Level Measurement
Continuous level measurement - Radar transmitters

SITRANS LR250 Horn Antenna

Overview

SITRANS LR250 is a 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, to a range of 20 m (66 ft).

Benefits

- Graphical local user interface (LUI) makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard
- LUI displays echo profiles for diagnostic support
- 25 GHz high frequency allows for small antennas for easy mounting in nozzles
- 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
- 3 mm (0.118 inch) accuracy in accordance with IEC 60770-1
- Suitable for API 2350

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 a few parameters required for basic operation.

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

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

SITRANS LR250 measures superbly on low dielectric media, and in small vessels, as well as tall and narrow vessels.

- Key Applications: liquid bulk storage tanks, process vessels, vaporous liquids, high temperatures, low dielectric media and applications with functional safety requirements

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 horn antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.
- Use largest possible antenna.

Mounting unit on bypass
Orient front or back of device toward vent.
- Use largest possible antenna.

Mounting unit on stilling well
Orient front or back of device toward stillpipe slots.

Mounting unit on vessel

Mounting on a nozzle

SITRANS LR250 installation, dimensions in mm (inch)
# Technical specifications

## Mode of operation
- **Measuring principle**: Radar level measurement
- **Frequency**: K-band (25.0 GHz)
- **Minimum measuring range**: 50 mm (2 inch) from end of antenna
- **Maximum measuring range**: 20 m (65 ft), antenna dependent

## Output
- **HART**: Version 5.1
- **Analog output**: 4...20 mA
- **Accuracy**: ± 0.02 mA
- **Fail-safe**: 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**: ITP 5.2.0
- **Function blocks**: 2 Analog Input (AI)

## Performance (according to reference conditions IEC60770-1)
- **Maximum measured error**: 3 mm (0.118 inch)
- **Influence of ambient temperature**: < 0.003 %/K

## Rated operating conditions
- **Location**: Indoor/outdoor
- **Ambient temperature**: -40 ... +80 °C (-40 ... +176 °F)
- **Pollution degree**: 4

## Medium conditions
- **Dielectric constant ($\varepsilon_r$)**: > 1.6, antenna and application dependent
- **Process temperature**: -40 ... +200 °C (-40 ... +392 °F) (at process connection with FKM O-ring)
- **Process pressure**: Up to 40 bar g (580 psi g), process connection and temperature dependent. See Pressure/Temperature curves for more information

## Design
- **Enclosure**: Aluminum, polyester powder-coated
- **Cable inlet**: 2 x M20 x 1.5 or 2 x ½" NPT
- **Degree of protection**: Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68
- **Weight**: < 3 kg (6.6 lb) 3.75 mm (1½ inch) threaded connection with 1½" horn antenna
- **Display (local)**: Graphic local user interface including quick start wizard and echo profile display
- **Antenna**: 316L stainless steel [optional alloy N06022/2.4602 (Hastelloy C-22 or equivalent)]
- **Dimensions (nominal horn sizes)**: Standard 1.5 inch (40 mm), 2 inch (48 mm), 3 inch (75 mm), 4 inch (95 mm) horn, and optional 100 mm (4 inch) horn extension

## Power supply
- **HART**: Nominal 24 V DC (max. 30 V DC) with max. 550 $\Omega$
- **PROFIBUS PA**: 15 mA per IEC 61158-2
- **FOUNDATION Fieldbus**: 20.0 mA per IEC 61158-2

