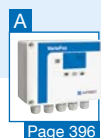


# Ultrasonic transmitter

## SonarFox® UST 20



- Non-contact level measurement
- Easy adjustment even without medium
- Robust housing for rough ambient conditions
- Suppression of interference signals



5

**Application** For continuous, non-contact level measurement in open or closed containers, tanks or silos. Suitable for liquid, mushy and pasty media. Ideal for sludge, adhesives, resins and waste water. The device can be easily adjusted even without a medium by means of the programming display with user-friendly menus. It also serves as a local display.

**Description** The SonarFox® UST 20 level indicator uses the physical properties of ultrasonic waves to determine the level. An ultrasonic wave is emitted which is reflected by objects in the sound cone. The time up to the reception of the reflected echo is a measure of the distance. Since the mounting position is defined, it is possible to calculate the filling level of the medium. Type, density and temperature of the medium have no effect on the measurement – the only prerequisite is a reflecting surface. Acoustically diffuse surfaces such as foam or uneven surfaces of bulk solids are to be tested with regard to the application. An optional, additional alignment horn adapter can be used for such media. Installations or stirrers above the surface of the medium can be masked during empty setup.

### Probe selection

Probe type	UST 20-01	UST 20-11	UST 20-21	UST 20-31
Measuring range	0.15 – 2 m	0.25 – 6 m	0.4 – 10 m	0.5 – 20 m
Low tanks < 1,000 mm	+	-	-	-
Tanks between 1,000 mm and 2,000 mm	+	+	-	-
Tanks between 2,000 mm and 6,000 mm	-	+	+	-
Tanks between 6,000 mm and 10,000 mm	-	-	+	+
High tanks > 10,000 mm	-	-	-	+
Liquids	+	+	+	+
Pastes and adhesives	+	+	+	+
High-viscosity or adhesive media	+	+	+	+
Low-viscosity media	+	+	+	+
Corrosive media	+	+	+	+
Conductive media	+	+	+	+
Non-conductive media	+	+	+	+
Foam on the medium*	o	o	o	o

- Not suitable
- o Limited suitability
- + Suitable

\* Use of alignment horn adapter advisable, see accessories.



# Ultrasonic transmitter

## SonarFox® UST 20

### Technical data

#### Programming display

5-digit, 9 mm high,  
yellow Matrix OLED  
Resolution 128 x 64 pixels

#### Status indicator

Level outside of measuring range, no echo, etc.  
Adjustable in the modes:  
3.75 mA, 22 mA, last measured value

#### Signal damping

Adjustable from 0 to 99 s

#### Delay of initial measurement at measurement start

Approx. 30 s

#### Measuring interval

1–4 s

#### Supply voltage

DC 18–36 V  
for Ex version DC 18–28 V

#### Output signal

4–20 mA/HART, 2-wire

#### Current input

Max. 22 mA

#### Max. load

$R_{\max} = 270 \Omega$  at:  $U = 24 \text{ V}$   
 $R_{\max} = 180 \Omega$  at:  $U = 22 \text{ V}$   
 $R_{\max} = 90 \Omega$  at:  $U = 20 \text{ V}$   
 $R_{\max} = 45 \Omega$  at:  $U = 19 \text{ V}$

#### Measuring range

UST 20-01: 0.15 – 2 m  
UST 20-11: 0.25 – 6 m  
UST 20-21: 0.4 – 10 m  
UST 20-31: 0.5 – 20 m

#### Adjustable measuring range

Min. 200 mm

#### Resolution

UST 20-01: <1 mm  
UST 20-11: <2 mm  
UST 20-21: <1 mm  
UST 20-31: <2.5 mm

#### Accuracy

±0.15 % FS

#### Temperature error

Max. 0.04 % / K

#### Measuring frequency

UST 20-01: 120 kHz  
UST 20-11: 75 kHz  
UST 20-21: 50 kHz  
UST 20-31: 30 kHz

#### Operating temperature range

UST 20-01 / -11: -30/+70 °C  
UST 20-21 / -31: -30/+60 °C  
at the process connection for a short time  
(60 min) up to 90 °C

#### Process pressure

Max. 1 bar

#### Process connection

UST 20-01: PP, G1B with lock nut  
UST 20-11: PP, G 1½B with lock nut  
UST 20-21: PP, G 2¼B with lock nut  
UST 20-31: Aluminium alloy,  
Flange EN 1092-1 DN100 PN16

#### Ultrasonic transducer

PVDF

#### Housing

Aluminium die cast

#### Degree of protection

IP 67 (EN 60529)


