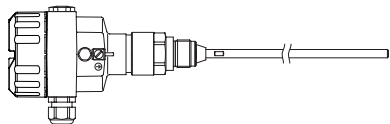
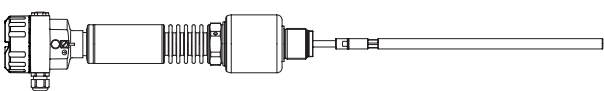


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Subject to change.

All dimensions in mm (inches).

All prices in Euro (€) or USD (\$),  
excluding VAT.

All EURO prices are EXW Betzigau,  
all USD prices are EXW Memphis,  
excluding packaging costs.

Valid: From 01.04.2021 until 31.03.2022, unless otherwise agreed.

By publishing this selection list all other lists become invalid.

We assume no liability for typing errors.

Different variations to those specified are possible.  
Please contact our technical consultants.

## Overview

- Guided microwave for continuous level and interface measurement of liquids
- TDR technology
- Works in applications with steam, buildup, foam generation or condensation
- Wide range of applications
- Maintenance free
- Compact unit
- Standard version
- High temperature and high pressure version
- Rod, rope or coax version
- Cutable probes
- High chemical resistance of the probe
- Second line of defense (optional)
- Electronic 2-wire 4 - 20 mA, HART
- Integrated Display and Adjustment Module
- Extensive Diagnostics
- Multiple approvals available
- 2011/65/EU RoHS conform

Approvals	CE			
	ATEX / IEC-Ex / INMETRO	Zone 0 and 0/1	Intrinsically Safe	
		Zone 1 and 0/1	Flameproof	
		Zone 20 and 20/21	Dust Ignition Proof	
	FM	General purp.		
		Cl. I, II, III Div. 1	Intrinsically Safe	
		Cl. I Div. 1	Explosionproof	
		Cl. I, II, III Div. 2	Non incensive	
		Cl. II, III Div. 1	Dust Ignition Proof	
	TR-CU	Ordinary Locations		
		Zone 0 and 0/1	Intrinsically Safe	
		Zone 1 and 0/1	Flameproof	
		Zone 20 and 20/21	Dust Ignition Proof	
	Functional safety	IEC 61508	SIL2 single-channel / SIL3 multi-channel	

Electronics	Operating voltage	9.6 ... 35 V DC, 2-wire loop Limited voltage range for Ex ia and with Display and Adjustment Module, see page 20
	Measuring signal	Current loop 4 - 20 mA according to NAMUR NE 43, HART
	Display and Adjustment Module	<ul style="list-style-type: none"> <li>• LCD-display with background light</li> <li>• Display of actual measurement</li> <li>• Display of setup parameters (e.g. min. and max adjustment, material properties, damping, linearisation, false signal suppression)</li> <li>• After programming the display can be removed. The setted parameters can be copied to other units.</li> <li>• Display of diagnostics data (e.g. temperature, echo curve, trailing pointer) simulation of level)</li> <li>• Operation via push buttons</li> </ul>

Housing	Material, version	Aluminium, single- or double chamber (powder coated) Stainless steel, single chamber (electro polished)
	Ingress protection	Type 6P/ IP66/ IP68 (0.2 bar)
	Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)

Blocking distance	Upper/ lower blocking distance	No measurement is possible within this area. Observe increased deviation of measurement value next to the blocking distance (details see Operating instructions).																				
		<table border="1"> <thead> <tr> <th>(in mm)</th> <th>Rope /Rod</th> <th>Coaxl</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>80</td> <td>30</td> </tr> <tr> <td>Oil</td> <td>150</td> <td>100</td> </tr> </tbody> </table>	(in mm)	Rope /Rod	Coaxl	Water	80	30	Oil	150	100	<table border="1"> <thead> <tr> <th>(in mm)</th> <th>Rope /Rod</th> <th>Coaxl</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>0</td> <td>0</td> </tr> <tr> <td>Oil</td> <td>50-200</td> <td>50</td> </tr> </tbody> </table>	(in mm)	Rope /Rod	Coaxl	Water	0	0	Oil	50-200	50	<p>The diagram illustrates the blocking distances and measuring range for two probe types: Rope and Rod/coax. The 'Upper blocking distance' is the area near the probe tip where measurement is not possible. The 'Measuring range' is the central area where measurement is possible. The 'Lower blocking distance' is the area at the bottom of the probe where measurement is not possible. The diagram shows that for the Rope probe, the upper blocking distance is larger than for the Rod/coax probe, while the lower blocking distance is smaller.</p>
(in mm)	Rope /Rod	Coaxl																				
Water	80	30																				
Oil	150	100																				
(in mm)	Rope /Rod	Coaxl																				
Water	0	0																				
Oil	50-200	50																				

## Overview

### NG 8100 Standard version

Length of extension "L"	Rod Rope Coax	300 .. 6,000 mm (11.81 .. 236") 500 .. 75,000 mm (19.7 .. 2,953") 300 .. 6,000 mm (11.81 .. 236")
Diameter	Rod Rope Coax	ø8 mm (ø0.31") ø12 mm (ø0.47") ø2 mm (ø0.08") ø4 mm (ø0.16") ø21.3 mm (ø0.84") ø42.2 mm (ø1.67")
Material	Rod Rope Gravity weight Coax	1.4404 (SS316L) 1.4401 (SS316) 1.4404 (SS316L) 1.4404 (SS316L)/ PFA
		Lead-through of probe to process side (rod/ rope/ coax lead-through): Isolation material: PEEK or PPS Sealing: FKM, FFKM, EPDM or silicone FEP coated
		Process connection: Thread 1.4404 (SS316L) with sealing Klingersil C-4400 Flange 1.4435 (SS316L), welded
		Second line of defense* (optional): Borosilicate glass GPC 540 / 316L
Process temperature (thread- or flange temperatur)		Depending on lead-through lead-through of probe to process side (rod/ rope/ coax lead-through):  Sealing FKM, EPDM or silicone FEP coated: -40 ... +150°C (-40 ... +302°F) with isolation material PEEK -40 ... +80°C (-40 ... +176°F) with isolation material PPS  Sealing FFKM: -20 ... +150°C (-4 ... +302°F) with isolation material PEEK -20 ... +200°C (-4 ... +392°F) with isolation material PEEK and temperature adapter
Process pressure		Depending on lead-through lead-through of probe to process side (rod/ rope/ coax lead-through): -1 .. 40 bar (-14.5 ... +580 psi g) with isolation material PEEK -1 .. 6 bar (-14.5 ... +87 psi g) with isolation material PPS  For flanges the max. pressure rating of the flange must be additionally observed.
Lateral load/ tensile load		Max. lateral load (torque): Rod ø8 mm 10 Nm (7.38 lbf ft) Rod ø12 mm 30 Nm (22.13 lbf ft) Coax ø21.3 mm 60 Nm (44 lbf ft) Coax ø42.2 mm 300 Nm (221 lbf ft)  Max. tensile load: Rope ø2 mm 1.5 KN (337 lbf) Rope ø4 mm 2.5 KN (562 lbf)
Dielectric constant of the medium	Rope / Rod Coax	DK ≥1.6 DK ≥1.4



\* The Second Line of Defense is a second level of the process separation in the form of a gas-tight feedthrough in the lower part of the housing, preventing product from penetrating into the housing.

## Overview

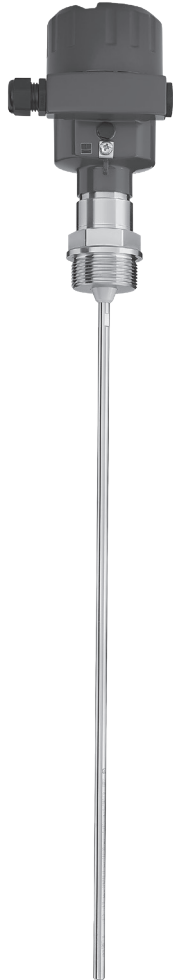
### NG 8200 High temperature and high pressure version

