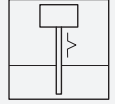




Guided Level Radar LTC51



- Premium device for level measurement in liquids
- Measuring range up to 45 m (148 foot)
- Process connection from 3/4 inch thread or flange
- Temperature range up to 200 °C (392 °F)
- Pressure range up to 40 bar (600 psi)
- Up to SIL 3 acc. to IEC/EN 61508

CE  **SIL 3** Ü

Function

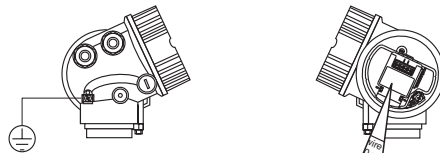
The device offers the following benefits:

- Reliable measurement even for changing product and process conditions
- HistoROM data management for easy commissioning, maintenance and diagnostics
- Highest reliability due to Multi-Echo tracking
- Seamless integration into control or asset management systems
- Intuitive user interface in national languages
- Approvals: ATEX, IECEx

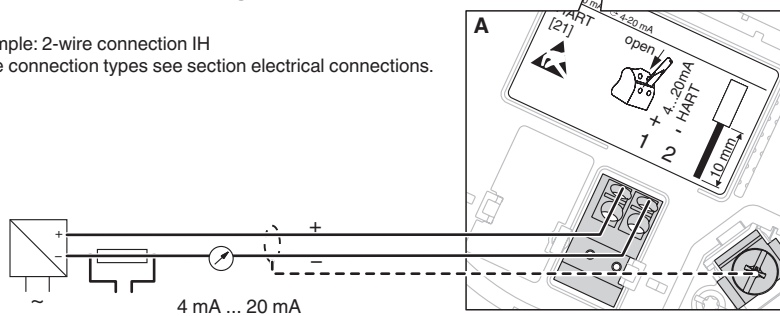
The following interfaces are available for system integration:

- HART with 4 mA ... 20 mA analog (standard)
- PROFIBUS PA (option)

Connection



Example: 2-wire connection IH
More connection types see section electrical connections.



Technical Data

General specifications

Measuring method	The device is a measuring system that functions according to the time-of-flight method. The distance from the reference point (process connection of the measuring device) to the product surface is measured.
Construction type	device with rod probe device with coax probe device with rope probe
Series	LTC51

Functional safety related parameters

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Technical Data

Safety Integrity Level (SIL)	SIL 3	
Supply		
Rated voltage	U _r	11.5 ... 35 V DC, 2-wire 10.4 ... 48 V DC, 4-wire 90 ... 253 V AC, 50/60 Hz
Input		
Measured variable	distance between reference point and product surface	
Measurement range	rod probe: 4 m/10 m (13 ft/33 ft) (for divisible/indivisible rod probes) coax probe: 6 m (20 ft) rope probe: 45 m (148 ft)	
Output		
Output signal	4 ... 20 mA 2 x 4 ... 20 mA	
Communication	4 ... 20 mA HART (standard) PROFIBUS PA (option)	
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU	EN 61326-1:2006 , EN 61326-2-3:2006	
Low voltage		
Directive 2014/35/EU	EN 61010-1:2010	
Conformity		
Degree of protection	IEC 60529:2001	
Measurement accuracy		
Accuracy	digital: - measuring range up to 15 m (49 feet): ±2 mm (0.08 inch) - measuring range > 15 m (49 feet): ±10 mm (0.39 inch) analog: 0.02 % sum of non-linearity, non-repeatability and hysteresis included in the maximum measured error	
Operating conditions		
Process conditions		
Process temperature	-40 ... 200 °C (-40 ... 392 °F)	
Process pressure (static pressure)	-1 ... 40 bar (-14.5 ... 580.2 psi)	
Dielectric constant	rod probe: DC ≥ 1.6 coax probe: DC ≥ 1.4 rope probe: DC ≥ 1.6	
Ambient conditions		
Ambient temperature	-40 ... 80 °C (-40 ... 176 °F)	
Mechanical specifications		
Degree of protection	IP68, NEMA 6P (24 hours in water 1.83 m (6 ft) deep) IP66, NEMA 4X	
Connection	gland M20 thread M20, G1/2, NPT1/2 device plug M12, 7/8 in	
Material	materials in contact with process : rod probe, coax probe: 1.4404/316L rope probe: 1.4401/316 process connections: 1.4404/316L, 2.4602/Alloy C22 process membran, seal: Viton, EPDM, Kalrez, gas-tight feed through as option	
Process connection	threads: from 3/4 in flanges: DIN EN from DN40, ANSI from 1-1/2 in, JIS from DN40	
Data for application in connection with hazardous areas		
EU-type examination certificate	see instruction manuals (SI)	
Directive conformity		
Directive 2014/34/EU	EN 60079-0:2012+A11:2013 , EN 60079-1:2007 , EN 60079-11:2012 , EN 60079-15:2010 , EN 60079-26:2007 , EN 60079-31:2009	
International approvals		
IECEx approval	see instruction manuals (SI)	
Certificates and approvals		
Overspill protection	see approval (ZE)	
Telecommunications	radio license FCC	

