BM26A-3000 Technical Datasheet

Magnetic Level Indicator for corrosive liquids

- Made of PVC, PP or PVDF for high resistance to corrosion
- Level indication up to 4 m / 13 ft (other dimensions on request)
- Indicator flaps housed in a hermetically sealed glass tube (IP68)

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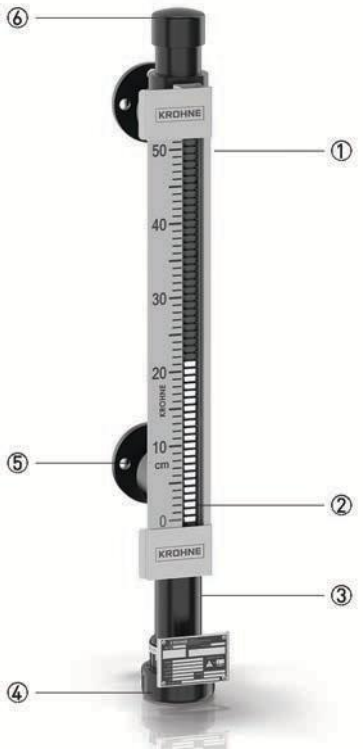
1.1 Bypass level indicators for a complete range of applications

The BM26A-3000 is a simple, lightweight device designed to indicate or transmit the level of a liquid. The measuring chamber can be made from a selection of plastics: PP, PVC or PVDF. Weight is kept to a minimum, thus it is suitable for installation on plastic tanks.

A magnetic level indicator (MLI) indicates level with a float magnetically coupled to a column of rotating flaps. An optional reed-chain transmitter (LT40) can also transmit level as an analog or digital signal. Optional bistable switches (MS15 series and MS40 series) can be attached to the measuring chamber to detect level.

This device is suitable for measuring liquids that have a density of 560...2000 kg/m³ / 34.96...124.86 lb/ft³, for a temperature range of -20...+100°C / -4...+212°F at a pressure of 0...6 barg / 0...87 psig. The EU's Pressure Equipment Directive is not applicable to the BM26A-3000.



① Level indicator - column of rotating flaps in a hermetically sealed tube made of borosilicate glass with options that include a scale, scale units and flap colours
② Red flaps for float failure indication
③ Plastic measuring chamber - material options include PVC, PVDF and PP
④ Option: drain
⑤ Side process connections - DN20...50 (EN) / NPS 1...2 (ASME)
⑥ Option: vent

Highlights

- Easy to install
- High-visibility level indicator column operates without electrical power
- Withstands process conditions up to +100°C (+212°F) / 6 barg (87 psig)
- Accuracy: Level indicator = ±10 mm / Reed-chain transmitter = ±5 mm
- Optional LT40 reed-chain level transmitter
  - Outut options: 4...20 mA (HART 7), FOUNDATION™ fieldbus or PROFIBUS PA
  - Accuracy options: ±10mm (+/-0.4") or +/- 5 mm (+/- 0.2")
- Gasket options include FKM/FPM, nitrile, PTFE and EPDM

Industries

- Chemical

Applications

- Corrosive chemicals
- Chemical injection and skids
- Chemical reactors
- Chlor-alkali processes
- Scrubber vessels
- Deionization tanks
- Plastic tank manufacturers
- Fermentation vessels
- Liquid liquid extractions
- Reflux drums
- Sulphuric acid

1.2 Measuring principle

The device operates on the principle of communicating tubes. The measuring chamber is connected adjacent to the tank. The process conditions in the measuring chamber are the same as those of the tank.

A float is in the measuring chamber. The float contains magnets that rotate the flaps in the indicator column and operate the optional limit switches and analog transmitter on the side of the measuring chamber. The position of the magnets does not correspond to the level of liquid, so the scale is adjusted at the factory to take into account this difference. The offset of the magnets depends on the liquid density. Refer to the illustration that follows:

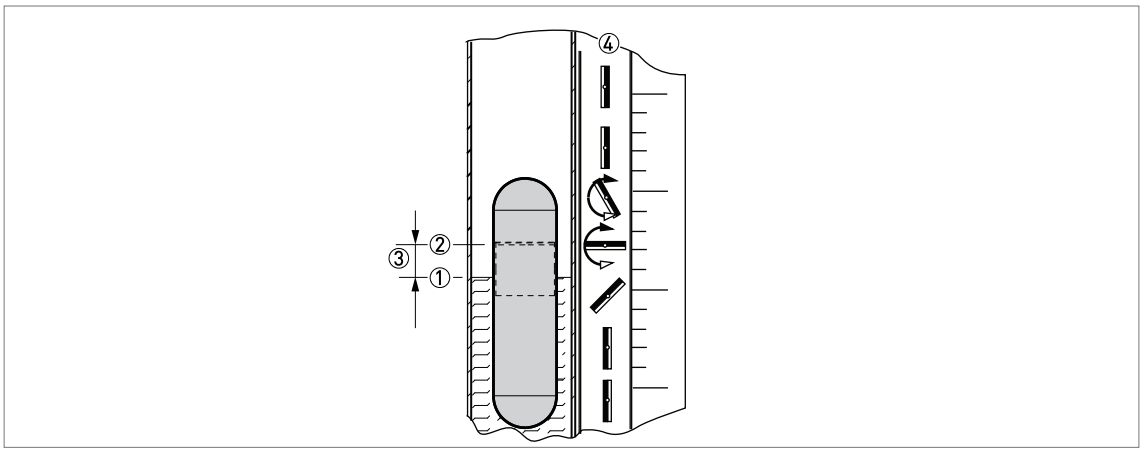


Figure 1-1: Offset between liquid level and the float magnet (liquid level offset)