Length of extension "L"	Rod Rope Coax	300 .. 6,000 mm (11.81 .. 236") 500 .. 60,000 mm (19.7 .. 2,362") 300 .. 6,000 mm (11.81 .. 236")
Diameter	Rod Rope Coax	ø8 mm (ø0.31") ø16 mm (ø0.63") ø2 mm (ø0.08") ø4 mm (ø0.16") ø21.3 mm (ø0.84") ø42.2 mm (ø1.67")
Material	Rod Rope Gravity weight Coax	1.4404 (SS316L) 1.4401 (SS316) 1.4404 (SS316L) 1.4404 (SS316L)
	Lead-through of probe to process side (rod/ rope/ coax lead-through): Version:            Isolation material:            Sealing: 250°C            PEEK                                  FFKM 280°C/450°C    Ceramic                              Graphite	
	Process connection: Thread                                  1.4404 (SS316L) For 250°C version with sealing Klingersil C-4400 Flange                                  1.4435 (SS316L), welded	
	Second line of defense* (optional): Borosilikate glas GPC 540 / 316L	
Process temperature (thread- or flange temperatur)	Selectable	-20 ... +250°C (-4 ... +482°F) -196 ... +280°C (-321 ... +536°F) -196 ... +450°C (-321 ... +842°F)
Process pressure	250°C version 280°C/450°C version	-1 .. 100 bar (-14.5 +1.450 psi g) -1 .. 400 bar (-14.5 +5.800 psi g)
	For flanges the max. pressure rating of the flange must be additionally observed. Derating of max. pressure with temperature must be observed (details see operating instructions).	
Lateral load/ tensile load	Max. lateral load (torque): Rod ø8 mm                              4 Nm (3 lbf ft) Rod ø16 mm                             30 Nm (22.13 lbf ft) Coax ø21.3 mm                        60 Nm (44 lbf ft) Coax ø42.2 mm                        300 Nm (221 lbf ft)	
	Max. tensile load: Rope ø2 mm                             1.5 KN (337 lbf) Rope ø4 mm                             2.5 KN (562 lbf)	
Dielectric constant of the medium	Rope / Rod Coax	DK ≥1.6 DK ≥1.4

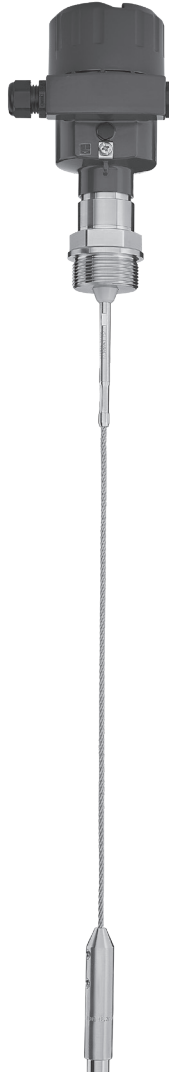


\* The Second Line of Defense is a second level of the process separation in the form of a gas-tight feedthrough in the lower part of the housing, preventing product from penetrating into the housing.

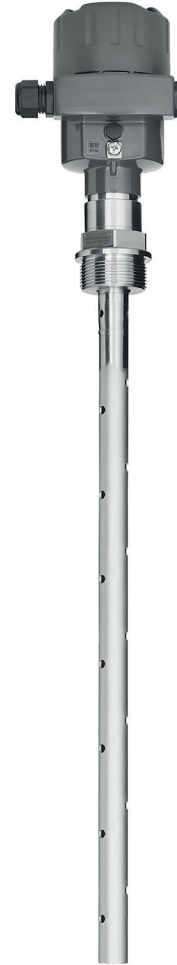
## NG 8100 Standard version



Rod version  
 (pos.8 E, pos.5+6 3D)



Rope version  
 (pos.8 A, pos.5+6 3D)



Coax version  
 (pos.8 L, pos.5+6 3D)

### Cable entries (by default)

Depending on model selected, the following cable entries are supported (details and options see pos.13 on page 11):

Version:	Cable entry:
CE, ATEX, IEC-Ex, INMETRO, TR-CU	M20 x 1.5 1x screwed cable gland, 1x blind plug
FM	NPT ½" tapered ANSI B1.20.1 1x open conduit + 1x blind plu



Display and Adjustment Module  
 (pos. 9)

### Housing

Standard housing is aluminium single chamber.  
 Alternative housings see option pos.16 on page 11.

## NG 8100 Standard version

### Basic type

#### NG 8100

pos.2

#### Certificate (detailed Ex-markings: see page 19)

	Gas	Dust	Protection method
0	CE/ TR-CU	-	-
Q	ATEX	Zone 0 and 0/1	Intrinsically Safe
Y	ATEX	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
V	ATEX	Zone 1 and 0/1	Flameproof
W	ATEX	-	Zone 20 and 20/21
B	IEC Ex	Zone 0 and 0/1	Intrinsically Safe
D	IEC Ex	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
C	IEC Ex	Zone 1 and 0/1	Flameproof
A	IEC Ex	-	Zone 20 and 20/21
F	INMETRO	Zone 0 and 0/1	Intrinsically Safe
G	INMETRO	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
K	INMETRO	Zone 1 and 0/1	Flameproof
L	INMETRO	-	Zone 20 and 20/21
M	FM	-	General purpose
H	FM	Cl. I Div. 2	Cl. II, III Div. 2
P	FM	Cl. I Div. 1	Cl. II, III Div. 1
U	FM	Cl. I Div. 1	-
N	FM	-	Cl. II, III Div. 1
X	TR-CU	Zone 0 and 0/1	-
J	TR-CU	Zone 0 and 0/1	Zone 20 and 20/21
R	TR-CU	Zone 1 and 0/1	-
1	TR-CU	-	Zone 20 and 20/21

pos.3

#### Process temperature/ Second line of defense/ Lead-through of probe to process side

Process-temperature	Second line of defense	Lead-through of probe		Available with certificate pos.2			
		Sealing	Isolation	0,Q,B, F,M,X	V,C,K, U,R	Y,W,D,A, G,L,J,1	P,H, N
A	-40 ... +80°C	without	FKM	PPS <sup>(9)</sup>	•	•	•
F	-40 ... +150°C	without	FKM	PEEK	•	•	•
Q	-40 ... +80°C	with	FKM	PPS <sup>(9)</sup>	•	•	•
G	-40 ... +150°C	with	FKM	PEEK	•	•	•
D	-20 ... +150°C	without	FFKM	PEEK	•	•	•
K	-20 ... +200°C	without	FFKM	PEEK	•	•	•
P	-20 ... +150°C	with	FFKM	PEEK	•	•	•
L	-20 ... +200°C	with	FFKM	PEEK	•	•	•
B	-40 ... +80°C	without	EPDM	PPS <sup>(9)</sup>	•	•	•
H	-40 ... +150°C	without	EPDM	PEEK	•	•	•
R	-40 ... +80°C	with	EPDM	PPS <sup>(9)</sup>	•	•	•
M	-40 ... +150°C	with	EPDM	PEEK	•	•	•
C	-40 ... +80°C	without	Silicon	PPS <sup>(9)</sup>	•	•	•
E	-40 ... +150°C	without	Silicon	PEEK	•	•	•
S	-40 ... +80°C	with	Silicon	PPS <sup>(9)</sup>	•	•	•
N	-40 ... +150°C	mit	Silicon	PEEK	•	•	•

pos.4

#### Electronic module

A	2-wire 4 - 20 mA, HART
B	2-wire 4 - 20 mA, HART, with SIL 2/3

pos.5+6

#### Process connection

1E	Thread M30 x 1.5	PN40, DIN3852-A
0S	Thread ¾" NPT	PN6, tapered, ANSI/ ASME B1.20.1 <sup>(1)</sup>
0A	Thread ¾" NPT	PN40, tapered, ANSI/ ASME B1.20.1
0B	Thread 1" NPT	PN40, tapered, ANSI/ ASME B1.20.1
0D	Thread 1½" NPT	PN40, tapered, ANSI/ ASME B1.20.1
3S	Thread G ¾"	PN6, DIN3852-A <sup>(1)</sup>
3A	Thread G ¾"	PN40, DIN3852-A
3B	Thread G 1"	PN40, DIN3852-A
3D	Thread G 1½"	PN40, DIN3852-A
5A	Flange 1" 150 lbs	RF, ASME B16.5
5B	Flange 1" 300 lbs	RF, ASME B16.5
5C	Flange 1" 600 lbs	RF, ASME B16.5
5D	Flange 1½" 150 lbs	RF, ASME B16.5
5E	Flange 1½" 300 lbs	RF, ASME B16.5
5F	Flange 1½" 600 lbs	RF, ASME B16.5
5G	Flange 2" 150 lbs	RF, ASME B16.5
5H	Flange 2" 300 lbs	RF, ASME B16.5
5J	Flange 2" 600 lbs	RF, ASME B16.5