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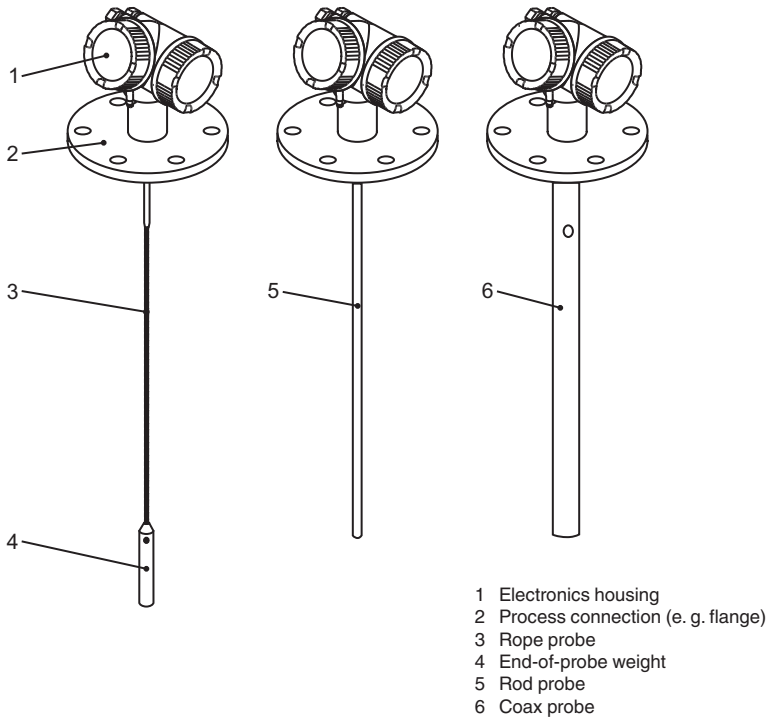
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Technical Data

General information	
Supplementary documentation	technical information (TI) manuals, brief instructions (BA, KA) instruction manuals (SI) approval (ZE)
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .
Accessories	
Designation	see technical information (TI)

Assembly



- 1 Electronics housing
- 2 Process connection (e. g. flange)
- 3 Rope probe
- 4 End-of-probe weight
- 5 Rod probe
- 6 Coax probe

Type Code

This overview does not mark options which are mutually exclusive.
 Option with * = on request/in preparation
 Option with ** = multiple options can be selected

L	T	C	5	1	-	(1)	-	(2)	(3)	(4)	-	(5)	(6)	(7)	-	(8)	(9)	.	L
---	---	---	---	---	---	-----	---	-----	-----	-----	---	-----	-----	-----	---	-----	-----	---	---

LTC51	Device
LTC51	Guided level radar

(1)	Type of probe
1	in mm, rod Ø8 mm, 1.4404/316L
2	in mm, rope Ø4 mm, 1.4401/316, max. 150 mm nozzle height, center rod
3	in inch, rope Ø1/6 inch, 1.4401/316, max. 6 in nozzle height, center rod
4	in mm, coax, 1.4404/316L
5	in inch, rod Ø1/3 inch, 1.4404/316L
6	in mm, rod Ø12 mm, Alloy C
7	in inch, rod Ø1/2 inch, Alloy C
8	in mm, rod Ø12 mm, 1.4404/316L
9	in inch, rod Ø1/2 inch, 1.4404/316L
A	in mm, rod Ø16 mm, 1.4404/316L, 500 mm divisible
B	in inch, rod Ø0,63 inch, 1.4404/316L, 20 inch divisible
C	in mm, rod Ø16 mm, 1.4404/316L, 1000 mm divisible
D	in inch, rod Ø0,63 inch, 1.4404/316L, 40 inch divisible
E	in mm, rope Ø4 mm, 1.4401/316, max. 300 mm nozzle height, center rod
F	in inch, rope Ø1/6 inch, 1.4401/316, max. 12 inch nozzle height, center rod

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Type Code

(1)	Type of probe
G	in inch, coax, 1.4404/316L
H	in mm, coax, Alloy C
K	in inch, coax, Alloy C
X	Special version