## Certificates and approvals
- **General**: CSAUSC, CE, FM, NE 21, RCM
- **Radio**: FCC, Industry Canada, and Europe ETSI EN 302-372, RCM
- **Hazardous**:
  - **Explosion Proof (Brazil)**: INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
  - **Increased Safety (Brazil)**: INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
  - **Intrinsically Safe (Brazil)**: INMETRO Ex ia Ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
  - **Explosion Proof (Canada/USA)**: CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G
  - **Increased Safety (Canada/USA)**: CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G
  - **Intrinsically Safe (Canada/USA)**: CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G
  - **Non-incendive (Canada/USA)**: CSA/FM Class I, Div. 2, Groups A, B, C, D T5
  - **Flame Proof/Increased Safety (China)**: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T4 Ga/Gb, Ex ia d A20 IP67 T100 °C
  - **Intrinsically Safe (China)**: NEPSI Ex ia IIC T4 Ga, Ex ia D A20 IP67 T100 °C
  - **Non-sparking (China)**: NEPSI Ex na IIC T4 Gc
  - **Intrinsically Safe (Europe)**: ATEX II 1G Ex ia IIC T4 Ga
  - **Non-sparking (Europe)**: ATEX II 1G Ex ia IIC T4 Ga
  - **Explosion Proof (International/Europe)**: IECEx/ATEX II 1/2GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
  - **Increased Safety (International/Europe)**: IECEx/ATEX II 1/2GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
  - **Intrinsically Safe (International)**: IECEx/ATEX II 1G Ex ia IIC T4 Ga
  - **Ex ia ta IIC T100 °C Da**
  - **Explosion Proof (Russia/Kazakhstan)**: EAC Ex d
  - **Increased Safety (Russia/Kazakhstan)**: EAC Ex e
  - **Intrinsically Safe (Russia/Kazakhstan)**: EAC Ex ia
  - **Marine**: Lloyd’s Register of Shipping
  - **ABS Type Approval**: Bureau Veritas
  - **Functional Safety**: SIL-2 suitable in accordance with IEC 61508/61511
## Level Measurement
Continuous level measurement - Radar transmitters

### SITRANS LR250 Horn Antenna

<table>
<thead>
<tr>
<th>Programming</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsically Safe Siemens handheld programmer</td>
<td>Infrared receiver</td>
<td></td>
</tr>
<tr>
<td>• Approvals for handheld programmer</td>
<td>IS model:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATEX II 1 GD Ex ia IIC T4 Ga</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ex ia D 20 T1SS °C Ta = -20 ... +50 °C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 Ta = +50 °C IECEx SIR 09.0073</td>
<td></td>
</tr>
<tr>
<td>Handheld communicator</td>
<td>HART communicator 375/475</td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>• SIMATIC PDM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Emerson AMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• SITRANS DTM (for connection into FDT such as PACTware or Fieldcare)</td>
<td></td>
</tr>
<tr>
<td>Display (local)</td>
<td>Graphic local user interface including quick start wizard and echo profile displays</td>
<td></td>
</tr>
</tbody>
</table>
### Selection and Ordering data

**SITRANS LR250 horn antenna**

| 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, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media. |
| 7ML5431- | 0 |

**Process Connection and Antenna Material**

- DN 100 PN 40 EN 1092-1 Type B1 raised face
- DN 80 PN 40 EN 1092-1 Type B1 raised face
- DN 50 PN 40 EN 1092-1 Type B1 raised face
- DN 100 PN 16 EN 1092-1 Type B1 raised face
- DN 80 PN 16 EN 1092-1 Type B1 raised face
- DN 50 PN 16 EN 1092-1 Type B1 raised face

**Process Connection Type**

- Threaded connection 316L
- 2" NPT (ASME B1.20.1) (tapered thread)
- R 1 1/2" [(BSPT), EN 10226-1] (tapered thread)
- G 1 1/2" [(BSPP), EN ISO 228-1] (parallel thread)
- 3" NPT (ASME B1.20.1) (tapered thread)
- R 2" [(BSPT), EN 10226-1] (tapered thread)
- G 2" [(BSPP), EN ISO 228-1] (parallel thread)
- 4" NPT (ASME B1.20.1) (tapered thread)
- R 3" [(BSPT), EN 10226-1] (tapered thread)
- G 3" [(BSPP), EN ISO 228-1] (parallel thread)

**Flanged connection 316L**

- 2" Class 150 ASME B16.5 flat face
- 3" Class 150 ASME B16.5 flat face
- 4" Class 150 ASME B16.5 flat face

**Antenna**

- 1 1/2" horn (fits 2" ASME or DN 50 nozzles)
- 2" horn (fits 2" ASME or DN 50 nozzles)
- 3" horn (fits 2" ASME or DN 50 nozzles)
- 4" horn (fits 4" ASME or DN 100 nozzles)
- 1 1/2" horn with 100 mm extension
- 2" horn with 100 mm extension
- 3" horn with 100 mm extension
- 4" horn with 100 mm extension
- Hastelloy C22 (or equivalent)

**Communication/Output**

- 4...20 mA, HART, start-up at < 3.6 mA
- FOUNDATION Fieldbus

**Enclosure/Cable inlet**

- Aluminum, Epoxy painted
  - 2 x M20 x 1.5

---

**Selection and Ordering data**

**SITRANS LR250 horn antenna**

| 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, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media. |
| 7ML5431- | 0 |