continuation flanges: see next page

## NG 8100 Standard version

5K	Flange 3"	150 lbs	RF, ASME B16.5	.....	•
5L	Flange 3"	300 lbs	RF, ASME B16.5	.....	•
5M	Flange 3"	600 lbs	RF, ASME B16.5	.....	•
5N	Flange 4"	150 lbs	RF, ASME B16.5	.....	•
5P	Flange 4"	300 lbs	RF, ASME B16.5	.....	•
5Q	Flange 4"	600 lbs	RF, ASME B16.5	.....	•
6B	Flange DN25, PN40		EN 1092-1 Form B1	.....	•
6D	Flange DN40, PN40		EN 1092-1 Form B1	.....	•
6E	Flange DN50, PN16		EN 1092-1 Form B1 <sup>(2)</sup>	.....	•
6F	Flange DN50, PN40		EN 1092-1 Form B1	.....	•
6G	Flange DN65, PN40		EN 1092-1 Form B1 <sup>(2)</sup>	.....	•
6H	Flange DN80, PN40		EN 1092-1 Form B1	.....	•
6J	Flange DN100, PN16		EN 1092-1 Form B1	.....	•
6K	Flange DN100, PN40		EN 1092-1 Form B1	.....	•
6L	Flange DN150, PN16		EN 1092-1 Form B1	.....	•
6M	Flange DN150, PN40		EN 1092-1 Form B1	.....	•
6N	Flange DN200, PN10		EN 1092-1 Form B1	.....	•
6P	Flange DN200, PN40		EN 1092-1 Form B1	.....	•
<b>pos.8 Type and length of extension "L" <sup>(3)</sup></b>					
E	Rod ø8 mm (0.31")				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300mm (11.81"), max. 6,000mm (236")	.....	•
F	Rod ø12 mm (0.47") <sup>(4)</sup>				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300mm (11.81"), max. 6,000mm (236")	.....	•
B	Rope ø2 mm (0.08") with gravity weight				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 500mm (19.7"), max. 75,000mm (2,953")	.....	•
U	Rope ø4 mm (0.16") without gravity weight				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 500mm (19.7"), max. 75,000mm (2,953")	.....	•
A	Rope ø4 mm (0.16") with gravity weight				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 500mm (19.7"), max. 75,000mm (2,953")	.....	•
K	Coax ø21.3mm (0.84") with single hole <sup>(7,8)</sup>	Base price			•
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300mm (11.81"), max. 6,000mm (236")	.....	•
L	Coax ø21.3mm (0.84") with multiple hole <sup>(7,8)</sup>	Base price			•
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300mm (11.81"), max. 6,000mm (236")	.....	•
P	Coax ø42.2mm (1.67") with multiple hole <sup>(4,7)</sup>	Base price			•
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300mm (11.81"), max. 6,000mm (236")	.....	•
<b>pos.9 Display and Adjustment Module / Inspection window in lid</b>					
0	without Display and Adjustment Module, without inspection window in lid				•
F	without Display and Adjustment Module, with inspection window in lid				•
A	with Display and Adjustment Module, with inspection window in lid				•
B	with Display and Adjustment Module (laterally in housing alu double chamber), with inspection window in lid <sup>(6)</sup>				•
<b>pos.10 Length of rigid part "L1"</b>					
0	without (for rod and coax version)				•
Z	L1 = customer specified (for rope version)				
			Price per 100mm (3.94") of part thereof (starting from 0mm), min. 100 mm (3.94"), max. L - 300mm (11.8") or 1,000 mm (39.4")	.....	•

(1) Process temperature (pos.3) max. 80°C.

(2) Available with rod ø12mm (pos.8 F).

(3) Rope / rod can be cut and changed.

(4) Available with following process connections: all threads 1½", flange ASME 2" or bigger, flange DN50 or bigger, not with flange DN150 PN40 and DN200 PN40.

(6) Not available with certificates FM non incensive (pos.2 H), available with housing double chamber (pos.16 D).

(7) Not available with process temperature 80°C pos.3 A, Q, B, R, C, S.

(8) Not available with process connections pos.5+6 1E, 0S, 3S, 6E, 6G.

(9) Available with process connections threads ¾" PN6 (Pos.5+6 0S, 3S).

NG 8100	A					1			
position	1	2	3	4	5+6	7	8	9	10

L =	mm
L1 =	mm

← Order code

All positions are available with special design (use code "Z").

## NG 8200 High temperatur- and high pressure version



Rod version 450°C  
 (pos.3 2, Pos.8 E, Pos.5+6 3D)



Rope version 250°C  
 (pos. 3.3, Pos.8 A, Pos.5+6 3D)



Coax version 280°C  
 (pos. 3.1, Pos.8 P, Pos.5+6 3D)

### Cable entries (by default)

Depending on model selected, the following cable entries are supported (details and options see pos.13 on page 11):

Version:	Cable entry:
CE, ATEX, IEC-Ex, INMETRO, TR-CU	M20 x 1.5 1x screwed cable gland, 1x blind plug
FM	NPT ½" tapered ANSI B1.20.1 1x open conduit + 1x blind plu



Display and Adjustment Module  
 (pos. 9)

### Housing

Standard housing is aluminium single chamber.  
 Alternative housings see option pos.16 on page 11.



## NG 8200 High temperatur- and high pressure version

### Basic type

#### NG 8200

pos.2

#### Certificate (detailed Ex-markings: see page 19)

	Gas	Dust	Protection method
0	CE/ TR-CU	-	-
Q	ATEX	Zone 0 and 0/1	Intrinsically Safe
Y	ATEX	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
V	ATEX	Zone 1 and 0/1	Flameproof
W	ATEX	-	Dust Ignition Proof
B	IEC Ex	Zone 0 and 0/1	Intrinsically Safe
D	IEC Ex	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
C	IEC Ex	Zone 1 and 0/1	Flameproof
A	IEC Ex	-	Dust Ignition Proof
F	INMETRO	Zone 0 and 0/1	Intrinsically Safe
G	INMETRO	Zone 0 and 0/1	Intrinsically Safe, Dust Ignition Proof
K	INMETRO	Zone 1 and 0/1	Flameproof
L	INMETRO	-	Dust Ignition Proof
M	FM	-	General purpose
H	FM	Cl. I Div. 2	Cl. II, III Div. 2 Non incandive
P	FM	Cl. I Div. 1	Cl. II, III Div. 1 Intrinsically Safe
U	FM	Cl. I Div. 1	- Explosionproof
N	FM	-	Cl. II, III Div. 1 Dust Ignition Proof
X	TR-CU	Zone 0 and 0/1	- Intrinsically Safe
J	TR-CU	Zone 0 and 0/1	Zone 20 and 20/21 Intrinsically Safe, Dust Ignition Proof
R	TR-CU	Zone 1 and 0/1	- Flameproof
1	TR-CU	-	Zone 20 and 20/21 Dust Ignition Proof

pos.3

#### Process temperature/ Second line of defense / Lead-through of probe to process side

	Process-temperature	Second line of defense	Lead-through of probe	
			Sealing	Isolation
3	-20 ... +250°C <sup>(1)</sup>	with	FFKM	PEEK
1	-196 ... +280°C <sup>(2)</sup>	with	Graphite	Ceramic
2	-196 ... +450°C <sup>(2)</sup>	with	Graphite	Ceramic

pos.4

#### Electronic module

- A 2-wire 4 - 20 mA, HART
- B 2-wire 4 - 20 mA, HART, with SIL 2/3

pos.5+6

#### Process connection

				Available with type of extension pos.8					
				E	H	B	A	L	P
0A	Thread ¾" NPT	PN100, tapered, ANSI/ ASME B1.20.1						•	
0B	Thread 1" NPT	PN100, tapered, ANSI/ ASME B1.20.1		•		•	•	•	
0D	Thread 1½" NPT	PN100, tapered, ANSI/ ASME B1.20.1		•		•	•	•	
0E	Thread 1½" NPT	PN400, tapered, ANSI/ ASME B1.20.1			•	•	•		•
0F	Thread 2" NPT	PN100, tapered, ANSI/ ASME B1.20.1		•		•	•		
3A	Thread G ¾"	PN100, DIN3852-A						•	
3B	Thread G 1"	PN100, DIN3852-A		•		•	•	•	
3D	Thread G 1½"	PN100, DIN3852-A		•		•	•	•	
3E	Thread G 1½"	PN400, DIN3852-A			•	•	•		•
3F	Thread G 2"	PN100, DIN3852-A						•	
5A	Flange 1" 150 lbs	RF, ASME B16.5						•	
5B	Flange 1" 300 lbs	RF, ASME B16.5						•	
5C	Flange 1" 600 lbs	RF, ASME B16.5						•	
5D	Flange 1½" 150 lbs	RF, ASME B16.5						•	
5E	Flange 1½" 300 lbs	RF, ASME B16.5						•	
5F	Flange 1½" 600 lbs	RF, ASME B16.5						•	
5G	Flange 2" 150 lbs	RF, ASME B16.5		•	•	•	•	•	•
5H	Flange 2" 300 lbs	RF, ASME B16.5		•	•	•	•	•	•
5J	Flange 2" 600 lbs	RF, ASME B16.5		•	•	•	•	•	•
5R	Flange 2" 1500 lbs	RF, ASME B16.5		•	•	•	•	•	•
5K	Flange 3" 150 lbs	RF, ASME B16.5		•	•	•	•	•	•
5L	Flange 3" 300 lbs	RF, ASME B16.5		•	•	•	•	•	•
5M	Flange 3" 600 lbs	RF, ASME B16.5		•	•	•	•	•	•
5S	Flange 3" 1500 lbs	RF, ASME B16.5		•	•	•	•	•	•