(2)	Process connection
Flanges	
A51	1-1/2 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A52	1-1/2 inch 300 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A61	2 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A62	2 inch 300 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A81	3 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A82	3 inch 300 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A91	4 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
A92	4 inch 300 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
AA1	6 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
AB1	8 inch 150 lbs RF, 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C51	1-1/2 inch 150 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C52	1-1/2 inch 300 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C61	2 inch 150 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C62	2 inch 300 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C65	DN40 PN10-40, Alloy C > 1.4404/316L, EN 1092-1
C73	DN50 PN10/16, Alloy C > 1.4404/316L, EN 1092-1
C75	DN50 PN25/40, Alloy C > 1.4404/316L, EN 1092-1
C81	3 inch 150 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C82	3 inch 300 lbs, Alloy C > 1.4401/316/1.4404/316L, ANSI B16.5 (CRN)
C93	DN80 PN10/16, Alloy C > 1.4404/316L, EN 1092-1
C95	DN100 PN10/16, Alloy C > 1.4404/316L, EN 1092-1
CA3	DN80 PN25/40, Alloy C > 1.4404/316L, EN 1092-1
CA5	DN100 PN25/40, Alloy C > 1.4404/316L, EN 1092-1
D65	DN40 PN10/40 B1, 1.4404/316L, EN 1092-1
D73	DN50 PN10/16 B1, 1.4404/316L, EN 1092-1
D75	DN50 PN25/40 B1, 1.4404/316L, EN 1092-1
D93	DN80 PN10/16 B1, 1.4404/316L, EN 1092-1
DA3	DN80 PN25/40 B1, 1.4404/316L, EN 1092-1
DA5	DN100 PN25/40 B1, 1.4404/316L, EN 1092-1
DC3	DN150 PN10/16 B1, 1.4404/316L, EN 1092-1
DE3	DN200 PN16 B1, 1.4404/316L, Flansch EN 1092-1
J16	10K 50A RF, 1.4404/316L, JIS B2220
J17	10K 80A RF, 1.4404/316L, JIS B2220
J18	10K 40A RF, 1.4404/316L, JIS B2220
J19	10K 100A RF, 1.4404/316L, JIS B2220
Threads	
G21	G3/4, ISO 228, 1.4404/316L
G51	G1-1/2, ISO 228, 1.4404/316L (CRN)
N21	MNPT3/4, ANSI, 1.4404/316L
N51	MNPT1-1/2, ANSI, 1.4404/316L (CRN)
XXX	Special version

(3)	Electrical connection
A	Gland M20, IP66/68, NEMA 4X/6P
B	Thread M20, IP66/68, NEMA 4X/6P
C	Thread G1/2, IP66/68, NEMA 4X/6P
D	Thread NPT1/2, IP66/68, NEMA 4X/6P
I	Connector M12, IP66/68, NEMA 4X/6P
M	Connector 7/8 inch, IP66/68, NEMA 4X/6P
X	Special version

(4)	Seal
3	EPDM, -40 to 120 °C
4	Kalrez, -20 to 200 °C, saturated steam max. 150 °C
5	Viton, -30 to 150 °C
X	Special version

(5)	Housing
A1	GT19 dual compartment, plastics PBT

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Type Code

(5)	Housing
A2	GT20 dual compartment, alu coated
A3	GT18 dual compartment, 1.4404/316L
XX	Special version

(6)	Electrical output
AH	4-wire, 90 to 253 V AC, 4 to 20 mA, HART
DH	4-wire, 10.4 to 48 V DC, 4 to 20 mA, HART
ID	2-wire, 4 to 20 mA, HART, switching output
IE	2-wire, 4 to 20 mA, HART, 4 to 20 mA
IH	2-wire, 4 to 20 mA, HART
PA	2-wire, PROFIBUS PA, switching output
XX	Special version

(7)	Display, operation
B	Without display, via communicator
D	SD02 4-line, push-buttons and data backup function
E	* SD03 4-line, illuminated, touch control and data backup function

(8)	Approval
C1	* CSA C/US IS Cl.I,II,III Div.1 Gr.A-G, NI Cl.1 Div.2, Ex ia
C2	* CSA C/US XP Cl.I,II,III Div.1 Gr.A-G, NI Cl.1 Div.2, Ex d
CG	CSA C/US General Purpose
E1	ATEX II 1G Ex ia IIC T6...T1 Ga
E2	ATEX II 1/3G Ex ic [ia] IIC T6...T1 Ga/Gc
E3	ATEX II 3G Ex nA IIC T6...T1 Gc
E4	ATEX II 3G Ex ic IIC T6...T1 Gc
ED	ATEX II 1/2G Ex d [ia] IIC T6...T1 Ga/Gc
EG	* ATEX II 1/2G Ex d [ia] IIC T6...T1 Ga/Gb or 1/2 D Ex ta IIIC Txx°C Da/Db
EW	ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb or 1/2 G Ex d [ia] IIC T6...T1 Ga/Gb
EX	ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb
FI	* FM IS Cl.I,II,III Div.1 Gr.A-G, AEx ia, NI Cl.1 Div.2
FN	* FM XP Cl.I,II,III Div.1 Gr.A-G, AEx d, NI Cl.1 Div.2
IA	IECEX Ex ia T6...T1 Ga
IB	IECEX Ex ia IIC T6...T1 Ga/Gb
IC	IECEX Ex d [ia] IIC T6...T1 Ga/Gb
ID	IECEX Ex ic [ia] IIC T6...T1 Ga/Gc
IG	IECEX Ex nA IIC T6...T1 Gc
IH	IECEX Ex ic IIC T6...T1 Gc
NA	Version for non-explosion-hazardous area
SX	* ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb or 1/2 D Ex ia IIIC Txx°C Da/D