**Process Connection and Antenna Material**

- DN 100 PN 40 EN 1092-1 Type B1 raised face
- DN 80 PN 40 EN 1092-1 Type B1 raised face
- DN 50 PN 40 EN 1092-1 Type B1 raised face
- DN 100 PN 16 EN 1092-1 Type B1 raised face
- DN 80 PN 16 EN 1092-1 Type B1 raised face
- DN 50 PN 16 EN 1092-1 Type B1 raised face

**Process Connection Type**

- Threaded connection 316L
- 2" NPT (ASME B1.20.1) (tapered thread)
- R 1 1/2" [(BSPT), EN 10226-1] (tapered thread)
- G 1 1/2" [(BSPP), EN ISO 228-1] (parallel thread)
- 3" NPT (ASME B1.20.1) (tapered thread)
- R 2" [(BSPT), EN 10226-1] (tapered thread)
- G 2" [(BSPP), EN ISO 228-1] (parallel thread)
- 4" NPT (ASME B1.20.1) (tapered thread)
- R 3" [(BSPT), EN 10226-1] (tapered thread)
- G 3" [(BSPP), EN ISO 228-1] (parallel thread)

**Flanged connection 316L**

- 2" Class 150 ASME B16.5 flat face
- 3" Class 150 ASME B16.5 flat face
- 4" Class 150 ASME B16.5 flat face

**Antenna**

- 1 1/2" horn (fits 2" ASME or DN 50 nozzles)
- 2" horn (fits 2" ASME or DN 50 nozzles)
- 3" horn (fits 2" ASME or DN 50 nozzles)
- 4" horn (fits 4" ASME or DN 100 nozzles)
- 1 1/2" horn with 100 mm extension
- 2" horn with 100 mm extension
- 3" horn with 100 mm extension
- 4" horn with 100 mm extension
- Hastelloy C22 (or equivalent)

**Communication/Output**

- 4...20 mA, HART, start-up at < 3.6 mA
- FOUNDATION Fieldbus

**Enclosure/Cable inlet**

- Aluminum, Epoxy painted
  - 2 x M20 x 1.5
## Level Measurement

Continuous level measurement - Radar transmitters

### SITRANS LR250 Horn Antenna

<table>
<thead>
<tr>
<th>Selection and Ordering data</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITRANS LR250 horn antenna</td>
<td>7ML5431-</td>
</tr>
</tbody>
</table>

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, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media.

### Approvals

- **General Purpose**, CE, CSA, FM, FCC, R&TTE, RCM
- Intrinsically Safe: IECEx/ATEX II 1 G Ex ia IIC T4 Ga, IECEx/ATEX II 1D Ex ia ta IIIIC T100 °C Da, INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIIC T100 °C Da, CE, R&TTE, RCM
- Non Sparking: ATEX II 3G Ex nA IIC T4 Gc, CE, R&TTE, RCM
- Increased Intrinsically Safe: IECEx/ATEX II 1/2 GD 1D, 2D Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIIC T100 °C Da, INMETRO Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIIC T100 °C Da, CE, R&TTE, RCM
- Flameproof: IECEx/ATEX II 1/2 GD 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIIC T100 °C Da, INMETRO Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIIC T100 °C Da, CE, R&TTE, RCM
- Non Sparking: NEPSI Ex nA IIC T4 Gc
- Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD ID A20 IP67 T100 °C
- Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD ID A20 IP67 T100 °C
- Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD ID A20 IP67 T100 °C

### Pressure rating

Rating per Pressure/Temperature curves in manual

1. 0.5 bar g (7.25 psi g) maximum

### Notes

1. Available with process connection options AA ... HD and Antenna Versions A ... H only
2. Available with process connection options JA ... MH and Antenna Versions J ... P only
3. Available for Antenna versions A and E only, max. range 10 m (32.8 ft), dk > 3 and A and E only available for Process Connection options AA, AB, and AC
4. Siemens type flange (flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard), see operating instructions for details
5. Applicable with communication option 2 only
6. Available with Approval options A, B, C, D, K, and L
7. Available with Process Connection and Antenna Material 0, 1, 2, and 3 only