① Level of the liquid
② Top of the float magnet. The magnet field around the top of the magnet turns the flaps in the indicator column that shows the level in the tank.
③ Liquid level offset. This offset is the difference between the level of the liquid and the top of the float magnet. The value is related to the type of float in the measuring chamber and the density of the liquid.
④ Indicator column of yellow/black or red/white rotating flaps with the optional scale in m/cm, mm, ft/inch, % (simplified) or customized volume units

2.1 Technical data

- *The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.*
- *Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Downloadcenter).*

2.1.1 BM26A-3000 magnetic level indicator

	PVC	PP	PVDF

Measuring system

Measuring principle	Magnetic level indicator - bypass chamber (principle of communicating tubes). A float in the measuring chamber is magnetically coupled to a mechanical level indicator.		
Application range	Level indication of liquids in applications 0...6 barg / 0...87 psig		
Measured value			
Primary measured value	Level of the float magnets in the measuring chamber		
Secondary measured value	Level or volume of the liquid in the tank		

Design

Measuring chamber, variants	Side / side process connections		
Measuring chamber, diameter	Ø63 mm × 4.7 mm	Ø63 mm × 3 mm	Ø63 mm × 5.8 mm
Options	LT40 reed-chain level transmitter without LCD indicator module with a compact or a remote housing ①		
	LT40 reed-chain level transmitter with LCD indicator module with a compact or a remote housing ①		
	Bistable limit switches ②		
Measuring range (ML)	0.5...4.0 m / 1.64...13.1 ft (longer on request)		
Display and user interface			
Display	Indicator column with magnetically coupled rotating flaps that have two colors: yellow/black; red/white		
Float failure indication (at the bottom of the indicator column)	Orange flaps		
Scale marking options	No scale; m + cm; mm; ft + inches; customized volume units, % (simplified) ③		

Measuring accuracy

Accuracy	±10 mm / 0.4¨
Repeatability	±10 mm / 0.4¨ (when density is constant)
Maximum rate of change	20 mm/s / 0.787¨/s

Operating conditions

Temperature			
Process temperature	-20...+50°C / -4...+122°F	-20...+100°C / -4...+212°F	-20...+100°C / -4...+212°F

	PVC	PP	PVDF
Ambient temperature	-20...+50°C / -4...+112°F	-20...+80°C / -4...+176°F	-20...+80°C / -4...+176°F
Storage temperature	-20...+50°C / -4...+112°F	-20...+80°C / -4...+176°F	-20...+80°C / -4...+176°F
Pressure			
Process pressure	0...6 barg / 0...87 psig ④		
Chemical properties			
Density	680...2000 kg/m³ / 42.45...124.86lb/ft³	560...2000 kg/m³ / 34.96...124.86lb/ft³	700...2000 kg/m³ / 43.7...124.86lb/ft³
Viscosity	≤ 500 mPa·s / ≤ 500 cP		
Other conditions			
Ingress protection (IEC 60529)	Indicator column: IP66 / IP68 (0.15 barg)		

Materials

Measuring chamber	PVC	PP	PVDF
Float	PVC	PP	PVDF
Indicator column rail	Stainless steel (1.4401 / 316)		
Indicator column tube	Borosilicate glass 3.3 (agrees with ISO 3585) - hermetically sealed tube		
Scale (option)	Stainless steel (1.4401 / 316)		
Process connection	PP	PP	PP
Gasket options	FKM/FPM; Nitrile; PTFE; EPDM		

Process connections

Flange, EN	DN20...50 (Type B1) in PN06; DN25...50 (Type B1) in PN16
Flange, ASME	NPS 1...2 (RF) in Class 150 ⑤

Drain and vent connections

Drain options	Without; G 3/8...3/4 (female) with plug; 3/8...3/4 NPT (female) with plug
Vent options	Without; G 3/8...3/4 (female) with plug; 3/8...3/4 NPT (female) with plug

Power supply

Limit switches	Refer to the technical data for the MS15 series and MS40 series
Reed-chain level transmitter	Refer to the technical data for the LT40

Input and output

Parameter	Level detection or indication
Output signal	Refer to the technical data for the LT40 reed-chain level transmitter and the MS15-series and MS40-series limit switches

	PVC	PP	PVDF

Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 15g shock ½ sinus: 6 ms)

Table 2-1: BM26A-3000: technical data

① For more data, refer to technical data for the LT40 reed-chain level transmitter in this section
② For more data, refer to technical data for the MS15-series and MS40-series limit switches in this section
③ If the scale adjacent to the indicator column has % (simplified) units, then it has a range of 0...100% with an increment of 10% between each marking
④ The maximum process pressure is related to the measuring range (C-C length), type of process connection and the process temperature. Refer to the "Maximum process pressure: measuring chamber" section in this chapter.
⑤ NPS = Nominal Pipe Size. For more data about the dimensions of flanges, refer to the ASME B16.5 standard.

2.1.2 LT40 reed-chain level transmitter

4...20 mA and 4...20 mA + HART® communication modules

Measuring system

Measuring principle	A reed resistor chain that is magnetically operated by a magnetic float in an adjacent measuring chamber
Primary measured value	Resistance
Secondary measured value	Level or volume of the liquid in the tank

Design

Description of device	Resistance reed chain with 2-wire loop-powered transmitter module attached adjacent to the measuring chamber of the magnetic level indicator. A transmitter module converts changes in resistance to an output signal. If the LT40 is used in multidrop mode, a maximum of 63 transmitters can be connected to a network that agrees with the HART® communication protocol.
Options	Transmitter module position: LT40 C - compact housing at the top of the reed resistor chain
	Transmitter module position: LT40 C - compact housing at the bottom of the reed resistor chain
	Transmitter module position: LT40 F - remote housing connected to the bottom of the reed resistor chain. Max. cable length: 25 m / 82 ft.
	LCD indicator module (non-Ex and Ex d-approved devices only)
Accessories	C 95 Basic universal power supply (Panel mount, 2 relays, 4-digit local indicator and non-Ex)
	C 95 Basic universal power supply (Panel mount, 2 relays, 4...20 mA output, 4-digit local indicator and non-Ex)
Display and user interface	
Display	Optional 2-wire loop-powered LCD indicator module (backlit)
	4-digit LCD with minus sign, 2-button keypad. Selectable number of decimals, 0 to 3.
Available units	mm; inches; %
Range	-1999...9999