Additional Options

(9)	Additional operation language
C	French
D	Spanish
E	Italian
F	Dutch
G	Portuguese
H	Polish
I	Russian
J	Turkish
K	Chinese abbreviations
L	Japanese
M	Korean
O	Bahasa
Q	Vietnamese
R	Czech



(9)	Calibration
4	5-point linearity protocol

(9)	Service **
T	Customized parametrization HART
U	Customized parametrization PA

Type Code

(9) Test, certificate **	
A	Material certificate, wetted metallic parts, EN 10204-3.1 inspection certificate
(9) Additional approval **	
S	SIL Functional Safety
W	WHG overfill protection
(9) Probe design **	
B	Sensor remote, 3 m cable, detachable, with mounting bracket
C	Sensor remote, 6 m cable, detachable, with mounting bracket
D	Sensor remote, 9 m cable, detachable, with mounting bracket
(9) Firmware version	
5	01.00.zz, HART, DevRev01
7	01.00.zz, PROFIBUS PA, DevRev01
(9) Marking	
1	Tagging (TAG), see additional specification
2	Bus address, see additional specifications
L Probe length	
Length	Length depends on chosen type of probe: - Rod probe: length in mm, 16 mm to 10000 mm - Rope probe: length in mm, 16 mm to 45000 mm - Coax probe: length in mm, 16 mm to 6000 mm

