Operating Manual USE3000, USE6000, USE15000, USE3200, USE15200, USE15000, XM(i), XT(i) and Transducer MU3L, MUEx

1. Product description

Application according to instructions
The probes USE3000, USE6000 and USE15000 are sensors for level measuring of liquid media in non-explosive areas in tank systems, the probes XM and XT outside at tank systems.
The probes USE3200, USE6200, USE15200, XM(i) und XT(i) are sensors for level measuring of liquid media in explosive areas and must be used only according to Ex-approval TÜV 01 ATEX 1717.
The probes USE3200-.... USE6200-... and USE15200-... are installed in explosive areas category 1 (Zone 0), whereas the terminal box has to be located in category 2 (Zone 1).
The probes Type XMi-... and XTi-...without float are use only in explosive areas category 2 (Zone 1).
The transducer MU3L transforms the level-dependent resistance signal of the probes (for non-explosive areas) into an analog output signal of 4...20 mA and is mounted in the terminal box of the probe (KLS).
The transducer MUEx transforms the level-dependent resistance signal of the probes (for explosive areas) into an analog output signal of 4...20 mA and is mounted in the terminal box of the probe (KLS).

2. Installation

The transmitters can be installed in the pressureless tank from outside through the tank top or tank bottom by using a mounting plug or flange. The mounting position is vertical with a maximum angle of inclination of 30 degrees.
The maximmum operating pressure (depands on the mounting elements and the float) must not be exceeded.
The electrical connection has to be according to the connection scheme shown inside the cover of the terminal box.
The supply voltage shown on the type label must not be exceeded.
Please note the output signal shown on the type label.

3. Operation

During operation the float of the probe moves up and down with the upper liquid level and produces a resistance (voltage divider signal proportional to the tank level.
This signal can be evaluated directly or be transformed into an 2-wire 4...20mA current output signal.
A standard built-in wire-break protection reduces the output current to 3,5 mA in case of wire break. The level evaluation / display is possible with Barksdale UAS / UAD-units as well as with other data acquisition units (e. g. SPS).
Customer specific sensor or transmitter adjustments are available, please note special documentation.

4. Maintenance

The USE-probes are maintenace-free in non-depositing media.
In media with residues the sensor as well as the float must be wiped off regularly depending on the degree of contamination.
The MU3L and MUEx-transducers are maintenace-free.

Probe accuracy (without transducer)

Depending on requirements and model various screen sizes are available:

R12 - (1/4" = 6,4 mm), accuracy appr. 0,3% bei 3000 mm - standard
R08 - (1/6" = 4,2 mm), accuracy appr. 0,1% bei 3000 mm - on request

The measuring accuracy of the probes can be calculated with following formula (depending on the measuring length):

$$\pm \frac{(\text{screen} : 2)}{\text{Measur. length Lm}} \times 100\%$$

$$\text{e. g.: } \pm \frac{(6{,}4 \text{ mm} : 2)}{1000 \text{ mm}} \times 100\% = 0{,}32\%$$

Barksdale
CONTROL PRODUCTS

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Due to technical changes

Technical Data

(Necessary data for Ex-probes)

Model	USE 3200			USE 6200		USE 15200		XMi	XTi
Total length L_0	max. 3000 mm			max. 6000 mm		max. 15000 mm		max. 6000 mm	max. 6000 mm
Float	VX 44	VX 52	VX 80	VX 100, Ø 105 mm, ball	BN 42, Ø 42 mm, oval	HY 102	VA 120	---	---
Min. spec. gravity in g/cm³	0,9	0,73	0,5	0,62	0,55	0,55	0,80	---	---
Max. operating pressure (bar)	15	25	16	32	15	90	16	---	---
Max. temperature (Medium)	T1...T4 to +100 °C T5 to +65 °C T6 to +50 °C			T1...T4 to +100 °C T5 to +65 °C T6 to +50 °C	T1...T4 to +100 °C T5 to +65 °C T6 to +50 °C	T1...T5 +60 °C T6 to +50 °C	T1...T5 +60 °C T6 to +50 °C	T1...T4 to +100 °C T5 to +65 °C T6 to +50 °C	T1...T4 to +100 °C T5 to +65 °C T6 to +50 °C
Approvals	TÜV 01 ATEX 1717			TÜV 01 ATEX 1717	TÜV 01 ATEX 1717	TÜV 01 ATEX 1717	TÜV 01 ATEX 1717	TÜV 01 ATEX 1717	TÜV 01 ATEX 1717