Measuring accuracy

Resolution	Standard: ±10 mm / 0.4¨ (when density is constant)
	Option: ±5 mm / 0.2¨ (when density is constant)

Operating conditions

Temperature	
Ambient temperature, transmitter	-40...+80°C / -40...+176°F ①
Ambient temperature, LCD indicator	-20...+70°C / -4...+158°F ①
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
Storage temperature	-40...+80°C / -40...+176°F
Pressure	
Operating pressure	Atmospheric pressure

Other conditions	
Warm-up time	30 s
Response time	1....60 s ②
Ingress protection (IEC 60529)	IP66/IP68 (at a depth of 1.5 m for 2 weeks)
Relative air humidity (RH)	0...99%

Installation conditions

Notes	The LT40 is calibrated at the factory and attached to the measuring chamber before delivery
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Polyester-coated aluminium
Reed-chain tube	Stainless steel (1.4401 / 316)
Clamp	Stainless steel (1.4401 / 316)
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel

Power supply

Voltage, without LCD indicator	non-Ex or Ex db: 10...35 V DC
	Ex ia: 10...30 V DC
Voltage, with LCD indicator	non-Ex or Ex db: 17...35 V DC
EN 60947-1 electrical data	Overvoltage category I
Cable entry	M20 × 1.5; 1/2 NPT
Cable gland	None; M20 × 1.5; 1/2 NPT
Intrinsically safe circuit data for Ex ia-approved devices	Refer to supplementary instructions or approval certificates

Input and output

Current output	
Output range	4...20 mA
Error signal	High: 21 mA; Low: 3.6 mA - agrees with NAMUR NE 43
HART®	
Description	Digital signal transmitted with the current output signal (HART® protocol)
Version	7
Primary value (PV)	Indicator column with m + cm or mm scale markings: mm Indicator column with ft + inches scale markings: inches Indicator column with %, volume or other markings: %
Multidrop operation	Yes, current output = 4 mA. Polling address 1...15.

Approvals and certifications

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).

Explosion protection	
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb ③
	II 2 G Ex db IIC T6...T1 Gb
IECEx	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb ③
	Ex db IIC T6...T1 Gb
UKEX - pending	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb ③
	II 2 G Ex db IIC T6...T1 Gb
Other standards and approvals	
EMC	EU Electromagnetic Compatibility Directive
	UK Electromagnetic Compatibility Regulations
	NAMUR NE 21 ④
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)
NAMUR	NAMUR NE 43

Table 2-2: LT40 (4...20 mA and 4...20 mA + HART® communication modules): technical data

① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
② This value is programmable
③ This Ex approval does not include the optional LCD indicator module
④ LT40 F: Applicable only for a resolution of ±10 mm / 0.4¨

Fieldbus communication module

	FOUNDATION™ fieldbus	PROFIBUS PA

Measuring system

Measuring principle	A reed resistor chain that is magnetically operated by a magnetic float in an adjacent measuring chamber
Primary measured value	Resistance
Secondary measured value	Level and volume of the liquid in the measuring chamber

Design

Description of device	Resistance reed chain with 2-wire loop-powered transmitter module attached adjacent to the measuring chamber of the magnetic level indicator. A transmitter module converts changes in resistance to an output signal.	
Description of transmitter module	Changes in resistance are converted to signals that agree with the FOUNDATION™ fieldbus communication protocol.	Changes in resistance are converted to signals that agree with the PROFIBUS PA communication protocol.
Options	Transmitter module position: LT40 C - compact housing at the top of the reed resistor chain	
	Transmitter module position: LT40 C - compact housing at the bottom of the reed resistor chain	
	Transmitter module position: LT40 F - remote housing connected to the bottom of the reed resistor chain. Max. cable length: 25 m / 82 ft.	
Display and user interface		
Display	None	

	FOUNDATION™ fieldbus	PROFIBUS PA

Measuring accuracy

Resolution	Standard: ±10 mm / 0.4¨ (when density is constant)
	Option: ±5 mm / 0.2¨ (when density is constant)

Operating conditions

Temperature	
Ambient temperature	-40...+80°C / -40...+176°F ①
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
Storage temperature	-40...+80°C / -40...+176°F
Pressure	
Operating pressure	Atmospheric pressure
Other conditions	
Ingress protection (IEC 60529)	IP66/IP68 (at a depth of 1.5 m for 2 weeks)
Relative air humidity (RH)	0...99%

Installation conditions

Notes	The LT40 is calibrated at the factory and attached to the measuring chamber before delivery
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Polyester-coated aluminium
Reed-chain tube	Stainless steel (1.4401 / 316)
Clamp	Stainless steel (1.4401 / 316)
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel

Power supply

Voltage	non-Ex or Ex db: 9...32 V DC	
	Ex ia: 9...30 V DC	
EN 60947-1 electrical data	Overvoltage category I	
Cable entry	M20 × 1.5; 1/2 NPT	
Cable gland	None; M20 × 1.5; 1/2 NPT	
Intrinsically safe circuit data for Ex ia-approved devices	Refer to supplementary instructions or approval certificates	
FOUNDATION™ fieldbus		
Description	FOUNDATION™ fieldbus protocol	N/A
PROFIBUS PA		
Description	N/A	PROFIBUS PA protocol Profile A&B, ver.3.0 (EN 50170 vol.2)

	FOUNDATION™ fieldbus	PROFIBUS PA

Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).
Explosion protection	
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb
	II 2 G Ex db IIC T6...T1 Gb
IECEx	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb
	Ex db IIC T6...T1 Gb
UKEX - pending	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb
	II 2 G Ex db IIC T6...T1 Gb
Other standards and approvals	
EMC	EU Electromagnetic Compatibility Directive
	UK Electromagnetic Compatibility Regulations
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)

Table 2-3: LT40 (fieldbus communication module): technical data

① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.

