

## Operating Instructions

# Minebea Intec Combics 2 Ex Indicator

for Use in Areas at Risk to Explosion

Model CAIXS2/ CAIXS2-U/ CAIXS2-U1



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# Notes on Using These Instructions

- ▶ Please read these instructions carefully and completely before using, maintaining or repairing the device.
- ▶ Observe the safety instructions.
- ▶ These instructions are part of the product. Keep it in a safe and easily accessible location.
- ▶ If the instructions should be lost or misplaced, please contact Minebea Intec for a replacement or download the latest version from our website: [www.Minebea-intec.com](http://www.Minebea-intec.com)

## Symbols and Signs

The following symbols are used in this manual:



**Warning symbol for various types of dangers.**



This symbol indicates useful information and tips.

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- , , This and similar symbols mean that the respective key should be pressed.
-   ..., This means that this key must be pressed more than once.

- ▶ Indicates a required action
- ▷ Describes the result of an action
  1. If a procedure has multiple steps...
  2. ... the steps are numbered consecutively
- Indicates an item in a list

## Menu Descriptions

In some cases, text descriptions are used to describe menu settings and in other cases only the number structure of the menu is used for faster orientation for experienced users (e.g. "Menu item 1.9« contains the parameter settings for calibration/adjustment). The Setup menu is shown on the display when "COBES" is selected as the language.



### Technical advice/hotline:

Phone: +49 (0) 40 / 67960444  
 Fax: +49 (0) 40 / 67960474

E-mail:  
[technical.support.hh@Minebea-intec.com](mailto:technical.support.hh@Minebea-intec.com)

# Warnings and Safety Precautions

The Combics CAIXS2 indicator complies with the European Council Directives as well as international regulations and standards for electrical equipment, electromagnetic compatibility, and the stipulated safety requirements. Improper use or handling, however, can result in damage and/or injury.

- ▶ Read these operating instructions carefully before use. This will prevent damage to the equipment. Please observe safety instructions 36953-751-16 in the safety information section. Please also bear the following points in mind:



Make absolutely sure to unplug the indicator from the power before you connect or disconnect any electronic peripheral devices to or from the interface port.



If you use electrical equipment in installations and under ambient conditions requiring higher safety standards, you must comply with the provisions as specified in the applicable regulations for installation in your country.



The operator shall be responsible for any modifications to the equipment and for any connections of cables or equipment not supplied by Minebea Intec and must check and, if necessary, correct these modifications and connections. Warning when using RS-232 cables, purchased from other manufacturers: These often have incorrect pin assignments for use with Minebea Intec equipment. Connect only Minebea Intec accessories and options, since these are optimally designed for use with your device. Therefore, do not use any proprietary solutions. The operator shall be solely responsible for installation and testing of any modifications to Minebea Intec equipment, including connection of cables or equipment not supplied by Minebea Intec. Information on operational quality (in line with norms pertaining to immunity) is available on request.



Clean your equipment only as directed in the cleaning instructions (see “Care and Maintenance”).



The display value can be affected by extreme electromagnetic influences. Once the disturbance has ceased, the instrument can be used again in accordance with its intended purpose. Information on operational quality is available upon request from Minebea Intec (in line with norms pertaining to immunity).

- ▶ If you have any problems with your device, contact your local Minebea Intec office, dealer or service center.

## IP Protection

### IP Rating

- The model meets the requirements of protection class IP69K.
- The IP69k protection rating is ensured only if the rubber gasket is installed and all connections are fastened securely (including the caps on unused sockets). Weighing platforms must be installed and tested by a certified technician.

## Equipment Description

- CAIXS2 The CAIXS2 Ex-Indicator offers the following features:
- robust and durable, thanks to its stainless steel housing
  - easy to clean and disinfect
  - easy to operate, thanks to the following features:
    - large backlit display elements (14 segments)
    - large keys with positive click action
  - operation independent of the platform location
  - range of interfaces for flexible use
  - password protection to prevent unauthorized alteration of operating parameters.
- CAIXS2 Offers the following practical functions:
- easy calibration via a separate key
  - automatic tare for loading
  - automatic printout for loading
  - configurable print-out
  - FlexPrint.
- CAIXS2 Simplifies and speeds up your daily work with:
- integrated programs for applications (some can be combined):
    - counting
    - neutral measurement
    - averaging/animal weighing
    - weighing in percent
    - checkweighing
    - classification
    - totalizing
    - net-total formulation
  - automatic initialization when the scale is switched on
  - option to be controlled via an external computer using various protocols
  - possibility of inputting tare values via the number block
  - connection option for a second balance
  - external battery
  - product data memory.
  - Fieldbus communication: optional Profibus
  - Analogue interface optional 4-20mA

### Intended Usage

It is robust electrical equipment and suitable for use in daily quality control in industry for the tasks previously specified. The Combics 2 CAIXS2 Ex-Indicator is designed for use with suitable scales or weighing platforms that correspond to the described technical specifications. To do this, the CAIXS2 and accessories must be used within the parameters of the specifications (see Appendix).

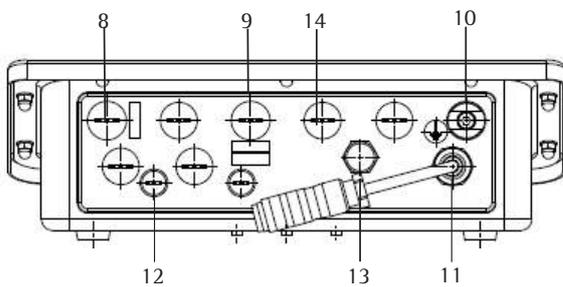
The CAIXS2 Ex-Indicator meets the requirements set in EC Directive for electrical equipment in category II 2 GD and as such is suitable for use in potentially explosive Zone 1 and Zone 21 atmospheres.

Any other use beyond this is considered improper.



**CAIXS2 2**

- 1 Display (for details, see “Operating Design” chapter)
- 2 On/Standby switch
- 3 General function keys: Zero, Tare, Switch function, Adjustment/ Calibration, Print/Data output (see “Operating Design”)
- 4 10 digit keypad for entering values
- 5 Additional function keys (see “Operating Design”)



**Rear View**

- 8 WP weighing platform connection
- 9 Connection options for COM1
- 10 Equipotential bonding conductor
- 11 Adapter cable with plug for EX power supply
- 12 Input for menu access switch (standard or legal-for-trade mode)
- 13 Vent valve
- 14 Connection UniCom (RS232 / 422/485, Profibus-DP, driver board 4-20 mA)

**Use in Legal Metrology**

- When the indicator is connected to a weighing platform and this equipment is to be verified, ensure that the applicable regulations regarding verification are observed.
- The indicator CAIXS2 and CAIXS2-U has an EU-type examination certificate, a NTEP and Canadian approval.
- The indicator CAIXS2-U1 has no NTEP approval.



Using NTEP or Canadian approval the application “Count” is blocked!

# Installation

When a CAIXS2 indicator is ordered with special equipment, the desired options come pre-loaded from the factory.

## Storage and Shipping Conditions

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Excessive vibrations may compromise the safety of the equipment.

- Do not expose the equipment to unnecessarily extreme temperatures, moisture, shocks, blows or vibration.
- Permissible storage temperature: -20 to +60°C.

## Installation Location

Avoid adverse influences at the place of installation:

- extreme temperatures (operating temperature: -10°C to +40°C)
- aggressive chemical vapors
- extreme moisture (according to IP protection rating).

## Unpacking the Equipment

- ▶ After unpacking the device, check it for any visible damage as a result of rough handling during shipment.
- ▷ If you detect any damage, proceed as directed under “Safety Inspection” in the chapter entitled “Care and Maintenance.”
- ▶ Save the original packaging for any future transport.  
Unplug all connected cables before packing the equipment.

## Checking Package Contents

- Indicator
- Operating instructions
- Options (special accessories) as listed on the bill of delivery

## Acclimatizing the Device

Condensation can form on the surfaces of a cold device when it is brought into a substantially warmer area.

- ▶ Allow the device to acclimatize for about 2 hours at room temperature, leaving it unplugged from the supply voltage.

## Getting Started

- 1.) Connect weighing platform to the indicator.
- 2.) CAIXS2 Indicators have an intrinsically safe data interface which can be connected to a computer (or any other peripheral device) using a barrier (e.g. YDI05-Z).
- 3.) Connect the AC adapter.
- 4.) Configure the analog/digital converter (ADC).
- 5.) Carry out an alignment: Adjustment.

### Connecting Weighing Platforms

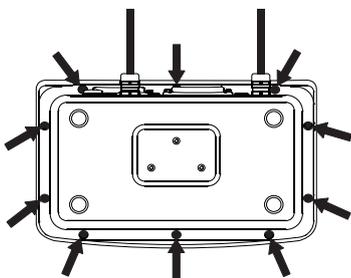
You can connect any intrinsically safe, analog Minebea Intec platform to your CAIXS2 Indicator. Refer also to the Verification of Intrinsic Safety, the EC Type Examination Certificate for the CAIXS2 and the load cell or analog weighing platform to be connected.



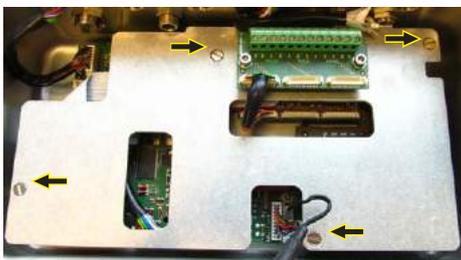
The load cell should be connected by a certified technician who has received specialized training from Minebea Intec. Any installation work that does not conform to the instructions in this manual results in forfeiture of all claims under the manufacturer's warranty.



Make sure the CAIXS2 is disconnected from the power before starting any connection work.



- ▶ Set up the weighing platform (see operating instructions for the weighing platform).
- ▶ Place the cable from the weighing platform next to the indicator.
- ▶ Open the Combics indicator:  
Loosen the ten cap nuts on the front panel. Remove the front panel.



- ▶ Remove the cover plate by removing the 4 screws.  
Connection terminals are now visible.

### Installing Connection and Interface Cables



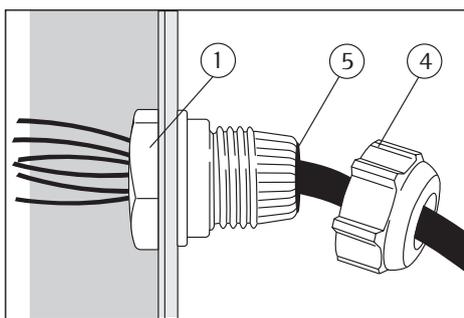
The cable gland (IP69K protection) is pre-mounted on the indicator. Please use extreme caution when performing any work on the equipment that affects this cable gland. You must use a torque wrench. The torque for this cable gland is 5 Nm.

### Preparing the Cable



- ▶ Strip approx. 14 cm from the end of the cable.
- ▶ Shorten the shielding to approx. 2 cm and pull back over the insulation.
- ▶ Strip approximately 5 mm of the insulation from the wires of the connecting cable and affix ferrules to the wire ends.

### Attaching the Cable Entry

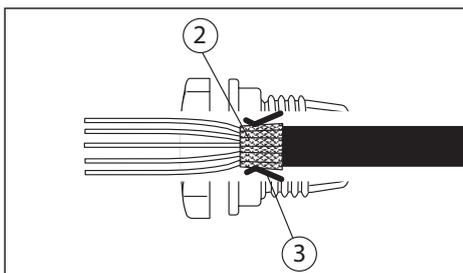


Please use extreme caution when performing any work on the equipment that affects this cable gland.

You must use a torque wrench.

The torque for this cable gland is 5 Nm.

- ▶ Remove the protective caps from the bore hole on the indicator.
- ▶ Insert the included cable gland through the bore hole and secure from the inside using the locknut (1).



- ▶ Insert the cable through the cable gland until the shielding (2) comes into contact with the clamps (3). Tighten the screw-down nut (4) until the gasket (5) inserted between the screw-down nut and cable forms a small beaded rim.
- ▶ Check the shielding and clamps.
- ▶ Securely connect the wires of the connecting cable in accordance with the terminal assignments.

### Connecting the Cable to the Analog/Digital Converter (ADC)

- ▶ Insert all cable wires through the ferrite case, wind them around the ferrite case and then reinsert back through the ferrite case.
- ▶ Screw the wires tightly into the clamps.

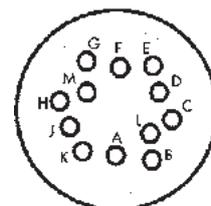
#### Pin Assignment (10 pin connector)

- ▶ Refer to the data sheet or operating instructions of the weighing platform for details on the assignment of wire colors/signals. Ensure any lines that are not assigned are insulated correctly.



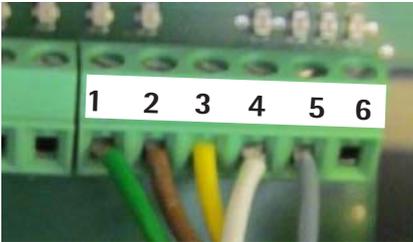
Connect weighing platform to ADU, Option A15

1	EXC+	blue	C
2	Sense+	green	B
3	OUT+	white	J
4	OUT-	pink	H
5	Sense-	gray	E
6	EXC-	brown	D

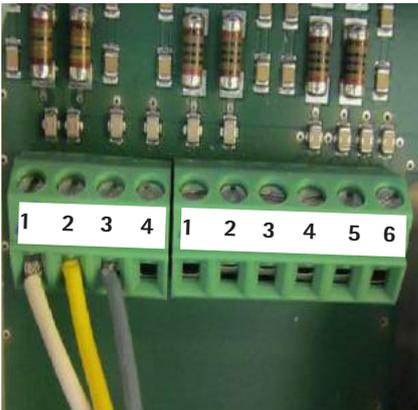


- ▶ When connecting a load receptor that uses 4-conductor technology (the cable of the weighing platform to be connected only has 4 lines), connect clamp pairs 1 and 2 (EXC+ and SENSE+), and 5 and 6 (SENSE- and EXC-) with a wire jumper.

RS232



RS485



Instead of an analog/digital converter (ADC), you could also install a data interface to connect an intrinsically safe digital weighing platform or balance (e.g. an IS.....-X).

**Connection using RS232 (Option A16)**

1	CTS	green
2	DTR	brown
3	RxD	yellow
4	TxD	white
5	GND	gray
6	GND	

**Connection using RS485 ( A19)**

RxD-TxD-P	white
RxD-TxD-N	yellow
GND	gray
GND	



Insulate unused cable ends

**Connecting Intrinsically Safe Data Cables**

Connect intrinsically safe data cables to COM1 (RS232, RS485 or RS422 and intrinsically safe control signals). For pin assignments on the data interface board, see 66015-741-50, 66015-750-50.

**External voltage supply for AP1**

At AP1 connected IS platform requires an external Voltage supply.

**Pin Allocations on the CAIXS2 Data Outputs (COM1)**

Option	A21 RS232 +	A22 RS422	A23 RS485 +	Pin**)
	Digital I/Os		Digital I/Os	
	CTS	GND	GND	1
	RxD	GND	TxD-RxD_P	2
	TxD	TxD_N	TxD_RxD_N	3
	DTR	TxD_P	---	4
	GND	DRT_P	GND	5
	GND	RxD_N	GND	6
	GND	DTR_N	GND	7
	UNI_IN	---	UNI_IN	8
	SET	---	SET	9
	PAR	CTS_N	PAR	10
	MIN	CTS_P	MIN	11
	MAJ	RxD_P	MAJ	12

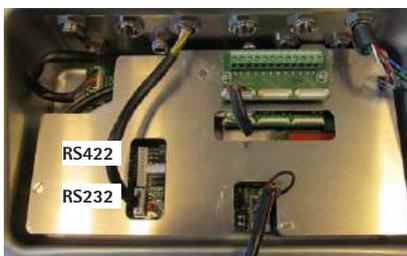
\*\* 12-pin terminal block on the data adapter board:

Plug the 12-pin connection cable into the corresponding type of data output (see data sheet External Data Interface).

**External voltage supply for COM1**

At COM1 connected IS platform requires an external Voltage supply, see document 66015-741-50 Page 3/9.

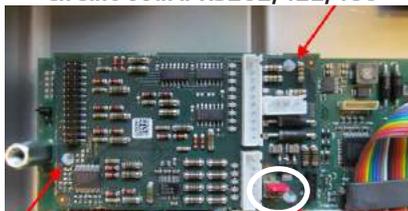
RS232/422



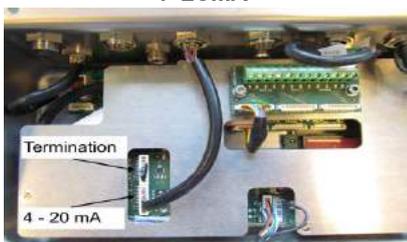
RS485



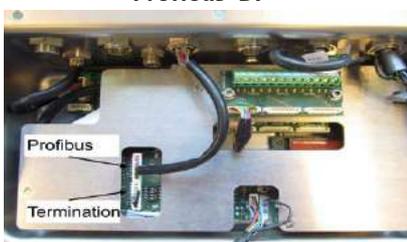
circuit board RS232/422/485



4-20mA



Profibus-DP



circuit board Profibus/4-20mA

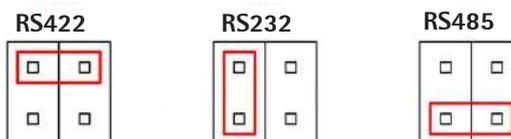
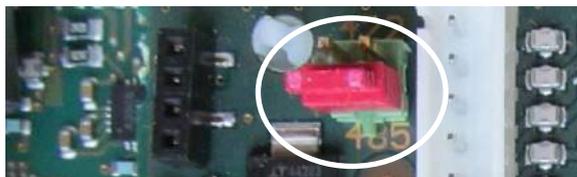


### Install interface Ex UniCOM (option A35 to A39)

interface	Option	Connection cable
RS232	A35	N21
RS485	A36	N25
RS422	A37	N22
Analog 4-20mA	A38	N23
Profibus-DP	A39	N24

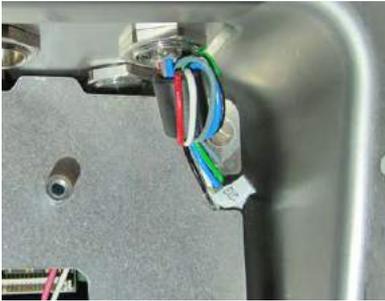
- ▶ Open the Combics evaluation unit (page 8).
- ▶ Insert 3 plastic holders (arrow) on the mainboard.
- ▶ Connect the circuit board to the connector and the plastic holders snap into place.

- ▶ Option A35-A37: Set the jumper to the circuit board for RS232/RS422/RS485.

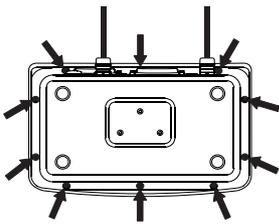


- ▶ Insert cover plate (Page 12).
- ▶ Blind plug unscrewing
- ▶ Fasten PG screw connection with connecting cable (page 9).
- ▶ Insert the flat plug of the data cable into the corresponding slot.
- ▶ Options A38/A39: Insert termination plug into unused slot.
- ▶ Mount the front plate (page 12).

The actual analog output or the Profibus interface is located in the YPSC01!  
 The following output settings are possible for this analog output in the YPSC01:  
 - 4-20 mA (standard configuration)



- ▶ Insert the cover plate and tighten the screws.



- ▶ Re-attach the front panel and tighten the ten cap nuts with a torque of 1 Nm.

## Connecting the Device to AC Power

Power is supplied via an external power supply device, which is provided with the equipment.



The power connection must be made in accordance with the regulations applicable in your country.

Make sure that the voltage rating printed on the manufacturer's ID label is identical to that of your local mains voltage. If the voltage specified on the label or the plug design of the AC adapter do not match the rating or standard you use, please contact your Minebea Intec office or dealer.



- ▶ Check the voltage rating and plug design.
- ▶ The device must be plugged into a properly installed wall outlet.

### Protection Class 1 Device

- ▶ The device must be plugged into a properly installed wall outlet that has a protective grounding conductor (PE).

## Safety Precautions

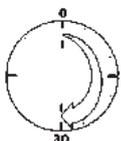


If you use an electrical outlet that does not have a protective grounding conductor, ensure that an equivalent protective conductor is installed by a certified electrician (as specified in the applicable regulations for installation in your country). The protective effect must not be negated by using an extension cord without a protective grounding conductor.

Before using for the first time, any superstructure parts must be completely installed.

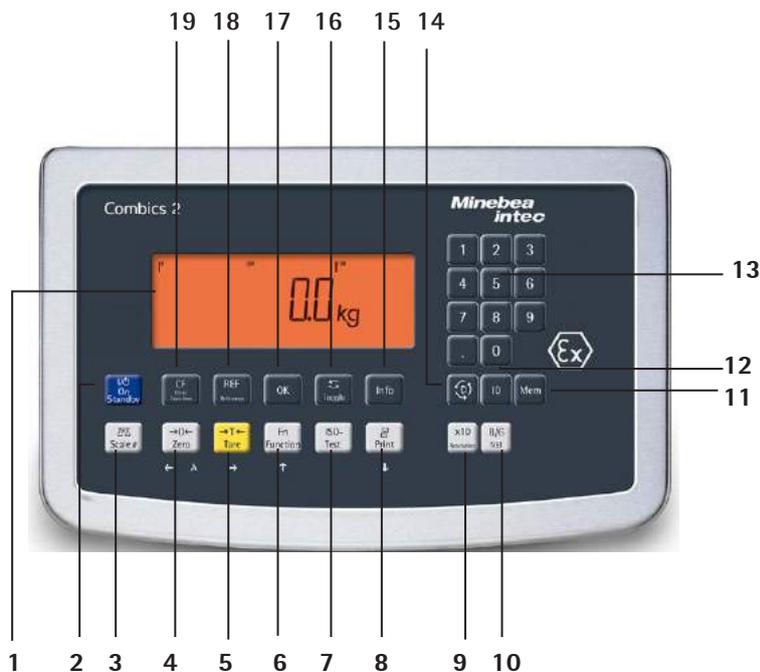
Avoid connecting the equipment to lines that have a heavy electrical load, e.g. compressors, large machinery, etc.

### Warm-Up Time



To deliver exact results, the device must warm up for at least 30 minutes after connection to AC power. Only after this time will the device have reached the required operating temperature.

# Operating Design



## Display and Keypad

- 1 Display
- 2 On/Standby key
- 3 Changing the active scale
- 4 Zero key
- 5 Tare key
- 6 Function key unit conversion
- 7 Start calibration or adjustment
- 8 Print key (data output)
- 9 Toggle unit between normal and 10-fold higher resolution
- 10 View gross value (net value plus tare)  
View net value (gross value minus tare)
- 11 Product data memory
- 12 ID key for entering the operator ID
- 13 Numeric keypad
- 14 Toggle between application program and application- specific information
- 15 Display of applications and manual tare values
- 16 Toggle key (function depends on application)
- 17 OK key (function depends on application)
- 18 Reference value key (function depends on application)
- 19 Clear function key (function depends on active application)

## Key Functions



### On/Standby switch

When in Standby mode, STANDBY is displayed.



### Zeroing key

- Press key **for less** than 2 seconds: Zero
- Press key **longer** than 2 seconds: Display the adjustment/configuration counter



### Tare key

- Saves the numeric input as the tare weight
- Press key longer than 2 seconds: Save the preset tare weight



**Function key:** Depending on the configuration in the Setup menu, switches between the

- first and second weighing unit
- results display and SQmin display.



**ISO test:** Start calibration or adjustment



### Print key

- Press key **for less** than 2 seconds: Print
- Press key **longer** than 2 seconds: Print GMP footer



**Toggle key:** When a second platform is connected (COM1, UniCom), this key toggles the display between the two readouts.

The following four keys are used for operating the individual applications. Their exact function is described in the respective section for the application.



**Delete key:** Deletes initialization values or totalizing memory. During numeric entry the last character entered is deleted.



**Reference value key:** Changes the set reference value.



**OK key:** Applies values or starts an application program.



**Toggle key:** Toggles between display modes within an application program.

- Info** **Info key:** Used to display application parameters and manual tare values (Info after pressing a follow-up key, e.g. )
- 1**, **2**, **3** ... **.**, **0** **Number block:** Used to enter numeric values
- ▶ To apply the value, press the corresponding function key (e.g. key  to save the entry as a manual tare value.
  - ▶ To delete the last character entered, press the  key.
-  **Application toggle key:** Toggles between available applications
- ID** **ID key:** Used to enter operator IDs
- Mem** **Save key:** Used to save values to the product data memory or load to the application
- x10** **Resolution toggle key:** Toggles unit between normal and 10-fold higher resolution
- B/G** **Gross/Net value key:** Toggles between the gross or net value

## Saving Settings in Weighing Mode

All application parameters saved (e.g. reference values) remain in memory and are available when:

- the device has been switched off and then on again
- you return to the originally selected application from a second one (e.g. when you switch from Averaging back to Counting, all parameters saved for Counting are available).

## Applying the Tare Weight

- ▶ Place the tare object on the weighing platform.
- ▶ Press the  key.
- ▶ The value is applied as the tare value.

## Input Through the Digital Control Port

You can connect an external hard drive or foot switch to the control port (universal in). You can assign one of the following functions to the control port in the **SETUP / CTRL ID / INPUT / PARAMET / EXT.KEY** menu:

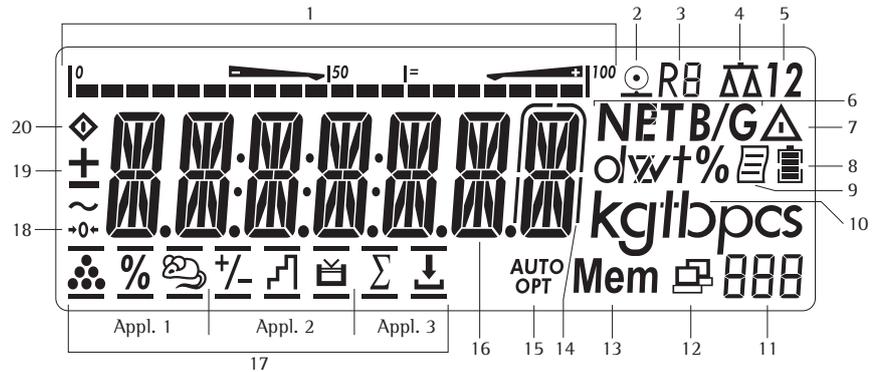
-  key
-  key (hold)
-  key
-  key
-  key
-  key
-  key
-  key
-  key
-  key
- **Info** key
-  key
- **x10** key
- **B/G** key

## The Display

There are two display modes:

- display for weighing (weighing values and calculated values)
- display in "Menu mode" (device settings).

### Display in Weighing Mode



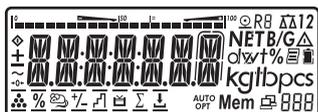
- Bar graph showing 10% intervals
  - shows the percentage of the weighing platform's capacity that is "used up" by the load on the scale (0% = lower limit, 100% = upper limit) or
  - shows the measured value in relation to a target value (with the "Checkweighing" or "Classification" applications).
- Minimum for checkweighing
  - Maximum for checkweighing
  - Target value for checkweighing
- Symbol for active print job
- R8 Displays the active range on multiple-range scales
- Indicates active weighing platform; flashes to prompt calibration/adjustment
- 1 2 Selected weighing platform 1 or 2
- B/G NET Net/Gross value on the main display (with tare in memory or preset tare)
- Identifies the value on the main display as calculated (value not valid in legal metrology)
- Battery charge status
- GMP-compliant printing in progress
- Weight unit of the value displayed
- Numeric display; e.g. showing the reference value
- Numeric display; e.g. showing the reference value
  - Interface initialized (profibus/Ethernet)
  - Flashes during data transfer (RS-232/485)
- Mem Symbol for product data memory
- In legal metrology, on equipment for which **e** is not equal to **d**, the digit bordered for identification is not taken into account
- AUTO/OPT
  - **AUTO**: Depending on the weight value, a reaction is triggered in the application
  - **OPT**: Automatic optimization takes place for the Counting application
- Measured value line: weight value or calculated value

- 17 Symbols for applications: An active application is identified by a line above and below the symbol (▲).
  - Application 1:
    - ▲ "Counting"/ "Neutral Measurement"
    - ⊗ "Weighing in percent"
    - 🐾 "Averaging" (animal weighing)
  - Application 2:
    - ⚖️ "Checkweighing"
    - 📏 "Classification"
    - 📦 "Checkweighing toward zero"  
Manually batching toward "zero"
  - Application 3:
    - Σ "Totalizing"
    - 🏭 "Net total formulation"
- 18 →0← The zero-setting symbol is displayed after the active scale or weighing platform has been zeroed (verified models only)
- 19 + - Plus or minus sign of the value displayed
- 20 ⬠ Busy symbol indicates that an internal process is in progress

## Menu Operating Concept

### Switching to the Menu

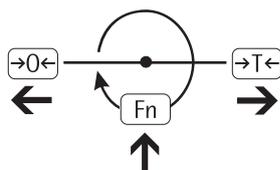
-  ▶ Turn on the device.  
If it is already on: turn off and then on again.
-  ▶ During the display test, briefly press the  key.



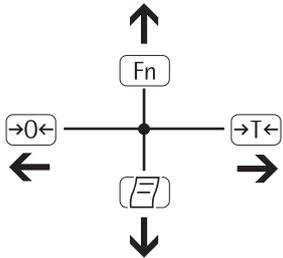
- ▶ The menu will open. The top most level is always displayed (*APPLIC.*); for menu structure see page 136.

### Navigating the Menu

You can navigate the menu using the keys with the white arrows under them.



-  Back to the superordinate menu level
-  Access the next menu item on the same level  
This continues to page through on the same level
-  **Press less than 2 seconds:** Select the menu item and save  
**Press longer than 2 seconds:** Exit the menu and switch to weighing mode
-  Print the menu settings starting from the current position, or print Info data



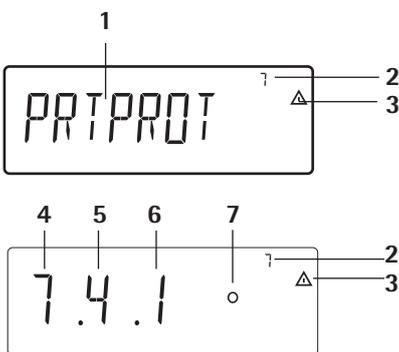
### Entering Numbers and Letters (without a Number Block)

- ←0← – Press the key for **less** than 2 seconds: Activate character to the left of the currently active character (when first character is active: exit the input mode without saving changes)
  - Press the key for **longer** than 2 seconds: Exit the input mode without saving changes
  
- ←0← – Press the key for **less** than 2 seconds: Confirm currently active character and move 1 position to the right (after the last character: save input)
  - Press key for **longer** than 2 seconds: Save current input and display the menu item
  
- Fn – Cursor in first position, no characters entered yet: Delete character(s) and enter 0
  - Change the displayed character; scroll forward (sequence: 0 ... 9, decimal point, minus sign, Z \_ A, space)
  
- E – Cursor in first position, no characters entered yet: Delete character(s) and enter a space
  - Change the displayed character; scroll backward (sequence: space, A \_ Z, minus sign, decimal point, 9 \_ 0)

Enter number values (date and time, etc.) using the 10-key numeric keypad.

### Menu Display

Both illustrations depict all of the main display elements and symbols that can be shown in Menu mode.



- 1 Selected menu item (e.g. printer for setting the connected printer)
- 2 Menu history (note at highest menu level in the Setup menu)
- 3 Note that other submenus are available

Display with the “CODES” language setting

- 4 First level in the Setup menu
- 5 Second level in the Setup menu
- 6 Third level in the Setup menu
- 7 Currently active setting

### Saving Menu Settings

The parameters selected in the menu remain saved when you switch to weighing mode or turn off the device. You can block access to the *SETUP* menu by requiring a password to prevent unauthorized or accidental setting changes.

## Configurations

Basic settings are made in the Menu mode by selecting the desired parameters. These are divided into the following groups (first menu level); for menu structure see page 136:

- Application parameter *APPLIC.*
- Function key *FN-KEY*
- Device parameter *SETUP*
- Device-specific information *INFO*
- User language *LANGUAG.*

When used in legal metrology, not all parameters can be accessed. Only those parameters that can be selected are displayed. Factory-set parameters are identified by an “\*” in the list starting on page 137.

### Printing Parameter Settings

- ▶ Access the Menu mode (see page 35).
- ▶ Press the  key.

The scope of the printout depends on the position in the setup. It may take several seconds.

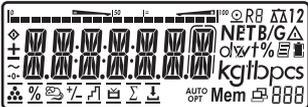
### Language Settings

Example: Select the language “German.” The factory setting for language is “English.”

Menu: *APPL / LANG.*



▶ Turn on the device.



▶ While all segments are lit, press the  key briefly.



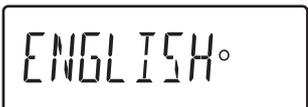
▶ The first item in the main menu is shown: *APPL.*


 ...

▶ Press the  key until the *LANGUAG.* menu item is displayed for the language setting.



▶ Press the  key to access the language setting sub-menu.



▶ The currently set language is displayed.


 ...

▶ Press the  key until *GERMAN* is displayed.



▶ Press the  key to save the selection.



▷ The small circle indicates that the setting has been saved.



Use the  key to exit the menu level to make additional settings if required.  
or

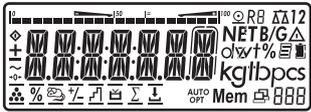


Press the  key longer than 2 seconds to exit the menu.

### Setting Up Password Protection



▶ Turn on the device.



▶ While all segments are lit, press the  key briefly.



▷ The first item in the main menu is shown: *APPLIC.*



▶ Press the  key until the *SETUP* menu item is displayed.



▶ Press the  key to open the *SETUP* sub-menu.



▷ The first parameter in the Setup sub-menu is displayed: WP-1.



▶ Press the  key until *BEN.-CODE* is displayed.



▶ Press the  key to open the menu item.



▷ The position for the first character to be entered flashes.



▶ Use the  and  keys to select the desired character.  
 starts the character selection with A alphabetically and  
 starts the character selection with 0 and counts upward.  
Alternatively, enter a number value using the 10-key numeric keypad directly.

- ▶  To apply a character, press the  key.
  - ▶ Enter all additional characters of the password as described above.
  - ▶ Press and hold the  key to save the password.
  - ▶  Use the  key to exit the menu level to make additional settings if required.
- or
- ▶  Press the  key longer than 2 seconds to exit the menu.

### Changing or Deleting Passwords

- ▶ In the *SETUP* sub-menu, open the *BEN.CODE* menu item as described above.
- ▶ The old password must be entered to change or delete a password.
- ▶ To change a password, overwrite the old password.
- ▶ To delete a password, enter spaces and press the  key.

# Configuring Weighing Platforms

## Service mode

**Purpose** The Service mode enables access to additional menu items in the Setup menu (*SETUP*) which are not displayed when the Service mode is not active. The most important calibration and adjustment work for the indicator and for the connected weighing platform can be carried out in the Service menu, e.g. ADC configuration.

When the Service mode is active, an “S” is shown in the top right-hand corner of the display. To deactivate the Service mode, restart the indicator (turn the indicator off and back on again).

In Service mode, the *SETUP* menu is expanded with the following parameters after entering the user password:

- *S-DATE* for entering the next service date
- *SER.ND.* for entering the device serial number
- *MODEL* with the model description
- *S-SADMIN*

The Setup menu for *WP 1* and *WP 2* can be extended to include the following setting options to configure the weighing platforms:

### Param 1

<i>CAL.ADJ</i> calibration, adjustment	1.9
<i>LIN.INT</i> internal linearization	1.9.5
<i>LIN.EXT.</i> external linearization with default weights	1.9.6
<i>LIN.E.USER</i> external linearization with user-defined weights (entered under 1.18)	1.9.7
<i>SET.PREL.</i> set the preload (not for use in legal metrology)	1.9.8
<i>DEL.PREL</i> delete the preload (not for use in legal metrology)	1.9.9
<i>HNJ.XTG/CAL.ADJ</i> enter the adjustment and linearization weights	1.18
<i>CAL.ADJ.1</i> enter adjustment weight	1.18.1
<i>LIN.WT.1</i> enter lin. weight 1	1.18.2
<i>LIN.WT.2</i> enter lin. weight 2	1.18.3
<i>LIN.WT.3</i> enter lin. weight 3	1.18.4
<i>LIN.WT.4</i> enter lin. weight 4	1.18.5
<i>ADJ.W/O.W</i> adjust without weights (enter the characteristic data of the load cells)	1.19
<i>NOM.LOAD.</i> nominal load	1.19.1
<i>RESOLUT</i> resolution (only visible for older ADCs)*	1.19.2
<i>SENSIT.1</i> sensitivity in mV/V for cell 1 (or average value for all cells)	1.19.3
<i>SENSIT.2</i> sensitivity in mV/V for cell 2	1.19.4
<i>SENSIT.3</i> sensitivity in mV/V for cell 3	1.19.5
<i>SENSIT.4</i> sensitivity in mV/V for cell 4	1.19.6
<i>ZER.POIN</i> zero point or offset of system in mV/V	1.19.7
<i>SAVE.</i> save values for 1.19	1.19.8
<i>GEOG.DAT</i> adjustment location (geograph. data; or alternatively the gravitational acceleration at the place of installation)	1.20
<i>LATITUDE</i> latitude in degrees	1.20.1
<i>ALTITUDE</i> elevation in meters above sea level	1.20.2
<i>GRAVITY.</i> gravitational acceleration	1.20.3
<i>SAVE.</i> save values for 1.20	1.20.4
ADC settings (see Analog/Digital Converter)	11
Apply the serial number of the IS weighing platform	12.1
Apply the serial number	12.1.1
Inactive (standard WP)	12.1.2

\* External or ADUs of the old Combics generation

### Activating the Service Mode

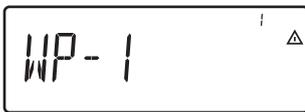
 ...  ► Switch to the Menu mode.

  ... ► Access the *SETUP* menu.



 ► Select *SETUP*.

If a password is requested at this point, enter the service password (see Appendix) and continue with “Saving the service password.”



  ... ► Access menu item *U-CODE*.



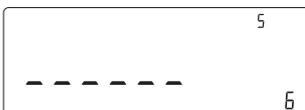
 ► Select *BEN.CODE*.



► Enter the service password (see Appendix).

 ► Apply the service password.

► The Service mode is active: an “5” appears in the top right-hand corner of the display.



  ► Return to *SETUP* in the Service mode.

## Analog/Digital Converter (ADC)

**Purpose** Adjust the parameters of the analog/digital converter to the connected load cell or weighing platform. After ADC configuration, the ADC in connection with the load sensor is defined as a scale.



Once the ADC configuration has been locked, the indicator can no longer be used to influence weighing results. The scope of functions available in the weighing instrument is defined by the A/D converter. Weighing functions that can be activated include reading weight values, taring, adjustment, reading the tare value and saving/deleting the tare entry.

- Setup information**
- ADC configuration is only possible when the menu access switch is open. Close the menu access switch after ADC configuration, as otherwise there will not be any display of the conditions “overload” (H) and “underload” (L).
  - When the Service mode is activated, the ADC configuration takes place in the **SETUP menu** under *WP-1* for the first weighing platform and under *COM1 / WP-2 / UNICOM* for the second weighing platform.



If you return to the highest level of the Setup menu without saving the configuration parameters beforehand (menu item 11.10) any settings that have been made will be deleted.

- The settings are made in the corresponding Setup menu under menu item 11.
- Enter the maximum capacities in a suitable weight unit, without any decimal places (decimal places will be truncated by the rounding function).
- Entries made in the ADC configuration will not be affected by a menu reset (returning the setup parameters to their factory settings).

<b>Factory settings/Reset menu</b>		<b>9.1</b>
<i>STANDARD</i>	Standard configuration	
<i>RANGE</i>	Ranges	11.3
	<i>SINGLE</i> Single-range scale	11.3.1
	<i>MULT.INT</i> Multi-interval scale	11.3.2
	<i>MULT.RNG</i> Multiple-range scale	11.3.3
<i>SINGLE</i>	Single-range scale	11.4
	<i>D</i> Scale interval d	11.4.1
	<i>MAX</i> Max. load	11.4.4
<i>MULT.INT</i>	Multi-interval scale	11.5
	<i>D</i> Scale interval d	11.5.1
	<i>RANGE 1</i> Range 1	11.5.4
	<i>RANGE 2</i> Range 2	11.5.5
	<i>RANGE 3</i> Range 3	11.5.6
	<i>MAX</i> Max. load	11.5.7
<i>MULT.RNG</i>	Multiple-range scale	11.6
	<i>D</i> Scale interval d	11.6.1
	<i>RANGE 1</i> Range 1	11.6.4
	<i>RANGE 2</i> Range 2	11.6.5
	<i>RANGE 3</i> Range 3	11.6.6
	<i>MAX</i> Max. load	11.6.7
<i>WT.UNIT</i>	Available weight units	11.7
	<i>FREE</i> User-defined /o	11.7.1
	<i>G</i> Grams /g	11.7.2
	<i>KG</i> Kilograms/kg	11.7.4
	...	
	<i>T</i> Tons/t	11.7.21
	<i>LB</i> Pound:ounces/lb o	11.7.22

<i>CAL UNIT</i>	Calibration/Adjustment unit	11.8
<i>SAVE</i>	Save configuration parameters	11.10
	<i>YES</i> Yes	11.10.1
	<i>NO</i> No	11.10.2

## Setting parameters for ADC configuration

<b>Standard or verifiable configuration</b>	<p>In ADC configuration, you must first select whether the weighing platform should be configured as a standard or verifiable (for use in legal metrology) weighing platform.</p> <ul style="list-style-type: none"> <li>– Standard configuration <i>STANDARD</i>.</li> <li>– Verifiable configuration <i>VERIF.</i></li> </ul>
<b>Accuracy class</b>	<p><i>CLASS</i> Menu item 11.1 (only displayed in verifiable configuration)</p> <p>Only menu item 11.1.4 (accuracy class <math>\text{III}</math>/<math>\text{III}</math>) can be selected here. If the menu item is not already marked as being active with a circle (o), the <math>\text{⇌}</math> key must be pressed once to activate it.</p>
<b>Configuration unit</b>	<p><i>WGT.UNIT</i> Menu item 1.7</p> <p>The weight unit used in the ADC configuration must have previously been selected here.</p>
<b>Range selection</b>	<p><i>RANGE</i> Menu item 11.3</p> <p>Depending on the setting under this menu item, the Menu items 11.5, 11.6 and 11.7 will either be displayed or will not be displayed for further configurations.</p> <ul style="list-style-type: none"> <li>– Single range mode (11.3.1) The entire weighing capacity is divided into decimal numbers dependent on the smallest scale interval <i>d</i> and the maximum weight. The readability corresponds to the scale interval <i>d</i>.</li> <li>– Multiple-range scale (11.3.2) A multiple-range scale has two or three weighing ranges. When the range limit for the lower weighing range is exceeded, the scale switches into the next highest weighing range (lower resolution). The scale only switches back to the lower weighing range (higher resolution) when the weighing platform has been completely unloaded after pressing the <math>\text{⇌}</math> key.</li> <li>– Multi-interval scale (11.3.3) The function “Multi-interval scale” divides the weighing capacity into a maximum of three ranges with differing readability. The corresponding change takes place automatically at the defined range limits. Once the scale has been tared, the highest possible resolution is available even if the weighing platform is loaded.</li> </ul>
<b>Scale interval <i>d</i></b>	<p>The scale interval <i>d</i> indicates the resolution of the weighing instrument. The scale interval can only be entered in increments of 1, 2, 5, 10, 20, etc.</p> <p>When “Verifiable configuration” is used, this menu item is not displayed. When using verifiable or verified weighing platforms (classes <i>l</i> and <i>m</i>), the scale interval <i>d</i> is the same as the verification scale interval <i>e</i>.</p>
<b>Verification scale interval <i>e</i></b>	<p>The verification scale interval <i>e</i> indicates the resolution of the weighing instrument in legal metrology. The scale interval can only be entered in increments of 1, 2, 5, 10, 20, etc.</p> <p>When “Standard configuration” is used, this menu item is not displayed.</p>
<b>Maximum load (max. load)</b>	<p>The maximum load is the maximum amount of weight that may be placed on the weighing platform. When heavier weights are used the weighing instrument displays overload “H”.</p> <p>The scale intervals of the weighing instrument are calculated using the maximum load and the scale interval <i>d</i> (e.g. max. capacity = 15.000 kg, smallest scale interval <i>d</i> = 0.005 kg yields 3000 scale intervals).</p> <p>In legal metrology the total number of intervals must be no more than 3000 <i>e</i>, and when using multi-interval scales there must not be more than 3000 <i>e</i> intervals per range.</p> <p>In standard operation, as opposed to legal metrology, you can define a “Super Range” weighing instrument of over 3000 intervals. These parameters, however, may be influenced by physical restrictions.</p>

- Minimum load (min. load)** When “Standard configuration” is used, this menu item is not displayed. The minimum load of the connected weighing platform is entered under this menu item. The minimum load for scales of class (III) is 20 e and 10 e for class (IIII).  
**Attention:** The function of the minimum load setting is to warn operators that below this limit, the summation of tolerances might lead to significant measurement errors. In Germany, for example, initial weights below the minimum load are not allowed.
- Range 1, Range 2, Range 3** The range limits are entered for the individual ranges. The accuracy changes when these limits are exceeded.  
The following applies when entering limits:  
Range 1 < Range 2 < Range 3 < max. load  
This means that the weighing range can be divided into a maximum of 4 ranges. The resolution changes at intervals of 1, 2, 5, 10, 20 etc., where the lowest resolution is the smallest scale interval entered. Set ranges that are not required for use to zero.
- Available weight units** *WT.LIMIT* Menu item 11.7  
This menu item is used to select the weighing units that have been cleared for use in weighing. All units marked with a circle (o) have been cleared for use, multiple selection is possible.
- Save parameters** *SAVE* Menu item 11.10  
The ADC configuration data are saved by selecting Menu item 11.10.1.



#### Testing and configuration for operation in legal metrology

A metrology plate is included in the scope of supply of the indicator. Once ADC configuration is complete, record the metrological data for all ranges on the metrology plate. Attach the plate underneath the display and cover with the supplied waterproof acetate foil.

- ▶ Under the menu item 1.7, check that only authorized weight units can be selected.

## Configuring the A/D Converter (ADC)

The weighing platform must already be connected.

### Opening the Menu Access Switch

The menu access switch is located on the back of the indicator, behind the cover.

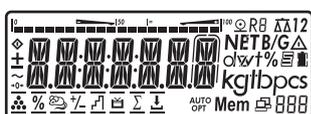
- ▶ Remove the cap.
- ▶ Slide the switch to the right (= “open” position).



Menu Access Switch/Calibration Switch Cover



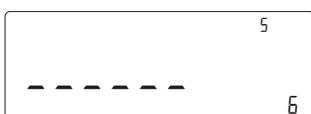
- ▶ Switch off and restart the device.



- ▶ While all segments are lit, press the  $\rightarrow 0 \leftarrow$  key briefly.



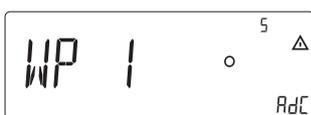
- ▷ *ADC-CON* appears briefly on the display, followed briefly by *5-CODE*.



- ▷ The cursor flashes on the display.
- ▶ Enter the service password (see Appendix).



- ▶ Confirm your entry using the  $\rightarrow T \leftarrow$  key.



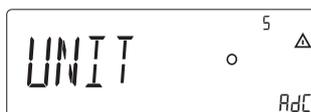
- ▷ The device is in Service mode. This can be recognized by the small 5 in the top right of the display.
- ▶ Select the weighing platform to be configured, using the  $\text{Fn}$  key to switch to WP-2 if required.



- ▶ Confirm your selection using the  $\rightarrow T \leftarrow$  key.



- ▶ Select the Configuration mode using the  $\text{Fn}$  key: *STANDARD* or *VERIF*.



- ▶ Carry out ADC configuration (see menu tree).



- ▶ Once you have completed the configuration, save the data using the *SAVE* menu item.
- ▷ The indicator will restart automatically.

The A/D converter can now be treated like a standard weighing platform in connection with the load sensor.



- ▶ Close the menu access switch (left position) and reattach the cap. Once ADC configuration has been completed, an adjustment of the weighing platform (calibration/adjustment and linearization) must be carried out (see “Calibration/Adjustment without Weights”).

### Installation location in Germany

An exception to this is the setting for “Germany (Zone D)”: If during external adjustment of weighing equipment within Germany the geographical data

- geographical latitude: 51.00 degrees N
- elevation: 513 m

is entered, the weighing equipment can be used throughout Germany.

Gravitational acceleration for “Germany (Zone D)” is 9.810 m/s<sup>2</sup>.

On delivery the geographical data for “Germany (Zone D)” is entered in the output device.

It is recommended to use the geographical data settings for “Germany (Zone D)” when adjusting and delivering the weighing equipment within Germany. Entering exact geographical data will lead to a higher level of accuracy but will also restrict the tolerance zone.

### Setup information

- It is only possible to enter geographical data when the menu access switch is open.
- When the Service mode is active, geographical data can be entered in the *SETUP* menu under “WP-1” for the first weighing platform and under *COM1 / WP-2 / UniCom* for the second weighing platform. The settings are made in the corresponding Setup menu under menu item 1.20.
- Either the “geographical latitude in degrees” (*LATITUDE* menu item 1.20.1) and “elevation in m above sea level” (*ELEVATION* menu item 1.20.2) or the value for gravitational acceleration (*GRAVITY* menu item 1.20.3). Gravitational acceleration takes precedence over the geographical latitude and elevation of the location: If it has been entered, input fields for latitude and elevation show the values 99999.99 and 9999999 respectively. If only elevation and latitude have been entered, 0000000 is displayed for gravitational acceleration.



If you return to the highest level of the Setup menu without saving the configuration parameters beforehand (menu item 1.20.4) any settings that have been made will be deleted.

