

SensorsX

SX-LRNB Series

80 GHz Radar Level Transmitter
Operating frequency: 76-81 GHz



WIDE MEASURING RANGE

Up to 120 m, custom ranges available on request

HIGH ACCURACY

± 2 , ± 3 , ± 5 or ± 10 mm, depending on configuration

MULTIPLE OUTPUT OPTIONS

4–20 mA with HART, 4–20 mA with RS485, or RS485

■ PRODUCT OVERVIEW

The SX-LRNB Series is an 80 GHz FMCW radar level transmitter designed for continuous level measurement of liquids and bulk solids. Narrow-beam antenna options support reliable measurement in demanding conditions such as agitation, condensation, dust, splashing, and antenna buildup. Multiple antenna designs, process connections, output options, and temperature and pressure configurations are available for a wide range of industrial applications.

■ KEY FEATURES

- 76–81 GHz FMCW radar measurement technology.
- Measuring ranges of 10, 20, 30, 60 or 120 m, with custom ranges available on request.
- Accuracy options of ± 2 , ± 3 , ± 5 and ± 10 mm.
- 3°, 4° and 8° antenna beam-angle options.
- 4–20 mA with HART, 4–20 mA with RS485, or RS485 output configurations.
- 12–28 V DC power supply.
- IP65 or IP66/67 housing options.
- Threaded, flanged and clamp process connections.
- Process-pressure capability up to 4 MPa, depending on antenna and process connection.
- Temperature configurations for cryogenic service down to -196 °C and high-temperature service up to $+450$ °C.
- Multiple wetted-material configurations, including PTFE and stainless-steel/PTFE combinations.
- Optional Ex ia, Ex db and Ex tb versions with EAC or ATEX approval.
- Suitable for liquid and bulk-solids level measurement in demanding industrial process conditions.

■ TYPICAL APPLICATIONS

Liquid Level Measurement

- Multi-level agitated tanks
- Vessel level with baffles or vortex conditions
- Splashing / turbulent surface level

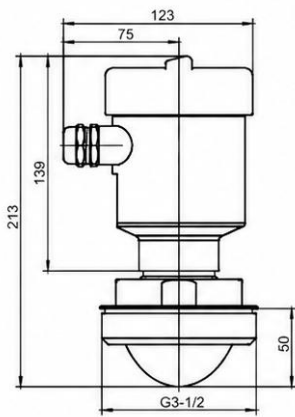
Solids & Dusty Environments

- High-range solids storage silo level
- Powder / dust-laden bin level
- Bulk solids level measurement

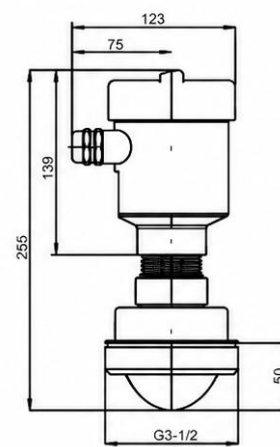
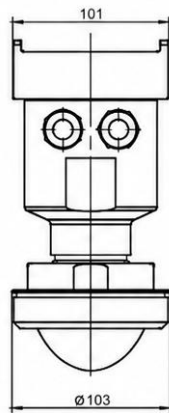
Harsh & High-Temperature Process

- Corrosive gas/liquid chemical process vessels
- High-temperature / high-pressure reactors
- Energy and chemical industry process tanks

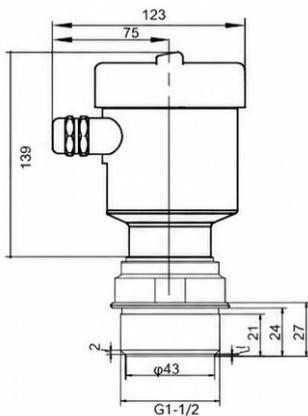
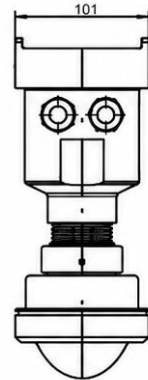
■ DIMENSIONAL DRAWING (REFERENCE)