2.1.3 MS15-series and MS40-series limit switches

	MS15 series	MS40 series

Measuring system

Measuring principle	Bistable reed switch (SPDT) that is magnetically operated by a magnetic float in an adjacent measuring chamber
Application range	Level detection

Design

Description of device	Limit switch attached adjacent to the measuring chamber of the magnetic level indicator

Measuring accuracy

Hysteresis	The hysteresis value agrees with the model of the magnetic level indicator. For more data, refer to the handbook.

Operating conditions

Temperature	
Ambient temperature	-40...+80°C / -40...+176°F ①

	MS15 series	MS40 series
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the limit switch housing. Refer to the "Temperature limits: MS15-series limit switch" and "Temperature limits: MS40-series limit switch" sections in this chapter.	
Operating temperature	-40...+115°C / -40...+239°F ②	-40...+120°C / -40...+248°F ②
Storage temperature	-40...+80°C / -40...+176°F	
Pressure		
Operating pressure	Atmospheric pressure Max. height above mean sea level: 2000 m / 6560 ft	
Other conditions		
Ingress protection (IEC 60529)	MS15 series: IP66 / IP68 (at a depth of 1.5 m for 2 weeks)	
	MS40 series: IP66	
Relative air humidity (RH)	0...99%	

Installation conditions

Notes	Adjust the switch position in relation to the hysteresis data (switching point offset) and the density of the liquid
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Aluminium with epoxy powder paint or stainless steel (1.4404 / 316L)	Aluminium with epoxy powder paint
Clamp	Stainless steel (1.4401 / 316)	
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel	Plastic

Electrical connections

Switching capacity	MS15 / MS40: Absolute ratings: 250 V AC/DC; 1 A; 60 VA/W	
	MS15 NAMUR / MS40 NAMUR: Agrees with DIN 19234 (NAMUR); Umax = 13 V DC	
EN 60947-5-1 electrical data (MS15 and MS40 only)	Overvoltage category II	
	Rated insulation voltage, Ui: 250 V AC or 250 V DC	
	Rated impulse withstand voltage, Uimp: 2.5 kV	
	Rated conventional thermal current, Ith: 1 A	
	Pollution degree: 4	
Utilization category (EN 60947-5-1) with current and voltage ratings	AC13: Ie = 0.5 A; Umax = 60 V AC	
	AC13: Ie = 0.25 A; Umax = 250 V AC	
	DC12: Ie = 1 A; Umax = 60 V DC	
	DC13: Ie = 0.5 A; Umax = 60 V DC	
Short-circuit protection device	0.25 A fuse, type 1500 A interrupting rating (IEC 60127-2/1)	
	1 A fuse, application category gG (IEC 60269) or type 1500 A interrupting rating (IEC 60127-2/1)	
Intrinsically safe circuit data	Refer to supplementary instructions or approval certificates	
Cable entry	M20 × 1.5; 1/2 NPT	M16 × 1.5

	MS15 series	MS40 series
Cable gland	None; M20 × 1.5; 1/2 NPT	M16 × 1.5

Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.	
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).	
Explosion protection		
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 or II 2 G Ex ia IIC T6...T1 Gb	
	II 2 G Ex db IIC T6...T1 Gb	N/A
IECEx	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb	
	Ex db IIC T6...T1 Gb	N/A
UKEX - pending	II 1 G Ex ia IIC T6...T1 or II 2 G Ex ia IIC T6...T1 Gb	
	II 2 G Ex db IIC T6...T1 Gb	N/A
Other standards and approvals		
LVD	MS15 / MS40: EU Low-Voltage Directive (LVD); UK Electrical Equipment (Safety) Regulations	
	MS15 NAMUR / MS40 NAMUR: N/A	
Vibration resistance (EN 60721-3-4)	Aluminium housing: vibration class 4M7 (1...200 Hz:3g, 25g shock ½ sinus: 11 ms)	
	Stainless steel housing: vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)	N/A

Table 2-4: MS15-series and MS40-series limit switches: technical data

① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the limit switch housing. Refer to the "Temperature limits: MS15-series limit switch" and "Temperature limits: MS40-series limit switch" sections in this chapter.