- Procedure**
- ▶ Open menu access switch.  
If the device is part of a verified weighing facility, this will only be possible if the verification seal is broken. The weighing equipment must then be verified again.
  - ▶ Activate the Service mode.
  - ▶ Select the weighing platform.
  - ▶ Enter the geographical data for the place of adjustment under menu items 1.20.1 to 1.20.3 and save them under menu item 1.20.4. The data can be obtained from the relevant land registry or Ordnance Survey.
  - ▶ Carry out external calibration.
  - ▶ After the calibration, enter the geographical data for the place of installation under menu items 1.20.1 to 1.20.3 and save them under menu item 1.20.4.
  - ▶ Close the menu access switch.
  - ▷ The weighing equipment can now be operated at the place of installation, and within the abovementioned tolerance zone.

**Note:** The set geographical values are displayed during the adjustment procedure if the display of the data has been activated in the Setup menu under *UTILIT* menu item 8.12.2 (factory setting: 8.12.1, display deactivated).

When the display is activated the adjustment procedure is as follows:

- ▷ If the elevation and geographical latitude are used, after the start of the *CAL* adjustment procedure the word *LATITUDE* will appear briefly followed by the set elevation (in meters above sea level).
- ▶ Confirm the display using the  $\rightarrow T \leftarrow$  key (cancel using the  $\rightarrow 0 \leftarrow$ ) key.
- ▷ Then the word "*LATITUDE*" will be displayed briefly followed by the set geographical latitude in degrees.
- ▶ Confirm the display using the  $\rightarrow T \leftarrow$  key (cancel using the  $\rightarrow 0 \leftarrow$ ) key.
- ▷ You are then asked to place the calibration weight on the weighing platform. If gravitational acceleration has been entered instead of elevation and geographical latitude, the word *GRAVITY* will appear briefly, followed by the value set for gravitational acceleration.
- ▶ Confirm the display using the  $\rightarrow T \leftarrow$  key (cancel using the  $\rightarrow 0 \leftarrow$ ) key.

#### Menu structure for entering the geographical data

<i>GEOG.DAT</i> adjustment location (geograph. data; or alternatively the gravitational acceleration at the place of installation)	1.20
<i>LATITUDE</i> latitude in degrees	1.20.1
<i>ALTITUDE</i> elevation in meters above sea level	1.20.2
<i>GRAVITY</i> . gravitational acceleration	1.20.3
<i>SAVE</i> . save values for 1. 20	1.20.4

## Entering Adjustment and Linearization Weights

- Purpose** Entering adjustment and linearization weights.
- Setup information**
- The Service mode must be activated in order for linearization weights to be entered under menu items 1.18.2 to 1.18.5 (see page 17).
  - **Adjustment and linearization weights are entered in the `SETUP` menu under `WP-1` for the first weighing platform and under `COM 1 / WP-2 / UNICOM` for the second weighing platform.** The settings are made in the corresponding Setup menu under menu item 1.18.
  - The Service mode does not have to be activated in order for external user-defined adjustment weights to be entered under menu item 1.18.1.
  - The adjustment and linearization weights must be entered in the unit selected for the ADC configuration under menu item 11.8.
- Procedure**
- ▶ Activate the Service mode (only necessary if linearization weights are going to be entered).
  - ▶ Select the weighing platform.
  - ▶ Enter the external user-defined adjustment weight under menu item 1.18.1.
  - ▶ Enter the external linearization weight under menu items 1.18.2 to 1.18.5.

### Menu structure for entering the adjustment and linearization weights

<code>MAN.EXT.W</code> enter the adjustment and linearization weights	1.18
<code>LOCAL.ADJ</code> enter external user-defined adjustment weight (Service mode not required)	1.18.1
<code>LIN.WT.1</code> enter lin. weight 1	1.18.2
<code>LIN.WT.2</code> enter lin. weight 2	1.18.3
<code>LIN.WT.3</code> enter lin. weight 3	1.18.4
<code>LIN.WT.4</code> enter lin. weight 4	1.18.5

## Function Allocation of the Key

- Purpose** The  key is normally used for the calibration/adjustment function. For detailed information about calibration and adjustment, see “Operation” starting on page 47. The following additional functions can be allocated to the key when the Service mode is activated:
- external linearization with default weights (menu item 1.9.6)
  - external linearization with the linearization weights (menu item 1.9.7) entered under menu item 1.18
  - internal linearization (menu item 1.9.5)
  - set preload (menu item 1.9.8) (only possible if not required for use in legal metrology)
  - delete preload (menu item 1.9.9) (only possible if not required for use in legal metrology).



Once linearization has been completed, or after a preload has been set or deleted, the function of the  key must be reallocated back to its original function in the Setup menu, e.g. external calibration/adjustment with default weights (setup, menu item 1.9).

### Menu structure for the function allocation of the key

<code>CAL.ADJ</code> calibration, adjustment	1.9
<code>CAL.EXT.</code> calibration/adjustment with default weights (Service mode not required)	1.9.1
<code>CAL.E-USR.</code> calibration/adjustment with user-defined weights (entered under 1-18, Service mode not required)	1.9.3
<code>LIN.INT</code> internal linearization	1.9.5
<code>LIN.EXT.</code> external linearization with default weights	1.9.6
<code>LIN.EUSR</code> external linearization with user-defined weights (entered under 1.18)	1.9.7
<code>SET.PREL.</code> set the preload (only possible when used in non-legal metrology)	1.9.8
<code>DEL.PREL.</code> delete the preload (only possible when used in non-legal metrology)	1.9.9
<code>BLOCKED</code> key blocked	1.9.10

## External Linearization

- Setup information**
- External linearization when weighing in legal metrology is only possible when the menu access switch is open.
  - The “external linearization” function must be allocated to the  key (menu item 1.9.6 or 1.9.7).



Once linearization has been completed, the  key must be reallocated back to its original function in the Setup menu, e.g. external calibration/adjustment with default weights (Setup menu item 1.9).

### Procedure

- ▶ For scales used in legal metrology: Open the menu access switch.



- ▶ Zero the weighing platform.

0.0 g

- ▶ Activate the Service mode.



- ▶ Start linearization.

- 5.0000 kg<sup>Δ</sup>

- ▶ After approximately 2 seconds you will be prompted to place the first linearization weight on the platform.

+ 0.002 kg<sup>Δ</sup>

- ▶ Place the required weight on the platform.

- ▶ After a short time the difference between the measured value and the true weight of the sample will be displayed.



- ▶ Save the linearization weight (cancel using the  key).

- 10.0000 kg<sup>Δ</sup>

- ▶ You will then be prompted to place the second linearization weight on the platform.

+ 0.0000 kg<sup>Δ</sup>

- ▶ Repeat the procedure for all required linearization weights.

- ▶ After the last linearization weight has been saved you will be prompted to remove any load from the weighing pan.

- 0.1 g

- ▶ Unload the weighing pan.

- ▶ After a short period of time the zero point will be applied automatically and the indicator will automatically switch back to weighing mode.

- ▶ Re-close the menu access switch.

## Set preload

- Setup information**
- Setting the preload when weighing in legal metrology is only possible using the “Zero at Power On” menu item.
  - The “Set Preload” function (menu item 1.9.8) must be allocated to the  key.



Once the preload has been set, the  key must be reallocated back to its original function in the Setup menu, e.g. external calibration/adjustment with default weights (Setup menu item 1.9).

### Procedure



- ▶ Zero the weighing platform.



- ▶ Place the preload weight on the weighing platform.



- ▶ Start the “Set Preload” function.



- ▶ After a short period of time the preload will be applied and the indicator will automatically switch back to weighing mode.



## Clearing the Preload

- Setup information**
- Clearing the preload when weighing in legal metrology is only possible using the “Zero at Power On” menu item.
  - The “Clear Preload” function (menu item 1.9.9) must be allocated to the  key.



Once the preload has been deleted, the  key must be reallocated back to its original function in the Setup menu, e.g. external calibration/adjustment with default weights (Setup menu item 1.9).

### Procedure



+ 8320.4 g

- ▶ Remove the preload weight from the weighing platform.



- ▶ Start the “Clear Preload”.



Clr PrL



0.0 g

- ▶ After a short period of time the preload will be deleted and the indicator will automatically switch back to weighing mode.

## Adjustment without Weights

In the Service menu, adjustment without weights can be carried out by entering the characteristic data of the load cells.



Adjustment without weights may not be carried out on weighing equipment used in legal metrology.

### Setup information

- Adjustment without weights is only possible when the menu access switch is open in the Service menu.
- When the Service mode is active, the parameters necessary for adjustment without weights can be entered in the *SETUP* menu under “*WP-1*” for the first weighing platform and under *COM 1 / WP-2* for the second weighing platform. The settings are made in the corresponding Setup menu under menu item 1.19.
- The “Nominal load” parameter must be entered in the “kg” unit.
- The “Resolution” parameter must be entered in the “kg” unit and must correspond to the scale interval “d” entered for the ADC configuration. This parameter is only available or visible with older ADCs.
- The “Sensitivity” parameter is entered in mV/V (see the data sheet for the value). - The “Zero Point” (Offset) parameter is entered in mV/V. This parameter is not visible with older ADCs.



The data entered is saved by selecting menu item 1.19.7. After saving, the data will no longer be able to be read.

### Procedure

- ▶ Open the menu access switch.
- ▶ Activate the Service mode.
- ▶ Select the weighing platform.
- ▶ Enter the nominal load of the load cell(s) in kg under menu item 1.19.1. If the weighing platform has multiple load cells, the nominal load must be multiplied accordingly (e.g. 4 load cells, each of which has a capacity of 50 kg, will produce a nominal load of 200 kg).
- ▶ Enter the resolution in kg under menu item 1.19.2. The value must correspond to the scale interval d entered under menu item 11.4.1. This applies only to older ADCs.
- ▶ Enter the sensitivity of the load cells in mV/V under menu item 1.19.3. For weighing platforms with multiple load cells: Enter the individual values of the load cells in 1.19.3 to 1.19.6 or enter the average of all load cells in 1.19.3. Values for the zero point or the dead load are set under 1.19.7. This does not apply to older ADCs.
- ▶ Save the values for adjustment without weighing under menu item 1.19.8.
- ▶ Close the menu access switch.

### Menu Structure for Adjustment without Weights

<i>ADJ.W/O.W</i>	adjust without weights (enter the characteristic data of the load cells)	1.19
<i>NOM.LOAD</i>	nominal load	1.19.1
<i>RESOLUT</i>	resolution (only visible for older ADCs)*	1.19.2
<i>SENSIT.1</i>	sensitivity in mV/V for cell 1 (or average value for all cells)	1.19.3
<i>SENSIT.2</i>	sensitivity in mV/V for cell 2	1.19.4
<i>SENSIT.3</i>	sensitivity in mV/V for cell 3	1.19.5
<i>SENSIT.4</i>	sensitivity in mV/V for cell 4	1.19.6
<i>ZER.POIN</i>	zero point or dead load in mV/V. (not for older ADCs)*	1.19.7
<i>SAVE.</i>	save values for 1.19	1.19.8

\* ADCs externos o la vieja generación Combics

# Operation

## Weighing

This application is always available during operation.

- Features:
- Zeroing by pressing  $\rightarrow 0 \leftarrow$
  - Storing the weight on the platform as a tare by pressing  $\rightarrow T \leftarrow$
  - Taring container weight automatically
  - Using a 10-key keypad to enter tare weight
  - Deleting tare values by entering  $0$  and  $\rightarrow T \leftarrow$  /  $CF$  and  $\rightarrow T \leftarrow$
  - Toggling the display using the Fn key between:
    - 1st and 2nd weight unit
    - SQmin
  - Configuring the  $F_n$  key function in the “Fn key” Setup menu
  - 10-fold increased resolution using the  $\times 10$  key
  - Toggling between the gross or net value using  $B/G$  Weighing with two weighing platforms
  - Individual numeric ID codes for weight values
  - Printing weight value:
    - GMP printout
    - Automatic printout
    - Automatic data output (see Data Interfaces chapter)

### Automatic Taring (*APPLIC* menu item 3.7):

When the menu item is active (3.7.2), the first weight on the scale that exceeds the preset minimum load is stored in the tare memory at stability.

The scale returns to the initial state when the load on the scale is less than 50% of the minimum load.

### Minimum load for automatic taring and automatic printing

(menu item 3.5):

You can set the following for the minimum load:

- 1 digit (no minimum load)
- 2 digits
- 5 digits
- 10 digits
- 20 digits
- 50 digits
- 100 digits
- 200 digits
- 500 digits
- 1000 digits

The “digits” here refer to the scale intervals for the connected weighing platform. If the interval is 1 g and 1000 digits are required, the minimum load is 1000 g (1000 intervals).

If the weighing platform interval is 5 g and the same number of digits as above is required, the minimum load is 5000 g.

When the load exceeds the minimum load limit, the weighing platform is tared automatically and/or a report printout is generated automatically; however, this requires the corresponding menu items to be active for automatic taring (menu item 3.7.2) and for automatic printing (menu 7.15.2).

**Automatic printing** (*PROTDC* menu item 7.15):

When the menu item (7.15.2) is active, the first weight value that exceeds the minimum load is printed.

If the menu item is also activated for automatic taring, it is only tared when the minimum load is exceeded. In this case, an automatic printout would only be generated when the second weight value exceeds the minimum load.

**Main scale: first platform displayed on start-up**

You can select the weighing platform to be displayed first when CAIXS2 is turned on in the Setup menu under "*UTILIT*" (menu item 8.11.).

## Adjustment/Configuration Counter for Standard scales

**Purpose** Automatically record changes to adjustment and weighing parameters using two independent counters. The values remain saved for the life of the device.

- ▶ To display both counters, press and hold the  $\rightarrow 0 \leftarrow$  key for longer than 2 seconds.
- ▷ The “Configuration counter” is first of all shown in the weight display for 3 seconds (identified by a P). The “Adjustment counter” is then displayed for another 3 seconds (identified by a C). After 6 seconds, the information display turns off automatically.

**Adjustment counter features:**

- Counter limited to 9999
- Counter at “C 0000” for hardware commissioning
- Counter cannot be reset
- Counter is updated automatically when:
  - linearization, calibration/adjustment is successful
  - user calibration, adjustment or linearization weight is changed (menu 1.18.)
  - when the following parameters are changed:
    - function of the  $\text{CAL}$  key (menu item 1.9.)
    - zero setting range (menu item 1.11)
    - tare/zero at power on (menu item 1.12)
    - the above parameters are reset to factory settings (menu item 9.1.1).

**Configuration counter features:**

- Counter limited to 9999
- Counter at “P 0000” for hardware commissioning
- Counter cannot be reset
- Counter is updated automatically when:
  - the following parameters are changed:
    - installation location (menu item 1.1.)
    - application filter (menu item 1.2.)
    - stability range (menu item 1.3.)
    - taring (menu item 1.5)
    - auto zero (menu item 1.6.)
    - weight unit 1 (menu item 1.7.)
    - weight unit 2 (menu item 3.1.)
    - weight unit 3 (menu item 3.3.)
    - the above parameters are reset to factory settings (menu item 9.1.1)
  - switching the  $\text{Fn}$  key to or from a 10-fold higher resolution
  - turning the application automatic taring on/off (menu item 3.7.)
  - the application parameters are reset to factory settings (menu item 9.1.1).

## Device Parameters

### Password Protection

Access to the *SETUP* device parameters and the *APPLIC* application parameters can be password-protected against unauthorized changes in the Setup menu under *U-CODE* (see page 38).

### Keypad

The keypad can be blocked and released for entry (menu item 8.3) in the *SETUP* menu under *UTILIT / PARAMETER / KEYS*.

### Automatic Shutoff of Combics

In the *SETUP* menu, the indicator can be set to shut off automatically using a timer under *UTILIT / PARAMETER / AUTO.OFF* (Menu item 8.7.).

### Display Lighting

The following settings can be made for display lighting in the *SETUP* menu under *UTILIT / PARAMETER / BACKLIT*:

- on (8.8.1)
- off (8.8.2)
- off automatically using a timer (8.8.3).

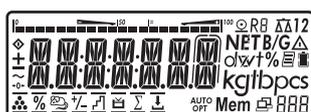
### Timer

The timer for switching off the device and/or display lighting can be set to 2, 4 or 10 minutes (menu item 8.9) in the *SETUP* menu under *UTILIT / PARAMETER / TIMER*.

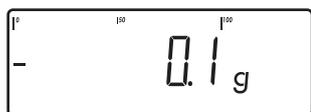
**Example:** Switch on the device, zero the scale, tare the container weight, place sample in the container, toggle display to gross weight or to second weight unit or 10-fold resolution.



- ▶ Turn on the device.



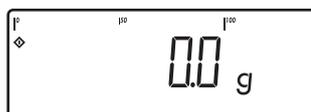
- ▶ All display segments appear (display test).



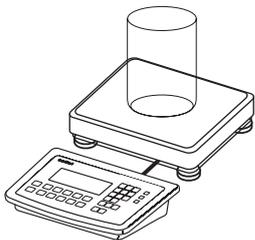
- ▶ The display for no load on the scale appears.



- ▶ Press the key to zero the scale.



- ▶ The display for a zeroed scale appears.



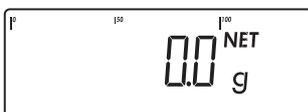
- ▶ Place the container on the weighing platform.



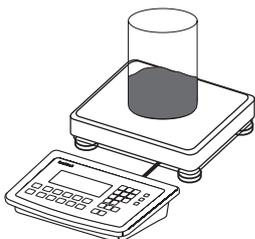
- ▷ The container weight is displayed.



- ▶ Press the key to tare the scale.



- ▷ The display for a tared scale with a container appears.



- ▶ Place a sample in the container (in this example, 120.2 g).



- ▷ The display for a tared scale with weighing results appears.



- ▷ Press the key; the following is displayed:
- ▷ the gross weight (in this example, 170.2 g = 50 g for container + 120.2 g for sample)



or press the key; the following is displayed:



- ▷ weight value in the second weight unit (in this example, kg)



or press the key; the following is displayed:



- ▷ weight value display with 10-fold resolution.  
This display switches back automatically after 10 seconds.

 ► Press the  key to print a report.

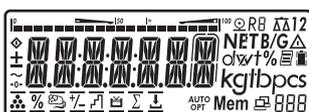
```

EISENSCHMIDT
GOETTINGEN
8/12/2016    3:10 PM
-----
G#    +    170.2 g
T     +    50.0 g
N     +    120.2 g
-----
    
```

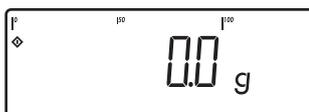
**Example** Weighing: Enter value for tare using the numeric keys; print results.

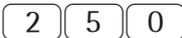
 ► Turn on the device.

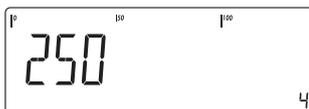
► All display segments appear (display test).



► The display for no load on the scale appears. When Combics 2 is turned on, it is ready for weighing and zeros itself automatically. With no load on the scale, you can zero the weighing platform at any time by pressing .

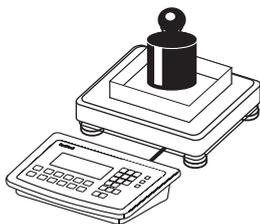


 ► Enter the tare weight using the keypad (e.g. 250 g).

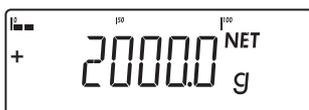


 ► Press the  key to apply the tare value.

► Place the container and material to be weighed on the scale.



► The net weight value is displayed.



 ► Press the  key to display the gross weight.



▷ The gross value is displayed.

You can toggle between the gross and net display using the **[B/G]** key.



▶ Press the **[Print]** key to print a report.

```

-----
8/12/2016    3:15 PM
Type         CAIXS2
Ser.no.      12345678
Vers.  C2   100.280810
BVers.      01-62-03
Ser.no.  A   12345678
-----
EISENSCHMIDT
GOETTINGEN
BATCH NO.    123456
CUSTOMER     6.789
8/24/2016    3:15 PM
-----

G#    +    2250 g
T     +    0000 g
PT2   +    250 g
N     +    2000 g
-----
-----
8/24/2016    3:16 PM
Name:
-----

```

GMP header (only if GMP-compliant printout is configured, menu 7.13)

End of GMP header Header

Identifier 1  
Identifier 2

GMP footer (only if GMP-compliant printout is configured)

End of GMP footer

**[0]** + **[→T←]** To delete the tare weight entered, enter **[0]** using the number block and press **[→T←]**.

## Calibration and Adjustment

**Purpose** **Calibration** determines the difference between the value displayed and the actual weight on the platform. Calibration does not entail making any changes within the weighing equipment.

During **adjustment**, the difference between the measured value displayed and the true weight of a sample is corrected, or is reduced to an allowable level within maximum permissible error limits.



The temperature range (°C) listed on the ID label should not be exceeded during operation.

### Configuration for Use in Legal Metrology

Configuration of the weighing instrument for use in legal metrology is set by a switch. The switch is located on the back of the weighing platform and covered by a protective cap.

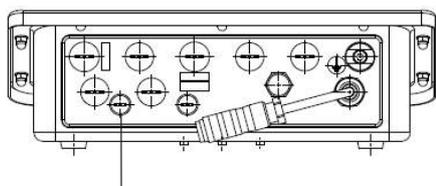
Using a verified scale in legal metrology in the EU:

The Type-Approval Certificate for verified scales is only valid for non-automatic weighing instruments. For automatic operation with or without additional, integrated equipment, please follow the applicable national regulations for the installation location.

- For servicing: External calibration/adjustment for verified scales of accuracy class  $\text{III}$
- External calibration/adjustment is blocked in legal metrology (switch cover is sealed).
  - External calibration/adjustment is only possible after the seal is removed. If the seal is broken, the validity of verification will become void and you must have your scale re-verified.

Using a verified scale in legal metrology with internal adjustment equipment:

- ▶ Before use in legal metrology, the “internal adjustment” function should be carried out at the installation location.



### Opening the Menu Access Switch

The menu access switch is located on the back of the indicator right next to the weighing platform connection (left-hand side).

- ▶ Remove the cap.
- ▶ Slide the switch to the right (= “open” position, not subject to legal verification).

### Characteristics

Which of the following features are available depends on the weighing platform connected. These features can be configured in the *SETUP* menu:

- external calibration/adjustment blocked in verified weighing instruments
- external calibration/adjustment with the standard weight or weight set by a user (not available on verified instruments): *SETUP / WP-1* menu Menu item 1.9 “Calibration and Adjustment”
- specify the weight for external calibration/adjustment: *SETUP / WP-1* menu Menu item 1.18 “enter adjustment weight”
- internal adjustment for IS weighing platforms (configure under: *SETUP / WP-1* or *COM 1/UNICOM*)
- block the  $\left[ \begin{smallmatrix} \text{ISO} \\ \text{Test} \end{smallmatrix} \right]$  key to prevent use of the functions described above: *SETUP / WP-1* menu Menu item 1.9 “Calibration and Adjustment”
- calibrate first; then adjust automatically or manually (not for verified weighing instruments): *SETUP / WP-1* menu Menu item 1.10 “Calibration/Adjustment sequence”
- flashing  $\left[ \begin{smallmatrix} \text{AA} \\ \text{AA} \end{smallmatrix} \right]$  symbol as adjustment prompt. If more than one weighing platform is connected, the platform number is also displayed: *SETUP / WP-1* menu Menu item 1.15. “Adjustment prompt”
- block external or enable calibration/adjustment: *SETUP / WP-1* menu Menu item 1.16. “External calibration.”

**Example 1**

External calibration and manual adjustment with default weights (weighing parameters: factory settings).

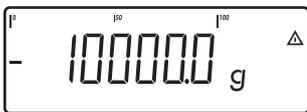


1.) Zero the scale.

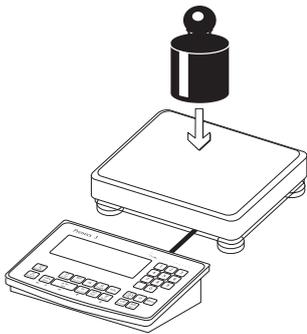


2.) Start calibration (e.g. when adjustment prompt flashes *WP* symbol).

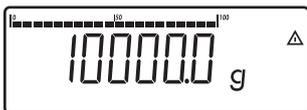
*CAL EXT.* is displayed for two seconds.



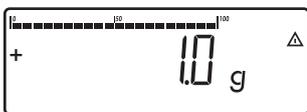
You are prompted to place the required weight on the platform (e.g. 10,000 g).



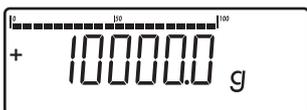
3.) Position the calibration/adjustment weight on the weighing platform.



The difference between the weight value and the true weight of the sample will be displayed with plus/minus signs.



Ext.	calibration	A printout will be generated
Targ.	+ 10000 g	if the process is canceled
Diff.	+ 1 g	using the  key.



4.) Activate calibration/adjustment (press the key to cancel).

The adjustment weight is displayed once adjustment is finished.

```

-----
02/24/2016  10:15
Type       CAIXS2
Ser.no.    12345678
Vers.     C2 100.280810
BVers.     01-26-03
Ser.no.    A 12345678
-----
Ext.       Calibrate
Targ. +    10000 g
Diff. +    1 g
Ext.       Adjustment
Diff. +    0 g
-----
02/24/2016  10:15
Name:
-----

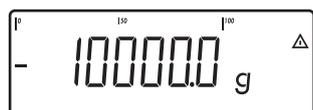
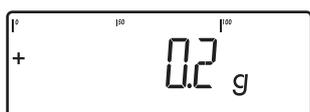
```

A GMP-compliant printout is generated.

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### Example 2

External calibration and manual adjustment with freely selectable adjustment weight (in the range 1/3 maximum load to maximum load).



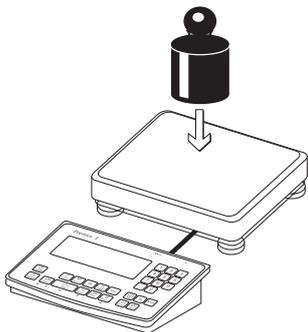
$\rightarrow 0 \leftarrow$  1.) Zero the scale.

$\text{ISO-Test}$  2.) Start calibration  
(e.g. when adjustment prompt flashes  $\text{WP}$  symbol).  
*CAL EXT.* is displayed for two seconds.

You are prompted to place the required weight on the platform (e.g. 10,000 g).

$5$  +  $\rightarrow T \leftarrow$

3.) Using the number block, enter the desired CAL weight steps and confirm with  $\rightarrow T \leftarrow$  (in this example, 5000.0 g).  
If the weight is too great or too small, an error message is displayed.



4.) Position the calibration/adjustment weight on the weighing platform.

The adjustment weight is displayed once adjustment is finished.

Remove the adjustment weight from the weighing platform.

## SQmin Function

**Purpose** To display the allowable minimum sample quantity “SQmin” (sample quantity minimum) in accordance with the United States Pharmacopoeia (USP). According to USP guidelines, the uncertainty of measurement may not exceed 0.1% of the sample quantity when substances are weighed with the highest degree of accuracy for volume determination. This additional function ensures that weighing results lie within defined tolerance limits corresponding to the requirements of your quality assurance system.

**Prerequisites** The scale must be set up by a service technician to be able to use the SQmin function. The technician will determine the permitted minimum sample quantity and load this to your scale using the guidelines of your QA system. He or she will document this setting via a “Weighing module test as per USP” certificate in which the measurements and min. sample quantity are logged. The SQmin function ensures that the weighing results correspond to USP guidelines. These SQmin settings cannot be changed by the user.

- Features**
- Displaying the minimum sample quality: After you press the **[Fn]** key, the value is displayed in the text line for 4 seconds.
  - If the minimum sample quantity has not been reached: The **Δ** symbol is displayed and weight values are marked with a “!” in the printout.
  - GLP header: The minimum sample quantity entered for SQmin can be included on the printout.

### Setting SQmin Parameters

The SQmin display must be turned on to use the SQmin function.

Menu: `SETUP / SQMIN /`

SQmin display: `DISPLAY` yes/no\*

Print in GLP header: `GLP-DRK` yes/no\*

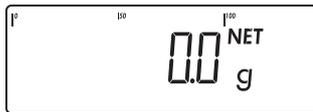
\* = Factory setting

### SQmin Operation

**Example** Determining sample weights while monitoring the minimum sample quantity (in this example, SQmin: 100 g).  
 Default setting: The SQmin display must be turned on.



▶ Place the container for the sample on the scale and tare.



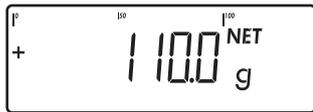
- ▶ Place the sample on the scale.
- ▷ The minimum sample quantity is not reached (symbol  $\Delta$ ).



▶ Print the weight value.

| N + 90.0 ! |

- ▶ Place another sample on the scale.
- ▷ The minimum sample quantity is exceeded.



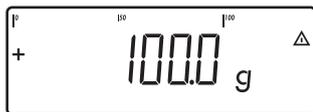
▶ Print the weight value.

| N + 110.0 g |



▶ Briefly press the **Fn** key to toggle between the measured value and SQmin value.

▷ The value for the minimum sample quantity is displayed for four seconds.



## Individual ID Codes (Identifiers)

You can assign codes (such as product name, batch number, etc.) for identification of measured values on printouts.

- Features**
- You can assign up to six ID codes.
  - One name and one value can be assigned to each ID code.
  - Displaying individual IDs: press the **ID** key.
  - The name is left-justified and the value is right-justified on the printout. If the entire code is too long for one line, additional lines are printed.
  - Enter ID code names in the Setup menu under *SETUP / PRTPROT*, menu item 7.4. The name can have a max. of 20 characters.
  - Enter up to 40 characters for the value of the ID code. Press the **ID** key to activate the input mode.
  - Individual characters of the ID can be deleted using the **CF** key.
  - If both the name and value fields are empty, no ID code is printed.
  - In the Setup menu, you can configure when and whether ID codes are printed (see “Configuring Printouts” page 96).

### Settings for Individual ID Codes

Menu: *SETUP / PRINT / PROTOC. / HEADER*

Factory settings for ID code names:

```
ID1:  ID1
ID2:  ID2
ID3:  ID3
ID4:  ID4
ID5:  ID5
ID6:  ID6
```

There are no factory settings for ID code values.

## Using Individual ID Codes

**Example** Enter ID code names. “Batch number” and “Customer” should be entered for ID 1 and ID 2.

-  ...  ► Open the menu.
-   ...  ► Select and open *SETUP*.
-   ...  ► Select and open *PRINT*.
-  ► Open *PROTDC..*
-  ► Open *HEADLIN*.
-   ...  ► Select and open *INDENT. 1.*
-   ... ► Enter the name for the first identification (use the  and  keys or the number block), e. g. “Batch number”.
-  ► To save the entry, press the  key.
-  ...  ► Select and open *INDENT. 2.*
-   ... ► Enter a name for the 2nd ID, e.g. “customer”.
-  ► To save, press the  key.
-   ... ► To exit the sub-menu, press the  key several times.

## Application Programs

### Overview of Applications and Functions

#### Usage

Basic weighing	X
Send print job/data record to peripheral device	X
Label printer	X
Second scale connection option	optional (WP-2 using COM1)
Counting	X*
Neutral measurement	X
Averaging (animal weighing)	X
Weighing in percent	X
Verification	X
Classification	X
Totalizing	X
Batching/counting to target value	X
Product data memory	X

#### Function

Zero	X
Tare	X
Date/time	X
External battery (rechargeable)	optional
ID codes (6 codes, 40 characters each)	X
Automatic printout	X
Automatic taring	X
Manual taring	X
Unit conversion	X
Increased resolution	X
GMP printout	X



Combination of applications

\* = Not available using NTEP or Canadian approval

## Counting

With the Counting application, you can determine the number of parts to each have approximately equal weight (menu *APPLIC. 1*).

- Features**
- Save the reference weight “wRef” from the weighing platform.
  - Enter the reference sample weight “wRef” using the keypad.
  - Enter the reference sample quantity “nRef” using the keypad.
  - Automatic average piece weight updating.
  - Counting with two weighing platforms.
  - Activate Info mode with the **[Info]** key.
  - Toggle the display between quantity and weight using the **[S]** key.
  - »Define the level of accuracy (display resolution) applied when a calculated reference sample quantity is saved.
  - Automatic taring of container weight.  
Setting: *APPLIC./AUT.TARE*, menu item 3.7.
  - Automatic initialization when the scale is switched on. The indicator is initialized with the most recently used values for reference sample quantity “nRef” and reference sample weight “wRef.” Setting: *APPLIC./AUT.START*, menu item 3.8.

### Exit Application, Delete Parameters

The value of the reference sample weight in the reference memory remains active until it is deleted using the **[CF]** key, or is overwritten, or until the application is changed. The reference sample weight also remains saved after the scale is turned off.

You can assign different functions to the **[CF]** key to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application. Setting: *APPLIC./CLER.EF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **[→T←]** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value. Setting: *APPLIC./TARE.FNC*. Menu item 3.25.1 (factory settings). A tare value entered manually overwrites any stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value. Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

### Average Piece Weight

Before the quantity on the platform can be calculated, the average piece weight must be entered in the application. There are several ways to enter this value in the program:

#### Calculating the Reference Piece Weight

- Place the number of parts defined as the reference sample quantity on the weighing platform and calculate the average piece weight by pressing the **[OK]** key.  
or
- Place any number of parts on the connected weighing platform, enter the quantity using the keypad and select and calculate by pressing the **[REF]** key.

How the reference weight is calculated depends on the application setting for resolution. The value is either rounded off in accordance with the display resolution, or saved with 10-fold or 100-fold resolution.

### Entering the Reference Piece Weight

The reference piece weight (i.e. the weight of one piece) can be entered using the keypad and saved with the **OK** key.



The entered value remains active until deleted by pressing the **CF** key or overwritten by a new value. It remains saved after the scale is switched off.

**Preparation** ► Open the *APPLIC./APPLIC.1/COUNT.* menu.

#### Available parameter settings

<i>MIN.INIT</i>	Minimum load for initialization	3.6
	<i>1-DIGIT</i> 1 scale interval*	3.6.1
	<i>2-DIGIT</i> 2 scale intervals	3.6.2
	<i>5-DIGIT</i> 5 scale intervals	3.6.3
	<i>10-DIG.</i> 10 scale intervals	3.6.4
	<i>20-DIG.</i> 20 scale intervals	3.6.5
	<i>50-DIG.</i> 50 scale intervals	3.6.6
	<i>100-DIG.</i> 100 scale intervals	3.6.7
	<i>200-DIG.</i> 200 scale intervals	3.6.8
	<i>500-DIG.</i> 500 scale intervals	3.6.9
	<i>1000-D</i> 1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
	<i>DISP.ACC.</i> Display accuracy*	3.9.1
	<i>10-FOLD</i> Display accuracy + 1 decimal place	3.9.2
	<i>100-FOLD</i> Display accuracy + 2 decimal places	3.9.3
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
	<i>STABIL</i> With stability*	3.11.1
	<i>ACC.STAB</i> With increased stability	3.11.2
<i>REF.UPDT</i>	Reference sample updating	3.12
	<i>OFF</i> Off	3.12.1
	<i>AUTOMAT</i> Automatic*	3.12.3
<i>REF.WP</i>	Reference weighing instrument	3.13
	<i>NO WP</i> No weighing platform selected	3.13.1*
	<i>WP 1</i> Weighing platform WP1	3.13.2
	<i>WP 2</i> Weighing platform WP2	3.13.3



► To save the setting, press the **→T←** key.



► To exit setup: Press the **→0←** key several times.

#### Minimum load for initialization

You can set the minimum load here, i.e., the load that must be placed on the weighing platform in order to carry out the application. If the load on the platform is too light, the following will occur:

- error code *INF 29* appears
- the weighing platform is not initialized
- the preset reference sample quantity is saved.

Setting: *APPLIC./APPLIC.1/COUNT./MIN.INIT* menu item 3.6.

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, for example, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals = 1000 digits) on the weighing platform for initialization.

\* = Factory setting

**Resolution** The resolution indicates the accuracy used to determine the reference weight. The default setting is “display resolution.” The resolution is increased when “10-fold” or “100-fold” is selected. “10-fold” increases the resolution of the net value by one step (display resolution x 10), “100-fold” increases it two steps (display resolution x 100).  
Setting: *APPLIC./APPLIC. 1/COUNT./RESOLUT* menu item 3.9.

**Parameter for saving weight values** The weight on the platform is saved as a reference value as soon as the platform has stabilized. “Stability” is defined as the point at which the fluctuation of a measured value lies within a defined tolerance. The narrower the tolerance, the more stable the platform is at “stability”.  
The “increased stability” setting has a lower tolerance so that the average piece weight saves is more accurate and the results more reproducible; however, the measurement time can take longer.  
Setting: *APPLIC./APPLIC. 1/COUNT./SAVE WT.* menu item 3.11.

**Reference sample updating** You can define whether or not the reference sample weight is updated automatically during weighing using this setting. The reference sample weight is updated automatically only when the following criteria are met:

1. “Automatic” must be set for reference sample updating in the menu.
2. The current piece count exceeds the original piece count by at least two.
3. The current piece count cannot be more than double the size of the original piece count. This limitation does not apply to the first update if the piece weight was entered via a keypad.
4. The current piece count is less than 1000.
5. The internally calculated piece count (such as 17.24 pcs) differs by less than  $\pm 0.3$  pcs from the nearest whole number (in this example: 17).
6. The weighing platform is stable in accordance with the parameter defined for saving weights.

If automatic reference sample updating is selected in the menu and the piece count (pcs) is displayed, the *AUTO* symbol is displayed below the bar graph. If the reference sample weight has been updated since you began weighing, the text line shows the *OPT* symbol. During an updating operation, *OPT* and the updated piece count are displayed briefly in the measured value line. The new reference sample weight and reference sample quantity are saved.

Setting: *APPLIC./APPLIC. 1/COUNT./REF.UPT* menu item 3.12.

**Counting with two weighing platforms** You can use two weighing platforms simultaneously with the Counting application. When using two platforms, you can choose from the following operating modes:

- Counting with two platforms of the same type
- Counting with one reference platform and one weighing platform.

#### **Counting with Two Platforms of the Same Type**

Use this mode to count different types of sample material with different weights. For example, count the lighter-weight pieces on one platform and the heavier pieces on another. You can define one of the two scales as the reference scale. The reference scale is the first scale active when you switch on the device, regardless of the setting for automatic initialization of the Counting application.

#### **Counting with One Reference Platform and One Weighing Platform**

In this operating mode, the reference platform is a high-resolution weighing platform with a relatively low maximum capacity. The other platform is used for weighing heavier samples, and has a high capacity with a relatively low resolution. This allows you to both determine the reference sample weight with high resolution; i.e., very precisely, and to count large amounts of parts, without requiring an expensive high-resolution, high-capacity weighing platform.

The system can be configured to switch automatically to the reference platform for initialization (the measured value line shows *REF*). Following initialization, you can switch to the counting platform.

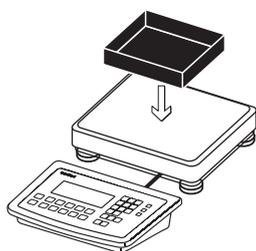
Setting: *APPLIC./APPLIC. 1/EQUNT./REF.WP* menu item 3.13.



If automatic reference sample updating is enabled, the update is performed on the active platform; in other words, the system does not automatically switch to the reference platform.

**Example:** You need to determine an unknown number of parts and the measurements should be logged.

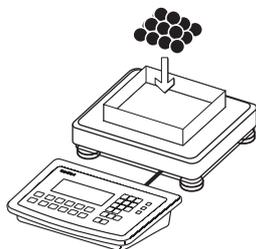
Configuration: The “Counting” application is selected, and printout has been set up.



- ▶ Place empty container on the scale.



- ▶ Tare the scale.  
This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



- ▶ Place any number of parts in the container for the reference quantity (in this example, 20 pcs).



- ▶ Enter the number of parts using the keypad.



- ▶ Start the calculation of the reference piece weight.



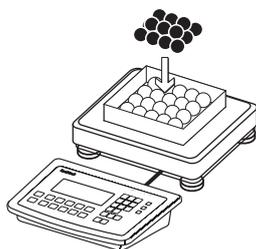
- ▶ Set the number of reference parts using **REF**: 1, 2, 5, 10, 20, etc.



- ▶ Start the calculation of the reference piece weight.

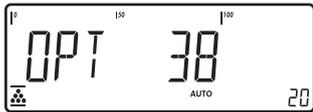


- ▶ Add a quantity of uncounted parts to the container.





▷ The result is displayed.



▷ If automatic reference sample updating is enabled, *OPT* appears in the display.



▶ Print results (Configuring Printouts see page 96).

```

nRef +      38 pcs
wRef + 0.003280 kg
G#   +   0.373 kg
T    +   0.248 kg
N    +   0.125 kg

Qnt          38 pcs
-----
    
```

## Neutral Measurement *NM*

With this application you can measure the length, surface and volume of parts that have roughly the same specific weight. The  $\circ$  symbol is displayed as the unit (menu *APPLIC. 1*).

- Features**
- Save the reference weight “wRef” from the weighing platform.
  - Enter the reference weight “wRef” using the keypad.
  - Enter the factor for calculation “nRef” using the keypad.
  - Measuring with two weighing platforms.
  - Activate Info mode with the **[Info]** key.
  - Toggle the display between measurement and weight using the **[G]** key.
  - The level of accuracy (display resolution) can be set when the calculated reference weight is applied.
  - Automatic taring of container weight.  
Setting: *APPLIC./AUT.TARE*, menu item 3.7.
  - Automatic initialization when the scale is switched on. The indicator is initialized with the most recently used values for reference sample quantity “nRef” and reference sample weight “wRef.”  
Setting: *APPLIC./AUT.START*, menu item 3.8 .

### Exit Application, Delete Parameters

The value of the reference sample weight in the reference memory remains active until it is deleted using the **[CF]** key, or is overwritten, or until the application is changed.

The reference sample weight also remains saved after the scale is turned off.

You can assign different functions to the **[CF]** to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **[T←]** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

### Reference Weight

In order to calculate the length, surface or volume of a given sample, the average weight of a reference quantity of the sample must be known (in the example below, the reference is 1 meter of electrical cable). There are different ways to enter the reference weight:

#### Calculating the Reference Weight

- Place the reference quantity (defined by the calculation factor) on the connected weighing platform and calculate the reference sample weight by pressing the **[OK]** key.
- or
- Place any amount of the sample material on the connected weighing platform, enter the calculation factor through the keypad, and press the **[REF]** key to calculate the reference sample weight.

How the reference weight is calculated depends on the application setting for resolution. The resolution settings are either display resolution, display resolution 10-fold or display resolution 100-fold.

### Entering the Reference Weight

The reference weight (e.g. the weight of one meter of electrical cable) can be entered using the keypad and saved by pressing the **OK** key.



The entered value remains active until deleted by pressing the **CF** key or overwritten by a new value. It remains saved after the scale is switched off.

**Preparation** ► Open the *APPLIC./APPLIC. 1/NEUTR.M.* menu.

### Available parameter settings

<i>MIN.INIT</i>	Minimum load for initialization	3.6
<i>1 DIGIT</i>	1 scale interval	3.6.1*
<i>2 DIGIT</i>	2 scale intervals	3.6.2
<i>5 DIGIT</i>	5 scale intervals	3.6.3
<i>10 DIG.</i>	10 scale intervals	3.6.4
<i>20 DIG.</i>	20 scale intervals	3.6.5
<i>50 DIG.</i>	50 scale intervals	3.6.6
<i>100 DIG.</i>	100 scale intervals	3.6.7
<i>200 DIG.</i>	200 scale intervals	3.6.8
<i>500 DIG.</i>	500 scale intervals	3.6.9
<i>1000 D</i>	1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
<i>DISP.ACC.</i>	Display accuracy	3.9.1*
<i>10 FOLD</i>	Display accuracy + 1 decimal place	3.9.2
<i>100 FOLD</i>	Display accuracy + 2 decimal places	3.9.3
<i>DEC.PLCS</i>	Decimal places in displayed result	3.10
<i>WITHOUT</i>	none	3.10.1*
<i>1 DEC.PL.</i>	1 decimal place	3.10.2
<i>2 DEC.PL.</i>	2 decimal places	3.10.3
<i>3 DEC.PL.</i>	3 decimal places	3.10.4
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
<i>STABL.</i>	With stability	3.11.1*
<i>ACC.STAB</i>	With increased stability	3.11.2
<i>REF.WP</i>	Reference weighing instrument	3.13
<i>NO WP</i>	No weighing platform selected	3.13.1*
<i>WP 1</i>	Weighing platform WP1	3.13.2
<i>WP 2</i>	Weighing platform WP2	3.13.3



► To save the setting, press the **→T←** key.



► To exit setup: Press the **→0←** key several times.

\* = Factory setting

**Minimum load for initialization** You can set the minimum load here, i.e., the load that must be placed on the weighing platform in order to carry out the application. If the load on the platform is too light, the following will occur:

- error code *INF 29* appears
- the weighing platform is not initialized
- the preset reference sample quantity is saved.

Setting: *APPLIC./APPLIC. 1/NEUTR.M/MIN.INIT* menu item 3.6.

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, for example, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals = 1000 digits) on the weighing platform for initialization.

**Resolution** The resolution indicates the accuracy used to determine the reference weight. The default setting is “display resolution.” The resolution is increased when “10-fold” or “100-fold” is selected. “10-fold” increases the resolution of the net value by one step (display resolution x 10), “100-fold” increases it two steps (display resolution x 100).

Setting: *APPLIC./APPLIC. 1/NEUTR.M/RESOLUT* menu item 3.9.

**Decimal places** In neutral measurement, not only whole numbers but also decimal numbers (for example, 1.25 or electrical cabling) can be displayed. The number of decimal places displayed can range from none up to 3 places.

Setting: *APPLIC./APPLIC. 1/NEUTR.M/DEC.PLCS* menu item 3.10.

**Parameter for saving weight values** The weight on the platform is saved as a reference value as soon as the platform has stabilized. “Stability” is defined as the point at which the fluctuation of a measured value lies within a defined tolerance. The narrower the tolerance, the more stable the platform is at “stability”.

The “increased stability” setting has a lower tolerance so that the average piece weight saved is more accurate and the results more reproducible; however, the measurement time can take longer.

Setting: *APPLIC./APPLIC. 1/NEUTR.M/SAVE.WT.* menu item 3.11.

**Measuring with two weighing platforms** You can use two weighing platforms simultaneously with the Neutral Measurement application. When using two platforms, you can choose from the following operating modes:

- Counting with two platforms of the same type
- Counting with one reference platform and one weighing platform.

#### **Neutral Measurement with Two Platforms of the Same Type**

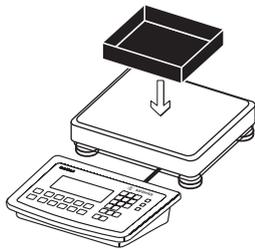
Use this mode to measure different types of sample material with different weights. For example, measure the lighter-weight samples on one platform and the heavier samples on another. You can define one of the two scales as the reference scale. The reference scale is the first scale active when you switch on the device, regardless of the setting for automatic initialization of the Neutral Measurement application.

#### **Neutral Measurement with One Reference Platform and One Weighing Platform**

In this operating mode, the reference platform is a high-resolution weighing platform with a relatively low maximum capacity. The other platform is used for weighing heavier samples, and has a high capacity with a relatively low resolution. This allows you to both determine the reference piece weight with high resolution; i.e., very precisely, and to measure large samples, without requiring an expensive high-resolution, high-capacity weighing platform.

The system can be configured to switch automatically to the reference platform for initialization (the measured value line shows *REF*).

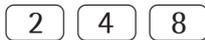
**Example:** Following initialization, you can switch to the counting platform.  
 25 m of electrical cable is to be measured.  
 Configuration: The “Neutral Measurement” application is selected, and printout has been set up (see “Configuration”).



- ▶ Place empty container on the scale.



- ▶ Tare the scale.  
 This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



- ▶ Enter the weight of 1 meter of cable using the keypad (in this example, 248 g).



- ▶ Save the value entered.

or

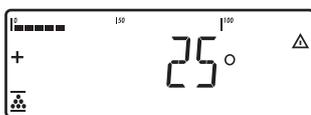
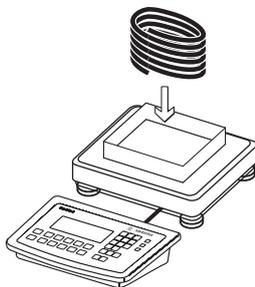


- ▶ Set the number of reference parts using **REF**: 1, 2, 5, 10, 20, etc.



- ▶ Start the calculation of the reference piece weight.

- ▶ Place the desired amount of cable into the container (25 m in this example).



- ▶ The result is displayed.



- ▶ Print results (Configuring Printouts).

nRef	+	1	o
wRef	+	0.248	kg
G#	+	6.794	kg
T	+	0.541	kg
N	+	6.253	kg
Qnt		25	o
-----			

## Averaging (Animal Weighing)

With this application, you can calculate averages from several weighing operations. It is used when either the object to be weighed (e.g. animals) or the environment during weighing are unstable. Selection and settings in the *APPLIC./APPLIC.1/ANIM.WG* menu.

- Features**
- Averaging started manually or automatically (.../START menu item 3.18).  
With manual start selected, the averaging routine begins when you press a key (provided the start conditions are met).  
With automatic start selected, the application begins when you place the first load on the platform (provided the start conditions are met).
  - Enter the number of subweighing operations using the keypad.
  - Use the **[REF]** key to select the number of measurements for averaging.
  - Activate Info mode with the **[Info]** key.
  - Toggle the display between “result of last measurement” and “current weight” by pressing the **[S]** key.
  - Automatic printout of results (.../PRINT menu item 3.20).
  - Automatic taring of container weight (*APPLIC./AUT.TARE* menu item 3.7).
  - Automatic start of averaging when the scale is turned on and a sample placed on the platform, provided start conditions are met (*APPLIC./AUT.START* menu item 3.8).

### Exit Application, Delete Parameters

The value of the reference sample weight in the reference memory remains active until it is deleted using the **[CF]** key, or is overwritten, or until the application is changed. The reference sample weight also remains saved after the scale is turned off.