continuation flanges: see next page

## NG 8200 High temperatur- and high pressure version

pos.5+6	<b>Process connection</b>				Available with type of extension pos.8							
					E	H	B	A	L	P		
	5N	Flange 4"	150 lbs	RF, ASME B16.5	•	•	•	•	•	•	•	
	5P	Flange 4"	300 lbs	RF, ASME B16.5	•	•	•	•	•	•	•	
	5Q	Flange 4"	600 lbs	RF, ASME B16.5	•	•	•	•	•	•	•	
	5T	Flange 4"	1500 lbs	RF, ASME B16.5	•	•	•	•	•	•	•	
	6B	Flange DN25, PN40		EN 1092-1 Form B1					•		•	
	6Q	Flange DN40, PN100		EN 1092-1 Form B1					•		•	
	6F	Flange DN50, PN40		EN 1092-1 Form B1	•	•	•	•	•	•	•	
	6R	Flange DN50, PN100		EN 1092-1 Form B1	•	•	•	•	•	•	•	
	6T	Flange DN65, PN160		EN 1092-1 Form B1			•	•			•	
	6H	Flange DN80, PN40		EN 1092-1 Form B1	•	•	•	•	•	•	•	
	6U	Flange DN80, PN100		EN 1092-1 Form B1		•	•	•			•	
	6J	Flange DN100, PN16		EN 1092-1 Form B1	•	•	•	•	•	•	•	
6K	Flange DN100, PN40		EN 1092-1 Form B1	•	•	•	•	•	•	•		
6L	Flange DN150, PN16		EN 1092-1 Form B1	•	•	•	•	•	•	•		
6V	Flange DN200, PN16		EN 1092-1 Form B1	•	•	•	•	•	•	•		
6P	Flange DN200, PN40		EN 1092-1 Form B1		•	•	•			•		
pos.8	<b>Type and length of extension "L" <sup>(3)</sup></b>											
	E	Rod ø8 mm (0.31") <sup>(4)</sup>										
		Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300 mm (11.81"), max. 6.000 mm (236") ....									•	
	H	Rod ø16 mm (0.63") <sup>(5)</sup>										
		Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300 mm (11.81"), max. 6.000 mm (236") ....									•	
	B	Rope ø2 mm (0.08") with gravity weight										
		Price per 100mm (3.94") of part thereof (starting from 0mm), min. 500 mm (19.7"), max. 60.000 mm (2.362") .									•	
	A	Rope ø4 mm (0.16") with gravity weight										
		Price per 100mm (3.94") of part thereof (starting from 0mm), min. 500 mm (19.7"), max. 60.000 mm (2.362") .									•	
	L	Coax ø21.3mm (0.84") with multiple hole <sup>(4)</sup> Base price .....									•	
	Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300 mm (11.81"), max. 6.000 mm (236") ....									•		
P	Coax ø42.2mm (1.67") with multiple hole <sup>(5)</sup> Base price .....									•		
	Price per 100mm (3.94") of part thereof (starting from 0mm), min. 300 mm (11.81"), max. 6.000 mm (236") ....									•		
Q	Coax ø42.2mm (1.67") with multiple hole and reference distance 260 mm (10.23") <sup>(5)</sup> Base price .....									•		
	Price per 100mm (3.94") of part thereof (starting from 0mm), min. 1000 mm (39.37"), max. 6.000 mm (236") .									•		
R	Coax ø42.2mm (1.67") with multiple hole and reference distance 500 mm (19.68") <sup>(5)</sup> Base price .....									•		
	Price per 100mm (3.94") of part thereof (starting from 0mm), min. 1250 mm (49.21"), max. 6.000 mm (236") .									•		
S	Coax ø42.2mm (1.67") with multiple hole and reference distance 750 mm (29.53") <sup>(5)</sup> Base price .....									•		
	Price per 100mm (3.94") of part thereof (starting from 0mm), min. 1500 mm (59.06"), max. 6.000 mm (236") .									•		
pos.9	<b>Display and Adjustment Module / Inspection window in lid</b>											
	0	without Display and Adjustment Module, without inspection window in lid .....									•	
	F	without Display and Adjustment Module, with inspection window in lid .....									•	
	A	with Display and Adjustment Module, with inspection window in lid .....									•	
	with Display and Adjustment Module (laterally in housing alu double chamber), with inspection window in lid <sup>(6)</sup> .....									•		

(1) Not available with process connections threads 1½" PN400, flange DN65 PN160, DN80 PN100 and DN200 PN40 (pos.5+6 0E, 3E, 6T, 6U, 6P).  
 (2) Available with following process connections: all threads 1½" PN400, flange ASME 2" or bigger, flange DN50 or bigger.  
 (3) Rope / rod can be cut and changed.  
 (4) Available with 250°C version (pos.3 3).  
 (5) Available with 280°C / 450°C version (pos.3 1, 2).  
 (6) Not available with certificates FM non incensive (pos.2 H), available with housing double chamber (pos.16 D).

NG 8200	B					1			0
position	1	2	3	4	5+6	7	8	9	10

**L =      mm** ← **Order code**

All positions are available with special design (use code "Z").

## Options / Accessories

### Options

- pos.11 x **Inspection Certificate** ..... •  
 3.1 according to EN 10204
- pos.12 **Measurement loop identification label**
- 1 of stainless steel ..... •  
 2 of foil ..... •
- pos.13 **Cable entry <sup>(1)</sup>**  
 Selection of the following options only necessary,  
 if a deviation from default is required:
- D M20 x 1.5 1x screwed cable gland PA black (ø5-9mm), 1x blind plug ..... •  
 E M20 x 1.5 1x screwed cable gland brass nickle plated (ø6-12mm), 1x blind plug ..... •  
 F M20 x 1.5 1x screwed cable gland brass nickle plated (ø5-9mm), 1x blind plug ..... •  
 A ½" NPT 1x conduit, 1x blind plug ..... •  
 B ½" NPT 1x screwed cable gland brass nickle plated (ø6-12mm), 1x blind plug ..... •  
 C ½" NPT 1x screwed cable gland brass nickle plated; for shielded cable (ø9-13mm), 1x blind plug ..... •
- pos.14 **Language of operating instruction**  
 Number of instructions: 1 piece. Standard is DE -German, available other languages:
- 2 EN - Englisch ..... •  
 3 FR - French ..... •  
 4 RU - Russian ..... •  
 5 ES - Spanish ..... •  
 6 PT - Portuguese ..... •  
 7 ZH - Chinese ..... •
- pos.15 x **Approval for steam boiler <sup>(2)</sup>** ..... •  
 according to EN12952-11, EN12953-9
- pos.16 **Housing**
- D Aluminium - double chamber ..... •  
 N Stainless steel - single chamber (electropolished) <sup>(3)</sup> ..... •

(1) Available cable entries:

Cable entry	Available with certificate pos.2						
	0	Q,B, F,X	Y,W,D,A, G,L,J,1	V,C, K,R	P	M	H,U,N
D	x	x			•	•	
E	•			x			
F	•	•	x		•	•	
A	•	•	•	•	x	x	x
B	•			•		•	
C	•			•		•	

• = Cable entry optional selectable  
 x = Default cable entry (option pos.13 not selectable)

(2) Available with NG8200 with electronic SIL (pos.4 B) and with extension with reference distance (pos.8 Q, R, S)

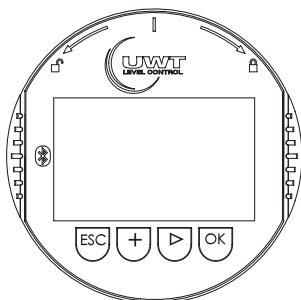
(3) Available without Ex-certificate (pos.2 0,M) or with intrinsically safe version (pos.2 Q, B, F, P, X), not with cable entry pos.13 E.