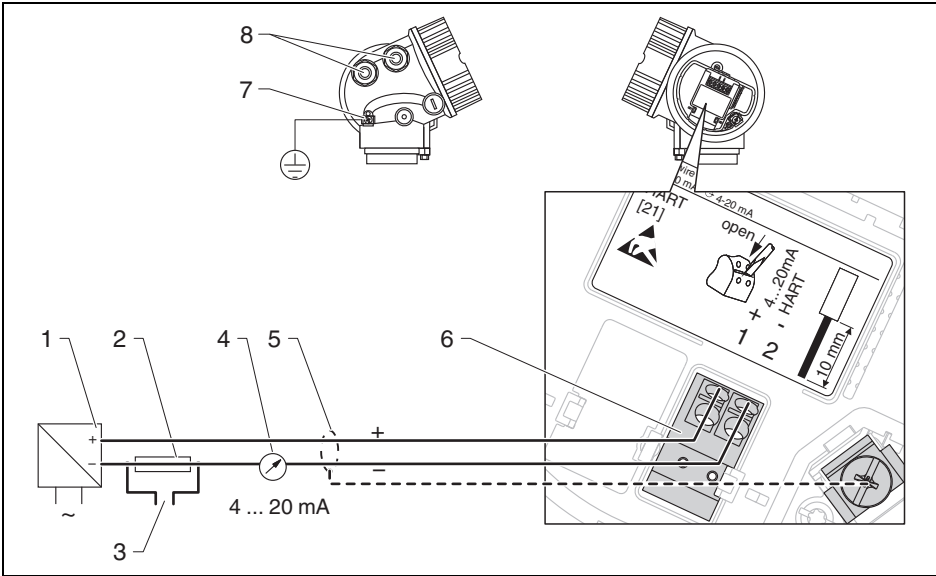
Accessories

	PACTware 5.0	FDT Framework
	DTM Level Control	DTM collection

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Connection

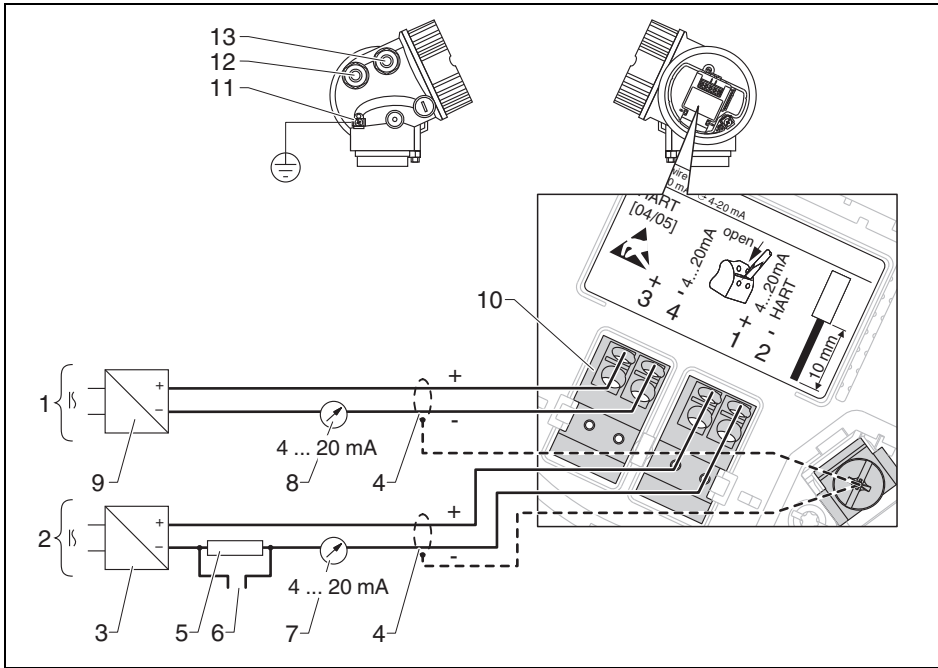
2-wire, 4 mA ... 20 mA HART (version IH)



- 1 Active barrier with power supply (e. g. KCD2-STC-Ex1): observe terminal voltage
- 2 HART communication resistor ($\geq 250 \Omega$): observe maximum load
- 3 Connection for optional field communicator
- 4 Analog display device: observe maximum load
- 5 Cable screen; observe cable specification
- 6 4 mA ... 20 mA HART (passive): terminals 1 and 2
- 7 Terminal for potential equalization line
- 8 Cable entry

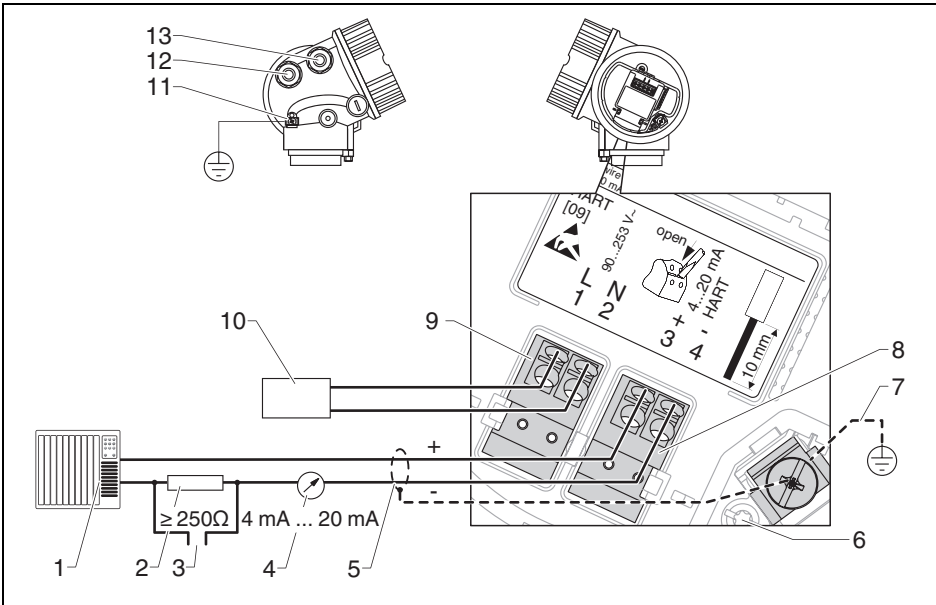
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2-wire, 4 mA ... 20 mA HART, 4 mA ... 20 mA (version IE)



- 1 Connection current output 2
- 2 Connection current output 1
- 3 Supply voltage for current output 1 (e. g. KCD2-STC-Ex1); observe terminal voltage
- 4 Cable screen; observe cable specification
- 5 HART communication resistor ($\geq 250 \Omega$); observe maximum load
- 6 Connection for optional field communicator
- 7 Analog display device; observe maximum load
- 8 Analog display device; observe maximum load
- 9 Supply voltage for current output 2 (e. g. KCD2-STC-Ex1); observe terminal voltage
- 10 Current output 2: terminals 3 and 4
- 11 Terminal for the potential equalization line
- 12 Cable entry for current output 1
- 13 Cable entry for current output 2

4-wire: 4 ... 20 mA HART (90 ... 253 V AC) (version AH)