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

<table>
<thead>
<tr>
<th>Selection and Ordering data</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Further designs</strong></td>
<td></td>
</tr>
<tr>
<td>Please add &quot;Z&quot; to Article No. and specify Order code(s).</td>
<td></td>
</tr>
</tbody>
</table>
| Plug M12 with mating Connector\(^{1}\) & A50
| Plug 7/8" with mating Connector\(^{2}\) & A55
| Stainless steel tag \([69 \times 50 \text{ mm} (2.71 \times 1.97 \text{ inch})]\): Measuring-point number/identification (max. 27 characters); specify in plain text | Y15
| Manufacturer’s Test Certificate: M to DIN 53500, Part 18 and to ISO 9000 | C11
| Inspection certificate 3.1 of EN 10204 | C12
| Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511\(^{15}\) | C20
| Namur NE43 compliant, device preset to fail-safe < 3.6 mA\(^{1}\) | N07
| **Compact Operating Instructions for HART/MA device** | Article No. |
| English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish | A5E33469191
| English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian | A5E33469171
| English, Portuguese (Brazil), Chinese | A5E34046583
| Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at [http://www.siemens.com/processinstrumentation/documentation](http://www.siemens.com/processinstrumentation/documentation) | |
| This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Compact Operating Instructions and Operating Instructions library. | |
| **Compact Operating Instructions for PROFIBUS PA device** | Article No. |
| English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish | A5E33469239
| English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian | A5E33472685
| English, Portuguese (Brazil), Chinese | A5E34046624
| Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at [http://www.siemens.com/processinstrumentation/documentation](http://www.siemens.com/processinstrumentation/documentation) | |
| This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Compact Operating Instructions and Operating Instructions library. | |

### Accessories

- Handheld programmer, Intrinsically safe, Ex ia 7ML1930-1BK
- HART modem/USB (for use with a PC and SIMATIC PDM) 7MF4997-1DB
- One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required) 7ML1930-1AP
- One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required)\(^6\) 7ML1930-1AQ
- FDA approved FKM O-ring for 2" G (BSPP) process connections -28 ... +80 °C (-28 ... +176 °F) 7ML1830-3AN
- 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-...

1) Available with enclosure option 1 only
2) To be used with communication options 1 and 3 only. Connector has IP67 rating.
3) Available with approval options A and B. Available with approval option C for use on intrinsically safe applications only. Not rated for dust Ex.
4) Available with enclosure option 0 only
5) Applicable to communication option 2 only
6) For use with communication options 1 and 3 only

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Level Measurement
Continuous level measurement - Radar transmitters

SITRANS LR250 Horn Antenna

Characteristic curves

Maximum flange and process temperatures versus allowable ambient temperature

SITRANS LR250 ambient/process flange surface temperature curve
**Dimensional drawings**

**Threaded Horn Antenna**

<table>
<thead>
<tr>
<th>Antenna Type</th>
<th>Antenna O.D.</th>
<th>Height to sensor reference point</th>
<th>Beam angle</th>
<th>Measurement range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-1/2” threaded connection</td>
<td>2” threaded connection</td>
<td>3” threaded connection</td>
</tr>
<tr>
<td>1.5” horn</td>
<td>39.8 (1.57)</td>
<td>135 (5.3)</td>
<td>N/A</td>
<td>19 degrees</td>
</tr>
<tr>
<td>2” horn</td>
<td>47.8 (1.88)</td>
<td>N/A</td>
<td>166 (6.55)</td>
<td>180 (7.09)</td>
</tr>
<tr>
<td>3” horn</td>
<td>74.8 (2.94)</td>
<td>N/A</td>
<td>199 (7.85)</td>
<td>213 (8.39)</td>
</tr>
<tr>
<td>4” horn</td>
<td>94.8 (3.73)</td>
<td>N/A</td>
<td>254 (10)</td>
<td>268 (10.55)</td>
</tr>
</tbody>
</table>

*SITRANS LR250 Threaded Horn Antenna, dimensions in mm (inch)*
SITRANS LR250 Horn Antenna

**Threaded Horn Antenna with Extension**

*28 mm (1.1) for 1.5 inch and 2 inch, 42 mm (1.65) for 3 inch*

<table>
<thead>
<tr>
<th>Antenna Type</th>
<th>Antenna O.D.</th>
<th>Height to sensor reference point</th>
<th>Beam angle</th>
<th>Measurement range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-1/2&quot; threaded connection</td>
<td>2&quot; threaded connection</td>
<td>3&quot; threaded connection</td>
</tr>
<tr>
<td>1.5&quot; horn</td>
<td>39.8 (1.57)</td>
<td>235 (9.3)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2&quot; horn</td>
<td>47.6 (1.88)</td>
<td>N/A</td>
<td>266 (10.47)</td>
<td>280 (11.02)</td>
</tr>
<tr>
<td>3&quot; horn</td>
<td>74.8 (2.94)</td>
<td>N/A</td>
<td>299 (11.77)</td>
<td>313 (12.32)</td>
</tr>
<tr>
<td>4&quot; horn</td>
<td>94.8 (3.73)</td>
<td>N/A</td>
<td>354 (13.94)</td>
<td>368 (14.49)</td>
</tr>
</tbody>
</table>