### Accessories

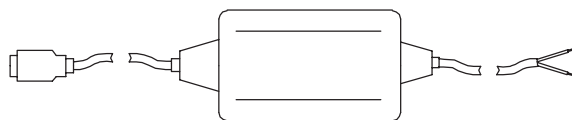
Minimum order value for separate orders of spare parts or accessories is 75 €.

- pl400510 **Display and Adjustment Module** (plug on) ..... •  
 zu400530 **HART Modem** ..... •  
 USB HART interface to connect of a PC with the NG 8000, for commissioning and servicing.

Display and Adjustment Module



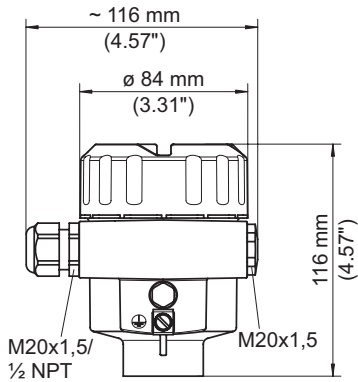
HART Modem



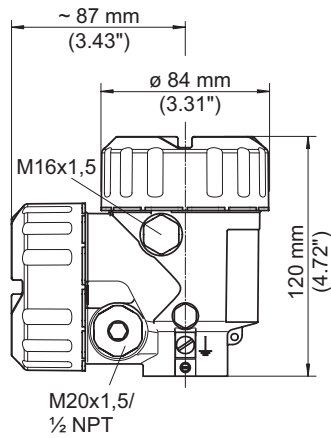
## Dimensions

### NG 8100 / NG 8200 Housing

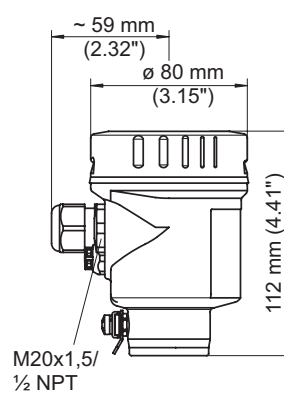
Aluminium  
single chamber



Aluminium  
double chamber

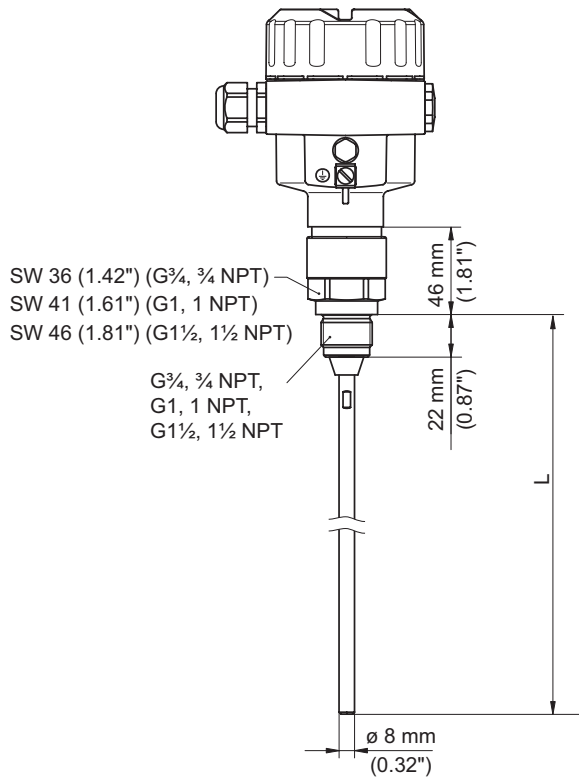


Stainless steel  
single chamber

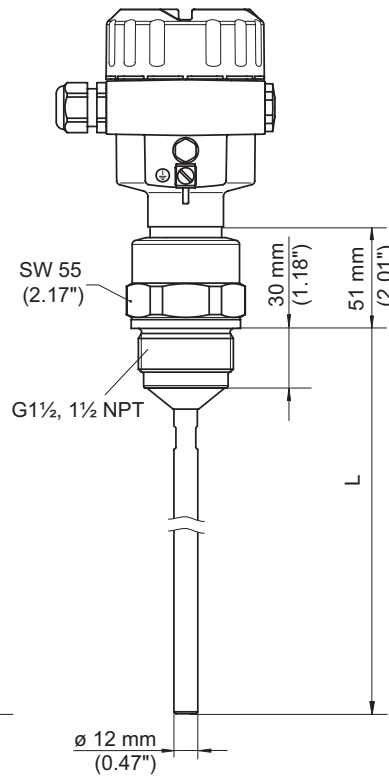


### NG 8100 Rod version

Rod  $\varnothing 8\text{ mm}$   
 Process connection: thread,  
 without temperature  
 adapter (80°C/150°C)

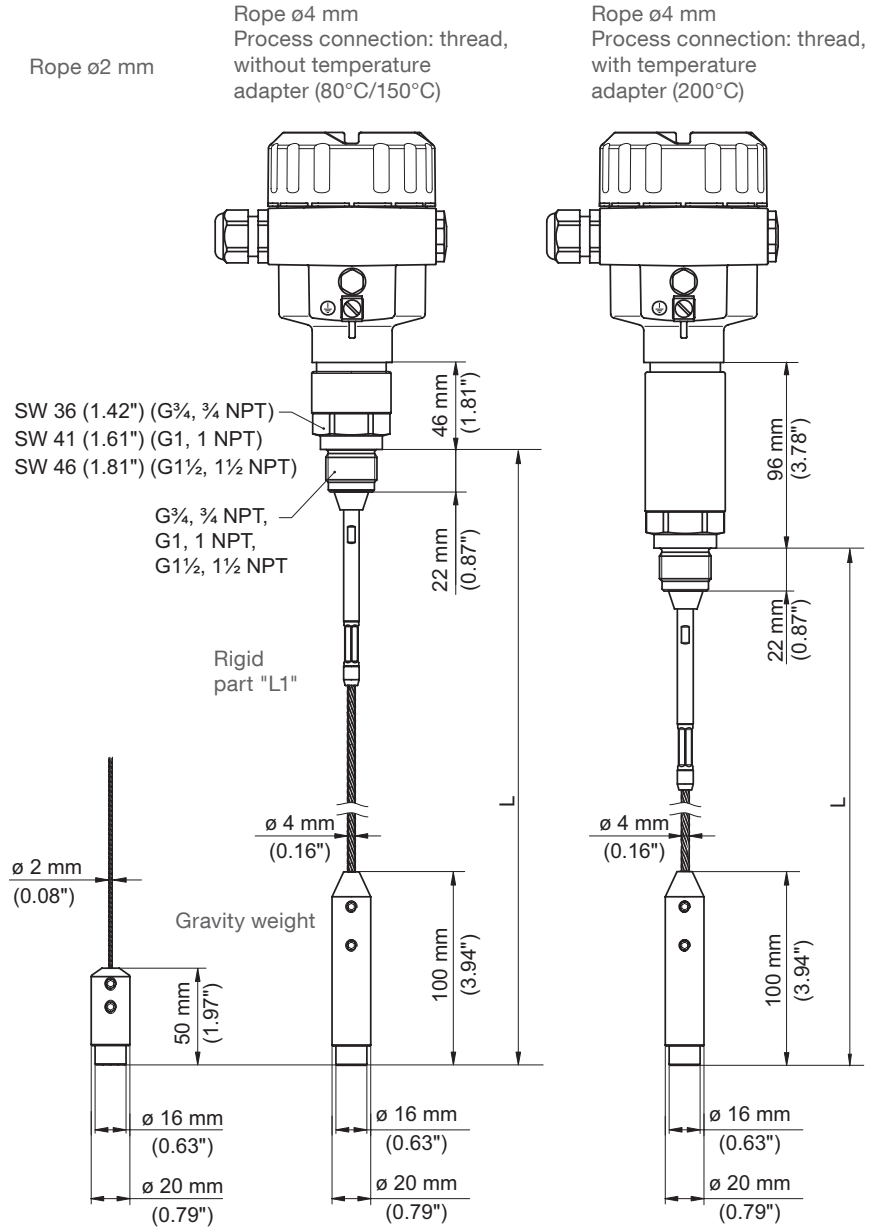


Rod  $\varnothing 12\text{ mm}$   
 Process connection: thread,  
 without temperature  
 adapter (80°C/150°C)



