

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Overview



The SITRANS LR250 hygienic encapsulated antenna is a 2 wire 25 GHz pulse radar level transmitter with sanitary and hygienic approvals for continuous monitoring of liquids, slurries and pastes within the Food, Beverage, chemical and pharmaceutical industries to a range of 20 m (66 ft) - antenna dependent.

Benefits

- Fully encapsulated horn antenna design with FDA approved and USP Class VI compliant, TFM 1600 PTFE lens.
- $< 0.8 \mu R_a$ surface finish for maximum cleanability and hygiene requirements commonly required in sanitary environments
- Chemically resistant TFM 1600 PTFE lens is also suitable for aggressive or corrosive materials
- Approved device in accordance with 3-A, EHEDG EL Class I and/or EHEDG EL Aseptic Class I
- Cost effective replacement for transmitters made of exotic materials
- Graphical local user interface (LUI) makes operation simple with plug-and-play set-up using the intuitive Quick Start Wizard
- Industry standard process connections including ISO 2852, DIN 11851, DIN 11864-1, DIN 11864-2, DIN 11864-3 and Tuchenhausen Varivent Type F and N
- LUI displays echo profiles for diagnostic support
- 25 GHz high frequency and 2 inch (50 mm) process connection/antenna allow for easy mounting
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Short blanking distance for improved minimum measuring range to 50 mm (2 inch) from the end of the antenna
- Communication using HART, PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools, such as PACTware or Fieldcare via SITRANS DTM.
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511

Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves setup and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller antenna options and decreasing sensitivity to obstructions.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly in small vessels and in tanks/vessels up to 20 m (66 ft) on materials with $dk > 1.6$.

- Key Applications: applications within the Food, Beverage, Chemical and Pharmaceutical industries where sanitary, aseptic or hygienic approvals are required or easy install/clean flush antennas are preferable, such as ice cream, fruit juice, milk, beer, and pharmaceutical or chemical additives and ingredients.

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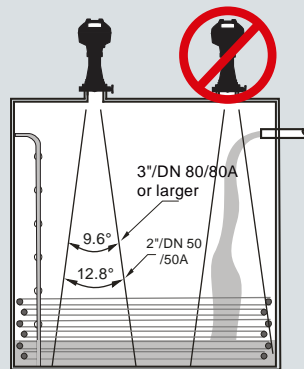
SITRANS LR250 Hygienic Encapsulated Antenna

Configuration

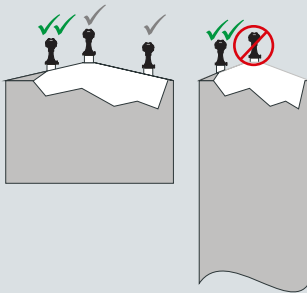
Installation

Note:

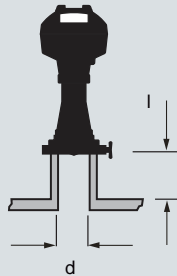
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.



Mounting unit on vessel



Mounting on a nozzle



Nozzles should be maximum l/d ratio 1:1
(Eg. 50 mm length,
50 mm diameter)

SITRANS LR250 hygienic encapsulated antenna installation

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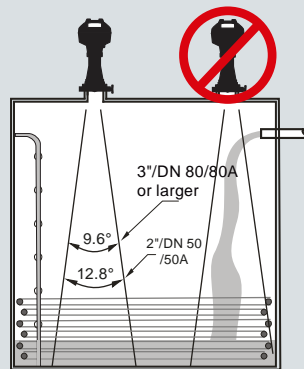
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Configuration

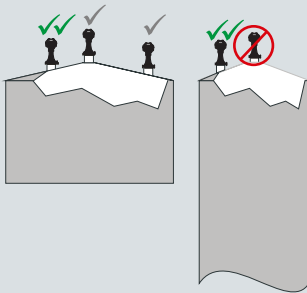
Installation

Note:

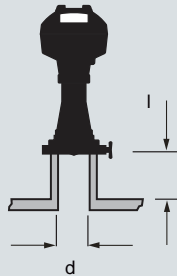
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- The peak energy density is directly in front of and in line with the antenna.
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Mounting unit on vessel



Mounting on a nozzle



Nozzles should be maximum l/d ratio 1:1
(Eg. 50 mm length, 50 mm diameter)

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Technical specifications

Mode of operation		Process connections	
Measuring principle	Radar level measurement	Hygienic/Sanitary connections	<ul style="list-style-type: none"> • 2", 3" & 4" Sanitary Clamp according to ISO 2852 • DN 50, DN 80 & DN 100 Aseptic/Hygienic threaded to DIN 11864-1 [Form A] • DN 50, DN 80 & DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] • DN 50, DN 80 & DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] • DN 50, DN 80 & DN 100 Hygienic Union according to DIN 11851 • Type F (50 mm) & Type N (68 mm) Tuchenhausen Varivent
Frequency	K-band (25.0 GHz)		
Minimum measuring range	50 mm (2 inch) from end of antenna		
Maximum measuring range	20 m (66 ft)		
Output		Power supply	
HART	Version 5.1	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
• Analog output	4 ... 20 mA	PROFIBUS PA	<ul style="list-style-type: none"> • 15 mA • Per IEC 61158-2
• Accuracy	± 0.02 mA	FOUNDATION Fieldbus	<ul style="list-style-type: none"> • 20.0 mA • Per IEC 61158-2
• Fail-safe	<ul style="list-style-type: none"> • Programmable as high low or hold (loss of echo) • NE 43 programmable 		
PROFIBUS PA	Profile 3.01		
• Function blocks	2 Analog Input (AI)		
FOUNDATION Fieldbus	H1		
• Functionality	Basic or LAS		
• Version	ITK 5.2.0		
• Function blocks	2 Analog Input (AI)		
Performance (according to reference conditions IEC60770-1)		Certificates and approvals	
Maximum measured error	<ul style="list-style-type: none"> • > 500 mm from sensor reference point: 3 mm (0.118 inch) • < 500 mm from sensor reference point: 25 mm (1 inch) 	General	CSA _{US/C} , CE, FM, NE 21, RCM
Influence of ambient temperature	< 0.003 %/K	Radio	FCC, Industry Canada and Europe ETSI EN 302-372, RCM
Rated operating conditions		Hazardous	
Installation conditions		• Explosion Proof (Brazil)	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Location	Indoor/outdoor	• Increased Safety (Brazil)	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Ambient conditions (enclosure)		• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)	• Explosion Proof (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
Installation category	I	• Intrinsically Safe (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
Pollution degree	4	• Non-incendive (Canada/USA)	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
Medium conditions		• Flame Proof/Increased Safety (China)	NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 T _A 90 °C
Dielectric constant ϵ_r	≥ 1.6 (antenna dependent)	• Intrinsically Safe (China)	NEPSI Ex ia IIC T4 Ga, Ex iaD 20 T90 IP67 DIP A20 T _A 90 °C
Process temperature	-40 ... +170 °C (-40 ... +338 °F) at process connection	• Non-sparking (China)	NEPSI Ex nA IIC T4 Gc
Process pressure	See Pressure/Temperature curves for more information (page 4/215)	• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia ta IIIC T100 °C Da
Design		• Non-sparking (Europe)	ATEX II 3G Ex nA IIC T4 Gc
Enclosure		• Flame Proof (International/Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
• Material	Aluminum, polyester powder-coated	• Increased Safety (International/Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
• Cable inlet	2 x M20x1.5 or 2 x 1/2" NPT	• Intrinsically Safe (International)	IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIIC T100 °C Da
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68	• Explosion Proof (Russia)	GOST-R Ex d
Weight (dependent on process connection)	<ul style="list-style-type: none"> • Approx. 4.7kg (10.4 lb) for 2" ISO 2852 (smallest size) • Approx. 7.9kg (17.4 lb) for DN 100 DIN 11864-2 (largest size) 	• Increased Safety (Russia)	GOST-R Ex e
Display (local)	Graphic local user interface including quick start wizard and echo profile display	• Intrinsically Safe (Russia)	GOST-R Ex ia
Antenna		Hygienic/Sanitary	EHEDG EL Class I EHEDG EL Aseptic Class I
• Material	Stainless steel 316L (1.4435 or 1.4404) and TFM 1600 PTFE Lens (lens is the only wetted part)		
• Lens surface finish (R _a)	0.8 µm		

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Programming

Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: ATEX II 1 GD Ex ia IIC T4 Ga Ex ia D 20 T135 °C $T_a = -20 \dots +50 \text{ °C}$ CSA/FM Class I, II, III, Div. 1., Groups A, B, C, D, E, F, G, T6 $T_a = 50 \text{ °C}$ IECEX SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	<ul style="list-style-type: none"> • SIMATIC PDM • Emerson AMS • SITRANS DTM (for connection into FDT, such as PACTware or Fieldcare)
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

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Selection and Ordering data	Article No.
SITRANS LR250 hygienic encapsulated antenna	7ML5433-
2-wire, 25 Ghz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, up to a range of 20 m (66 ft) (Antenna dependant). Ideal for Hygienic applications including small vessels and low dielectric media.	0 - A 0
Hygienic/Sanitary Approvals	
EHEDG EL Class I ¹⁾	1
EHEDG EL Aseptic Class I ¹⁾	2
3-A ²⁾³⁾	3
EHEDG EL Class I & 3-A ²⁾⁴⁾	4
Process Connection Types (all types have TFM1600 PTFE lens)	
316L st/st [1.4435 or 1.4404]	
2" Sanitary Clamp according to ISO 2852 ⁵⁾	AA
3" Sanitary Clamp according to ISO 2852	AB
4" Sanitary Clamp according to ISO 2852	AC
316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)	
DN 50 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] ⁵⁾	BA
DN 80 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A]	BB
DN 100 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A]	BC
316L st/st [1.4435 or 1.4404]	
DN 50 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] ⁵⁾	CA
DN 80 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]	CB
DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]	CC
316L st/st [1.4435 or 1.4404]	
DN 50 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] ⁵⁾	DA
DN 80 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]	DB
DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]	DC
316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)	
DN 50 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 ⁵⁾	EA
DN 80 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851	EB
DN 100 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851	EC
316L st/st [1.4435 or 1.4404]	
Type F (50 mm) Tuchenhausen Varivent (EHEDG only) ⁵⁾	FA
Type N (68 mm) Tuchenhausen Varivent (EHEDG only) ⁵⁾	FB
Type F (50 mm) Tuchenhausen Varivent [3-A only & EPDM process seal -40 °C ... 120 °C (-40 °F ... 248 °F)] ⁵⁾	FC
Type N (68 mm) Tuchenhausen Varivent [3-A only & EPDM process seal -40 °C ... 120 °C (-40 °F ... 248 °F)] ⁵⁾	FD
Type F (50 mm) Tuchenhausen Varivent [3-A only & FKM process seal -20 °C ... 170 °C (-4 °F ... 338 °F)] ⁵⁾	FE
Type N (68 mm) Tuchenhausen Varivent [3-A only & FKM process seal -20 °C ... 170 °C (-4 °F ... 338 °F)] ⁵⁾	FF
EXCLUDE Process Connection - Electronics Head assembly spare only (select all other options as normal)	YY

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Communication	
PROFIBUS PA	1
4 ... 20 mA HART, start-up at < 3.6 mA	2
FOUNDATION Fieldbus	3
Enclosure (with Cable Inlets)	
Aluminum, Epoxy paint, 2 X 1/2" NPT	0
Aluminum, Epoxy paint, 2 X M20 x 1.5	1
Approvals	
General Purpose, CE, CSA, FM, FCC, R&TTE, RCM	A
Intrinsically Safe: CSA/FM Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4 FCC, Industry Canada	B
Intrinsically Safe: IECEX/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, CE, R&TTE, RCM	C
Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D T5, FCC, Industry Canada	D
Non Sparking: ATEX II 3G Ex nA IIC T4 Gc, CE, R&TTE, RCM	E
Increased Safety: IECEX/ATEX II 1/2 GD, 1D, 2D Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, R&TTE, RCM ⁶⁾	F
Flameproof: IECEX/ATEX II 1/2 GD 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, R&TTE, RCM ⁶⁾	G
Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada ⁶⁾	H
Non Sparking: NEPSI Ex nA IIC T4 Gc	K
Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD 20 T90 IP67 DIP A20 TA 90 °C	L
Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 TA 90 °C ⁶⁾	M
Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 TA 90 °C ⁶⁾	N
Pressure Rating	
Rating per pressure/temperature curves in instruction manual	0

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Selection and Ordering data	Order code	Selection and Ordering data	Order code
<p>Further designs</p> <p>Please add "-Z" to Order No. and specify Order code(s).</p> <p><u>Electrical Connection cable entry:</u></p> <p>Plug M12 (IP 67 rating) with mating connector²⁾⁷⁾⁸⁾ ● A50</p> <p>Plug 7/8" (IP 67 rating) with mating Connector²⁾⁸⁾⁹⁾ ● A55</p> <p><u>Test Certificates</u></p> <p>Manufacturer's Test Certificate M to DIN 55350, Part 18 and to ISO 9000 ● C11</p> <p>Inspection Certificate 3.1 of EN 10204 ● C12</p> <p><u>Functional Safety</u></p> <p>Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511⁶⁾¹⁰⁾ ● C20</p> <p><u>Namur</u></p> <p>Namur NE43 compliant, device preset to failsafe < 3.6 mA⁶⁾ ● N07</p> <p><u>Tagging</u></p> <p>Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)]</p> <p>Measuring-point number / identification (max. 27 characters) specify in plain text ● Y15</p>		<p>Operating Instructions for FOUNDATION Fieldbus device</p> <p>English A5E32221411</p> <p>German A5E32376112</p> <p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p> <p>Compact Operating Instructions for FOUNDATION Fieldbus device</p> <p>English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish A5E33472700</p> <p>English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian A5E33472738</p> <p>This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Compact Operating Instructions and Operating Instructions library.</p>	
<p>Operating Instructions for HART/mA device</p> <p>English A5E32220602</p> <p>German A5E32376088</p> <p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p>	Article No.	<p>Compact Operating Instructions for HART/mA device</p> <p>English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish A5E33469191</p> <p>English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian A5E33469171</p> <p>This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Compact Operating Instructions and Operating Instructions library.</p>	
<p>Operating Instructions for PROFIBUS PA device</p> <p>English A5E32221386</p> <p>German A5E32376094</p> <p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p>		<p>Compact Operating Instructions for PROFIBUS PA device</p> <p>English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish A5E33469239</p> <p>English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian A5E33472685</p> <p>This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Compact Operating Instructions and Operating Instructions library.</p>	

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<i>Accessories</i>	
Handheld programmer, Intrinsically safe, EEx ia (LUI enabled)	7ML1930-1BK
HART modem/RS 232 (for use with a PC and SIMATIC PDM)	7MF4997-1DA
HART modem/USB (for use with a PC and SIMATIC PDM)	7MF4997-1DB
One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required) ⁶⁾	7ML1930-1AP
One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required) ⁹⁾	7ML1930-1AQ
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-
For applicable back up point level switch - see point level section on page 4/9	

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

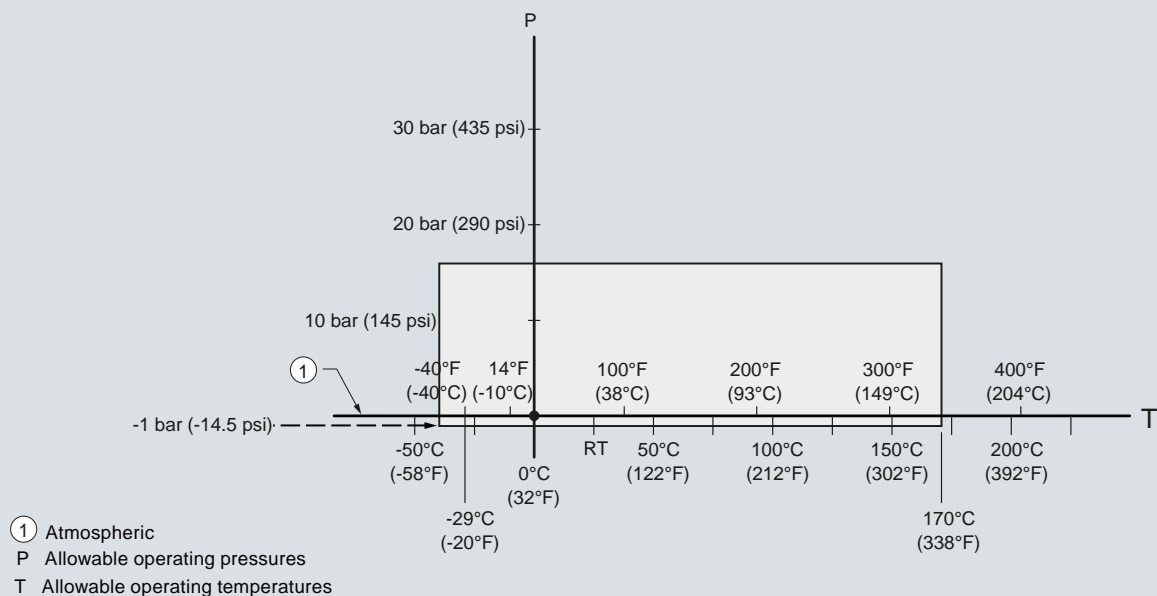
- 1) Available with process connection options AA ... FB & YY only
- 2) Available with Approval options A, B, C, L only
- 3) Available with Process connection FC ... FF only
- 4) Available with process connection options AA ... EC & YY only
- 5) Max. range 10 m (32.8 ft), dk > 3 [20 m (66 ft) and dk > 1.6 if installed in a stillpipe]
- 6) Applicable with Communication option 2 only
- 7) Available with Enclosure option 1 only
- 8) Available with Communication options 1 & 3 only.
- 9) Available with Enclosure option 0 only
- 10) Available with Approval options A, B, C, D, E, K, L only

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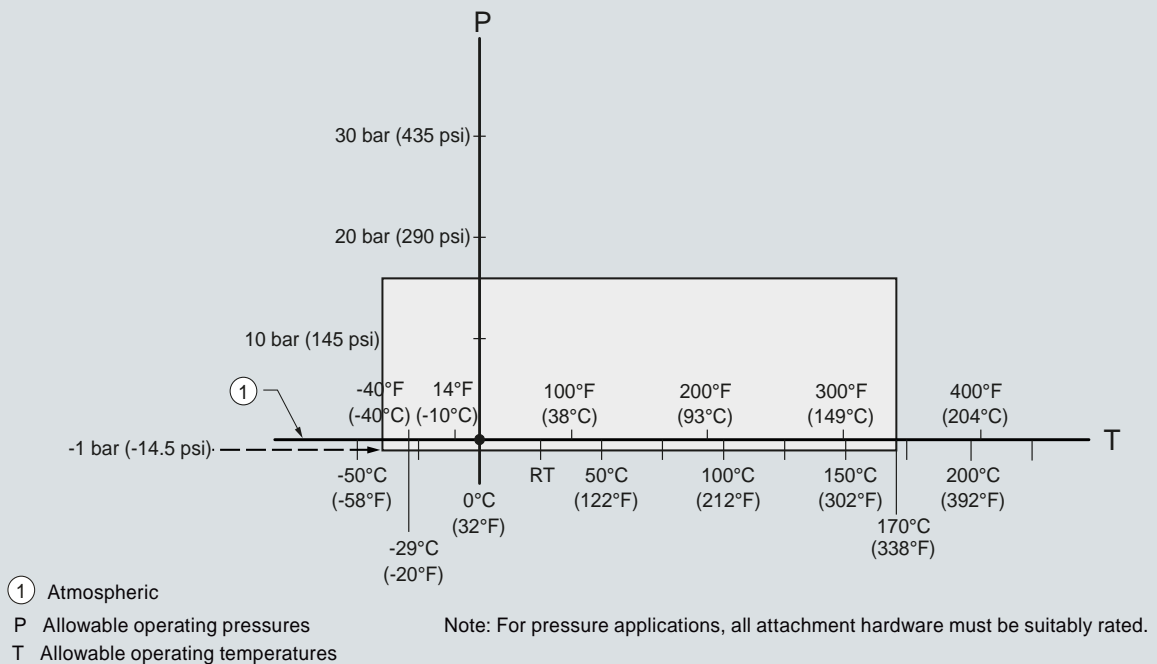
Characteristic curves

DIN 11851 Sanitary/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100
 DIN 11864-1 Aseptic/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