You can assign different functions to the **[CF]** to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **[T]** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

### Number of measurements for averaging

You can enter the desired number of weight measurements to determine the average using the keypad. This value remains active until it is overwritten by another value. It also remains in memory when you switch to a different application program, or turn off the scale.

### Start application

There are three ways to start the averaging routine:

- Manual start with preset number of subweighing operations: Place the sample on the platform and press the **[OK]** key.

- Manual start with user-defined number of subweighing operations: Place the sample on the platform and enter the number of weighing operations using the keypad. Press the **(REF)** key to save the number entered and begin weighing.
- Automatic start with preset number of subweighing operations: Measurement begins when you place the first sample on the platform, provided the start conditions are met.

**Preparation** ► Open the *APPLIC./APPLIC. 1/ANIM.WG* menu.

### Available parameter settings

\* = Factory setting

<i>MIN.INIT</i>	Minimum load for initialization		3.6
<i>1-DIGIT</i>	1 scale interval*		3.6.1
<i>2-DIGIT</i>	2 scale intervals		3.6.2
<i>5-DIGIT</i>	5 scale intervals		3.6.3
<i>10-DIG.</i>	10 scale intervals		3.6.4
<i>20-DIG.</i>	20 scale intervals		3.6.5
<i>50-DIG.</i>	50 scale intervals		3.6.6
<i>100-DIG.</i>	100 scale intervals		3.6.7
<i>200-DIG.</i>	200 scale intervals		3.6.8
<i>500-DIG.</i>	500 scale intervals		3.6.9
<i>1000-D</i>	1000 scale intervals		3.6.10
<i>START</i>	Start averaging		3.18
<i>MANUAL</i>	Manual*		3.18.1
<i>AUTOMAT</i>	Automatic		3.18.2
<i>ACTIVITY</i>	Animal activity		3.19
<i>0.1 PERC.</i>	0.1% of animal/object		3.19.1
<i>0.2 PERC.</i>	0.2% of animal/object*		3.19.2
<i>0.5 PERC.</i>	0.5% of animal/object		3.19.3
<i>1 PERC.</i>	1% of animal/object		3.19.4
<i>2 PERC.</i>	2% of animal/object		3.19.5
<i>5 PERC.</i>	5% of animal/object		3.19.6
<i>10 PERC.</i>	10% of animal/object		3.19.7
<i>20 PERC.</i>	20% of animal/object		3.19.8
<i>50 PERC.</i>	50% of animal/object		3.19.9
<i>100 PERC.</i>	100% of animal/object		3.19.10
<i>PRINT</i>	Autom. printout of results		3.20
<i>MANUAL</i>	Off*		3.20.1
<i>AUTOMAT</i>	On		3.20.2
<i>DIS.UNL-D</i>	Static display of result after load removed		3.21
<i>CLEARRE-D</i>	Display is fixed until unload threshold reached*		3.21.1
<i>PRESENT</i>	Fixed display until <b>(CF)</b> is pressed		3.21.2



► To save the setting, press the **(→T←)** key.



► To exit setup: Press the **(→0←)** key several times.

### Minimum load for initialization

You can set the minimum load here, i.e., the load that must be placed on the weighing platform in order to carry out the application. If the load on the platform is too light, the following will occur:

- error code *INF 29* appears
- the weighing platform is not initialized
- the preset reference sample quantity is saved.

Setting: *APPLIC./APPLIC. 1/ANIM.WG/MIN.INIT* menu item 3.6.

\* = Factory setting

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, for example, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals = 1000 digits) on the weighing platform for initialization.

**Start measurement**

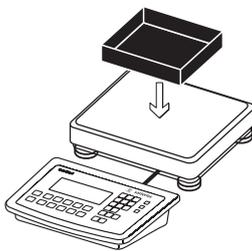
The averaging routine does not begin until the fluctuation in weight value remains below a defined threshold over three consecutive measurements. The tolerance limit is defined as a percentage of the animal or object weight (for example, 0.1%, 0.2%, ..., 50%, 100%), configured in Setup under: *ACTIVITY* menu item 3.19. If the “Averaging” parameter is set to 2%, for example, and the animal or object weighs 10 kg, measurement does not begin until the fluctuation in weight value remains below 200 g during three consecutive measurements.

**Display**

A calculated average value is shown continuously on the main display. The  $\Delta$  symbol indicates the calculated value. You can toggle between the results display and the current scale display by pressing the  $\square$  key. Setting: *APPLIC./APPLIC.1/ANIM.WG/DIS.UNLD* 3.21. You can select “Display is static until unload threshold reached” to have the display switch automatically to the weight readout when you unload the weighing platform (i.e., when the load is less than half the minimum load). The result of the most recent averaging operation is not saved. If you select “Display is static until the  $\square$  key is pressed,” the calculated average remains displayed even after the weighing platform is unloaded, until you press the  $\square$  key or begin a new measurement.

**Example:**

The weight of one mouse should be measured. Configuration: The “Animal Weighing” application is selected, and printout has been set up (see “Configuration”).



► Place empty container on the scale.

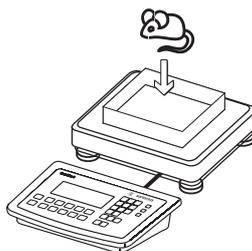


► Tare scale.

This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



► Place the mouse in the container.



► Enter the number of sub-weighing operations using the keypad (in this example, 20 measurements).



► Save the value entered and start the averaging.

or



▶ Set the number of reference parts using **[REF]**: 1, 2, 5, 10, 20, etc.



▶ Start the calculation of the reference piece weight.



The averaging routine does not begin until the fluctuation in weight value remains below a defined threshold over three consecutive measurements. The number of subweighing operations remaining is shown in the numeric display.



▶ The averaging result is displayed.

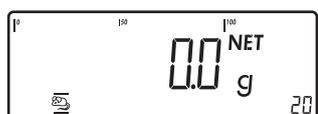


▶ Print the results.

Note: If automatic printout of results is enabled, you do not need to press the **[Print]** key. The results are printed automatically.

Printout Configuration, see page 96.

```
mDef +      20
T      +    0.292 kg
x-Net +    0.183 kg
-----
```



▶ When you unload the weighing platform, the display switches to the weight readout automatically, unless configured otherwise in the menu. The weighing instrument is ready for the next measurement.

## Weighing in Percent %

With this application, you can use your weighing platform to obtain weight readouts in percent which are in proportion to a reference weight. % is displayed as the weight unit. Selection and settings in the *APPLIC. / APPLIC. 1 / PERCENT* menu.

- Features**
- Save the current weight value as reference weight “pRef”.
  - Enter the reference weight “Wxx%” for 100% using the keypad.
  - Enter the reference percentage “pRef” using the keypad.
  - Display result as loss (difference) or residue.
  - Display up to 3 decimal places (menu item 3.10).
  - Weighing in percent with two weighing platforms.
  - Activate Info mode with the **[Info]** key.
  - Toggle between percent display and weight display using the **[S]** key.
  - Automatic taring of container weight (*APPLIC. / AUT.TARE* menu item 3.7).
  - Automatic initialization when the scale is switched on. The application is initialized with the most recently used data (*APPLIC. / AUT.START* menu item 3.8).

### Exit Application, Delete Parameters

The value of the reference sample weight in the reference memory remains active until it is deleted using the **[CF]** key, or is overwritten, or until the application is changed. The reference sample weight also remains saved after the scale is turned off.

You can assign different functions to the **[CF]** key to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **[T←]** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value. Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

To determine the weight of a sample relative to a reference weight, you need to define the reference percentage value. There are different ways to enter this value in the application:

### Calculating the Reference Percentage Value

- Place the reference quantity (defined by the reference percentage value) on the connected weighing platform and press the **[OK]** key to initialize the application.
- or
- Place any amount of the sample material on the connected weighing platform, enter the reference percentage value through the keypad, and press the **[REF]** key to initialize the application.

How the reference weight is calculated depends on the application setting that defines “Accuracy for saving weights”. The value is either rounded off in accordance with the display resolution, saved with 10-fold or 100-fold resolution.

### Entering the Reference Percentage Value

The reference weight for 100% is entered using the keypad and the **OK** key is pressed to initialize the application.



The entered value remains active until deleted by pressing the **CF** key or overwritten by a new value. It remains saved after the scale is switched off.

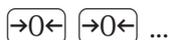
**Preparation** ► Open the *APPLIC./APPLIC. 1/PERCENT* menu.

#### Available parameter settings

<i>MIN.INIT</i>	Minimum load for initialization	3.6
	<i>1-DIGIT</i> 1 scale interval*	3.6.1
	<i>2-DIGIT</i> 2 scale intervals	3.6.2
	<i>5-DIGIT</i> 5 scale intervals	3.6.3
	<i>10-DIG.</i> 10 scale intervals	3.6.4
	<i>20-DIG.</i> 20 scale intervals	3.6.5
	<i>50-DIG.</i> 50 scale intervals	3.6.6
	<i>100-DIG.</i> 100 scale intervals	3.6.7
	<i>200-DIG.</i> 200 scale intervals	3.6.8
	<i>500-DIG.</i> 500 scale intervals	3.6.9
	<i>1000-D</i> 1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
	<i>DISP.ACC.</i> Display accuracy	3.9.1*
	<i>10-FOLD</i> Display accuracy + 1 decimal place	3.9.2
	<i>100-FOLD</i> Display accuracy + 2 decimal places	3.9.3
<i>DEC.PLCS</i>	Decimal places in displayed result	3.10
	<i>WITHOUT</i> none	3.10.1*
	<i>1-DEC.PL.</i> 1 decimal place	3.10.2
	<i>2-DEC.PL.</i> 2 decimal places	3.10.3
	<i>3-DEC.PL.</i> 3 decimal places	3.10.4
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
	<i>STABL.</i> With stability	3.11.1*
	<i>ACC.STAB</i> With increased stability	3.11.2
<i>REF.WP</i>	Reference weighing instrument	3.13
	<i>NOWP</i> No weighing platform selected	3.13.1*
	<i>WP 1</i> Weighing platform WP1	3.13.2
	<i>WP 2</i> Weighing platform WP2	3.13.3
<i>CALC.DIS</i>	Calculated values display	3.15
	<i>RESIDUE</i> Residue	3.15.1*
	<i>LOSS</i> Loss	3.15.2



► To save the setting, press the **→T←** key.



► To exit setup: Press the **→0←** key several times.

#### Minimum load for initialization

You can set the minimum load here, i.e., the load that must be placed on the weighing platform in order to carry out the application. If the load on the platform is too light, the following will occur:

- error code *INF 29* appears
- the weighing platform is not initialized
- the preset reference sample quantity is saved.

\* = Factory setting

Setting: *APPLIC./APPLIC. 1/PERCENT/MIN.INIT* menu item 3.6.

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, for example, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals = 1000 digits) on the weighing platform for initialization.

**Resolution** The resolution indicates the accuracy used to determine the reference weight. The default setting is “display resolution.” The resolution is increased when “10-fold” or “100-fold” is selected. “10-fold” increases the resolution of the net value by one step (display resolution x 10), “100-fold” increases it two steps (display resolution x 100).

Setting: *APPLIC./APPLIC. 1/PERCENT/RESOLUT* menu item 3.9.

**Decimal places** The number of decimal places displayed can range from none up to 3 places.  
Setting: *APPLIC./APPLIC. 1/PERCENT/DEC.PLCS* menu item 3.10.

**Parameter for saving weight values** The weight on the platform is saved as a reference value as soon as the platform has stabilized. “Stability” is defined as the point at which the fluctuation of a measured value lies within a defined tolerance. The narrower the tolerance, the more stable the platform is at “stability”.  
The “increased stability” setting has a lower tolerance so that the average piece weight saves is more accurate and the results more reproducible; however, the measurement time can take longer.  
Setting: *APPLIC./APPLIC. 1/PERCENT/SAVE.WT.* menu item 3.11.

**Weighing in Percent with two weighing platforms** You can use two weighing platforms simultaneously with the Weighing in Percent application. When using two platforms, you can choose from the following operating modes:

- Weighing in Percent with two platforms of the same type
- Weighing in Percent with one reference platform and one weighing platform.

#### **Weighing in Percent with Two Platforms of the Same Type**

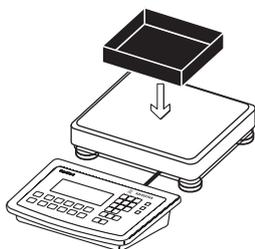
Use this mode to measure different types of sample material with different weights. For example, measure the lighter-weight samples on one platform and the heavier samples on another. You can define one of the two scales as the reference scale. The reference scale is the first scale active when you switch on the device, regardless of the setting for automatic initialization of the Neutral Measurement application.

#### **Weighing in Percent with One Reference Platform and One Weighing Platform**

In this operating mode, the reference platform is a high-resolution weighing platform with a relatively low maximum capacity. The other platform is used for weighing heavier samples, and has a high capacity with a relatively low resolution. This allows you to both determine the reference piece weight with high resolution; i.e., very precisely, and to measure large samples, without requiring an expensive high-resolution, high-capacity weighing platform.

The system can be configured to switch automatically to the reference platform for initialization (the measured value line shows *REF*). Following initialization, you can switch to the counting platform.

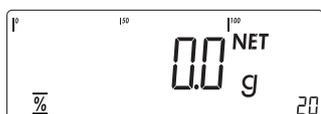
**Example:** 100% of a sample material should be weighed.  
 Configuration: The “Weighing in percent” application is selected, and printout has been set up.



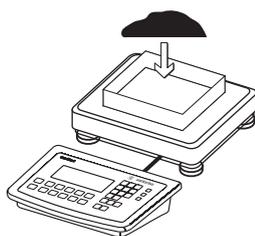
- ▶ Place empty container on the scale.



- ▶ Tare the scale.  
 This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



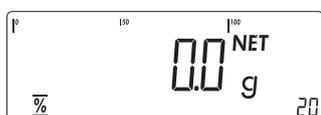
- ▶ Add reference material to the container in accordance with reference percentage value (in this example, 85 g).



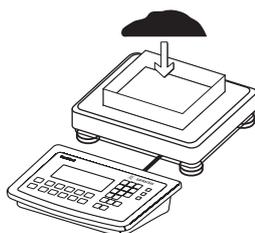
- ▶ Start the calculation of the reference weight by pressing the **OK** key.
- ▶ The calculation is based on the active net weight value and the reference percentage value entered.



If the weight is too light, an error code is shown in the main display *INF 29*.  
 If this is the case, set the minimum load to a smaller number of digits.



- ▶ Add additional material until the reference percentage value has been reached (in this example, 100 g).





► Print the results.  
Printout Configuration, see page 96.

pRef + 20 %  
wRef + 0.085 kg

G# + 1.080 kg  
T + 0.675 kg  
N + 0.423 kg

Prc + 100 %  
-----

## Checkweighing

With this application, you can check whether the sample on the weighing platform matches a target value or lies within a given tolerance range. Checkweighing also makes it easy to fill sample materials to a specified target weight.

Selection and settings in the *APPLIC./APPLIC.2/CHECK.WG* menu.

- Features**
- Enter the nominal or target weight (set point) and the tolerance range delimiters either using the keypad or by saving the weight value of a load on the platform.
  - Enter the tolerance limits as absolute values (Min and Max), as a percentage deviation from the target or as a relative deviation from the target.  
Setting: *APPLIC./APPLIC.2/CHECK.WG/CHECK.RG* menu item 4.5.
  - The target value can be taken over as a weighed value from a weighing platform, and the upper and lower tolerance limits are defined as a percentage deviation from the target value (setting 4.5.2). The following percentages can be selected as the deviation: 0.1%, 0.2%, 0.5%, 1%, 1.5%, 2%, 3%, 5% or 10%, selection using the **REF** key.
  - The target value, lower tolerance limit (minimum) and upper tolerance limit (maximum) can be applied as weighed values from the weighing platform (menu item 4.5.1).
  - The target value can be applied as weighed values and via asymmetrical percent limits (menu item 4.5.3).
  - The target value can be applied as weighed values and via relative weight limits (menu item 4.5.4).
  - Target value and tolerance limits checked during input; values must conform to: upper limit > target > lower limit > 1 digit.
  - Checkweighing range: either 30% to 170% of the target, or from 10% to infinity.
  - Results are shown on the main display, as a bar graph and LED as well as sent to control output ports for further processing.
  - Toggle the main display between weight and tolerances limits by pressing the **S** key. If the weight in the readout is outside the tolerance range, "LL" (too low) or "HH" (too high) is displayed.
  - Activate Info mode with the **Info** key.
  - Automatic results printout (*APPLIC./APPLIC.2/CHECK.WG/CHECK.RG* menu item 4.6).
  - Automatic taring of container weight (*APPLIC./AUT.TARE* menu item 3.7).
  - Automatic initialization when you switch on the scale with most recently saved application data (*APPLIC./AUT.START* menu item 3.8).

You can assign different functions to the **CF** key to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **T** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

- Target value** Checkweighing entails comparing the current weight value to a defined target value. You can enter the value for this target using the keypad, or by saving the weight value indicated. You can also define upper and lower tolerance limits based on this target. You can do this by:
- entering absolute values using the keypad or placing the desired amount of weight on the platform and saving the value
- or
- by entering each value using the keypad as a percentage deviation of the target weight
- or
- by entering each value as an asymmetrical percentage deviation of the target weight that is selected via the keypad or using the **[REF]** key
- or
- by entering a relative weight deviation from the target weight via the keypad.

The value remains valid until deleted by pressing the **[CF]** key or until overwritten by a new value. It remains saved after the scale is switched off.

**Preparation** ► Open the *APPLIC./APPLIC.2/CHECK.WG* menu.

**Available Parameter Settings**

<i>MIN.INIT</i>	Minimum load for initialization	3.5
	<i>1 DIGIT</i> 1 scale interval	3.5.1*
	<i>2 DIGIT</i> 2 scale intervals	3.5.2
	<i>5 DIGIT</i> 5 scale intervals	3.5.3
	<i>10 DIG.</i> 10 scale intervals	3.5.4
	<i>20 DIG.</i> 20 scale intervals	3.5.5
	<i>50 DIG.</i> 50 scale intervals	3.5.6
	<i>100 DIG.</i> 100 scale intervals	3.5.7
	<i>200 DIG.</i> 200 scale intervals	3.5.8
	<i>500 DIG.</i> 500 scale intervals	3.5.9
	<i>1000 D</i> 1000 scale intervals	3.5.10
<i>AUT.START</i>	Automat. Automatic start of applications when you switch on the device with most recently saved application data	3.8
	<i>AUTOMAT</i> Automatic (on)	3.8.1
	<i>MANUAL</i> Manual (off)	3.8.2
<i>TARE.FNC</i>	Tare function	3.25
	<i>NORMAL</i> Can add a preset tare if tare value is available; however no tare function possible	3.25.1*
	<i>SPECIAL</i> When a preset tare is entered, the tare value is deleted; however, tare function activation is possible	3.25.2
<i>CHECK.RG</i>	Checkweighing range	4.2
	<i>30-170%</i> 30 to 170%	4.2.1*
	<i>10-MAX.L</i> 10% to infinity	4.2.2

\* = Factory setting

<i>CTRL.SET</i> Activate SET control output		4.3
<i>OUTPUT</i>	“SET” output	4.3.1*
<i>OP.READY</i>	Ready to operate	4.3.2
<i>OUTP.ACT</i> Port lines		4.4
<i>OFF</i>	Off	4.4.1
<i>ALWAYS</i>	Always on.	4.4.2
<i>STABIL</i>	On at stability	4.4.3
<i>CHECK.RG</i>	On within checkweighing range	4.4.4*
<i>STAB.CHK</i>	On at stability within checkweighing range	4.4.5
<i>INPUT</i> Parameter input		4.5
<i>TAR.MN.MX</i>	Min, Max, target value	4.5.1*
<i>TARG.PER</i>	Only target value with percent limits	4.5.2
<i>TAR.A.PER</i>	Target value with asymmetrical percent limits	4.5.3
<i>TAR.TOL</i>	Target value with relative tolerances	4.5.4
<i>AUT.PRNT</i> Automatic printing		4.6
<i>OFF</i>	Off	4.6.1*
<i>ON</i>	On	4.6.2
<i>OK</i>	Only values within tolerance	4.6.3
<i>NOT OK</i>	Only values outside tolerance	4.6.4
<i>APP.ZERO</i> Checkweighing toward zero		4.7
<i>OFF</i>	Off	4.7.1*
<i>ON</i>	On	4.7.2

-  ► To save the setting, press the  key.
-   ... ► To exit setup: Press the  key several times.

**Display** The result of a measurement is shown either as a weight value or in relation to the target.

**Weight display:** The measured value line always shows the weight value, even if it lies outside the tolerance range. The bar graph is displayed with symbols indicating lower limit, target and upper limit. Weights are shown logarithmically from 0 up to the lower tolerance limit, and linearly beyond that point.

**Relation to target value:** As “Weight display” above, with the exception that:

- *LL* appears in the main display if the weight value is less than the lower limit
- *HH* is shown on the main display if the weight value is higher than the upper tolerance limit.

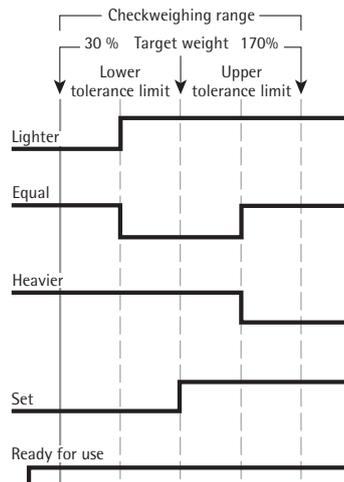
**Digital I/O Interface** The **Checkweighing** application supports the digital input/output interface. The four outputs are activated as follows:

- Less than
- Equal to
- Greater than
- Set.

Acoustic signal: An acoustic signal can be activated in addition. Setting: menu item 8.2.3.

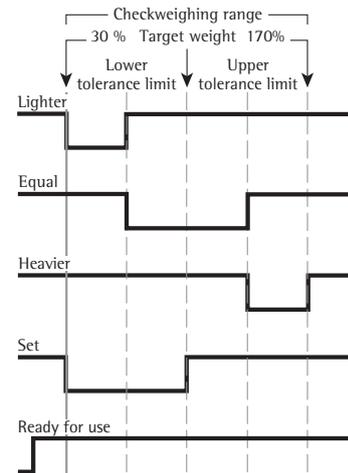
In the *APPLIC./APPLIC.2/CHECK.WG/OUTP.ACT* menu, menu item 4.4, you can choose the following settings for the control outputs:

- off
- always on
- activated at stability
- on within the checkweighing range
- on at stability within checkweighing range.



**Digital I/O Interface**

- "SET" control output: set or ready for use
- port lines: always on



**Digital I/O Interface**

- "SET" control output: set or ready for use
- port lines: within the checkweighing range

The "SET" output normally changes its voltage level when the load is near the target weight. Alternatively, you can assign the "Ready for use" function to this port.

Setting: *APPLIC./APPLIC.2/CHECK.WG/CTRL.SET* menu item 4.3.

This makes it possible, for example, to connect a simple indicator for weighing or calculation results.

All data output ports have a high voltage level when the application is not initialized.

**Output port specifications:**

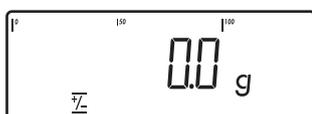
- When not in use, the voltage level is high: >3.7 V/+4 mA.
- When activated, the voltage level is low: <0.4 V/-4 mA.



The outputs are not protected against short circuits and are not galvanically isolated.

**Example 1:** Checkweighing samples with a target weight of 1250 g and a tolerance range from -10 g to +30 g. The tolerance values should be entered as absolute values (lower and upper tolerance limit).

Configuration: The “Checkweighing” application is selected using the setting *INPUT / TAR.MN.MX.* a printout has been set up (see “Configuration”).



OK

▶ Start target value and tolerance entry using the **OK** key.



▷ The target value symbol flashes at the top of the display.



▶ Place a sample with the target weight (in this example, 1250 g) on the platform.



OK

▶ Save the target value.

▷ The minimum symbol flashes at the top of the display.

1 2 4 0

▶ Enter lower limit value (in this example, 1240 g).



OK

▶ Save the lower limit value.

▷ The maximum symbol flashes at the top of the display.

1 2 8 0

▶ Enter upper limit value (in this example, 1280 g).



OK

▶ Save the upper limit value.

▷ Because the sample with the target weight is still on the weighing platform, the weight is shown on the display with the checkweighing bars. The green LED indicates a value in the target range.

▶ Remove the sample with the target weight from the platform.

▶ The samples can now be placed on the platform and checked one after the other.

- ▷ The LEDs next to the display indicate the results:  
 yellow LED: sample too heavy  
 green LED: sample in tolerance range  
 red LED: sample too light.



- ▷ Print the results.

Note: If automatic printout of results is enabled, you do not need to press the key. The results are printed automatically.  
 For Printout configuration: see page 96.

Setp	+	1.250 kg	Target value
Min	+	1.240 kg	Minimum
Max	+	1.280 kg	Maximum
G#	+	1.256 kg	Gross weight
T	+	0.000 kg	Tare weight
N	+	1.256 kg	Net weight
Lim	+	0.48 %	Percentage of deviation from target*
W.Diff+		0.006 kg	Absolute deviation from target

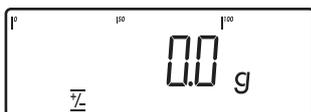
\* When displayed in relation to target value:

If the weight is lighter than the lower limit, the display shows: LL

If the weight is heavier than the upper limit, the display shows: HH

**Example 2:** Checkweighing samples with a target weight of 1250 g and a tolerance range from -10 g to +30 g. The tolerance values should be entered as a relative deviation from the target value.

Configuration: The “Checkweighing” application is selected using the setting *INPUT / TAR.TOL*, a printout has been set up (see “Configuration”).



- ▷ Start target value and tolerance entry using the key.



- ▷ The target value symbol flashes at the top of the display.



- ▷ Place a sample with the target weight (in this example, 1250 g) on the platform.



- ▷ Save the target value.
- ▷ The minimum symbol flashes at the top of the display.

1 0

▶ Enter the maximum lower deviation (in this example, 10 g).



OK

▶ Save the lower limit value.

▶ The maximum symbol flashes at the top of the display.

3 0

▶ Enter the maximum upper deviation (in this example, 30 g).

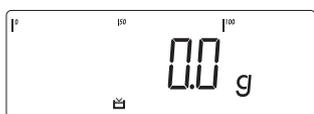


OK

▶ Save the upper limit value.

▶ Proceed as described in example 1.

**Example 3: Checkweighing toward zero** . Checkweighing samples with a target weight of 1250 g and a tolerance range from -10 g to +30 g. Configuration: The “Checkweighing toward zero” application (*TOW.ZERO*) is selected as well as the *TAR.MN.MX* entry, and a printout has been set up (see “Configuration”).



OK

▶ Start target value and tolerance entry using the **OK** key.

▶ Place a sample with the target weight (in this example, 1250 g) on the platform.



OK

▶ Save the target value.

1 2 4 0

▶ Enter lower limit value (in this example, 1240 g).



OK

▶ Save the lower limit value.

1 2 8 0

▶ Enter upper limit value (in this example, 1280 g).



► Save the upper limit value.



► Remove the sample with the target weight from the weighing platform.

► The samples can now be checked one after the other.

► The LEDs next to the display indicate the results:  
 yellow LED: sample too heavy  
 green LED: sample in tolerance range  
 red LED: sample too light.



► Print the results.

Note: If automatic printout of results is enabled, you do not need to press the (F) key. The results are printed automatically.

Printout Configuration, see page 96.

Setp	+	1.250 kg	Target value
Min	+	1.240 kg	Minimum
Max	+	1.280 kg	Maximum
G#	+	1.256 kg	Gross weight
T	+	0.000 kg	Tare weight
N	+	1.256 kg	Net weight
Lim	+	0.48 %	Percentage of deviation from target*
W.Diff+		0.006 kg	Absolute deviation from target
-----			

\* When displayed in relation to target value:

If the weight is lighter than the lower limit, the display shows: LL

If the weight is heavier than the upper limit, the display shows: HH

## Classification

With this application, you can determine whether the weight of a given sample lies within the limits of a defined weight class (*APPLIC.2* menu).

- Features**
- Classification with 3 or 5 weight classes.  
Setting: *APPLIC./APPLIC.2/CLASS./PARAM.2/PTY.* menu item 4.8.
  - Enter the upper limits of weight classes using the keypad or by saving weight values from a load on the platform.
  - Enter the upper limits of weight classes as absolute values or as a percentage of deviation from the upper limit of Class 1.  
Setting: *APPLIC./APPLIC.2/CLASS./PARAM.2/INPUT* menu item 4.9.
  - Activate Info mode with the  key.
  - Toggle the main display between classification display and weight display by pressing the  key.
  - Automatic results printout .  
Setting: *APPLIC./APPLIC.2/CLASS./PARAM.2/PRINT* menu item 4.10.
  - Automatic taring of container weight.  
Setting: *APPLIC./AUT.TARE*, menu item 3.7.
  - Automatic initialization when the scale is switched on.  
Setting: *APPLIC./AUT.START*, menu item 3.8.

### Exit Application, Delete Parameters

The initialization values remain active until they are deleted using the  key, overwritten, or until the application is changed. The class limits also remain saved after the scale is turned off.

You can assign different functions to the  to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the  key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2.

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

- Delimiters** To use the Classification application, you need to enter the delimiters that separate one class from another. Limits between the individual weigh classes are required for the classification. The lower limit of Class 1 is defined by the preset minimum load. The other classes are configured by defining their upper limits. There are two ways to enter the delimiters:
- By saving the weight value indicated:** Each upper limit value, with the exception of the highest class, is entered using the keypad or by saving the weight value of a load on the weighing platform.

By **entering a percentage**: The upper value of Class 1 is entered using the keypad or by saving the value indicated. Upper limits for the other classes are defined by entering a percentage of deviation from the upper limit of Class 1, using the keypad.

**Example:** Enter 100 g as the upper limit of Class 1. Then enter 15%. When working with 3 classes, this yields the following weight classes:

- Class 0: up to the minimum load
- Class 1: >minimum load - 100 g
- Class 2: >100 g - 115 g
- Class 3: >115 g - maximum load

When working with 5 classes, this yields the following weight classes:

- Class 0: up to the minimum load
- Class 1: >minimum load - 100 g
- Class 2: >100 g - 115 g
- Class 3: >115 g - 130 g
- Class 4: >130 g - 145 g
- Class 5: >145 g - maximum load

The values entered remain valid until deleted by pressing the **CF** key or until overwritten by a new value. They remain saved after the scale is switched off.

**Preparation** ► Open the *APPLIC./APPLIC.2/CLASS* menu.

**Available parameter settings**

<i>MIN.INIT</i>	Minimum load for initialization	3.6
	<i>1 DIGIT</i>	1 scale interval 3.6.1*
	<i>2 DIGIT</i>	2 scale intervals 3.6.2
	<i>5 DIGIT</i>	5 scale intervals 3.6.3
	<i>10 DIG.</i>	10 scale intervals 3.6.4
	<i>20 DIG.</i>	20 scale intervals 3.6.5
	<i>50 DIG.</i>	50 scale intervals 3.6.6
	<i>100 DIG.</i>	100 scale intervals 3.6.7
	<i>200 DIG.</i>	200 scale intervals 3.6.8
	<i>500 DIG.</i>	500 scale intervals 3.6.9
	<i>1000 D</i>	1000 scale intervals 3.6.10
<i>CTRL.SET</i>	Activate SET control output	4.3.
	<i>OUTPUT</i>	"SET" output 4.3.1*
	<i>OP.READY</i>	Ready to operate 4.3.2
<i>OUTP.ACT</i>	port lines	4.7
	<i>OFF</i>	Off 4.7.1*
	<i>ALWAYS</i>	Always on 4.7.2
	<i>STABL.</i>	On at stability 4.7.3
<i>QTY.</i>	Number of classes	4.8.
	<i>3 CLASS</i>	3 classes 4.8.1*
	<i>5 CLASS</i>	5 classes 4.8.2
<i>INPUT</i>	Parameter input	4.9.
	<i>WEIGHTS</i>	Weight values 4.9.1*
	<i>PERC.TAG</i>	Percentage values 4.9.2
<i>PRINT</i>	Automatic printing	4.10.
	<i>MANUAL</i>	Off 4.10.1*
	<i>AUTOMAT</i>	On 4.10.2

- To save the setting, press the **→T←** key.
- To exit setup: Press the **→0←** key several times.

\* = Factory setting

**Minimum load for initialization** You can set the minimum load here, i.e., the load that must be placed on the weighing platform in order to carry out the application. If the load on platform is too light, then this is class 0.

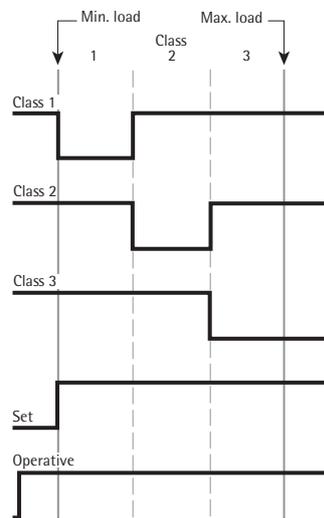
Setting: *APPLIC./APPLIC. 1/COUNT./MIN.INIT* menu item 3.6.

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, for example, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals = 1000 digits) on the weighing platform for initialization.

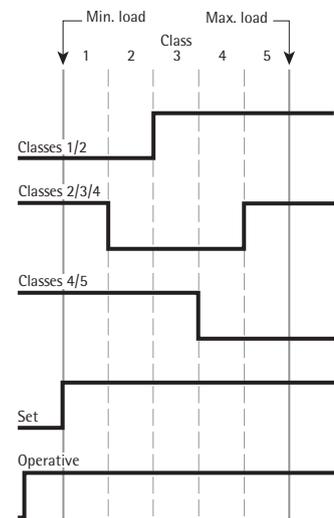
**Display** The result of a given measurement is shown as either a weight value or a class number.

**Weight display:** The current weight is shown in the measured value line and the current class in the number display.

Display of classes: The current class is displayed in the measured value line.



**Digital I/O Interface**  
Control lines when working with 3 classes



**Digital I/O Interface**  
Control lines when working with 5 classes

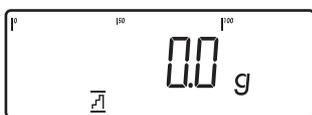
In the *APPLIC./APPLIC.3/CLASS./PARAM.2/OUTP.ACT* menu, menu item 4.7, you can choose the following settings for the control outputs:

- off
- always on
- activated at stability.

The “SET” output normally changes its voltage level when the current weight exceeds the minimum load. Alternatively, you can assign the “Ready for use” function to this port.

Setting: *APPLIC./APPLIC.3/CLASS./PARAM.2/CTRL.SET* menu item 4.3.

**Example 2:** There should be three classes.  
 Configuration: The “Classification” application is selected, and printout has been set up.



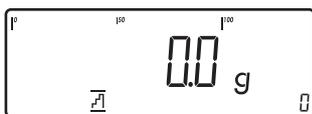
▶ Enter the class limits using the  key.



▶ Enter the upper limit for Class 1 using the keypad (in this example, 110 g).

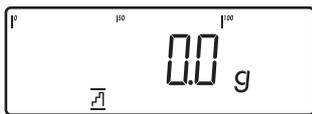


▶ Save the upper limit for Class 1.



▶ Enter the upper limit for Class 1 using the keypad (in this example, 110 g).

▶ Save the upper limit for Class 1.



▶ Place the sample on the weighing platform.





▷ The result is displayed.



▶ Print the results.

Note: If automatic printout of results is enabled, you do not need to press the  key. The results are printed automatically.

Printout Configuration, see page 96.

Lim1 + 0.110 kg  
Lim2 + 0.130 kg

G# + 0.118 kg  
T + 0.000 kg  
N + 0.118 g

Class 2  
-----

## Totalizing $\Sigma$

With this application, you can add weights to the totalizing memory. In addition to weight values, the number of separate values added to memory is also saved (*APPLIC.3* menu).

- Features**
- You can weigh up to 999 items.
  - Save values automatically: Simultaneous saving of net values and calculated values (if available).  
Setting: *APPLIC./APPLIC.3/TOTALIZ* menu item 3.16.
  - Save weight values and calculated values from either Application 1 (for example, Counting, Weighing in Percent) or Application 2 (Checkweighing).  
Setting: *APPLIC./APPLIC.3/TOTALIZ* menu item 3.22.
  - Current transaction number displayed in the number display (indicating the transactions already added).
  - Weighing in up to a defined target, with the totalization memory content + current weight displayed in the text lines.
  - Save weight values manually or automatically.
  - Accurate calculation of total of weight values from two weighing platforms.
  - Activate Info mode with the **[Info]** key .
  - Automatic printout when value saved.
  - Automatic taring of container weight.  
Setting: *APPLIC./AUT.TARE*, menu item 3.7.

### Exit Application, Delete Parameters

The value of the totalizing memory remains valid until deleted by pressing the **[CF]** key.

You can assign different functions to the **[CF]** key to delete applications. When you clear applications, you can delete either the data stored for all applications or just selected data stored for the active application.

Setting: *APPLIC./CLER.CF* menu item 3.24.

### Tare Function:

If you store a tare (weight value) by pressing the **[T←]** key, you can later enter a tare value manually. The tare value you enter is added to the stored tare value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.1 (factory setting).

A tare value entered manually overwrites a stored tare value (weight value). If you enter a tare value manually, a tare value (weight value) stored later overwrites the manually entered value.

Setting: *APPLIC./TARE.FNC* menu item 3.25.2 .

**Restore factory default settings:** *APPLIC./RESET* menu item 9.1.

The Signum has a totalizing memory for totalizing individual net and gross values. You can save weight values in totalizing memory manually or automatically.

Setting: *APPLIC./APPLIC.3/TOTALIZ* menu item 3.16.

- **Save value manually** by pressing the **[OK]** key.  
The value taken from the active platform is added to the value already saved in the totalization memory and the transaction counter value is increased by one. When a value is added manually, the program does not check whether the platform has been unloaded since the last time the **[OK]** key was pressed.

- Value saved automatically when the weighing platform is stable and the defined minimum load is exceeded.  
If the defined minimum load is not exceeded, you can save the item manually by pressing the **O** key. Regardless of these settings, the current value cannot be saved automatically unless the platform is unloaded before the next sample is placed on it. The weighing platform is considered to be unloaded when the load is less than 50% of the minimum load.

The number of items added to memory is shown in the number display.  
Press the **[CF]** key to clear the totalizing memory. A printout is automatically generated.

With two weighing platforms connected, you can add values from both platforms to the totalizing memory. The displayed result is accurately calculated in the active weight unit.

Example: When you add 1.243 g (determined on a weighing platform with three decimal places) to 1.4 g (determined on a platform with 1 decimal place), the display shows 2.643 g.

**Preparation** ► Open the *APPLIC./APPLIC.3/TOTALIZ.* menu.

<b>Available parameter settings</b>	<i>MIN.INIT</i> Minimum load for initialization	3.6
	<i>1 DIGIT</i>	1 scale interval 3.6.1*
	<i>2 DIGIT</i>	2 scale intervals 3.6.2
	<i>5 DIGIT</i>	5 scale intervals 3.6.3
	<i>10 DIG.</i>	10 scale intervals 3.6.4
	<i>20 DIG.</i>	20 scale intervals 3.6.5
	<i>50 DIG.</i>	50 scale intervals 3.6.6
	<i>100 DIG.</i>	100 scale intervals 3.6.7
	<i>200 DIG.</i>	200 scale intervals 3.6.8
	<i>500 DIG.</i>	500 scale intervals 3.6.9
	<i>1000 D</i>	1000 scale intervals 3.6.10
	<i>AUTO.SAV</i> Autosave	3.16.
	<i>OFF</i>	Off 3.16.1*
	<i>ON</i>	On 3.16.2
	<i>PRT.SAV</i> Individual/Component printout when saved	3.17.
	<i>OFF</i>	Automatic printing off 3.17.1
	<i>ON</i>	Print the entire standard print configuration every time with the <b>[OK]</b> key 3.17.2*
	<i>VAL.FROM</i> Source of data for autosave	3.22.
	<i>APPL. 1</i>	Application 1 3.22.1*
	<i>APPL. 2</i>	Application 2 3.22.2
	<i>SAV.VAL.</i> Save value	3.23.
	<i>NET</i>	Net 3.23.1*
	<i>CALCUL.</i>	Calculation 3.23.2
	<i>NET+CAL</i>	Net and Calculated 3.23.3

**Printout** You can configure whether a printout is generated automatically when a weight value is stored in the totalizing memory or manually by pressing the **[E]** key.  
Setting: *APPLIC./APPLIC.3/TOTALIZ* menu item 3.17.

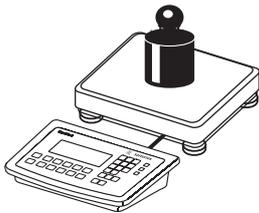
- You can print manually by pressing the **[E]** key (single printout): 3.17.1.
- Component log (single printout of an item): 3.17.2.

The total data record is printed when you clear the totalizing memory (by pressing the **[CF]** key).

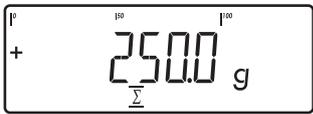
\* = Factory setting

**Example:**

Totalizing weight values.  
 Configuration: The “Totalizing” application is selected, and printout has been set up. Setting: *SETUP / PRINT / PROTOC.* menu item 7.6.  
 Component log: menu item 7.7.  
 Total data record: menu item 7.8.



- ▶ Place the first weight on the weighing platform.



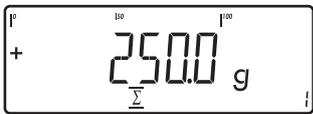
- ▷ The weight value is displayed.

OK

- ▶ Store first weight value in totalizing memory.

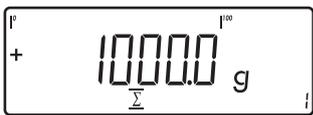
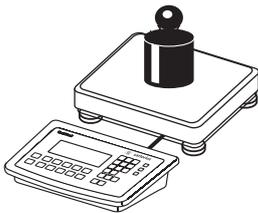
G#	+	0.250 kg
T	+	0.000 kg
N	+	0.250 kg
n		1

- ▷ Component weight is printed automatically (**configured component log**).



- ▷ The transaction counter value is increased by one (to 1).

- ▶ Remove the first weight from the weighing platform and place the second weight.



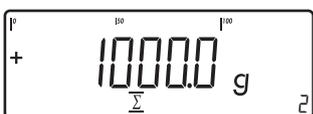
- ▷ The weight value is displayed.

OK

- ▶ Store second weight value in totalizing memory.

G#	+	1.346 kg
T	+	0.346 kg
N	+	1.000 kg
n		2

- ▷ Component weight is printed automatically (**configured component log**).



- ▷ The transaction counter value is increased by one (to 2).



▶ Toggle the display between individual value and total.



▶ End totalizing.

G# + 1.346 kg  
 T + 0.346 kg  
 N + 1.000 kg  
 n 2  
 -----

▶ **Configured total data record is printed.**

## Net Total Formulation

With this application, you can weigh in different components up to a defined total. Each component is saved in the net-total memory (*APPLIC.3* menu).

- Features**
- Weigh in up to 999 components in series.
  - Net total formulation **cannot** be combined with level 1 and 2 applications (*APPLIC.1*, *APPLIC.2*).
  - Current component number displayed in the number line (indicating the component to be added).
  - Toggle the display from “component mode” to “additive mode” by pressing the  key.
    - **Component mode:** Display the weight of the component currently on the platform (for 1 second after it is saved; then the platform is tared).
    - **Additive mode:** Display the weight of all components on the platform (after it is saved, the net weight of the last component added is displayed briefly).
  - Toggle to a second weighing platform while weighing in.
  - Activate Info mode with the  key.
  - Automatic component printout when it is saved.  
Setting: *APPLIC./APPLIC.3/NET TOT* menu item 3.17.

**Printout** If the 3.17.2 menu item is selected, the entire component record is printed. If the 3.17.3 menu item is selected, the following items are generated only for the first component if it has been configured:  
Blank line, dash line, date/time, time, ID1 ... ID6, header lines 1 and 2. For subsequent components, each “component” item (“Comp xx”) is followed by a blank line.

- Automatic taring of container weight.  
Setting: *APPLIC./AUT.TARE* menu item 3.7.
- Restore factory default settings.  
Setting: *APPLIC./RESET* menu item 9.1.

**Preparation** ► Open the *APPLIC./APPLIC.3/NET.TOT* menu.

**Available parameter settings**

\* = Factory setting

<i>MIN.INIT</i>	Minimum load for initialization	3.6
<i>1 DIGIT</i>	1 scale interval	3.6.1*
<i>2 DIGIT</i>	2 scale intervals	3.6.2
<i>5 DIGIT</i>	5 scale intervals	3.6.3
<i>10 DIG.</i>	10 scale intervals	3.6.4
<i>20 DIG.</i>	20 scale intervals	3.6.5
<i>50 DIG.</i>	50 scale intervals	3.6.6
<i>100 DIG.</i>	100 scale intervals	3.6.7
<i>200 DIG.</i>	200 scale intervals	3.6.8
<i>500 DIG.</i>	500 scale intervals	3.6.9
<i>1000 D</i>	1000 scale intervals	3.6.10
<i>PRT.SAV.</i>	Individual/Component printout when saved	3.17
<i>OFF</i>	Automatic printing off	3.17.1
<i>EACH.TIM.</i>	Print the entire standard print configuration every time the  key is pressed	3.17.2*
<i>ONCE</i>	Print the entire standard print configuration once with the  key	3.17.3

**Minimum load** The minimum amount that a component must weigh before it can be saved in net-total memory.

Setting: *APPLIC / APPLIC.3 / NET.TOT*. Menu item 3.6.

Once the limit is exceeded by the load, the value can be saved. If the load on platform is too light, the following will occur when you try to save a value:

- error code *INF 29* appears
- a warning signal is emitted (double-beep)
- the weight value is not saved.

The minimum load required for automatic taring of the container weight on the platform (first weight) is configured under: *APPLIC. / MIN.TARE* menu item 3.5.

The minimum load can be set in 10 steps, from 1 to 1000 digits (see Available parameters). The “digits” here refer to the scale intervals in the connected weighing platform. If the interval of the connected platform is 1 g, and 1000 digits are required, you must place at least 1000 g (= 1000 intervals) on the weighing platform for autotaring (only with the “Autotare first weight” option selected).

### Net-total formulation with two weighing platforms

This mode is used for weighing large and small components at the same time. It is possible to toggle from the small-component platform to the large-component platform once during a measurement series. Once you toggle to the large-component platform, the  $\rightarrow 0 \leftarrow$  and  $\rightarrow T \leftarrow$  keys are available until a component is saved. For example, you can tare a partially-filled container taken from the small-component platform on the large component platform.

The value in component memory on the small-component platform is transferred to the large-component platform and the weight unit is converted, if necessary. The Component and Additive display modes are both available on the large-component platform.

The value read by the active platform is saved in component memory. The displayed result is accurately calculated in the active weight unit.

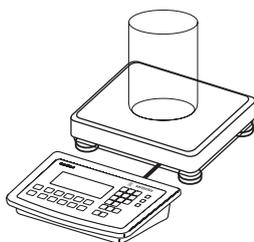
When you press  $\square$ CF to stop a measurement series the tare memories for both platforms are cleared, unless the large-component platform is an SBI instrument, in which case the platform is only tared.

**Example:** Three components of a formula should be weighed.  
Configuration: The “Net-total formulation” application is selected, and printout has been set up.

Setting: *APPLIC. / APPLIC.3 / NET TOT*

Component log: *SETUP / PRINT / PROTOC.* menu item 7.7

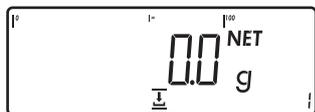
Total data record: *SETUP / PRINT / PROTOC.* menu item 7.8



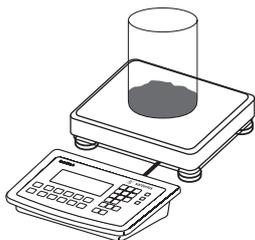
- ▶ Place empty container on the scale.



- ▶ Tare scale.  
This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



- ▶ The prompt to fill and save the first component is shown.



- ▶ Place the first component into the container (in this example, 1100 g).



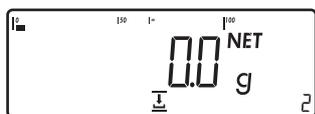
- ▶ The weight of the first component is displayed.



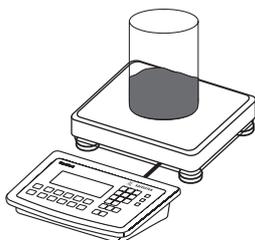
- ▶ Save the weight of the first component using the **OK** key.

Cmp001+ 1.100 kg ▶

- The component record is printed automatically.



- ▶ The weighing platform is tared and the component counter value is increased by one. The prompt to fill and save the second component is now displayed.



- ▶ Place the second component into the container (in this example, 525 g).



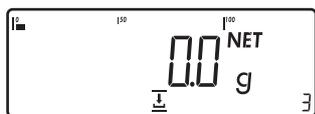
- ▶ The weight of the second component is displayed.



- ▶ Save the weight of the second component using the **OK** key.

Cmp002+ 0.525 kg ▶

- The component record is printed automatically.



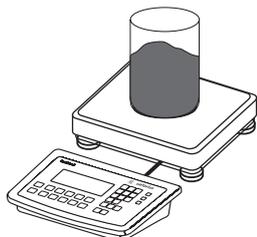
- ▶ The weighing platform is tared and the component counter value is increased by one. The prompt to fill and save the third component is now displayed.



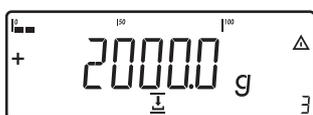
- ▶ Toggle to the “additive mode” using the **↻** key to display the total weight of all components.



▶ The value displayed equals the weight of components added up to now plus the current weight on the platform.



▶ Place the third component into the container until the desired total weight is reached (in this example, 2000 g).



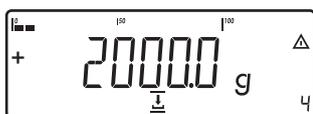
▶ The total weight is displayed.