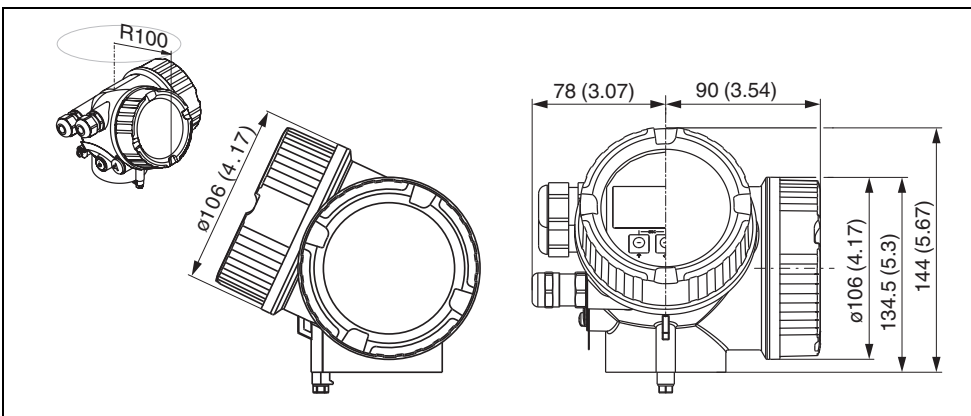


- 1 Evaluation unit, e. g. PLC
- 2 HART communication resistor ($\geq 250 \Omega$): observe maximum load
- 3 Connection for optional filed communicator
- 4 Analog display device: observe maximum load
- 5 Signal cable including screening (if required), observe cable specification
- 6 Protective connection; do not disconnect!
- 7 Protective earth, observe cable specification
- 8 4 mA ... 20 mA HART (active): terminals 3 and 4
- 9 Supply voltage: terminals 1 and 2
- 10 Supply voltage: observe terminal voltage, observe cable specification
- 11 Terminal for potential equalization
- 12 Cable entry for signal line
- 13 Cable entry for power supply

Dimensions

Housing GT19, plastics PBT (version A1)

Dimensions in mm (in)



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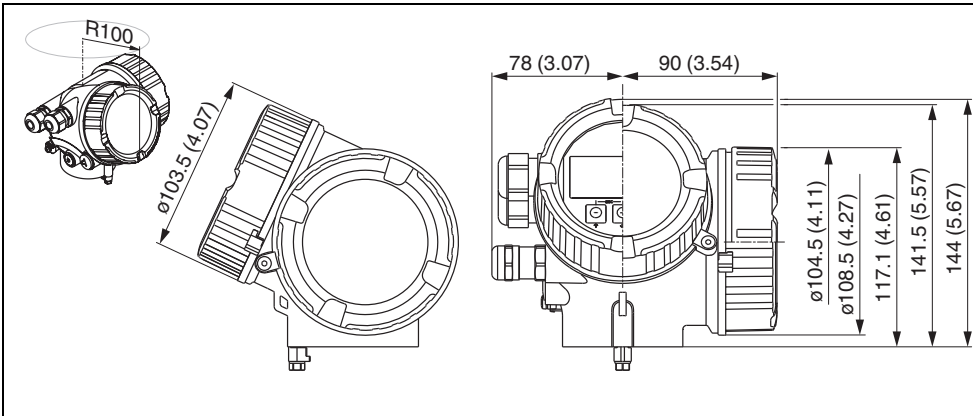
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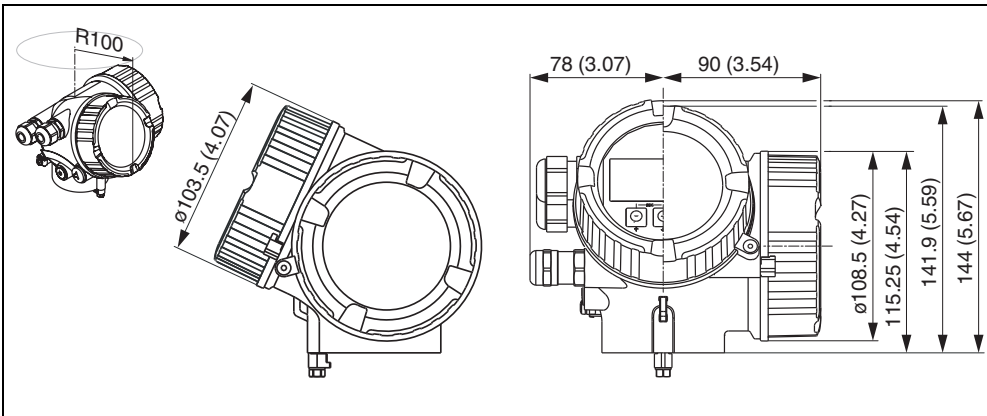
Housing GT20, alu coated (version A2)

Dimensions in mm (in)