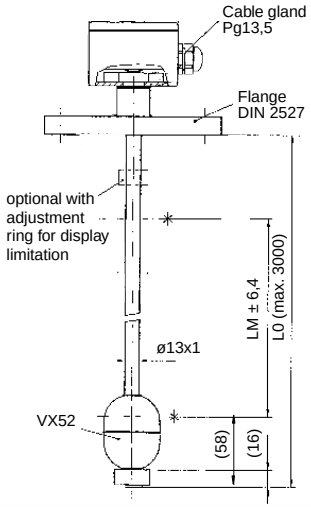
USE 3200

A: L0- Reference edge

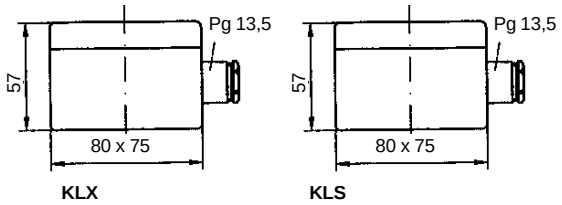
B: Immersion depth at density 1

L0 = LM + 20 + float height + X

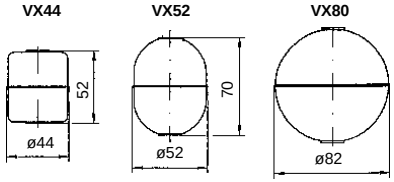
X= 0 mm (Ffange)
20 mm (T2)



Electrical connections USE 3200



Floats USE 3200



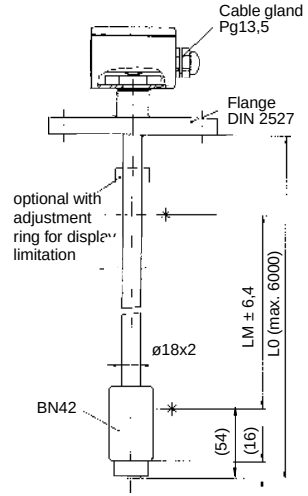
USE 6200

A: L0- Reference edge

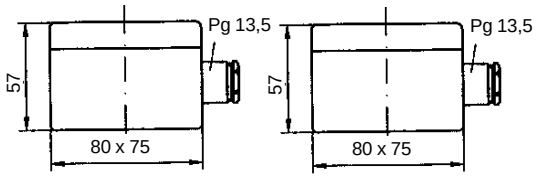
B: Immersion depth at density 1

L0 = LM + 26 + float height + X

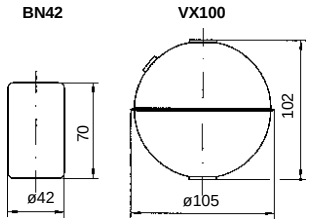
X= 0 mm (Ffange)
20 mm (T2)