② The operating temperature is the temperature of the electronic parts

2.2 Dimensions

2.2.1 Magnetic level indicator (measuring chamber) - overall dimensions

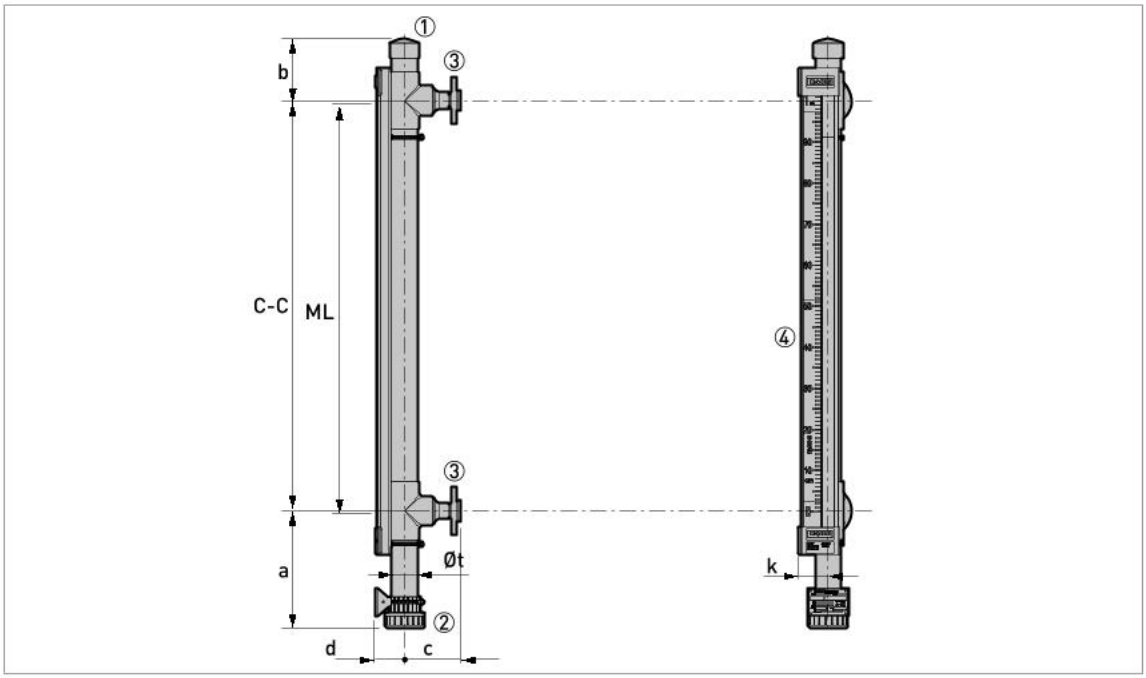


Figure 2-1: Magnetic level indicator (measuring chamber - PP, PVC and PVDF versions): side - side process connections

① Optional vent with 3/8...3/4 NPT or G 3/8...3/4 threaded connection (with plug)
② Optional drain with 3/8...3/4 NPT or G 3/8...3/4 threaded connection (with plug)
③ Process connection (flange)
④ Level indicator column with optional scale (mm, inch, simplified % or volume)

- *a = distance from the center axis of the bottom connection to the bottom of the device*
- *b = distance from the center axis of the top connection to the top of the device*
- *C-C = distance between the center axes of the top and bottom process connections*
- *ML = measuring length*

Other dimensions are available on request.

Device material	Dimensions [mm]							
	a	b	C-C	ML	c	d	k	Øt
PP	287 ①	225 ②	500...4000 ③	③	④	73	74	63
PVC	287 ①							
PVDF	332 ⑤							

Table 2-5: Side - side process connections: dimensions in mm

① If the device has a drain plug, then a = 305 mm
② If the device has a drain plug, then b = 250 mm
③ This agrees with the "C-C" dimension given in the customer order
④ If the flange size is DN40 or NPS 1 1/2, then c = 155 mm. For all other flange sizes, c = 135 mm.
⑤ If the device has a drain plug, then a = 347 mm

Device material	Dimensions [mm]							
	a	b	C-C	ML	c	d	k	Øt
PP	11.30 ①	8.86 ②	19.7...157.5 ③	③	④	2.9	2.9	2.48
PVC	11.30 ①							
PVDF	13.07 ⑤							

Table 2-6: Side - side process connections: dimensions in inches

① If the device has a drain plug, then a = 12.01¨
② If the device has a drain plug, then b = 9.84¨
③ This agrees with the "C-C" dimension given in the customer order
④ If the flange size is DN40 or NPS 1 1/2, then c = 6.10¨. For all other flange sizes, c = 5.31¨.
⑤ If the device has a drain plug, then a = 13.66¨