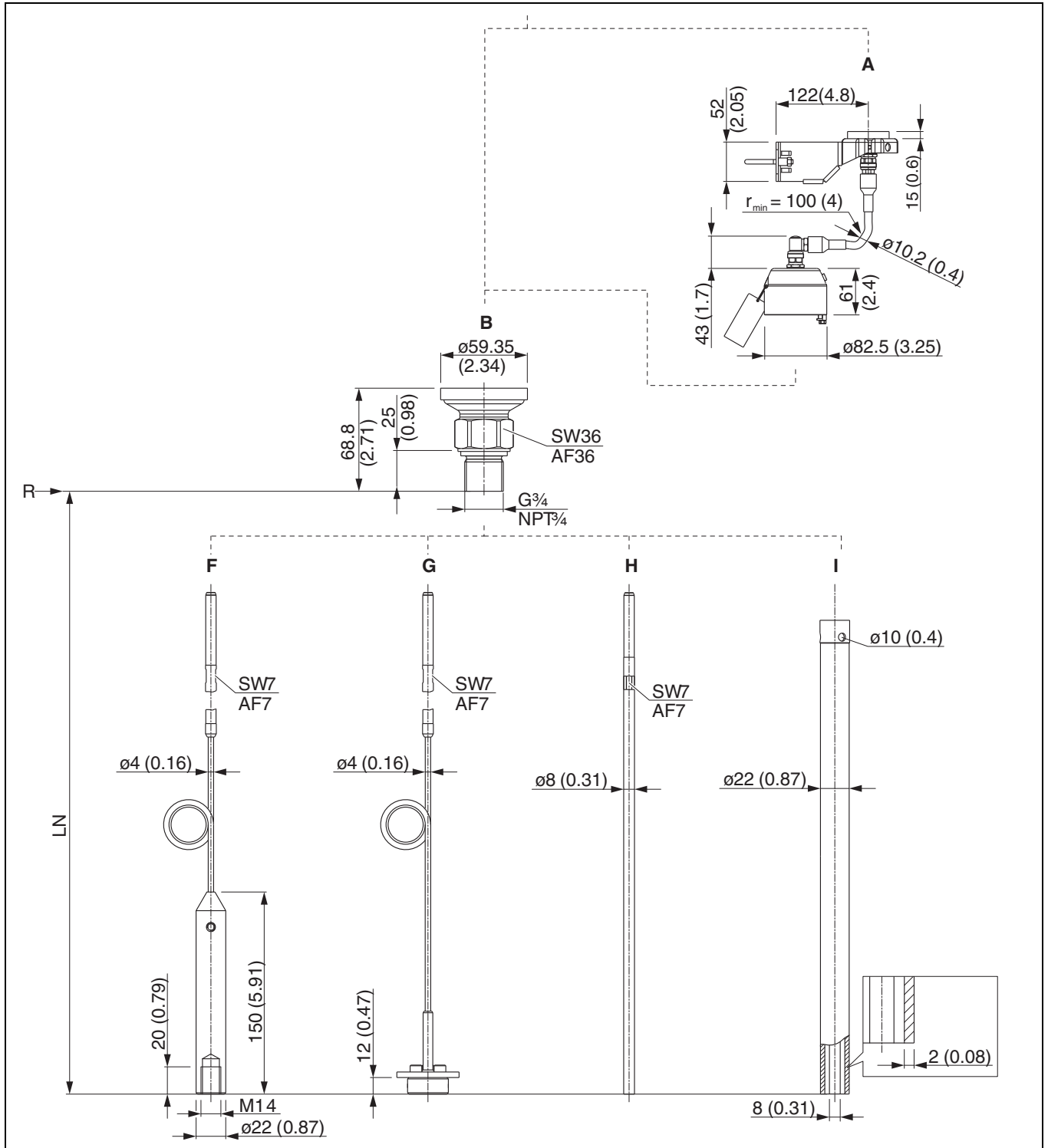
Housing GT18, stainless steel (version A3)

Dimensions in mm (in)



Process connections (G3/4, NPT3/4) and probes

Dimensions in mm (in)



- A** Mounting bracket for probe design "Sensor remote" (feature "Probe design")
- B** Thread ISO228 G3/4 or ANSI MNPT3/4 (feature "Process connection")
- F** Rope probe 4 mm or 1/6 in (feature "Probe")
- G** Rope probe 4 mm or 1/6 in; centering disk on request (feature "Probe")
- H** Rod probe 8 mm or 1/3 in (feature "Probe")
- I** Coax probe (feature "Probe")
- LN** Length of probe
- R** Reference point of the measurement