▶ Save the weight of the third component using the **OK** key.

Cmp003+ 0.375 kg

▶ The component record is printed automatically.



▶ The component counter value is increased by one. The prompt to fill and save the fourth component is now displayed.



▶ End component weighing by pressing the **CF** key.

▶ Results are printed automatically (configured total data record).

n + 3  
 Tot.cp+ 2.000 kg  
 Cont.T+ 0.296 kg

Number of components  
 Content of component memory  
 Content of tare memory (container weight)

-----

## Combining Application Programs

The following table shows how the applications described can be combined. The basic **weighing** function is available at all times; it does not need to be combined with a computational function.

Select programs one after the other: Toggle using the  $\left(\leftarrow\right)$  key.

<b>Application 1</b> <b>(Basic Function)</b>	<b>Application 2</b> <b>(Monitoring Function)</b>	<b>Application 3</b> <b>(Cumulative-value Function)</b>
Counting	–	Totalizing
Counting	Checkweighing	Totalizing
Counting	Checkweighing	–
Counting	Classification	–
Neutral measurement	–	Totalizing
Neutral measurement	Checkweighing	Totalizing
Neutral measurement	Checkweighing	–
Neutral measurement	Classification	–
Animal weighing	–	Totalizing
Animal weighing	Checkweighing	Totalizing
Animal weighing	Checkweighing	–
Animal weighing	Classification	–
Weighing in percent	–	Totalizing
Weighing in percent	Checkweighing	Totalizing
Weighing in percent	Checkweighing	–
Weighing in percent	Classification	–
–	–	Net-total formulation
–	Checkweighing	Totalizing

**Example:** “Portioning” (counting  $\clubsuit$ , checkweighing  $\frac{1}{2}$  with totalizing  $\Sigma$ )

Configuration:

Application 1: Counting (*COUNT.*)

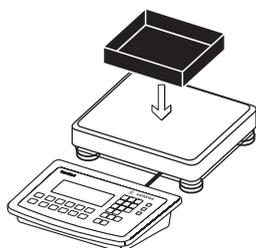
Application 2: Checkweighing (*CHECK.*)

Application 3: Totalizing (*TOTALIZ*): Saved value: Net + Calculated (3.23.3)

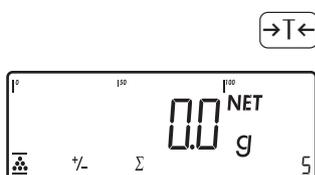
Autosave: On (3.16.2)

Source of data: Application 2 (3.22.2)

Setup: Printout: *PRT PROT* 7.8. Printer 1: “Total: Print when FN pressed,” then select the menu line items of your choice.

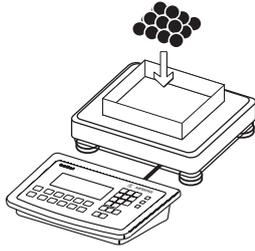


► Place empty container on the scale.



► Tare scale.

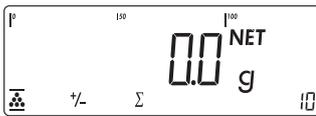
This is not required if the automatic tare function is active. The tare weight is saved automatically when you place the container on the platform.



- ▶ Place any number of parts in the container for the reference quantity (in this example, 10 pcs).

OK

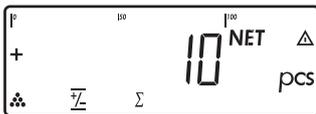
- ▶ Start the calculation of the reference piece weight.



- ▶ If the weight is too light, an error code is shown in the main display *INF 29*. Reduce the minimum load setting or increase the reference sample quantity setting and the number of parts in the container.



- ▶ Toggle to Checkweighing.



OK

- ▶ Start Checkweighing.

1 0 0

- ▶ Enter target value, minimum and maximum (in this example, target 100 pieces, minimum 100 pieces, maximum 102 pieces).

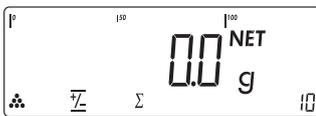
OK

1 0 0

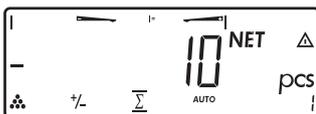
OK

1 0 2

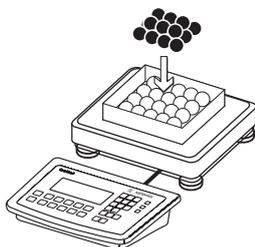
OK



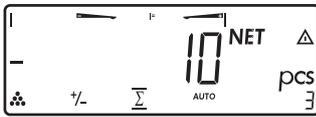
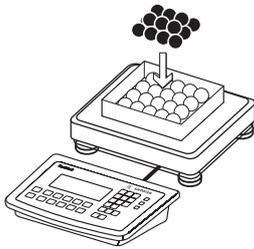
- ▶ Toggle to totalizing.



- ▶ Add desired number of pieces.



- ▶ The number of pieces is saved automatically.
- ▶ Unload the scale: Remove the samples.
- ▶ Perform further counting operations as desired.



- ▶ Toggle display from individual value to total.



- ▶ End the portioning options and print the final evaluation.

```

-----
nRef  +      10 pcs
wRef  + 0.001000 kg
Setp  +      100 pcs
Min   +      100 pcs
Max   +      102 pcs

n      6
*N    +      0.600 kg
Total +      600 pcs
-----
    
```

Configured printout: Total.

## Configuring Printouts

**Purpose** You can individually define each measurement printout. This should be carried out **after** setting the applications since some data in the printout is application-dependent.

In the “Print parameters” menu, single, component, and total data records can be configured, which contain the available print items for the respective applications. Using the total data record for “Totalizing” and “Net-total formulation” applications, you can define which parameters are printed using the **[CF]** key.

- Features**
- Six lists each with a max. length of 30 print items
    - Single printout Printer 1
    - Component printout Printer 1
    - Total data printout Printer 1
    - Single printout Printer 2
    - Component printout Printer 2
    - Total data printout Printer 2.
  - Single, component, and total data records can be configured separately.
  - Print single printout: **[E]** key.  
Auto printout of application when Setup menu is activated:
    - Animal weighing (averaging)
    - Checkweighing
    - Classification.
  - Print component printout:  
Totalizing/Net-total formulation with the **[OK]** key: *APPLIC./APPLIC.3/TOTALIZ* printout: Component printout.
  - Print total data printout:  
For selected application Totalizing/Net-total formulation with **[CF]** key.
  - When switching to another application in Setup, only the application-dependent printout lists are deleted. The other printout lists remain saved.
  - Print items can be deleted individually: Press and hold the **[←0→]** key.
  - Print items “Form Feed” for record footer:  
Move to the next label start for printer type: YDP14IS: “Label” and YDP04IS, setting “Label, manual form feed”.
  - ISO/GMP-compliant printout: The Setup menu configuration under “ISO/GMP-compliant printout” is also active for configured printouts.

- Preparation
- ▶ Open Menu mode (see page 35).
  - ▶ Select the *SETUP* menu.  
**[Fn] [Fn] ...**
  - ▶ Select and open the *PRINT* submenu.  
**[Fn] [Fn] ... [→T←]**
  - ▶ Select and open the *PROTOC.* submenu.  
**[Fn] [Fn] ... [→T←]**

### Available parameter settings

<i>PROTOC.</i> Protocol		7
<i>HEADLIN.</i> Header and ID header input		7.4
<i>QTY.1</i> Quantity interface 1		7.5
<i>INDIV.1</i> Standard interface 1		7.6
<i>COMPON.1</i> Component interface 1		7.7
<i>TOTAL.1</i> Result interface 1		7.8
<i>QTY.2</i> Quantity interface 2		7.9
<i>INDIV.2</i> Standard interface 2		7.10
<i>COMPON.2</i> Component interface		7.11

<i>TOTAL 2</i>	Result interface 2	7.12
<i>GMP.PROT</i>	ISO/GMP	7.13
<i>DAT/TIM</i>	Date without time	7.14
<i>AUT.ONCE</i>	Automatic printout after stability	7.15
<i>FLEX.PRIN</i>	Flex print	7.16
<i>DEC.SEP.</i>	Decimal separator	7.17

<i>RESET</i> Restore factory default settings	9
Setting the factory settings	9.1

- The rows of the printout list can be called up and activated individually.  
Example: see under Configuration, menu item 7.6.
- The print selection set as active appears with the left selection bar on the display, e.g. gross, tare, net.
  - ▶ Expand the printout: Press the **[←T→]** key. The selection bar appears on the right of the display.
  - ▶ Select print items: Press the **[Fn]** key.
  - ▶ Save the desired print items: Press the **[←T→]** key.
  - ▶ Press the **[→0←]** key to change the print selection set as active. The selection bar appears on the left. The required print item is set as active and appears in the printout.
- Print items can be deleted individually from the active printout selection:  
Press and hold the **[→0←]** key.
  - ▶ Save settings with the **[←T→]** key and exit Setup: Press the **[→0←]** key several times.

**Additional functions**    Printing the “Selection” and “List” Settings  
 LIST: Output of the current printout list  
 SELECT: Print currently selectable items

- ▶ When the selection bar is in LIST or SELECT: Press the **[E]** key.

Printout (example)    **Indiv.Prt**  
                           **List**  
                           =====

```

Net (N)
Gross (G#)
Tare
Tare (T2/PT2)
Piece count
=====
etc.
```

**Example:** Standard printout for data output from the “Counting” application.

**Configuration:**

- Application: Application 1: Counting
- Then access Setup: Printout: Printer 1: “Individual: print by pressing (E)”

- ▶ Select the *SETUP* menu.
- ▶ Select and open the *PRINT* submenu.
- ▶ *PROTDC.* submenu should be selected and opened.



- ▶ Press the key until *HEADER* appears in the display.



- ▶ Press the key until *INDIV. 1* appears in the display.



- ▶ Press the key.

- ▶ The list of print items appears.



- ▶ Press the key to go to the selection list.



The first print item of the selection list is displayed.

- ▶ Press the key to scroll through the available print items in the selection list.
- or

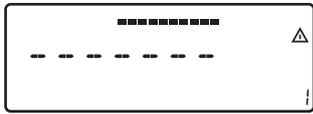
- ▶ Press the key to add the displayed print item from the selection list to the list of print items.

- ▶ Press the key until the line row appears in the display.





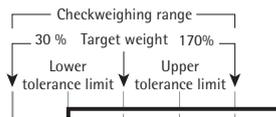
▶ Press the key to save the selection.



▶ The counter value is increased by one.



▶ Press the key until the “reference weight” entry is displayed.



▶ Press the key to save the selection.

▶ You can now select additional print items in the same way.



▶ To exit print item entry, press the key until *APPLIC.* appears in the display.



▶ Press and hold the key (2–3 sec) to switch to weighing mode.

▶ Carry out weighing.



▶ Press the key to print the results.

Printout example

```

-----
nRef  +      5 pcs
wRef  +      8 pcs
wRef  +  0.4000 g
    
```

## Product Data Memory

**Purpose** The product data memory stores initialization data and user data (product and tare values).

- Features**
- The product data memory has 100 memory cells for product or tare values. This means that e.g. 80 application memories and 20 tare memories are available.
  - Each memory cell is uniquely identified by a number up to three digits.
  - The product data memory can be used with the following applications:
 

Application 1	Application 2
- Weighing	- Checkweighing
- Counting	- Classification
- Neutral measurement	
- Animal weighing	
- Weighing in percent	
  - Data records can be created, overwritten, and individually deleted.
  - Data remains stored when the scale is switched off.

### Saving Product Data (in this example in the “Counting” application)

- ▶ Start the Counting application.
- ▶ Enter a memory number and press and hold the **Mem** key (min 2 seconds).

### Saving Preset Tare Values

- ▶ Allocate preset tare memory.
- ▶ Enter a memory number and press and hold the **Tare** key (min 2 seconds).

### Activating Saved Product or Tare Values

- ▶ Enter a memory number and press the **Mem** key.

### Displaying Information for a Specific Product or Tare Value

- (  $\text{CH}$  ) Enter a memory number and press the **Info** key.
- Use the **Fn** key to switch between wRef (average piece weight) and nRef (quantity).
  - Use the **→T←** key to scroll the displayed value to the right.
  - Use the **Mem** key to activate the displayed memory.
  - Use the **CF** key (min. 2 seconds) to delete the displayed memory.
  - ▶ Exit the mode using the **CF** key.

### Displaying Information for all Product or Tare Memories

- ▶ Press the **Mem** key to display the first memory number.
- Press the **Fn** key to scroll through in lexical order (e.g. 1, 3, 333, 4, etc.).
- Use the **Mem** key to activate the selected memory number.
- Press the **Info** key to display the saved product values.
- Press and hold the **CF** key (min. 2 seconds) to delete the selected memory number.
- ▶ Exit the mode using the **CF** key.

### Deleting Specific Memory Numbers

- ▶ Enter a memory number and press and hold the **CF** key.

**Example:** Using the Counting application with a stored average piece weight.  
Configuration: Application: Counting (COUNT.)

#### Saving the Average Piece Weight

- ▶ Start the application.
- ▶ Determine the average piece weight using one of the methods described above.
- ▶ Enter the memory cell number using the keypad, and press and hold the **Mem** key (min 2 seconds).

#### Loading the Average Piece Weight or Reference Sample Quantity

- ▶ Enter the memory cell number and press the **Info** key.
- Use the **Fn** key to switch between wRef (average piece weight) and nRef (quantity).
- Use the **→T←** key to scroll the displayed value to the right.
- Use the **Mem** key to activate the displayed memory.
- Use the **CF** key (min. 2 seconds) to delete the displayed memory.
- ▶ Exit the mode using the **CF** key.

#### Overwriting Data in a Memory Cell

- ▶ Enter the memory cell number to be overwritten via the keypad.
- ▶ Press and hold the **Mem** key (min 2 seconds).
- ▷ The previous average piece weight is overwritten.
  
- ▶ To cancel without saving, press the **CF** key.

#### Deleting an Average Piece Weight

- ▶ Enter the memory cell number of the average piece weight to be overwritten.
- ▶ Press the **Info** key.
- ▶ Delete the displayed value by pressing and holding the **CF** key (min. 2 seconds).

## Data Interfaces

The indicator is equipped with the following data interfaces:

- **COM1:** –Standard data interface (RS-232 (A21), 485 (A22), 422 (A23)).
- **UniCOM:** Universal Data Interface (optional),

UniCOM interface can be used as an RS-232, RS-485/RS-422, analog output (voltage/current interface) or Profibus. A barcode scanner can be connected (Combics 2 only) via the PS/2 socket or the corresponding screw terminals (IP69K).

The interface can be configured in the *SETUP* menu for different input and output functions (e.g. printer, 2nd weighing platform, PC).



Warning when using third-party RS-232 connecting cables: the pin assignments may not be compatible with Minebea Intec equipment.

### Specifications

Serial interface: Level:	Interface operation: Full duplex COM1: RS232 oder RS422/485 UniCOM : RS232 oder RS422/485
Connection to device:	Weighing platforms Connection via screw terminals in the housing, cable routed into the housing via a cable gland.
Transmission rate:	150, 300, 600, 1200, 2400, 4800, 9600, 19200 baud (depending on the operating mode)
Number of data bits:	7, 8 bits
Parity:	Space, odd, even, none (depending on the operating mode)
Number of stop bits:	1 or 2
Handshake mode:	Software (XON/XOFF), hardware (1 character after CTS)
Protocols:	SBI, XBPI-232, XBPI-485, SMA, Profibus
Network address <sup>4)</sup> :	0, 1, 2, ..., 31
SBI: Manual data output:	Without stability, after stability, configurable printout
SBI: Auto data output:	Without stability, at stability, at user-defined intervals
SBI: Output format:	16 or 22 characters
Printout of application data:	Configurable printout

### Analog UniCOM interface (optional) (YPSC01)

Level:	4 to 20 mA
Power supply:	Internal
Factory setting:	4 to 20 mA
Connection:	via screw terminals in the housing, cable routed into the housing via a cable gland.

## Configuring the Data Interface as a COM Port (*DATPROT*)

You can configure the interface as a COM port in either COM1 or UniCOM, “Data Protocol” (*DATPROT*) menu item.

**SBI communication** This is a simple ASCII interface.

Data output is configured under menu items 6.1 and 6.3:

- Manual output of displayed value with or without stability (menu items 6.1.1 and 6.1.2).
- Automatic output of displayed value with or without stability (menu items 6.1.4 and 6.1.5) at intervals defined by display updates. The number of display intervals is set in menu item 6.3.
- Output of a configurable printout (menu item 6.1.7). Output is linked to the “Printouts” menu item (*DATPROT*), (see page 96 “Configuring Printouts”).

If you do not activate and configure a user-definable data record, the printout simply contains the current value displayed on the display and control unit (weight with unit, calculated value, alphanumeric display).

**SMA communication** Standardized communications protocol of the **Scale Manufacturers Association**

## Data Input Format

You can connect a computer to your scale to send commands controlling weighing instrument functions and applications via the interface port.

All commands use the same data input format. They begin with the character **ESC** (ASCII: 27) and end with a carriage return **CR** (ASCII: 13) and **LF** (ASCII: 10). The total length of a command is anywhere from 4 characters (1 command character between the start and end described above) to a max. of 7 characters (4 command characters). This number can also be higher when sending texts.

The commands listed in the following table must each be supplemented with ESC ... CR LF.

**Example:** The command character for output is “P” (“output to Port”). To trigger this command, send the string: “ESC P CR LF”.

Command	Meaning
K	Weighing mode 1
L	Weighing mode 2
M	Weighing mode 3
N	Weighing mode 4
O	Block keys
P	Send display value to data interface
Q	Output acoustic signal
R	Unblock keys
T	Tare and zero (combination tare function)
f3_	Zero (see also the “kZE_” command)
f4_	Tare without zeroing (see also the “kT_” command)
i_	Information about the indicator, example of output: “CAIS3/01-63-09/1” Meaning: Indicator: Combics 3, software version: 01-63-02, Active weighing platform: 1
kF1_	Trigger soft key F1 function
kF2_	Trigger soft key F2 function
kF3_	Trigger soft key F3 function
kF4_	Trigger soft key F4 function
kF5_	Trigger soft key F5 function
kF6_	Trigger  key function
kF7_	Trigger  key function
kF8_	Trigger  key function
kF9_	Trigger  key function
kF10_	Trigger  key function
kF11_	Trigger  key function
kF12_	Trigger  key function
kP_	Trigger  key function (print at printer interface)
a6_	Alibi memory: next stable weighing value is written to alibi memory and sent back
a4xx_	Alibi memory: Read content according to the transaction number specified under xx
kT_	Trigger  key (tare)
kNW_	Trigger  key function (toggle the weighing platform)
kZE_	Trigger  key function (zero the instrument)
kCF_	Trigger  key function
x1_	Output model designation of active weighing platform, example: “LP6200S-0C”
x2_	Output serial number of active weighing platform, example: “0012345678”
x3_	Output software version of active weighing platform, example: “00-43-04”
x4_	Output software version of indicator, example: “01-63-09”
x9_	Output serial number of indicator, example: “0012345678”
x10_	Output model of indicator, example: “CAIS3”
z1xx_	Input: printout header 1
z2xx_	Input: printout header 2
z3xx_ - z8xx_	Input: ID1 - 6
txx...x_	Write text in display. xx...x is the text to be displayed.

The ASCII code for the “underline” character (“\_”) is 95.

Format for entering printout header lines: “ESC z x a ... a \_ CR LF” with x=1 or 2 and a ... a: 1 to 20 characters for header x, followed by the underline, CR and LF characters.

Each line in a print job can contain up to 22 characters (up to 20 printable characters plus two control characters). The first 6 characters, called the “data header”, identify the subsequent value. You can suppress the header under menu item 7.2 in the “Printouts” menu; in this case, the print job has up to 16 characters (up to 14 printable characters plus two control characters).

**Example:** output without identification           +           253 pcs           16 characters are printed

**Example:** output with identification   Qnt +           253 pcs           22 characters are printed

Display segments that are not activated are output as spaces. Values with no decimal point are output without a decimal point.

**Data Output Format with 16 Characters (without Data Header)**

Normal Operation

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
or	-	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
or	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF

- + -: Plus or minus sign
- \*: Space
- D: Digit or letter (max. 7 characters plus decimal point)
- U: Unit symbol (1 to 3 letters followed by 2-0 spaces)
- CR: Carriage return
- LF: Line feed

**Special Outputs**

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	*	*	*	*	-	-	*	*	*	*	*	CR	LF
or	*	*	*	*	*	*	*	H	*	*	*	*	*	*	CR	LF
or	*	*	*	*	*	*	*	H	H	*	*	*	*	*	CR	LF
or	*	*	*	*	*	*	*	L	*	*	*	*	*	*	CR	LF
or	*	*	*	*	*	*	*	L	L	*	*	*	*	*	CR	LF
or	*	*	*	*	*	*	*	C	*	*	*	*	*	*	CR	LF

- \*: Space
- -: Final readout
- H: Overload
- HH: Overload in checkweighing
- L: Underweight
- LL: Underweight in checkweighing
- C: Adjustment

**Error Message**

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	U	r	r	*	*	#	#	*	*	*	*	CR	LF
	*	*	*	U	r	r	*	*	#	#	#	*	*	*	CR	LF
*:	Space															
#:	Error code number (2 or 3 digits)															

**Example:** Output weight value of +1255.7 g

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	*	*	1	2	5	5	.	7	*	g	*	*	CR	LF

Position 1: Plus +, or minus - or space

Position 2: Space

Positions 3-10: Weight value with decimal point. leading zeros are output as spaces.

Position 11: Space

Positions 12-14: Characters for unit of measure, space, or ! sign as a symbol

Position 15: Carriage return

Position 16: Line feed

## Data Output Format with 22 Characters

### Normal Operation

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
l	l	l	l	l	l	+	D	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF	
l	l	l	l	l	l	-	D	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF

l: ID code character, right-justified with spaces

+ -: Plus or minus sign

\*: Space

D: Digit or letter (max. 7 characters plus decimal point)

U: Unit symbol (1 to 3 letters followed by 2-0 spaces)

CR: Carriage return

LF: Line feed

### Special Outputs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	*	*	*	*	*	-	-	*	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	*	*	*	*	H	*	*	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	*	*	*	*	H	H	*	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	*	*	*	*	L	*	*	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	*	*	*	*	L	L	*	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	*	*	*	*	C	*	*	*	*	*	*	CR	LF

\*: Space

--: Final readout

H: Overload

HH: Overload in checkweighing

L: Underweight

LL: Underweight in checkweighing

C: Adjustment

**Error Message**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	U	r	r	*	*	#	#	*	*	**	CR	LF		
S	t	a	t	*	*	*	*	U	r	r	*	#	#	#	*	*	**	CR	LF		

\*: Space

#: Error code number (2 or 3 digits)

<b>G#</b>	Gross value
<b>N</b>	Net value
<b>T</b>	Application tare memory 1
<b>T2</b>	Application tare memory 2
<b>Diff</b>	Difference from adjustment value
<b>Targ.</b>	Exact adjustment weight value
<b>Nom.</b>	Exact adjustment weight for SBI printout
<b>nRef</b>	Reference sample quantity
<b>pRef</b>	Percentage of reference
<b>wRef</b>	Reference piece weight
<b>Qnt</b>	Result from "Counting" (piece count) and "Neutral Measurement" applications
<b>mDef</b>	Target value for animal weighing
<b>x-Net</b>	Animal weighing results
<b>Setp</b>	Target value for checkweighing
<b>Diff.W</b>	Absolute difference (e.g., in kg) in Checkweighing
<b>Lim</b>	Deviation in % in Checkweighing
<b>Max</b>	Upper tolerance for checkw.
<b>Min</b>	Min. tolerance for checkw. <b>Stat</b> Status
<b>Classx</b>	Classification
<b>Limx</b>	Class limit
<b>D</b>	Percentage (as loss)
<b>Prc</b>	Percentage (as residue)
<b>Wxx%</b>	Reference percentage weight
<b>Cmpxxx</b>	Component xxx
<b>Cont.T</b>	Contents of the tare memory in Net-total Formulation
<b>S-Comp</b>	Total of initial weighings for Net-total Formulation
<b>PT2</b>	Preset tare
<b>n</b>	Transaction counter
<b>*G</b>	Sum of gross weights in Totalizing
<b>*N</b>	Sum of net weights in Totalizing
<b>Ser.no</b>	Serial number of the platform or indicator

**Example:** Output of the weight value +1255.7 g

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
G	#	*	*	*	*	+	*	*	*	1	2	5	5	.	7	*	g	*	*	CR	LF

Positions 1-6: ID code, right-justified with spaces

Position 7: Plus +, or minus - or space

Position 8: Space

Positions 9-16: Weight value with decimal point. leading zeros are output as spaces (a comma can also be set instead of a decimal point, menu item 7.17)

Position 17: Space

Positions 18-20: Characters for unit of measure, space, or ! sign as a symbol

Position 21: Carriage return

Position 22: Line feed



If the weight value is output with 10-fold increased resolution, this value is not permitted to be printed or saved in a weighing instrument operated in legal metrology in the SBI mode. In this case, the unit symbol is not included with output.

## Configuring the Data Interface as a Printer Port (*PRINTER*)

You can connect one or two strip printers or one or two label printers to the Combics. Configure the COM1 and UniCOM interfaces as printer ports in the *PRINTER* menu item.

There are several actions that generate the command for outputting data to the printer port:

- Pressing the  key. If the operating menu is active, all menu settings under the active menu level are printed.
- Upon receipt of the "ESC KP \_" SBI command.  
For details, see the section entitled "Data Input Format" in this chapter.
- In some applications, pressing a given key (e.g., to save a value or start a routine) also generates a print command. In this case, a configurable printout is generated with application-specific data.

The  and  symbols are displayed when data is being output to the printer port.

## Configuring a Printout

Printouts are configured in the *SETUP* menu under “Printouts” (*SETUP / PRINT / PROTOC.*). This should be carried out **after** configuring the application since some data in the printout is application-dependent.

You can configure a separate printout for each interface. Each printout is comprised of different information blocks that can be activated or deactivated via multiple selection in the menu.

For the “Totalizing” and “Net-total Formulation” applications, the totalizing/results printout can be configured independent of the individual/component printout.

### Headers

2 headers each with a max. of 20 characters are available (e.g., for printing the company name).

Input: menu items 7.4.1 and 7.4.2. Empty headers are not printed.

**Example** Print image:

```
EISENSCHMIDT
GOETTINGEN
```

In this example, the company name is printed centered because there are 4 and 5 spaces before the text.

## GMP-Compliant Printouts

When this function, the printout is supplemented with a GMP header and a GMP footer (GMP: “Good Manufacturing Practice”).

Setting: menu item 7.13.

The GMP header precedes the first measured result. The GMP footer is printed either after each individual measurement result (“GMP-compliant printout always for 1 result”, 7.13.2) or after the last result in a series of measurements (“GMP-compliant printout always for several application results,” menu item 7.13.3). To end a series of measured results, press and hold the  $\boxed{E}$  key. In this case, the  $\boxed{E}$  symbol is displayed after the GMP header is printed and remains in the display until the GMP footer is printed.

If you toggle to a different platform while a GMP printout of several measured results is being generated (7.13.3), the GMP footer for the platform used up to that point is generated when you press the  $\boxed{AVA}$  key. The GMP header for the other platform is included on the next printout generated.

A GMP-compliant printout is generated automatically at the conclusion of calibration/adjustment, linearization routines, as well as when you set or clear a preload.

When printing GMP-compliant printouts on label printers under menu setting 7.13.3, the relationship between the GMP header and footer is lost (printed on different labels). GMP-compliant printouts on label printers, therefore, should only take place using menu setting 7.13.2. Three examples of GMP headers and one example of a footer are shown in the following.

**Weighing platform WP 1:**

```

----- Dash line
14.01.2016    09:43  Date/time
Type          CAIXS2  Combics Type
Ser.no.       12345678  Combics serial no.
Vers.  C2  100.280810  Software version Application
BVers.        01-62-03  Software version Basic software
Ser.no.   A 12345678  Scales serial no.
----- Dash line

```

**Weighing platform WP 2 (xBPI printout):**

```

----- Dash line
14.01.2016    9:45 AM  Date/time
Type          CAIXS2  Combics Type
Ser.no.       12345678  Combics serial no.
Vers.  C2  100.280810  Software version Application
BVers.        01-62-03  Software version Basic software
Type          IS12000S  Platform type
Ser.No    D 12345678  Platform serial no.
----- Dash line

```

**Weighing platform WP 2 (SBI printout):**

```

----- Dash line
14.01.2016    9:45 AM  Date/time
Type          CAIXS2  Combics Type
Ser.no.       12345678  Combics serial no.
Vers.  C2  100.280810  Software version Application
BVers.        01-62-03  Software version of basic version

Type          SBI  (Platform type)
----- Dash line

```

**GMP footer:**

```

----- Dash line
14.01.2016    9:45 AM  Date/time
Name:          Field for signature
               Blank line
----- Dash line

```

## Sample Printouts

For details on the individual information blocks, see “Configuring Printouts” above. For details on configuring the header lines, refer to the chapter of the respective application.

### “Weighing” application:

If selected, an empty line will be printed.

```

                HEADER LINE1
                HEADER LINE2
1/14/2016      9:43 AM
-----

G#      +      1.402 kg
T       +      0.200 kg
N       +      1.202 kg
-----

```

Display with ID of weighing platform

```

-----

Ser.no.      80705337

G#      +      1.402 kg
T       +      0.200 kg
N       +      1.202 kg
-----

```

### “Counting” application:

The initialization data contains the reference sample quantity and the reference sample weight. The results data contains gross, net and tare weight and the piece count as a result.

```

-----

nRef          10 pcs
wRef +        0.035 kg

G#      +      1.402 kg
T       +      0.212 kg
N       +      1.190 kg

Qnt          34 pcs
-----

```

**"Neutral Measurement" Application:**

The initialization data block contains the reference sample quantity and reference weight. The results block contains gross, net and tare weight and the piece count as a result.

```

-----
Ref          2 o
wRef +      1.200 kg

G# +       14.700 kg
T +        0.300 kg
N +       14.400 kg

Qnt          12 o
-----

```

**"Weighing in Percent" Application:**

The initialization data contains the reference percentage and the reference sample weight. The results data shows gross, net and tare weights, as well as the percentage, which is shown as either the loss or the residual amount.

Percentage = residual

```

-----
pRef          100 %
Wxx% +       2.100 kg

G# +         1.859 kg
T +          0.200 kg
N +         1.659 kg

Prc           79 %
-----

```

Percentage = loss:

```

-----
pRef          100 %
Wxx% +       2.100 kg

G# +         0.641 kg
T +          0.200 kg
N +         0.441 kg

D            21 %
-----

```

**"Checkweighing" Application:**

The initialization data contains the target weight, the min. weight, and the max. weight. The results data always contains the gross, net and tare weight. Additional results can be printed in 2 different display types:

– Weight display:

In the OK and nonconforming range, the deviation from the target weight is always printed as a percentage and absolute deviation.

– Relation to target value:

In the OK range, the deviation from the target weight is printed as a percentage and absolute deviation.

In the nonconforming range, "HH" is printed for exceeding the weight and "LL" for falling below the weight.

OK range in the weight and tolerance limit display.

```

-----
Setp +       1.300 kg
Min +       1.235 kg
Max +       1.365 kg

G# +       1.312 kg
T +        0.000 kg
N +       1.312 kg

Lim +        0.92 %
Diff.W+     0.012 kg
-----

```

Result outside (over) "OK" range; "Threshold" printout:

```

-----
Setp +       1.300 kg
Min +       1.235 kg
Max +       1.365 kg

G# +       1.400 kg
T +        0.000 kg
N +       1.400 kg

Stat        HH
-----

```

Example with 2 transactions:

```

HEADER LINE1
HEADER LINE2
1/14/2016    9:43 AM
-----
G#   +    1.400 kg
T    +    0.200 kg
N    +    1.200 kg
n                    1
    
```

```

G#   +    3.400 kg
T    +    0.200 kg
N    +    3.200 kg
n                    2
    
```

Single printout (menu setting 3.17.2).

Complete standard printout configuration is printed for each transaction.

Example: print 2nd transaction

```

HEADER LINE1
HEADER LINE2
1/14/2016    9:43 AM
-----
G#   +    2.400 kg
T    +    0.200 kg
N    +    2.200 kg
n                    2
    
```

Standard printout

The transaction counter is not printed.

Example: print 2nd transaction

```

G#   +    2.400 kg
T    +    0.200 kg
N    +    2.200 kg
    
```

Print menu parameters:

All active sub-items of the currently displayed menu are printed:

```

-----
MENU
      SETUP
WP1
-----
  1
  1.1
      1.1.2
      1.2.1
1.3.2
...
  1.18
  1.18.1
    CAL.
      10.000 kg
etc.
    
```

**GMP-Compliant Printouts**

"Linearization" printout

```

-----
1/14/2016    1:00 PM
Type          CAIXS2
Ser.no.       12345678
Vers.  C2  100.280810
BVers.       01-62-03
Ser.no.  A  12345678
    
```

Linearization

```

Wt.1 +    7.00 kg
Wt.2 +   15.00 kg
Wt.3 +   22.00 kg
Wt.4 +   30.00 kg
      completed
    
```

```

-----
1/14/2016    1:02 PM
Name:
    
```

Calibration/adjustment printout

```

-----
1/14/2016    1:50 PM
Type          CAIXS2
Ser.no.       12345678
Vers.  C2  100.280810
BVers.       01-62-03
Ser.no.  A  12345678
    
```

External calibration

```

Targ. +   30.00 kg
Diff.  -    0.03 kg
External adjustment
Diff.  +    0.00 kg
    
```

```

-----
1/14/2016    1:52 PM
Name:
    
```

Setting the preload printout

```

-----
1/14/2016    1:50 PM
Type          CAIXS2
Ser.no.       12345678
Vers.  C2  100.280810
BVers.       01-62-03
Ser.no.  A  12345678
    
```

Set preload

completed

```

-----
1/14/2016    1:52 PM
Name:
    
```

Clearing the preload printout

```

-----
1/14/2016    1:50 PM
Type          CAIXS2
Ser.no.       12345678
Vers.  C2  100.280810
BVers.       01-62-03
Ser.no.  A  12345678
    
```

Clearing the preload completed

```

-----
1/14/2016    1:52 PM
Name:
    
```

Weighing printout with multiple results

(Example: 2 results):

```

-----
1/14/2016    9:43 AM
Type          CAIXS2
Ser.no.       12345678
Vers.  C2  100.280810
BVers.       01-62-03
Ser.no.  A  12345678
    
```

```

HEADER LINE1
HEADER LINE2
1/14/2016    9:43 AM
-----
G#   +    2.40 kg
T    +    0.20 kg
N    +    2.20 kg
    
```

```

HEADER LINE1
HEADER LINE2
1/14/2016    9:44 AM
-----
G#   +    3.40 kg
T    +    0.30 kg
N    +    3.10 kg
    
```

```

-----
1/14/2016    9:45 AM
Name:
    
```

## Error Codes

Errors are divided into the following:

- Dynamic errors are displayed for the duration of the error with an error code (e.g. *INF 01*).
- Temporary errors are displayed for 2 seconds (e.g. *INF 07*).
- Fatal errors are displayed continuously (e.g. *ERR 101*; a reset is required to clear these).

Display	Cause	Remedy
No display segments	No power present	Check power supply
-----	Key has no function in this status	
Flashing <b>Δ</b>	Battery defective or time changed	Set time
H	Weighing range exceeded	Unload the balance
L or <i>ERR 54</i>	Weighing pan is not in place	Position the weighing pan
<i>ERR 101</i> □ <i>104</i>	Key is stuck Key pressed when switching on	Release key or contact your local Minebea Intec Service Center
<i>ERR 320</i>	Operating program memory faulty	Contact your local Minebea Intec Service Center
<i>ERR 335</i>	Verified weighing platform not compatible with the connected terminal	Connect a compatible weighing platform
<i>ERR 340</i>	New EEPROM loaded (Service)	Turn the scale off and then on again. If the error code Err340 is still displayed, please contact your local Minebea Intec Service Center
<i>ERR 341</i>	RAM has lost data; battery is dead	Leave the scale connected to power for at least 10 hours
<i>INF 01</i>	Data output not compatible with output format	Set output format correctly
<i>INF 02</i>	Adjustment condition was not maintained e.g., not tared or weighing pan loaded	Calibrate only when zero is displayed Unload the scale, press <b>→T←</b> key to tare
<i>INF 03</i>	Adjustment could not be completed within a certain time.	Allow to warm up again and repeat the adjustment process
<i>INF 06</i>	Built-in adjustment weight defective	Contact your local Minebea Intec Service Center
<i>INF 07</i>	Function not allowed in scales verified for use in legal metrology	Contact your local Minebea Intec Service Center
<i>INF 08</i>	The load on the scale is too heavy to zero the readout	Check whether “Tare/zero at power on” (1.12) is set
<i>INF 09</i>	Taring is not possible when the scale gross weight is zero	Zero the scale
<i>INF 10</i>	Tare key is blocked when there is data in the tare memory	The application program data must be deleted before taring
<i>INF 18</i>	Preload is too light	
<i>INF 19</i>	Preload is too heavy	
<i>INF 29</i>	Minimum load not reached	Reduce min. load (under Application, menu item 3.6)
<i>INF 30</i>	BPI ID (BPI byte) not deleted in current weighing platform (COM1 is fixed on XBPI data communication)	Contact Minebea Intec Customer Service
<i>INF 31</i>	Interface handshake activated (XOFF, CTS)	Send XON, unblock CTS
<i>INF 71</i>	Cannot store the current weight value (e.g., control limits too low or too high)	None
<i>INF 72</i>	Cannot store the current weight value (e.g., the transaction counter has reached its limit)	None
<i>INF 73</i>	Data cannot be written or read	Contact your local Minebea Intec Service Center
<i>INF 74</i>	Function is blocked (e.g., menu is locked, device is already configured to another interface)	None
<i>NO WP</i>	No weighing platform connected	Connect weighing platform

# Care and Maintenance

## Service

Regular servicing by a Minebea Intec technician will extend the service life of your equipment and ensure its continued weighing accuracy. Minebea Intec offers its customers service contracts with regular maintenance intervals ranging from one month to two years. The frequency of the maintenance intervals depends on the operating conditions and the operator's tolerance requirements.

## Repairs



Disconnect the power supply to the defective equipment immediately (unplug the power cord from the mains supply). Repair work must be performed by authorized Minebea Intec service technicians using original spare parts. Repairs performed by untrained persons may result in considerable hazards for the user.



If a cable or cable gland is damaged or defective, replace the cable as a complete unit with all its connectors.



Do not open the indicator while it is carrying current. Wait at least 10 seconds after disconnecting it from power before beginning to open the equipment. Proper fitting of all surfaces is essential for the IP rating of the housing; for this reason the device must be opened and closed by a certified technician.

## Cleaning

Indicators are designed in compliance with European Hygienic Equipment Design Group (EHEDG) directives on suitable measures to avoid contamination, so that they are particularly easy to clean and disinfect.



Disconnect the power supply to the indicator. If necessary, disconnect the data cable.



Make sure that no liquid enters the indicator.



Do not use aggressive cleaning agents (solvents or similar agents).



Do not spray the device with water or blow with compressed air.

- ▶ Clean the indicator with a cloth lightly moistened with a soap solution. For use in the food industry, use a cleaning agent suitable for that particular working environment.
- ▶ Wipe the indicator with a soft, dry cloth.

## Cleaning the Stainless Steel Surfaces

- Only use conventional household cleaning agents that are suitable for stainless steel.
- Only use solvents for cleaning stainless steel parts.
- ▶ All stainless steel parts should be cleaned at regular intervals: Rub stainless steel surfaces with a moist cloth, with a cleaning agent if required, then remove all residue from the surface.
- ▶ Allow device to dry. For additional protection, protective oil may be applied.

## Replacing the Dust Cover

Damaged dust covers should be replaced immediately.

- ▶ Remove damaged dust cover.
- ▶ Place the new dust cover on the indicator and press it over the edge of the front and rear side of the device until it is fixed in place.

## Safety Inspections

Safe operation of the device is no longer ensured when:

- there is visible damage to the device or power cord
- the device has been stored for a relatively long period under unfavorable conditions (e.g. excessive humidity)

If there is any indication that safe operation of the device is no longer warranted:

- ▶ Disconnect the power supply to the device and make sure the device cannot be used for the time being.
- ▶ Notify your nearest Minebea Intec Service Center.

Maintenance and repair work may only be carried out by service technicians:

- who have access to the required maintenance manuals
- and
- who have attended the appropriate training workshops.



The seals on the device indicate that the device may only be opened and maintained by authorized specialist personnel, so that the correct and safe operation of the device is ensured and the guarantee remains valid.

# Disposal

If the packaging is no longer needed, it can be disposed of by local waste disposal authorities. The packaging is made of environmentally friendly materials that can be used as secondary raw materials. If you no longer require the packaging, you can dispose of it free of charge in Germany through the Vfw dual system (contract number D-59101-2009-1129). In Germany, you can dispose of this material using the Vfw dual system (contract number D-59101-2009-1129).

The equipment, including accessories and batteries, should not be disposed of as regular household waste.

EU legislation requires its Member States to collect electrical and electronic equipment and dispose of it separately from other unsorted municipal waste so that it may be recycled.

In Germany and several other countries, Minebea Intec itself assumes responsibility for the return and conformant disposal of its electronic and electrical products. Such equipment may not be thrown out with household waste or brought to collection centers run by local public disposal operations – not even by small commercial operators. For disposal in Germany and in the other member nations of the European Economic Area (EEA), please contact our local service technicians or our Service Center in Bovenden:

Minebea Intec Bovenden GmbH & Co. KG  
Leinetal 2  
37120 Bovenden, Germany

WEEE-Reg.-Nr. DE58091735

In countries that are not members of the European Economic Area (EEA) or where no Minebea Intec subsidiaries or dealerships are located, please contact your local authorities or a commercial disposal operator.

Prior to disposal and/or scrapping of the equipment, any batteries should be removed and disposed of at local collection points.

Minebea Intec will not take back equipment contaminated with hazardous materials (ABC contamination) – either for repair or disposal. Please refer to our website ([www.Minebea-intec.com](http://www.Minebea-intec.com)) or contact the Minebea Intec Service Department for more detailed information regarding repair service addresses or the disposal of your device.

# Specifications

## ADC Scale Interface

When used in standard applications (as opposed to legal metrology):	
- Display resolution	≤ 62500 d
Using the Equipment in Legal Metrology:	
Accuracy class	III III
Verification scale intervals when used as:	
- Single-range scale	≤ 6250e 1000
- Multiple-range scale	≤ 3125e 1000
- Multi-interval scale	≤ 3125e 1000
- Multi-interval scale Max/e	≤ 15625e 9375
Load cell connection:	
- Supply voltage	2,5 V
- Bridge impedance	83 Ω to 2000 Ω
- Available sensor technology	4-conductor or 6-conductor technology
When used in legal metrology:	
- Available sensor technology	6-conductor technology
- Max. cable length per gage	150 m/mm <sup>2</sup>
- Lowest permissible input signal for Pind = 0,5	0.2 μV/e
- Fraction of tolerance for this module: for Delta U <sub>min</sub> 0.2 μV/e	0.5
Measurement signal	0 mV to 7.5 mV
“Lowest permissible input signal when used in non-legal metrology”:	0.02 μV/d
Measurement signal for dead load	0 mV to 2.5 mV
Sensitivity	4 million digits max. (internal)
Digital protective interface	According to EN 45501
Data interface	Bidirectional intrinsically safe RS-232 interface “COM 1” with intrinsically safe control outputs (digital I/Os) for connection to suitable intrinsically safe equipment. Alternatives: Bidirectional intrinsically safe RS-422 interface “COM 1” or bidirectional intrinsically safe RS-485 interface “COM 1” with intrinsically safe control outputs (digital I/Os).
Additional data interface:	Optional UniCom RS232 / RS485
Display	20 mm LCD, 14-segment plus status symbols, backlit
Housing: - Material	Stainless steel 1.4301
- Protection class according to EN 60529	IP69K
Temperature range	Storage temperature -20°C to +60°C, operating temperature -10°C to +40°C
Power supply	Only via suitable and where applicable country-specific EX power supply provided by Minebea Intec model YPS02-X.. / YPS02-Z.. / YPSC01-X / YPSC01-Z: 100-240Vac (± 10%), 50/60Hz; max. 25VA or 40-80VA with YPSC01- or via Ex battery pack YRB02-X
Explosion protection	See EC Type Examination Certificate in the Appendix
Emissions	In accordance with IEC61326-1: Class A
Defined immunity to interference	In accordance with IEC61326-1: Industrial areas



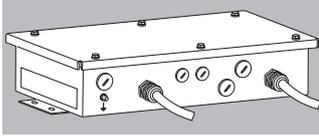
## Accessories

Item	Order No.
RS-232 interface for digital platform (A16)	YD007-X
Cable to connect interface converter YDI05-Z to indicator CAIXS2, open cable end for installation on indicator using cable gland, 14-pin round connector, IP65, 0.2 m	YCC02-XR14F02
Cable to connect platform to indicator CAIXS2, open cable ends for installation on indicator using cable gland, 14-pin round connector, IP65, 6 m (RS-232, RS-485)	YCC02-XR14M6
Non-prefabricated cable LiY6x(2x0,14C)Y sheath color blue; recommended e.g. for RS-422 interfaces, digital IN, 1 m = 1 unit	YCC422-X
Non-prefabricated cable 2x0,22 LiYCY sheath color blue; recommended e.g. for interface RS-485, 1 m = 1 unit	YCC485-X
Round plug for individual cable assembly, 14-pin, IP65	69Y03166
Cable gland for cables with diameter 4.5 to 9 mm, IP67, M16 x 1.5	YAS04CIS-X
Interface converter made of stainless steel for installation in non-hazardous area, for connection of peripheral devices in non-hazardous area, in version RS-232-RS-232 or RS-422-RS-232	YDI05-Z
2 dust covers for CAIXS2	YDC01CI-X
Kit for panel mounting	YAS07CI

## Power Supply

### Item

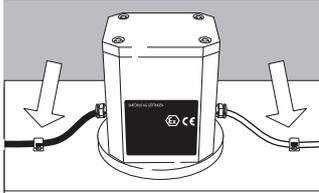
### Order No.



AC adapter, for use in explosive atmospheres  
100–240 V 14-pin round plug (30 cm)

ATEX

YPSC01-X



AC adapter outside explosive atmospheres  
100–240 V range

ATEX

USA/Canada

YPSC01-Z

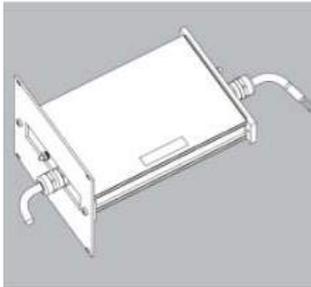
YPS02-ZKR



AC adapter outside explosive atmospheres 24 V

ATEX

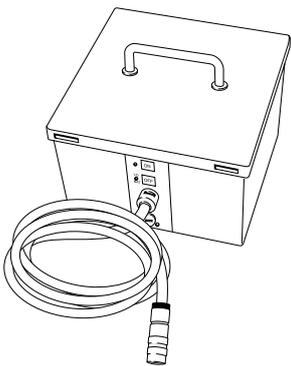
YPS02-XV24



External battery for installation in explosive area

YRB02-X

USA/Canada



### Configuration example



## **“Installation”, a Service Offered by Minebea Intec**

### **“Installation” Service in Germany**

Our “Installation” service package provides the following services:

- Installation
- Commissioning
- Inspection
- Training

If you would like Minebea Intec to install the indicator, please request this service from a customer service employee.

## **Minebea Intec Services**

### **“Installation” service in Germany**

Our “Installation” service package provides a range of important services that guarantee satisfactory work from your device:

- Installation
- Commissioning
- Inspection
- Instruction

You can request these services from our customer service using the “Installation Check No. 2” in the included warranty and service check folder.

### **Re-verification in Germany**

Scale verification for legal metrology is valid until the end of the calendar year after next. If the scale is used for fill level control in accordance with legislation on prepackaging, verification is valid until the end of the following calendar year.

Re-verification must currently be carried out by a weights and measures official.

Re-verification should be requested in good time from the local Weights and Measures office. As appropriate, please observe all statutory amendments.

### **Subsequent Verifications within European Countries**

The expiration date of the verification depends on the national regulations of the country in which the weighing instrument is used. For information on verification and legal regulations currently applicable in your country, and to obtain the names of the persons to contact, please contact your local Minebea Intec office, dealer, or Service Center.

Further information concerning verification can be obtained from our customer service centers.

# Menu Structure

**Overview of the complete menu structure;** the individual setting parameters are listed on the following pages. The indicator only displays the menus that correspond to the available hardware.