DIN 11864-2 Aseptic/Hygienic flanged: DN 50, DN 80, and DN 100



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

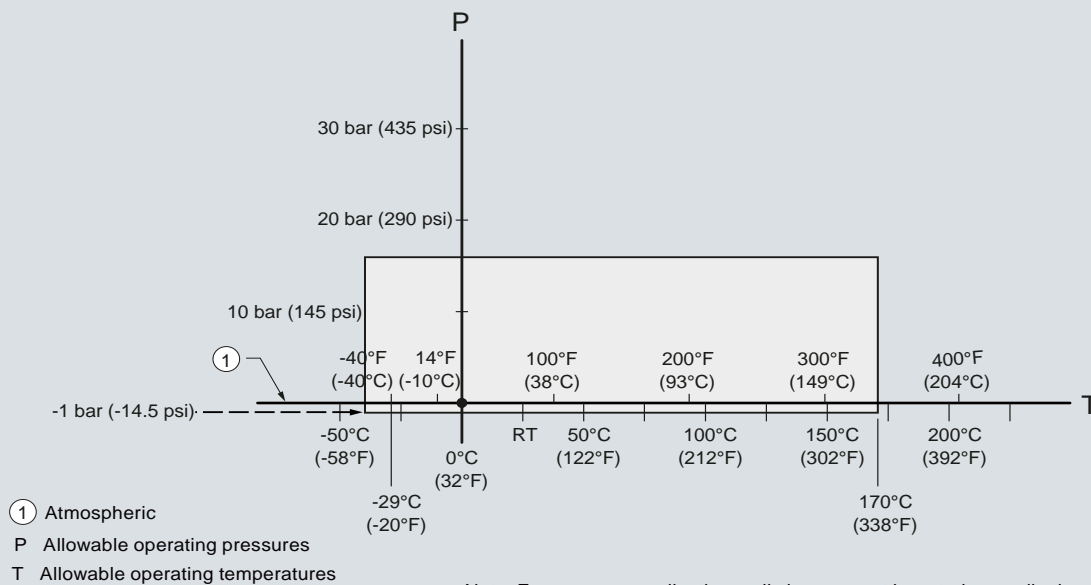
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Characteristic curves

DIN 11864-3 Aseptic/Hygienic clamp: DN 50, DN 80, and DN 100
 ISO 2852 Sanitary/Hygienic clamp: 2", 3", and 4"
 Tuchenhagen Varivent face seal clamp: Type N (68 mm) and Type F (50 mm)



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

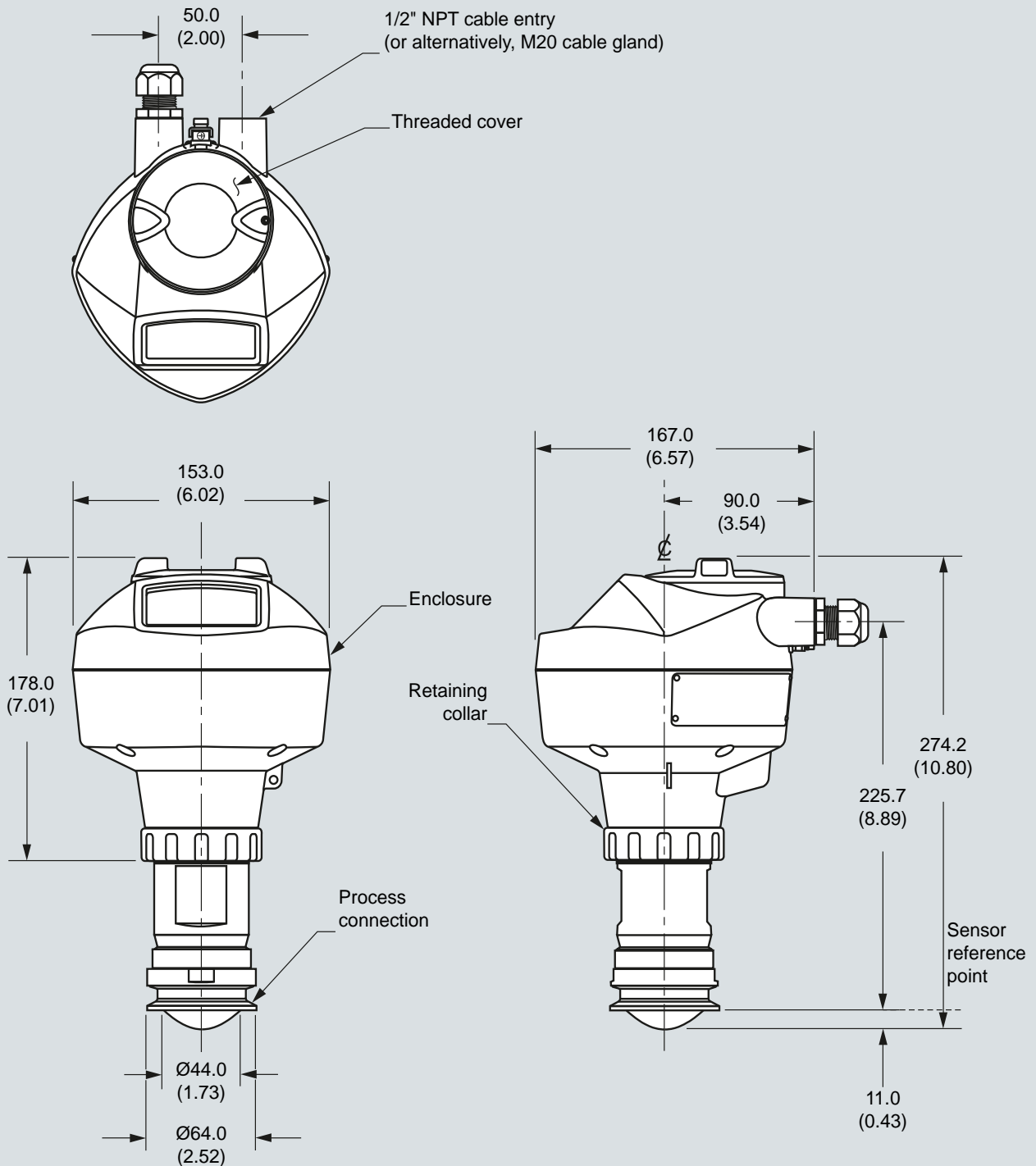
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SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (2" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

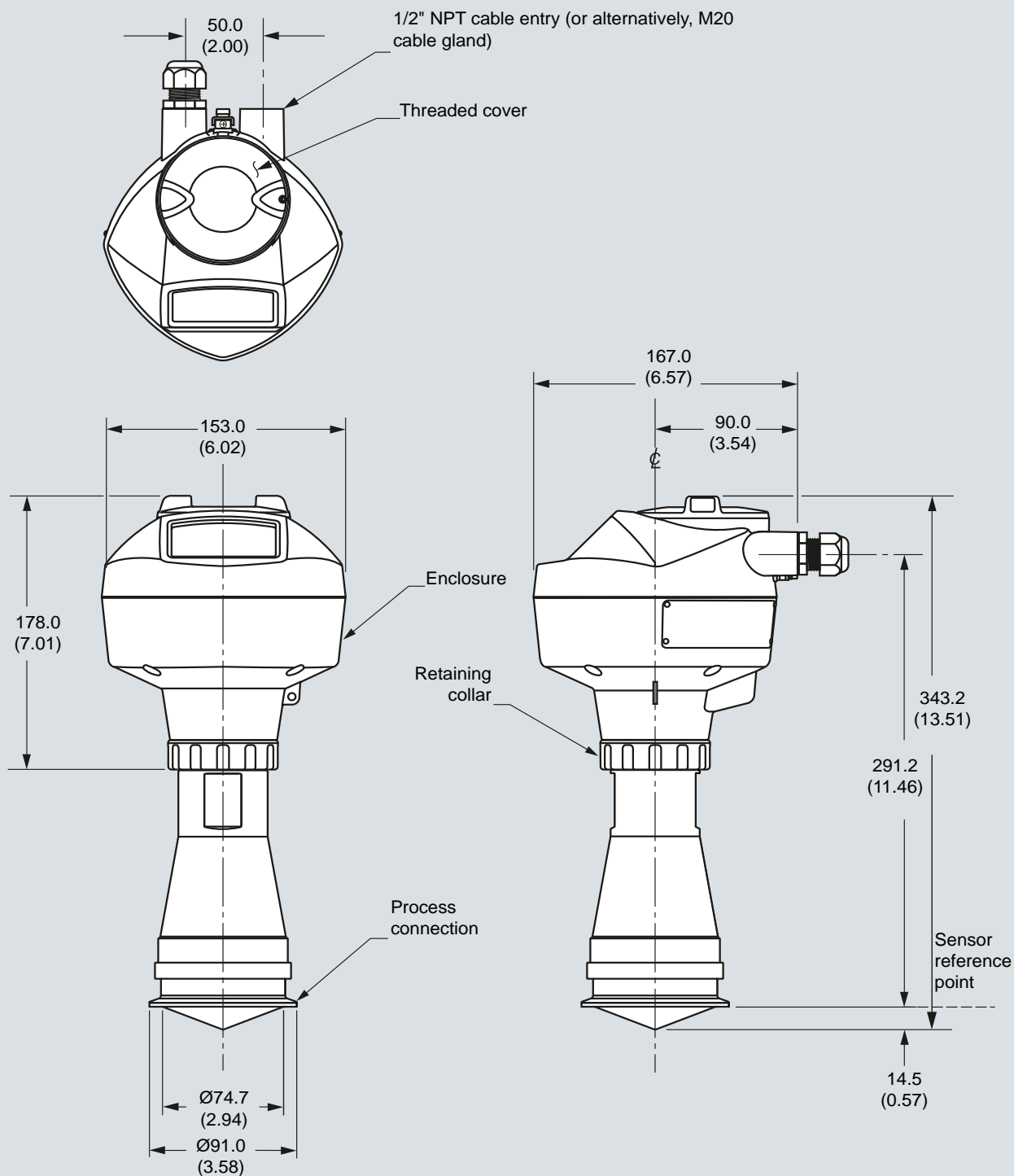
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Dimensional drawings

Hygienic encapsulated antenna (3" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

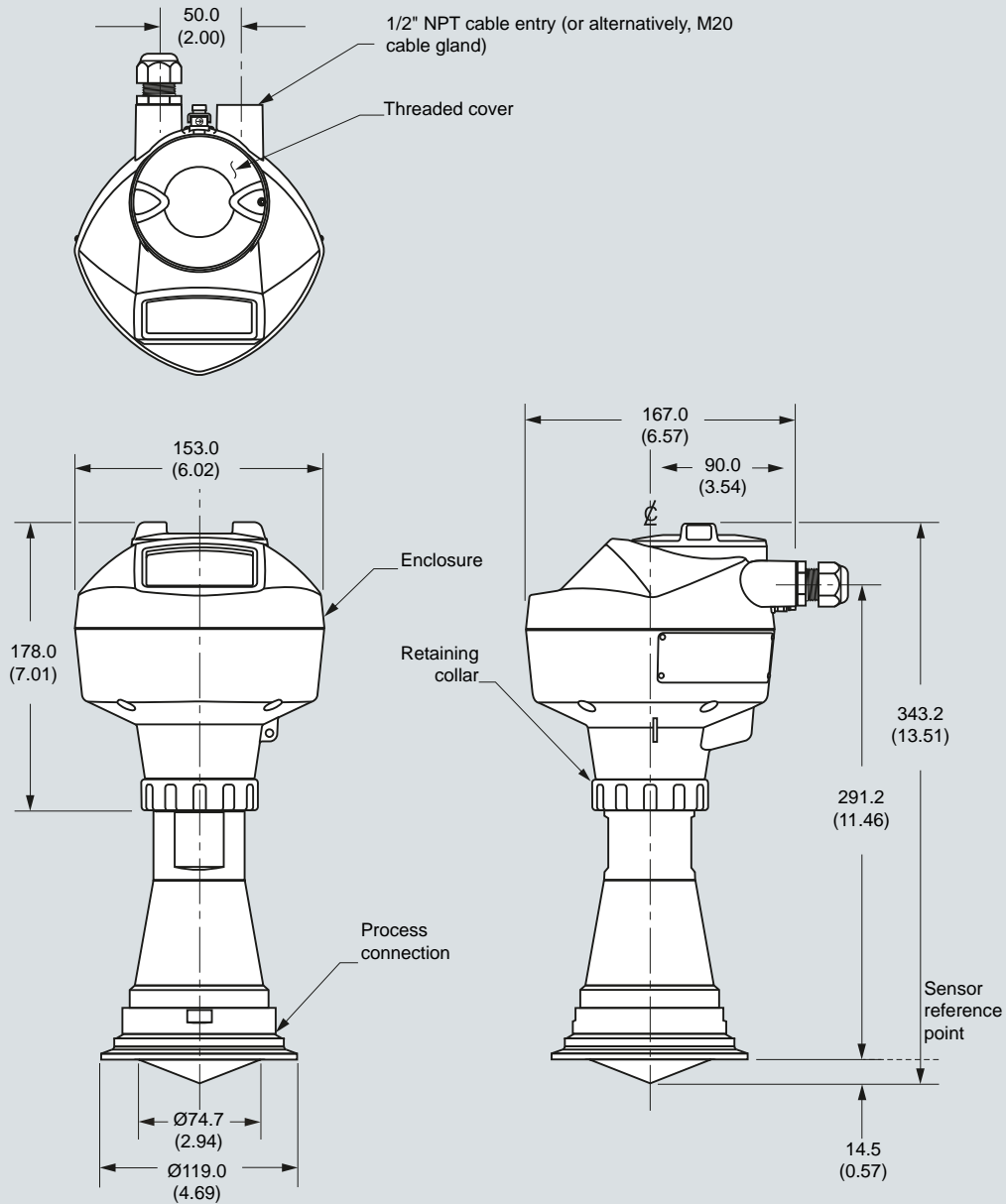
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Dimensional drawings

Hygienic encapsulated antenna (4" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

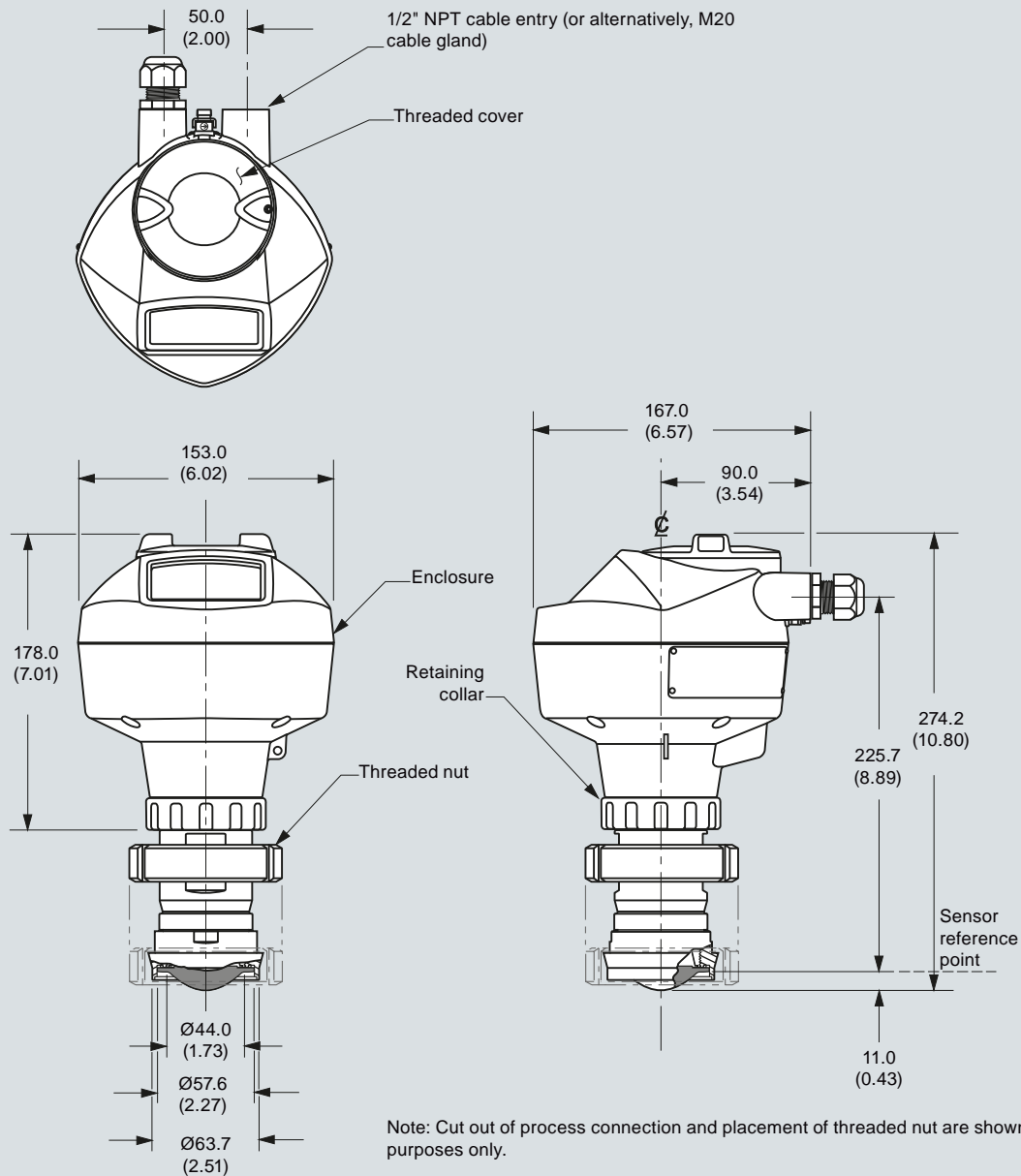
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Dimensional drawings

Hygienic encapsulated antenna (DN 50 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

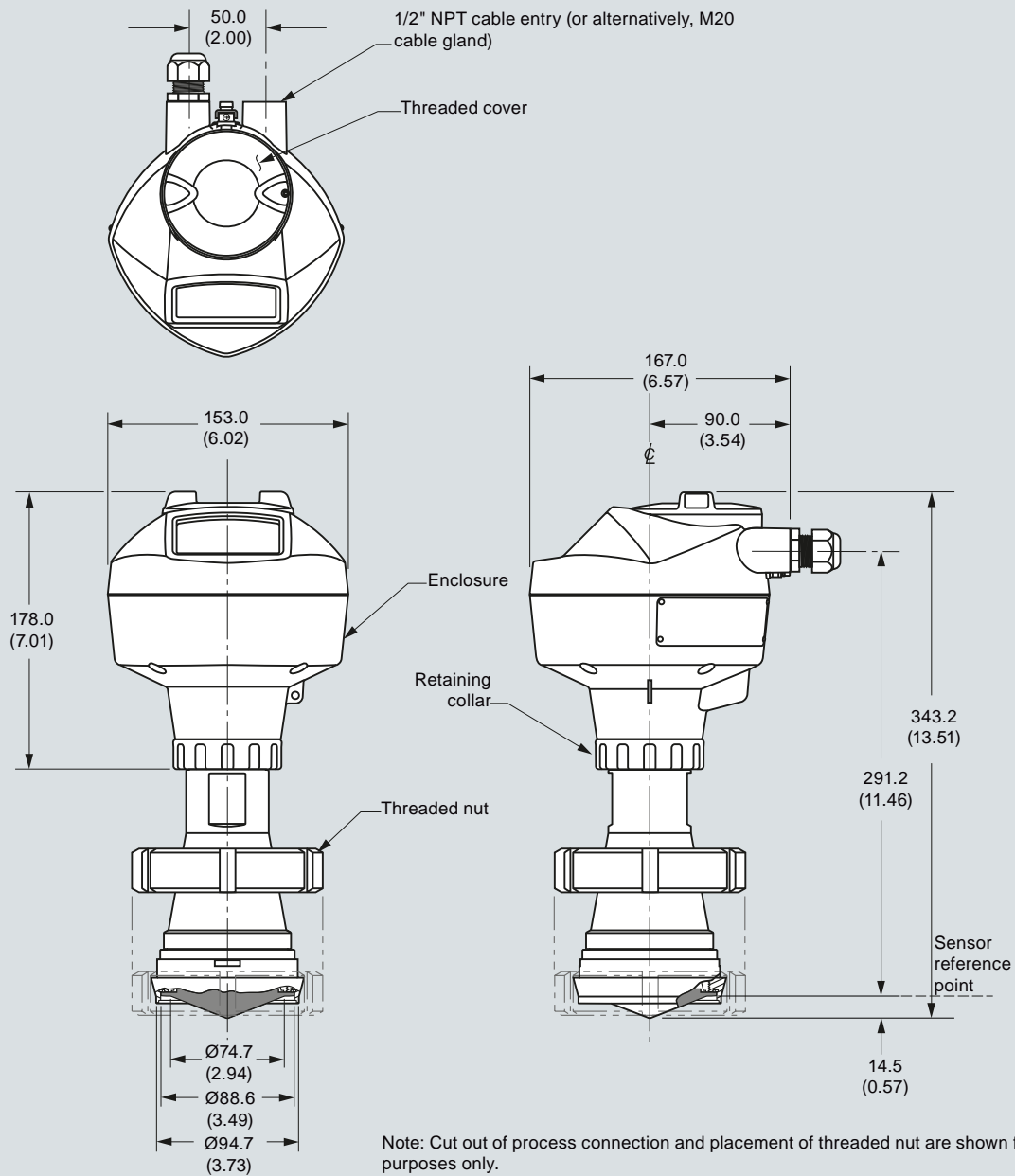
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