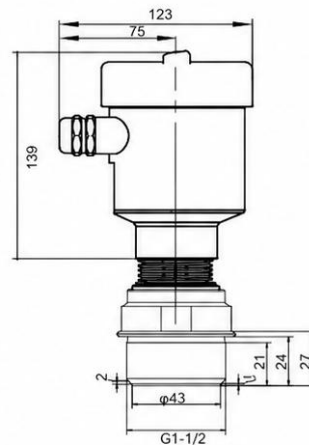
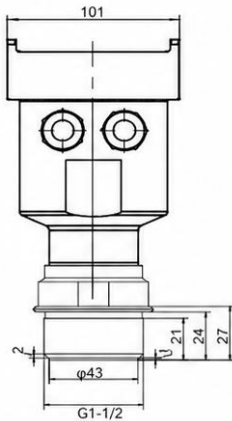
G3-1/2 Threaded Process Connection High-Temperature Structure Dimensions



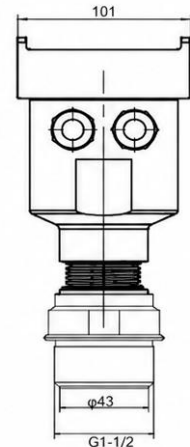
G3-1/2 Threaded Process Connection Standard-Temperature Structure Dimensions



G1-1/2 Threaded Process Connection Standard-Temperature Structure Dimensions



G1-1/2 Threaded Process Connection High-Temperature Structure Dimensions



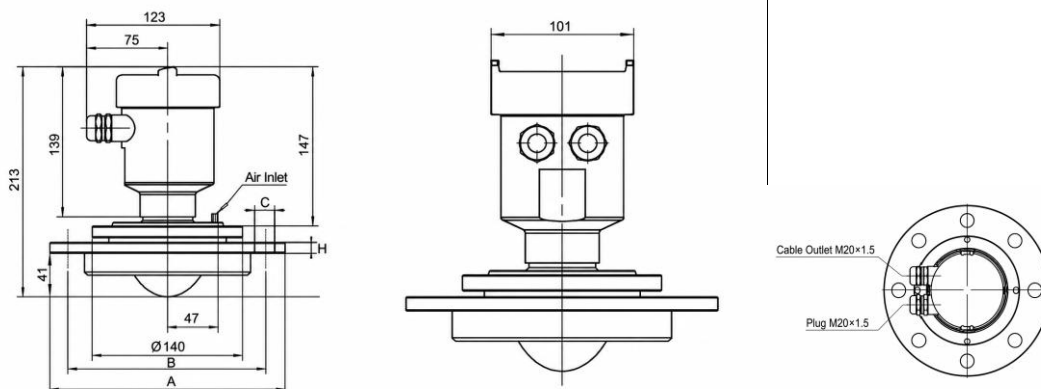
Standard threaded configurations — Dimensions in mm

■ GENERAL TECHNICAL SPECIFICATIONS

Parameter	Specification
Transmit frequency	76-81 GHz
Measurement range	10, 20, 30, 60 or 120 m; custom ranges available on request.
Measurement accuracy	±2, ±3, ±5 or ±10 mm, depending on configuration
Beam angle	3°, 4° or 8°, depending on antenna configuration
Ingress protection	IP65 or IP66/67, depending on housing configuration
Explosion marking	Optional Ex ia, Ex db or Ex tb configurations with EAC or ATEX approval
Installation	Threaded, flanged or clamp process connection
Process temperature	−196 to +450 °C, configuration-dependent
Process pressure	Up to 4 MPa, depending on antenna and process connection
Overall dimensions	Ø100 × 270 mm
Cable entry	M20 × 1.5
Housing material	Aluminium alloy
Net / gross weight	2.480 kg / 2.995 kg
Package size	370 × 270 × 180 mm
Recommended cable	AWG18 or 0.75 mm²
Fault output	3.8 mA, 4 mA, 20 mA, 21 mA, or hold
Output / Communication	4–20 mA with HART and/or RS485, depending on output configuration
Local operation / programming	128 × 64 dot-matrix display; four keys; PC configuration software
Antenna	3° hollow-lens antenna or 3°, 4°, and 8° solid-lens antenna options