<i>APPLIC.</i>	<b>Set and select applications</b> (see page 137)
- <i>APPLIC.1</i>	Basic weighing function, Counting applications $\clubsuit$ , Neutral measurement $\clubsuit$ nM, Animal weighing $\clubsuit$ , Weighing in percent %
- <i>APPLIC.2</i>	Checkweighing +/-, Classification $\clubsuit$ applications
- <i>APPLIC.3</i>	Net-total formulation $\clubsuit$ , Totalizing $\Sigma$ applications
- <i>AUT.TARE</i>	Automatic taring: 1. weight tared
- <i>MIN.TARE</i>	Minimum load for automatic tare and printout
- <i>AUT.START</i>	Automatic start of application
- <i>CLER.CF</i>	Selective deleting with the $\square$ key
- <i>TARE.FCT</i>	Tare function
- <i>RESET</i>	Factory settings for all applications
<i>FN-KEY</i>	<b>Defines functions of the <math>\square</math> key</b> (see page 141)
- <i>OFF</i>	
- <i>2ND.UNIT</i>	
<i>SETUP</i>	<b>Adjusts device settings to user requirements</b> (see page 141)
- <i>WP1</i>	Settings for weighing platform 1
- <i>COM1</i>	Settings for the RS-232 interface
- <i>UNICOM</i>	Settings for the second optional interface
- <i>CTRL.ID</i>	Universal input setting
- <i>PRINT</i>	Printout settings
- <i>UTILIT.</i>	Settings for additional functions
- <i>TIME</i>	Time setting
- <i>DATE</i>	Date setting
- <i>U-CODE</i>	User password entry for locking the Setup menu
- <i>S-DATE</i>	only visible in Service mode; applications
- <i>SER.NO.</i>	only visible in Service mode; serial number
- <i>MODEL</i>	only visible in Service mode; serial number
- <i>SDMIN</i>	Activates display or GMP-compliant printout, only visible in service mode
- <i>ALIB.MEM</i>	
<i>INFO</i>	<b>Displays device-specific information</b> (see page 151)
- <i>SERVICE</i>	Service date
- <i>TERM</i>	Indicator serial number
- <i>WP-1</i>	Weighing platform 1 device data
- <i>WP-2</i>	Weighing platform 2 device data
- <i>FLEXINF</i>	FlexPrint settings
<i>LANGUAG.</i>	<b>Language setting for display and printout</b> (see page 151)
- <i>DEUTSCH</i>	
- <i>ENGLISH</i>	
- <i>US.MODE</i>	
- <i>FRANC</i>	
- <i>ITAL</i>	
- <i>ESPAÑOL</i>	
- <i>CODES</i>	
<i>ADC.CON</i>	<b>ADC configuration settings</b> (see page 152)
- <i>VERIF.</i>	
- <i>STANDARD</i>	

## Menu Applications

### APPLIC./APPLIC.1 WEIGH. Weighing

### APPLIC./APPLIC.1/ COUNT. Counting<sup>1</sup>

<i>MIN.INIT</i>	Minimum load for application	3.6
1 <i>DIGIT</i>	1 scale interval	3.6.1*
2 <i>DIGIT</i>	2 scale intervals	3.6.2
...	see " <i>MIN.TARE</i> "	
1000 <i>D</i>	1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
<i>DISP.ACC.</i>	Display accuracy	3.9.1*
10 <i>FOLD</i>	plus 1 decimal place (10 fold)	3.9.2
100 <i>FOLD</i>	plus 2 decimal places (100 fold)	3.9.3
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
<i>STABIL</i>	With stability*	3.11.1
<i>ACC.STAB</i>	With increased stability*	3.11.2
<i>REF.UPDT</i>	Reference sample updating	3.12
<i>OFF</i>	Off	3.12.1
<i>AUTOMAT</i>	Automatic	3.12.3*
<i>REF.WP</i>	Reference weighing instrument	3.13
<i>NOWP</i>	No weighing platform selected	3.13.1*
<i>WP 1</i>	Weighing platform 1	3.13.2
<i>WP 2</i>	Weighing platform 2	3.13.3

### APPLIC./APPLIC.1 NEUTR.M Neutral Measurement

<i>MIN.INIT</i>	Minimum load for application	3.6
1 <i>DIGIT</i>	1 scale interval	3.6.1*
2 <i>DIGIT</i>	2 scale intervals	3.6.2
...	see " <i>MIN.TARE</i> "	
1000 <i>D</i>	1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
<i>DISP.ACC.</i>	Display accuracy	3.9.1*
10 <i>FOLD</i>	plus 1 decimal place (10 fold)	3.9.2
100 <i>FOLD</i>	plus 2 decimal places (100 fold)	3.9.3
<i>DEC.PLCS</i>	Decimal place in displayed result	3.10
<i>WITHOUT</i>	none	3.10.1
1 <i>DEC.PL</i>	1 decimal place	3.10.2
2 <i>DEC.PL</i>	2 decimal places	3.10.3
3 <i>DEC.PL</i>	3 decimal places	3.10.4
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
<i>STABIL</i>	With stability*	3.11.1
<i>ACC.STAB</i>	With increased stability*	3.11.2
<i>REF.WP</i>	Reference weighing instrument	3.13
<i>NOWP</i>	No weighing platform selected	3.13.1*
<i>WP 1</i>	Weighing platform 1	3.13.2
<i>WP 2</i>	Weighing platform 2	3.13.3

\* = Factory setting

<sup>1</sup> = Not available using NTEP or Canadian approval

APPLIC./ APPLIC.1 ANIM.WG.

### Animal Weighing (Averaging)

<i>MIN.INIT</i>	Minimum load for application	3.6
1 <i>DIGIT</i>	1 scale interval	3.6.1*
2 <i>DIGIT</i>	2 scale intervals	3.6.2
...	see "MIN.TARE"	
1000 <i>D</i>	1000 scale intervals	3.6.10
<i>START</i>	Start averaging	3.18
<i>MANUAL</i>	manual	3.18.1*
<i>AUTOMAT</i>	automatic	3.18.2*
<i>ACTIVITY</i>	Animal activity	3.19
0.1 <i>PERC.</i>	0.1% of animal/object	3.19.1
0.2 <i>PERC.</i>	0.2% of animal/object	3.19.2*
0.5 <i>PERC.</i>	0.5% of animal/object	3.19.3
1 <i>PERC.</i>	1% of animal/object	3.19.4
2 <i>PERC.</i>	2% of animal/object	3.19.5
5 <i>PERC.</i>	5% of animal/object	3.19.6
10 <i>PERC.</i>	10% of animal/object	3.19.7
20 <i>PERC.</i>	20% of animal/object	3.19.8
50 <i>PERC.</i>	50% of animal/object	3.19.9
100 <i>PERC.</i>	100% of animal/object	3.19.10
<i>PRINT</i>	Automatic printout	3.20
<i>MANUAL</i>	manual	3.20.1*
<i>AUTOMAT</i>	automatic	3.20.2*
<i>DIS.UNL D</i>	Static display of result after load removed	3.21
<i>CLEAR D</i>	Display is fixed until unload threshold reached	3.21.1*
<i>PRESENT</i>	fixed display until <input type="checkbox"/> CF is pressed	3.21.2

APPLIC./ APPLIC.1 PERCENT Weighing in Percent

<i>MIN.INIT</i>	Minimum load for application	3.6
1 <i>DIGIT</i>	1 scale interval	3.6.1*
2 <i>DIGIT</i>	2 scale intervals	3.6.2
...	see "MIN.TARE"	
1000 <i>D</i>	1000 scale intervals	3.6.10
<i>RESOLUT</i>	Resolution for calculation of reference value	3.9
<i>DISP.ACC.</i>	Display accuracy	3.9.1*
10 <i>FOLD</i>	plus 1 decimal place (10 fold)	3.9.2
100 <i>FOLD</i>	plus 2 decimal places (100 fold)	3.9.3
<i>DEC.PLCS</i>	Decimal place in displayed result	3.10
<i>WITHOUT</i>	none	3.10.1
1 <i>DEC.PL.</i>	1 decimal place	3.10.2
2 <i>DEC.PL.</i>	2 decimal places	3.10.3
3 <i>DEC.PL.</i>	3 decimal places	3.10.4
<i>SAVE.WT.</i>	Parameter for saving weight values	3.11
<i>STABIL</i>	With stability*	3.11.1
<i>ACC.STAB</i>	With increased stability*	3.11.2
<i>REF.WP</i>	Reference weighing instrument	3.13
<i>NO WP</i>	No weighing platform selected	3.13.1*
<i>WP 1</i>	Weighing platform 1	3.13.2
<i>WP 2</i>	Weighing platform 2	3.13.3
<i>CALC.DIS</i>	Calculated values display	3.15
<i>RESIDUE</i>	Residue	3.15.1*
<i>LOSS</i>	Calculation	3.15.2

APPLIC./ APPLIC.2 OFF

<i>APPLIC./APPLIC.2</i>	<i>CHECK.WG</i>	<b>Checkweighing</b>	
	<i>CHECK.RG</i>	Checkweighing range	4.2
		30-170%	4.2.1*
		10-MAX.L	4.2.2
	<i>CTRL.SET</i>	Activate SET control output	4.3
		<i>OUTPUT</i>	"SET" output
		<i>OP.READY</i>	Ready to operate (for process control systems)
	<i>OUTP.ACT</i>	Port lines	4.4
		<i>OFF</i>	off
		<i>ALWAYS</i>	always
		<i>STABIL</i>	on at stability
		<i>CHECK.RG</i>	on within checkweighing range
		<i>STAB.CHK</i>	On at stability within checkweighing range
	<i>INPUT</i>	Parameter input	4.5
		<i>TAR.MIN.MX</i>	Min, Max, target value
		<i>TARG.PER.</i>	Only target value with percent limits
		<i>TAR.A.PER</i>	Target value with asymmetrical percent limits
		<i>TAR.TOL</i>	Target value with relative tolerances
	<i>AUT.PRNT</i>	Automatic printing	4.6
		<i>OFF</i>	off
		<i>ON</i>	on
		<i>OK</i>	Only values within tolerance
		<i>NOT OK</i>	Only values outside tolerance
	<i>APP.ZERO</i>	Checkweighing toward zero	4.7
		<i>OFF</i>	off
		<i>ON</i>	on (Symbol  is displayed)

<i>APPLIC./APPLIC.2</i>	<i>CLASS.</i>	<b>Classification</b>	
	<i>PARAM.1</i>	Parameter 1	
	<i>MIN.INIT</i>	Minimum load for application	3.6
		1 DIGIT	1 scale interval
		2 DIGIT	2 scale intervals
		... see "MIN.TARE"	3.6.2
		1000 D	1000 scale intervals
			3.6.10
	<i>PARAM.2</i>	Parameter 2	
	<i>CTRL.SET</i>	Activate SET control output	4.3
		<i>OUTPUT</i>	"SET" output
		<i>OP.READY</i>	Ready to operate (for process control systems)
	<i>OUTP.ACT</i>	Port lines	4.7
		<i>OFF</i>	off
		<i>ALWAYS</i>	always
		<i>STABIL</i>	on at stability
	<i>QTY.</i>	Number of classes	4.8
		3 CLASS	3 classes
		5 CLASS	5 classes
	<i>INPUT</i>	Parameter input	4.9
		<i>WEIGHTS</i>	Weight values
		<i>PERC.TAG</i>	Percentage values
			4.9.2
	<i>PRINT</i>	Automatic printing	4.10
		<i>MANUAL</i>	manual
		<i>AUTOMAT</i>	automatic
			4.10.1*
			4.10.2*

*APPLIC.3* *OFF*

<i>APPLIC./APPLIC.3</i>	<i>NET.TOT.</i>	<b>Net-Total</b>	
	<i>MIN.INIT</i>	Minimum load for application	3.6
		1 DIGIT	1 scale interval
		2 DIGIT	2 scale intervals
		... see "MIN.TARE"	3.6.2
		1000 D	1000 scale intervals
			3.6.10
	<i>PRT.SAV.</i>	Individual/Component printout when saved	3.17
	<i>OFF</i>	Automatic printing off	3.17.1
		<i>EACH.TIM.</i>	Print the entire standard print configuration every time with the  key function
			3.17.2*
		<i>ONCE</i>	Print the entire standard print configuration once with the  key
			3.17.3

\* = Factory setting

<i>APPLIC./APPLIC.3/TOTALIZ</i>	<b>Totalizing</b>		
	<i>MIN.INIT</i> Minimum load for application		3.6
	<i>1-DIGIT</i> 1 scale interval		3.6.1*
	<i>2-DIGIT</i> 2 scale intervals		3.6.2
	... see "MIN.TARE"		
	<i>1000-D</i> 1000 scale intervals		3.6.10
	<i>AUTO.SAV</i> Autosave		3.16
	<i>OFF</i> Off		3.16.1*
	<i>ON</i> On		3.16.2
	<i>PRT.SAV</i> Individual/Component printout when saved		3.17
	<i>OFF</i> Automatic printing off		3.17.1
	<i>EACH.TIM.</i> Print the entire standard print configuration every time with the <b>[OK]</b> key function		3.17.2*
	<i>ONCE</i> Print the entire standard print configuration once with the <b>[OK]</b> key		3.17.3
	<i>VAL.FROM</i> Value source for automatic saving		3.22
	<i>APPL.1</i> Application 1		3.22.1*
	<i>APPL.2</i> Application 2		3.22.2
	<i>SAV.VAL.</i> Save value		3.23
	<i>NET</i> Net		3.23.1*
	<i>CALCUL.</i> Calculation		3.23.2
	<i>NET+CAL</i> Net and calculated		3.23.3
<i>APPLICATION / AUT.TARE</i>	<b>Automatic taring</b>		
	<i>AUT.TARE</i> 1st Weight tared		3.7
	<i>OFF</i> Off		3.7.1*
	<i>ON</i> On		3.7.2
<i>APPLICATION/MIN.TARE</i>	<b>Minimum load for automatic taring and automatic printing</b>		
	<i>MIN.TARE</i> Minimum load for automatic taring and printing		3.5
	<i>1-DIGIT</i> 1 digit		3.5.1*
	<i>2-DIGIT</i> 2 digits		3.5.2
	<i>5-DIGIT</i> 5 digits		3.5.3
	<i>10-DIG.</i> 10 digits		3.5.4
	<i>20-DIG.</i> 20 digits		3.5.5
	<i>50-DIG.</i> 50 digits		3.5.6
	<i>100-DI.</i> 100 digits		3.5.7
	<i>200-DI.</i> 200 digits		3.5.8
	<i>500-DI.</i> 500 digits		3.5.9
	<i>1000-D</i> 1000 digits		3.5.10
	<i>APPLICATION / AUT.START</i>		For"On"
	<b>automatic start of application with the last saved initialization data</b>		
	<i>AUT.START</i> Automat. start of application with the last saved settings		3.8
	<i>AUTOMAT</i> Automatic (on)		3.8.1*
	<i>MANUAL</i> manual (off)		3.8.2
<i>APPLIC./CLER.CF</i>	<b>Selective deleting with the <b>[CF]</b> key</b>		
	<i>CLER.CF</i> Selective deleting with the <b>[CF]</b> key		3.24
	<i>ALL.APPL.</i> Deletes all applications		3.24.1*
	<i>SEL.APPL</i> Only deletes selected application		3.24.2
<i>APPLIC. / TARE.FNC</i>	<b>Tare function</b>		
	<i>TARE.FNC</i> Tare function settings		3.25
	<i>NORMAL</i> Can add a preset tare if tare value is available; however no tare function possible		3.25.1*
	<i>SPECIAL</i> When a preset tare is entered, the tare value is deleted; however, tare function activation is possible		3.25.2
<i>APPLIC. / RESET</i>	<b>Resets all applications to factory settings</b>		
	<i>RESET</i> Restore all applications to factory default settings		9.1
	<i>YES</i> Yes (restore factory settings)		9.1.1
	<i>NO</i> No (retain user-defined settings)		9.1.2*

\* = Factory setting

## Menu Key Assignment for the Key

*FN-KEY*

*OFF*  key not assigned  
*2ND UNIT* Display 2nd unit\*  
*SOMIN*

### Setup Menu (Device Settings)

*SETUP / WP-1 / RS-232*

Depending on the connected complete scale

*SBI-STDS / SBI.EICH / XBPI.232 / ADU-232*

*SETUP / WP-1 / RS-485*

Depending on the connected complete scale

*IS-485 / ADU-485*

*SETUP / WP-1 / INTERN.*

*PARAM. 1*

<i>AMBIENT</i>	Adapting the scale to ambient conditions (filter adjustment)	1.1
<i>V.STABLE</i>	very stable	1.1.1
<i>STABLE</i>	stable	1.1.2*
<i>UNSTABLE</i>	unstable	1.1.3
<i>V.STABLE</i>	very stable	1.1.4
<i>APP.FILT</i>	application filter	1.2
<i>FINAL.RD.</i>	final readout	1.2.1*
<i>FILLING</i>	filling mode	1.2.2
<i>REDUC.</i>	low filtering	1.2.3
<i>OFF</i>	without filtering	1.2.4
<i>STAB.RNG</i>	Stability range	1.3
<i>MAX.ACC.</i>	maximum accuracy (1/4 digit)	1.3.1*
<i>V.ACC.</i>	very accurate (1/2 digit)	1.3.2
<i>ACC.</i>	accurate (1 digit)	1.3.3
<i>FAST</i>	fast (2 digits)	1.3.4
<i>V.FAST</i>	very fast (4 digits)	1.3.5
<i>MAX.FAST.</i>	maximum speed (8 digits)	1.3.6
<i>STAB.DLY</i>	Stability delay	1.4
<i>NONE</i>	no delay	1.4.1
<i>SHORT</i>	short delay	1.4.2*
<i>MEDIUM</i>	medium-length delay	1.4.3
<i>LONG</i>	long delay	1.4.4
<i>TARE</i>	Tare mode	1.5
<i>W/O.STAB</i>	on	1.5.1
<i>AFT.STAB</i>	off	1.5.2*
<i>AUT.ZERO</i>	Auto zero	1.6
<i>ON</i>	on	1.6.1*
<i>OFF</i>	off	1.6.2
<i>WT.UNIT</i>	Weight unit (depends on the weighing platform type)	1.7
	<sup>1)</sup> not for use in legal metrology	
<i>GRAM</i>	gram/g	1.7.2*
<i>KILOGR.</i>	Kilograms/kg	1.7.3
<i>CARAT</i>	carats/ct <sup>1)</sup>	1.7.4
<i>POUND</i>	pounds/lb <sup>1)</sup>	1.7.5
<i>OUNCE</i>	ounces/oz <sup>1)</sup>	1.7.6
<i>TROY.OZ.</i>	troy ounces/ozt <sup>1)</sup>	1.7.7
<i>HK.TAEL</i>	Hong Kong taels/tlh <sup>1)</sup>	1.7.8
<i>SNG.TAEL</i>	Singapore taels/tls <sup>1)</sup>	1.7.9
<i>TWN.TAEL</i>	Taiwan taels/tlt <sup>1)</sup>	1.7.10
<i>GRAIN</i>	Grains/GN <sup>1)</sup>	1.7.11
<i>PENNY.WT.</i>	Pennyweights/dwt <sup>1)</sup>	1.7.12
<i>MILLIGR.</i>	Milligrams/mg <sup>1)</sup>	1.7.13
<i>PART./PB</i>	Parts per Pound//lb <sup>1)</sup>	1.7.14
<i>CHN.TAEL</i>	Chinese taels/tlc <sup>1)</sup>	1.7.15
<i>MOMME</i>	Mommes/mom <sup>1)</sup>	1.7.16
<i>KARAT</i>	Austrian karats/K <sup>1)</sup>	1.7.17

\* = Factory setting

	TOLA	Tola/tol <sup>1)</sup>	1.7.18
	BAHT	Baht/bat <sup>1)</sup>	1.7.19
	MESGHAL	Mesgahl/MS <sup>1)</sup>	1.7.20
	TON	tons/t	1.7.21
1.DIG.DIG.	Display accuracy		1.8
	ALL	all digits	1.8.1*
	-1.WT.CHA	reduced by one digit	1.8.2
	RES.% 10	10-fold increased resolution	1.8.14
	+DIV. 2	Increase resolution by 2 scale intervals	1.8.15
	+DIV. 1	Increase resolution by 1 scale interval	1.8.16
CAL.ADJ	Calibration, adjustment		1.9
	CAL.EXT.	External calibration/adjustment with default weight	1.9.1*
	CAL.E.AUT.	External cal./adjustment, weight is detected (see 1.18.1)	1.9.2
	CAL.E.USER.	External calibr./adjustment with user-defined weight	1.9.3
	CAL.INT.	Internal calibration/adjustment (for IS scales only)	1.9.4
	INT.LIN.	Internal linearization (for IS scales only)	1.9.5 <sup>1)</sup>
	EXT.LIN.	External linearization with default weights	1.9.6 <sup>1)</sup>
	LINE.USER	External linearization with user-defined weights	1.9.7 <sup>1)</sup>
	SET.PREL.	Set the preload	1.9.8
	DEL.PREL.	Delete the preload	1.9.9
	BLOCKED	Key blocked	1.9.10
CAL.SEQ.	Calibration/adjustment sequence		1.10
	AUTOMAT	Calibration with automatic adjustment	1.10.1
	MANUAL	Calibration with manual adjustment	1.10.2*
ZERORNG.	Zero range		1.11
	1PERC.	1 percent/max.load	1.11.1
	2PERC.	2 percent/max.load	1.11.2
	5PERC.	5 percent/max.load	1.11.3*
INIT.ZER.	Zero at power on		1.12
	1PERC.	1 percent/max.load	1.12.1*
	2PERC.	2 percent/max.load	1.12.2
	5PERC.	5 percent/max.load	1.12.3
ON.TARE	Tare/zero at power on		1.13
	ON	On	1.13.1*
	OFF	Off	1.13.2
ISOCAL	Adjustment prompt		1.15
	OFF	Off	1.15.1*
	ADJ.PROM	On	1.15.2
CAL.EXT	External calibration/adjustment		1.16
	ACTIVATE	Activated	1.16.1*
	BLOCKED	Blocked	1.16.2
CAL.UNIT	Weight unit for calibration		1.17
	GRAM	gram	1.17.1*
	KILOGR.	Kilogram	1.17.2
	TONS	ton	1.17.3
	POUND	pound	1.17.4
MAN.EXT.W	Manual entry of external weights		1.18
	CAL.ADJ.	cal/adj. weight	1.18.1
	LIN.WT. 1	linearization weight 1	1.18.2 <sup>1)</sup>
	LIN.WT. 2	linearization weight 2	1.18.3 <sup>1)</sup>
	LIN.WT. 3	linearization weight 3	1.18.4 <sup>1)</sup>
	LIN.WT. 4	linearization weight 4	1.18.5 <sup>1)</sup>
ADJ.W/O.W	Adjustment without weights <sup>1)</sup>		1.19
	NOM.LOAD	Nominal load	1.19.1
	RESOLUT	resolution	1.19.2
	SENSIT. 1	Sensitivity 1	1.19.3
	SENSIT. 2	Sensitivity 2	1.19.4
	SENSIT. 3	Sensitivity 3	1.19.5
	SENSIT. 4	Sensitivity 4	1.19.6
	ZER.POIN	Zero point	1.19.7
	SAVE	Save parameters	1.19.8
GEOG.DAT	Geographical data <sup>1)</sup>		1.20
	LATITUDE	latitude	1.20.1
	ALTITUDE	altitude	1.20.2
	GRAVITY	gravitational acceleration	1.20.3
	SAVE	Save parameters	1.20.4

\* = Factory setting    <sup>1)</sup> Only in Service mode

## SETUP / WP- 1 / INTERN. PARAM.2

2ND.UNIT	2nd weight unit (depends on the weighing platform type)	3.1
	<sup>1)</sup> not for use in legal metrology	
GRAM	gram/g	3.1.2*
KILOGR.	Kilograms/kg	3.1.3
CARAT	carats/ct <sup>1)</sup>	3.1.4
POUND	pounds/lb <sup>1)</sup>	3.1.5
OUNCE	ounces/oz <sup>1)</sup>	3.1.6
TROY.OZ.	troy ounces/ozt <sup>1)</sup>	3.1.7
HK.TAEL	Hong Kong taels/tlh <sup>1)</sup>	3.1.8
SNG.TAEL	Singapore taels/tls <sup>1)</sup>	3.1.9
TWN.TAEL	Taiwan taels/tlt <sup>1)</sup>	3.1.10
GRAIN	Grains/GN <sup>1)</sup>	3.1.11
PENNY.WT.	Pennyweights/dwt <sup>1)</sup>	3.1.12
MILLIGR.	Milligrams/mg <sup>1)</sup>	3.1.13
PART./PB	Parts per Pound//lb <sup>1)</sup>	3.1.14
CHN.TAEL	Chinese taels/tlc <sup>1)</sup>	3.1.15
MOMME	Mommes/mom <sup>1)</sup>	3.1.16
KARAT	Austrian karats/K <sup>1)</sup>	3.1.17
TOLA	Tola/tol <sup>1)</sup>	3.1.18
BAHT	Baht/bat <sup>1)</sup>	3.1.19
MESGHAL	Mesgahl/MS <sup>1)</sup>	3.1.20
TON	Tons/t	3.1.21
2.DIS.DIG.	Display accuracy	3.2
ALL	all digits	3.2.1*
-1.WT.CHG	reduced by 1 decimal place for load change	3.2.2
RES.*10	10-fold increased resolution	3.2.14
+DIV.2	Increase resolution by 2 scale intervals	3.2.15
+DIV.1	Increase resolution by 1 scale interval	3.2.16

## SETUP / WP- 1 / INTERN. RESET Factory settings

WT.PARA	Restore factory default settings	9.1
NO	No	9.1.1*
YES	Yes	9.1.2

SETUP / WP- 1 / INTERN. ADC-CON Analog/Digital converter configuration (ADC)<sup>1)</sup>

STANDARD	Standard
VERIF.	Verifiable

## SETUP / COM- 1 OFF

## SETUP / COM- 1 WP-2 Weighing platform 2

RS-232*	
5BIT	
*BP1-232	
ADU-232	
RS-485*	
IS-485	
ADC-485	

Menus 1.1 to 1.8 same as for WP1	
Calibration/Adjustment	1.9
External calibration/adjustment; default weight*	1.9.1
External calibration/adjustment;	
weight can be selected (1.18.1)	1.9.3
Internal cal/adj	1.9.4
( $\frac{ISO}{Test}$ ) key locked	1.9.10
Menus 1.10 to 9.1 same as for WP1	
ADC-232	
Menus 1.1 to 9.1 same as for WP1	

\* = Factory setting <sup>1)</sup> Only in Service mode

## SETUP / COM-1

## DAT.PROT Data protocols

## SBI

## CONFIG.

## BAUD Baud rate

150	150	5.1
300	300	5.1.1
600	600	5.1.2
1200	1200	5.1.3
2400	2400	5.1.4
4800	4800	5.1.5
9600	9600	5.1.6
19200	19200	5.1.7*
		5.1.8

## PARITY Parity

SPACE	Space	5.2
	Only if 7 data bits is selected	5.2.2
ODD	Odd	5.2.3*
EVEN	Even	5.2.4
NONE	None	5.2.5

## STOPBIT Number of stop bits

1STOP	1 stop bit	5.3
2STOP	2 stop bits	5.3.1*
		5.3.2

## HANDSHK Handshake mode

SOFTW.	Software handshake	5.4
HARDW.	Hardware handshake, 1 character after CTS	5.4.1
		5.4.3*

## DATABIT Number of data bits

	7 bits*	5.6
	8 bits	5.6.1
		5.6.2

## MAN./AUT. Data output (manual/automatic)

IND.W/O	Manual, without stability	6.1
IND.AFTR	Manual, at stability	6.1.1
AUT.W/O	Automatic, without stability	6.1.2*
AUT.WITH	Automatic, with stability	6.1.4
PROT.PRN	Protocol printout for computer (PC)	6.1.5
		6.1.7

## AUT.CYCL Time-dependent automatic data output

EACHVAL	1 display update	6.3
AFTR.2	2 display updates	6.3.1*
AFTR.10	10 display updates	6.3.2
AFTR.100	100 display updates	6.3.4
		6.3.7

## LINE Data output: Line format

16.CHAR	For raw data: 16 characters	7.2
22.CHAR	For other applications: 22 characters	7.2.1
		7.2.2*

## SIGN Data output: Sign format

+DEACT.	Plus sign deactivated	7.3
+ACT.	Plus sign activated	7.3.1
		7.3.2*

## SETTING Factory settings for COM1: SB

YES	Yes	9.1
NO	No*	9.1.1
		9.1.2

## X BPI-232

## SMA

## BAUD Baud rate

150	150	5.1
300	300	5.1.1
600	600	5.1.2
1200	1200	5.1.3
2400	2400	5.1.4
4800	4800	5.1.5
9600	9600	5.1.6
19200	19200	5.1.7*
		5.1.8

Numeric menu 5.2 to 5.6 similar to SBI

\* = Factory setting

SETUP / COM-1 PRINTER Printer configuration

YDP20

CONFIG.

BAUD Baud rate

1200	1200	5.1
2400	2400	5.1.4*
4800	4800	5.1.5
9600	4800	5.1.6
19200	9600	5.1.7
	19200	5.1.8

PARITY Parity

SPACE	Space	5.2
	Only if 7 data bits is selected	5.2.2
ODD	Odd	5.2.3*
EVEN	Even	5.2.4
NONE	None	5.2.5

STOPBIT Number of stop bits

1 STOP	1 stop bit	5.3
2 STOP	2 stop bits	5.3.1*
		5.3.2

HANDBSHK Handshake mode

SOFTW.	Software handshake	5.4
HARDW.	Hardware handshake, 1 character after CTS	5.4.1
		5.4.3*

YDP14IS

LINE	Strip printer
LABEL	Label printer*

UNI-PRINT Universal printer

CONFIG.

BAUD

Baud rate		5.1
150	150	5.1.1
300	300	5.1.2
600	600	5.1.3
1200	1200	5.1.4
2400	2400	5.1.5
4800	4800	5.1.6
9600	9600	5.1.7*
19200	19200	5.1.8

PARITY Parity

SPACE	Space	5.2
	Only if 7 data bits is selected	5.2.2
ODD	Odd	5.2.3*
EVEN	Even	5.2.4
NONE	None	5.2.5

STOPBIT Number of stop bits

1 STOP	1 stop bit	5.3
2 STOP	2 stop bits	5.3.1*
		5.3.2

HANDBSHK Handshake mode

SOFTW.	Software handshake	5.4
HARDW.	Hardware handshake, 1 character after CTS	5.4.1
		5.4.3*

DATABIT Number of data bits

	7 bits	5.6
	8 bits	5.6.1*
		5.6.2

YDP04/S\*

LINE	Strip printer*
LABEL	Label printer
LABFF	Label printer with manual feed

YDP21

\* = Factory setting

## SETUP /UNICOM

OFF\*

WP-2 Weighing platform 2

RS-232ST Ⓜ

SBI Eich

SBI-ST Ⓜ

XBPI-232\*

Menus 1.1 to 1.8 same as for WP1

Calibration/Adjustment 1.9

Ext. calibration/adjustment; default weight 1.9.1\*

External calibration/adjustment;  
weight can be selected (1.18.1) 1.9.3

Internal cal./adj. 1.9.4

No function when you press the  key 1.9.10

Menus 1.10 to 9.1 same as for WP1

ADU-232

Menus 1.1 to 9.1 same as for WP1

RS-485

IS-485 Connect Minebea Intec IS weighing platform

Menus 1.1 to 1.8 same as for WP1

Calibration/Adjustment 1.9

Ext. calibration/adjustment; default weight 1.9.1\*

External calibration/adjustment;  
weight can be selected (1.18.1) 1.9.3

Internal cal./adj. 1.9.4

No function when you press the  key 1.9.10

Menus 1.10 to 9.1 same as for WP1

ADU-485

Menus 1.1 to 9.1 same as for IS-485

DAT.PROT. Data protocol

SBI SBI standard version\*

Menus 5.1 to 9.1 same as for COM1

XBPI-232 XBPI-232

XBPI-485 XBPI-485

0 to 31 Network address: Selectable from 0 to 31

SMA SMA interface function

Menus 5.1 to 5.6 same as for COM1

PROFIBUS

ADDRESS 0 to 126 Addresses 0 to 126 can be selected

APP/DAT

NO No\*

YES Yes, transfer application data

ETHER Ethernet

\* = Factory setting

*PRINTER* Printer configuration

<i>YDP20</i>	<b>YDP20</b>	
		Menus 5.1 to 5.4 same as for COM1
<i>YDP14IS</i>	<b>YDP14IS</b>	
	<i>LINE</i>	Strip printer
	<i>LABEL</i>	Label printer*
<i>UNI-PRI</i>	<b>Universal printer</b>	
		Menus 5.1 to 5.6 same as for COM1
<i>YDP04/05*</i>	<b>YDP04IS or YDP05</b>	
	<i>LINE</i>	Strip printer*
	<i>LABEL</i>	Label printer
	<i>LABELFF</i>	Label printer with manual feed
<i>YDP21</i>	<b>YDP21</b>	

*ANALOG* Analog data output port for PLC operation

Analog output: value		8.12	
	<i>NET</i>	Net value*	8.12.1
	<i>GROSS</i>	Gross value	8.12.2
Analog output: error indicator		8.13	
	<i>HIGH</i>	High level (20 mA)*8.13.1	
	<i>LOW</i>	Low level (4 mA) when menu is open or during calibration: 0/4 mA on this interface	8.13.2
Analog output: mode		8.14	
	<i>ZEROMAX</i>	Zero to maximum load*	8.14.1
	<i>MINMAX</i>	Minimum/Maximum values	8.14.2
Analog output: data output min./max.		8.15	
	<i>MIN</i>	Min. (4 mA) input in kg	8.15.1
	<i>MAX</i>	Max. (20 mA) input in kg	8.15.2

\* = Factory setting

## SETUP / CTRL IO

## INPUT

## PARAMET.

EXT.KEY	Function for external key	8.4
PRINT	Trigger  key function*	8.4.1
PRNT.LNG.	Trigger  key function (press and hold)	8.4.2
TARE	Trigger  key function	8.4.3
ISO.TEST	Trigger  key function	8.4.4
FN	Trigger  key function	8.4.5
SCALE.NR	Trigger  key function	8.4.6
OK	Trigger  key function	8.4.7
Z/TARE	combined zero/tare function	8.4.8
ZERO	Trigger  key function	8.4.9
ON.STBY	Trigger  key function	8.4.10
CF	Trigger  key function	8.4.11
INFO	Trigger  key function	8.4.12
(-)-	Trigger  key function	8.4.13
X 10	Trigger  key function	8.4.14
B/G NET	Trigger  key function	8.4.15

\* = Factory setting

## SETUP / PRINT 7

<i>PROTOC.</i> Printouts	7
<i>HEADLIN.</i> Header entry	7.4
<i>LINE 1</i> Line 1	7.4.1
<i>LINE 2</i> Line 2	7.4.2
<i>IDENT. 1</i> Identifier 1	7.4.3
<i>IDENT. 2</i> Identifier 2	7.4.4
<i>IDENT. 3</i> Identifier 3	7.4.5
<i>IDENT. 4</i> Identifier 4	7.4.6
<i>IDENT. 5</i> Identifier 5	7.4.7
<i>IDENT. 6</i> Identifier 6	7.4.8
<i>QTY. 1</i> Printout quantity to COM1	7.5
<i>1PRNT.0</i> 1 printout	7.5.1*
<i>2PRNT.0</i> 2 printouts	7.5.2
<i>INDIV. 1</i> Single and results printout for all other applications, user-defined	7.6
<i>COMPON. 1</i> Component printout for net total and totalizing, user-defined	7.7 <sup>1)</sup>
<i>TOTAL 1</i> Totalizing results, user-defined	7.8 <sup>1)</sup>
<i>GMP.PROT</i> ISO/GMP printout	7.13
<i>OFF</i> Off	7.13.1*
<i>ON</i> On	7.13.2
<i>DAT./TIM</i> Date and time	7.14 <sup>1)</sup>
<i>DAT.+TIM</i> Date and time	7.14.1
<i>DAT.ONLY</i> Date only	7.14.2
<i>AUT.ONCE</i> Automatic printout after stability	7.15
<i>OFF</i> Off	7.15.1*
<i>ON</i> On	7.15.2
<i>FLEX.PRIN</i> FlexPrint	7.16
<i>OFF</i> Off	7.16.1*
<i>ON</i> On	7.16.2
<i>DEC.SEP.</i> Weight value decimal separator	7.17
<i>PERIOD</i> Period	7.17.1*
<i>COMMA</i> Comma	7.17.2
<i>DAT.RECORD</i> Printout of Alibi and product data memory	7.18
<i>ALL</i> Print all data records	7.18.1
<i>SPEC.</i> Number of data record to be printed (enter no.)	7.18.2*
<i>RESET</i> Reset factory	
<i>SETTINGS</i>	

\* = Factory setting

SETUP / UTILIT. 0

PARAMET

<b>KEYS</b> Unblock keys		8.3
ALL +	Release all	8.3.1*
-ALL	All blocked	8.3.2
- <b>NUM.PAD</b>	Number pad locked	8.3.3
- <b>SCALE.N</b>	 key locked	8.3.4
-ZERO	key  locked	8.3.5
-TARE	key  locked	8.3.6
-FN	key  locked	8.3.7
- <b>ISO.TST</b>	 key locked	8.3.8
- <b>PRINT</b>	 key locked	8.3.9
-X 10	 key locked	8.3.10 <sup>1)</sup>
- <b>B/G.NET</b>	 key locked	8.3.11 <sup>1)</sup>
-CF	 key locked	8.3.12 <sup>1)</sup>
-REF	 key locked	8.3.13 <sup>1)</sup>
-OK	 key locked	8.3.14 <sup>1)</sup>
- <b>TOGGLE</b>	 key locked	8.3.15 <sup>1)</sup>
- <b>INFO</b>	 key locked	8.3.16 <sup>1)</sup>
- (-D-)	D key locked	8.3.17 <sup>1)</sup>
-ID	d key locked	8.3.18 <sup>1)</sup>
-MEM	R key locked	8.3.19 <sup>1)</sup>
<b>AUTO.OFF</b> Automatic shutoff of display and control unit		8.7
<b>TIMER</b>	Automatic shutoff via timer (see 8.9)	8.7.1
<b>WITHOUT</b>	no automatic shutoff	8.7.2*
<b>BACKLIT</b> Display lighting		8.8
<b>ON</b>	On	8.8.1*
<b>OFF</b>	Off	8.8.2
<b>AUTO.OFF</b>	Automatic shutoff via timer (see 8.9)	8.8.3
<b>TIMER</b> Timer for automat. shut-off		8.9
<b>1+1 MIN</b>	After 1 minute warning displayed for 1 minute then off	8.9.1*
<b>2+2 MIN</b>	After 2 minutes warning displayed for 2 minutes then off	8.9.2
<b>5+5 MIN</b>	After 5 minutes warning displayed for 5 minutes then off	8.9.3
	Warning information:  <b>12</b> flash simultaneously	
<b>START.WP</b> Main scale: first platform displayed on start-up		8.11
<b>WP-1</b>	Weighing platform 1	8.11.1*
<b>WP-2</b>	Weighing platform 2	8.11.2
<b>DIS.GEOG.</b> Show geographical data before calibration/adjustment		8.12
<b>ON</b>	On	8.12.1
<b>OFF</b>	Off	8.12.2*

RESET

Reset factory settings

SETUP / TIME

00.00.00 Enter: hours.minutes.seconds (e.g. 14.10.30), confirm with the  key

SETUP / DATE

00.00.00 Enter: day.month.year (e.g. 13.08.10), confirm with the  key  
U.S. mode: month.day.year (e.g. 08.13.10)

SETUP / U-CODE

----- Enter, change, delete user password (max. 8 characters)

Only in Service mode: SETUP / S-DATE

Date XXX entry for next service

Only in Service mode: SETUP / SER.NO.

2345 Serial number

Only in Service mode: SETUP / MODEL

CL2000 I Model description

Only in Service mode: SETUP / S0MIN

S\_ S0MIN  
S0MIN1  
S0MIN2

\* = Factory setting

SETUP / SQMIN

```

DISPLAY SQmin value display
  NO      No*
  YES     Yes

GMP PRT. GMP-compliant printout
  NO      No*
  YES     Yes

```

## Menu Info (Device Information)

\* = Factory setting

INFO / SERVICE Service date

Input: day.month.year (e.g. 13.08.10), confirm with the **→|←** key  
 key U.S. mode: month.day.year (e.g. 08.13.10)

INFO / TERM Indicator

```

CAIXS2-RBC-L Model type
12345 Serial number (complete display with the →|← key)
01-62-01 Indicator version number (complete display with the →|← key)
E2 117.141117 Software version (complete display with the →|← key)
PCBEX Main PC board type

```

INFO / WP-1 1st weighing platform

```

00-42-51 Software version 1st weighing platform
51.53 Geographic latitude in degrees
151 Geographic altitude in meters
9.81 Acceleration of gravity, m/s2 (however no latitude and longitude then)
SWITCH Menu access switch

```

INFO / WP-2 2nd weighing platform (e. g. IS weighing platform)

```

Y000115 Type description of 1st weighing platform
01.02.07 Software version 2nd Weighing platforms
10404354 Serial number
51.53 Geographic latitude in degrees
151 Geographic altitude in meters
8.91 Acceleration of gravity, m/s2

```

INFO / FLEXINF FlexPrint

```

----- File name
ID--- ID
V--- Version

```

## Language Menu (Language Settings for Display, Calibration and Gmp-Compliant Printouts)

LANGUAGE

```

DEUTSCH German
ENGLISH English*
U.S. MODE English with U.S. date/time
FRANC. French
ITAL. Italian
ESPAÑOL Spanish
CODES Mixed menu display: English and number menu structure

```

\* = Factory setting

## ADC Settings Menu

ADC.CON

<i>STANDARD</i>	Standard configuration	9.1.3
<i>RANGE</i>	Ranges	11.3
<i>SINGLE</i>	Single-range scale	11.3.1
<i>MULT.INT</i>	Multi-interval scale	11.3.2
<i>MULT.RNG</i>	Multiple-range scale	11.3.3
<i>SINGLE</i>	Single-range scale	11.4
<i>d</i>	Scale interval d	11.4.1
<i>MAX</i>	Max. load	11.4.4
<i>MULT.INT</i>	Multi-interval scale	11.5
<i>d</i>	Scale interval d	11.5.1
<i>RANGE 1</i>	Range 1	11.5.4
<i>RANGE 2</i>	Range 2	11.5.5
<i>RANGE 3</i>	Range 3	11.5.6
<i>MAX</i>	Max. load	11.5.7
<i>MULT.RNG</i>	Multiple-range scale	11.6
<i>d</i>	Scale interval d	11.6.1
<i>RANGE 1</i>	Range 1	11.6.4
<i>RANGE 2</i>	Range 2	11.6.5
<i>RANGE 3</i>	Range 3	11.6.6
<i>MAX</i>	Max. load	11.6.7
<i>WT.UNIT</i>	Available weight units	11.7
<i>FREE</i>	User-defined /o	11.7.1
<i>G</i>	Grams /g	11.7.2
<i>KG</i>	Kilograms/kg	11.7.4
<i>...</i>		
<i>T</i>	Tons/t	11.7.21
<i>LB</i>	Pound:ounces/lb oz	11.7.22
<i>SAVE</i>	Save configuration parameters	11.10
<i>YES</i>	Yes	11.10.1
<i>NO</i>	No	11.10.2

\* = Factory setting

<i>VERIF.</i> Verifiable configuration		9.1.4
<i>CLASS</i> Accuracy class		11.1
Class <b>III</b> / <b>III</b>		11.1.4
<i>RANGES</i> Ranges		11.3
<i>SINGLE</i>	Single-range mode	11.3.1
<i>MULT.INT</i>	Multi-interval mode	11.3.2
<i>MULT.RNG</i>	Multiple-range scale	11.3.3
<i>SINGLE</i> Single-range mode		11.4
<i>E</i>	Verification scale interval e	11.4.2
<i>MIN.</i>	Min. load	11.4.3
<i>MAX.</i>	Max. load	11.4.4
<i>MULT.INT</i> Multi-interval mode		11.5
<i>E</i>	Verification scale interval e	11.5.2
<i>MIN.</i>	Min. load	11.5.3
<i>RANGE 1</i>	Range 1	11.5.4
<i>RANGE 2</i>	Range 2	11.5.5
<i>RANGE 3</i>	Range 3	11.5.6
<i>MAX.</i>	Max. load	11.5.7
<i>MULT.RNG</i> Multiple-range scale		11.6
<i>E</i>	Verification scale interval e	11.6.2
<i>MIN.</i> Min. load	11.6.3	
<i>RANGE 1</i>	Range 1	11.6.4
<i>RANGE 2</i>	Range 2	11.6.5
<i>RANGE 3</i>	Range 3	11.6.6
<i>MAX.</i>	Max. load	11.6.7



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1. Product model / product number / solely valid for project number:  

Combics Indicator   CAIXS2   ----
-----------------------------------
  
2. Name and address of the manufacturer (2.1) and his authorized representative (2.2):
 

2.1 Minebea Intec Bovenden GmbH & Co. KG, Leinetal 2, 37120 Bovenden, Germany
2.2 /
  
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
  
4. Object(s) of the declaration:
 

4.1 CAIXS2
------------
  
5. The object(s) of the declaration described above is in conformity with the relevant Union harmonization legislation:
 

(4.1)	
5.1 2014/30/EU	(6.1)
5.2 2011/65/EU	(6.2)
5.3 2014/34/EU	(6.3)
  
6. References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:
 

6.1 2014/30/EU	EN 61326-1:2013
6.2 2011/65/EU	EN 50581:2012
6.3 2014/34/EU	EN 60079-0:2012, EN 60079-11:2012, EN 60529:2014
  
7. The notified body w performed x and issued the certificate y relevant for z:
 

	w	x	Y	z
7.1	2809	EC-Type Examination Certificate	FM13ATEX0085X	(4.1)
7.2	2809	Quality Assurance Notification	FM19ATEXQ0151	(4.1)

Minebea Intec Bovenden GmbH & Co. KG  
 Bovenden, 20. Mar. 2019

Andreas Theisen  
 Managing Director

Oliver Freitag  
 CE Certification

Torben Hiller  
 Ex Approval Manager



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A. Additional information on ( )::

A.1	(7.1)	Marking		II 2G Ex ia IIC T4 Gb II 2D Ex ia IIIC T80°C Db FM13ATEX0085X
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## български (bg)

### Декларация за съответствие

1. Модел на продукта / Номер на продукта:
  2. Наименование и адрес на производителя (2.1) и на неговия упълномощен представител (2.2);
  3. Настоящата декларация за съответствие е издадена на отговорността на производителя.
  4. Предмет(и) на декларацията:
  5. Предметът (ите) на декларацията, описан(и) по-горе отговаря(т) на съответното законодателство на Съюза за хармонизация;
  6. Позоваване на използваните хармонизирани стандарти или позоваване на други технически спецификации, по отношение на които се декларира съответствие;
  7. Нотифицираният орган в извърши х и издаде сертификата у, отнасящ се за з:
- A. Допълнителна информация за ( ):
- A.1 Маркировка

## čeština (cs)

### Prohlášení o shodě

1. Model výrobku / číslo výrobku:
  2. Jméno a adresa výrobce (2.1) a jeho zplnomocněného zástupce (2.2);
  3. Toto prohlášení o shodě se vydává na výhradní odpovědnost výrobce.
  4. Předmět(y) prohlášení:
  5. Výše popsaný předmět / Výše popsané předměty prohlášení je/ jsou ve shodě s příslušnými harmonizačními právními předpisy Unie;
  6. Odkazy na příslušné harmonizované normy, které byly použity, nebo na jiné technické specifikace, na jejichž základě se shoda prohlašuje;
  7. Oznamovaný subjekt v provedl x a vydal certifikát y relevantní z hlediska z:
- A. Další informace o ( ):
- A.1 Označení

## dansk (da)

### Overensstemmelseserklæring

1. Produktmodel/produktnummer:
  2. Fabrikantens (2.1) og dennes bemyndigede repræsentants (2.2) navn og adresse:
  3. Denne overensstemmelseserklæring udstedes på fabrikantens ansvar.
  4. Genstand(ene) for erklæringen:
  5. Genstanden(e) for erklæringen, som beskrevet ovenfor, er i overensstemmelse med den relevante EU-harmoniseringslovgivning.
  6. Referencer til de relevante anvendte harmoniserede standarder eller til de andre tekniske specifikationer, som der erklæres overensstemmelse med:
  7. Det bemyndigede organ w har foretaget x og udstedt attesten y, der gælder for z:
- A. Supplerende oplysninger om ( ):
- A.1 Markning

## Deutsch (de)

### Konformitätserklärung

1. Produktmodell/Produktnummer:
  2. Name und Anschrift des Herstellers (2.1) und seines Bevollmächtigten (2.2);
  3. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
  4. Gegenstände der Erklärung:
  5. Die oben beschriebenen Gegenstände der Erklärung erfüllen die einschlägigen Harmonisierungsrechtsvorschriften der Union;
  6. Angabe der einschlägigen harmonisierten Normen oder der anderen technischen Spezifikationen, die der Konformitätserklärung zugrunde gelegt wurden;
  7. Die notifizierte Stelle w hat x und die für z relevante Bescheinigung y ausgestellt:
- A. Zusatzangaben zu ( ):
- A.1 Kennzeichnung

## Ελληνικά (el)

### Δήλωση συμμόρφωσης

1. Μοντέλο προϊόντος/αριθμός προϊόντος:
  2. Όνομα και διεύθυνση του κατασκευαστή (2.1) και του εξουσιοδοτημένου αντιπροσώπου του (2.2);
  3. Η παρούσα δήλωση συμμόρφωσης εκδίδεται με αποκλειστική ευθύνη του κατασκευαστή.
  4. Στόχος της δήλωσης:
  5. Ο στόχος της δήλωσης που περιγράφεται παραπάνω είναι σύμφωνος με τη σχετική ενωσιακή νομοθεσία εναρμόνισης;
  6. Παραπομπές στα σχετικά εναρμόνιζόμενα πρότυπα που χρησιμοποιήθηκαν ή παραπομπές στις λοιπές τεχνικές προδιαγραφές σε σχέση με τις οποίες δηλώνεται η συμμόρφωση;
  7. Ο κοινοποιημένος οργανισμός w διεξήγε x και εξέδωσε το πιστοποιητικό y όπως απαιτείται για z:
- A. Πρόσθετες πληροφορίες σχετικά με ( ):
- A.1 Σήμανση

## español (es)

### Declaración de conformidad

1. Modelo de producto/número de producto:
  2. Nombre y dirección del fabricante (2.1) y de su representante autorizado (2.2);
  3. La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante.
  4. Objeto(s) de la declaración:
  5. El/Los objeto(s) de la declaración descritos anteriormente son conformes con la legislación de armonización pertinente de la Unión Europea;
  6. Referencias a las normas armonizadas pertinentes utilizadas o referencias a las otras especificaciones técnicas respecto a las cuales se declara la conformidad;
  7. El organismo notificado W ha efectuado X y expedido el certificado Y relevante para Z:
- A. Información adicional en ( ):
- A.1 Marcado