#### Electrical connection

Cable gland M16 x 1.5

#### Weight

UST 20-01: 0.3 kg  
UST 20-11: 0.4 kg  
UST 20-21: 0.6 kg  
UST 20-31: 3.1 kg

#### Options

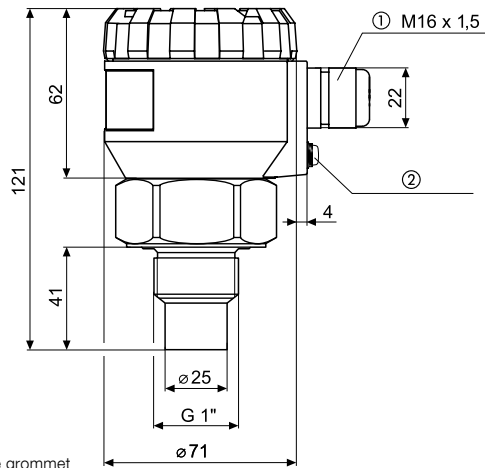
- Output RS-485 Modbus RTU
- Ex version 
  - Ex II 1/2G Ex ia IIB T5 Ga/Gb
  - Ex II 1/2G Ex ia IIA T5 Ga/Gb (UST 20-21)
  - Ex II 2G Ex ia IIA T5 Ga/Gb (UST 20-31)

# Ultrasonic transmitter SonarFox® UST 20



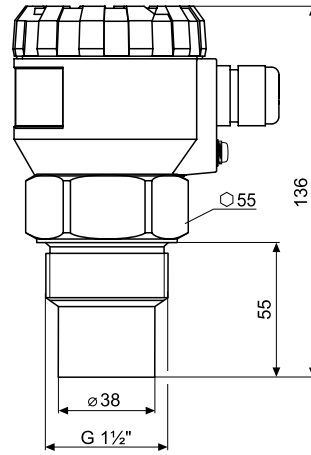
## Types and dimensions (mm)

Housing UST 20-01

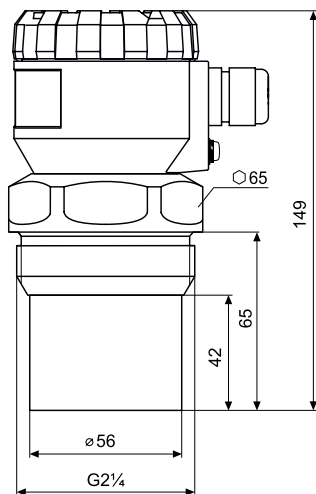


① Cable grommet  
② Earthing terminal

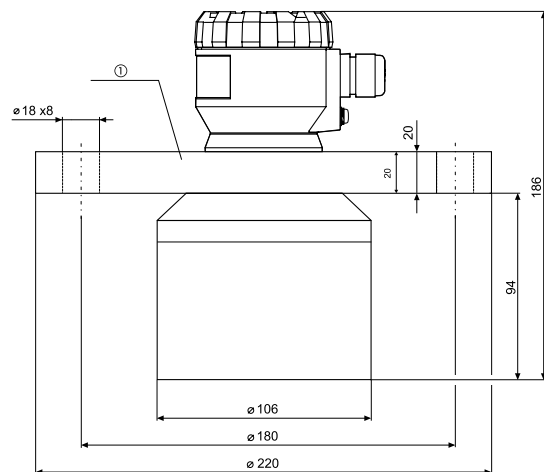
Housing UST 20-11



Housing UST 20-21



Housing UST 20-31





# Ultrasonic transmitter

## SonarFox® UST 20

### Ordering data

DG: H, PG: 4

Price €

5

<b>1</b>	<b>Ultrasonic transmitter</b>	
	56220	SonarFox® UST 20
<b>2</b>	<b>Probe type/measuring range/measuring frequency/process connection</b>	
	01	Measuring range 0.15–2 m, 120 kHz, PP G1B
	11	Measuring range 0.25–6 m, 75 kHz, PP G1½B
	21	Measuring range 0.4–10 m, 50 kHz, PP G2¼B
	31	Measuring range 0.5–20 m, 30 kHz, aluminium alloy EN 1092-1 DN 100 PN 16
<b>3</b>	<b>Display</b>	
	D	With local display, housing lid with window
	O	Without local display, housing lid without window
<b>4</b>	<b>Output signal/interface</b>	
	01	4–20 mA + HART / 2-wire / DC 18–36 V
	02	RS-485 Modbus RTU
	EX	4–20 mA (ia) + HART / 2-wire / DC 18–28 V Ui=30 V DC; li=132 mA; Pi=0.99 W; Ci=370 nF; Li=0.9 mH

Ordering code example  
= in-stock items

56220

11

D

01

Accessories	DG	PG	Part no.	Price €
<b>Programming display/local display PD 20 UST/PMG</b>	H	4	<b>56225</b>	
<b>Alignment horn adapter</b> made of plastic (PP) G1i	H	4	<b>56221</b>	
<b>Alignment horn adapter</b> made of plastic (PP) G1½ female	H	4	<b>56222</b>	
<b>Alignment horn adapter</b> made of plastic (PP) G2¼ female	H	4	<b>56223</b>	
<b>Housing cover with window</b>	H	4	<b>56224</b>	
<b>Housing cover without window</b>	H	4	<b>56226</b>	

Blue part no. = in-stock items