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### SITRANS LR250 Horn Antenna

**Flanged Horn**

<table>
<thead>
<tr>
<th>Nominal Horn Size</th>
<th>Horn O.D.</th>
<th>Height to Sensor Reference Point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Stainless Steel Flange Raised or Flat-Faced</strong></td>
</tr>
<tr>
<td>50 (2)</td>
<td>47.8 (1.88)</td>
<td>135.3 (5.32)</td>
</tr>
<tr>
<td>80 (3)</td>
<td>74.8 (2.94)</td>
<td>168.3 (6.62)</td>
</tr>
<tr>
<td>100 (4)</td>
<td>94.8 (3.73)</td>
<td>223.3 (8.79)</td>
</tr>
</tbody>
</table>

SITRANS LR250 Flanged Horn Antenna, dimensions in mm (inch)
**Level Measurement**
Continuous level measurement - Radar transmitters

**SITRANS LR250 Horn Antenna**

Flanged Horn with Extension

<table>
<thead>
<tr>
<th>Nominal Horn Size</th>
<th>Horn O.D.</th>
<th>Height to sensor reference point</th>
<th>Beam angle</th>
<th>Measurement range</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 (2)</td>
<td>47.8 (1.88)</td>
<td>235.3 (9.26)</td>
<td>15 degrees</td>
<td>20 m (65.6 ft)</td>
</tr>
<tr>
<td>80 (3)</td>
<td>74.8 (2.94)</td>
<td>268.3 (10.62)</td>
<td>10 degrees</td>
<td>20 m (65.6 ft)</td>
</tr>
<tr>
<td>100 (4)</td>
<td>94.8 (3.73)</td>
<td>323.3 (12.79)</td>
<td>8 degrees</td>
<td>20 m (65.6 ft)</td>
</tr>
</tbody>
</table>

SITRANS LR250 Flanged Horn Antenna with extension, dimensions in mm (inch)
SITRANS LR250 Horn Antenna

**SITRANS LR250 Raised face flange, dimensions in mm (inch)**

---

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>Flange class</th>
<th>Flange O.D. (mm)</th>
<th>Bolt hole circle Ø (mm)</th>
<th>Bolt hole Ø (mm)</th>
<th>No. of bolts</th>
<th>Angle of adjacent bolt holes</th>
<th>Facing Ø (mm)</th>
<th>Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>150 lb</td>
<td>152 (5.98)</td>
<td>120.7 (4.75)</td>
<td>19 (0.75)</td>
<td>4</td>
<td>90</td>
<td>92.1 (3.63)</td>
<td>20.6 (0.81)</td>
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<tr>
<td>3&quot;</td>
<td>150 lb</td>
<td>190 (7.48)</td>
<td>152.4 (6.00)</td>
<td>19 (0.75)</td>
<td>4</td>
<td>90</td>
<td>127 (5.00)</td>
<td>25.9 (1.02)</td>
</tr>
<tr>
<td>4&quot;</td>
<td>150 lb</td>
<td>230 (9.06)</td>
<td>190.3 (7.50)</td>
<td>19 (0.75)</td>
<td>8</td>
<td>45</td>
<td>157.2 (6.19)</td>
<td>25.9 (1.02)</td>
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<tr>
<td>2&quot;</td>
<td>300 lb</td>
<td>176 (6.92)</td>
<td>127 (5.00)</td>
<td>19 (0.75)</td>
<td>8</td>
<td>45</td>
<td>92.1 (3.66)</td>
<td>28.4 (1.12)</td>
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<tr>
<td>3&quot;</td>
<td>300 lb</td>
<td>209.6 (8.25)</td>
<td>168 (6.62)</td>
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<td>8</td>
<td>45</td>
<td>127.0 (5.00)</td>
<td>35.0 (1.38)</td>
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<tr>
<td>4&quot;</td>
<td>300 lb</td>
<td>254 (10.00)</td>
<td>200 (7.88)</td>
<td>22 (0.88)</td>
<td>8</td>
<td>45</td>
<td>157.2 (6.19)</td>
<td>38.1 (1.50)</td>
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<td>DN 50</td>
<td>PN 10/16</td>
<td>165 (6.5)</td>
<td>125 (4.92)</td>
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<td>102 (4.02)</td>
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<td>DN 80</td>
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<td>220 (8.66)</td>
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<td>138 (5.43)</td>
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<td>300 (11.81)</td>
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<td>126 (4.96)</td>
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<td>151 (5.94)</td>
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<td>240 (9.45)</td>
<td>23 (0.91)</td>
<td>8</td>
<td>45</td>
<td>212 (8.35)</td>
<td>22 (0.87)</td>
</tr>
</tbody>
</table>
Level Measurement
Continuous level measurement - Radar transmitters
SITRANS LR250 Horn Antenna

