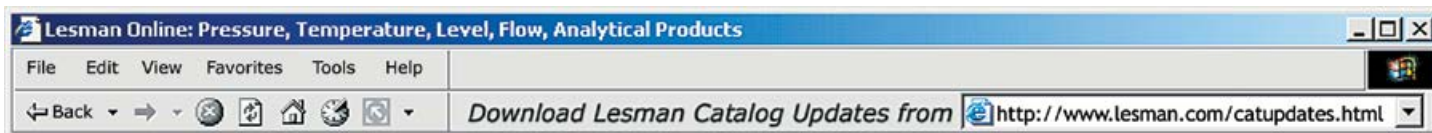# SOLIDS FLOW AND MOTION

Siemens offers a full line of custom belt scales and weighfeeder systems guaranteed to fit your application. Take a look at the MUS universal belt scale system or the heavyweight, NTEP-approved MMI multi-idler belt scale system for custody transfer applications. With the right combination of belt scales, weighfeeders, integrators, and speed sensors, you can build the perfect configuration for your plant. And, with Siemens software, you can configure your integrator using a Windows-based laptop PC.

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Belt Scales
Siemens SITRANS WB300 and WB310 Medium Duty Belt Scales	Call	
Siemens MCS Compact Stainless Steel Modular Belt Scale	$3019.00	190
Siemens MLC Light Duty Monitoring Single Idler Belt Scale	$6019.00	190
Siemens MMI Heavy Duty NTEP-Approved Multi-Idler Belt Scale	Call	190
Siemens MSI Heavy Duty Single Idler Belt Scale	$4111.00	190
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Siemens BW500 Integrator for Belt Scales and Weighfeeders	$2447.00	192
Siemens SF500 Integrator for Bulk Solids Flowmeters	$3495.00	192
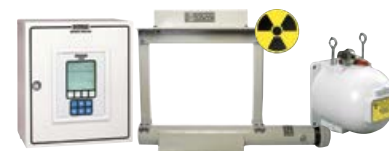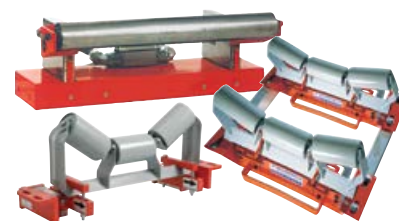
Prices in this catalog are current at the publication date, and are subject to change without notice.
Due to manufacturer agreements, some products may not be available in all Lesman markets or geographic areas.

Side tabs: Solids Flow and Motion | Controllers and Programmers | Digital Indicators | Recorders and Data Acquisition | Combustion Safety and Efficiency | Process Valves

L 186 | *ACOUSTIC SENSOR* | V 01.2019 | Illinois, Indiana, Missouri, and Iowa
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Acoustic Sensor and Controller for Bulk Solids Flow

SIEMENS

Features

- **Non-Mechanical:** Doesn't foul up or wear out
- **Noninvasive:** Doesn't break, leak, or clog
- **Simple Mounting:** Doesn't take long or require shutdown
- **Acoustic Emission Detection Technology:** Reliably detects material flow/no flow conditions
- **Two Alarm/Control Relays and 0/4-20 mA Output:** Will easily connect to your process

Reliable, Continuous Protection for Bulk Solids Flow

The SITRANS AS100 sensor prevents problems in solids flow processes caused by abnormal flow, sudden blockages, product absence, or equipment failure, such as burst filter bags. It reacts instantly to changes in flow of pellets, powders, or most bulk solids in pipes, chutes, vibratory feeders, pneumatic conveyors, and gravity flow systems.

Any sudden blockage that prevents product flow or any rupture that increases flow as product escapes from a pipe or bag is immediately detected by the AS100. This enables you to take early preventative action, avoiding expensive damage.

Early Warning of Flow Problems

The friction and impact of bulk solids flow in pipes, chutes, and conveyors all generate high frequency sound waves — noises that are often inaudible to the human ear. The SITRANS AS100 detects deviations in these sound waves caused by changes in solids flow rates and warns of impending problems.

Operation Unaffected by Plant Environment Noise

The AS100 uses unique acoustic emission technology to detect high frequency sound waves generated by equipment and materials in motion. These sound waves travel readily through solids materials, but are strongly attenuated when traveling through air. Consequently, the AS100 is immune to interference from airborne noise and low level structural vibration, providing a noninvasive method of process monitoring. Because the AS100 operates in a high frequency broadband, it is immune to competing background noise generated by machines and other processes. Audible noises and low frequency vibrations are screened out.

Simple, Low-Cost Installation

The noninvasive sensor can be installed without any shutdown of process or equipment. In minutes, the compact unit can be attached to a flat surface, pipe, flange, elbow, or joint, where acoustic emission levels are potentially highest.

The light-weight unit weighs only one pound and is easily positioned. A range of installation option are available to suit your needs. Installation can be via a clearance hole and bolt, drilling and tapping, mounting disc, or an extension tab. The unit can be screwed in, bolted in, or bonded in place. Once installed, simply connect the power supply and alarm output and set the alarm level, and the unit is fully operational.

24-Hour Protection in Tough Environments

With no moving parts and a type 304 stainless steel housing sealed against dust and moisture, the AS100 provides continuous protection around the clock and requires little or no maintenance.

Because the AS100 is mounted outside the process, it is completely noninvasive. In hazardous or hygienic food environments, this is a great advantage as there is no need for constant cleaning and concerns about product contamination are eliminated. The SITRANS AS100 is also unaffected by abrasive applications.

FM Class II, Div 1, Group E-G Approval!

Search www.lesman.com for
SITRANS CU-02   Go!