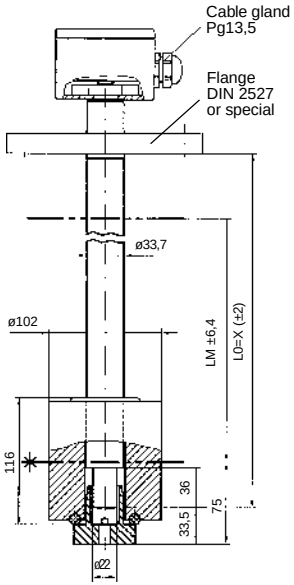
Electrical connections USE 6200



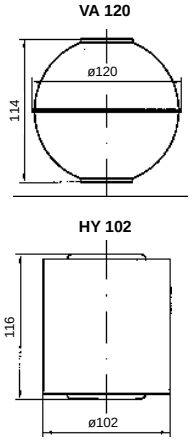
Floats USE 6200



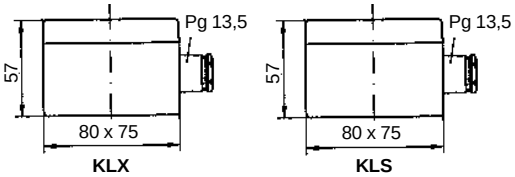
USE 15200

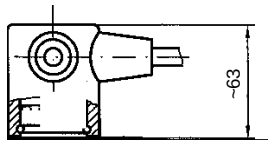


Floats USE 15200



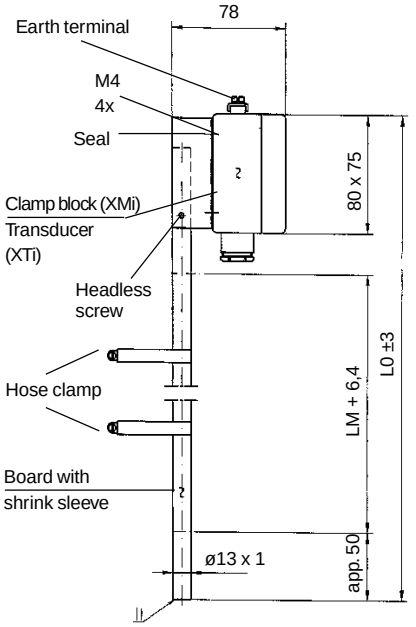
Electrical connections USE 15200





Special

XMi / XTi

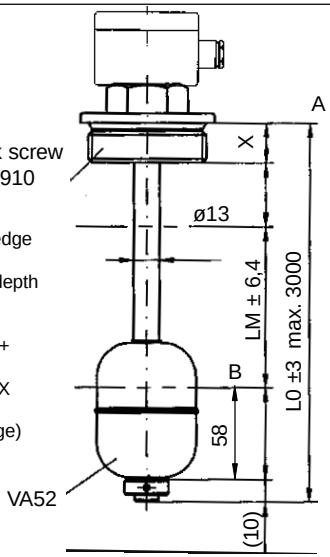


Barksdale

Technical Data

Model	USE 3000			USE 6000		XM	XT
Total length L_0	max. 3000 mm			max. 6000 mm		max. 6000 mm	max. 6000 mm
Float	VA 44	VA 52	VA 80	VA 100, Ø 105 mm, ball	BN 42, Ø 42 mm, oval	---	---
Min. spec. gravity in g/cm³	0,9	0,74	0,5	0,62	0,55	---	---
Max. operating pressure (bar)	15	25	16	32	15	---	---
Max. temperature (Medium)	–10 °C... +90 °C - Standard –50 °C...+150 °C - High temp.			–10 °C...+90 °C - Standard –50 °C...+150 °C - High temp.	–10 °C...+90 °C - Standard –50 °C...+150 °C - High temp.	–10 °C...+90 °C - Stand. –50 °C...+150 °C - H. temp	–10 °C...+90 °C - Stand. –50 °C...+150 °C - H. temp

USE 3000



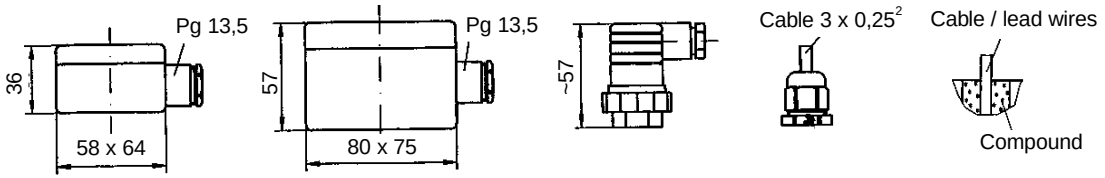
A: L0- Reference edge

B: Immersion depth at density 1

L0 = LM + 20 + float height + X

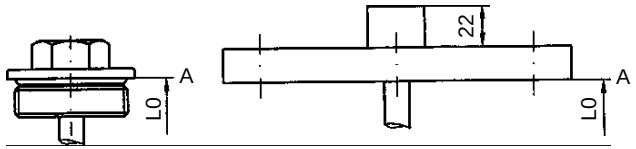
X= 0 mm (Ffange)
20 mm (T2)