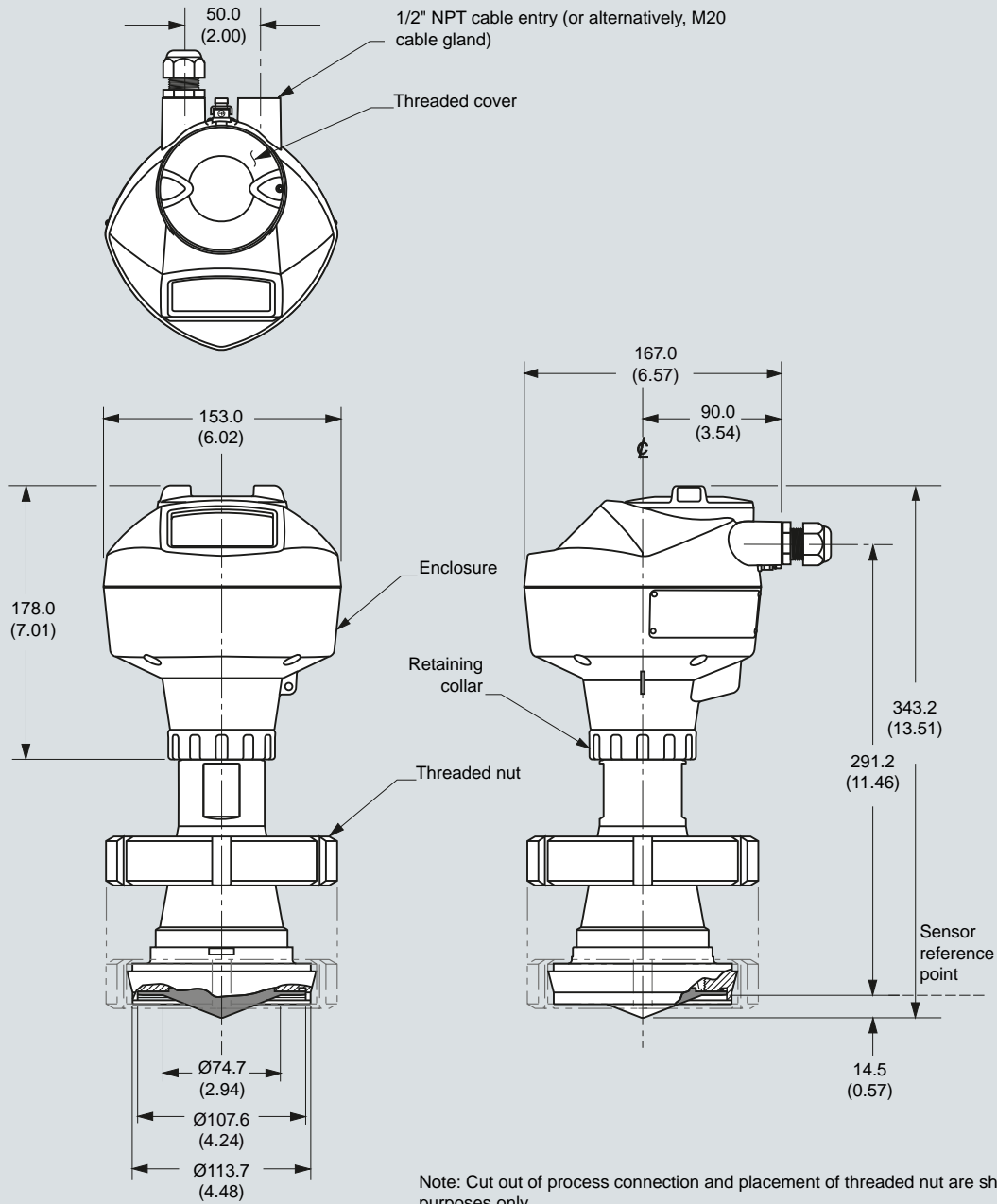
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

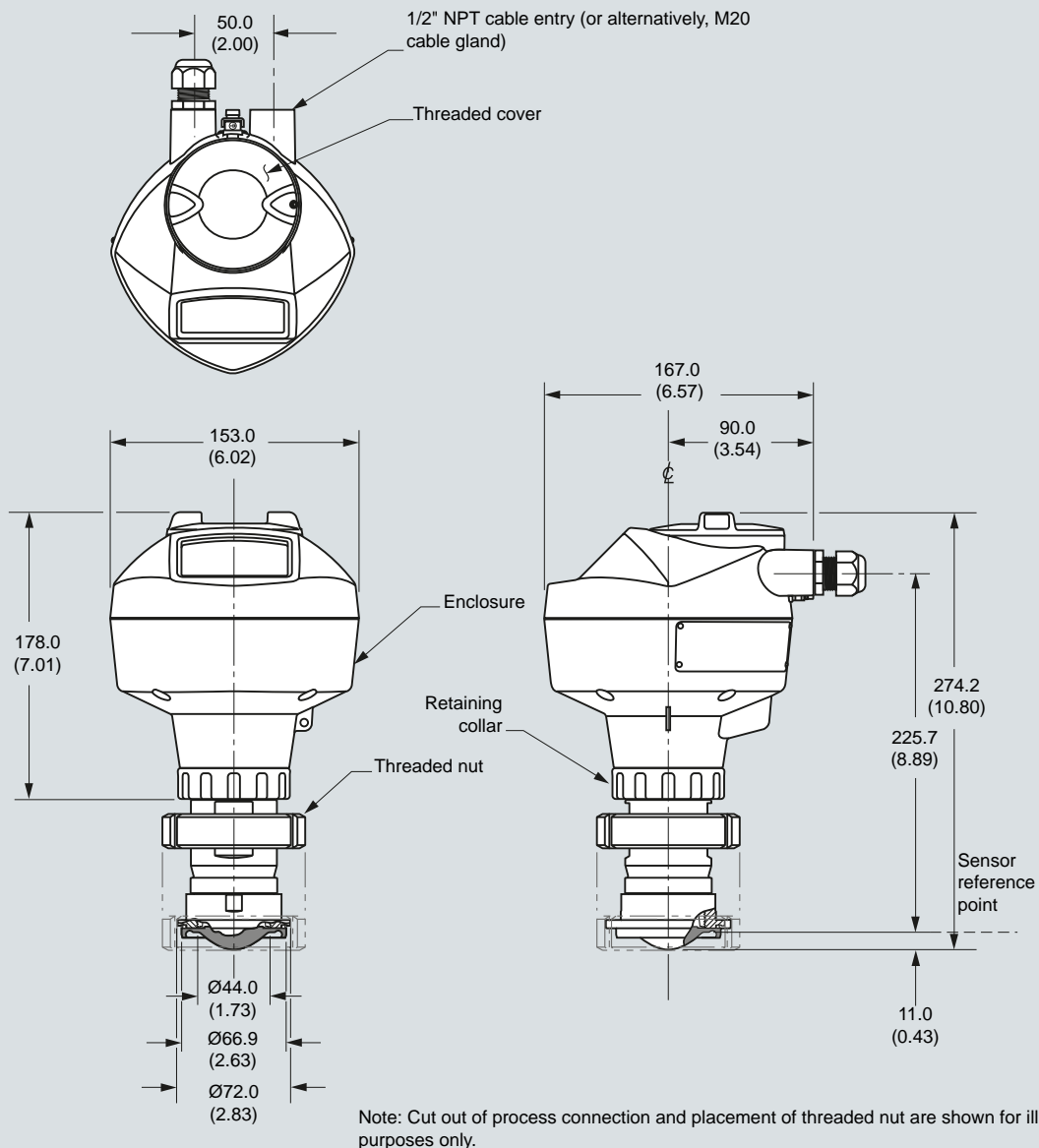
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-1)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

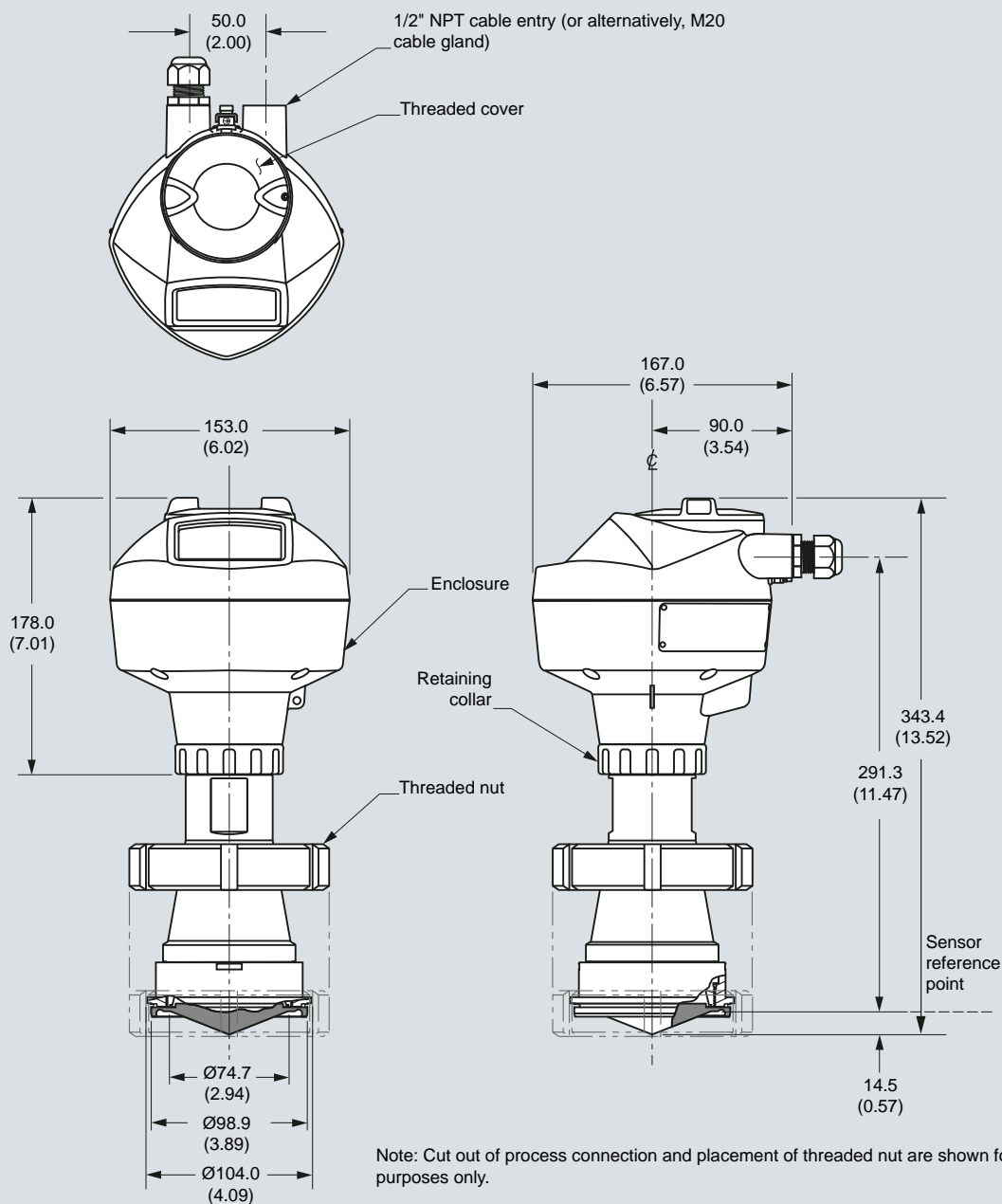
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-1)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

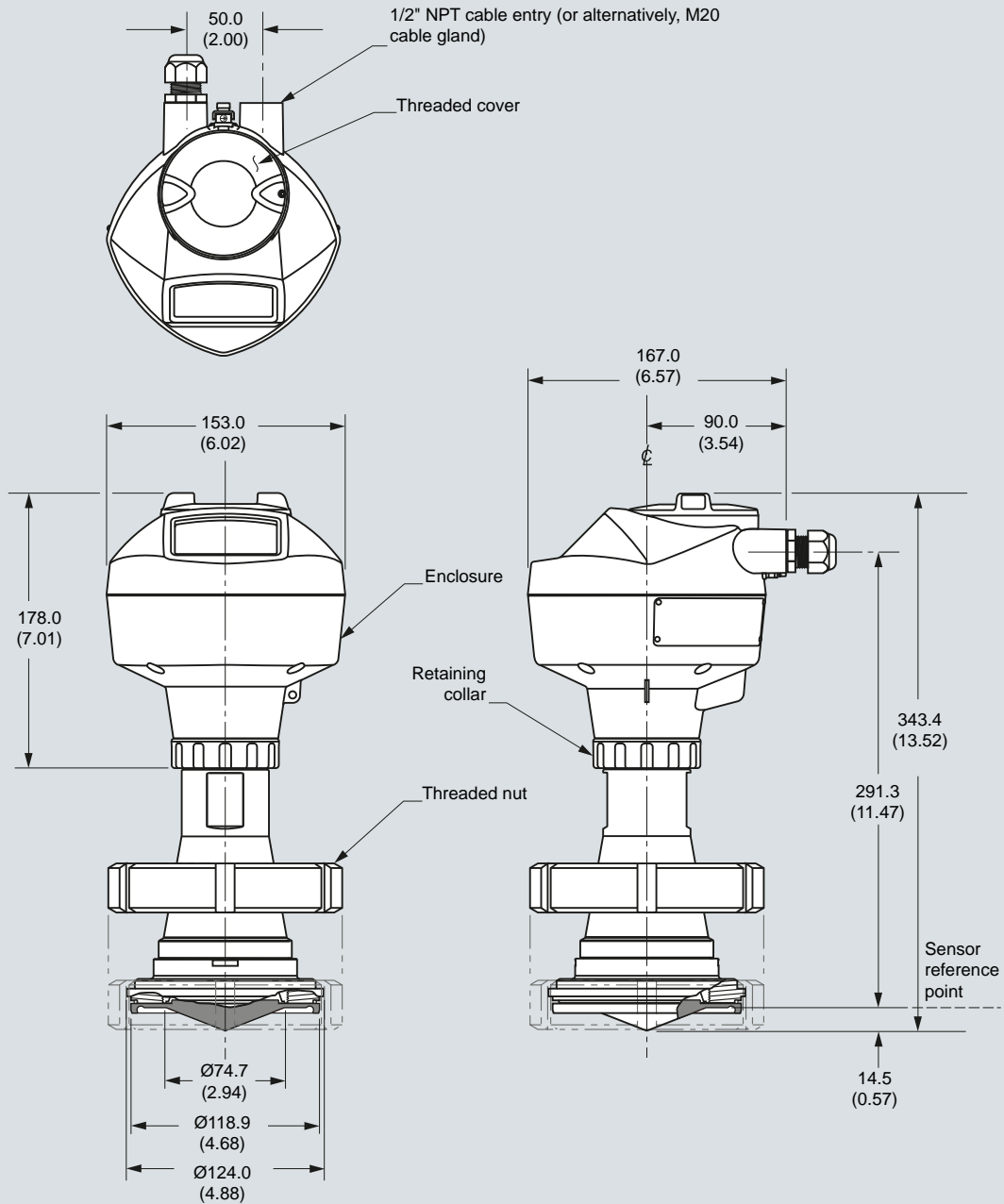
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 aseptic clamp to DIN 11864-1)



Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

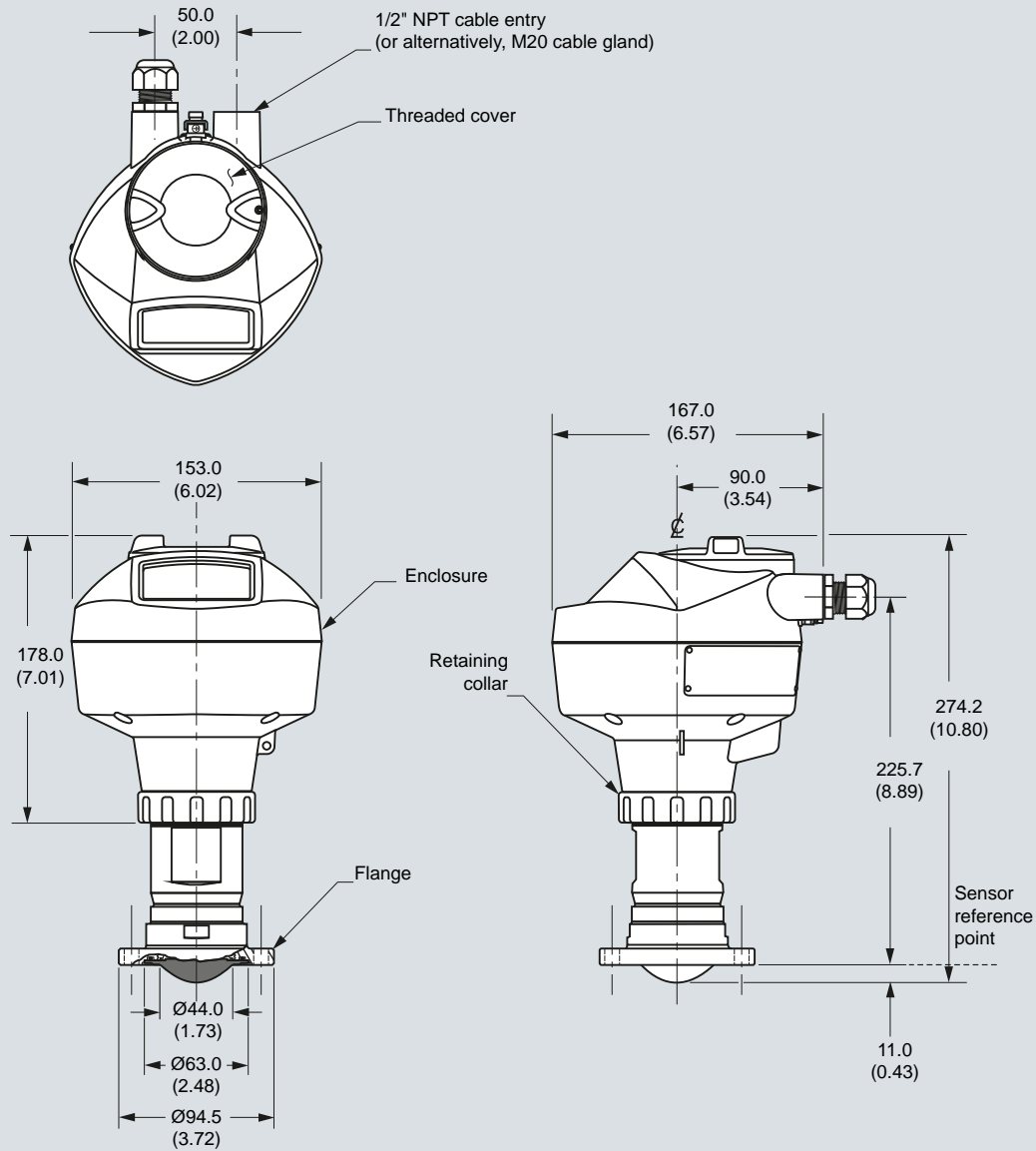
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic flange to DIN 11864-2)



Note: Cut out of process connection and flange are shown for illustration purposes only.