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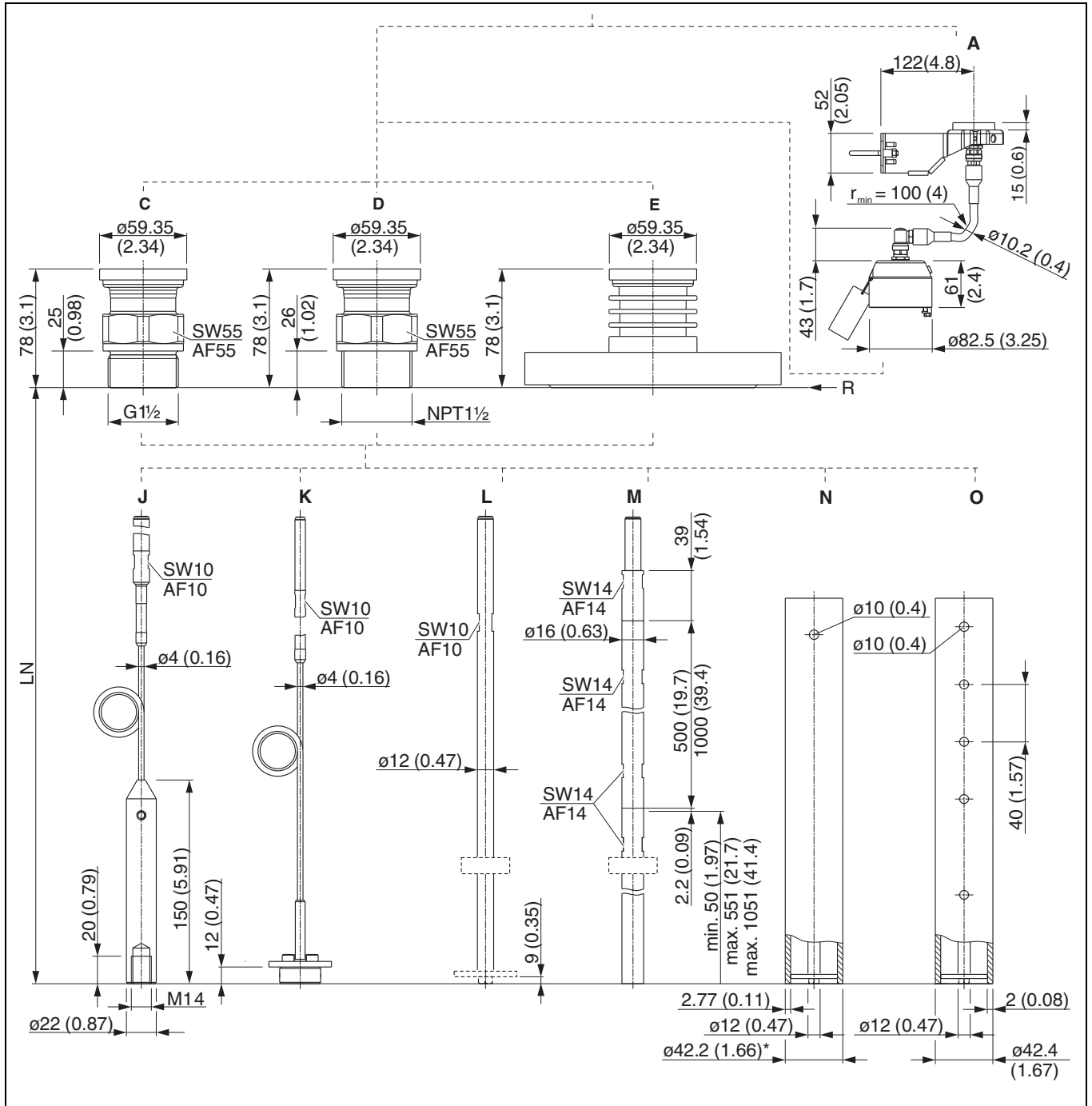
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Process connections (G1-1/2, NPT1-1/2, flange) and probes

Dimensions in mm (in)



- A Mounting bracket for probe design "Sensor remote" (feature "Probe design")
- C Thread ISO228 G1-1/2 (feature "Process connection")
- D Thread ANSI MNPT1-1/2 (feature "Process connection")
- E Flange ANSI B16.5, EN1092-1, JIS B2220 (feature "Process connection")
- J Rope probe 4 mm or 1/6 in (feature "Probe")
- K Rope probe 4 mm or 1/6 in; centering disk on request (feature "Probe")
- L Rod probe 12 mm or 1/2 in; centering disk on request (feature "Probe")
- M Rod probe 16 mm or 0.63 in, 20 in or 40 in divisible; centering disk on request (feature "Probe")
- N Coax probe; Alloy C (feature "Probe")
- O Coax probe; 316L (feature "Probe")
- LN Length of probe
- R Reference point of the measurement

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