The standard sensor operates effectively from -4º to 176º F (-20º to 80º C), with extended temperature options offering sensing from -40º to 185º F (-40º to 85º C) or -40º to 257º F (-40º to 125º C).

Field-Proven Detection

The SITRANS AS100 monitors a wide range of granular and bulk solids materials, including:

- Sugar (granulated or powder)
- Coal (slugs to dust)
- Polyethylene pellets
- Cocoa beans
- Fiberglass
- Wood chips
- Cement
- Grain
- Sand

Applications include:

- Solids flow sensing
- Flow/no flow, high flow/low flow
- Inflow blockage detection
- Cyclone blockage detection
- Filter monitoring and switching
- Burst filter bag detection
- Route verification

Ease of Use

The AS100 system combines a highly sensitive acoustic sensor with easily set up controls. Powered by 20 or 30 VDC, the sensor provides a DC analog voltage that can be monitored by the dedicated SITRANS CU 02 control unit, or a PLC that accepts 0-10 VDC input signals.

Control Options

With a SITRANS CU 02 control unit, the system can be readily configured for setpoints indicating such conditions as high flow, low flow, or no flow, or it can be added to a control loop via a 4-20 mA output.

Two relays are fully programmable and independent of each other, and can be used to operate an alarm or switch device. The control unit can be mounted up to 1500 feet from the sensor.

The signals are amplified and processed by the AS100 sensor to provide the levels of acoustic emission activity as a function of time.

With a CU 02 as part of the system, two relays, an LCD, and 4-20 mA outputs are provided. The sensor output can also be fed directly to a PLC accepting a 0-10 VDC signal.

The sensor can also be operated independently of the control unit by providing an external power supply.

The output is fed into a control panel, chart recorder, data logger, or programmable logic controller with a suitable input.

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ACOUSTIC SENSOR   **187**   **L**

Dimensions

6 x 24 AWG Cable

SIEMENS

Mounting Post, 17A/F Nut and M10 Thread
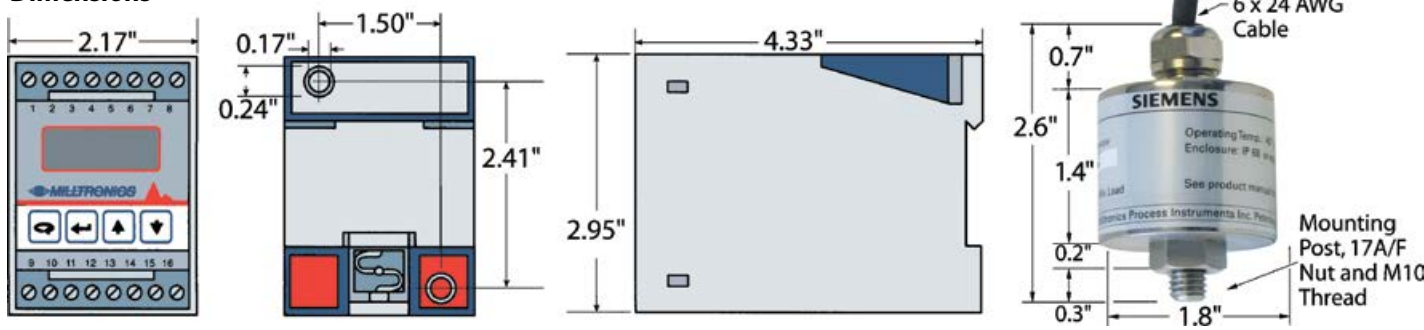
Great for plugged chute detection! Works well in filter monitoring and burst filter bag detection applications!

Acoustic Emission Technology: How It Works

The AS100 sensor uses acoustic emission technology, which is a completely noninvasive technique. The sensor monitors high frequency sounds or structure-borne acoustics generated by friction and impact of powders, granules, and solids in motion.

Monitoring this activity provides the basis for the sensor's exceptional troubleshooting capabilities, which are further extended by its dual range of operation.

Process and operating equipment naturally generate sounds that can span a wide range of frequencies. Low frequency sounds — whether airborne or structure borne — are often masked by irrelevant sounds from adjacent plant or machinery. This can prevent the activity of interest from being monitored. However, at the high frequencies of acoustic emission, these problems can be greatly diminished.

The AS100 is most responsive to the diffuse-field component of the acoustic emission activity: it senses the acoustic sound wave's reverberation as it propagates through the component being monitored. As a result, positioning and orientation of the sensor are not critical, as signals are readily detected at all points and orientations for a particular application. By detecting acoustic emission activity, the sensor differentiates between normal and abnormal states in a given process.

A sensitive piezo-crystal inside the AS100 sensor converts surface displacements of the structure associated with the traveling acoustic wave. It converts them into an electric signal that is amplified and processed to produce the level of acoustic emission activity as a process of time.

Looking for an acoustic system to measure noise in oscillating displacement pumps, conveyors, or channels?

Siemens SITRANS DA400 detects high-frequency acoustic oscillations created by friction and impact of mechanical parts or bulk solids in pipes, raceways, channels, chutes, conveyors.

Call for price and availability.