2.2.2 Options

LT40 C reed-chain level transmitter - compact version

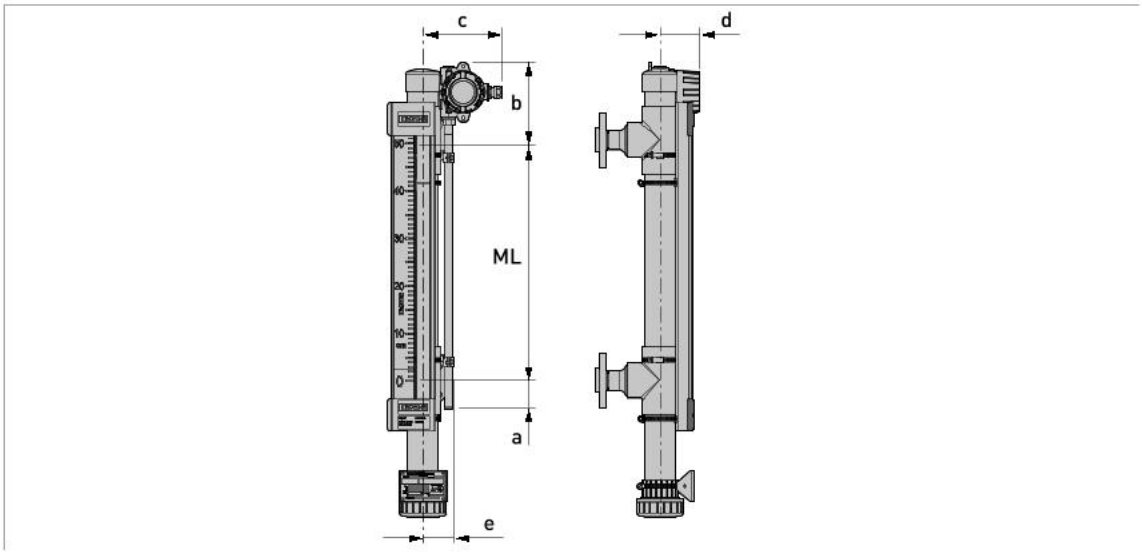


Figure 2-2: LT40 C reed-chain level transmitter - compact version

Dimensions [mm]					
a	b	c	ML	d	e
57	163.5	167.4	500...4000	84	64

Table 2-7: LT40 C reed-chain level transmitter: dimensions in mm

Dimensions [inches]					
a	b	c	ML	d	e
2.2	6.4	6.6	19.7...157.5	3.3	2.5

Table 2-8: LT40 C reed-chain level transmitter: dimensions in inches

LT40 F reed-chain level transmitter - remote version

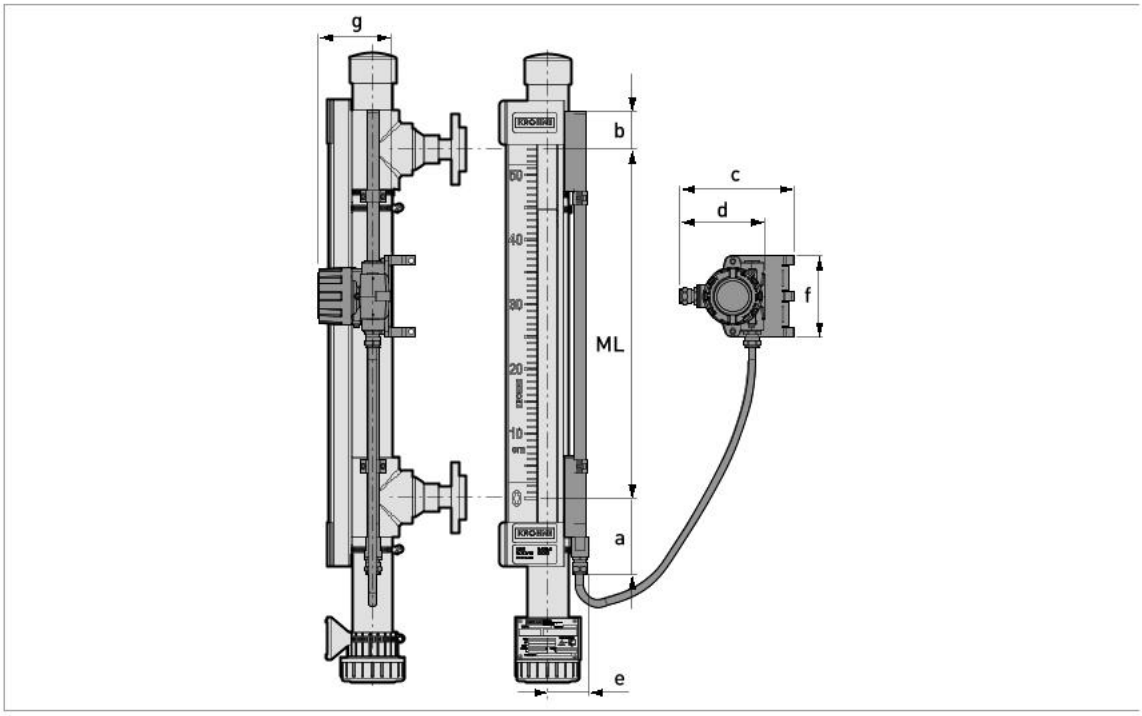


Figure 2-3: LT40 F reed-chain level transmitter - remote version

Dimensions [mm]							
a	b	c	d	ML	e	f	g
81.5	66.5	176	133	500...4000	50	125.5	62

Table 2-9: LT40 F reed-chain level transmitter: dimensions in mm

Dimensions [inches]							
a	b	c	d	ML	e	f	g
3.21	2.62	6.93	5.24	19.7...157.5	1.97	4.94	2.44

Table 2-10: LT40 F reed-chain level transmitter: dimensions in inches

Support for the LT40 F reed-chain level transmitter

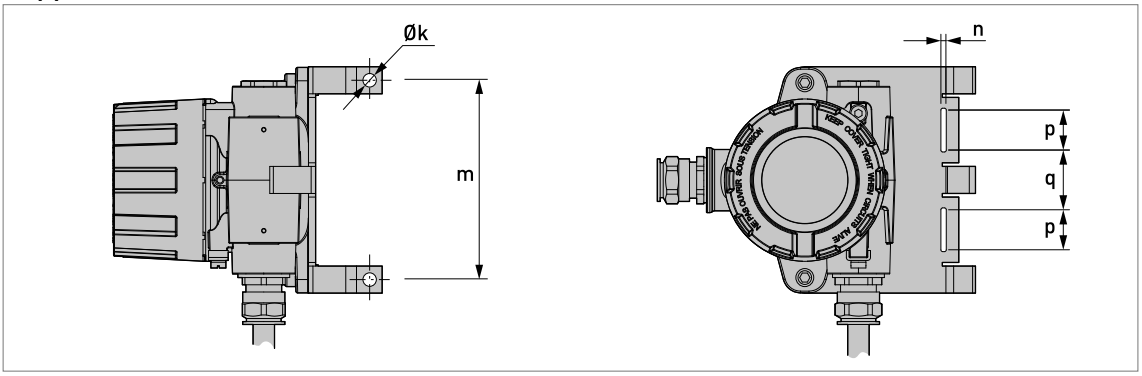


Figure 2-4: Support for the LT40 F reed-chain level transmitter

Dimensions [mm]				
Øk	m	n	p	q
7.5	107.75	3	24.25	31

Table 2-11: Support for the LT40 F reed-chain level transmitter: dimensions in mm

Dimensions [inches]				
Øk	m	n	p	q
0.30	4.24	0.12	0.95	1.22

Table 2-12: Support for the LT40 F reed-chain level transmitter: dimensions in inches

MS15 -series and MS40-series limit switches

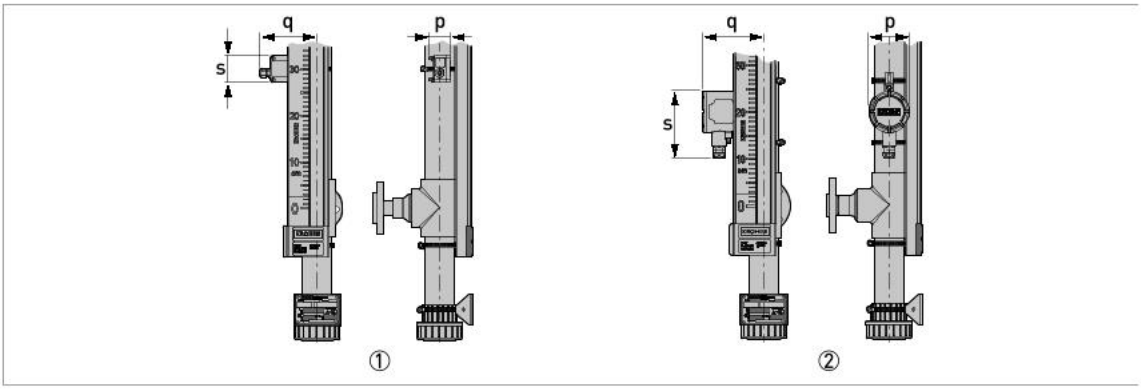


Figure 2-5: MS15-series and MS40-series limit switches

① Magnetic level indicator with an MS15-series limit switch
② Magnetic level indicator with an MS40-series limit switch