Electrical connections



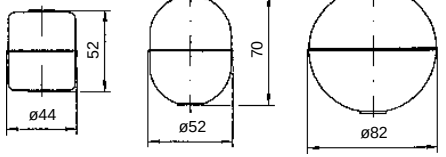
KL6 **KLS** **ST1** **Pg 13,5** **Cable / Lead wires**

Mechanical connections



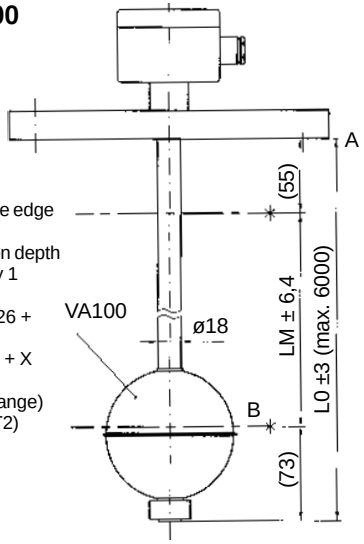
T2/(T1,5) DIN 912 **Flange (with head nut) DIN 2527**

Floats



VA44 **VA52** **VA80**

USE 6000



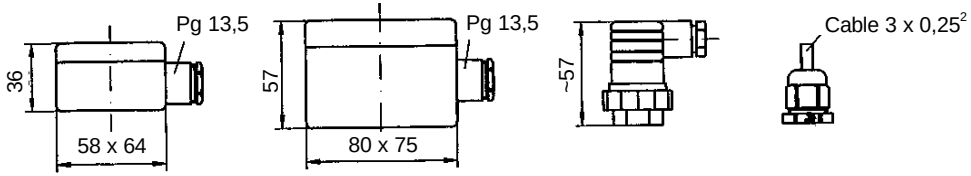
A: L0- Reference edge

B: Immersion depth at density 1

L0 = LM + 26 + float height + X

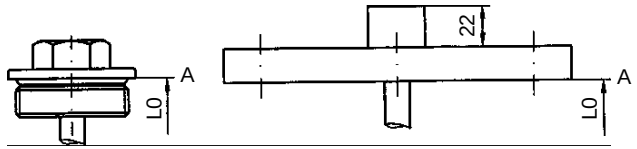
X= 0 mm (Ffange)
20 mm (T2)

Electrical connections



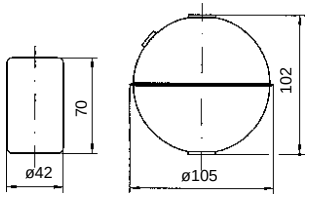
KL6 **KLS** **ST1** **Pg 13,5**

Mechanical connections



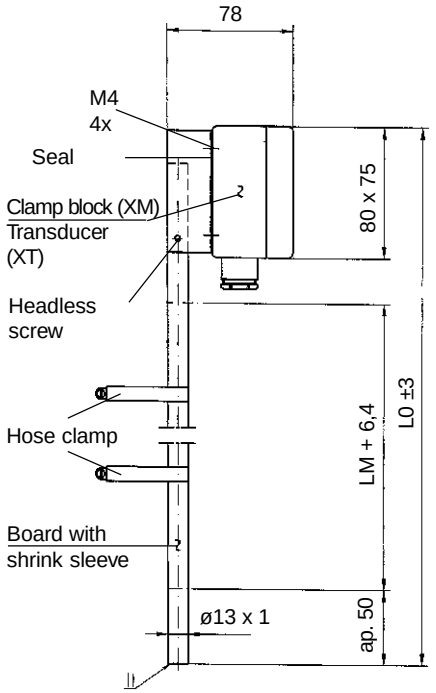
T2/(T1,5) DIN 912 **Flange (with head nut) DIN 2527**