Specifications

Sensor

Power: 20 to 30 VDC, 18 mA typical

Relative Sensitivity: 0.5%/ºC average, over the operating range

Output: Analog, 0.08 to 10 VDC nominal, 100 KΩ min. load impedance

Cable: *Standard:* 13', PVC jacket, 3 twisted pairs, 24 AWG, shielded; *Extended:* 13', thermoplastic elastomer jacket, 6 conductor, 24 AWG, shielded

Housing: 304 stainless steel; **Ingress Protection:** IP68 (waterproof)

Control Unit

Power: 100, 115, 200, 230 VAC ±15% 50/60 Hz (factory set); *Excitation:* 26 VDC nominal, 70 mA max; *Consumption:* 10 VA max

Analog Input: 0-10 VDC, from sensor

Analog Output: 4-20 mA, isolated output, 750Ω max; *Switched:* Two Form C relays, latching or nonlatching 5 Amp at 250 VAC non-inductive

Alarm and Startup Delay: Adjustable from 0 to 999 seconds

Operating Temperature: -4º to 122º F ambient

Housing: Polycarbonate; **Ingress Protection:** IP20

Wall Mount Display: LCD, 3 digits plus symbols

Ordering Instructions

Pick one control unit, and then select your sensor configuration by choosing one option from each table section below. A complete catalog number looks like this: 7MH7562-2AA and 7MH7560 - _ _ _ _ _

Model Selection Guide

Issue all orders to: *Siemens Industry Inc, c/o Lesman Instrument Company*

Description		Catalog Number	Price
SITRANS CU-02 Control Unit, 115 V Power		7MH7562-2AA	$641.00
SITRANS CU-02 Control Unit, 230 V Power		7MH7562-4AA	641.00
SITRANS AS100 Acoustic Sensor		7MH7560-	1005.00
Sensor	Standard (-4° to 176° F) (Note 1)	1A _ _ _ -	0.00
	Extended (-40° to 257° F) (Note 2)	3A _ _ _ -	315.00
	Extended (-22° to 248° F) (Note 3)	4A _ _ _ -	315.00
Mounting	None	_ _ A0 _ -	0.00
	Mounting Disk	_ _ B0 _ -	82.00
	Extension Mounting Tab	_ _ C0 _ -	82.00
Approvals	CE	_ _ _ _ 1	0.00
	CE, FM/CSA Class II, Div 1, Grps E-G	_ _ _ _ 3	164.00
	CE, CSA Class II, Div 1, Grps E-G	_ _ _ _ 4	164.00
Accessories	Mounting Tab	7MH7723-1AA	108.00
	Mounting Disk	7MH7723-1AB	108.00
	1/2" NPT Adapter Kit (Sensor 1)	7MH7723-1BW	278.00
	1/2" NPT Adapter Kit (Sensor 3)	7MH7723-1BX	278.00

Note 1: Not available with FM approval (Approval 3)
Note 2: Available only with CE approval (Approval 1)
Note 3: Available only with CE/CSA approval (Approval 4)

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L 188   *MOTION FAILURE*   V 01.2019

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Motion Failure Alarms

Rugged motion sensors protect your equipment — reduce downtime and costly repairs

Search www.lesman.com for
MFA 4p   Go

Composed of powerful, extremely sensitive probes and innovative electronics, these systems assure reliable alarm indication for monitoring loss of motion in any conveying and rotating machinery.

Not only are the rugged probes impervious to dust, dirt build-up, and moisture, but their noncontacting design eliminates the need for lubricating, cleaning, and replacing of parts. Indoors and outdoors, year after year, Siemens' motion sensing systems operate maintenance-free.

All Siemens motion sensors are easy to install. Gap distance between the sensed ferrous object and the probe can be as much as 4". Wiring costs are minimal, because the probes can use the same conduit, or armored cable, as the drive motor and its control circuits.

Motion sensor systems greatly reduce the downtime and cleanup expenses associated with failure of conveying equipment. Spillage is minimized with the immediate shutdown of pre-feeding equipment. Motion sensor use prevents extensive damage — even fire — due to heat build-up caused by belt slippage at the head pulley, or by a broken belt on a multiple V belt drive. They are so effective in operation that they provide rapid payback of initial cost, often the first time they warn of conveyor malfunction.

Motion Failure Alarm MFA-4p

The general purpose MFA-4p monitors motion and provides the contacts to shut down machinery when plant equipment slows down or fails. On belt, drag, and screw conveyors; on bucket elevators, fans and pumps, the MFA-4p underspeed alarm warns instantly of equipment malfunction. This single setpoint system is ideal for use in most industrial applications, operating reliably where nothing else can.

Probes for Siemens MFA-4*

Standard MSP-12
- Temperature rating -40° to 140° F
- #1 Seller! Withstands most environments
- Long-lasting aluminum enclosure, internal preamp
- Mounting flange and locknut for fast installation and setup

High Temperature MSP-3
- Temperature rating -40° to 140° F
- Withstands temperatures to 500° F
- Cast aluminum probe with mounting flange
- 5 foot high-temperature cable provided, up to 100 foot max length
- Preamp remote mounted in cast aluminum NEMA 4 enclosure

Harsh Environment XPP-5
- Temperature rating -40° to 140° F
- CSA hazardous approval (Class 1, Div 1, Groups A-D, Class II, Div 1, Groups E-G, Class III)
- Cast aluminum probe with mounting flange and lock nut
- 5 foot high-temperature PTFE cable provided, up to 100 ft. max length
- Preamp remote mounted in cast aluminum NEMA 4 enclosure

Stainless High Temperature MSP-9
- Operates in environments to 500° F
- 304 stainless steel probe
- 5 foot special high-temp Teflon cable provided, up to 100 foot max length
- Preamp remote mounted in enamel painted (or stainless steel) enclosure

Visit our website for more information on Siemens motion failure alarms and speed sensors.

www.Lesman.com

Remote mount amplifier for MSP-3, and MSP-9 motion sensing probes. Available in aluminum, painted steel, or NEMA 4X stainless steel enclosures.