Limit switch version	Dimensions [mm]		
	p	q	s
MS15 series	88	133	143.5
MS40 series	46	119	56

Table 2-13: MS15-series and MS40-series limit switches: dimensions in mm

Limit switch version	Dimensions [inches]		
	p	q	s
MS15 series	3.46	5.24	5.65
MS40 series	1.81	4.68	2.20

Table 2-14: MS15-series and MS40-series limit switches: dimensions in inches

2.2.3 Accessories

Support bracket

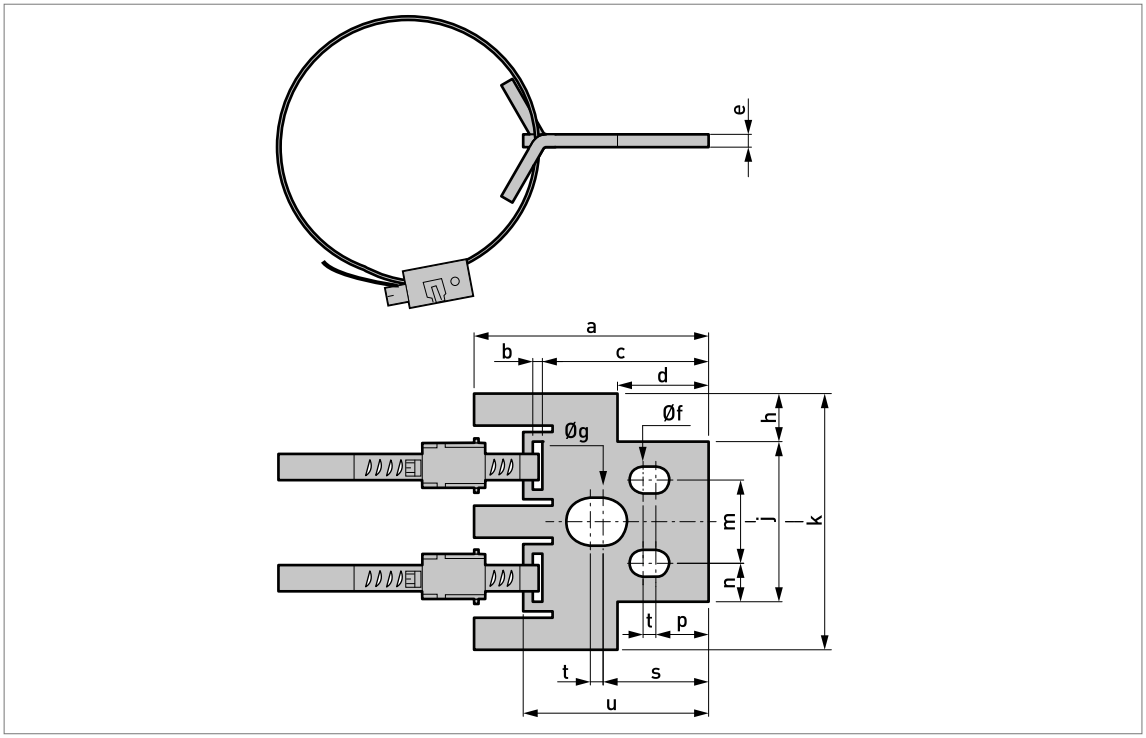


Figure 2-6: Support bracket

The support bracket is an accessory. If necessary, send an order to your supplier.

	Dimensions [mm]															
	a	b	c	d	e	Øf	Øg	h	j	k	m	n	p	s	t	u
Support bracket	73	3	52	28.5	4	8.4	15	15	50	80	26	12	16.5	33	4	58

Table 2-15: Support bracket: dimensions in mm

	Dimensions [inches]															
	a	b	c	d	e	Øf	Øg	h	j	k	m	n	p	s	t	u
Support bracket	2.87	0.12	2.05	1.12	0.16	0.33	0.59	0.59	1.97	3.15	1.02	0.47	0.65	1.30	0.16	2.28

Table 2-16: Support bracket: dimensions in inches

2.3 Maximum process pressure: measuring chamber

Do not use the device at a process pressure more than the maximum limit for a given process temperature.

Maximum process pressure [bar] for a given maximum process temperature [°C]

Standard	Pressure rating	Measuring range, L (C-C)	Maximum process temperature [°C]				
			-20	+20	+38	+50	+100
		[m]	Maximum process pressure [barg]				
EN 1092-1	PN6	0.5 ≤ L ≤ 1	6	6	6	5	1 ①
		1 < L ≤ 2	3	3	3	3	1 ①
		2 < L ≤ 3	2	2	2	2	1 ①
		3 < L ≤ 4	2	2	2	2	1 ①
EN 1092-1	PN16	0.5 ≤ L ≤ 1	6	6	6	5	1 ①
		1 < L ≤ 2	3	3	3	3	1 ①
		2 < L ≤ 3	2	2	2	2	1 ①
		3 < L ≤ 4	2	2	2	2	1 ①
ASME B16.5	Class 150	0.5 ≤ L ≤ 1	6	6	6	5	1 ①
		1 < L ≤ 2	3	3	3	3	1 ①
		2 < L ≤ 3	2	2	2	2	1 ①
		3 < L ≤ 4	2	2	2	2	1 ①