■ RECOMMENDED CONFIGURATIONS BY APPLICATION

High-dust and powder-buildup applications

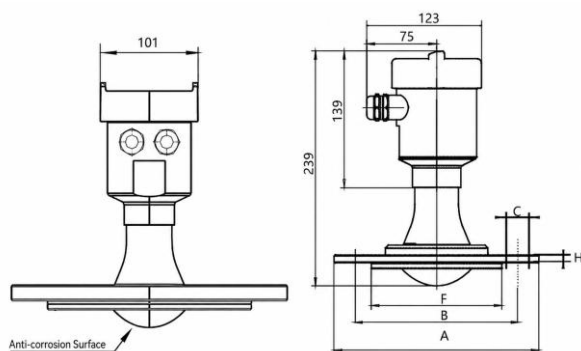


Flanged universal-joint configuration — Dimensions in mm

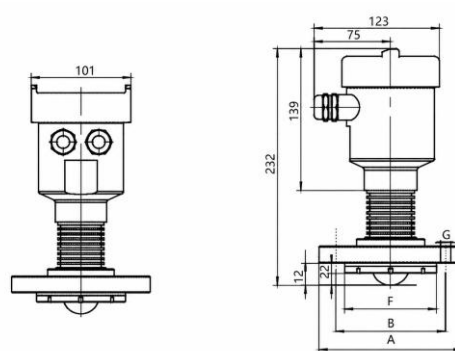
DN	A	B	Bolt holes	H
DN80	Ø190	Ø150	4 × Ø18	Ø15
DN100	Ø210	Ø170	4 × Ø18	Ø15
DN125	Ø240	Ø200	8 × Ø18	Ø17
DN150	Ø265	Ø225	8 × Ø18	Ø17
DN200	Ø320	Ø280	8 × Ø18	Ø19