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MOTION FAILURE   189   **L**

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Specifications

Span: 0–7200 PPM; *Setpoint Adjustment:* 2–3000 PPM; Adjustable start-up time delay

Ambient Temperature: -40° to 140° F; *Repeatability:* ±1%; *Deadband:* ±1/4%

Power: 110/115/200/230 VAC 50/60 Hz, Switch Selectable

Output: Two Form C relay contacts (DPDT) rated 10A 115/230 VAC resistive, or 10A 24 VDC resistive

Visual Indication: For probe operation and relay status

Cable to Pre-Amp: 2 wires #18 to 12AWG pulled in conduit with the 115 VAC motor control wiring, or armored cable

Enclosure: Corrosion-proof NEMA 4 polycarbonate

Options: Open frame style (with or without brackets); Overspeed alarm; 230VAC +10% 50/60 Hz at 5VA; *Slow Speed Available in the U.S.:* 1 pulse/10 min. minimum; 1 pulse/3 sec. maximum

Ordering Instructions
Select one option from each table section below. A complete MFA-4p catalog number looks like this: 7MH7144- _ _ _ _. A complete system includes a probe, remote mount amplifier (as needed), and mounting hardware.

Model Selection Guide

Issue all orders to: Siemens Industry Inc, c/o Lesman Instrument Company

Description	Catalog Number	Price
MFA-4p Motion Failure Alarm Electronics Unit	7MH7144-	$494.00
Enclosure — NEMA 4X Polycarbonate	1A _ _	0.00
Enclosure — NEMA 4 Painted Mild Steel	2A _ _	566.00
Enclosure — NEMA 4X Stainless Steel	3A _ _	1133.00
Speed Detection Version, Switch-Selectable		
Speed — Standard/Underspeed/Overspeed	_ _ A _	0.00
Speed — Slow/Underspeed/Overspeed	_ _ B _	178.00
Approvals — CE, CSA US/C, FM	_ _ _ 2	0.00
MFA-4p Spare Parts and Accessories		
Spare MFA 4p Circuit Card, Standard	7MH7723-1DU	433.00
Spare MFA 4p Circuit Card, Slow Speed	7MH7723-1DV	562.00
Probe Selection — MSP-3, 1/2" Conduit Entry (Note 1)	7MH7146-0BA	455.00
Probe Selection — MSP-9 (Note 1)	7MH7146-0DA	963.00
Probe Selection — MSP-12, 1/2" Conduit Entry	7MH7146-0EA	411.00
Probe Selection — XPP-5, 1.5 m Cable (Note 2)	7MH7146-0GA	784.00
Remote Amplifier (Note 1) — Aluminum, 1/2" NPT Entry	7MH7145-0A	352.00
Remote Amplifier (Note 1) — Painted Steel, NEMA 4	7MH7145-0C	632.00
Remote Amplifier (Note 1) — Stainless Steel, NEMA 4X	7MH7145-0D	752.00
Probe and Remote Mount Amplifier Spare Parts and Accessories		
Spare Remote Mount Amplifier Card	7MH7723-1DT	170.00
MSP-3, MSP-9 Lid Gasket	7MH7723-1CW	22.00
MSP-3, MSP-12, XPP-5 Locknut	7MH7723-1CR	35.00
MSP-3, MSP-12, XPP-5 Mounting Flange	7MH7723-1CS	36.00
MSP-3, MSP-12 Lid with 1/2" NPT Conduit Entry	7MH7723-1CU	36.00
MSP-9 Mounting Bracket	7MH7723-1CT	202.00
MSP-9 Lid	7MH7723-1CV	69.00
MSP-12 Lid Gasket	7MH7723-1CX	22.00

Notes:
1 Remote amplifier required for MSP-1, MSP-3, and MSP-9 models.
2 XPP-5 has CSA approval, Class I, Groups A–D, Class II, Groups E–G.

SITRANS WM100 Zero Speed Switch

Replaces retired Milltronics ZSS

Features

- Up to 4" gap between SITRANS WM100 and targets
- Non-contacting design eliminates the need for lubricating, cleaning, and part replacement
- Visual indication of target triggered pulse
- Rugged, low maintenance suitable for tough environments
- One SPDT Form C relay contact
- Provides cost-effective protection

Accurate Monitoring in Harsh Conditions

SITRANS WM100 is a heavy-duty zero-speed alarm switch. This non-contacting unit provides cost-effective equipment protection even in the harshest conditions. WM100 monitors the absence of motion on moving or rotating equipment.

SITRANS WM100 can be mounted up to 100 mm (4") from the ferrous target. The robust motion sensor provides the contracts to shutdown machinery whenever zero speed is detected. On belt, drag, and screw conveyors, or on bucket elevators, fans and pumps, the zero speed alarm option can warn instantly of equipment malfunctions. It alarms to minimize spillage, prevent extensive damage or even fire caused by belt slippage at the head pulley and warn against conveyor malfunction.

Specifications

Output: *Contact:* 1 SPDT Form C dry relay contact, rated 5A at 250 V AC, failsafe operation; *Time Delay: Start-up:* 10–14 seconds (5–7 seconds with 12 ppm jumper); *Zero Speed (selected via common jumper):* 5 seconds ±2 (min. speed 10 to 15 ppm) or 10 seconds ±2 (min. speed 5 to 7.5 ppm)

Operating Temperature: -40° to 140° F

Design: NEMA 4x, 6/IP67 aluminum body and connection box; 2" NPSL process mounting; 3/4" NPT conduit entrance, 5 screw terminals plus grounding terminal for electrical connection, max 12 AWG wire size; Neoprene gasket

Display: Red LED for verification of pulses; 6 or 12 to 3000 pulses per minuet

Approvals: CSA US/C, CE, C-TICK

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

Description	Catalog Number	Price
SITRANS WM100 Heavy-Duty Zero-Speed Alarm Switch	7MH7158-	$712.00
Model — 115 VAC Power	-0AA00	0.00
Model — 230 VAC Power	-0BA00	88.00
ID Tag — Stainless Steel 0.5" x 1.75" (16 Char.)	Z-Y17-	50.00
Spare Parts — Locknut	7MH7723-1CR	35.00
Spare Parts — Mounting Flange	7MH7723-1CS	36.00
Spare Parts — Motion Cable Gland Adaptor Kit	7MH7723-1JU	110.00

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L **190** **BELT SCALE SYSTEMS** *V.01.2019*

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Belt Scale Selection Guide

SIEMENS

A typical belt scale system consists of the belt scale, an integrator, and a speed sensor, like the system shown here. Your application requirements will dictate the proper system combination.