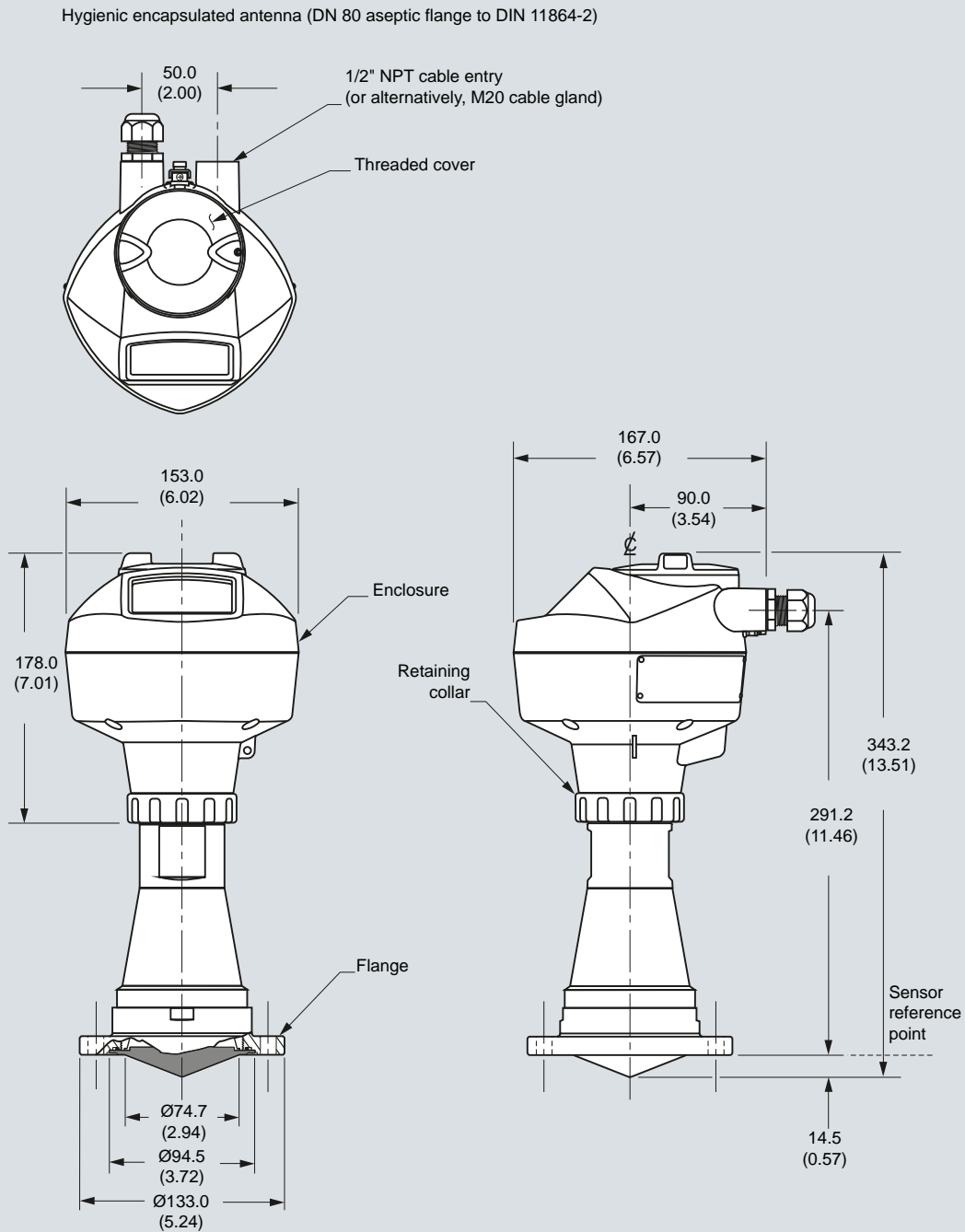
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

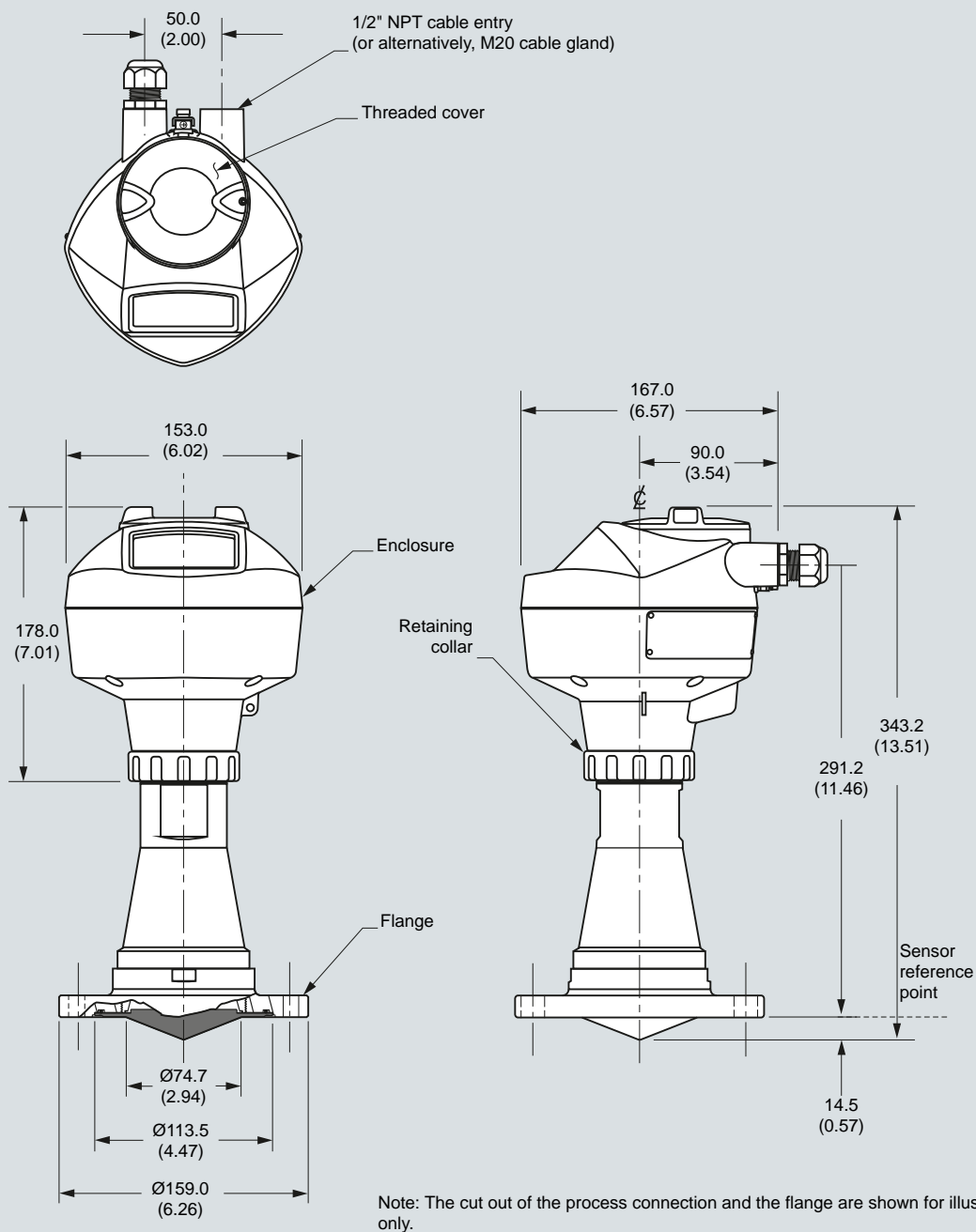
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 aseptic flange to DIN 11864-2)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

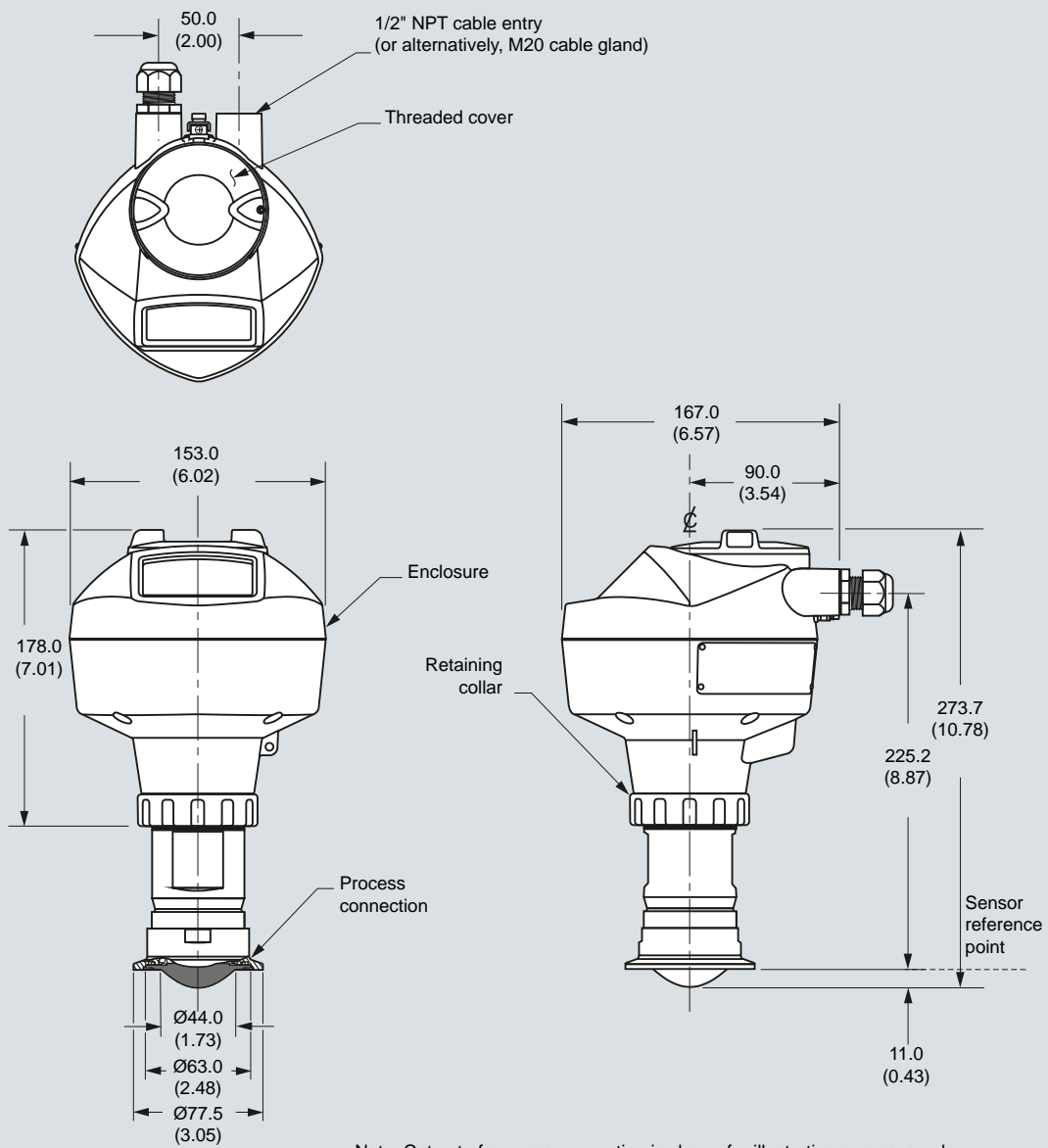
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-3)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

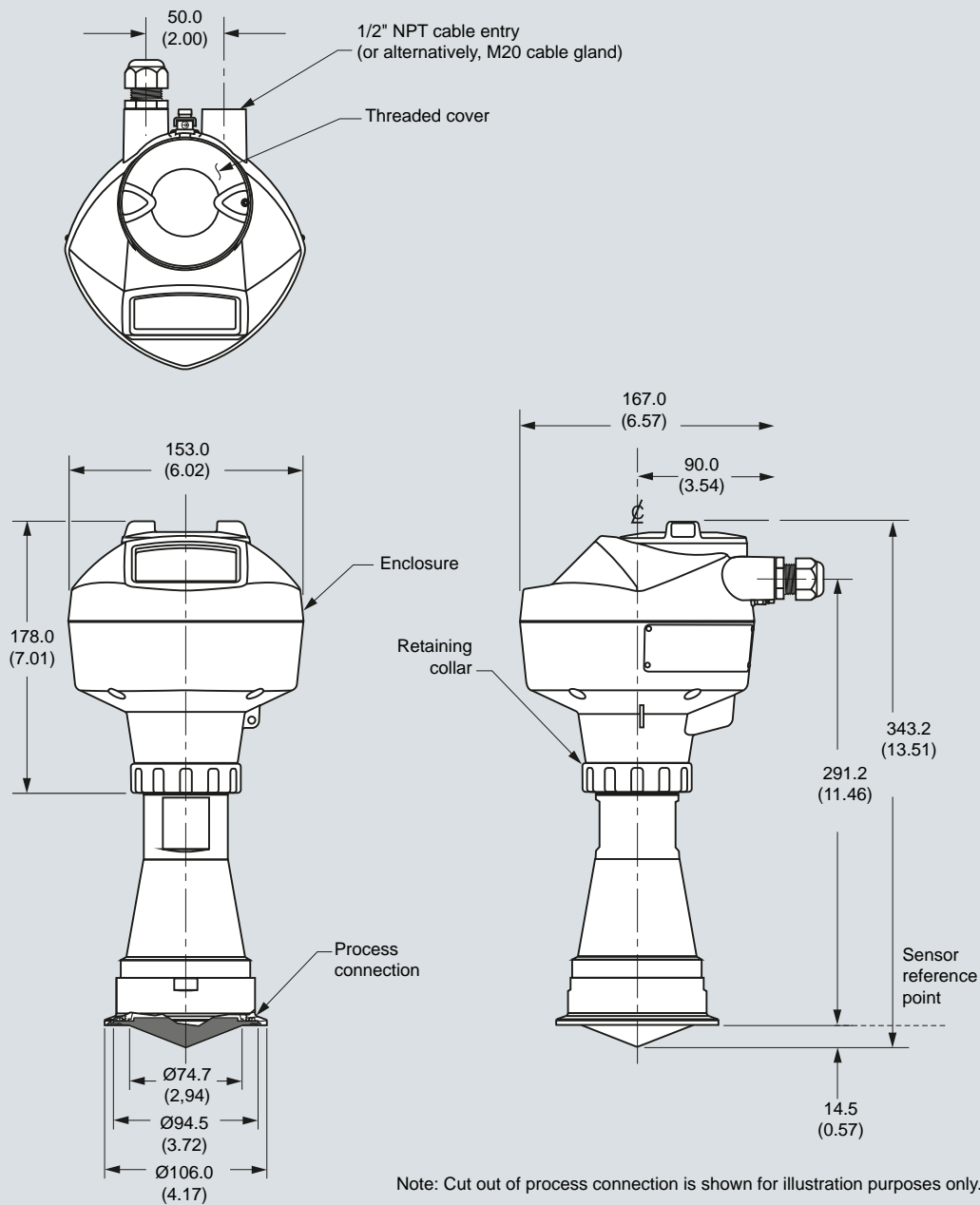
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-3)



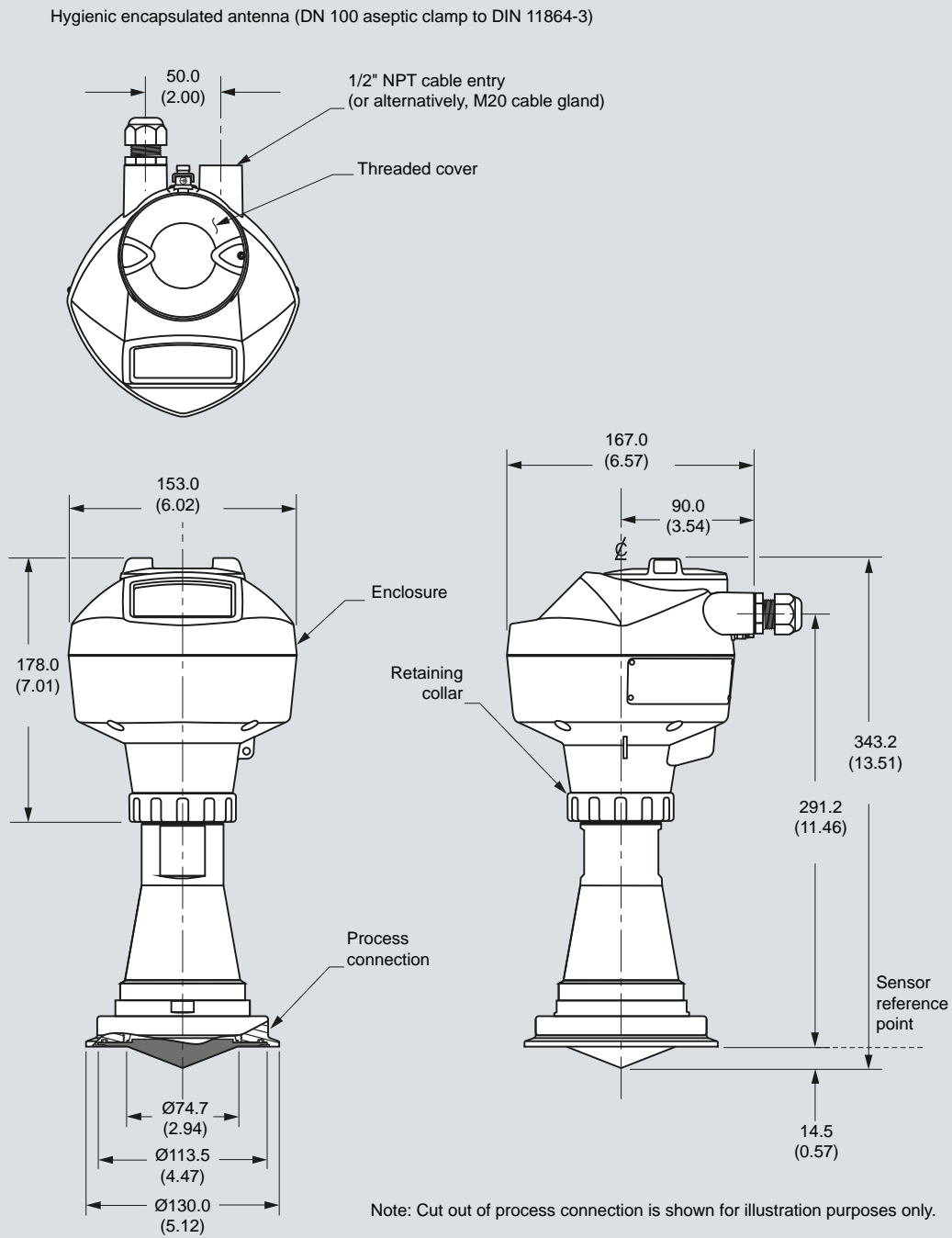
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



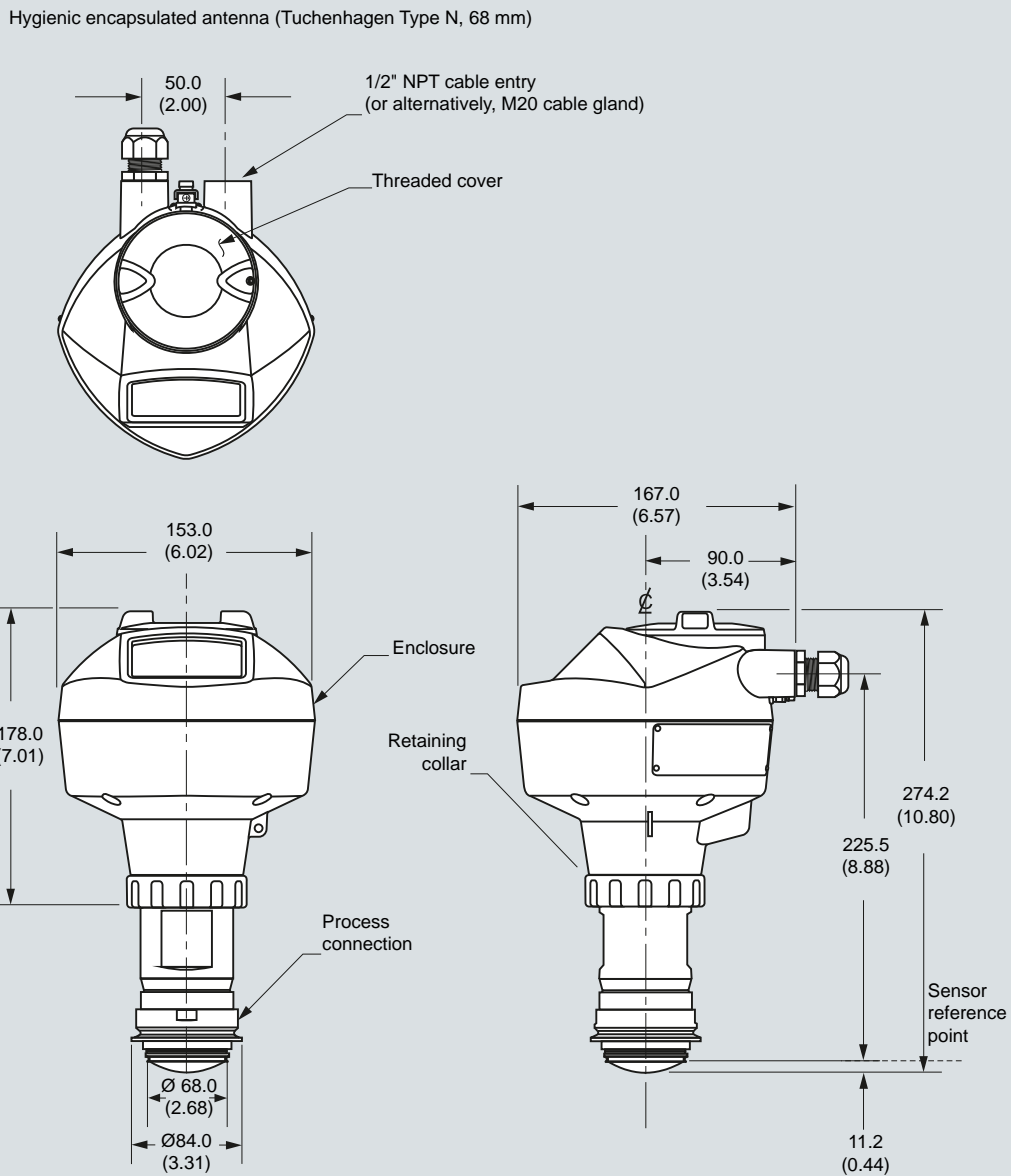
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