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estni keel (et)	français (fr)	hrvatski (hr)
<p>Vastavusdeklaratsioon</p> <ol style="list-style-type: none"> <li>1. Tootemudel/tootenumber:</li> <li>2. Tootja nimi ja aadress (2.1) ning tema volitatud esindaja (2.2):</li> <li>3. Käesolev vastavusdeklaratsioon on välja antud tootja aumvattustul.</li> <li>4. Deklareeritav toode:</li> <li>5. Olallkirjeldatud deklareeritav toode on kooskõlas asjaomaste liidu ühtlustamisaktidega:</li> <li>6. Viited kasutatud harmoneeritud standarditele või viited muudele tehnilistele spetsifikatsioonidele, millele vastavust deklareeritakse:</li> <li>7. Teavitatud asutus w teostas x ja andis välja tõendi z, mis on asjakohane y-le:</li> </ol> <p>A. Lisateave järgmise kohta ( ):</p> <p>A.1 Märgistus</p>	<p>Déclaration de conformité</p> <p>Modèle/numéro de produit :</p> <ol style="list-style-type: none"> <li>2. Nom et adresse du fabricant (2.1) et de son mandataire (2.2) :</li> <li>3. La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.</li> <li>4. Objet(s) de la déclaration :</li> <li>5. Le ou les objets de la déclaration décrite ci-dessus est/sont conforme(s) à la législation d'harmonisation de l'Union applicable :</li> <li>6. Références des normes harmonisées pertinentes appliquées ou des autres spécifications techniques par rapport auxquelles la conformité est déclarée :</li> <li>7. L'organisme notifié w a effectué x et a établi l'attestation y applicable à z :</li> </ol> <p>A. Informations complémentaires relatives à ( ) :</p> <p>A.1 Marquage</p>	<p>Izjava o sukladnosti</p> <ol style="list-style-type: none"> <li>1. Model proizvoda / broj proizvoda:</li> <li>2. Naziv i adresa proizvođača (2.1) i njegovog ovlaštenog zastupnika (2.2):</li> <li>3. Za izdavanje ove izjave o sukladnosti odgovoran je isključivo proizvođač.</li> <li>4. Predmet(i) izjave:</li> <li>5. Predmet(i) navedene izjave je/su u skladu s mjerodavnim zakonodavstvom Unije o uskladjivanju:</li> <li>6. Pozivanja na relevantne primjenjene uskladene norme ili pozivanja na ostale tehničke specifikacije u vezi s kojima se izjavljuje sukladnost:</li> <li>7. Prijavljeno tijelo w provelo je x i izdalo certifikat y koji je relevantan za z:</li> </ol> <p>A. Dodatne informacije o proizvodu ( ):</p> <p>A.1 Označavanje</p>
magyar (hu)	italiano (it)	Latvių kalba (lt)
<p>Megfelelősségi nyilatkozat</p> <ol style="list-style-type: none"> <li>1. Termékmodell / termékszám:</li> <li>2. A gyártó (2.1) vagy adott esetben meghatalmazott képviselőjének (2.2) neve és címe:</li> <li>3. Ezt a megfelelősségi nyilatkozatot a gyártó kizárólagos felelőssége mellett adják ki.</li> <li>4. A nyilatkozat tárgya(i):</li> <li>5. A fent ismertetett nyilatkozat tárgya megfelel a vonatkozó uniós harmonizációs jogszabályoknak:</li> <li>6. Az alkalmazott harmonizált szabványokra való hivatkozás vagy az azokra az egyéb műszaki leírásokra való hivatkozás, amelyekkel kapcsolatban megfelelősségi nyilatkozatot tettek:</li> <li>7. A(z) w bejelentett szervezet elvégezte a(z) x eljárást, és kiállította a(z) z kapcsolódó y tanúsítványát:</li> </ol> <p>A. További információk ( ):</p> <p>A.1 Jelölés</p>	<p>Dichiarazione di conformità</p> <ol style="list-style-type: none"> <li>1. Modello di prodotto/numero di prodotto:</li> <li>2. Nome e indirizzo del fabbricante (2.1) e del relativo rappresentante autorizzato (2.2):</li> <li>3. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.</li> <li>4. Oggetto/i della dichiarazione:</li> <li>5. L'oggetto o gli oggetti della dichiarazione di cui sopra sono conformi alla pertinente normativa di armonizzazione dell'Unione:</li> <li>6. Riferimento alle pertinenti norme armonizzate utilizzate o riferimenti alle altre specifiche tecniche in relazione alle quali è dichiarata la conformità:</li> <li>7. L'organismo notificato w ha effettuato x e rilasciato il certificato y pertinente a z:</li> </ol> <p>A. Informazioni aggiuntive su ( ):</p> <p>A.1 Marcatura</p>	<p>Atitikties deklaracija</p> <ol style="list-style-type: none"> <li>1. Gaminio modelis / gaminio numeris:</li> <li>2. Gamintojo (2.1) ir jo įgaliotojo atstovo (2.2) pavadinimas ir adresas:</li> <li>3. Ši atitikties deklaracija išduota tik gamintojo atsakomybe.</li> <li>4. Deklaracijos objektas (objektai):</li> <li>5. Pirmiau aprašytas deklaracijos objektas (objektai) atitinka susijusius derinamuosius Sąjungos teisės aktus:</li> <li>6. Susijusių taikytų darnųjų standartų nuorodos arba kitų techninių specifikacijų, pagal kurias buvo deklaruota atitiktis, nuorodos:</li> <li>7. Notifikuotoji įstaiga w atliko x ir išdavė sertifikatą y dėl z:</li> </ol> <p>A. Papildoma informacija ( ):</p> <p>A.1 Ženklinimas</p>



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latviešu valoda (lv)	malta (mt)	nederlands (nl)
<p>Atbilstības deklarācija</p> <p>1. Produkta modeļis / produkta numurs: 2. Ražotāja (2.1.) un tā pilnvarotā pārstāvja (2.2.) nosaukums un adrese: 3. Šī atbilstības deklarācija ir izdota vienīgi uz ražotāja atbildību. 4. Deklarācijas priekšmets vai priekšmeti: 5. Iepriekš aprakstītais deklarācijas priekšmets vai priekšmeti atbilst attiecīgajam Savienības saskaņošanas tiesību aktam. 6. Atsauces uz attiecīgiem izmantojamiem saskaņotajiem standartiem vai uz citām tehniskajām specifikācijām, attiecībā uz ko tiek deklarēta atbilstība: 7. Paziņotā struktūra w ir veikusi x un izsniegusi sertifikātu y, kas attiecas uz z: A. Papildu informācija par ( ): A.1. Marķējums</p>	<p>Dikjarazzjoni ta' konformità</p> <p>1. Mudell tal-prodott / numru tal-prodott: 2. L-isem u l-indirizz tal-manifattur (2.1) u tar-rapprezentant awtorizzat tieghu (2.2): 3. Din id-dikjarazzjoni ta' konformità tinhareg taht ir-responsabbiltà unika tal-manifattur. 4. L-ghan(ijiet) tad-dikjarazzjoni: 5. L-ghan(ijiet) tad-dikjarazzjoni deskritt(i) hawn fuq huwa(huma) konformi mal-legislawzzjoni ta' armonizzazzjoni rilevanti tal-Unjoni. 6. Ir-referenzi għall-istandards armonizzati rilevanti li ntuzaw, jew ir-referenzi għall-ispeċifikazzjonijiet tekniċi l-oħra li skonthom qed tiġi ddiġjarata l-konformità: 7. Il-korp notifikat w wettaq x u hareġ ieċ-ċertifikat y rilevanti għal z: A. Informazzjoni addizzjonali fuq ( ): A.1 Immarkar</p>	<p>Conformiteitsverklaring</p> <p>1. Productmodel/productnummer: 2. Naam en adres van de fabrikant (2.1) en zijn gemachtigde (2.2): 3. Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant. 4. Voorwerp(en) van de verklaring: 5. Het (de) hierboven beschreven voorwerp(en) is (zijn) in overeenstemming met de desbetreffende harmonisatiewetgeving van de Unie: 6. Vermelding van de toegepaste relevante geharmoniseerde normen of van de overige technische specificaties waarop de conformiteitsverklaring betrekking heeft: 7. De aangemelde instantie w heeft een x uitgevoerd en het certificaat y verstrekt dat relevant is voor z: A. Aanvullende informatie over ( ): A.1 Markering</p>
polski (pl)	português (pt)	română (ro)
<p>Deklaracja zgodności</p> <p>1. Model produktu/numer produktu: 2. Nazwa i adres producenta (2.1) oraz jego upoważnionego przedstawiciela (2.2): 3. Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta. 4. Przedmiot(-y) deklaracji: 5. Wymieniony powyżej przedmiot (lub przedmioty) niniejszej deklaracji jest zgodny z odnoszonymi wymaganiami unijnego prawodawstwa harmonizacyjnego: 6. Odwołania do odnoszących norm zharmonizowanych, które zastosowano, lub do innych specyfikacji technicznych, w stosunku do których deklarowana jest zgodność: 7. Jednostka notyfikowana w przeprowadziła x i wydała certyfikat y i odpowiedni dla z: A. Informacje dodatkowe o ( ): A.1 Oznakowanie</p>	<p>Declaração de conformidade</p> <p>1. Modelo do produto/número do produto: 2. Nome e endereço do fabricante (2.1) e do seu mandatário (2.2): 3. A presente declaração de conformidade é emitida sob a exclusiva responsabilidade do fabricante. 4. Objeto(s) da declaração: 5. O(s) objeto(s) da declaração acima descrito(s) está(ão) em conformidade com a legislação aplicável de harmonização da União: 6. Referências às normas harmonizadas aplicáveis utilizadas ou às outras especificações técnicas em relação às quais é declarada a conformidade: 7. O organismo notificado w realizou x e emitiu o certificado y e relevante para z: A. Informações complementares relativa a ( ): A.1 Marcação</p>	<p>Declarație de conformitate</p> <p>1. Modelul de produs/Număr produs: 2. Denumirea și adresa producătorului (2.1) și a reprezentantului său autorizat (2.2): 3. Prezenta declarație de conformitate este emisă pe răspunderea exclusivă a producătorului. 4. Obiectul (obiectele) declarației: 5. Obiectul (obiectele) declarației descrise mai sus sunt în conformitate cu legislația relevantă de armonizare a Uniunii: 6. Trimiteri la standardele armonizate relevante folosite sau trimiteri la celelalte specificații tehnice în legătură cu care se declară conformitatea: 7. Organismul notificat w a efectuat x și a emis certificatul y corespunzător pentru z: A. Informații suplimentare despre ( ): A.1 Marcaj</p>



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MEU19005 Rev. 1



slovenčina (sk)	slovenščina (sl)	suomi (fi)
<p>Vyhlasenie o zhode</p> <p>1. Model výrobu/číslo výrobu:</p> <p>2. Meno/názov a adresa výrobcu (2.1) a jeho splnomocneného zástupcu (2.2):</p> <p>3. Toto vyhlásenie o zhode sa vydáva na vlastnú zodpovednosť výrobcu.</p> <p>4. Predmet(-y) vyhlásenia:</p> <p>5. Uvedený predmet či uvedené predmety vyhlásenia sú v zhode s príslušnými harmonizačnými právnymi predpismi Únie:</p> <p>6. Odkazy na príslušné použité harmonizované normy alebo odkazy na iné technické špecifikácie, v súvislosti s ktorými sa zhoda vyhlasuje:</p> <p>7. Notifikovaný orgán w vykonal x a vydal certifikát y relevantný pre z:</p> <p>A. Doplnujúce informácie o ( ):</p> <p>A.1 Označenie</p>	<p>Izjava o skladnosti</p> <p>1. Model proizvoda/serijska številka proizvoda:</p> <p>2. Ime in naslov proizvajalca (2.1) ter njegovega pooblaščenega zastopnika (2.2):</p> <p>3. Za izdajo te izjave o skladnosti je odgovoren izključno proizvajalec.</p> <p>4. Predmet(i) izjave:</p> <p>5. Predmet(i) navedene izjave je (so) v skladu z ustreznimi zakonodajo Unije o harmonizaciji:</p> <p>6. Sklicevanja na uporabljene ustrezne harmonizirane standarde ali sklicevanja na druge tehnične specifikacije v zvezi s skladnostjo, ki je navedena v izjavi:</p> <p>7. Priglašeni organ w je izvedel x in izdal certifikat y, pomemben za z:</p> <p>A. Dodatne informacije o ( ):</p> <p>A.1 Oznaka</p>	<p>Vaatumustenmukaisuusvakuutus</p> <p>1. Tuotemalli/tuotenumero:</p> <p>2. Valmistajan (2.1) ja valtuutetun edustajan (2.2) nimi ja osoite:</p> <p>3. Tämä vaatimustenmukaisuusvakuutus on annettu valmistajan yksinomaisella vastuulla.</p> <p>4. Vakuutuksen kohde (kohteet):</p> <p>5. Edellä kuvattu (kuvatut) vakuutuksen kohde (kohteet) on (ovat) asiaa koskevan unionin yhdenmukaistamislainsäädännön vaatimusten mukainen (mukaisia):</p> <p>6. Viittaus niihin asiaa koskeviin yhdenmukaistettuihin standardeihin, joita on käytetty, tai viittaus muihin teknisiiin eritelmiin, joiden perusteella vaatimustenmukaisuusvakuutus on annettu:</p> <p>7. Ilmoitettu laitos w suoritti x ja antoi todistuksen y liittyen z:</p> <p>A. Lisätietoja ( ):</p> <p>A.1 Merkintä</p>
svenska (sv)		
<p>Försäkran om överensstämmelse</p> <p>1. Produktmodell/produktnummer:</p> <p>2. Tillverkarens namn och adress (2.1) och dess auktoriserade representant (2.2):</p> <p>3. Denna försäkran om överensstämmelse utfärdas på tillverkarens eget ansvar.</p> <p>4. Föremål för försäkran:</p> <p>5. Föremålet/föremålen för försäkran ovan överensstämmer med den relevanta harmoniserade unionslagstiftningen:</p> <p>6. Hänvisningar till de relevanta harmoniserade standarder som använts eller hänvisningar till de andra tekniska specifikationer enligt vilka överensstämmelsen försäkras:</p> <p>7. Det anmälda organet w har utfört x och utfärdat intyget y relevant för z:</p> <p>A. Ytterligare information om ( ):</p> <p>A.1 Märkning</p>		



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX FME 13.0005X**

Page 1 of 4

Certificate history:

Status: **Current**

Issue No: 8

Issue 7 (2019-10-11)  
Issue 6 (2019-04-30)  
Issue 5 (2018-10-26)  
Issue 4 (2018-04-30)  
Issue 3 (2017-12-21)  
Issue 2 (2015-06-10)  
Issue 1 (2014-10-31)  
Issue 0 (2013-12-09)

Date of Issue: 2021-04-28

Applicant: **Minebea Intec Bovenden GmbH & Co. KG**  
Leinetal 2  
37120 Bovenden.  
**Germany**

Equipment: **CAIXS2... Intrinsically Safe Indicator**

Optional accessory:

Type of Protection: **Intrinsic Safety 'i'**

Marking: Ex ia IIC T4 Gb  
Ex ia IIIC T80°C Db  
-10 °C ≤ Ta ≤ +40 °C

Approved for issue on behalf of the IECEx  
Certification Body:

**Nicholas Ludlam**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**FM Approvals Ltd**  
Voyager Place  
Maidenhead  
Berkshire  
SL6 2PJ  
United Kingdom





## IECEx Certificate of Conformity

Certificate No.: **IECEx FME 13.0005X**

Page 2 of 4

Date of issue: 2021-04-28

Issue No: 8

Manufacturer: **Minebea Intec Bovenden GmbH & Co. KG**  
Leinetal 2  
37120 Bovenden.  
Germany

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-11:2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[GB/FME/ExTR13.0004/00](#)  
[GB/FME/ExTR13.0004/03](#)  
[GB/FME/ExTR13.0004/06](#)

[GB/FME/ExTR13.0004/01](#)  
[GB/FME/ExTR13.0004/04](#)  
[GB/FME/ExTR13.0004/07](#)

[GB/FME/ExTR13.0004/02](#)  
[GB/FME/ExTR13.0004/05](#)  
[GB/FME/ExTR13.0004/08](#)

Quality Assessment Report:

[GB/FME/QAR13.0021/08](#)



## IECEx Certificate of Conformity

Certificate No.: **IECEx FME 13.0005X**

Page 3 of 4

Date of issue: 2021-04-28

Issue No: 8

### EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The intrinsically safe indicator type CAIXS2-.... is used for data handling and indication in a weighing system. Intrinsically safe analog weighing platforms or load cells can be connected to the internal analog digital converter board, which can be replaced by a RS232 /RS485 data output board for connection of intrinsically safe digital weighing platforms or scales. Additional data transfer can be done by an intrinsically safe RS232, RS485 or RS422 data output board with and without digital I/O signals. Ambient temperature range: -10 °C to +40 °C.

### **CAIXS2-ab Intrinsically Safe Indicator**

a = U, V or blank

b = blank or up to three numbers (not relevant to safety)

See attached Annex for further details.

### **SPECIFIC CONDITIONS OF USE: YES as shown below:**

1. The front panel of the intrinsically safe indicator type CAIXS2-.... is non-metallic and shall not be used where UV light or radiation may impinge on the enclosure.
2. The front panel of the indicator type CAIXS2-.... is non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.
3. The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
4. After the first installation, the gasket must be replaced each time the enclosure is opened.



## IECEx Certificate of Conformity

Certificate No.: **IECEx FME 13.0005X**

Page 4 of 4

Date of issue: 2021-04-28

Issue No: 8

**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

Minor update to Documents, Update the IEC 60079-0 standard from 6th to 7th Edition.

**Annex:**

[Annex to IECEx cert\\_FME 13 0005X issue 8.pdf](#)

Annex to IECEx FME 13.0005X issue No.:8



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 Maidenhead, UK, SL6 2PJ  
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 www.fmapprovals.com

Electrical parameters

**Connections to the DC Supply Adapter Cable**

Circuit	Ui	Ii	Pi	Ci	Li
V_1	12.6 V	133 mA	1.46 W	188 nF	0.0 mH
V_2	12.6 V	133 mA	1.46 W	3 nF	0.0 mH
V_3	8.6 V	187 mA	1.51 W	391 nF	0.0 mH
V_4	12.6 V	150 mA	1.68 W	223 nF	0.1 mH

**Connections to the Data Adapter Board (COM1)**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	2.2 nF*/0.5nF**	0 mH
RS422	8.6 V	210 mA	0.5 W	0.5 μF	0 mH
RS485	see below	see below	any	260nF	0 mH
Digital I/O	8.6V	any	any	0 uF	0 mH

\*: versus ground; \*\*: between the lines. \*\*\*: resistively limited

**For the RS485 communication:**

Ui	±12.6 V	12 V	7.2 V
Ii	135 mA***	164 mA***	3.3A***
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

RS485 (Rmin = Ui/Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

\*\*\*: resistively limited

**Output parameters of the CAIXS2-....(COM1)**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 μF*	3 mH	140μH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 μF	300 μH	50μH/Ω
RS485	5.2 V	210 mA***	263 mW	60 μF	600 μH	125 μH/Ω
Digital I/O	6.0 V	45 mA***	67 mW	40 μF	20 mH	530 μH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**Input/Output parameters for the WP Board**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS485	5.4V	75 mA***	183 mW	50 μF	600 μH	135 μH/Ω
	Ui	Ii	Pi	Ci	Li	
	±12.6 V	135 mA***	†	260 nF	0 mH	
	12.0 V	164 mA***				
	6.0 V	3.3A***				

\*\*\*: resistively limited

Annex to IECEx FME 13.0005X issue No.:8



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†: Any; The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... As the circuit is resistively limited at the input. A consideration only needs to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

Rmin of the external intrinsically safe circuit is defined by Ui/li and is:

Ui	±12.6V	12.0V	6.0V
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.8 V*	110 mA***	295 mW	2.14 μF	2 mH	120 μH/Ω
	21.6 V**	55 mA		174 nF		
	Ui	li	Pi	Ci	Li	
	12.6 V*	328 mA***	†	3 nF	0 mH	
	25.2 V**			0.5 nF		

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

†: Any; The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... As the circuit is resistively limited at the input. A consideration only needs to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

#### DMS Front End Board

Uo	Io	Po	Co	Lo
11.8 V	147 mA	1.49 W	770 nF	300 μH

#### Connections to the UNICOM RS Board

Circuit	Ui	li	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	0 μF	0 mH
RS422	8.6 V	210 mA	0.5 W	11.22 μF	0 mH
RS485	see below	see below	any	0 μF	0 mH

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

#### For the RS485 communication:

Ui	±12.6 V	12 V	7.2 V
li	135 mA***	164 mA***	any
Rmin	95.4 Ω	73.2 Ω	0

RS485 (Rmin = Ui/li is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

#### Output parameters of the UNICOM RS Board

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 μF*	3 mH	140 μH/Ω
	20.0 V*			217 nF**		
RS422	5.2V	165 mA	292 mW	60 μF	1 mH	75 μH/Ω

Annex to IECEx FME 13.0005X issue No.:8



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RS485	5.2 V	210 mA***	263 mW	60 $\mu$ F	500 $\mu$ H	125 $\mu$ H/ $\Omega$
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\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**Connections to the UNICOM Board (J2 and J3, respectively)**

<b>Ui</b>	<b>Ii</b>	<b>Pi</b>	<b>Ci</b>	<b>Li</b>
6.8 V	200 mA	600 mW	3 $\mu$ F	20 $\mu$ H
<b>Uo</b>	<b>Io</b>	<b>Po</b>	<b>Co</b>	<b>Lo</b>
6.0 V	23 mA	34 mW	10 $\mu$ F	3 mH

---

# 1 EU-TYPE EXAMINATION CERTIFICATE



- 2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**
- 3 **EU-Type Examination Certificate No:** FM13ATEX0085X
- 4 **Equipment or protective system:** CAIXS2-.... Intrinsically Safe Indicator  
(Type Reference and Name)
- 5 **Name of Applicant:** Minebea Intec Bovenden GmbH & Co. KG
- 6 **Address of Applicant:** Leinetal 2  
37120 Bovenden  
Germany

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3049923 dated 23<sup>rd</sup> December, 2013

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-11:2012 and EN 60529:1991+A1:2000+A2:2013

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:

	II 2 G Ex ia IIC T4 Gb	-10 °C ≤ Ta ≤ +40 °C
	II 2 D Ex ia IIIC T80°C Db	-10 °C ≤ Ta ≤ +40 °C

Digitally signed  
by Richard  
Zammit  
Foxit  
PhantomPDF  
Version: 10.0.1

**Richard Zammit**  
Certification Manager, FM Approvals Europe Ltd.

Issue date: 28<sup>th</sup> April 2021

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

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F ATEX 020 (Dec/2020)



Page 1 of 5

## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

**13 Description of Equipment or Protective System:**

The intrinsically safe indicator type CAIXS2-.... is used for data handling and indication in a weighing system. Intrinsically safe analog weighing platforms or load cells can be connected to the internal analog digital converter board, which can be replaced by a RS232 /RS485 data output board for connection of intrinsically safe digital weighing platforms or scales. Additional data transfer can be done by an intrinsically safe RS232, RS485 or RS422 data output board with and without digital I/O signals. As options, the UNICOM board or the UNICOM RS boards can be connected to the digital board to provide intrinsically safe data transfer to an external device.

Ambient temperature range: -10 °C to +40 °C.

**CAIXS2-ab Intrinsically Safe Indicator**

a = U or V or blank

b = blank or up to three numbers (not relevant to safety)

Electrical Parameters

**Connections to the DC Supply Adapter Cable**

Circuit	Ui	Ii	Pi	Ci	Li
V 1	12.6 V	133 mA	1.46 W	188 nF	0
V 2	12.6 V	133 mA	1.46 W	3 nF	0
V 3	8.6 V	187 mA	1.51 W	391 nF	0
V 4	12.6 V	150 mA	1.68 W	223 nF	0.1 mH

**Connections to the Data Adapter Board (COM1)**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	2.2 nF*/0.5 nF**	0
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0
RS485	see below	see below	any	260 nF	0
Digital I/O	8.6 V	any	any	0 µF	0

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**For the RS485 communication**

Ui	±12.6 V	12 V	7.2 V
Ii	135 mA***	164 mA***	3.3 A***
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

\*\*\*: resistively limited

**Output parameters of the CAIXS2-.... (COM1)**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 µF*	3 mH	140 µH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 µF	300 µH	50 µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	600 µH	125 µH/Ω
Digital I/O	6.0 V	45 mA***	67 mW	40 µF	20 mH	530 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

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F ATEX 020 (Dec/2020)

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## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

### 13 Description of Equipment or Protective System:

The intrinsically safe indicator type CAIXS2-... is used for data handling and indication in a weighing system. Intrinsically safe analog weighing platforms or load cells can be connected to the internal analog digital converter board, which can be replaced by a RS232 /RS485 data output board for connection of intrinsically safe digital weighing platforms or scales. Additional data transfer can be done by an intrinsically safe RS232, RS485 or RS422 data output board with and without digital I/O signals. As options, the UNICOM board or the UNICOM RS boards can be connected to the digital board to provide intrinsically safe data transfer to an external device.

Ambient temperature range: -10 °C to +40 °C.

#### **CAIXS2-ab Intrinsically Safe Indicator**

a = U or V or blank

b = blank or up to three numbers (not relevant to safety)

Electrical Parameters

#### **Connections to the DC Supply Adapter Cable**

Circuit	Ui	Ii	Pi	Ci	Li
V 1	12.6 V	133 mA	1.46 W	188 nF	0
V 2	12.6 V	133 mA	1.46 W	3 nF	0
V 3	8.6 V	187 mA	1.51 W	391 nF	0
V 4	12.6 V	150 mA	1.68 W	223 nF	0.1 mH

#### **Connections to the Data Adapter Board (COM1)**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	2.2 nF*/0.5 nF**	0
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0
RS485	see below	see below	any	260 nF	0
Digital I/O	8.6 V	any	any	0 µF	0

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

#### **For the RS485 communication**

Ui	±12.6 V	12 V	7.2 V
Ii	135 mA***	164 mA***	3.3 A***
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-...)

\*\*\*: resistively limited

#### **Output parameters of the CAIXS2-... (COM1)**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 µF*	3 mH	140 µH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 µF	300 µH	50 µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	600 µH	125 µH/Ω
Digital I/O	6.0 V	45 mA***	67 mW	40 µF	20 mH	530 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

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F ATEX 020 (Dec/2020)

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## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

**Connections to the UNICOM Board (J2 and J3, respectively)**

<b>Ui</b>	<b>Ii</b>	<b>Pi</b>	<b>Ci</b>	<b>Li</b>
6.8 V	200 mA	600 mW	3 µF	20 µH
<b>Uo</b>	<b>Io</b>	<b>Po</b>	<b>Co</b>	<b>Lo</b>
6.0 V	23 mA	34 mW	10 µF	3 mH

**14 Special Conditions for Safe Use:**

1. The front panel of the intrinsically safe indicator type CAIXS2-.... is non-metallic and shall not be used where UV light or radiation may impinge on the enclosure.
2. The front panel of the indicator type CAIXS2-.... is non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.
3. The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
4. After the first installation, the gasket must be replaced each time the enclosure is opened.

**15 Essential Health and Safety Requirements:**

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

**16 Test and Assessment Procedure and Conditions:**

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

**17 Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

**18 Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
23 <sup>rd</sup> December 2013	Original Issue.
31 <sup>st</sup> October 2014	Issue 2 of Original: Correction to Special Conditions of Use.
10 <sup>th</sup> June 2015	<u>Supplement 1:</u> Report Reference: - 3053600 dated 08 <sup>th</sup> June 2015. Description of the change: Addition of UNICOM and UNICOM RS boards

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## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

Date	Description
19 <sup>th</sup> December 2017	<u>Supplement 2:</u> Report Reference: - RR210598 dated 18 <sup>th</sup> December 2017. Description of the change: Minor component and board changes. Updated documentation. Update Certificate to the latest standards and EU format. Updated Applicant company name.
30 <sup>th</sup> April 2018	<u>Supplement 3:</u> Report Reference: – RR213686 dated 11 <sup>th</sup> April 2018. Description of the Change: Minor design change not affecting compliance.
26 <sup>th</sup> October 2018	<u>Supplement 4:</u> Report Reference: – RR215545 dated 22 <sup>nd</sup> October 2018. Description of the Change: Minor design changes not affecting compliance.
30 <sup>th</sup> April 2019	<u>Supplement 5:</u> Report Reference: – RR218080 dated 16 <sup>th</sup> April 2019. Description of the Change: Update of EN 60529 Standard to latest edition. Minor update to label due to Certificate transfer. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
11 <sup>th</sup> October 2019	<u>Supplement 6:</u> Report Reference: – RR219894 dated 11 <sup>th</sup> October 2019. Description of the Change: Minor documentation updates.
28 <sup>th</sup> April 2021	<u>Supplement 7:</u> Report Reference: – RR226683 dated 27 <sup>th</sup> April 2021. Description of the Change: Minor documentation updates. Update EN 60079-0 to EN IEC 60079-0:2018 edition.

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These safety instructions apply to the installation, operation, maintenance and repair of the equipment

In the following the expression „device“ refers to the indicator type CAIXS2. The expression „equipment“ refers to the indicator type CAIXS2 and to the other connected devices.

- 1) Install the equipment in compliance with applicable laws, rules and regulations, ordinances and standards. In particular, be sure to conform to the European Standards EN 60079-14 (Explosive atmospheres – Part 14: Electrical installations design, selection and erection). For more information see „Verification of Intrinsic Safety“ 66015-75 1-60 (ATEX) and „Control Drawing“ 66015-75 1-07 (for use in the USA and in Canada).
- 2) Be sure to follow the installation, operating, maintenance and servicing instructions for the connected devices given in the manuals supplied.
- 3) The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
- 4) The equipment must be powered by a suitable certified/approved power supply or battery pack with intrinsically safe circuits as described in the certificate of this equipment.
- 5) Exposure to UV radiation is not allowed!
- 6) Prior to opening the equipment, disconnect the power supply or make sure that there is no potentially explosive atmosphere or any other explosion hazard in the surrounding area!
- 7) The data cables connected to the equipment are considered as intrinsically safe circuits. The connections are secured against accidental disconnections and may only be plugged in or disconnected when the power is switched completely off.
- 8) Output not used must be safeguarded by appropriate sealing cap (maybe in the scope of delivery) so that the IP6x protection rating is maintained.
- 9) The injection of any external voltage must be avoided by suitable installation of the connected cables!
- 10) Check the correct function of the data transfer before you use the equipment in a hazardous location.
- 11) If the equipment does not operate properly, unplug it immediately from line power (mains supply)! If the device shows visible damages, unplug it and make sure that it will not be used anymore.
- 12) All metal parts must be electrically connected to the terminal for the equipotential bonding conductor (PA). The equipment operator is obligated to connect a lead with a gauge of at least 4 mm<sup>2</sup> (cross section) to the PA terminal located on the side of the housing. The low resistance of this connection to the PA busbar must be checked when the system is installed at the intended place of use. The shielding of the connecting cables may only be used for grounding when no impermissible difference in voltage is generated and, if necessary, the shielding is able to conduct the equipotential current.
- 13) Avoid generating static electricity. Use only a damp cloth to wipe down the equipment. The equipment operator shall be responsible for preventing any risks caused by static electricity.
- 14) Keep chemicals and other agents, which can corrode the housing seals and cable sheaths, away from the equipment. These agents include oil, grease, benzene, acetone and ozone. If you are not sure about the safety of a certain substance, please contact the manufacturer.
- 15) Use equipment only in the temperature ranges indicated. Avoid exposing the equipment to heat.
- 16) The equipment operator is responsible for any non-Minebea Intec cables used.
- 17) Check the EX approval marking (particularly the group for gases/dusts and temperature class/code) on all equipment in the hazardous area before operation to ensure that this approved equipment is permitted to be operated in this area.
- 18) At reasonable intervals, have your equipment installation checked for proper functioning and safety by a trained and certified technician.
- 19) If your equipment needs to be repaired, use only original spare parts supplied by the manufacturer!
- 20) Any tampering with the equipment by anyone, other than repair work done by authorized Minebea Intec service technicians, will result in the loss of EX conformity and in the forfeiture of all claims under the manufacturer's warranty. Only authorized specialists may open the equipment by working to Minebea Intec rule.
- 21) Modifications, including those to be carried out by Minebea Intec employees, may be permitted only after the express written authorization has been obtained from Minebea Intec.
- 22) If the housing has been opened, close the housing with a tightening torque of 1 Nm.
- 23) If the housing has been opened again after the first field wiring, the gasket must be replaced!

	Datum Date	Name Name	Material Material	---	Maßstab / Scale	---
Erstellt Written by	06.04.2021	T. Hiller	<b>Minebea Intec</b>		Title Title	Blatt / Sheet
Gepf. / Reviewed by	06.04.2021	R. Koch	Ausgabe / Revision	Änderung / Alteration	Zeichnungs-Nr. Drawing number	von / of
Freigebe Released by	07.04.2021	T. Hiller	<b>02</b>	<b>543785</b>		<b>66015-751-16</b>

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**Specific Conditions of Use:**

- 1) The front panel of the intrinsically safe indicator type CAIXS2-... is non-metallic and shall not be used where UV light or radiation may impinge on the enclosure.
- 2) The front panel of the intrinsically safe indicator type CAIXS2-... is enclosure is non-conducting and, under certain extreme conditions, may generate an ignition capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
- 3) The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
- 4) After the first installation, the gasket must be replaced each time the enclosure is opened.

**Device Marking:**

**ATEX:** II 2 G Ex ia IIC T4 Gb  
II 2 D Ex ia IIIC T80°C Db

**IECEX:** Ex ia IIC T4 Gb  
Ex ia IIIC T80°C Db

**USA:** IS CL I,II,III, DIV1, GP A,B,C,D,E,F,G T4  
CL I, Zone 1, AEx ia IIC T4  
Zone 21, AEx ia IIIC T80°C

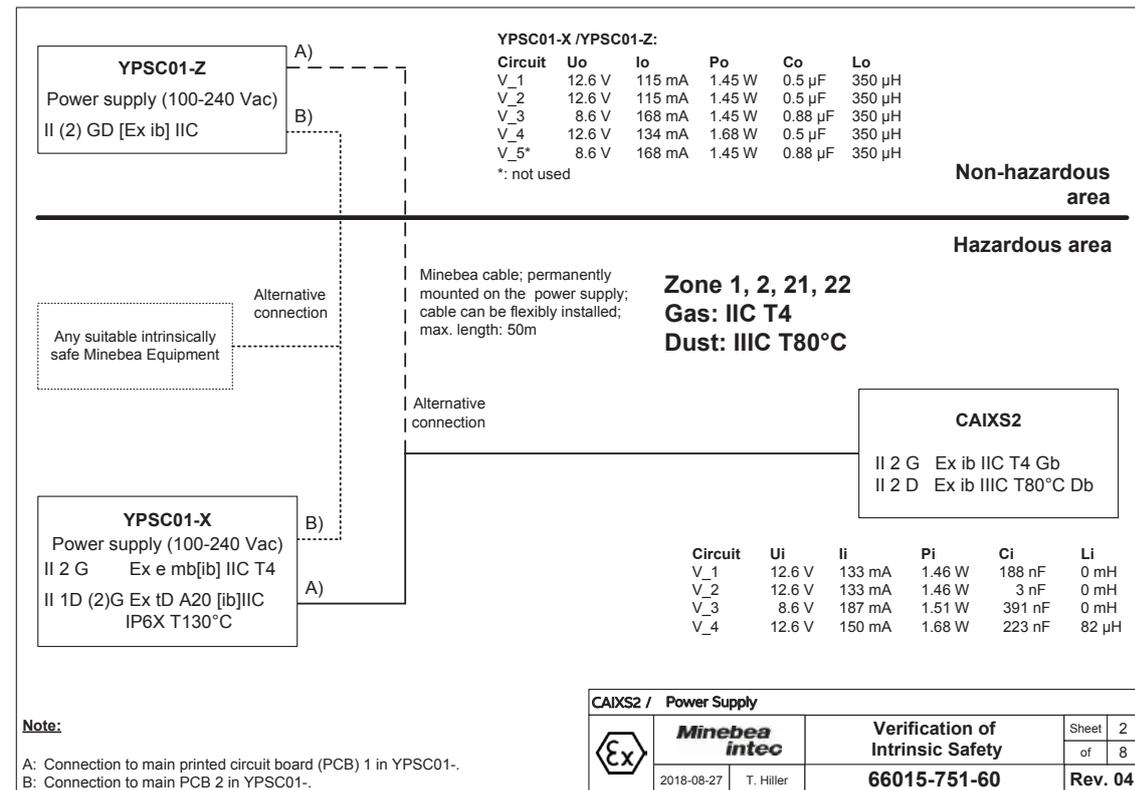
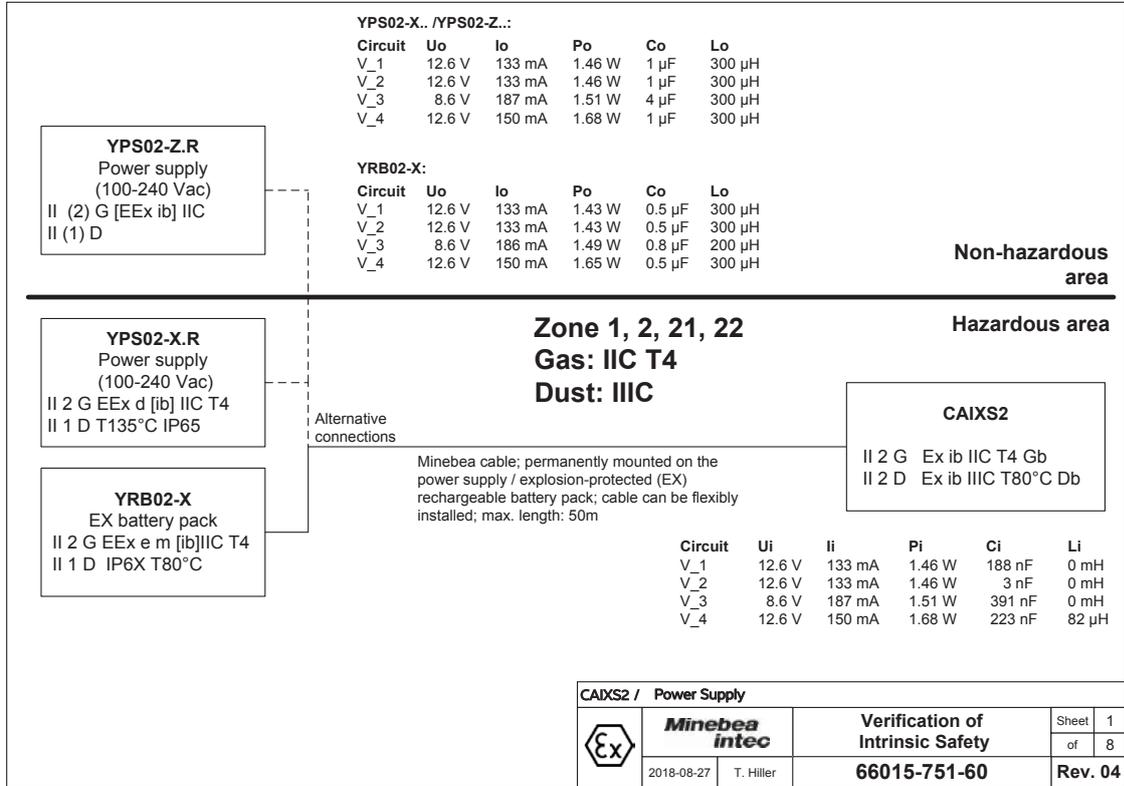
**Canada:** Ex ia CL I,II,III, DIV1 GP A,B,C,D,E,F,G T4  
Ex ia IIC T4 Gb

**Temperature:** -10°C ≤ T<sub>AMB</sub> ≤ +40°C

**Device Label:**



	Datum Date	Name Name	Material Material	---	Maßstab / Scale	---
Erstellt Written by	06.04.2021	T. Hiller	<b>Minebea intec</b>		Title Title	Blatt / Sheet
Geprüft Reviewed by	06.04.2021	R. Koch			Ausgabe / Revision	Änderung / Alteration
Freigabe Released by	07.04.2021	T. Hiller	02	543785	66015-751-16	2



**Note:**

A: Connection to main printed circuit board (PCB) 1 in YPSC01-.  
 B: Connection to main PCB 2 in YPSC01-.

### Zone 1, 2, 21, 22 Gas: IIC T4 Dust: IIIC

**CAPIX...**  
**IUXS4...**, **IFXS4...**  
Weighing platform  
II 2 GD EEx ib IIC T4 T155°C

or  
PR62.. / MP... (see list below)

Ui 13 V  
Ii 425 mA  
Pi 2.0 W  
Ci 4 nF  
Li 6 µH

Uo = 11.8 V  
Io = 147 mA  
Po = 1.49 W  
Co = 770 nF  
Lo = 300 µH

**ADU:  
DMS Frontend  
Board**

**CAIXS2**

II 2 G Ex ib IIC T4 Gb  
II 2 D Ex ib IIIC T80°C Db

EC Type-Examination Certificate	Ui	Ii	Pi	Ci	Li	Suitable for Zone	Comment
TUV 03 ATEX 2301 X	---	---	2W	---	---	21, 22	(Serie PR62./...und MP56/...)
PTB 02 ATEX 2059	25V	160mA	2W	0	0	1, 2	(Serie PR62./...)
PTB 00 ATEX 2039	25V	160mA	2W	0	0	1, 2	(Serie PR6251/...)
KEMA 04ATEX1253X	17V	500mA	2.1W	0	0	1, 2, 20, 21, 22	(Serie MP55, MP58, MP58T), T130/150°C
Sira 04ATEX2143X	24V	483mA	2W	0	0	1, 2, 20, 21, 22	(Serie MP57, MP59, MP59T), T115°C

**Sensor cable for weighing platform**  
Functionality requires cables with a low resistance rating.  
**Recommended:** LIYCY 6x...<sup>2</sup> with 700µH/km maximum, 130nF/km maximum (wire versus wire) and 170nF/km maximum (wire vs. ground) can be installed flexibly up to lengths of 500m.  
The 6-wire cable, type **PR6136**, (Lmax = 1.1 mH/km; Cmax = 220nF/km; Rmin = 26 ohms/km) can be used up to 500m.  
For cables longer than 50m, the screen (shield) of the cable may not be connected to the housing of the weighing platform, or the weighing platform and the indicator must be connected with limited resistivity (e.g., by connecting to an equipotential grounding busbar).

CAIXS2 / Connection of an Analog Weighing Platform				Sheet	3
	<b>Minebea intec</b>	<b>Verification of Intrinsic Safety</b>		of	8
	2018-08-27	T. Hiller	<b>66015-751-60</b>	Rev.	<b>04</b>

### Zone 1, 2, 21, 22 Gas: IIC T4 Dust: IIIC

**ISX...**<sup>5)</sup>

II 2 G Ex ib IIC T4 Gb  
II 2 D Ex ib IIIC T80°C Db

**RS232 or RS485  
Data interface**

Commercially available shielded cables up to 20 m can be used (e.g., LIYCY).