## Dimensions

### NG 8100 Rope version

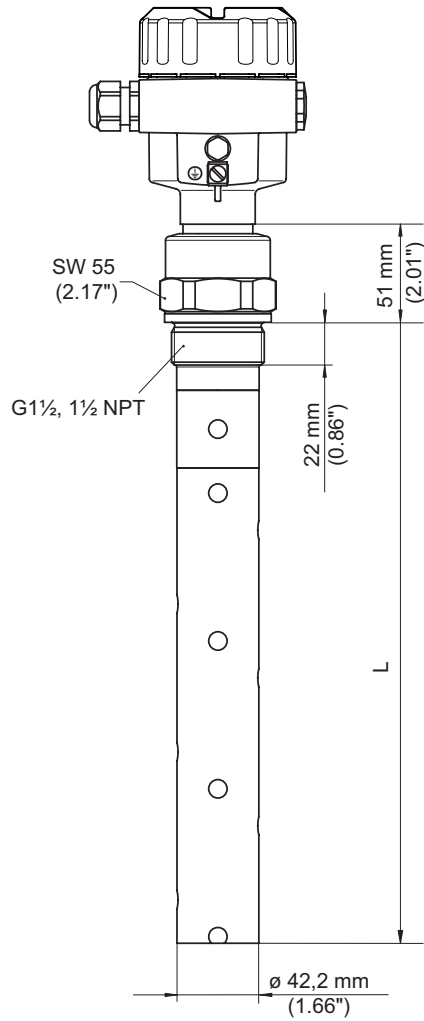
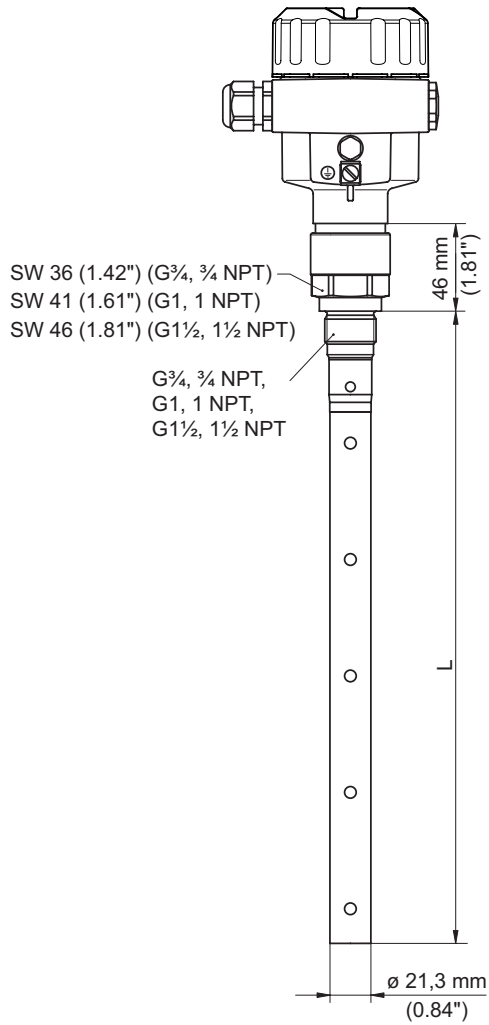


## Dimensions

### NG 8100 Coax version

Coax  $\varnothing 21.3$  mm  
 Process connection: thread,  
 without temperature  
 adapter (80°C/150°C)

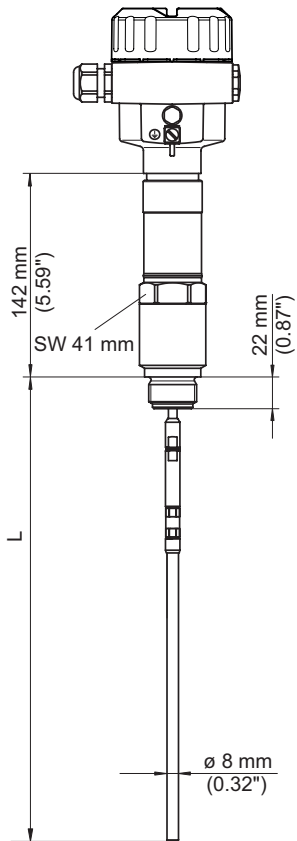
Coax  $\varnothing 42.2$  mm  
 Process connection: thread,  
 without temperature  
 adapter (80°C/150°C)



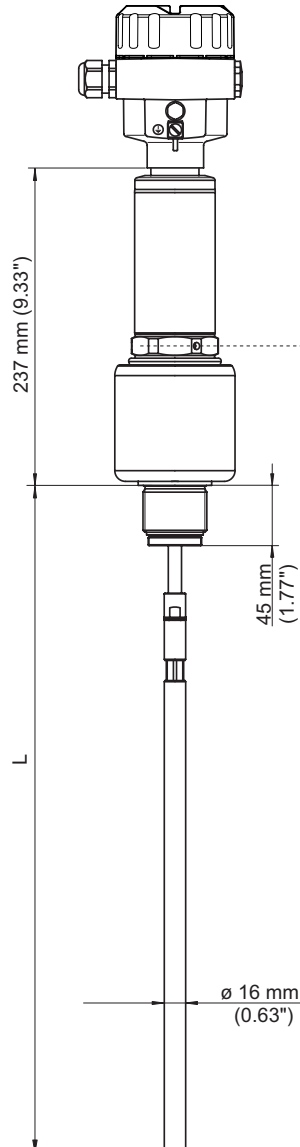
## Dimensions

### NG 8200 Rod version

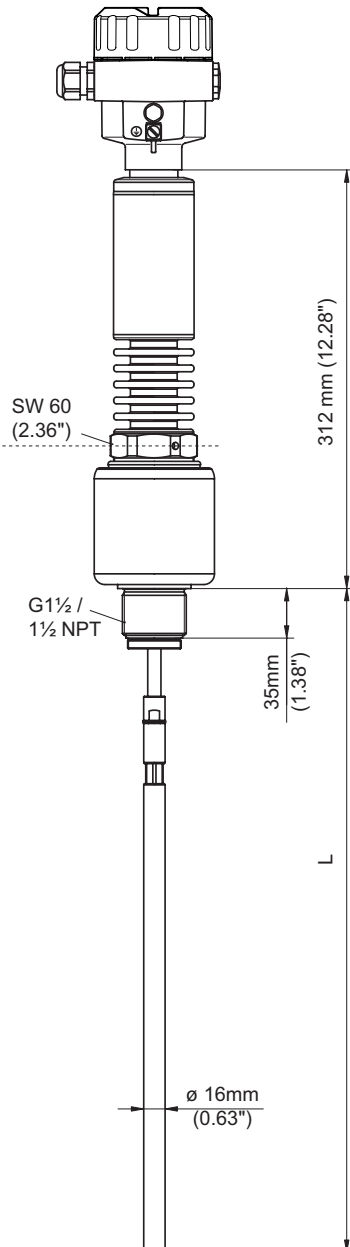
Process temp. 250°C  
 Rod ø8 mm  
 Process connection: thread