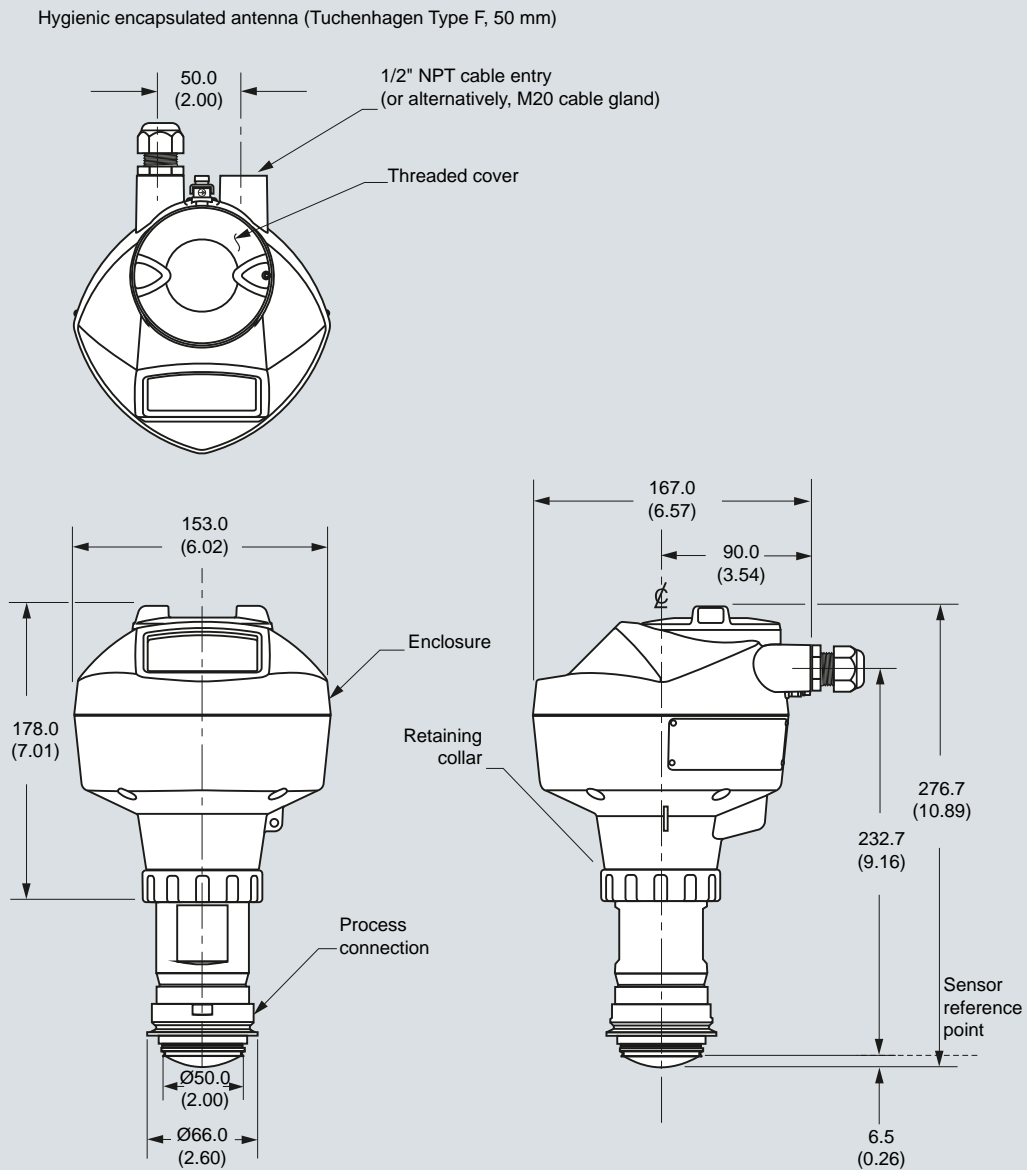
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Schematics

4

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART, PROFIBUS PA, and FOUNDATION Fieldbus Intrinsically Safe versions only.

Hand Programmer

SIEMENS			
1	2	3	4
5	6	7	8
9	0	.	/+
C	⏪	⏩	⏴
⏴	⏵	⏶	⏷

Part number:
7ML1930-1BK

Notes:

- DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
- All field wiring must have insulation suitable for rated input voltages.
- Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
- Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR250 connections

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Specials

SITRANS LR250 hygienic encapsulated Specials	
	Order No.
For "Electronics Head only" follow the standard configuration and choose YY option on positions 9 and 10 of the full part number. For example: 7ML5433-1YY20-1AA0 will order an electronics head for the following: EHEDG EL Class 1 approval, 4 ... 20 mA HART, M20 cable entries, General purpose Haz Loc approval, pressure rating as per manual.	
Spare Lens Kits (Lens and O-ring)	
Kit, 2 inch, ISO2852, HEA, Lens, silicone secondary O-ring	A5E32572731
Kit, 3 inch, ISO2852, HEA, Lens, silicone secondary O-ring	A5E32572745
Kit, 4 inch, ISO2852, HEA, Lens, silicone secondary O-ring	A5E32572747
Kit, DN 50, DIN11851, HEA, Lens, silicone secondary O-ring	A5E32572758
Kit, DN 80, DIN11851, HEA, Lens, silicone secondary O-ring	A5E32572770
Kit, DN 100, DIN11851, HEA, Lens, silicone secondary O-ring	A5E32572772
Kit, DN 50, DIN11864-1, HEA, Lens, silicone secondary O-ring	A5E32572773
Kit, DN 80, DIN11864-1, HEA, Lens, silicone secondary O-ring	A5E32572779
Kit, DN 100, DIN11864-1, HEA, Lens, silicone secondary O-ring	A5E32572782
Kit, DN 50, DIN11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572785
Kit, DN 80, DIN11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572790
Kit, DN 100, DIN11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572791
Kit, Tuchenhausen, Type F, HEA, Lens, silicone secondary O-ring	A5E32572794
Kit, Tuchenhausen, Type N, HEA, Lens, silicone secondary O-ring	A5E32572795
Accessories (customer side process connection and FKM and EPDM seal for each size and type)	
Kit DN50 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910638
Kit, DN80 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910649
Kit, DN100 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910657
Kit DN50 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910658
Kit, DN80 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910671
Kit, DN100 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910681
Kit 2" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910686

SITRANS LR250 hygienic encapsulated Specials	
	Order No.
Kit 3" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910697
Kit 4" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910708
Kit DN50 DIN11851 SC Tank connection, EPDM Seal Class II ¹¹⁾	A5E32910746
Kit DN80 DIN11851 SC Tank connection, EPDM Seal Class II ¹¹⁾	A5E32910771
Kit DN100 DIN11851 SC Tank connection, EPDM Seal Class II ¹¹⁾	A5E32910780
Kit DN50 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910784
Kit DN80 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910789
Kit DN100 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910790
Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910791
Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910793
Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910799
Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910805
Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910809
Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910812
Kit DN50 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910813
Kit DN80 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910814
Kit DN100 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910815
Kit DN50 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910816
Kit DN80 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910817
Kit DN100 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910818
Kit Type F, Tuchenhausen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection	A5E33489537
Kit Type N, Tuchenhausen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection	A5E33489543
Kit Type F, Tuchenhausen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection	A5E33489828
Kit Type N, Tuchenhausen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection	A5E33489830

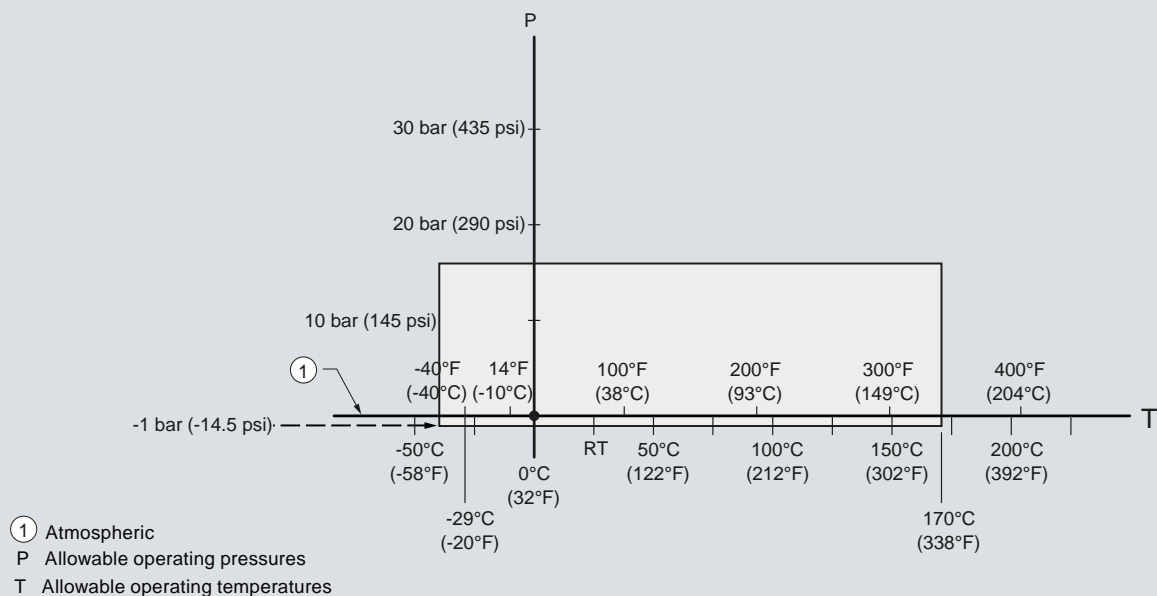
11) Class II for low fat applications when EPDM seal used on DIN 11851

Level measurement Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

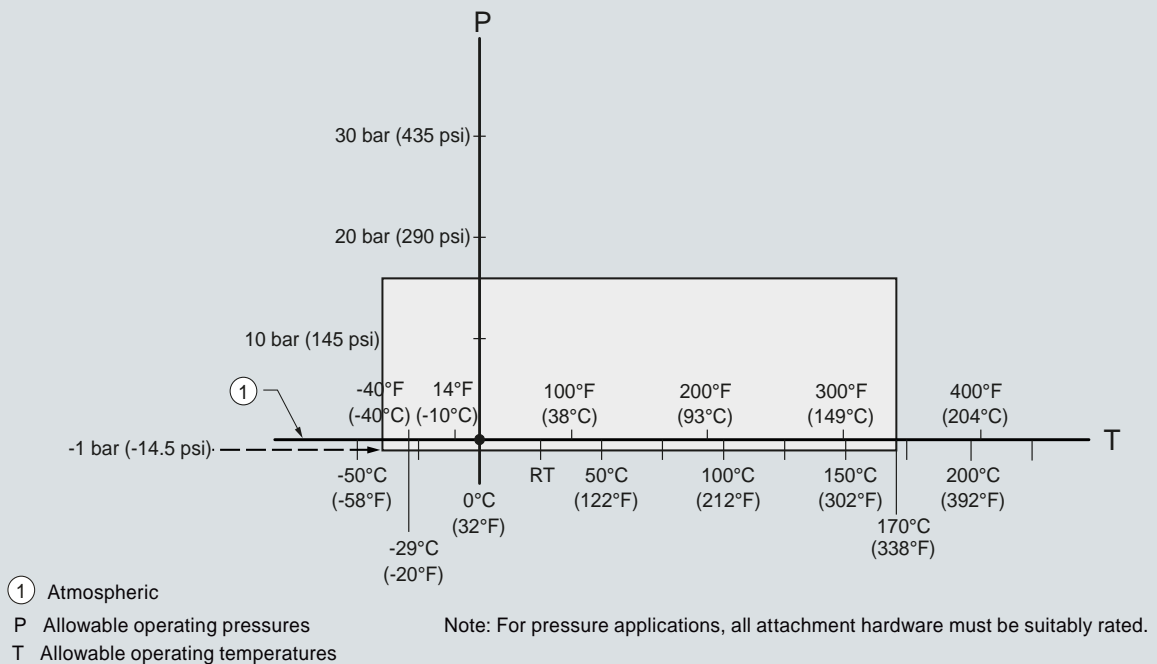
Characteristic curves

DIN 11851 Sanitary/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100
 DIN 11864-1 Aseptic/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

DIN 11864-2 Aseptic/Hygienic flanged: DN 50, DN 80, and DN 100



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

Level measurement

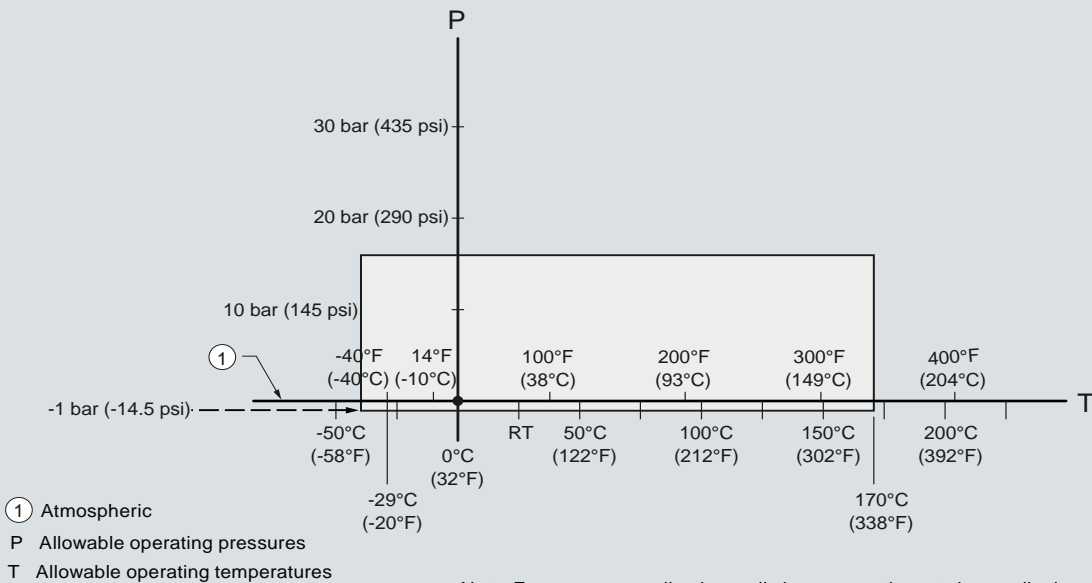
Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Characteristic curves

DIN 11864-3 Aseptic/Hygienic clamp: DN 50, DN 80, and DN 100
 ISO 2852 Sanitary/Hygienic clamp: 2", 3", and 4"
 Tuchenhagen Varivent face seal clamp: Type N (68 mm) and Type F (50 mm)

4



SITRANS LR250 hygienic encapsulated antenna, process pressure/temperature rating curve

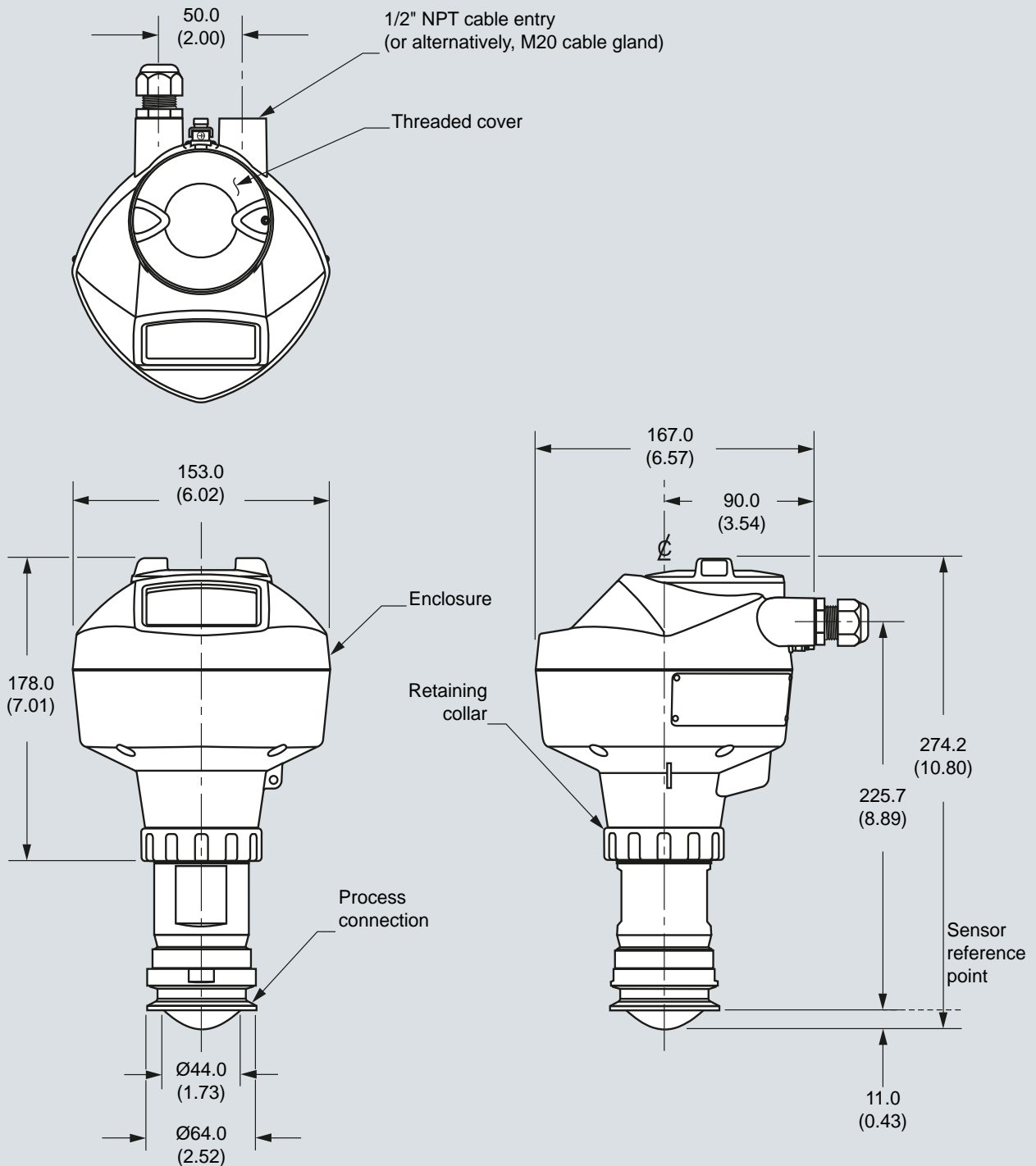
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (2" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