**WP Board**

**CAIXS2**

II 2 G Ex ib IIC T4 Gb  
II 2 D Ex ib IIIC T80°C Db

**RS232 parameters (A/J/K/N/M)<sup>2)</sup>**

Ui 12.6 V <sup>3)</sup> / 25.2 V <sup>4)</sup>	Uo 10.0 V <sup>3)</sup> / 20.0 V <sup>4)</sup>
Ii 328 mA*	Io 101 mA*
Pi any	Po 253 mW
Ci 2.2 nF <sup>3)</sup> / 0.5nF <sup>4)</sup>	Co 3 µF <sup>3)</sup> / 217nF <sup>4)</sup>
Li 0 mH	Lo 3 mH
	Lo/Ro 140 µH/Ω

**RS485 parameters (J/K/M)<sup>2)</sup>**

Ui see table 1	Uo 5.2 V
Ii see table 1	Io 210 mA***
Pi any	Po 263 mW
Ci 260 nF	Co 60 µF
Li 0 mH	Lo 600 µH
	Lo/Ro 125 µH/Ω

**Table 1 (Rmin = Ui / Ii)**

Ui ±12.4V	12.0V	6.0V
Ii 130 mA***	164 mA***	3.3 A***
Rmin 95.4Ω	73.2Ω	2.2Ω

**RS232 parameters (A/J/K/N/M or 1/2/3/4/5/6 of J102)<sup>2)</sup>**

Ui 12.6 V <sup>3)</sup> / 25.2 V <sup>4)</sup>	Uo 10.8 V <sup>3)</sup> / 21.6 V <sup>4)</sup>
Ii 328 mA*	Io 110 mA* / 55 mA
Pi any	Po 295 mW
Ci 3nF <sup>3)</sup> / 0.5nF <sup>4)</sup>	Co 2.14 µF <sup>3)</sup> / 174 nF <sup>4)</sup>
Li 0 mH	Lo 2 mH
	Lo/Ro 120 µH/Ω

**RS485 parameters (J/K/M or 1/2/3 of J101)<sup>2)</sup>**

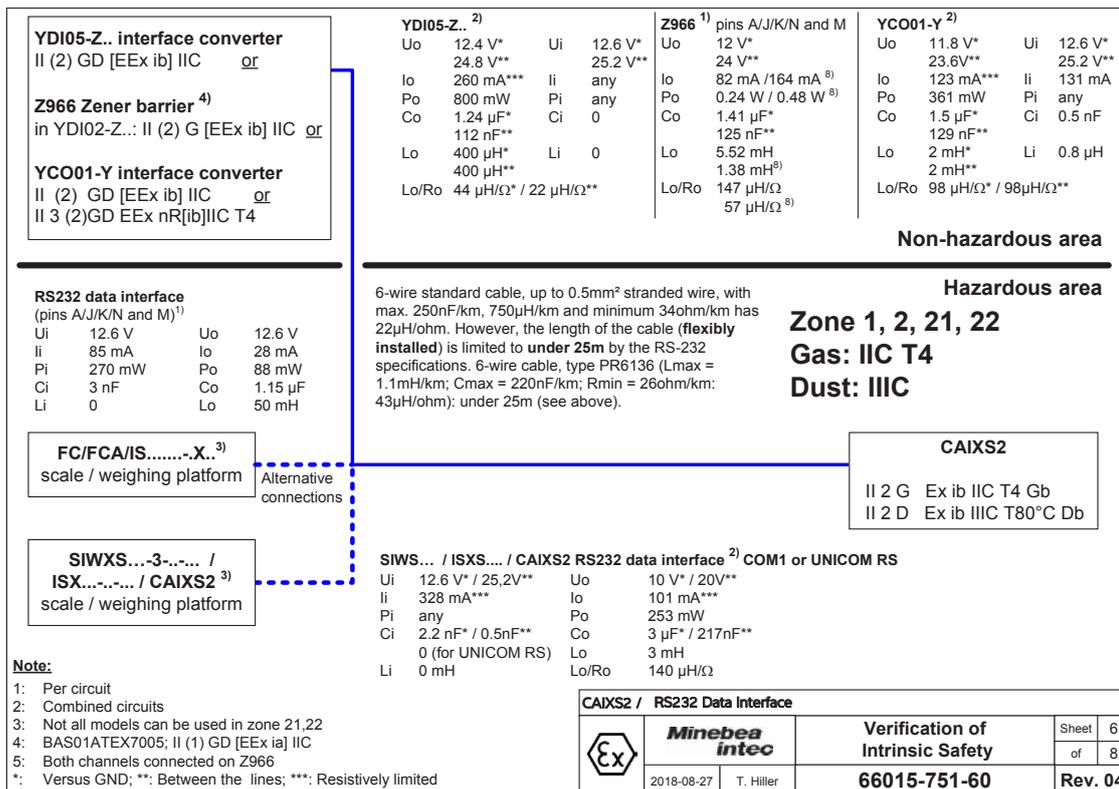
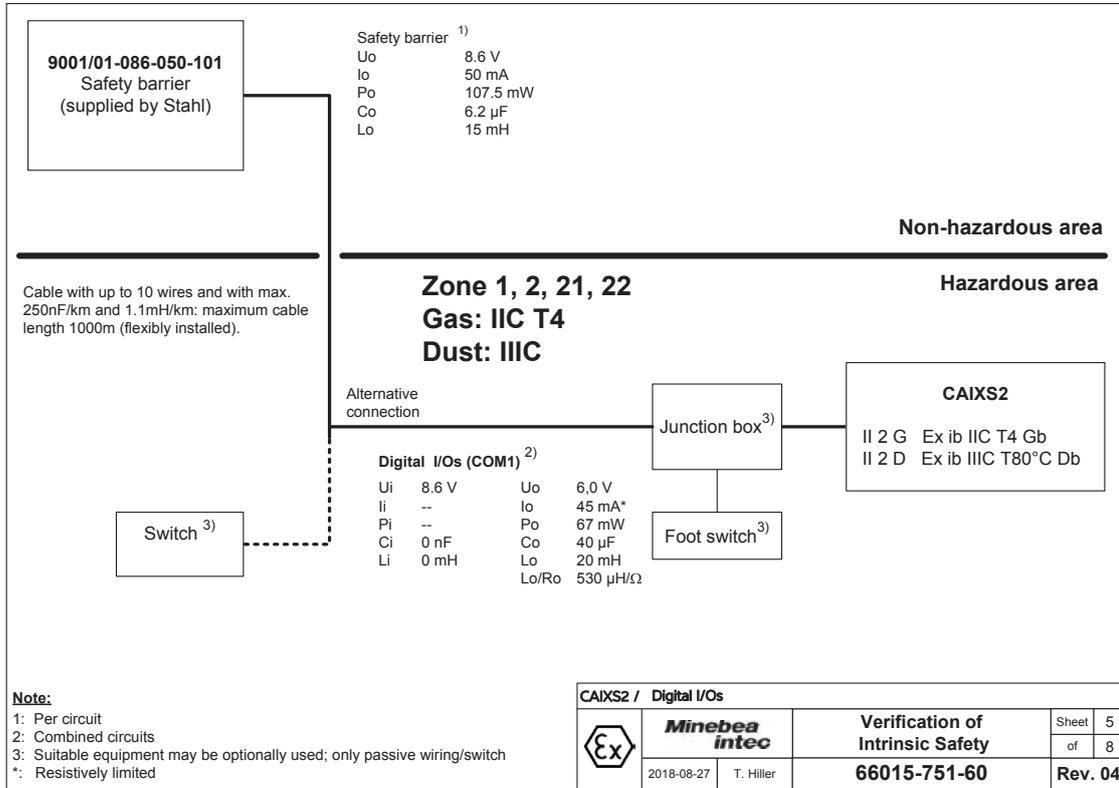
Ui see table 2	Uo 5.4 V
Ii see table 2	Io 74 mA*
Pi any	Po 183 mW
Ci 260 nF	Co 50 µF
Li 0 mH	Lo 600 µH
	Lo/Ro 135 µH/Ω

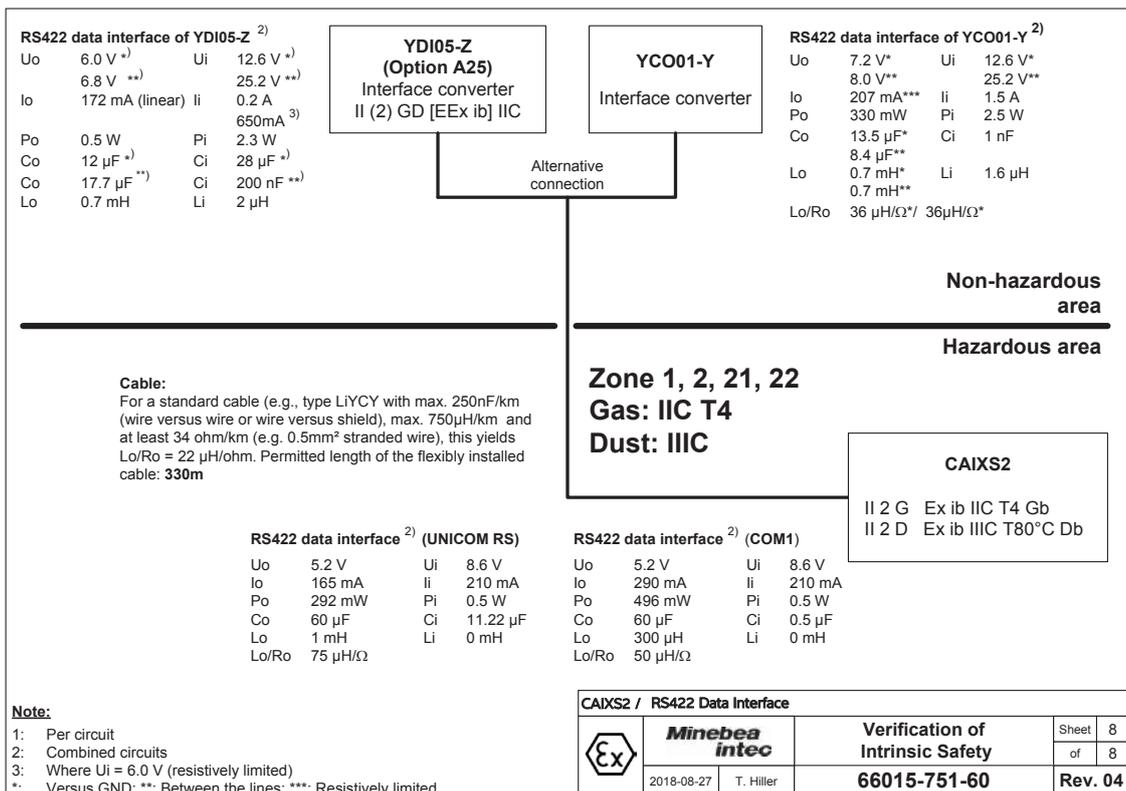
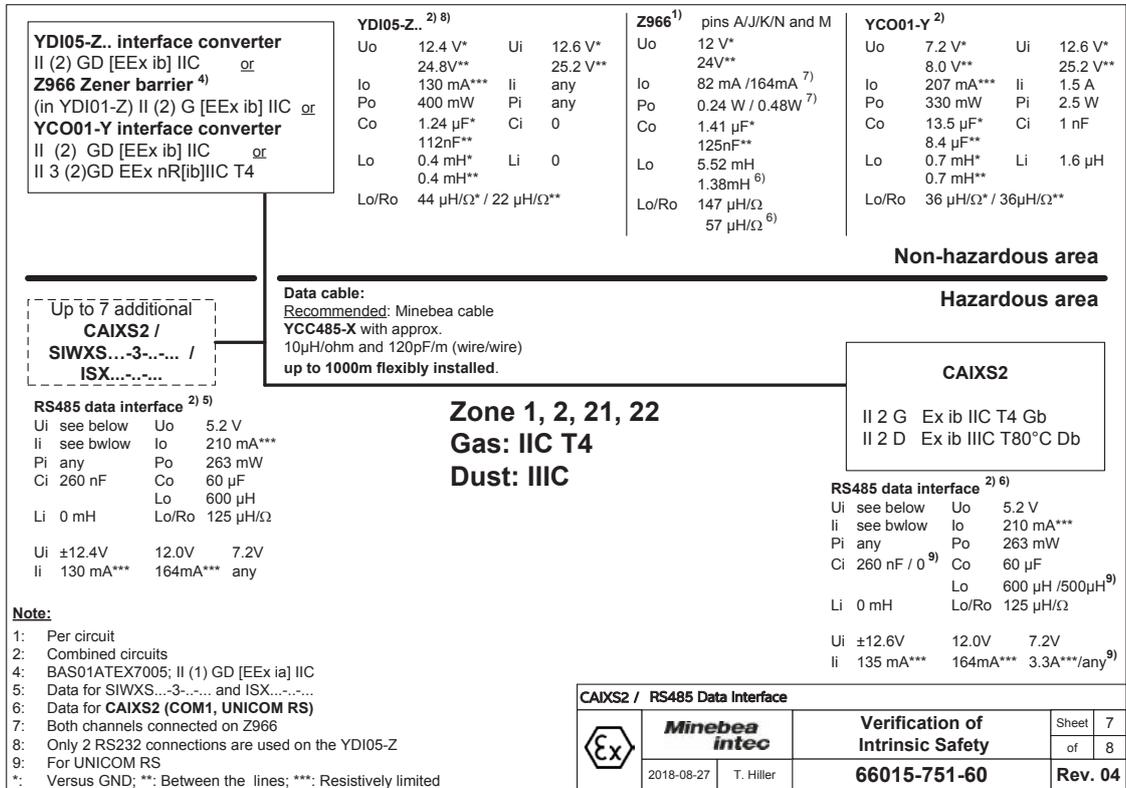
**Table 2 (Rmin = Ui / Ii)**

Ui ±12.6V	12.0V	6.0V
Ii 135 mA***	164 mA***	3.3 A***
Rmin 95.4Ω	73.2Ω	2.2Ω

**Note:**  
1: Per circuit  
2: Combined circuits  
3: Versus ground  
4: Between the signal lines  
5: SIWXSB-3-06-H.. and ISXBB-3-06-H.. models may not be used in zone 21 and zone 22  
\*: Resistively limited

CAIXS2 / Connection of a Digital Weighing Platform				Sheet	4
	<b>Minebea intec</b>	<b>Verification of Intrinsic Safety</b>		of	8
	2018-08-27	T. Hiller	<b>66015-751-60</b>	Rev.	<b>04</b>





# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM17US0327X
3. **Equipment:** CAIXS2-ab Intrinsically Safe Indicator  
**(Type Reference and Name)**
4. **Name of Listing Company:** Minebea Intec Bovenden GmbH & Co. KG
5. **Address of Listing Company:** Leinetal 2  
37120 Bovenden  
Germany
6. The examination and test results are recorded in confidential report number:  
  
3049923 dated 23<sup>rd</sup> December 2013
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
  
FM Class 3600:2018, FM Class 3610:2018, FM Class 3810:2005,  
ANSI/IEC 60529:2004, ANSI/UL 60079-0:2019, ANSI/ISA 60079-11:2014
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**  
  
Intrinsically safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G Hazardous (Classified) Locations per Entity concept in accordance with 66015-751-07. Intrinsically safe for Class I, Zone 1, Group IIC Hazardous (Classified) Locations per Entity concept in accordance with 66015-751-07. Intrinsically safe for Zone 21 Group IIIC Hazardous (Classified) Locations per Entity concept in accordance with 66015-751-07.

**Certificate issued by:**

*J.E. Marquedant*  
 \_\_\_\_\_  
 J.E. Marquedant  
 VP, Manager - Electrical Systems

27 April 2021  
 \_\_\_\_\_  
 Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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 T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmaprovals.com](mailto:information@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)

## SCHEDULE



US Certificate Of Conformity No: FM17US0327X

11. The marking of the equipment shall include:

IS CL I, II, III, DIV 1, GP A,B,C,D,E,F,G T4  
CL I, Zone 1, AEx ia IIC T4  
Zone 21, AEx ia IIIC T80°C

12. **Description of Equipment:**

**General** - The intrinsically safe indicator type CAIXS2-.... Is used for data handling and indication in a weighing system. Intrinsically safe analog weighing platforms or load cells can be connected to the internal analog digital converter board, which can be replaced by a RS232/RS485 data output board for connection to intrinsically safe digital weighing platforms or scales. Additional data transfer can be done by an intrinsically safe RS232, RS485 or RS422 data output board with and without digital I/O signals.

**Construction** - The housing of the display unit consists of stainless steel with a membrane switch glued to the front panel. The weighing modules housing consists of painted aluminium and/or stainless steel.

**Ratings** - The ambient temperature range of the CAIXS2-.... Intrinsically Safe Indicator, which is also listed on controlled drawing 66015-751-07, is -10°C to +40°C. The maximum surface temperature for dusts of the CAIX2-.... is 80°C.

**CAIXS2-ab Intrinsically Safe Indicator**

a = U or V or blank

b = blank or up to three numbers (not relevant to safety)

Electrical Parameters

**Connections to the DC Supply Adapter Cable**

Circuit	Ui	Ii	Pi	Ci	Li
V 1	12.6 V	133 mA	1.46 W	188 nF	0.0 mH
V 2	12.6 V	133 mA	1.46 W	3 nF	0.0 mH
V 3	8.6 V	187 mA	1.51 W	391 nF	0.0 mH
V 4	12.6 V	150 mA	1.68 W	223 nF	0.1 mH

**Connections to the Data Adapter Board (COM1)**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	2.2 nF*/0.5nF**	0 mH
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0 mH
RS485	see below	see below	any	260nF	0 mH
Digital I/O	8.6 V	any	any	0 µF	0 mH

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**For the RS485 communication**

Ui	±12.6 V	12 V	7.2 V
Ii	135 mA***	164 mA***	3.3A***
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

\*\*\*: resistively limited

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## SCHEDULE



US Certificate Of Conformity No: FM17US0327X

**Output parameters of the CAIXS2-.... (COM1)**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 µF*	3 mH	140µH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 µF	300 µH	50µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	600 µH	125 µH/Ω
Digital I/O	6.0 V	45 mA***	67 mW	40 µF	20 mH	530 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**Input/Output parameters for the WP Board**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS485	5.4 V	74 mA***	183 mW	50 µF	600 µH	135 µH/Ω
	Ui	Ii	Pi	Ci	Li	
	±12.6 V	135 mA***	†	260 nF	0 mH	
	12.0 V	164 mA***				
	6.0 V	3.3 A***				

\*\*\*: resistively limited

†: Any. The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... as the circuit is resistively limited at the input. A consideration only need to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

Rmin of the external intrinsically safe circuit is defined by Ui / Ii and is;

Ui	±12.6V	12.0V	6.0V
Rmin	95.4Ω	73.2Ω	2.2Ω

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.8 V*	110 mA***	295 mW	2.14 µF	2 mH	120 µH/Ω
	21.6 V**	55 mA		174 nF		
	Ui	Ii	Pi	Ci	Li	
	12.6 V*	328 mA***	†	3 nF	0 mH	
	25.2 V**			0.5 nF		

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

†: Any. The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... as the circuit is resistively limited at the input. A consideration only need to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

**DMS Front End Board**

Uo	Io	Po	Co	Lo
11.8V	147 mA	1.49 W	770 nF	300 uH

**Connections to the UNICOM RS Board**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	0 uF	0 mH
RS422	8.6 V	210 mA	0.5 W	11.22 µF	0 mH
RS485	see below	see below	any	0 uF	0 mH

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# SCHEDULE



US Certificate Of Conformity No: FM17US0327X

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**For the RS485 communication**

<b>Ui</b>	±12.6 V	12 V	7.2 V
<b>Ii</b>	135 mA***	164 mA***	any
<b>Rmin</b>	95.4 Ω	73.2 Ω	0

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

**Output parameters of the UNICOM RS Board**

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 µF*	3 mH	140µH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	165 mA	292 mW	60 µF	1 mH	75µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	500 µH	125 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**Connections to the UNICOM Board (J2 and J3, respectively)**

Ui	Ii	Pi	Ci	Li
6.8V	200 mA	600 mW	3 uF	20 uH
Uo	Io	Po	Co	Lo
6.0V	23 mA	34 mW	10 uF	3 mH

**13. Specific Conditions of Use:**

1. The front panel of the intrinsically safe indicator type CAIXS2-.... is non-metallic and shall not be used where UV light or radiation may impinge on the enclosure.
2. The front panel of the intrinsically safe indicator type CAIXS2-.... is enclosure is non-conducting and, under certain extreme conditions, may generate an ignition capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
3. The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
4. After the first installation, the gasket must be replaced each time the enclosure is opened.

**14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

**15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

**16. Certificate History**

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
 T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

Date	Description
19 <sup>th</sup> December 2017	<u>Supplement 2:</u> Report Reference: - RR210598 dated 18 <sup>th</sup> December 2017. Description of the change: Minor component and board changes. Updated documentation. Update Certificate to the latest standards and EU format. Updated Applicant company name.
30 <sup>th</sup> April 2018	<u>Supplement 3:</u> Report Reference: – RR213686 dated 11 <sup>th</sup> April 2018. Description of the Change: Minor design change not affecting compliance.
26 <sup>th</sup> October 2018	<u>Supplement 4:</u> Report Reference: – RR215545 dated 22 <sup>nd</sup> October 2018. Description of the Change: Minor design changes not affecting compliance.
30 <sup>th</sup> April 2019	<u>Supplement 5:</u> Report Reference: – RR218080 dated 16 <sup>th</sup> April 2019. Description of the Change: Update of EN 60529 Standard to latest edition. Minor update to label due to Certificate transfer. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
11 <sup>th</sup> October 2019	<u>Supplement 6:</u> Report Reference: – RR219894 dated 11 <sup>th</sup> October 2019. Description of the Change: Minor documentation updates.
28 <sup>th</sup> April 2021	<u>Supplement 7:</u> Report Reference: – RR226683 dated 27 <sup>th</sup> April 2021. Description of the Change: Minor documentation updates. Update EN 60079-0 to EN IEC 60079-0:2018 edition.

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FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin, Ireland. D02 E440  
T: +353 (0) 1761 4200 E-mail: [atex@fmapprovals.com](mailto:atex@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

F ATEX 020 (Dec/2020)

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# CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** **FM17CA0165X**
3. **Equipment:** **CAIXS2-ab Intrinsically Safe Indicator**  
(Type Reference and Name)
4. **Name of Listing Company:** **Minebea Intec Bovenden GmbH & Co. KG**
5. **Address of Listing Company:** **Leinetal 2**  
**37120 Bovenden**  
**Germany**
6. The examination and test results are recorded in confidential report number:  
  
3049923C dated 23<sup>rd</sup> December 2013
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
  
CAN/CSA-C22.2 No. 0-M91:R2006, CSA-C22.2 No. 1010.1:R2004,  
CAN/CSA C22.2 No. 60079-0:2019, CAN/CSAC22.2 No. 60079-11:2014
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**  
  
Intrinsically safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G Hazardous Locations per Entity concept in accordance with 66015-751-07. Intrinsically safe Ex ia for Class I, Zone 1, Group IIC Hazardous Locations per Entity concept in accordance with 66015-751-07.

**Certificate issued by:**

*J.E. Marquedant*  
 J.E. Marquedant  
 VP, Manager - Electrical Systems

27 April 2021  
 Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
 T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

## SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0165X

11. The marking of the equipment shall include:

IS CL I, II, III, DIV 1, GP A,B,C,D,E,F,G T4  
Ex ia IIC T4 Gb

12. **Description of Equipment:**

**General** - The intrinsically safe indicator type CAIXS2-.... Is used for date handling and indication in a weighing system. Intrinsically safe analog weighing platforms or load cells can be connected to the internal analog digital converter board, which can be replaced by a RS232/RS485 data output board for connection to intrinsically safe digital weighing platforms or scales. Additional data transfer can be done by an intrinsically safe RS232, RS485 or RS422 data output board with and without digital I/O signals.

**Construction** - The housing of the display unit consists of stainless steel with a membrane switch glued to the Front panel. The weighing modules housing consists of painted aluminium and/or stainless steel.

**Ratings** - The ambient temperature range of the CAIXS2-.... Intrinsically Safe Indicator, which is also listed on controlled drawing 66015-751-07, is -10°C to +40°C.

**CAIXS2-ab Intrinsically Safe Indicator**

a = U or V or blank

b = blank or up to three numbers (not relevant to safety)

**Electrical Parameters**

**Connections to the DC Supply Adapter Cable**

Circuit	Ui	Ii	Pi	Ci	Li
V 1	12.6 V	133 mA	1.46 W	188 nF	0.0 mH
V 2	12.6 V	133 mA	1.46 W	3 nF	0.0 mH
V 3	8.6 V	187 mA	1.51 W	391 nF	0.0 mH
V 4	12.6 V	150 mA	1.68 W	223 nF	0.1 mH

**Connections to the Data Adapter Board (COM1)**

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	2.2 nF*/0.5nF**	0 mH
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0 mH
RS485	see below	see below	any	260nF	0 mH
Digital I/O	8.6 V	any	any	0 µF	0 mH

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**For the RS485 communication**

Ui	±12.6 V	12 V	7.2 V
Ii	135 mA***	164 mA***	3.3A***
Rmin	95.4 Ω	73.2 Ω	2.2 Ω

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

\*\*\*: resistively limited

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## SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0165X

### Output parameters of the CAIXS2-.... (COM1)

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 $\mu$ F*	3 mH	140 $\mu$ H/ $\Omega$
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 $\mu$ F	300 $\mu$ H	50 $\mu$ H/ $\Omega$
RS485	5.2 V	210 mA***	263 mW	60 $\mu$ F	600 $\mu$ H	125 $\mu$ H/ $\Omega$
Digital I/O	6.0 V	45 mA***	67 mW	40 $\mu$ F	20 mH	530 $\mu$ H/ $\Omega$

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

### Input/Output parameters for the WP Board

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS485	5.4 V	74 mA***	183 mW	50 $\mu$ F	600 $\mu$ H	135 $\mu$ H/ $\Omega$
	Ui	Ii	Pi	Ci	Li	
	$\pm$ 12.6 V	135 mA***	†	260 nF	0 mH	
	12.0 V	164 mA***				
	6.0 V	3.3 A***				

\*\*\*: resistively limited

†; Any. The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... as the circuit is resistively limited at the input. A consideration only need to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

Rmin of the external intrinsically safe circuit is defined by Ui / Ii and is;

Ui	$\pm$ 12.6V	12.0V	6.0V
Rmin	95.4 $\Omega$	73.2 $\Omega$	2.2 $\Omega$

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.8 V*	110 mA***	295 mW	2.14 $\mu$ F	2 mH	120 $\mu$ H/ $\Omega$
	21.6 V**	55 mA		174 nF		
Ui	Ii	Pi	Ci	Li		
	12.6 V*	328 mA***	†	3 nF	0 mH	
	25.2 V**			0.5 nF		

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

†; Any. The input power from the SIWXS... or ISX... is not critical to the CAIXS2-.... as the circuit is resistively limited at the input. A consideration only need to be taken for the cable parameters and that will be defined by the SIWXS... or ISX....

### DMS Front End Board

Uo	Io	Po	Co	Lo
11.8V	147 mA	1.49 W	770 nF	300 $\mu$ H

### Connections to the UNICOM RS Board

Circuit	Ui	Ii	Pi	Ci	Li
RS232	12.6 V*/25.2 V**	328 mA***	any	0 $\mu$ F	0 mH
RS422	8.6 V	210 mA	0.5 W	11.22 $\mu$ F	0 mH
RS485	see below	see below	any	0 $\mu$ F	0 mH

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

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F 348 (Mar 16)

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## SCHEDULE



Member of the FM Global Group

Canadian Certificate Of Conformity No: FM17CA0165X

### For the RS485 communication

<b>Ui</b>	±12.6V	12 V	7.2 V
<b>Ii</b>	135 mA***	164 mA***	any
<b>Rmin</b>	95.4 Ω	73.2 Ω	0

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the associated apparatus connected to the CAIXS2-....)

### Output parameters of the UNICOM RS Board

Circuit	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 μF*	3 mH	140μH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	165 mA	292 mW	60 μF	1 mH	75μH/Ω
RS485	5.2 V	210 mA***	263 mW	60 μF	500 μH	125 μH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

### Connections to the UNICOM Board (J2 and J3, respectively)

Ui	Ii	Pi	Ci	Li
6.8V	200 mA	600 mW	3 uF	20 uH
Uo	Io	Po	Co	Lo
6.0V	23 mA	34 mW	10 uF	3 mH

### 13. Specific Conditions of Use:

- The front panel of the intrinsically safe indicator type CAIXS2-.... is non-metallic and shall not be used where UV light or radiation may impinge on the enclosure.
- The front panel of the intrinsically safe indicator type CAIXS2-.... is enclosure is non-conducting and, under certain extreme conditions, may generate an ignition capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
- The device shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.
- After the first installation, the gasket must be replaced each time the enclosure is opened.

### 14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

### 15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

### 16. Certificate History

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F 348 (Mar 16)

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## SCHEDULE



to EU-Type Examination Certificate No. FM13ATEX0085X

Date	Description
19 <sup>th</sup> December 2017	<u>Supplement 2:</u> Report Reference: - RR210598 dated 18 <sup>th</sup> December 2017. Description of the change: Minor component and board changes. Updated documentation. Update Certificate to the latest standards and EU format. Updated Applicant company name.
30 <sup>th</sup> April 2018	<u>Supplement 3:</u> Report Reference: - RR213686 dated 11 <sup>th</sup> April 2018. Description of the Change: Minor design change not affecting compliance.
26 <sup>th</sup> October 2018	<u>Supplement 4:</u> Report Reference: - RR215545 dated 22 <sup>nd</sup> October 2018. Description of the Change: Minor design changes not affecting compliance.
30 <sup>th</sup> April 2019	<u>Supplement 5:</u> Report Reference: - RR218080 dated 16 <sup>th</sup> April 2019. Description of the Change: Update of EN 60529 Standard to latest edition. Minor update to label due to Certificate transfer. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
11 <sup>th</sup> October 2019	<u>Supplement 6:</u> Report Reference: - RR219894 dated 11 <sup>th</sup> October 2019. Description of the Change: Minor documentation updates.
28 <sup>th</sup> April 2021	<u>Supplement 7:</u> Report Reference: - RR226683 dated 27 <sup>th</sup> April 2021. Description of the Change: Minor documentation updates. Update EN 60079-0 to EN IEC 60079-0:2018 edition.

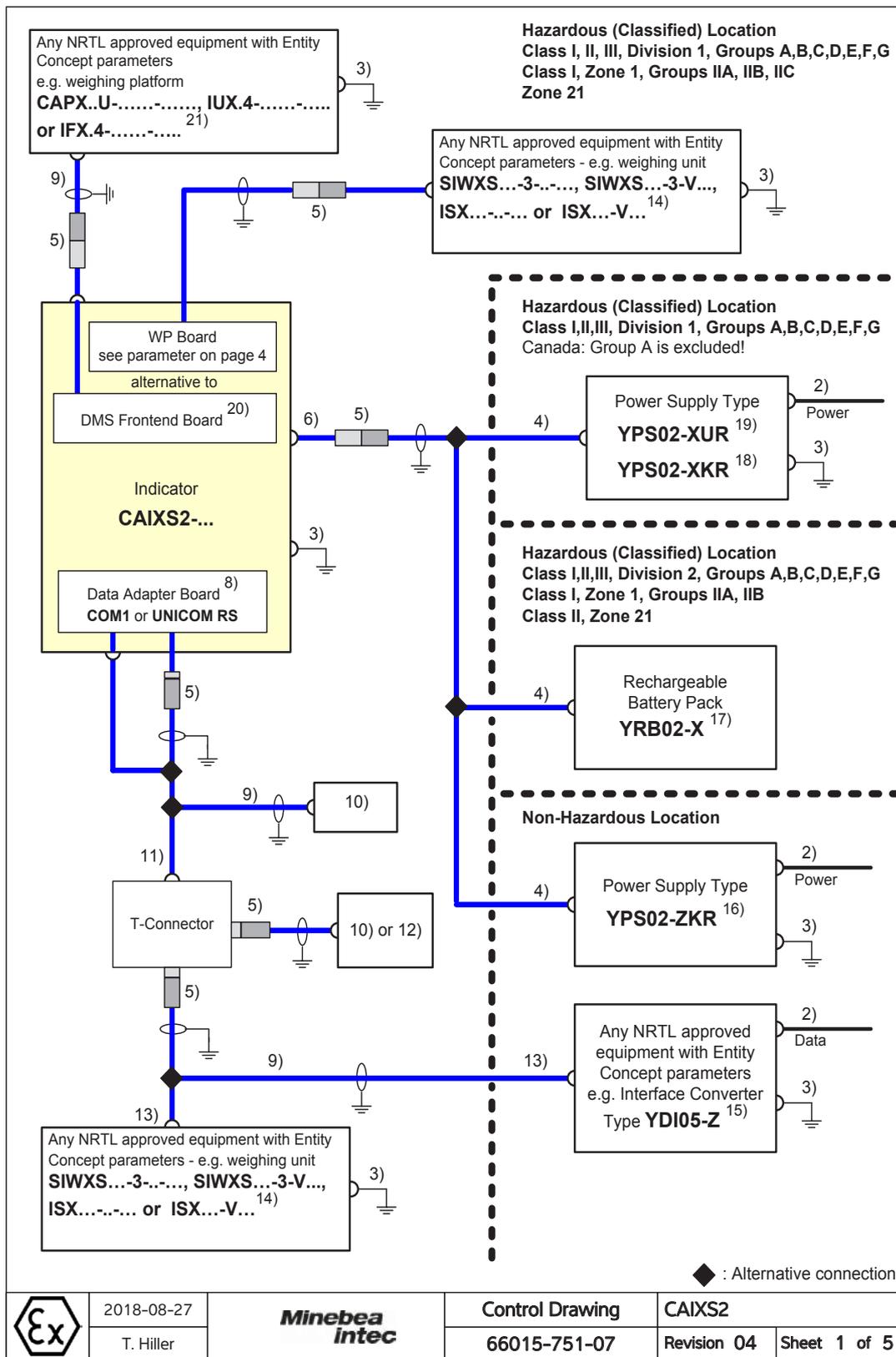
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T: +353 (0) 1761 4200 E-mail: [atex@fmaprovals.com](mailto:atex@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)

F ATEX 020 (Dec/2020)

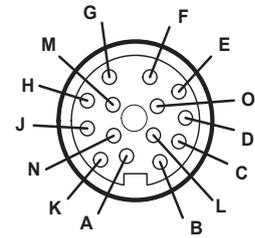
Page 5 of 5



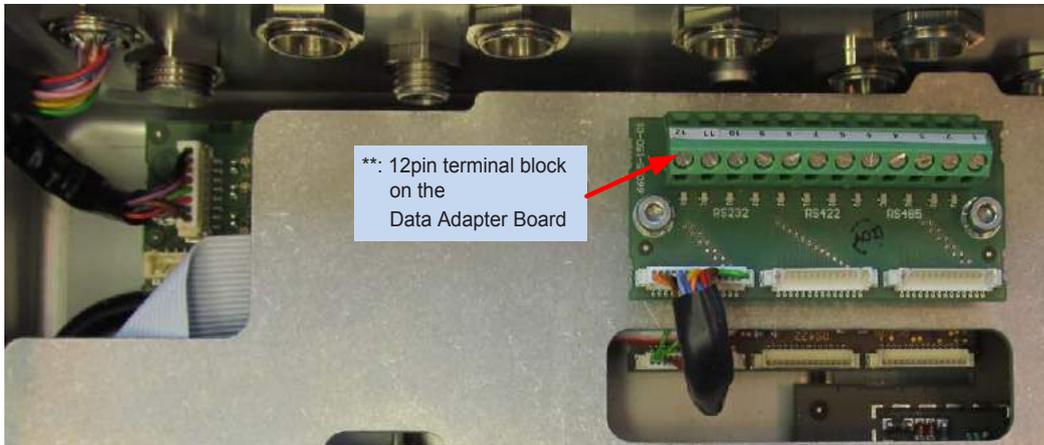


**Terminal Assignments on the CAIXS2 Data Interfaces (COM1)**

RS232 + Digital I/Os	RS422	RS485 + Digital I/Os	Pin <sup>*)</sup>	Pin <sup>**)</sup>
CTS	GND	GND	A	1
RxD	GND	TxD-RxD_P	J	2
TxD	TxD_N	TxD_RxD_N	K	3
DTR	TxD_P	---	N	4
GND	DTR_P	GND	C	5
GND	RxD_N	GND	M	6
GND	DTR_N	GND	B	7
UNI_IN	---	UNI_IN	O	8
SET	---	SET	D	9
PAR	CTS_N	PAR	E	10
MIN	CTS_P	MIN	F	11
MAJ	RxD_P	MAJ	G	12



\*: 14pin female connector on an adapter cable (topview)



**Input parameters** (combined circuits) for COM1:

	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	L <sub>i</sub>
RS232	12.6 V* 25.2 V**	328 mA***	any	2.2 nF*/0.5nF**	0 mH
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0 mH
RS485	see below	see below	any	260 nF	0 mH
Digital I/Os	8.6 V	any	any	0 µF	0 mH

RS485 (R<sub>min</sub> = U<sub>i</sub> / I<sub>i</sub> is the minimum output resistance of the combined circuits of the equipment connected to the CAIXS2):

U <sub>i</sub>	±12.6 V	12.0 V	7.2 V
I <sub>i</sub>	135 mA***	164 mA***	3.3 A***
R <sub>min</sub>	95,4 Ω	73,2 Ω	2.2 Ω

**Output parameters** (combined circuits) for COM1:

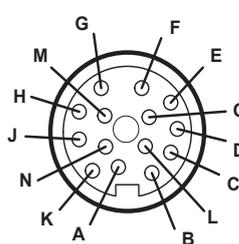
	U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	C <sub>o</sub>	L <sub>o</sub>	Lo/Ro
RS232	10.0 V* 20.0 V**	101 mA***	253 mW	3 µF* 217 nF**	3 mH	140 µH/Ω
RS422	5.2 V	290 mA	496 mW	60 µF	300 µH	50 µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	600 µH	125 µH/Ω
Digital I/Os	6.0 V	45 mA***	67 mW	40 µF	20 mH	530 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

	2018-08-27	<b>Minebea Intec</b>	<b>Control Drawing</b>	<b>CAIXS2</b>
	T. Hiller		<b>66015-751-07</b>	Revision 04 Sheet 2 of 5

**Terminal Assignments on the CAIXS2 Data Interfaces (UNICOM RS):**

RS232	RS422	RS485	Pin <sup>*)</sup>
CTS	GND	GND	A
RxD	GND	TxD-RxD_P	J
TxD	TxD_N	TxD_RxD_N	K
DTR	TxD_P	---	N
GND	DTR_P	GND	C
GND	RxD_N	GND	M
GND	DTR_N	GND	B
---	CTS_N	---	E
---	CTS_P	---	F
---	RxD_P	---	G



\*: 14pin female connector on an adapter cable (topview)

**Input parameters** (combined circuits) for UNICOM RS:

	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	L <sub>i</sub>
RS232	12.6 V* 25.2 V**	328 mA***	any	0 nF	0 mH
RS422	8.6 V	210 mA	0.5 W	11.22 µF	0 mH
RS485	see below	see below	any	0 nF	0 mH

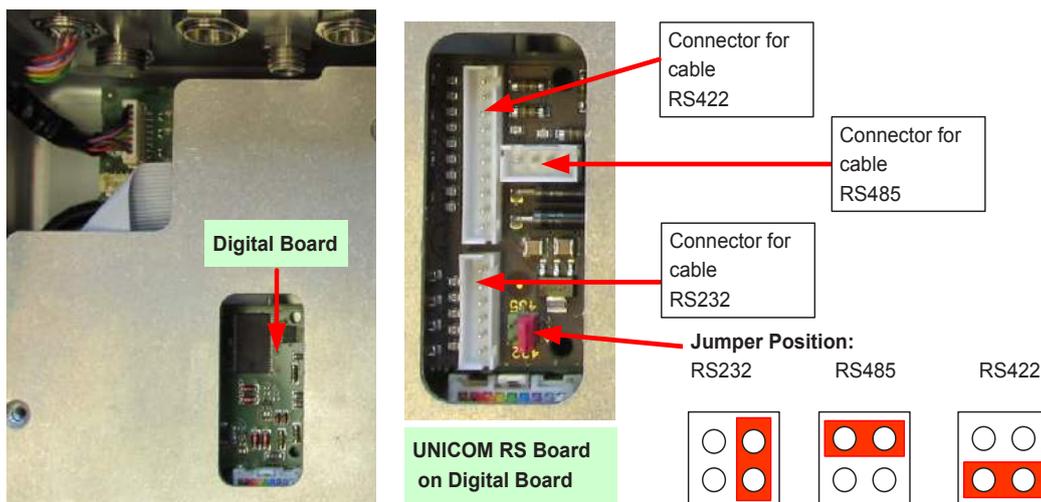
RS485 (R<sub>min</sub> = U<sub>i</sub> / I<sub>i</sub> is the minimum output resistance of the combined circuits of the equipment connected to the CAIXS2):

U <sub>i</sub>	±12.6 V	12.0 V	7.2 V
I <sub>i</sub>	135 mA***	164 mA***	any
R <sub>min</sub>	95.4 Ω	73.2 Ω	0 Ω

**Output parameters** (combined circuits) for UNICOM RS:

	U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	C <sub>o</sub>	L <sub>o</sub>	Lo/Ro
RS232	10.0 V* 20.0 V**	101 mA***	253 mW	3 µF* 217 nF**	3 mH	140 µH/Ω
RS422	5.2 V	165 mA	292 mW	60 µF	1 mH	75 µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	500 µH	125 µH/Ω

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited



	2018-08-27		Control Drawing	CAIXS2	
	T. Hiller		66015-751-07	Revision 04	Sheet 3 of 5

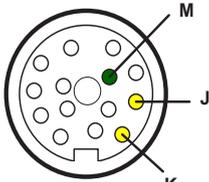
Parameters of the Ex ia circuits (combined circuits) on the WP Board:

**RS485**

Uo	5.4 V	Io	74 mA***
Po	183 mW		
Co	50 µF	Lo	600 µH
Lo/Ro	135 µH/Ω		
Ui	±12.6 V	12.0 V	6.0 V
Ii	135 mA***	164 mA***	3.3 A***
Pi	any		
Ci	260 nF	Li	0 mH

Rmin of the external intrinsically safe circuit is defined by Ui / Ii and is

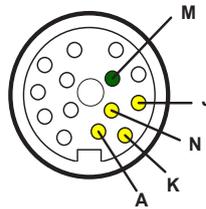
Ui	±12.6 V	12.0 V	6.0 V
Rmin	95.4 Ω	73.2 Ω	2.2 Ω



Signal	Connector
RxD-TxD-P	J
RxD-TxD-N	K
Signal GND	M

**RS232**

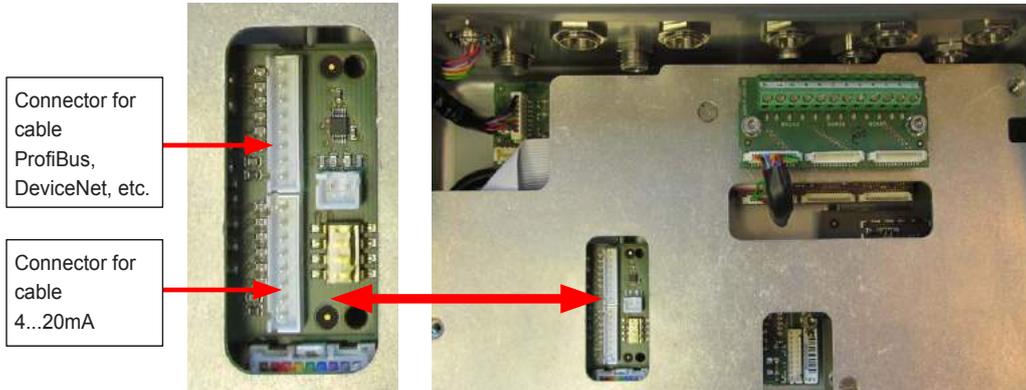
Uo	10.8 V* / 21.6V**	Io	110 mA***/55 mA
Po	295 mW		
Co	2.14 µF* / 174nF**	Lo	2 mH
Lo/Ro	120 µH/Ω		
Ui	12.6V* / 25.2V**	Ii	328 mA***
Pi	any		
Ci	3 nF* / 0.5nF**	Li	0 mH



Signal	Connector
CTS	N
DTR	A
RxD	K
TxD	J
Signal GND	M

\*: versus ground; \*\*: between the lines; \*\*\*: resistively limited

**UNICOM**



**Input parameters** (combined circuits) for UNICOM:

<b>Ui</b>	<b>Ii</b>	<b>Pi</b>	<b>Ci</b>	<b>Li</b>
6.8 V	200 mA	600 mW	3 µF	20 µH

**Output parameters** (combined circuits) for UNICOM:

<b>Uo</b>	<b>Io</b>	<b>Po</b>	<b>Co</b>	<b>Lo</b>
6.0 V	23 mA	34 mW	10 µF	3 mH

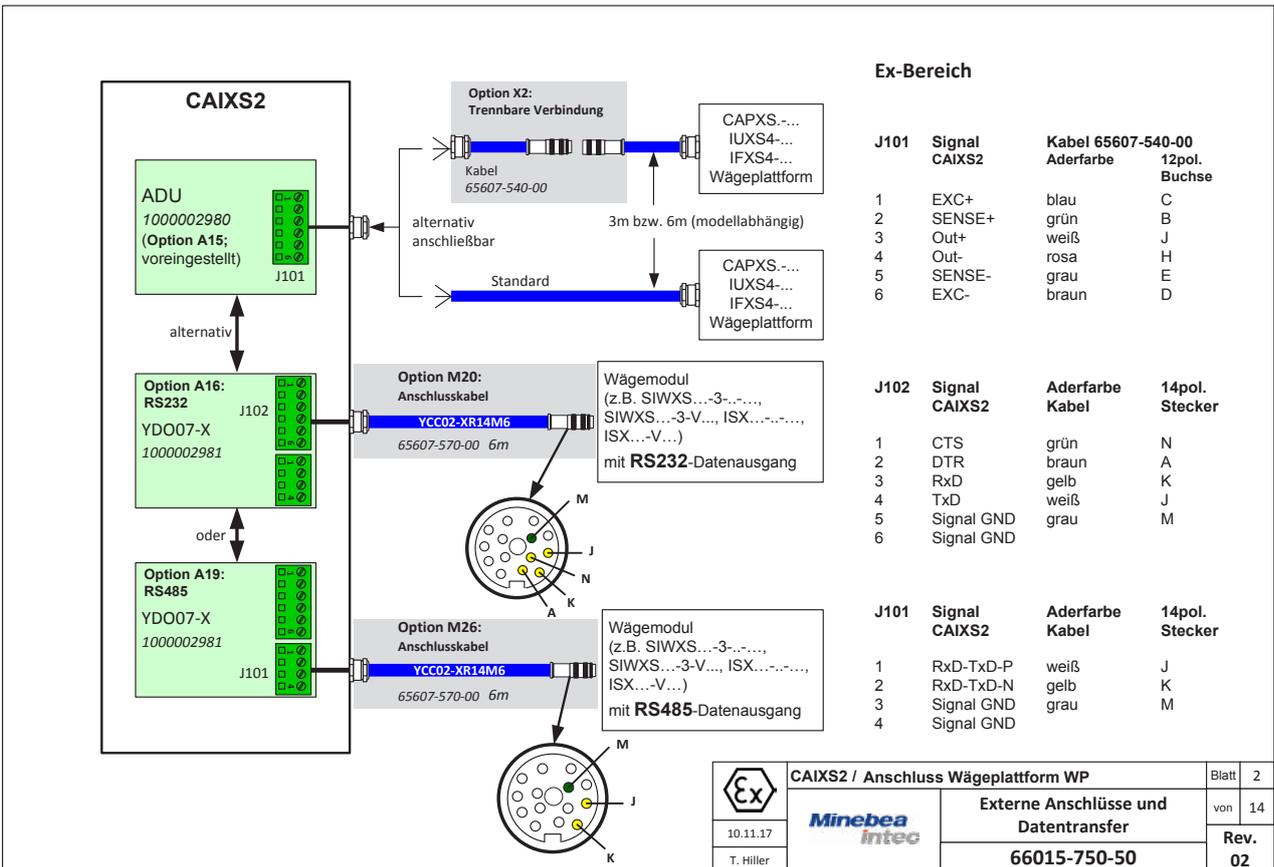
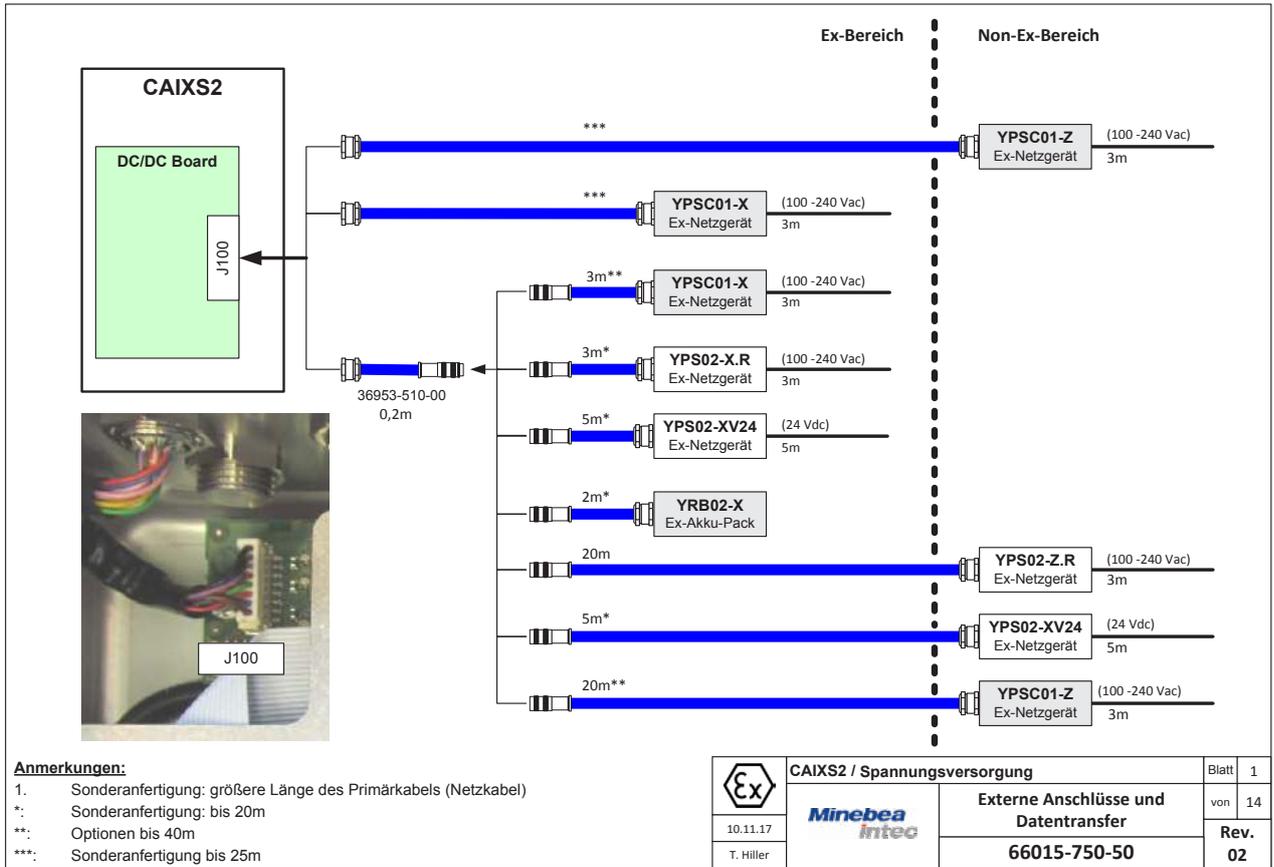
	2018-08-27	<b>Minebea intec</b>	<b>Control Drawing</b>		<b>CAIXS2</b>	
	T. Hiller		66015-751-07	Revision 04	Sheet 4 of 5	

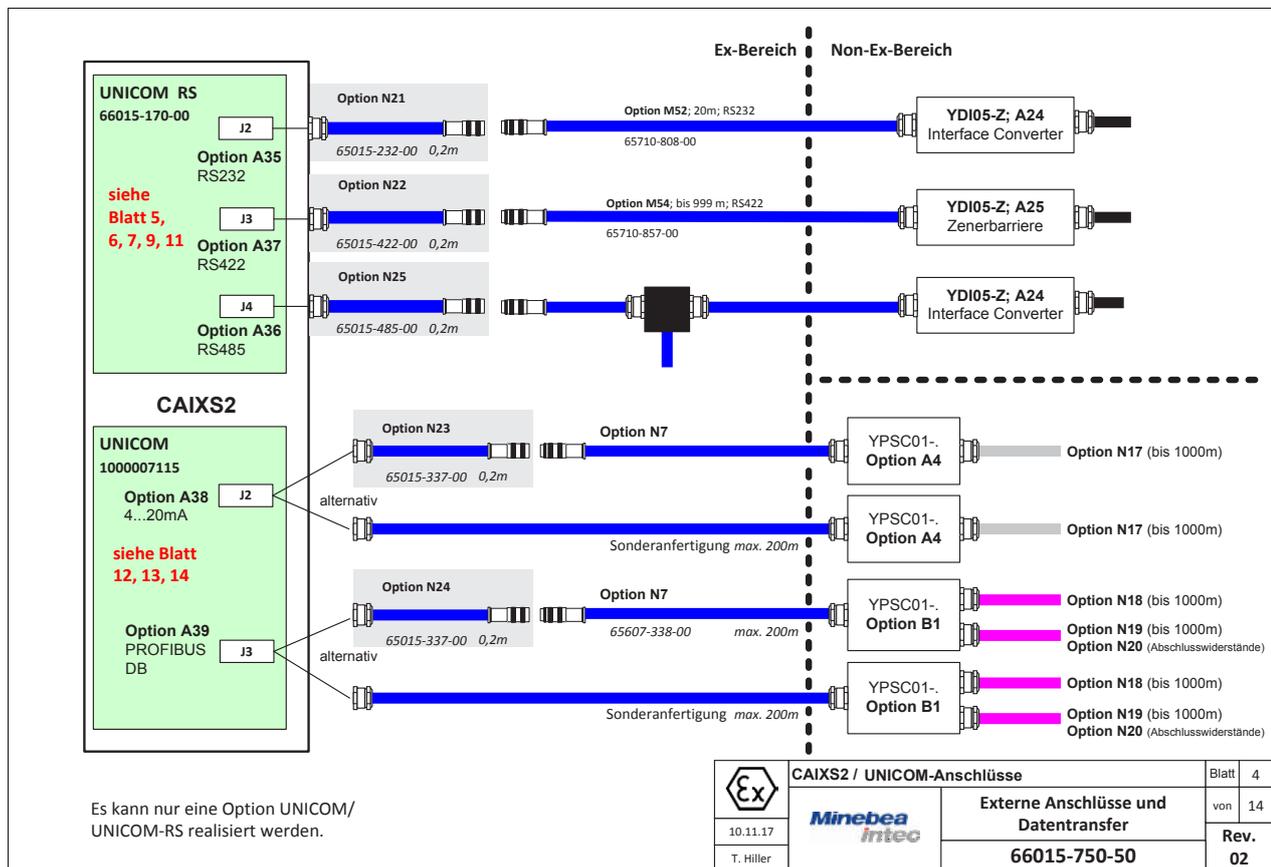
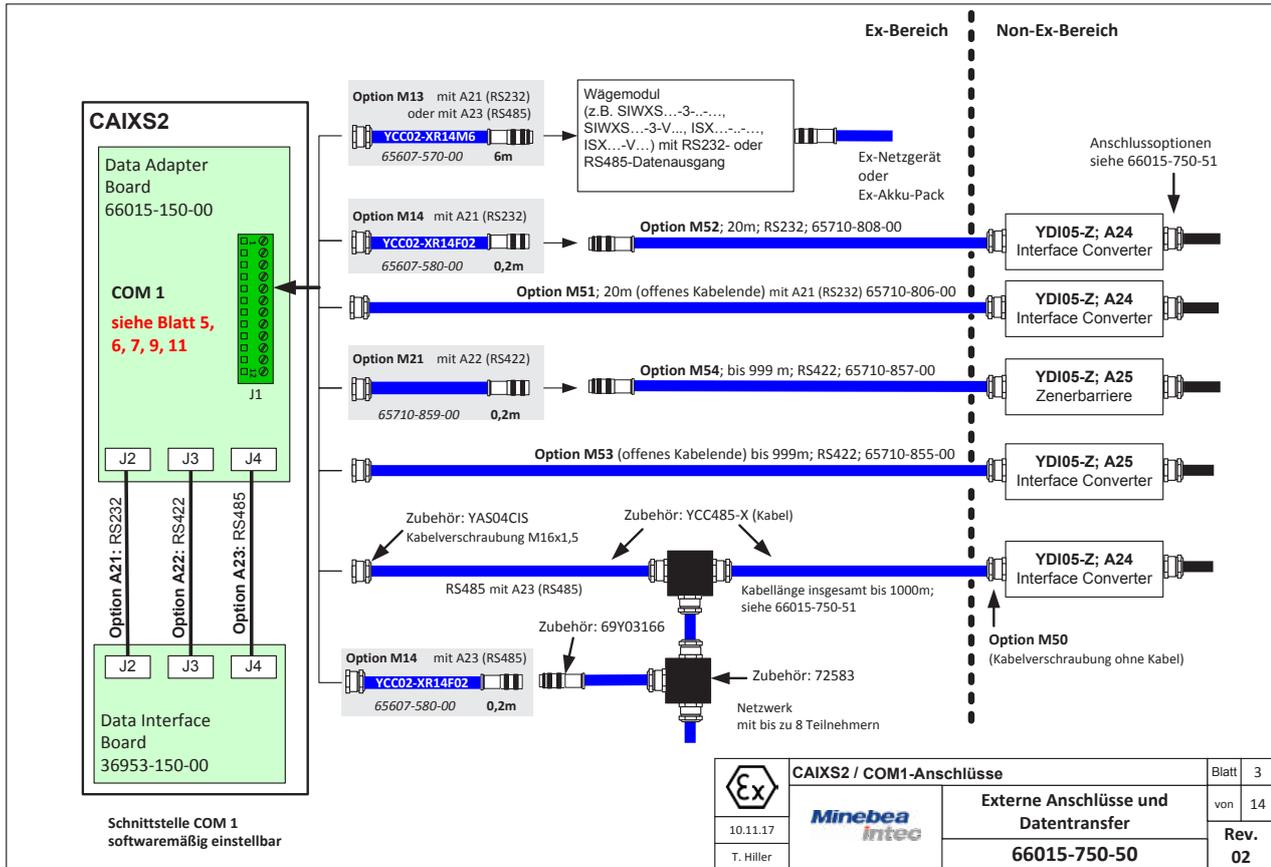
**Notes**