■ RECOMMENDED CONFIGURATIONS BY APPLICATION

Corrosive-media and high-temperature/high-pressure applications



Antenna 3° Structure Diagram



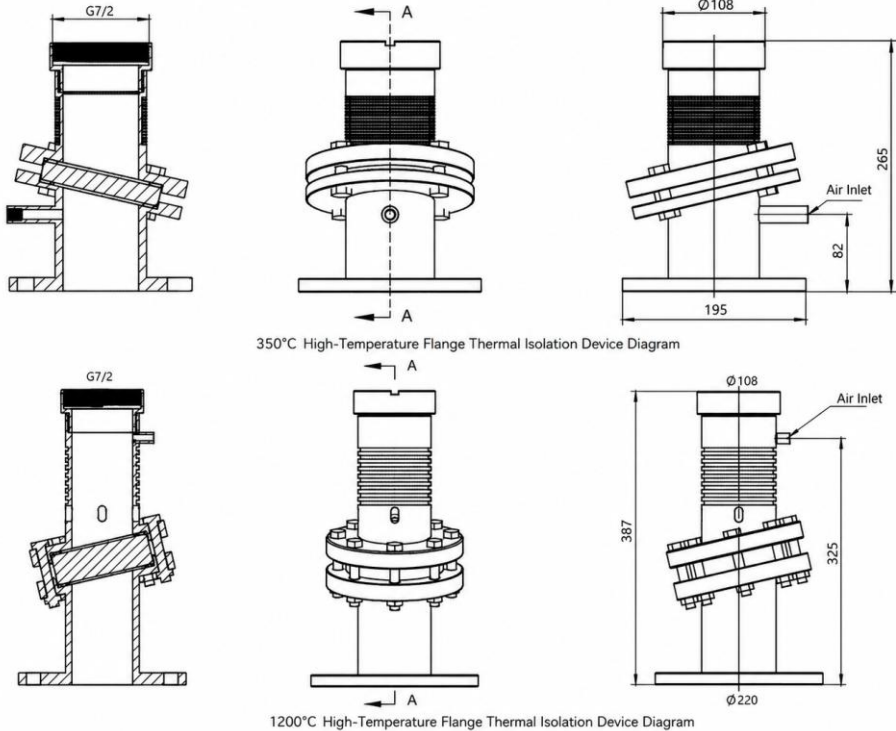
Antenna 8° Structure Diagram

Dimensions in mm

Antenna	DN	A	B	Bolt holes	H1	H2
3°	DN80	Ø190	Ø150	4 × Ø18	Ø128	Ø18
3°	DN100	Ø210	Ø170	4 × Ø18	Ø148	Ø18
3°	DN125	Ø240	Ø200	8 × Ø18	Ø178	Ø20
3°	DN150	Ø265	Ø225	8 × Ø18	Ø202	Ø20
3°	DN200	Ø320	Ø280	8 × Ø18	Ø258	Ø22
8°	DN50	Ø140	Ø110	4 × Ø14	Ø90	Ø16
8°	DN65	Ø160	Ø130	4 × Ø14	Ø110	Ø16

■ RECOMMENDED CONFIGURATIONS BY APPLICATION

High-temperature and high-pressure operating environments



Dimensions in mm

■ ORDERING INFORMATION

Complete model number example: **SX-LRNB-1322A502E096M43XM1**

Accuracy / Blind Zone

1	±2 mm; 0.1 m blind zone
3	±3 mm; 0.3 m blind zone
4	±5 mm; 0.3 m blind zone
5	±10 mm; 0.6 m blind zone

Antenna

2	3° hollow lens, ≤1.6 MPa
3	3° solid lens, ≤4 MPa
4	4° solid lens, ≤4 MPa
8	8° solid lens, ≤4 MPa

Antenna Material

2	PTFE
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Wetted Material

2	PTFE
F	PTFE + connection material + FKM
E	PTFE + connection material + EPDM
W	Glass + connection material + metal graphite
6	316 stainless steel + PTFE
7	316L stainless steel + PTFE
4	304 stainless steel + PTFE

Explosion Protection

A	Without
K	Ex ia-EAC
M	Ex db-EAC
N	Ex tb-EAC
E	Ex db-ATEX
F	Ex tb-ATEX

Housing

5	Aluminium housing with display, IP66/67
6	Aluminium housing with display, IP65

Structure

0	-40 to 85 °C
1	-40 to 200 °C
H	-40 to 450 °C
D	-196 to 200 °C

Seal

X	Without
2	PTFE
F	ePTFE (-200 to 200 °C)

Connection Type	
E	EN 1092-1 Type B1 flange
G	GOST 33259-2015 Type B flange
F	GOST 33259-2015 Type E flange
A	ASME B16.5 Type RF flange
R	ISO 228 thread
T	ISO 2852 clamp
Pressure Class	
0	Standard: thread or clamp
1	PN6
2	PN10
3	PN16
4	PN25
5	PN40
Connection Size	
8	DN40 / 1-1/2"
9	DN50 / 2" / Ø64
A	DN65 / 2-1/2"
B	DN80 / 3"
W	DN90 / 3-1/2"
C	DN100 / 4"
D	DN125 / 5"
E	DN150 / 6"
F	DN200 / 8"
Connection Material	
6	316 stainless steel
7	316L stainless steel
4	304 stainless steel
2	PTFE ≤0.5 MPa
Electrical Connection	
M	M20 × 1.5
N	2 × M20 × 1.5
P	NPT 1/2
Q	2 × NPT 1/2
Power Supply	
4	12-28 VDC
Output 1	
3	4-20 mA, two-wire + HART
7	4-20 mA, four-wire + RS485
8	RS485, four-wire
Output 2	

X	Without
Measurement Unit	
L	mm
C	cm
M	m
D	%
Level Range	
0	10 m
1	20 m
2	30 m
3	60 m
4	120 m
Accessory (Optional)	
F1	Universal flange; flange connection only
B5	Purge universal flange, ultra-high-temperature type; flange connection only
Optional	
D	Customized information; specify in order remarks