MSI belt scale **+** BW500 integrator **+** RBSS speed sensor

Belt scales help maximize the use of raw materials, control inventories, and aid in the manufacturing of a consistent product. Siemens belt scale combine simple, drop-in installation, low maintenance (no moving parts), and repeatable accuracy for productive operation. They show minimal hysteresis, and superior linearity, and ignore side loading. All belt scales shown here feature overload protection for the load cells. When used with approved intrinsic safety barriers, MLC, MCS, MSI, and MMI belt scales can be used in hazardous locations.

For food, light duty, and medium duty industry

Model	Low Capacity (MLC)	Light Duty WD600	Compact (MCS)	Medium Duty (MUS)
Description	Low capacity scale for light belt loading	Light-to-medium duty slider belt scale	Compact, rugged, modular belt scale with stainless steel load cells	Modular, medium-to-heavy duty scale
Application	Product monitoring in fertilizer, tobacco, animal feed pellets and sugar	Process and load-out control for food, chemicals, and tobacco	Aggregate, mining, steel, mobile crushers, weighfeeder retrofits	Process indication in aggregates, agriculture, mining, steel, stackers
Capacity	Up to 50 t/h (55 STPH)	Up to 100 t/h (110 STPH)	Up to 1200 t/h (1320 STPH)	Up to 5000 t/h (5500 STPH)
Belt Width	18" to 48"	12" to 48"	Up to 42" CEMA	Standard duty ≤42", heavy duty ≥48"
Accuracy	±1.0% or better	±0.5 to 1% totalization over 25-100% range	±0.5 to 1.0%, ±2.0 on mobile applications	±0.5 to 1.0%
Approvals	CE, C-TICK, GOST	CE, C-TICK, GOST, Meets FDA/USDA requirements for food	CE, C-TICK, GOST, ATEX, CSA, FM, IECEx	CE, C-TICK, GOST

For heavy duty industry

Model	SITRANS WB300	SITRANS WB310	Single Idler (MSI)	Multiple Idler (MMI)
Description	Heavy-duty, full-frame four load cell belt scales	Heavy-duty, full-frame two load cell, pivoted pan based, belt scale	Heavy duty, high accuracy single idler scale	Heavy duty, high accuracy multiple idler scale
Application	For process and load-out control: Clinker in cement production, mining, iron, and steel	Recycling industries, tough applications from sorting to production monitoring	For process and load-out control in cement, chemicals, steel, aggregate, food, and mining	For critical process and load-out control in cement, chemicals, steel, aggregate, food, and mining
Capacity	Up to 5000 t/h (5500 STPH)			Up to 12000 t/h (13000 STPH)
Belt Width	24" to 72"	54" to 72"	18" to 96"	18" to 96"
Accuracy	±2.0% or better	±5.0% or better	±0.5% or better	±0.25% or better
Approvals	CE, RCM	CE, RCM	CE, C-TICK, GOST, SABS, Measurement Canada, OIML, MID, ATEX, IECEx, CSA, FM, CMC	

*Learn more about Siemens bulk solids flow products at* **www.Lesman.com.**

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BELT SCALE SYSTEMS 191 **L**

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Bulk Solids System Components

Speed Sensors for Siemens Belt Scale Systems

Speed sensors operate in conjunction with a conveyor belt scale, providing a signal to an integrator for calculation of belt speed, flow rate, and totalized weight.

		New!	
Model	**Milltronics RBSS**	**SITRANS WS300**	**Milltronics TASS**
Description	High resolution, wheel-driven return belt speed sensor	Low- to high-resolution, shaft-driven speed sensor	Compact low-profile, wheel-driven return belt speed sensor, ideal for use on mobile crushers and in constricted spaces
Function	Provides a signal generated as the wheel on the sensor rotates on the return belt; Accurate belt speed detection	Converts shaft rotation into a pulse train of 32, 256, 1000, or 2000 pulses per revolution using high-precision rotary optical encoder; Suitable for low or varying shaft speeds	Operates with a conveyor belt scale, providing signals to an integrator to compute the rate of material being conveyed.
Construction	IP65 rated rugged design, CE approval	NEMA 4X/IP65; CE, CSA, FM, ATEX approvals	IP67; CE, RCM, GOST-R

Milltronics MWL Weight Lifter for Siemens Belt Scales

- Can be used with new and existing applications
- Safe and easy application of belt scale reference weights, with the operator remaining outside the conveyor
- Easy-to-store drive handle that can be applied to left or right side of MWL
- Low profile fits easily into belt conveyor
- Security pin ensures safe weight storage
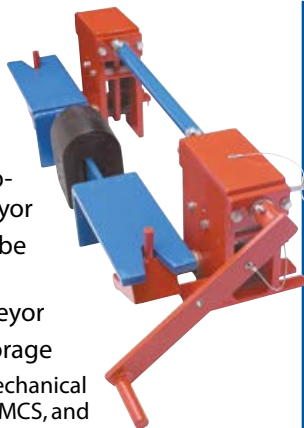
Milltronics MWL Weight Lifter is a mechanical calibration weight lifter for MSI, MMI, MBS, MCS, and MUS belt scales.