- 1) In the **USA**: The installation must be in accordance with the National Electrical Code<sup>®</sup>, NFPA 70, Article 504 or 505 and ANSI / ISA-RP 12.6.  
In **Canada**: The installation must be in accordance with the Canadian Electrical Code<sup>®</sup>, Part1, Section 18.
- 2) The apparatus must not be connected to any device that uses or generates in excess of 250Vrms or DC.  
 $U_m = 250V$ .
- 3) In the **USA**: The Apparatus must be connected to a suitable ground electrode per National Electrical Code<sup>®</sup>, NFPA 70, Article 504 or 505. The resistance of the ground pad must be less than 1 ohm.  
In **Canada**: The Apparatus must be connected to a suitable ground electrode per Canadian Electrical Code<sup>®</sup>, Part 1. The resistance of the ground pad must be less than 1 ohm.
- 4) Connection by non interchangeable cable type LiYC-Y-CY 4 x 0.5; max length: 50m (164 ft).
- 5) Connection by means of polarized connector outside of the indicator.
- 6) Connection by non interchangeable cable type LiYC-Y-CY 4 x 0.5; max length: 0.5m (1.6 ft).
- 8) The circuits of the data output circuits shall be assumed to be connected to earth.
- 9) The cable needs not be protected against damage.
- 10) Equipment with metallic housing (IP4X in minimum) and passive wiring, only. For use in Class II,III, Division 1 and in Zone 21 the housing must be IP6X.
- 11) The cable to the T-Connector must be protected against damage.
- 12) Any NRTL approved equipment with Entity Concept parameters (see note 13)
- 13) The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of  $V_{oc}$ ,  $I_{sc}$  and  $P_{max}$  resp.  $U_o$ ,  $I_o$ ,  $P_o$  of the associated apparatus are less than or equal to  $V_{max}$ ,  $I_{max}$  and  $P_{max}$  resp.  $U_i$ ,  $I_i$ ,  $P_i$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  resp.  $C_o$  and  $L_o$  of the associated apparatus are greater than  $C_i$  and  $L_i$  of the intrinsically safe apparatus plus all cable parameters.  
For the input and output parameters of the data interface of the CAIXS2 see page 2.
- 14) The weighing unit series SIWXS...-3-... and SIWXS...-3-V... (complete scales) and ISX...-... and ISX...-V... (digital weighing platforms) are approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 36953-751-07-A4.
- 15) The Interface Converter YDI05-Z.. is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65710-800-07-A4.
- 16) The Power Supply Model YPS02-ZKR is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65501-000-17.
- 17) The rechargeable battery pack YRB02-X is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65656-000-07-A4.
- 18) The Power Supply Model YPS02-XKR is /certified by CSA for use in Canada. See Certificate of Compliance and Control Drawing number 65516-000-17.
- 19) The Power Supply Model YPS02-XUR is approved by FM for use in the USA. See Certificate of Compliance and Control Drawing number 65516-000-17.
- 20) The output parameters of the Ex ia circuit to the load cells are:  
 $U_o = 11.8 V$ ,  $I_o = 147 mA$ ,  $P_o = 1.49 W$ ,  $C_o = 770 nF$ ,  $L_o = 300 \mu H$
- 21) See entity parameters on the control drawing 35739-003-07-A4 or 65607-000-07-A4 of the weighing platform types CAPX..U-....., IUX.4-..... and IFX.4-.....
- 22) Ambient temperature range:  $-10^{\circ}C$  ....  $+40^{\circ}C$  ( $14^{\circ}F$  ....  $+104^{\circ}F$ ) The temperature class for gases of the CAIXS2 is T4. The maximum surface temperature for dusts of the CAIXS2 is  $80^{\circ}C$  ( $176^{\circ}F$ ).
- 23) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.  
**AVERTISSEMENT:** LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

	2018-08-27	<b>Minebea intec</b>	<b>Control Drawing</b>	<b>CAIXS2</b>	
	T. Hiller		<b>66015-751-07</b>	<b>Revision 04</b>	<b>Sheet 5 of 5</b>







**Data Adapter CAIXS COM1**  
1000002982

**Data Interface Board**  
7-36953-150-00

**Digital Board**  
7-36953-130-00

**UNICOM RS Board**  
66015-170-00  
auf Digital Board  
7-36953-130-00

**Option A21 RS232**  
Auswahl per Kabel an J2

**Option A22 RS422**  
Auswahl per Kabel an J3

**Option A23 RS485**  
Auswahl per Kabel an J4

**COM1**

J1	RS232	RS422	RS485
1	CTS	GND	GND
2	RXD	GND	TRXP
3	TXD	TRXN	TRXN
4	DTR	TRXP	n.c.
5	GND	DTRP	GND
6	GND	RXDN	GND
7	GND	DTRN	GND
8	UNI-IN	n.c.	UNI-IN
9	SET	n.c.	SET
10	PAR	CTSN	PAR
11	MIN	CTSP	MIN
12	MAJ	RXDP	MAJ

Option: A21 A22 A23

**UNICOM RS**

**Option A37 RS422 (J3)**  
1 : TXD\_P  
2 : TXD\_N  
3 : RXD\_P  
4 : RXD\_N  
5 : DTR\_P  
6 : DTR\_N  
7 : CTS\_P  
8 : CTS\_N  
9 : GND  
10 : GND

**Option N22**  
Kabel aufstecken

**Option A25 RS232 (J2)**  
1 : CTS  
2 : DTR  
3 : RXD  
4 : TXD  
5 : GND  
6 : GND

**Option N21**  
Kabel aufstecken

**Option N25**  
Kabel aufstecken

**Option A36 RS485 (J4)**  
1 : TRXD\_P  
2 : TRXD\_N  
3 : GND  
4 : GND

**Position Codier-Stecker:**  
Option A25 RS232    Option A36 RS485    Option A37 RS422

--	--	--

	<b>CAIXS2 / COM1, UNICOM RS</b>	Blatt	5
10.11.17	<b>Minebea intec</b>	<b>Externe Anschlüsse und Datentransfer</b>	von 14
T. Hiller		<b>66015-750-50</b>	Rev. 02

**Ex-Bereich**      **Non-Ex-Bereich**

**CAIXS2**  
COM 1 Board 66015-150-00  
Option A21

**UNICOM RS**  
66015-170-00  
Option A35

**Option M14** mit A21  
YCC02-XR14F02 65607-580-00 0,2m

**Option N21**  
65015-232-00 0,2m

**Option M51: 20m** (offenes Kabelende) mit A21 (RS232) 65710-806-00

**YDI05-Z** (Schnittstellenumsetzer) mit Option A24, M52

**YDI05-Z** (Schnittstellenumsetzer) mit Option A24, M51

12polige Buchse Option M55

YCC01-03ISM5 5m D-SUB 25pol

YCC01-09ISM5 5m D-SUB 9pol

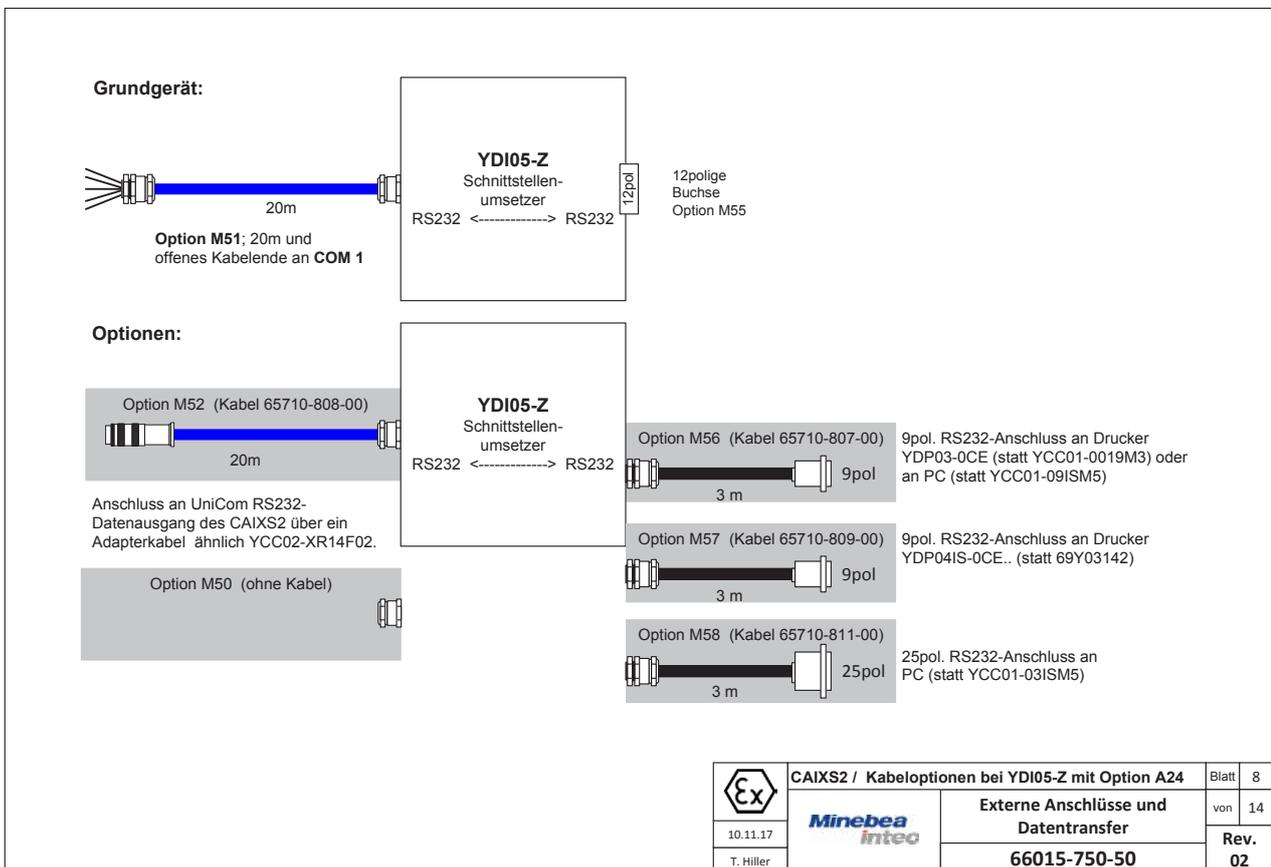
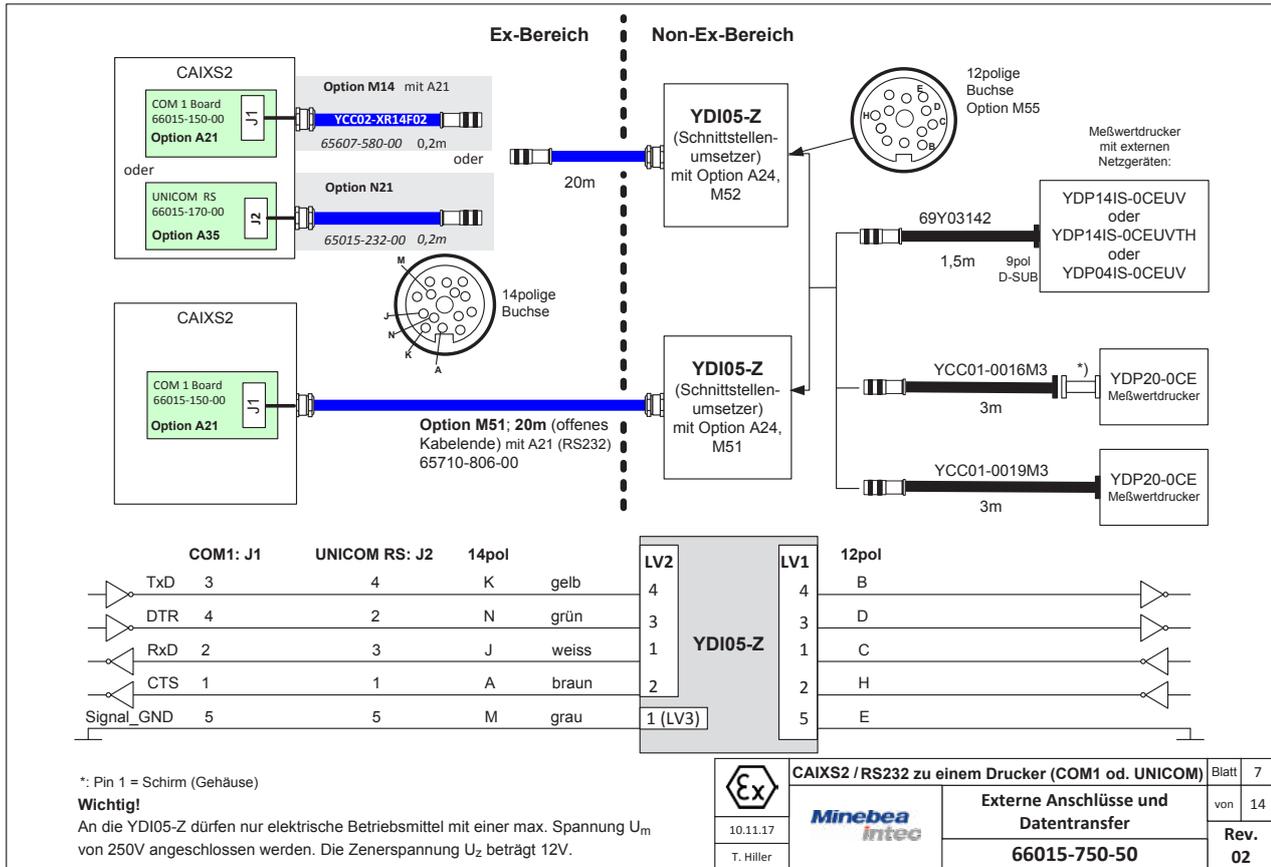
PC

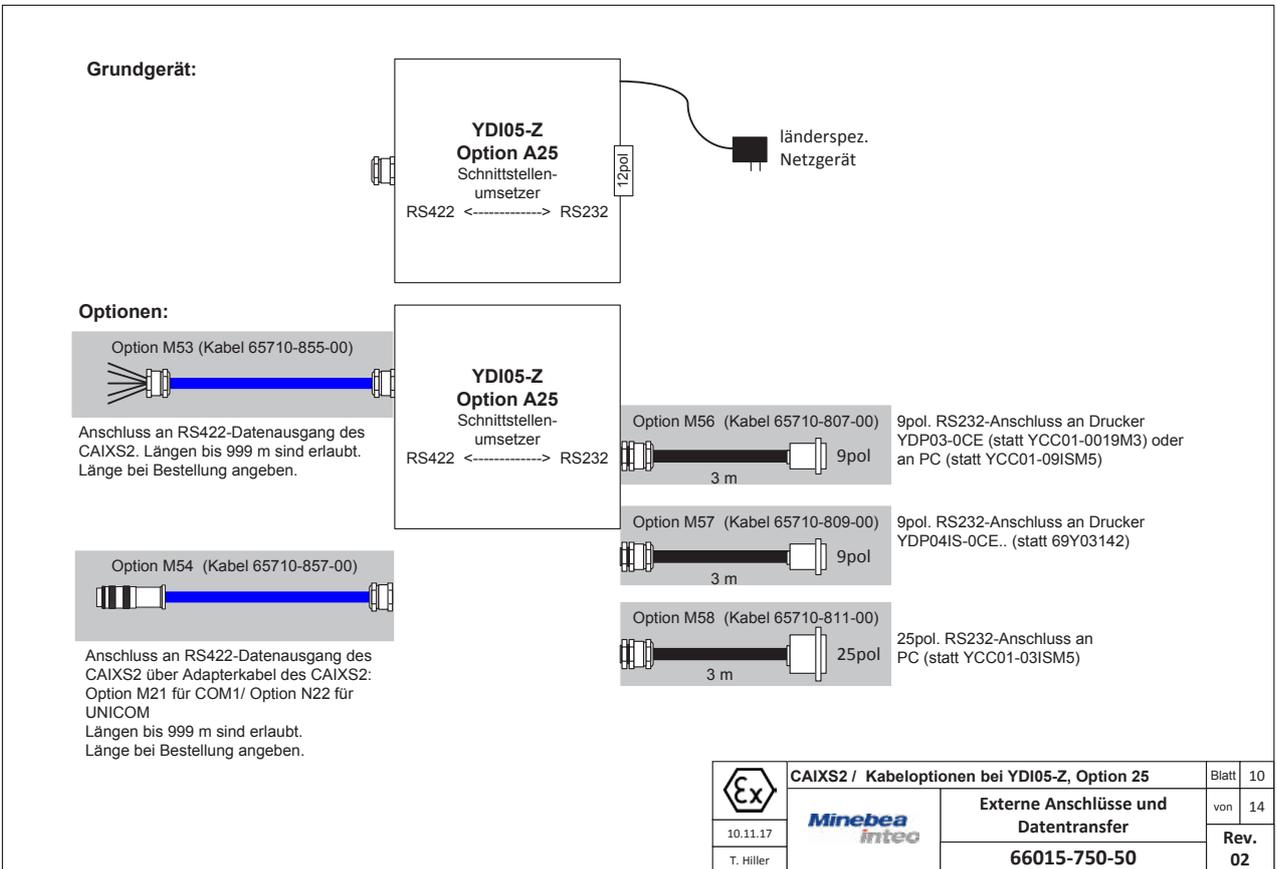
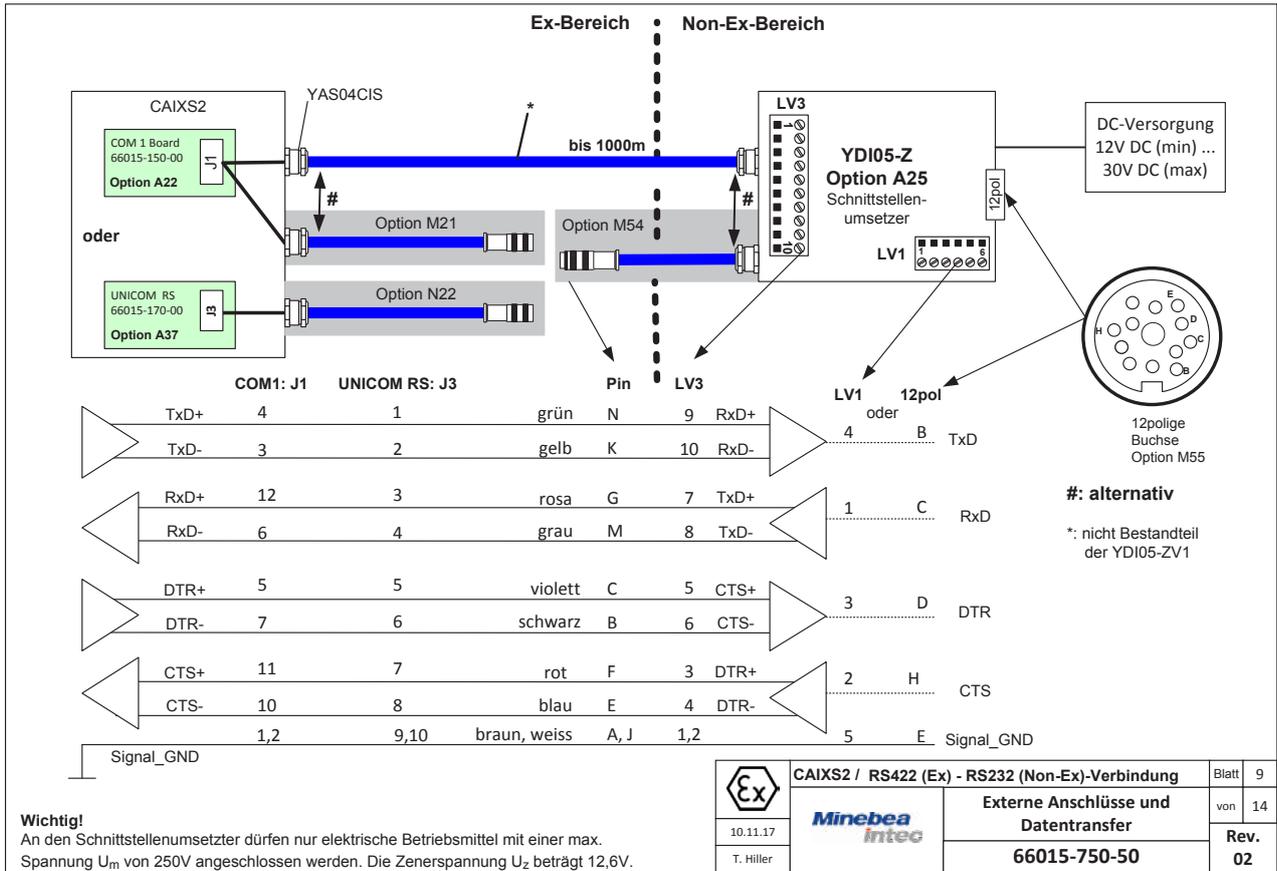
COM1: J1	UNICOM RS: J2	14pol		LV2	LV1	12pol	25pol *	9pol	
TxD	3	4	K	gelb	4	B	3	2	RxD
DTR	4	2	N	grün	3	D	5	8	CTS
RxD	2	3	J	weiss	1	C	2	3	TxD
CTS	1	1	A	braun	2	H	20	4	DTR
Signal_GND	5	5	M	grau	5	E	7	5	Signal_GND

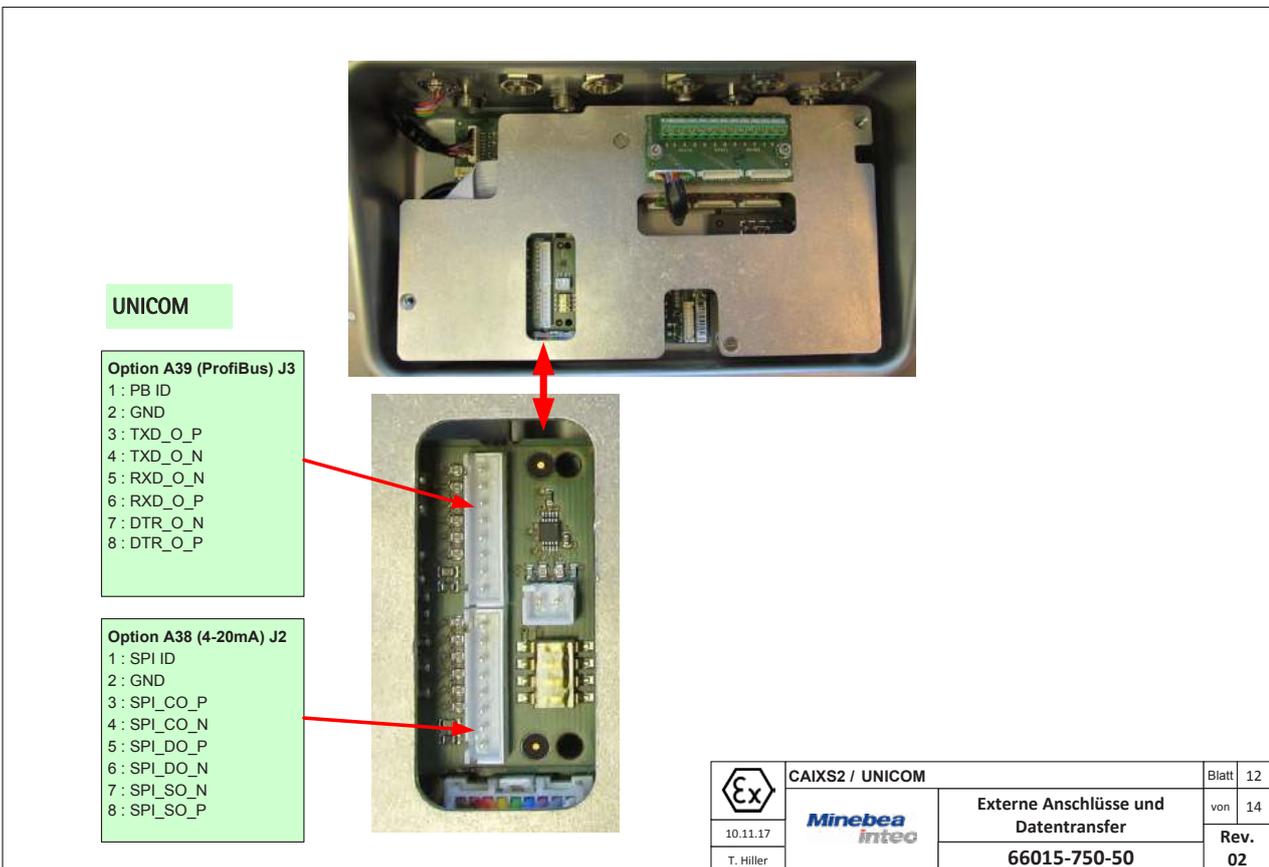
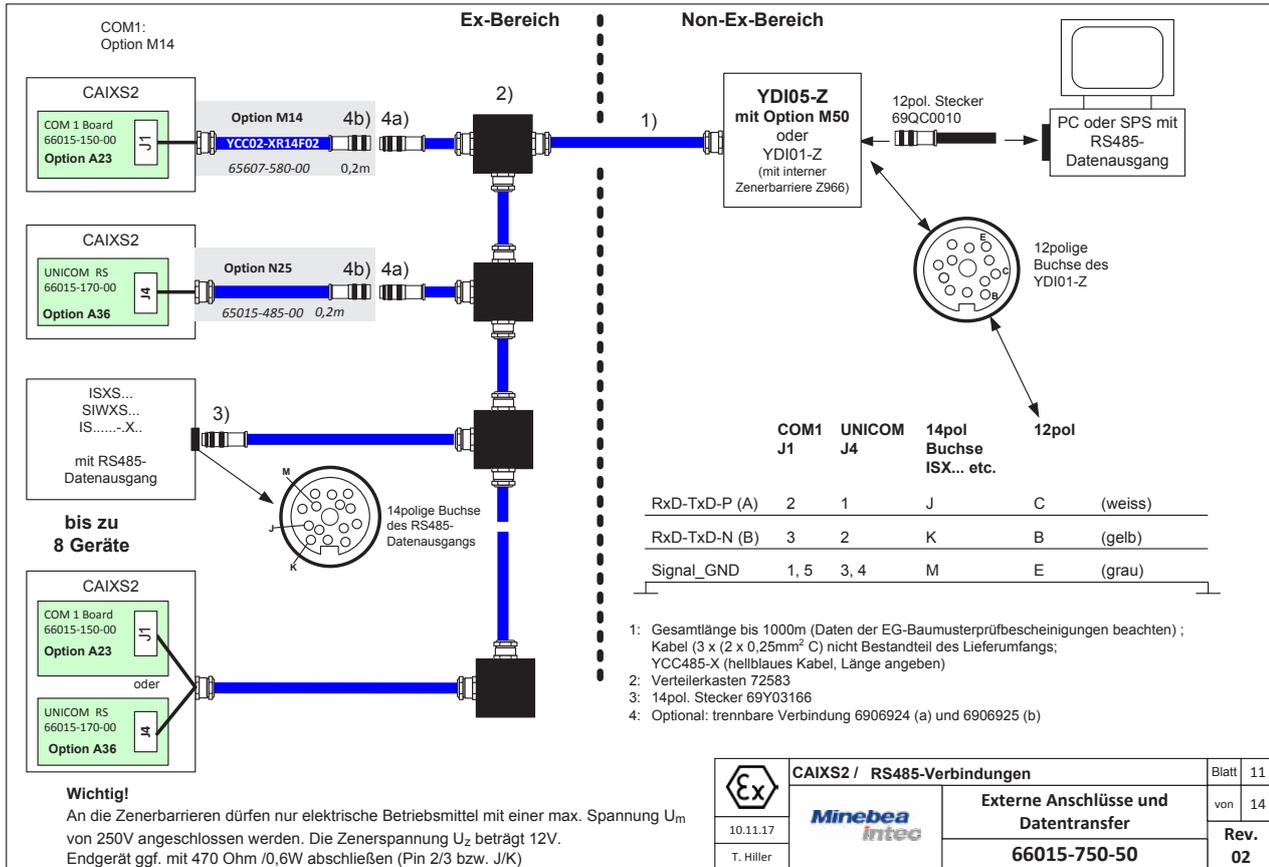
\*: Pin 1 = Schirm (Gehäuse)

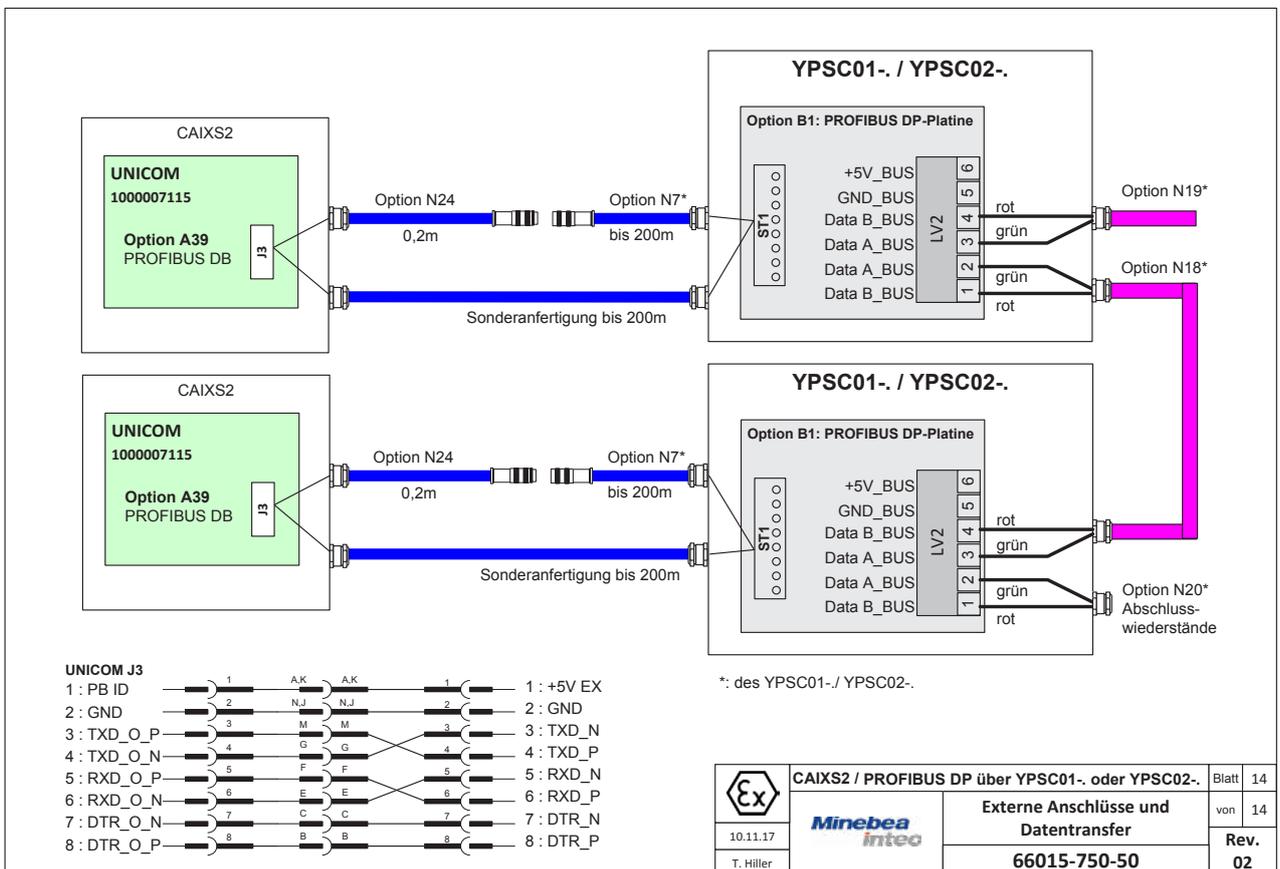
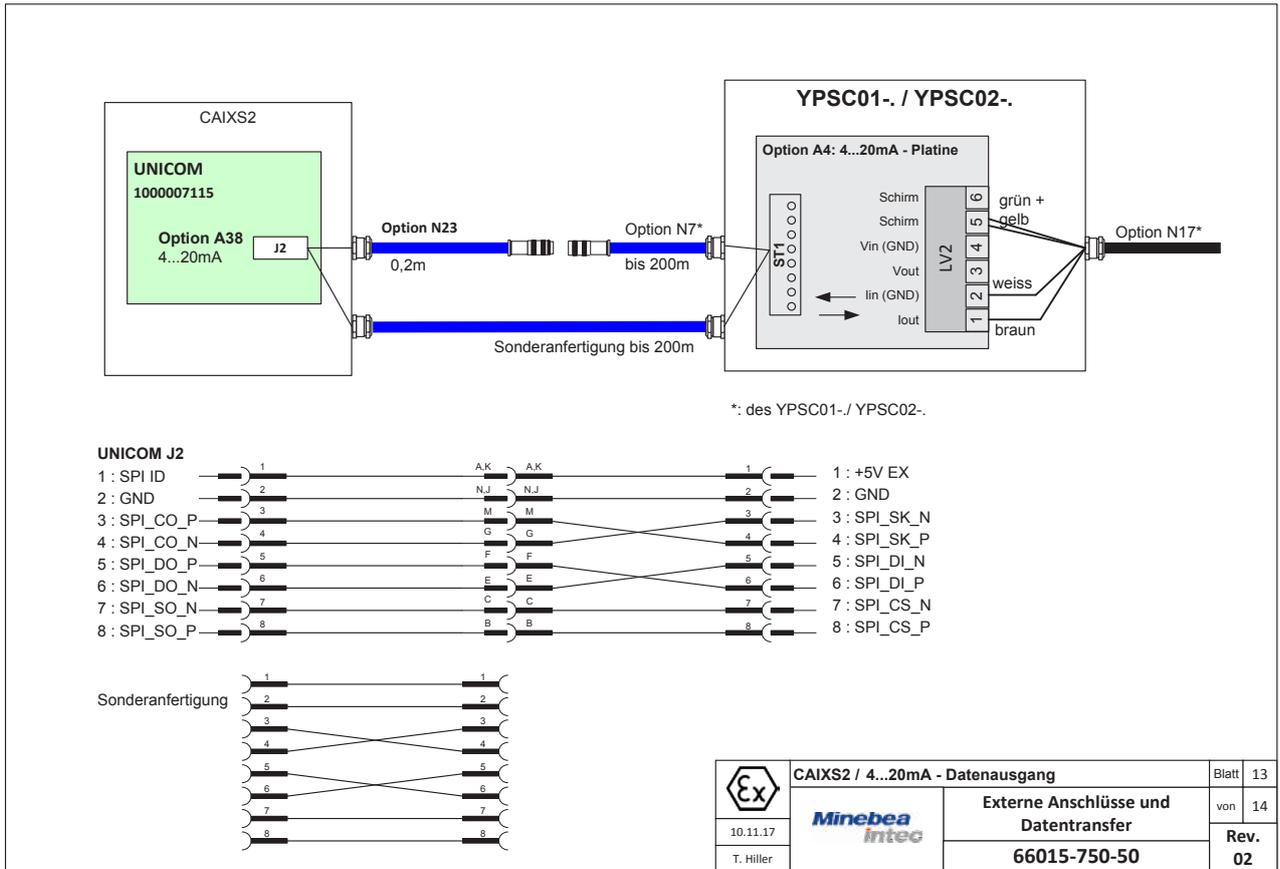
**Wichtig!**  
An die YDI05-Z dürfen nur elektrische Betriebsmittel mit einer max. Spannung  $U_m$  von 250V angeschlossen werden. Die Zenerspannung  $U_Z$  beträgt 12V.

	<b>CAIXS2 / RS232-Verbindung zu einem PC</b>	Blatt	6
10.11.17	<b>Minebea intec</b>	<b>Externe Anschlüsse und Datentransfer</b>	von 14
T. Hiller		<b>66015-750-50</b>	Rev. 02













## EU-type examination certificate

Number **T11379** revision 0  
Project number 1902516  
Page 1 of 1

**Issued by** NMI Certin B.V.,  
designated and notified by the Netherlands to perform tasks with respect to conformity modules mentioned in Article 13 of Directive 2014/31/EU, after having established that the measuring instrument meets the applicable requirements of Directive 2014/31/EU, to:

**Manufacturer** Minebea Intec Bavenden GmbH & Co. KG  
Leinetal 2  
D-37120, Bovenden  
Germany

**Measuring instrument** A Non-automatic weighing instrument

**Manufacturer's mark** : Minebea Intec

**Type** : MINECOMB

Further properties are described in the annex:  
- Description T11379 revision 0.

**Valid until** 6 July 2028

**Issuing Authority** NMI Certin B.V., Notified Body number 0122  
6 July 2018

*C. Oosterman*  
C. Oosterman  
Head Certification Board

NMI Certin B.V.  
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3314 EG Oordrecht  
The Netherlands  
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www.nmi.nl

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## Bewertungs-Zertifikat

*Evaluation Certificate*

<b>Ausgestellt für:</b> <i>Issued to:</i>	Sartorius Industrial Scales GmbH & Co. KG Leinetal 2 37120 Bovenden	
<b>gemäß:</b> <i>In accordance with:</i>	WELMEC 8.8 (2011-05) WELMEC Guide 8.8 (2011-05)	
<b>Baueinheiten:</b> <i>Type of parts:</i>	Auswertegerät Indicator	
<b>Typbezeichnung:</b> <i>Type designation:</i>	TA-X	
<b>Nr. der Bescheinigung:</b> <i>Certificate No.:</i>	DE-15-EC-PTB002	
<b>Anzahl der Seiten:</b> <i>Number of pages:</i>	8	
<b>Geschäftszeichen:</b> <i>Reference No.:</i>	PTB-1.12-4069151	
<b>Zertifizierung:</b> <i>Certification:</i>	Braunschweig, 10.04.2015	<b>Bewertung:</b> <i>Evaluation:</i>
<b>Im Auftrag</b> <i>On behalf of PTB</i>	<b>Siegel</b> <i>Seal</i>	<b>Im Auftrag</b> <i>On behalf of PTB</i>
 Dr. Oliver Mack		 Michael Denzel

R3-00359566

Zertifikate ohne Unterschrift und Siegel haben keine Gültigkeit. Dieses Zertifikat darf nur unverändert weiterverbreitet werden. Auszüge bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt.  
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Minebea Intec Bovenden GmbH & Co. KG

Leinetal 2

D-37120 Bovenden

Ihr Zeichen: Metrology Department

Ihre Nachricht vom:

Mein Zeichen: PTB-1.1

Meine Nachricht vom:

Bearbeitet von: Dr.-Ing. D. Knopf

Telefordurchwahl: 0531 592 1100

Telefaxdurchwahl:

E-Mail: dorothea.knopf@ptb.de

Datum: 02.02.2017

#### Sammelschreiben zur Zertifikatsübertragung

Sehr geehrter Herr,

hiermit teilen wir Ihnen mit, dass die von der KBS der PTB gegenüber der Firma *Sartorius Industrial Scales GmbH & Co. KG* ausgestellten, unten aufgelisteten Zertifikate zum 29.11.2016 für die Firma *Minebea Intec Bovenden GmbH & Co. KG* gelten. Die *Minebea Intec Bovenden GmbH & Co. KG* ist nach den uns vorliegenden Informationen bezüglich dieser Zertifikate in alle Rechte und Pflichten der *Sartorius Industrial Scales GmbH & Co. KG* eingetreten. Diese Änderung wird bei etwaigen Revisionen der Zertifikate berücksichtigt werden.

Dies betrifft folgende Zertifikate:

EG-Bauartzulassungen:

D97-09-018, D07-09-010, DE-08-MI006-PTB040, DE-08-MI006-PTB034,

Evaluation-Certificates nach WELMEC 8.8:

DE-15-EC-PTB002, DE-15-EC-PTB005,

Prüfscheine:

D09-11.02, D09-07.21, D09-06.13, D09-00.28, D09-00.18, D09-99.15, D09-96.30, D09-95.18, D09-03.13, D09-07.56, D09-03.29, D09-99.06, D09-97.07, D09-96.19, D09-95.30, D09-95.20, D09-95.09, D09-95.08

Für weitere Informationen stehen wir Ihnen gerne zur Verfügung.

Mit freundlichen Grüßen

Im Auftrag

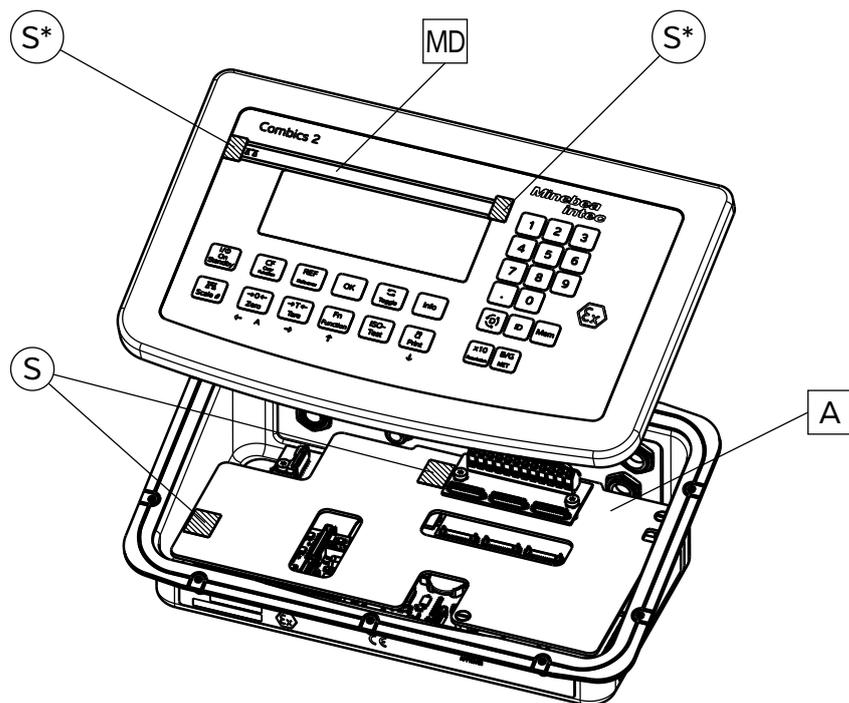
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Abbestr. 2-12  
10557 Berlin  
DEUTSCHLAND

**Schilder und Marken****CAIXS2 (Typ Minecomb)***Plates and Markings*

**MD** Metrologische Daten: Max, Min, e und , wenn vorhanden, d  
 Metrological data: Max, Min, e and if existend d

**S** Sicherungsstempel (selbstklebende Marke oder Plombe)  
 Protective mark (self-adhesive mark or seal)

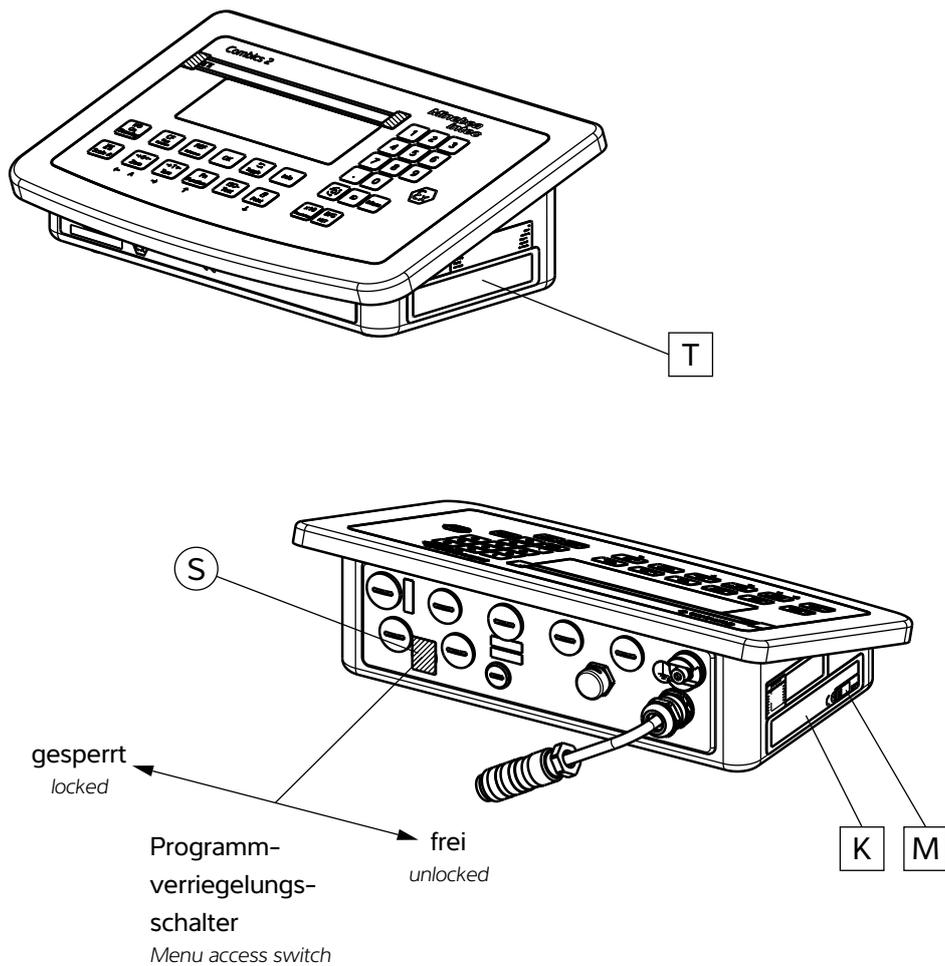
**S\*** Sicherungsstempel (selbstklebende Marke oder Plombe), nur bei zerstörungsfrei lösbaren Schildern.  
 Protective mark (self-adhesive mark or seal), only for labels which can be removed without being destroyed.

**A** Abdeckblech unter dem sich der Programmverriegelungsschalter und der Anschluss des Lastaufnehmers an die Auswerteelektronik befinden.  
 Cover plate under which the program locking switch and the connection of the load receptor to the evaluation electronics are located.

## Schilder und Marken

### Plates and Markings

## CAIXS2 (Typ Minecomb)



- K** Kennzeichnungsschild mit CE-Zeichen  
*Descriptive plate with CE-sign*
- M** Zeichen für die EG-Eichung (Marke mit Messtechnik-M)  
*Mark for EC verification (metrology sticker)*
- S** Sicherungsstempel (selbstklebende Marke oder Plombe)  
*Protective mark (self-adhesive mark or seal)*
- T** Typenschild  
*Type plate*

## Schilder und Marken

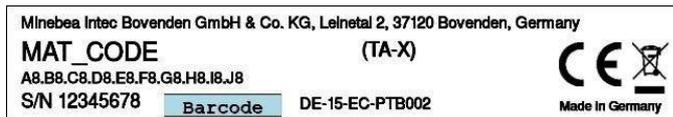
## CAIXS2 (Typ Minecomb)

### Plates and Markings

Beispiel Typenschild



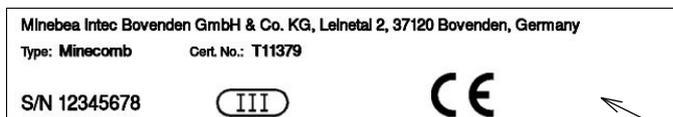
*Example of type plate*



Beispiel für Kennzeichnungsschild mit CE-Zeichen



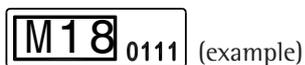
*Example of descriptive plate with CE-sign*



Zeichen für die EG-Eichung (Marke mit Messtechnik-M)



*Mark for EC verification (metrology sticker)*



Beispiel für Schild mit metrologischen Daten



*Example of label with metrological data*



Schild wird vom Eichbeamten/Service bei Eichung ausgefüllt und mit der Folie überklebt.

*Label is filled in by the calibration officer/service at calibration and pasted over with the foil.*

## Appendix: General Password

After selecting the "Setup" menu item a request to enter the access password "E E E " will be displayed for 2 seconds.

▷ The first digit in the display flashes.

Numbers and the point can be entered via the number pad.

**Select characters** using the **Fn** and **F7** keys.

**Fn** key displays: Numbers in ascending order (0 to 9)  
then the characters . and -  
then letters in descending order (from \_Z to A)

**F7** key displays: Letters in alphabetical order A to Z  
then the characters - and .  
then numbers in descending order 9 to 0

- Fn** or **F7** ▶ Press the **Fn** or **F7** keys multiple times until the desired character is displayed.
- T←** ▶ Confirm the displayed character using the **→T←** key.
  - ▷ The second digit in the display flashes.
  - ▶ Enter all additional characters in the same way.
  - ▷ If the password is longer than 7 characters the first character will be displaced to the left and out of the display.
- T←** ▶ Confirm the entered password using the **→T←** key.
- 0←** ▶ Exit the menu level using the **→0←** key.
- T←** hold ▶ Press and hold the **→T←** key to switch to the Operating mode.

General password: 40414243
-------------------------------

Service password: 202122
-----------------------------





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Date: July 2021

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