Schematics

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

Part number: 7ML1930-1BK

Hand Programmer

Notes:
1. 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.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 … 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.
## Selection and ordering data

### SITRANS LR250 Specials

#### SITRANS LR250 horn version enclosures (PROFIBUS PA models)

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5E01156836</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with PROFIBUS PA communication, no process connection</td>
</tr>
<tr>
<td>A5E01156838</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection</td>
</tr>
<tr>
<td>A5E01156839</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option B, with PROFIBUS PA communication, no process connection</td>
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<tr>
<td>A5E01156841</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option B, with PROFIBUS PA communication, no process connection</td>
</tr>
<tr>
<td>A5E01156843</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection</td>
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<tr>
<td>A5E01156844</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with PROFIBUS PA communication, no process connection</td>
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<tr>
<td>A5E01156846</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option D, with PROFIBUS PA communication, no process connection</td>
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<tr>
<td>A5E01156848</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option D, with PROFIBUS PA communication, no process connection</td>
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#### SITRANS LR250 horn version enclosures (FOUNDATION Fieldbus models)

<table>
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<tr>
<th>Article No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>A5E03769538</td>
<td>SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E03769539</td>
<td>SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E03769543</td>
<td>SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E02654608</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E02653792</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E02653793</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection</td>
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<tr>
<td>A5E02654606</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection</td>
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### SITRANS LR250 horn version enclosures (< 3.6 mA start-up HART)

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<th>Article No.</th>
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<tbody>
<tr>
<td>A5E02956317</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E02956319</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E02956320</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option E, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
</tr>
<tr>
<td>A5E02956322</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option F, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E02956323</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option G, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E03441096</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E03441097</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E03441098</td>
<td>SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option D, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<tr>
<td>A5E03441099</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<td>A5E03441097</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option B, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<td>A5E03441098</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option D, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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<td>A5E03441099</td>
<td>SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option H, with HART communication start-up at &lt; 3.6 mA, no process connection</td>
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## Level Measurement
Continuous level measurement - Radar transmitters

### SITRANS LR250 Specials

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Sun shield for SITRANS LR250 enclosure, stainless steel</td>
<td>A5E35497857</td>
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<tr>
<td>SITRANS LR250 horn antenna and extension kits</td>
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<tr>
<td>38 mm (1.5 inch) horn antenna kit, 1.5&quot; process connections only</td>
<td>A5E01151539</td>
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<tr>
<td>100 mm (4 inch) horn antenna extension kit, 1.5&quot; process connections only</td>
<td>A5E01151553</td>
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<tr>
<td>50 mm (2 inch) stainless steel 316L horn antenna kit</td>
<td>A5E01151569</td>
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<tr>
<td>75 mm (3 inch) stainless steel 316L horn antenna kit</td>
<td>A5E01151571</td>
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<tr>
<td>100 mm (4 inch) stainless steel 316L horn antenna kit</td>
<td>A5E01151573</td>
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<tr>
<td>100 mm (4 inch) horn antenna extension kit, 50 mm (2 inch), 75 mm (3 inch), and 100 mm (4 inch) process connection</td>
<td>A5E01151577</td>
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<tr>
<td>50 mm (2 inch) horn antenna kit, Hastelloy C-22</td>
<td>A5E01151584</td>
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<td>75 mm (3 inch) horn antenna kit, Hastelloy C-22</td>
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<td>100 mm (4 inch) horn antenna kit, Hastelloy C-22</td>
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<td>5 Dupont 1Gr Polyback, PTFE grease kit</td>
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<td>SITRANS LR250 lid with O-ring</td>
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