Milltronics MWL mechanically raises and lowers the static weights and then stores the weights securely above the belt scale calibration arms, and allows the operator to lower and apply them safely without having to lean into the conveyor.

The MWL is manually operated, and uses a high mechanical advantage to enable weights up to 750 lbs to be applied with limited effort. The crank handle uses twelve rotations for full range of motion, and can be removed and stored for safety with the locking ball-pin that secures the MWL when it is not in use.

Two lifting arms support a base-bar weight above the test-weight brackets of the belt scale: either flat bar or round bar style calibration weights are applicable. Locating notches in the base-bar weight engage the calibration weights securely on the lifting arms in the stored position, and the gear drive locks the lifting arms in place.

Specifications

Application: Span calibrations on belt conveyors

Components: Left-handed or right-handed crank body, each connected to a lifting pad with guide pin; Torque tube to connect left and right crank shafts; Crank handle that mounts to either the left or right input shaft; U-clamp to secure flat bar calibration weights; Optional base bar with integrated round bar weight or to support other types of calibration weights; Optional shaft extension adds 4" (102 mm) to handle shaft length

Crank Arm: Mechanical advantage 20:1, 12 revolutions required for raising or lowering

Approvals: Compliant with Directive 98/37/IEC, CE, C-TICK

WD600 Slider Bed Belt Scale

- Unique weighing mechanism design with low friction and long weigh area for increased retention time, resulting in higher accuracy and reliability
- Ultra-sensitive parallelogram style load cells (nickel-plated alloy or stainless steel) provide precision weighing accuracy
- Drop-in weighbridge for quick washdown and maintenance

Milltronics WD600 is a light- to medium-duty slider bed belt scale used for process and load-out control in manufacturing. Its corrosion resistant WD600 components are durable and virtually maintenance-free.

WD600 works with an existing flat belt conveyor and a Siemens integrator. As material is moving along the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended weighbridge to the load cells. WD600 reacts only to the vertical component of the applied force.

Specifications

Typical Applications: Monitor feed rates and blending in cereals, seeds, minerals, wet foods, or powder additives into a process

Measuring Principle: Heavy duty strain gauge load cells measuring load on a belt conveyor

Temperature: *Material:* 150° F (65° C) max. ; *Operating range:* -40° to 150° F (-40° to 65° C); *Compensated range:* 15° to 105° F (-10° to 40° C)

Capacity: Up to 18 t/h; *Nickel-plated load cells:* 10, 15, 20, 30 kg; *Stainless steel load cells:* 6 kg, 25, 50 lbs; *Overload:* 150% of rated load cell capacity

Belt Width: 12", 18", 24", 30", 36" or 48" (300 to 1200 mm)

Accuracy: ±0.5% to 1% totalization over 4:1 operating range, application dependent

Construction: Stainless steel with UHMW slider pads, nickel-plated alloy steel or stainless steel load cells.

Output: Two mV/V or three mV/V, depending on load cell version; *Non-repeatability:* 0.01% of rated output; *Non-linearity:* 0.02% of rated output

Compatible with: Milltronics BW100 and BW500 integrators, or SIWAREX FTC weighing module (for integration directly into PLC system)

L 192 WEIGHBELT FEEDERS V.01.2019

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Weighfeeder Selection Guide

SIEMENS

Ultra-sensitive load cells provide precision weighing accuracy, improving blend consistencies, accountability, and record-keeping. Weighfeeders are indispensable when automated production processes require continuous in-line weighing and feeding. Depend on these weighfeeders to deliver fast, reliable, and uninterrupted service. The virtually maintenance-free construction promises unmatched performance.

Milltronics weighfeeders come standard with belt weigh bridge and speed sensor. Flanged belting is available on all models. Belt sizes and widths are made to measure for your specific application. Complete your weighfeeder system with a Milltronics integrator.

Model	SITRANS WW100	SITRANS WW200	SITRANS WW500
Description	Light duty, high accuracy, low capacity for minor ingredient additives	Medium duty, low to medium capacity for minor ingredient additives	Heavy duty, high-capacity apron weighfeeder for applications in extremely harsh environments
Typical Applications	Control and monitor feed rates and blending in bulk chemicals, tobacco, food, and water treatment	Control and monitor feed rates and blending of minerals or powdered additives into a process	Industrial applications in steel, cement, or other heavy duty industries that convey clinker, granulated blast furnace clag or petroleum coke
Capacity	100 lbs/hr to 20 STPH / 45 kg/hr to 18 t/hr	100 lbs/hr to 110 STPH / 45 kg/hr to 100 t/hr	11 to 2200 STPH / 10 to 2000 t/hr
Belt Width	9" to 12"	12" to 36"	Up to 98"
Motor Size	0.25 HP	0.33 HP or larger	0.75 HP
Belt Speed	1 to 40 FPM		2 to 50 FPM
Accuracy	±0.25% to 0.5%	±0.5% or better	±2% or better
Sensing Element	Platform weighbridge, single load cell	Platform weighbridge, dual load cell	Load cells
Construction	Mild steel or stainless steel		Mild steel
Features	Belts for specific applications, sanitary version available	Custom units for special application needs, belts for specific applications	Custom gate sizes available, limit switch, position sensor
Approvals	CE, Meets USDA and FDA requirements for food processing		—
Learn more	Fill out the application datasheet at www.Lesman.com/datasheets/ and send it to Lesman for an engineering review.		

Integrators for Belt Scales, Weighfeeders, and Solids Flowmeters

Electronic integrators process sensor signals into operating data for continuous in-line weighing and flow measurement. They can perform basic control functions, like PID and batch control, traditionally handled by higher level devices. Easy to install, commission, operate, and maintain, Milltronics integrators from Siemens incorporate patented electronic load cell balancing to perform basic and sophisticated level and flow control functions.