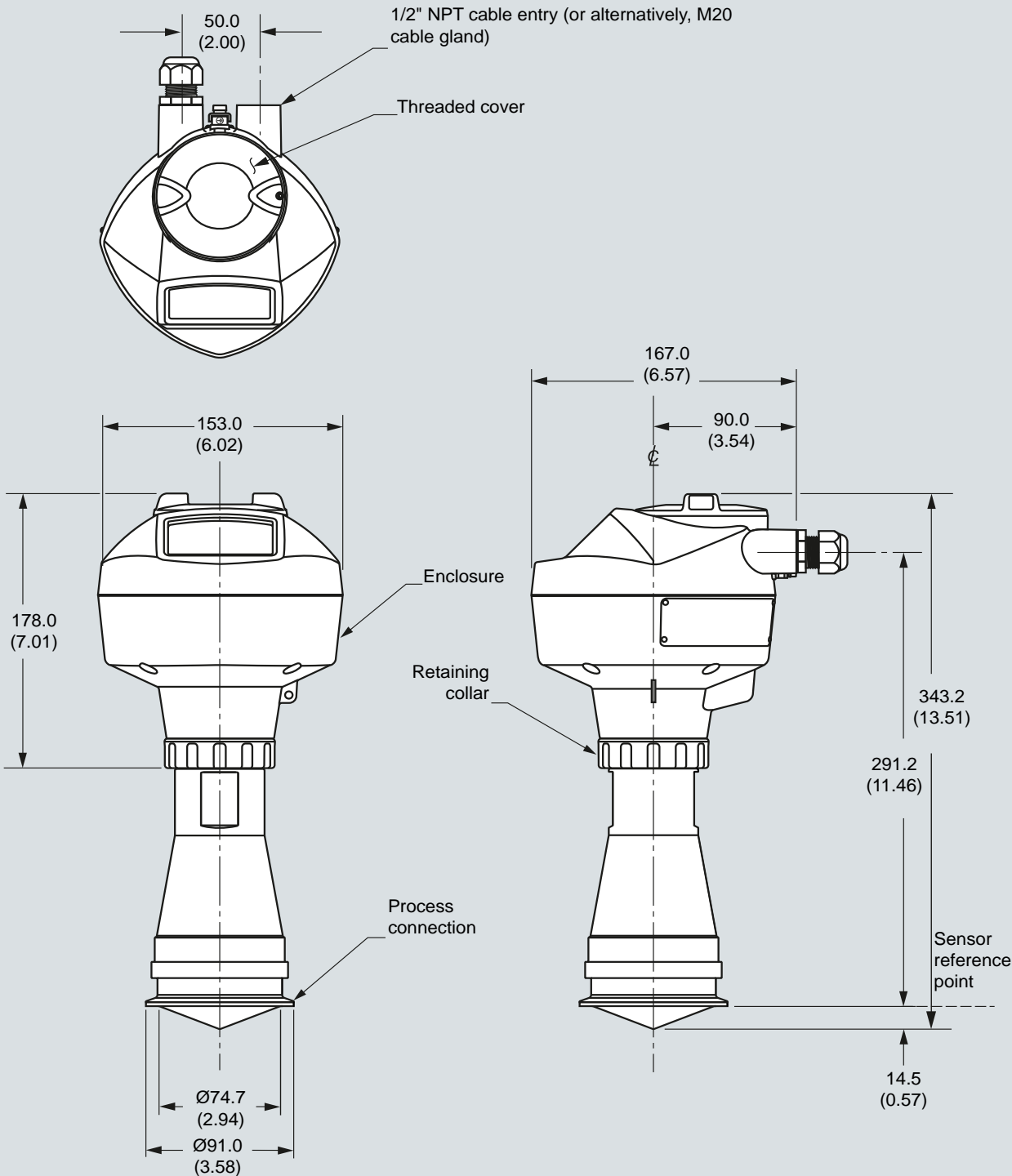
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (3" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

4

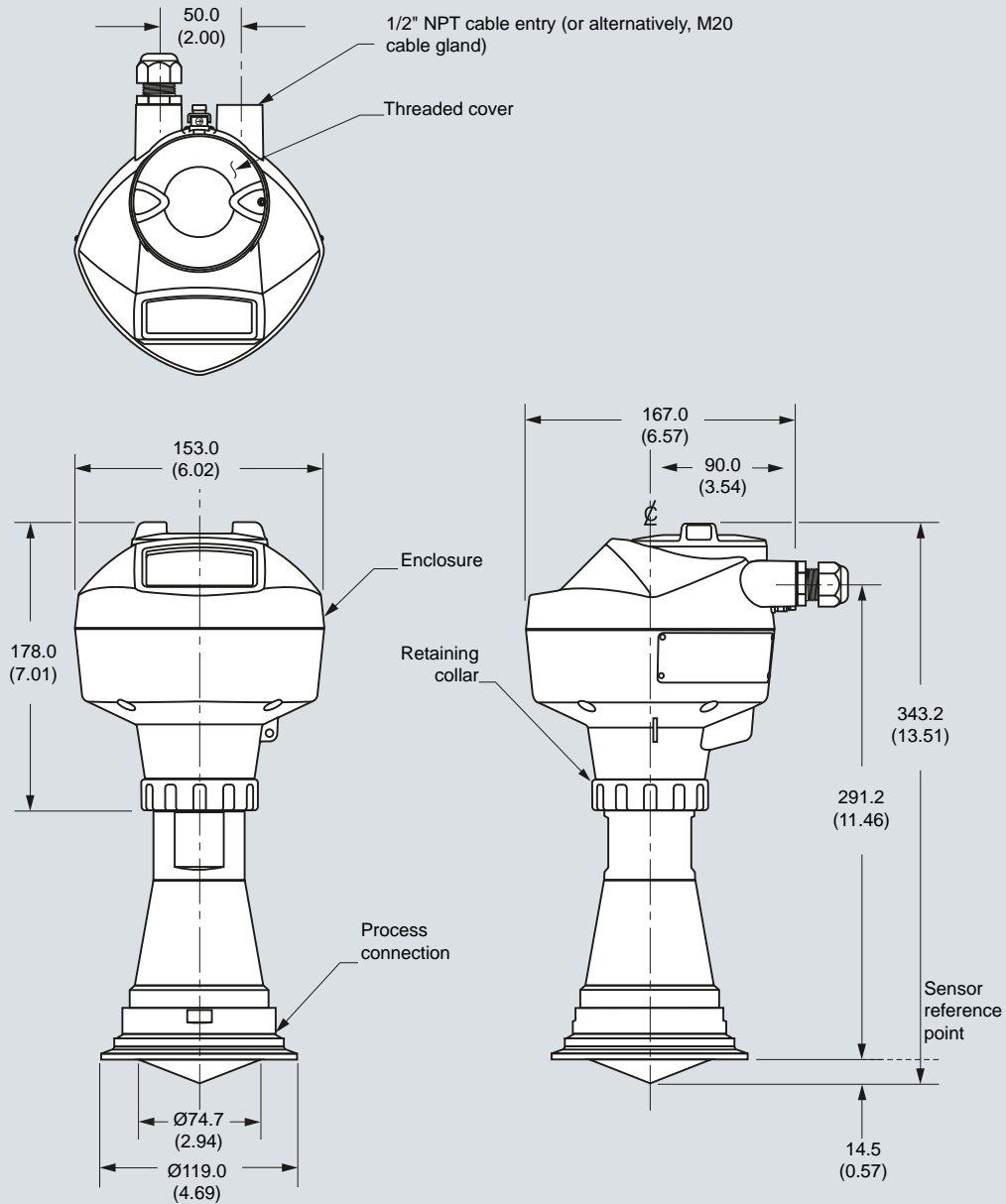
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (4" ISO 2852 sanitary clamp)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

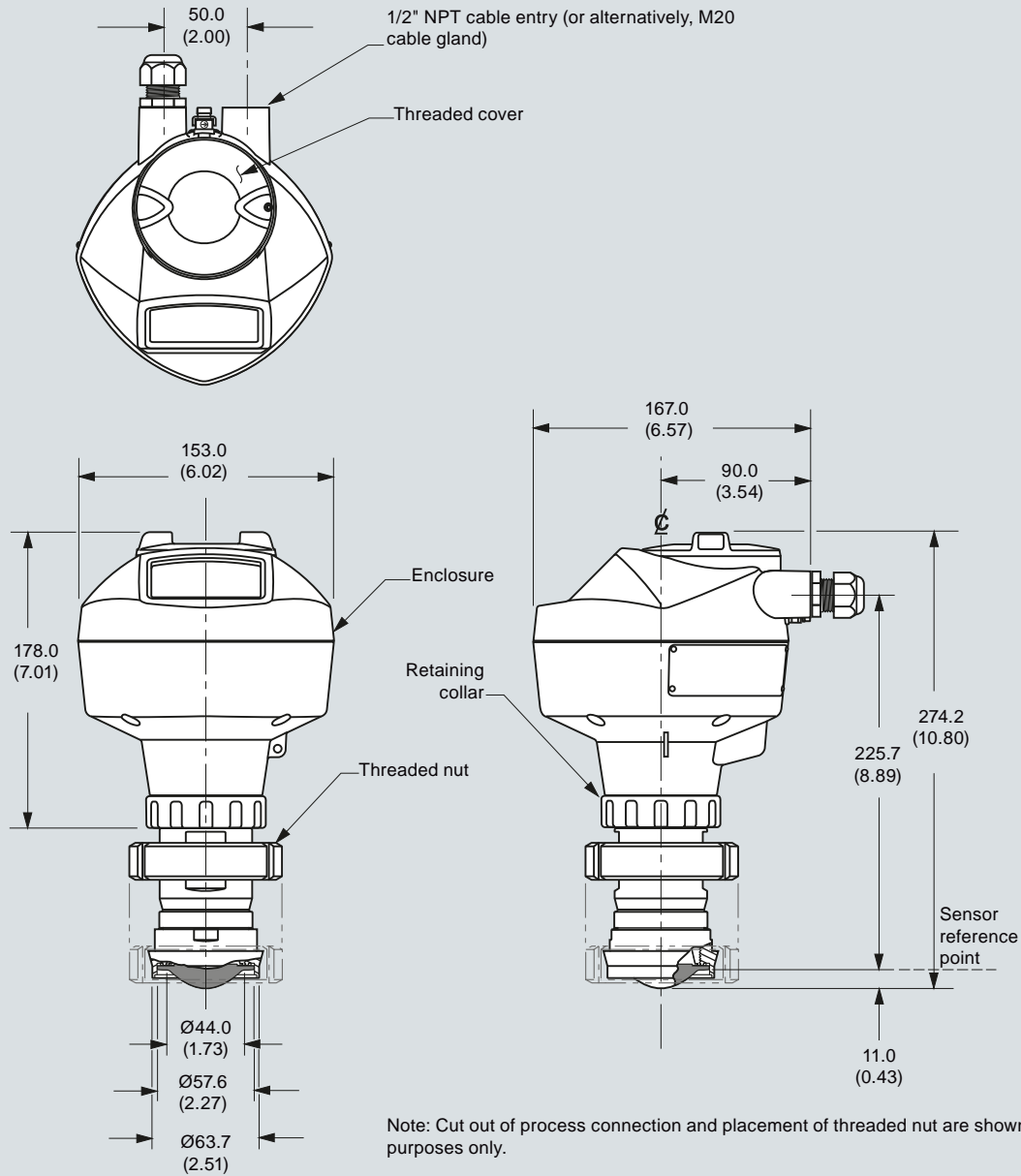
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

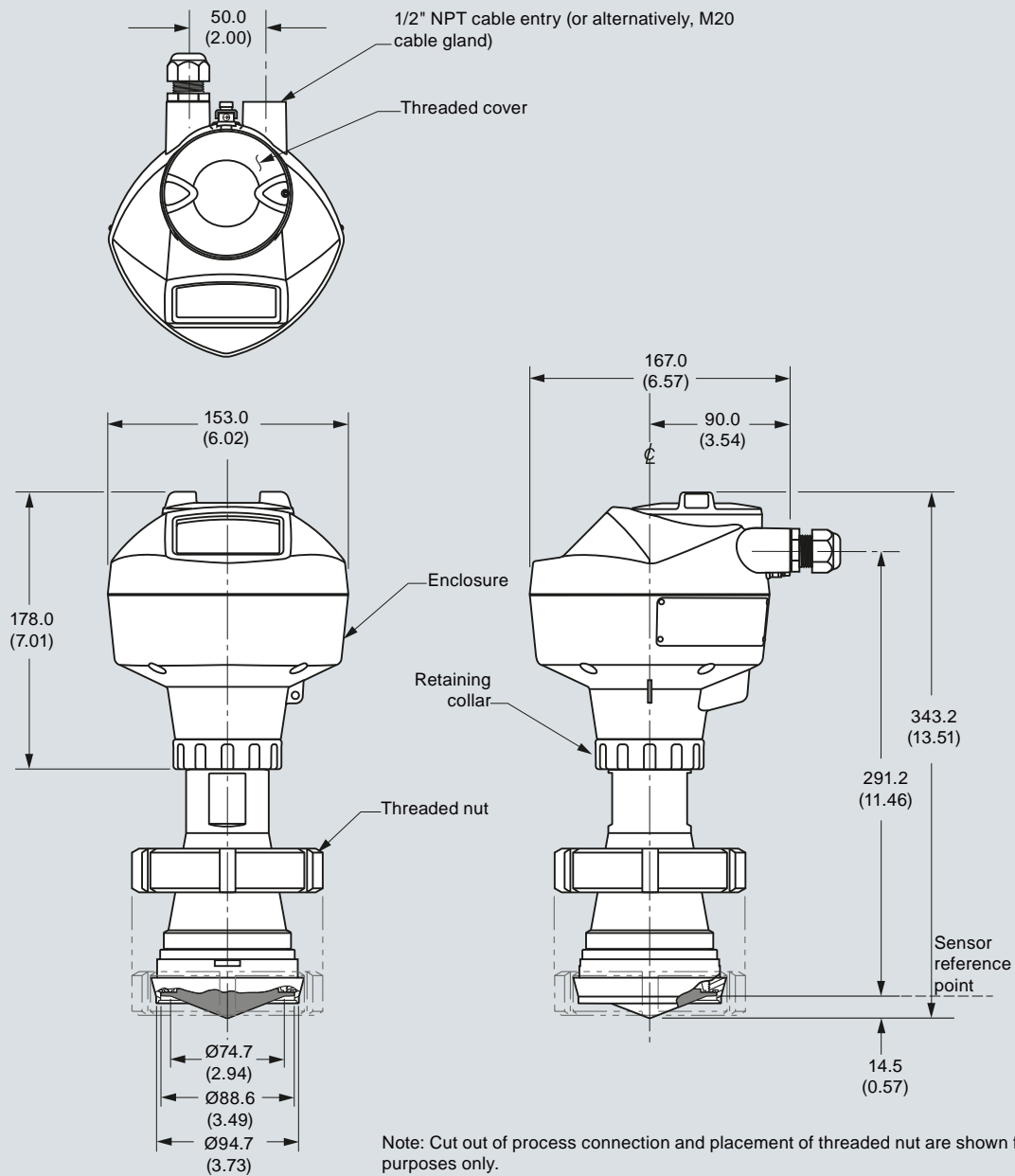
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

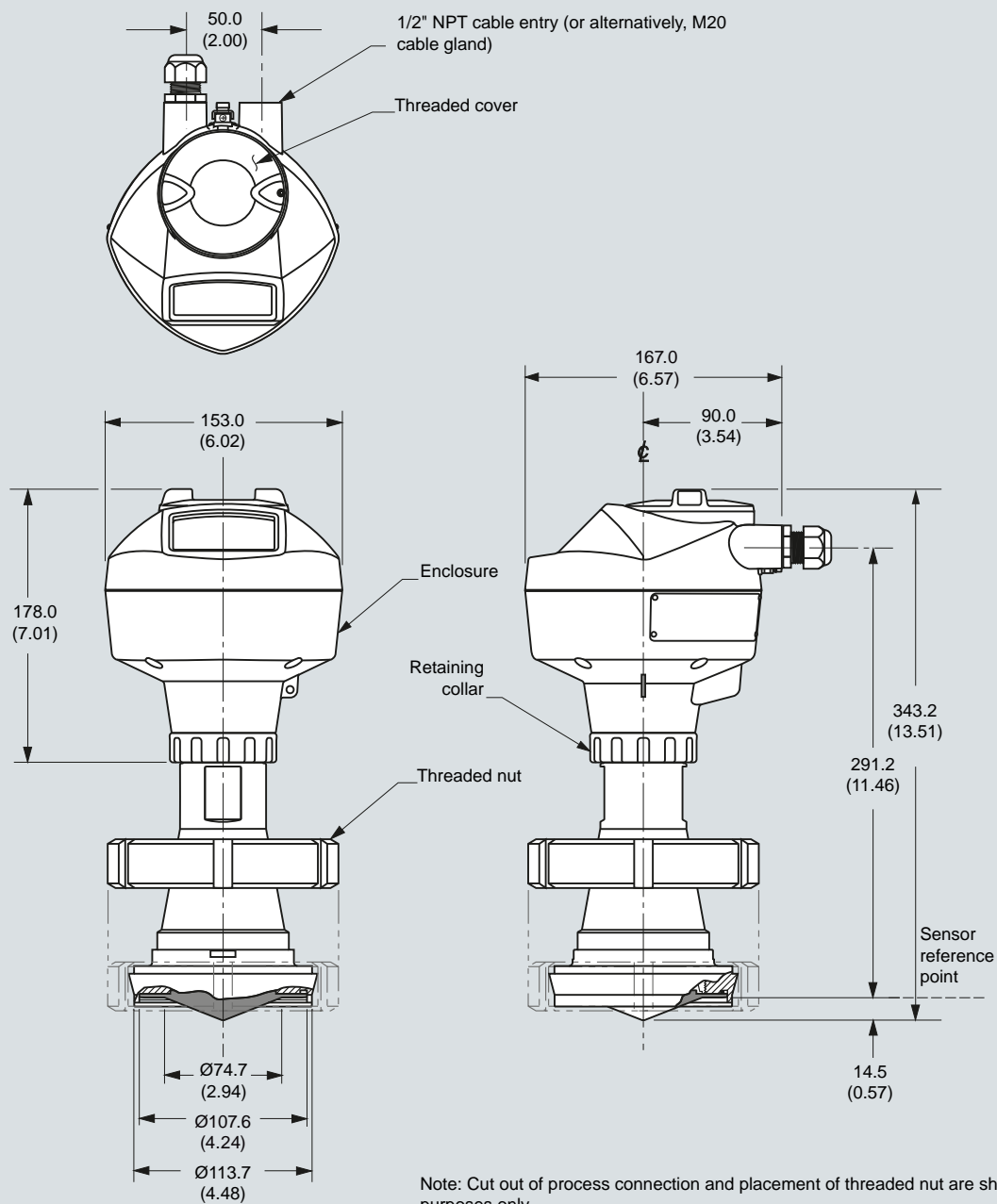
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 nozzle/slotted nut to DIN 11851)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

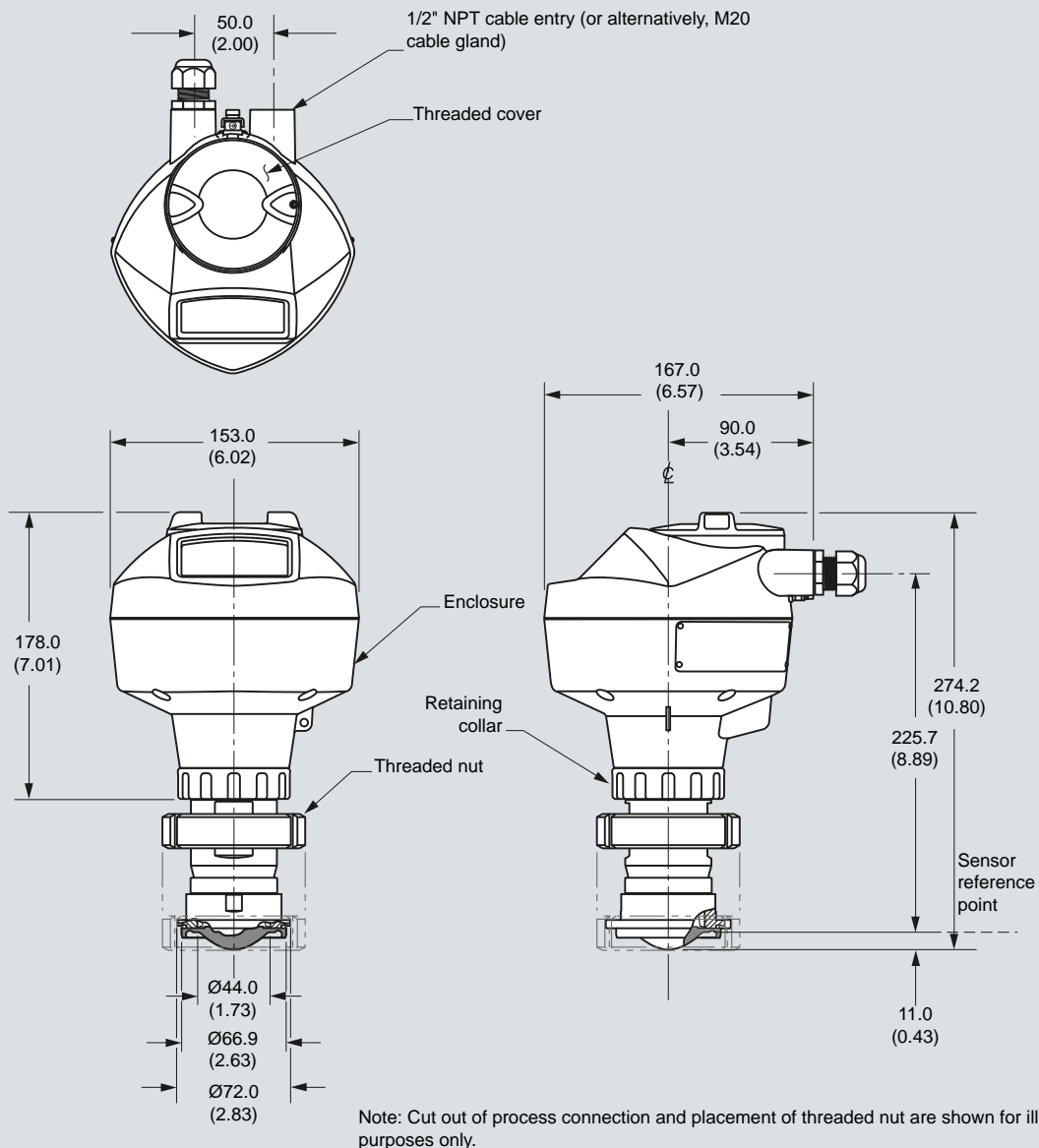
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-1)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