Floats



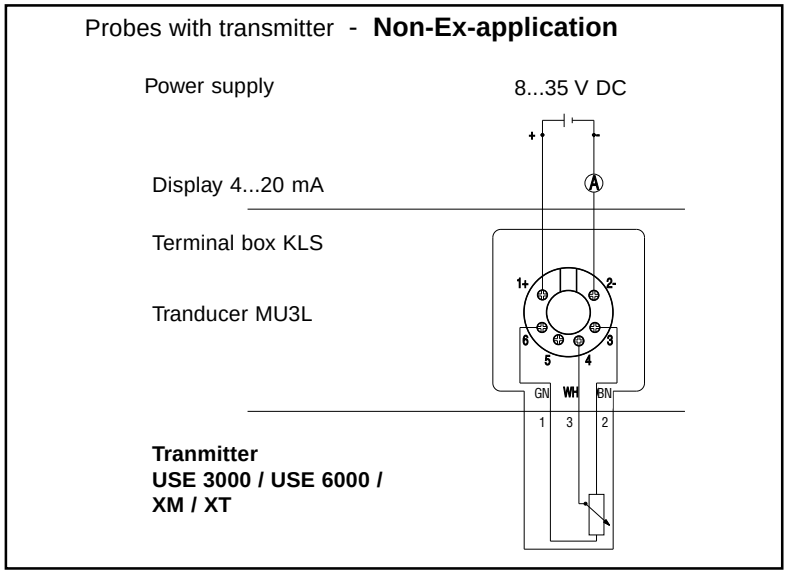
BN 42 **VA100**

XM / XT



Connection Scheme

Probes with transmitter - **Non-Ex-application**

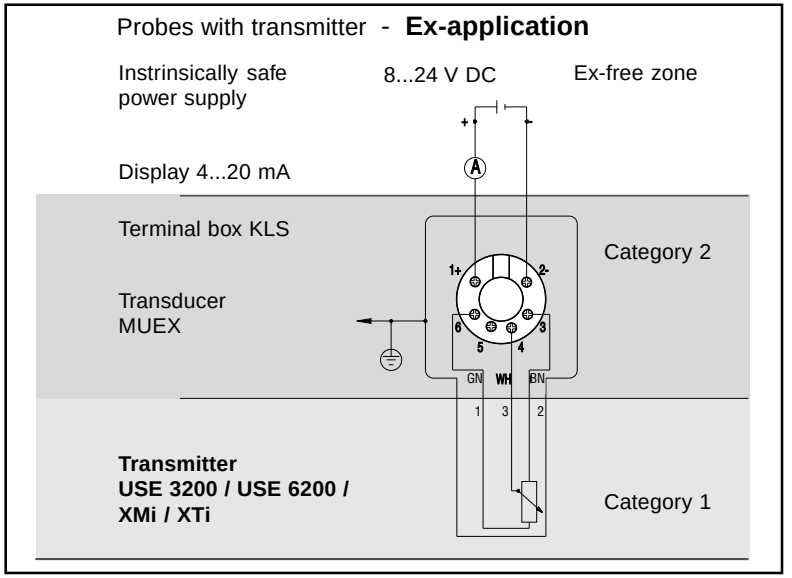


Technical Data MU3L

Power Supply	:	8...35 V DC
Output Signal	:	4...20 mA
Updating Time	:	135 ms
Load	:	≤(+UB–8) / 0,023 ohm <±0,01% f. s. / 100 Ohm
Signal at Wire Breaking	:	3,5 mA
Response Time	:	0,33 sec.
Accuracy	:	0,2% f. s.
Max. Ambient Temperature	:	–40 °C...+85 °C
Level Indication Circuit	:	3-wire potentiometer circuit

Connection Scheme

Probes with transmitter - **Ex-application**



Technical Data MUEX

Power Supply	:	8...24 V DC Intrinsically safe DIN EN 50020 or equal
Output Signal	:	4...20 mA
Updating Time	:	135 ms
Load	:	≤(+UB–8) / 0,023 ohm <±0,01% f. s. / 100 Ohm
Signal at Wire Breaking	:	3,5 mA
Response Time	:	0,33 sec.
Accuracy	:	0,2% f. s.
Max. Ambient Temperat.	:	T1 to T4: –40 °C...+85 °C T5 to T6: –40 °C...+60 °C
Level Indication Circuit	:	3-wire potentiometer circuit
Approval	:	Cenelec EEx ia IIC T1...T6 ATEX Ex II 1 G, application in category 1, 2, 3
Certificate No.	:	DEMKO 99 ATEX 126 964
Ex-data	:	U_i 24 V DC I_i 120 mA DC P_i 0,84 W L_i ≤10 µH C_i ≤ 1 nF