Siemens Dolphin Plus software can be used for quick and easy configuration. Optional modules for Allen-Bradley Remote I/O, Profibus DP, and DeviceNet can provide direct digital communications with your plant control system.

Model	Milltronics BW500/L	Milltronics BW500	Milltronics SF500
Description	Basic integrator for belt scale applications	Full feature integrator for use with both belt scales and weighfeeders	Full feature integrator for use with solids flowmeters
Compatible with	MLC, MUS, MCS, MSI, and WD600 belt scales	MLC, MUS, MCS, MSI, MMI, WD600 belt scales, WW100, WW200, and WW300 weighfeeders	SITRANS WF100, WF200, WF250, WFS300, and WFS320 solids flowmeters
Display Output	Rate, totalized weight, belt loading, and belt speed	Rate, totalized weight, belt loading, belt speed, PID, and batching	Rate, totalized weight, PID, batching
Alarm Relay	Two programmable SPST Form A contacts rated 5 amp @ 250 VAC	Five programmable SPST Form A contacts rated 5 amp @ 250 VAC	
Options	PROFIBUS DP, Allen-Bradley Remote I/O, DeviceNet, ProfiNet IO, Modbus TCP/IP, or Ethernet I/P industrial communications	Two additional analog inputs, two outputs programmable for PID control, Profibus DP, AB RIO, DeviceNet, ProfiNet IO Modbus TCP I/P, Ethernet I/P industrial communications	
Approvals	CSA, FM, CE, C-TICK, GOST	CSA, FM, CE, C-TICK GOST, NTEP, OIML, MID, Measurement Canada	CSA, FM, CE, C-TICK, GOST

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V 01.2019

WEIGHBELT FEEDERS

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Solids Flow and Motion

Controllers and Programmers

Digital Indicators

Recorders and Data Acquisition

Combustion Safety and Efficiency

Process Valves

Choosing the Right Solids Flowmeter

A typical solids flowmeter system consists of the flowmeter, sensing head, and an integrator, like the system shown here. Your application requirements will dictate the proper system combination.

WF340 flowmeter

WFS300 sensing head

SF500 integrator

+

+
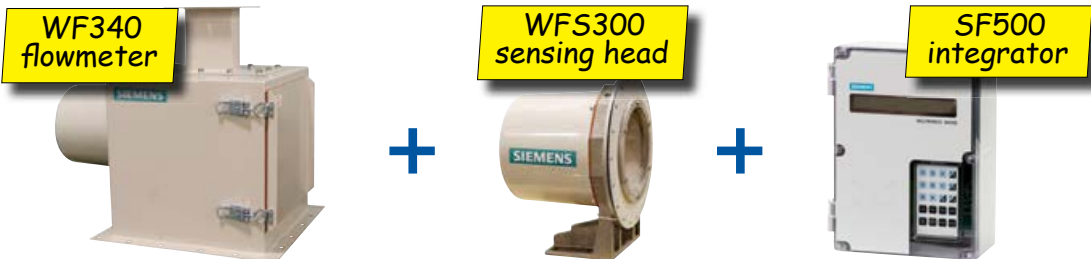
Solids flowmeters enhance process control, contributing to improved quality of your end product and a positive bottom line These heavy duty, low maintenance solids flowmeters provide continuous in-line weighing of dry bulk solids, free-flowing powders, or granular material. All models produce accurate, repeatable results, and can be used for critical functions like batch load-out and blending. All models are totally enclosed and dust-tight, and are constructed of painted mild steel. Stainless steel and hazardous area classification models are also available.

Strain Gauge Load Cell-Based Flowmeters	SITRANS WF100	SITRANS WF200	SITRANS WF250
Description	Low to medium capacity flowmeter for various product sizes, densities, and fluidities in restricted spaces	Medium to high capacity flowmeters for various product sizes, densities, and fluidities	Medium to high capacity flowmeters various product sizes, densities, and fluidities
Typical Applications	Monitoring food ingredients, pet food blending, plastic pellet production, silica sand in glass making	Grinding mill rejects in cement, load-out of grains and seeds	Cement in aerated gravity conveyor
Capacity	3 to 200 t/h (3 to 220 STPH)	200 to 900 t/h (220 to 990 STPH)	
Particle Size	0.25" to 0.5" max.	Fine powder to 1"	

LVDT-Based Flowmeters	SITRANS WF330	SITRANS WF340	SITRANS WF350
Description	Low to medium capacity flowmeter for various product sizes, densities, and fluidity, particularly fine powders	Compact, vertical flow, low to medium capacity flowmeter for various media sizes, densities, and fluidity, like fine powders	Low to medium capacity flowmeter for powders conveyed by aerated gravity conveyors
Typical Applications	General purpose for most pre-feed applications: Fly ash, lime dosing, cement flow and control, flour stream monitoring	Designed for applications with tight space requirements: Fly ash load-out, lime dosing, and gypsum flow	Suitable for cement flow rate measurements downstream of an aerated gravity conveyor. Uses vertical vents and baffles for air separation
Capacity	0.2 to 3000 t/h (0.2 to 330 STPH)		
Particle Size	0.5" (13 mm) or 1.0" (25 mm), depending on model		Fine powder up to 3 mm (0.15")
Sensing Heads	Compatible with SITRANS WFS300 (0.5" particles, 0.2–40 t/h) or SITRANS WFS320 (1" particles, 20–300 t/h)		
Approvals	CE, C-TICK, GOST, CSA, FA, ATEX, IECEx, stainless steel options for meeting FDA and USDA requirements for food processing.		

Fill out the application datasheet at www.Lesman.com/datasheets/ and send it to Lesman for an engineering review.