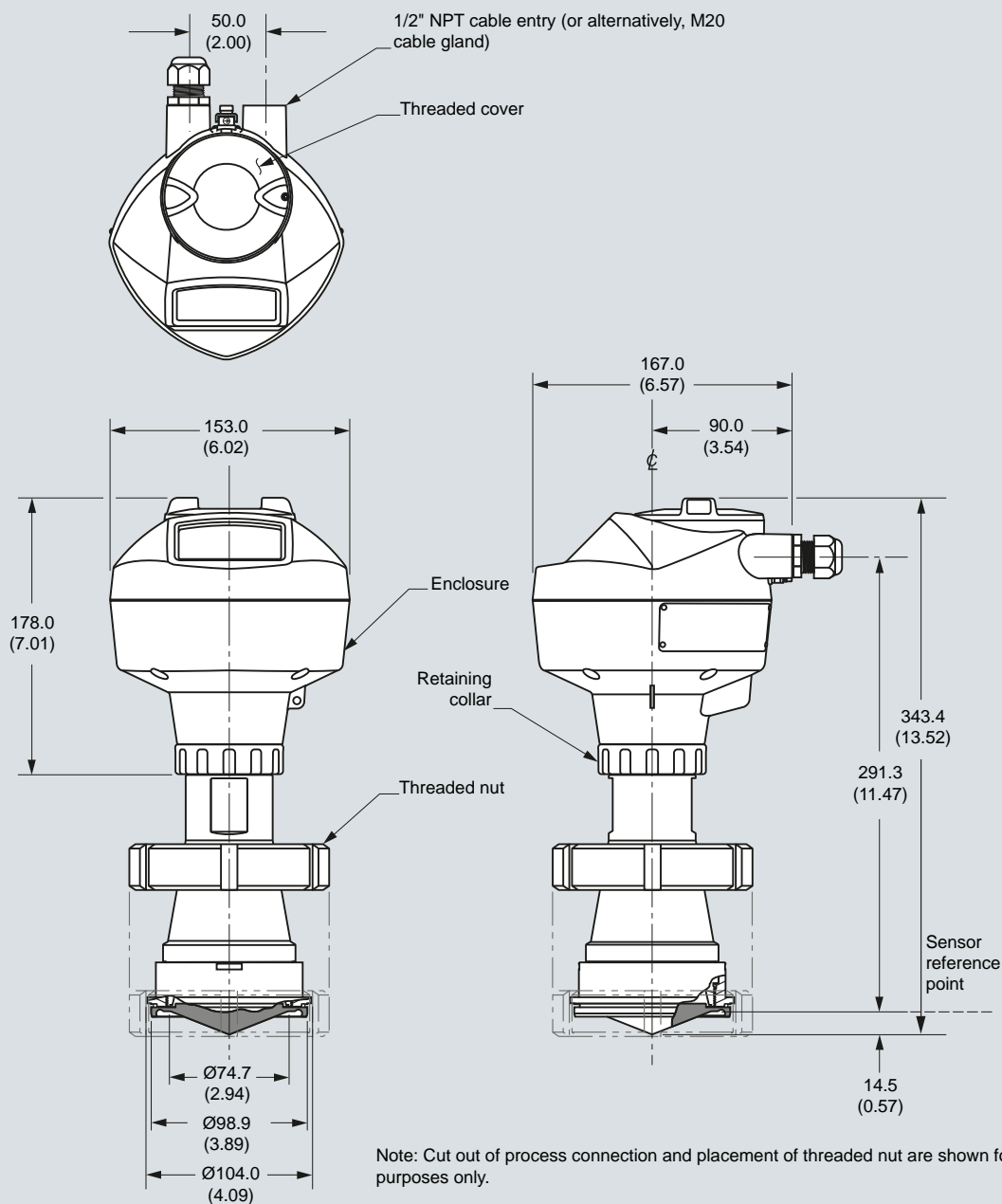
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-1)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

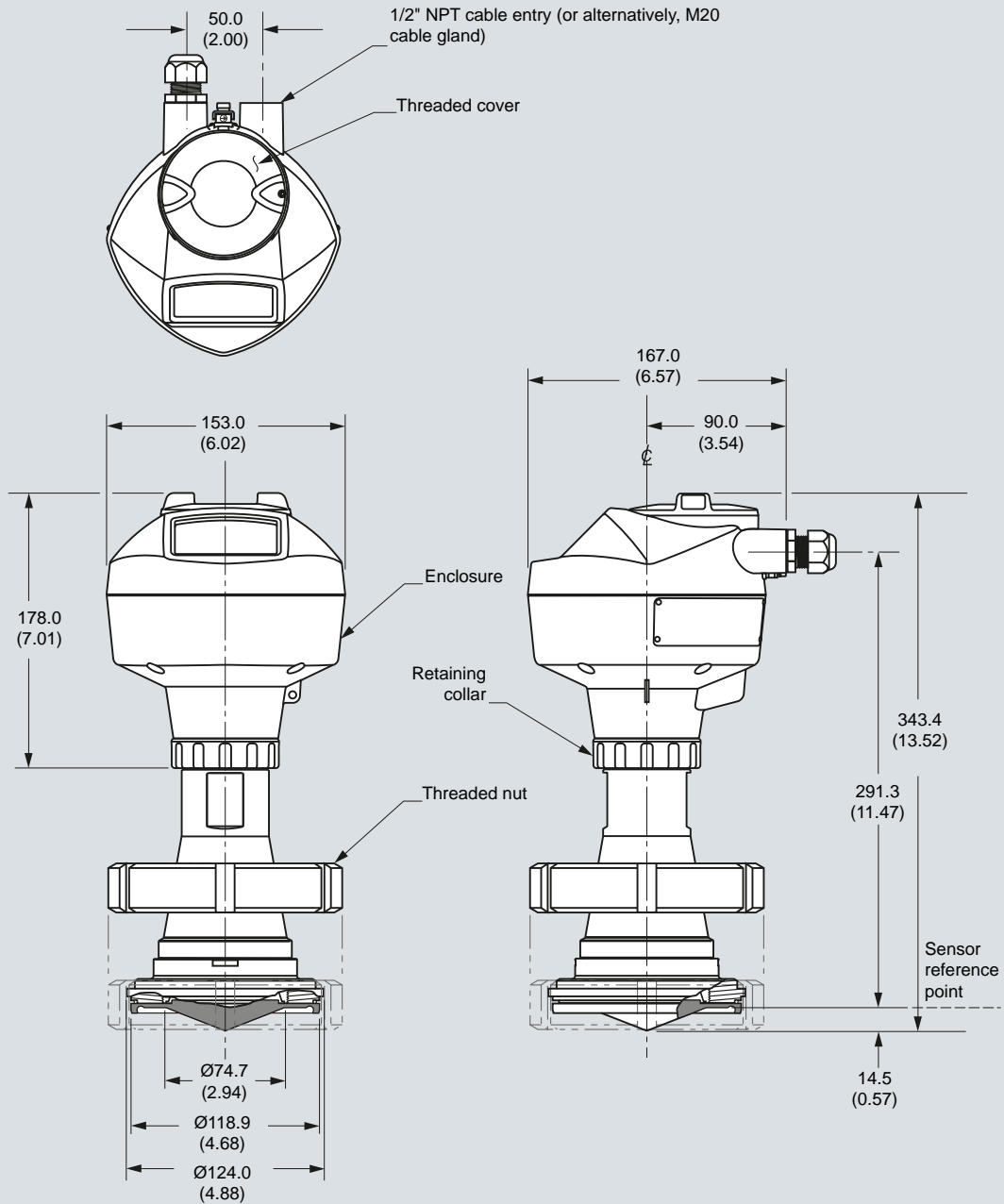
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 aseptic clamp to DIN 11864-1)



Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

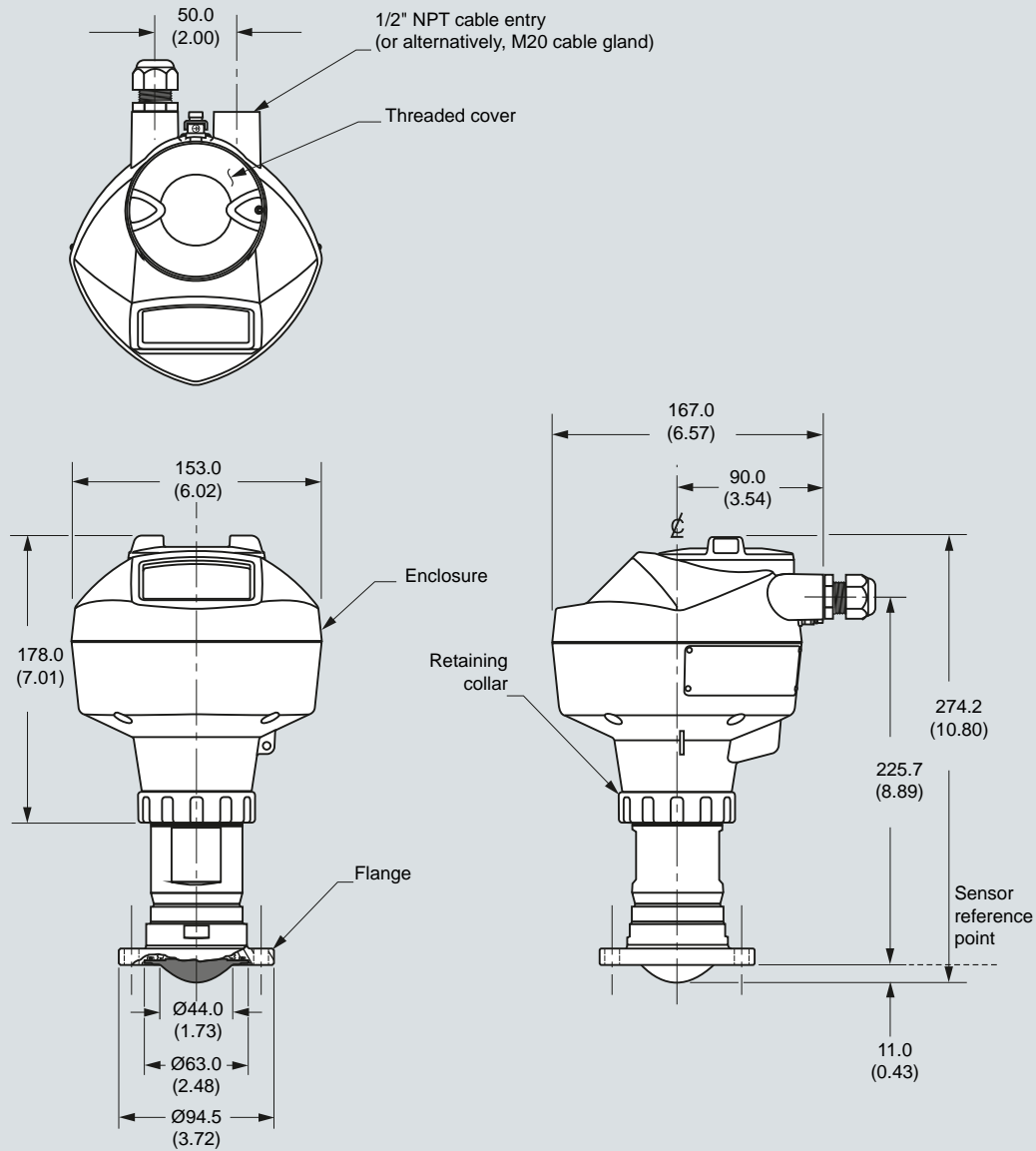
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic flange to DIN 11864-2)



Note: Cut out of process connection and flange are shown for illustration purposes only.

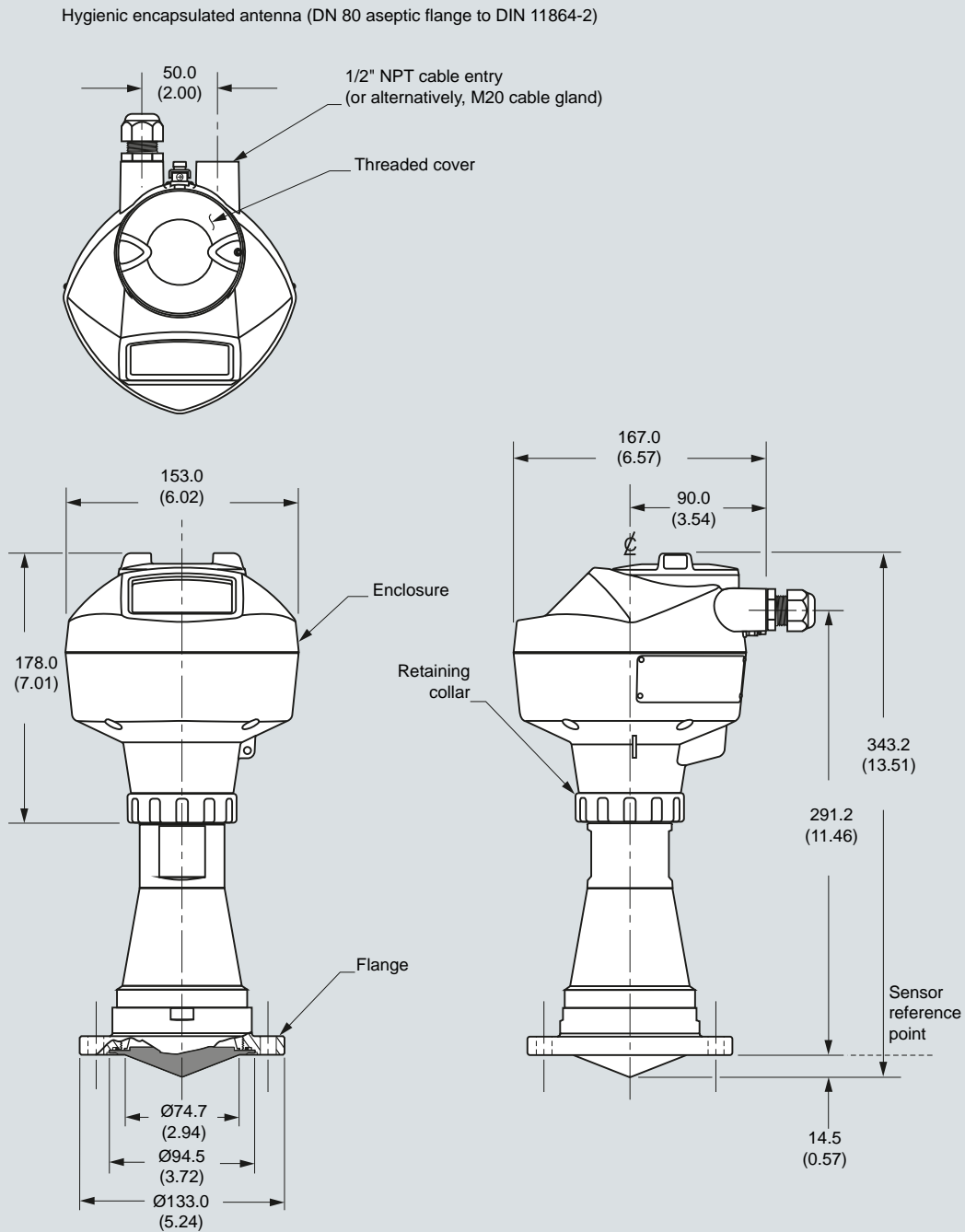
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

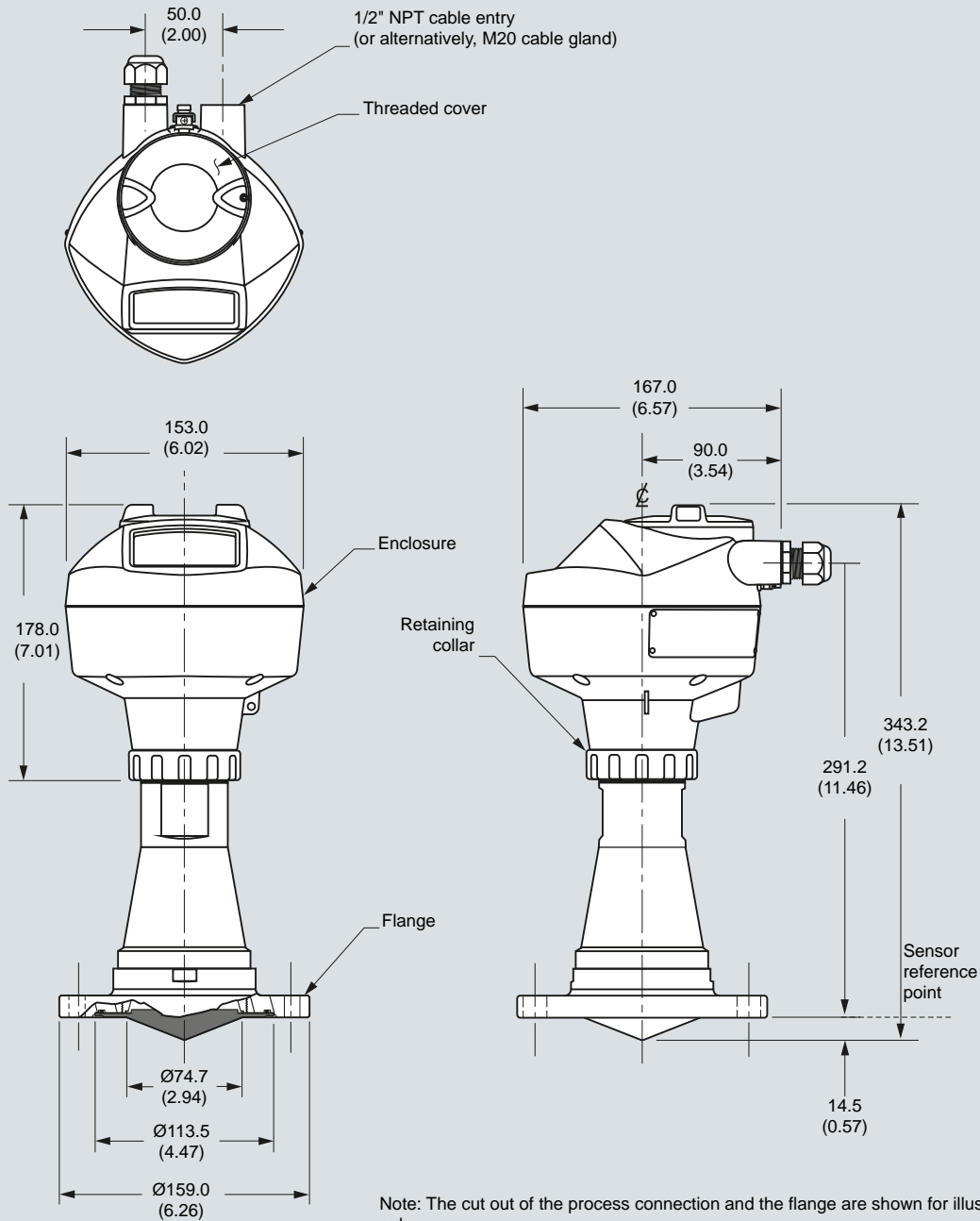
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 100 aseptic flange to DIN 11864-2)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