Process temp. 280°C  
 Rod ø16 mm  
 Process connection: thread



Process temp. 450°C  
 Rod ø16 mm  
 Process connection: thread



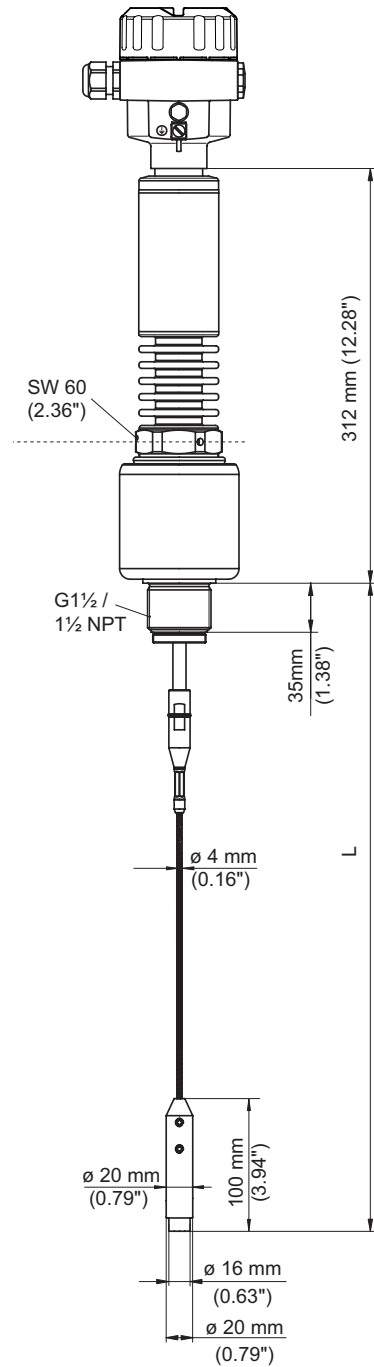
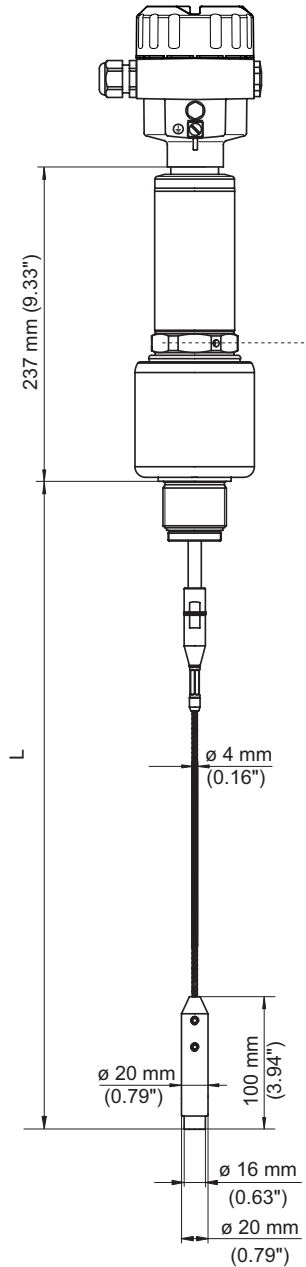
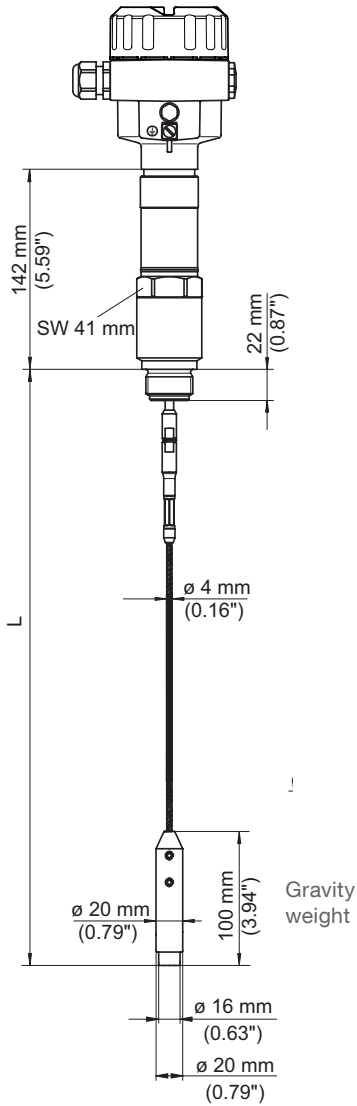
## Dimensions

### NG 8200 Rope version

Process temp. 250°C  
 Rope ø4 mm  
 Process connection: thread

Process temp. 280°C  
 Rope ø4 mm  
 Process connection: thread

Process temp. 450°C  
 Rope ø4 mm  
 Process connection: thread



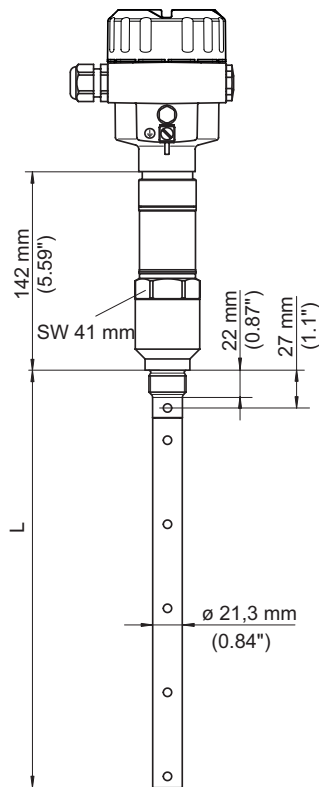
Rope ø2 mm



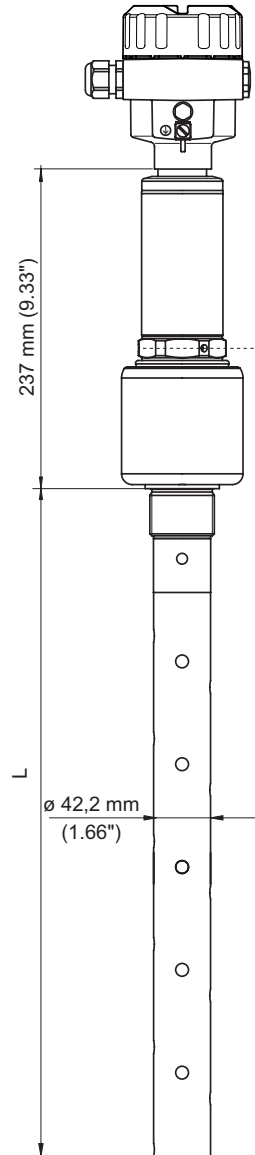
## Dimensions

### NG 8200 Coax version

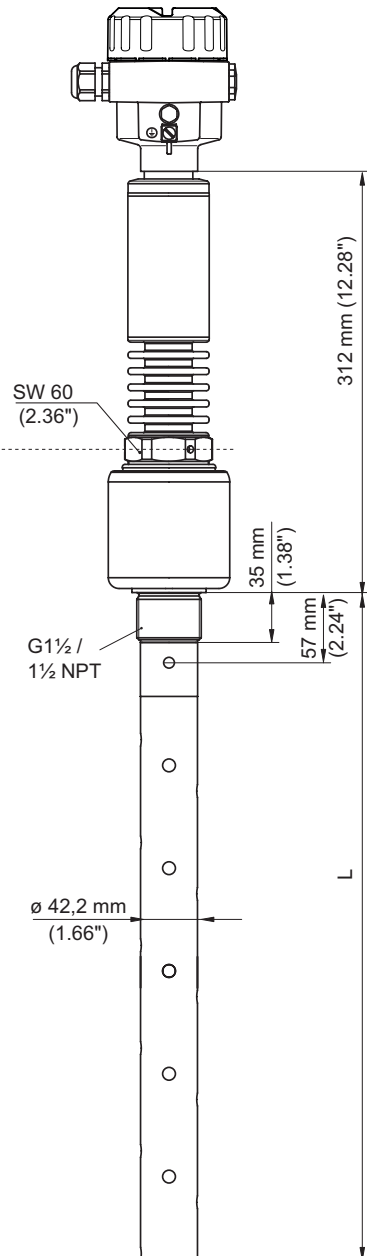
Process temp. 250°C  
 Coax  $\varnothing 21.3$  mm  
 Process connection: thread



Process temp. 280°C  
 Coax  $\varnothing 42.2$  mm  
 Process connection: thread



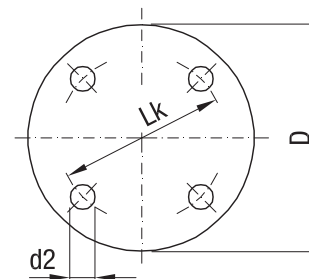
Process temp. 450°C  
 Coax  $\varnothing 42.2$  mm  
 Process connection: thread