L 194 *RADIAMETRIC WEIGHING* V 01.2019

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Solids Flow and Motion

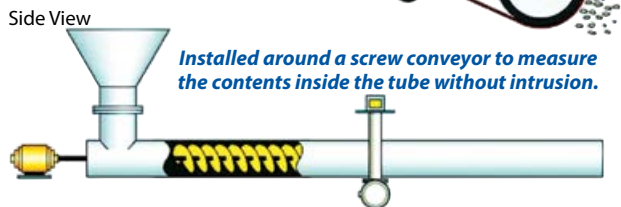Controllers and Programmers

Digital Indicators

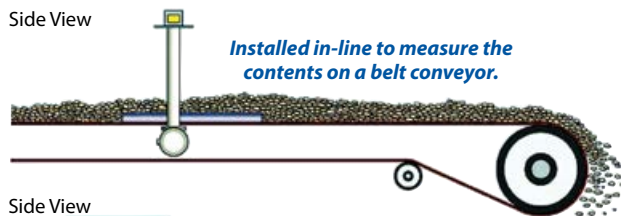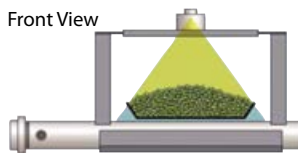Recorders and Data Acquisition

Combustion Safety and Efficiency

Process Valves

Radiametric Weighing System for Bulk Solids Mass Flow

Typical Radiametric Weighing System Installations

Front View

Side View

Installed in-line to measure the contents on a belt conveyor.

Front View

Side View

Installed around a screw conveyor to measure the contents inside the tube without intrusion.
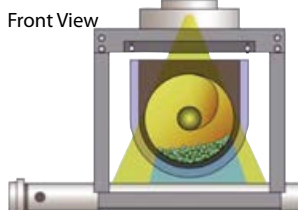
Features

- Not affected by dust, moisture, high temperatures, variable or constant speed conveyors, build-up on belt or screw
- Automatically compensates for buildup on belt or screw
- Suitable for corrosive, abrasive, or toxic materials
- Single computer, compatible with all Ronan detectors, expandable to accurately measure the most complex processes
- Multiple user-configurable outputs
- Auto-zero on empty conveyor
- Proprietary filtering technology provides excellent measurement reliability
- No component wear, low maintenance

Ronan's X96S non-contact weighing system is an economical approach for solids weighing on belt and screw conveyors. It is designed to deliver outstanding performance in a wide range of difficult applications and process conditions, including dangerous materials like caustic, toxic, corrosive, explosive, and carcinogenics, regardless of their temperature. The modular design is ideal to upgrade older systems while keeping the existing sources.

Each system consists of a gamma source, frame, detector and measurement control computer. The gamma source, typically mounted on the top of the frame above the conveyor belt or screw, emits gamma energy through the material, collimated in a direction towards the detector mounted on the bottom of the conveyor. The mass of material on the conveyor attenuates the gamma energy. The amount of energy reaching the detector is inversely proportional to the mass on the conveyor. The detector measures the level of energy and sends a proportional signal to the X96S controller that linearizes, filters, and correlates this signal to a weight and rate measurement.

The entire system is mounted external to the conveyor and can be installed by simply bolting the frame around the conveyor, without the need to make any costly modifications to the conveyor itself. The lightweight, compact design enables it to be located in areas where space is a limitation and without the need for additional supports or foundations.

Source Holders

Ronan ultra-low level nuclear measurement sources improve safety and eliminate the requirement for surveys, wipe tests, inspections and much of the documentation. They are so safe, the NRC permits their removal and installation without a licensed person being present, translating into significant cost savings for the user.

The RLL-1 ultra-low radiation source utilizes very small quantities of radioactive materials. Because of these very low-levels of activity, and their simplicity of design, Ronan systems are the safest gamma gauges on the market.

RLL-1 Specifications

Temperature Limit: 455°F standard, 800°C for 20 minutes fire-resistant option

Collimation: Beam pattern up to 45°

Maximum Source Size: *RLL-1:* Multiple capsules; Up to 0.9 mCi CS-137; Up to 0.2 mCi Co-60; *RLL-1A:* Single capsule; Up to 0.09 mCi CS-137; Up to 0.01 mCi Co-60

SA-1 Specifications

Temperature Limit: 300°F

Collimation: Beam Pattern up to 37°

Maximum Source Size: 5 Ci CS-137, 18 mCi Co-60

Radiation Fields: Meets all international standards for surface radiation limits

X96S Process Measurement Controller

Ronan X96S controllers feature the fastest processors in the radiometric gauging industry. The modular design allows for low-cost expansion of outputs and measurement variables. Calibration and configuration is easy, and can be performed locally through push buttons on the front-face display, or remotely using HART®, Foundation Fieldbus or Profibus PA communications.

X96S Specifications

Accuracy: ±1% span

Inputs: *Pressure:* 0-10V or 4-20 mA; *Temperature:* Nickel or Platinum RTD; **Digital:** Up to 8 digital inputs that can be individually configured as dry or live contacts, quadrature, encoders, or pulse counters

Communications: HART 4-20mA, Foundation Fieldbus™, PROFIBUS PA

Outputs: Up to 4 Form C relays, Up to 4 isolated open collector outputs capable of switching 4.5-30V; RS-232/RS-485 optional

Diagnostics: On-board modular self-test watchdog timer and status LEDs

Power Supply: 24 VDC @ 0.035 A

Housing: NEMA 4 standard; Optional stainless steel or explosion-proof

Approvals: CSA Class 1, Div 1 Groups A-D; NEMA 4, NEMA 4X; Complies with Cenelec/ATEX

Learn More at Lesman.com