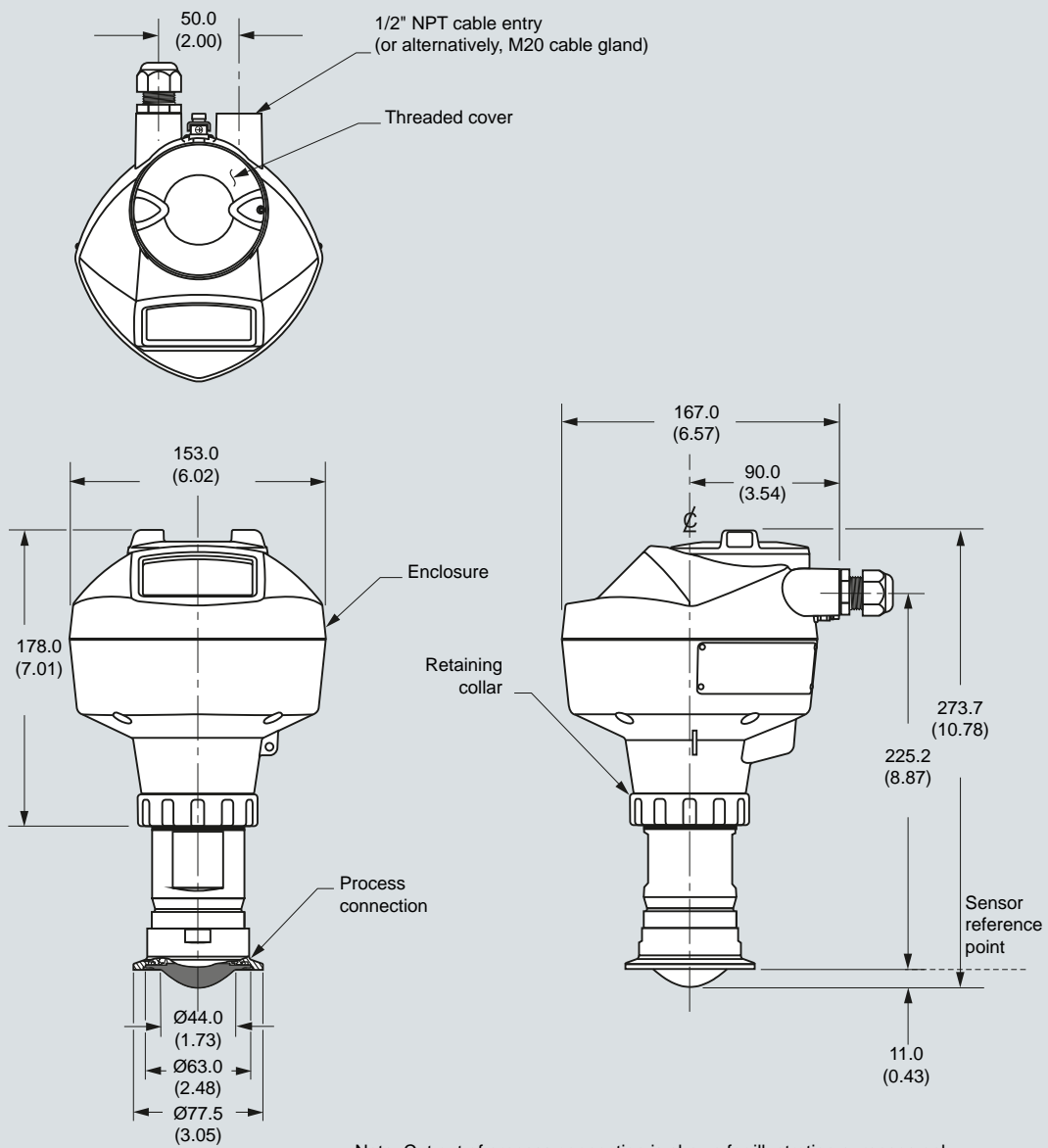
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-3)



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

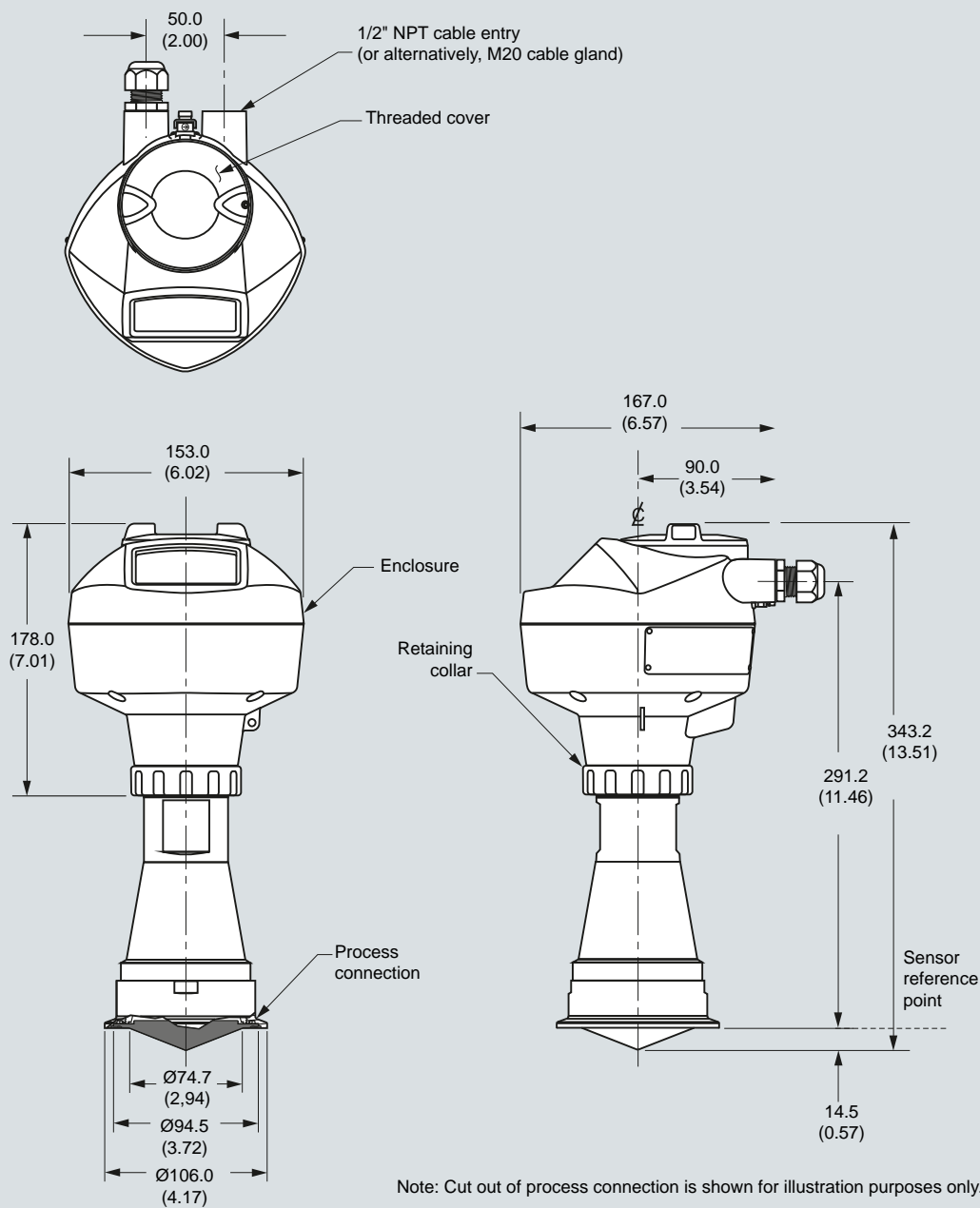
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-3)



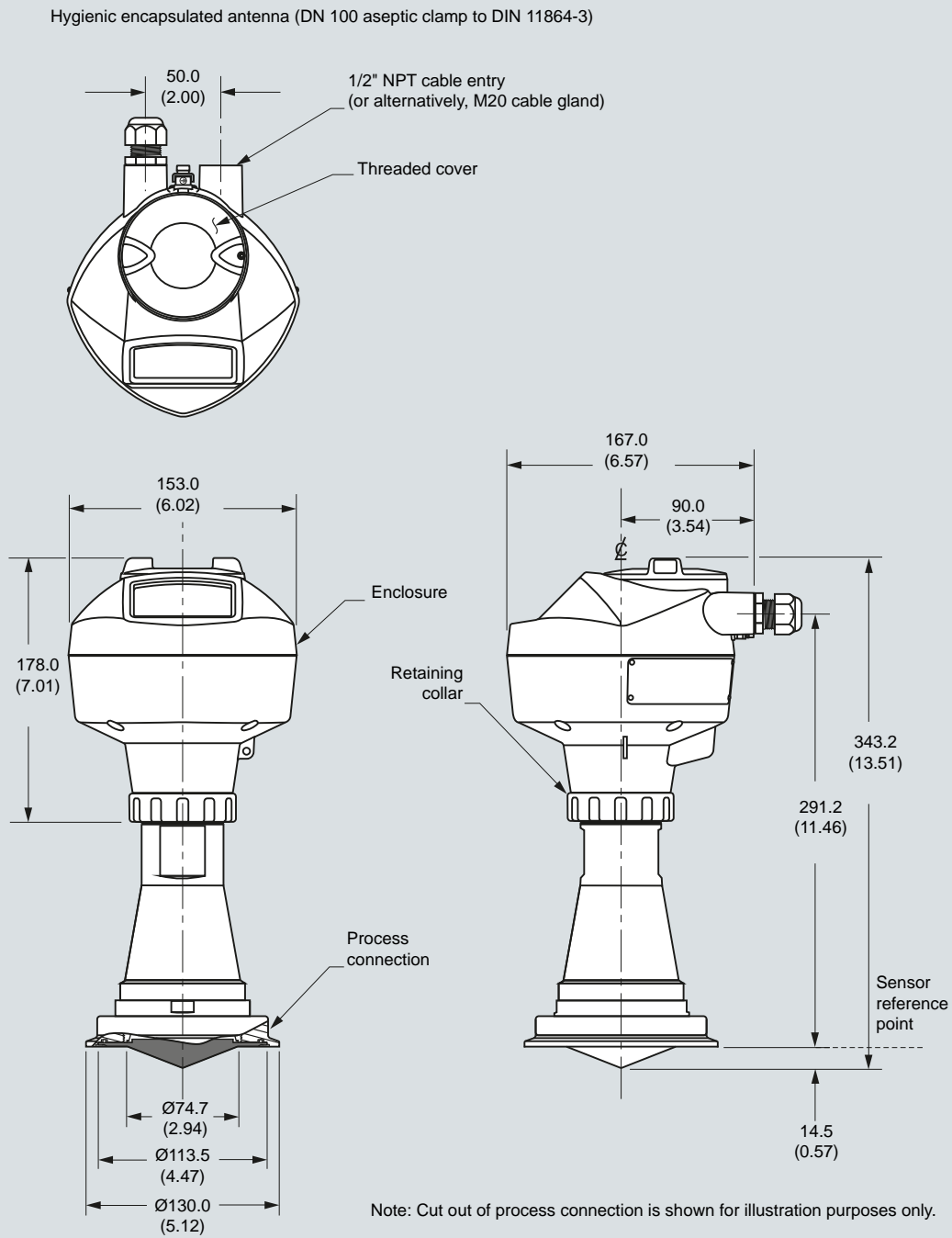
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



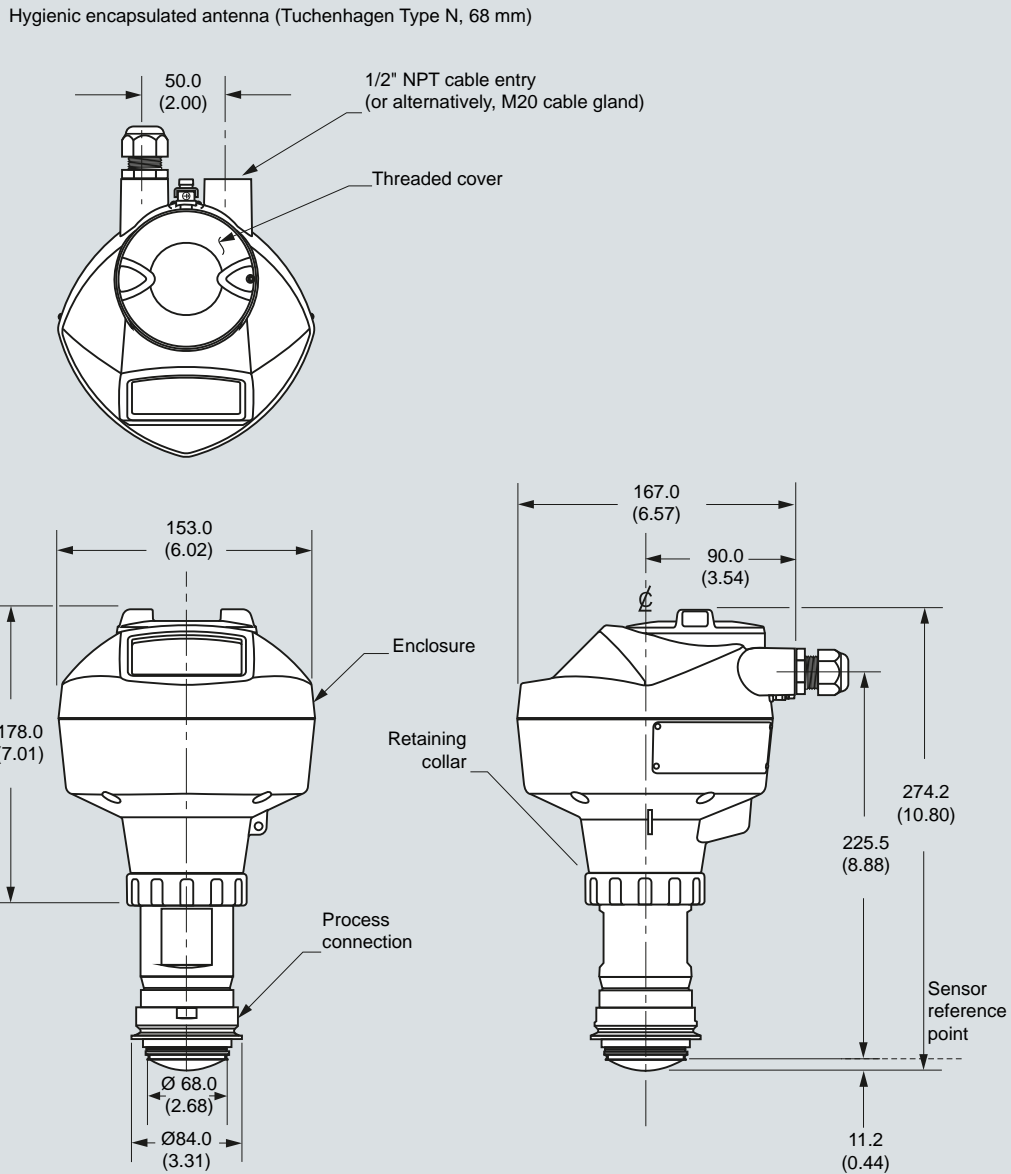
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



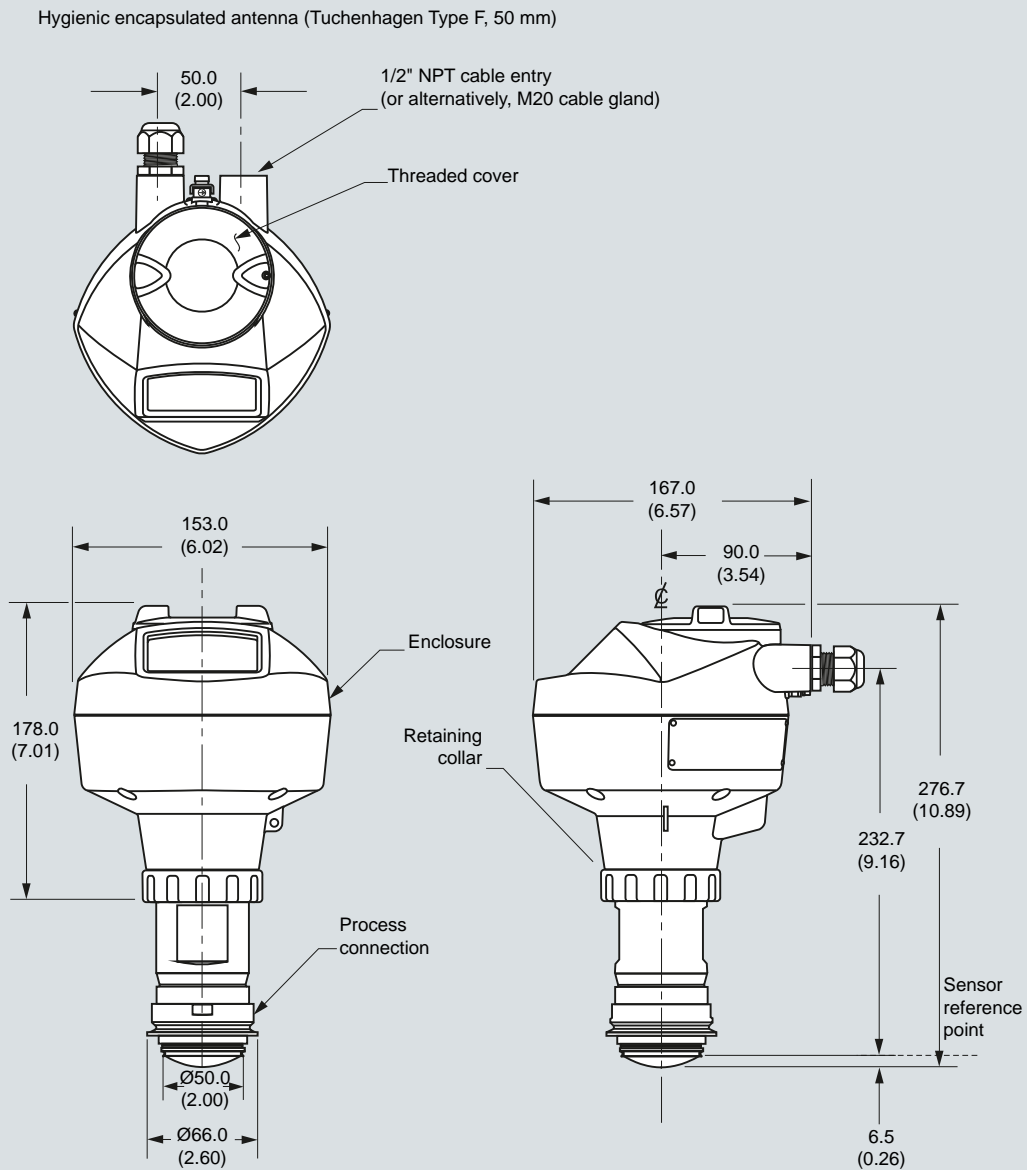
SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



SITRANS LR250 hygienic encapsulated antenna, dimensions in mm (inch)

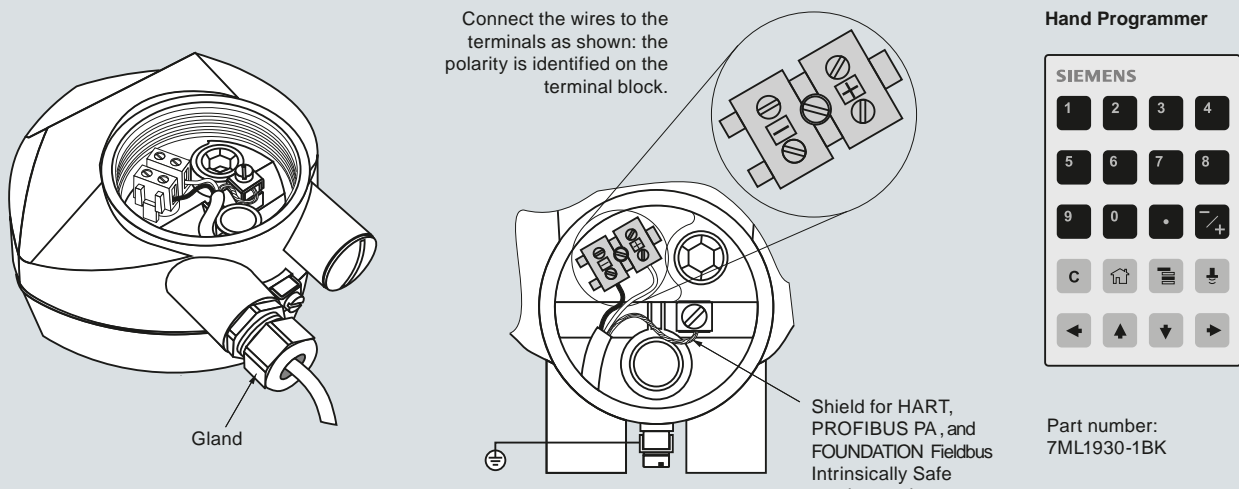
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Schematics

4



Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART, PROFIBUS PA, and FOUNDATION Fieldbus Intrinsically Safe versions only.

Hand Programmer

SIEMENS			
1	2	3	4
5	6	7	8
9	0	.	/+
C	⏪	⏩	⏴
⏴	⏵	⏶	⏷

Part number:
7ML1930-1BK

Notes:

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SITRANS LR250 connections