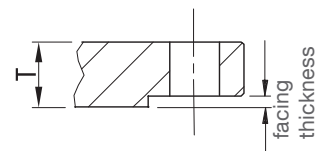
## Dimensions

### Flanges

	Code	Type	Number of holes	d2 mm (inch)	Lk mm (inch)	D mm (inch)	T thickness mm (inch)
ASME B16.5, raised face	5A	1" 150 lbs	4	15.9 (0.63)	79.3 (3.12)	108.0 (4.25)	14.3 (0.56)
	5B	1" 300 lbs	4	19.1 (0.75)	88.9 (3.5)	124.0 (4.88)	17.5 (0.69)
	5C	1" 600 lbs	4	19.1 (0.75)	88.9 (3.5)	124.0 (4.88)	17.5 (0.69)
	5D	1½" 150 lbs	4	15.9 (0.63)	98.6 (3.88)	127.0 (5.0)	17.5 (0.69)
	5E	1½" 300 lbs	4	22.2 (0.87)	114.3 (4.5)	155.5 (6.12)	20.6 (0.81)
	5F	1½" 600 lbs	4	22.2 (0.87)	114.3 (4.5)	155.5 (6.12)	22.4 (0.88)
	5G	2" 150 lbs	4	19.1 (0.75)	120.7 (4.75)	152.4 (6.01)	19.1 (0.75)
	5H	2" 300 lbs	8	19.1 (0.75)	127.0 (5.0)	165.1 (6.5)	22.4 (0.88)
	5J	2" 600 lbs	8	19.1 (0.75)	127.0 (5.0)	165.1 (6.5)	25.4 (1.0)
	5R	2" 1500 lbs	8	25.4 (1.0)	165.1 (6.5)	215.9 (8.5)	38.1 (1.5)
	5K	3" 150 lbs	4	19.1 (0.75)	152.4 (6.01)	190.5 (7.5)	23.9 (0.94)
	5L	3" 300 lbs	8	22.2 (0.87)	168.2 (6.62)	209.6 (8.25)	26.9 (1.06)
	5M	3" 600 lbs	8	22.2 (0.87)	168.2 (6.62)	209.6 (8.25)	31.8 (1.25)
	5S	3" 1500 lbs	8	38.1 (1.5)	203.2 (8.0)	266.7 (10.5)	47.8 (1.88)
	5N	4" 150 lbs	8	19.1 (0.75)	190.5 (7.5)	228.6 (9.0)	23.9 (0.94)
	5P	4" 300 lbs	8	22.2 (0.87)	200.2 (7.88)	254.0 (10.0)	30.2 (1.19)
	5Q	4" 600 lbs	8	25.4 (1.0)	215.9 (8.5)	273.1 (10.75)	38.1 (1.5)
5T	4" 1500 lbs	8	35.1 (1.38)	241.3 (9.5)	311.2 (12.25)	53.8 (2.12)	
EN 1092-1 type B1, raised face	6A	DN25 PN16	4	14.0 (0.55)	85.0 (3.35)	115.0 (4.53)	18.0 (0.71)
	6B	DN25 PN40	4	14.0 (0.55)	85.0 (3.35)	115.0 (4.53)	18.0 (0.71)
	6C	DN40 PN16	4	18.0 (0.71)	110.0 (4.33)	150.0 (5.91)	18.0 (0.71)
	6D	DN40 PN40	4	18.0 (0.71)	110.0 (4.33)	150.0 (5.91)	18.0 (0.71)
	6Q	DN40 PN100	4	22.0 (0.87)	125.0 (4.92)	170.0 (6.69)	26.0 (1.02)
	6E	DN50 PN16	4	18.0 (0.71)	125.0 (4.92)	165.0 (6.5)	18.0 (0.71)
	6F	DN50 PN40	4	18.0 (0.71)	125.0 (4.92)	165.0 (6.5)	20.0 (0.79)
	6R	DN50 PN100	4	26.0 (1.02)	145.0 (5.71)	195.0 (7.68)	28.0 (1.10)
	6T	DN65 PN160	8	26.0 (1.02)	170.0 (6.69)	220.0 (8.66)	34.0 (1.34)
	6G	DN80 PN16	8	18.0 (0.71)	160.0 (6.3)	200.0 (7.87)	20.0 (0.79)
	6H	DN80 PN40	8	18.0 (0.71)	160.0 (6.3)	200.0 (7.87)	24.0 (0.94)
	6U	DN80 PN100	8	26.0 (1.02)	180.0 (7.09)	230.0 (9.06)	32.0 (1.26)
	6J	DN100 PN16	8	18.0 (0.71)	180.0 (7.09)	220.0 (8.66)	20.0 (0.79)
	6K	DN100 PN40	8	22.0 (0.87)	190.0 (7.48)	235.0 (9.25)	24.0 (0.94)
	6L	DN150 PN16	8	22.0 (0.87)	240.0 (9.45)	285.0 (11.2)	22.0 (0.87)
	6M	DN150 PN40	8	26.0 (1.02)	250.0 (9.84)	300.0 (11.8)	28.0 (1.10)
	6N	DN200 PN10	8	22.0 (0.87)	295.0 (11.6)	340.0 (13.4)	24.0 (0.94)
6V	DN200 PN16	12	22.0 (0.87)	295.0 (11.6)	340.0 (13.4)	24.0 (0.94)	
6P	DN200 PN40	12	30.0 (1.18)	320.0 (12.6)	375.0 (14.8)	36.0 (1.42)	



Raised face



Type	Facing thickness
DN25 - DN200 ASME 150 lbs ASME 300 lbs	2 mm (0.08")
ASME 600 lbs ASME 1500 lbs	7 mm (0.28")

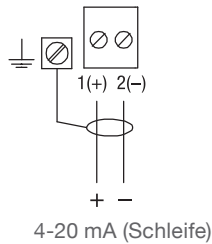
## Detailed Ex-markings

pos.2	Certificate		Protection method
Q	ATEX II 1G ATEX II 1/2G	Ex ia IIC T6..T1 Ga Ex ia IIC T6..T1 Ga/Gb	Intrinsically Safe
Y	ATEX II 1G ATEX II 1/2G	Ex ia IIC T6..T1 Ga Ex ia IIC T6..T1 Ga/Gb	Intrinsically Safe
	ATEX II 1D ATEX II 1/2D	Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
V	ATEX II 1/2G ATEX II 2G	Ex db IIC T6...T1 Ga/Gb Ex db IIC T6...T1 Gb	Flameproof
W	ATEX II 1D ATEX II 1/2D	Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
B	IEC Ex	Ex ia IIC T6..T1 Ga Ex ia IIC T6..T1 Ga/Gb	Intrinsically Safe
D	IEC Ex	Ex ia IIC T6..T1 Ga Ex ia IIC T6..T1 Ga/Gb	Intrinsically Safe
		Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
C	IEC Ex	Ex db IIC T6...T1 Ga/Gb Ex db IIC T6...T1 Gb	Flameproof
A	IEC Ex	Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
F	INMETRO	Ex ia IIC T6...T1 Ga Ex ia IIC T6...T1 Ga/Gb	Intrinsically Safe
G	INMETRO	Ex ia IIC T6...T1 Ga Ex ia IIC T6...T1 Gb/Gb	Intrinsically Safe
		Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
K	INMETRO	Ex db IIC T6...T1 Ga/Gb Ex db IIC T6...T1 Gb	Flameproof
L	INMETRO	Ex ta IIIC T! Da Ex ta/tb IIIC T! Da/Db	Dust Ignition Proof
H	FM	NI Class I,II,III Div.2, Gr. A,B,C,D,F,G	Non incensive
P	FM	IS Class I, II, III Div.1, Gr. A-G	Intrinsically Safe
U	FM	XP Class I Div.1, Gr. A-D	Explosionproof
N	FM	DIP Class II,III Div.1, Gr. E,F,G	Dust Ignition Proof
X	TR-CU	0Ex ia IIC T6...T1 Ga X Ga/Gb Ex ia IIC T6...T1 X	Intrinsically Safe
J	TR-CU	0Ex ia IIC T6...T1 Ga X Ga/Gb Ex ia IIC T6...T1 X	Intrinsically Safe
		Ex ta IIIC T... Da X Ex ta/tb IIIC T... Da/Db X	Dust Ignition Proof
R	TR-CU	Ga/Gb Ex db IIC T6...T1 X 1Ex db IIC T6...T1 Gb X	Flameproof
1	TR-CU	Ex ta IIIC T... Da X Ex ta/tb IIIC T... Da/Db X	Dust Ignition Proof

## Electrical Installation

### 4-20 mA

The terminals are located below the Display and Adjustment Module. To connect the unit, remove the display by gently turning the display counter-clockwise until it is free.



Wire cross-section (spring-loaded terminals) :  
 Massive wire, stranded wire 0,2 ... 2,5 mm<sup>2</sup> (AWG 24 ... 14)  
 Stranded wire with end sleeve 0,2 ... 1,5 mm<sup>2</sup> (AWG 24 ... 16)  
 Connect cable shield to ground terminal.

Operating voltage (voltage present at terminals):

Version	Display and Adjustment Module (illuminated)	Operating voltage
Non-Ex, Ex d	without	9,6 ... 35 V DC
	with	16 ... 35 V DC
Ex ia	without	9,6 ... 30 V DC
	with	16 ... 30 V DC

### 4-20 mA HART

Typical PLC/ mA configuration with HART:

- Depending on the system design, the power supply may be separate from the PLC, or integral to it.
- HART resistance (total loop resistance, that is, cable resistance plus 250 Ohm (external resistor) must be limited to a certain value, to ensure a proper function.  
 Max. loop resistance = (supply voltage - min. voltage present at terminals) / 22mA  
 Example: CE-unit with 24 V DC supply: Max. loop resistance = (24 V - 9,6 V) / 22 mA = 655 Ω
- The external resistor is not required, if the PLC has an integral 250 Ohm resistor.