Table 2-17: Maximum process pressure [barg] for a given maximum process temperature [°C]

① Do not use the PVC measuring chamber at a process temperature more than +50°C

Maximum process pressure [psig] for a given maximum process temperature [°F]

Standard	Pressure rating	Measuring range, L (C-C)	Maximum process temperature [°F]				
			-4	+68	+100.4	+122	+212
		[ft]	Maximum process pressure [psig]				
EN 1092-1	PN6	1.6 ≤ L ≤ 3.3	87.0	87.0	87.0	72.5	14.5 ①
		3.3 < L ≤ 6.6	43.5	43.5	43.5	43.5	14.5 ①
		6.6 < L ≤ 9.8	29.0	29.0	29.0	29.0	14.5 ①
		9.8 < L ≤ 13.1	29.0	29.0	29.0	29.0	14.5 ①
EN 1092-1	PN16	1.6 ≤ L ≤ 3.3	87.0	87.0	87.0	72.5	14.5 ①
		3.3 < L ≤ 6.6	43.5	43.5	43.5	43.5	14.5 ①
		6.6 < L ≤ 9.8	29.0	29.0	29.0	29.0	14.5 ①
		9.8 < L ≤ 13.1	29.0	29.0	29.0	29.0	14.5 ①
ASME B16.5	Class 150	1.6 ≤ L ≤ 3.3	87.0	87.0	87.0	72.5	14.5 ①
		3.3 < L ≤ 6.6	43.5	43.5	43.5	43.5	14.5 ①
		6.6 < L ≤ 9.8	29.0	29.0	29.0	29.0	14.5 ①
		9.8 < L ≤ 13.1	29.0	29.0	29.0	29.0	14.5 ①

Table 2-18: Maximum process pressure [psig] for a given maximum process temperature [°F]

① Do not use the PVC measuring chamber at a process temperature more than +122°F

3.1 Intended use

The BM26A- and BM26A-3000 are magnetic level indicators that measure the level or volume of liquids.

The BM26A-3000 is designed to be used with corrosive liquids.

These devices are installed next to open or pressurized tanks. With the applicable options, they are resistant to difficult service conditions and liquids that are poisonous or flammable.

Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator.

The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose.

3.2 Pre-installation requirements

3.2.1 General notes

Obey the installation conditions that follow. For technical data about the device, refer to *Technical data* on page 6.

- Install the magnetic level indicator vertically on the tank.
- Select bolts and gaskets (not supplied) that agree with the pressure rating of the process connection and the process pressure.
- We recommend that you use braces to prevent damage to the process connections.

Make sure that the outer surface temperature of the device is less than +60°C / +140°F. If the surface temperature is more than +60°C / +140°F, use the device with precautions that agree with health and safety rules and regulations.

Customer order data is used to adjust the device. If liquid density changes, the device will not measure correctly. For example, if liquid density decreases, then the float does not follow the surface of the liquid and goes down to the bottom of the measuring chamber.

3.2.2 Isolation valves

We recommend that you install isolation valves between the device and the tank. The device can then be easily removed from the tank for the cleaning procedure. Drain the device only when it is isolated from the tank.

3.3 Reed-chain level transmitter (LT40)

3.3.1 General notes

Customer order data is used to adjust the device. If liquid density changes, the device will not measure correctly. For example, if liquid density decreases, then the float does not follow the surface of the liquid and goes down to the bottom of the measuring chamber.

LT40 C

The compact converter of the LT40 C is attached to the reed-chain tube.

Do not install the LT40 C on the BI version of the device.

LT40 F

The remote converter of the LT40 F is connected to the reed-chain tube by an electrical cable. The electrical cable has a maximum length of 25 m / 82 ft. The remote converter can be attached to a pipe with two hose clamps or attached to a wall with two bolts. Refer to the illustration that follows:

Do not attach the remote converter of the LT40 F reed-chain level transmitter to the BM26A series bypass level indicator, or a hot or cold pipe.

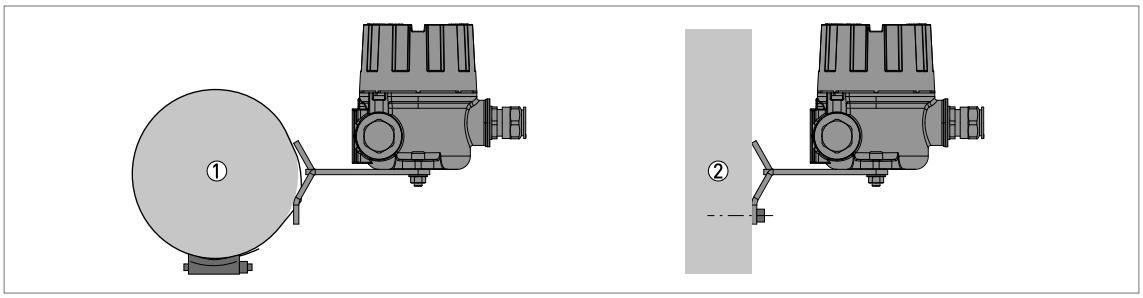


Figure 3-1: LT40 F: Installation of the remote converter - examples of locations (top view)

① The remote converter is attached to a tube with two hose clamps
② The remote converter is attached to a wall with two bolts

3.3.2 Thermal insulation

If you put thermal insulation around the magnetic level indicator, do not cover the housing of the reed-chain level transmitter. Make sure that there is approximately 15 mm / 0.6¨ of empty space between the housing and the thermal insulation.

3.4 Limit switches (MS15 series and MS40 series)

3.4.1 General notes

Limit switch condition - LOW limit:
The limit switch is open when the float moves **below** the switching point.

Limit switch condition - HIGH limit:
The limit switch is open when the float moves **above** the switching point.

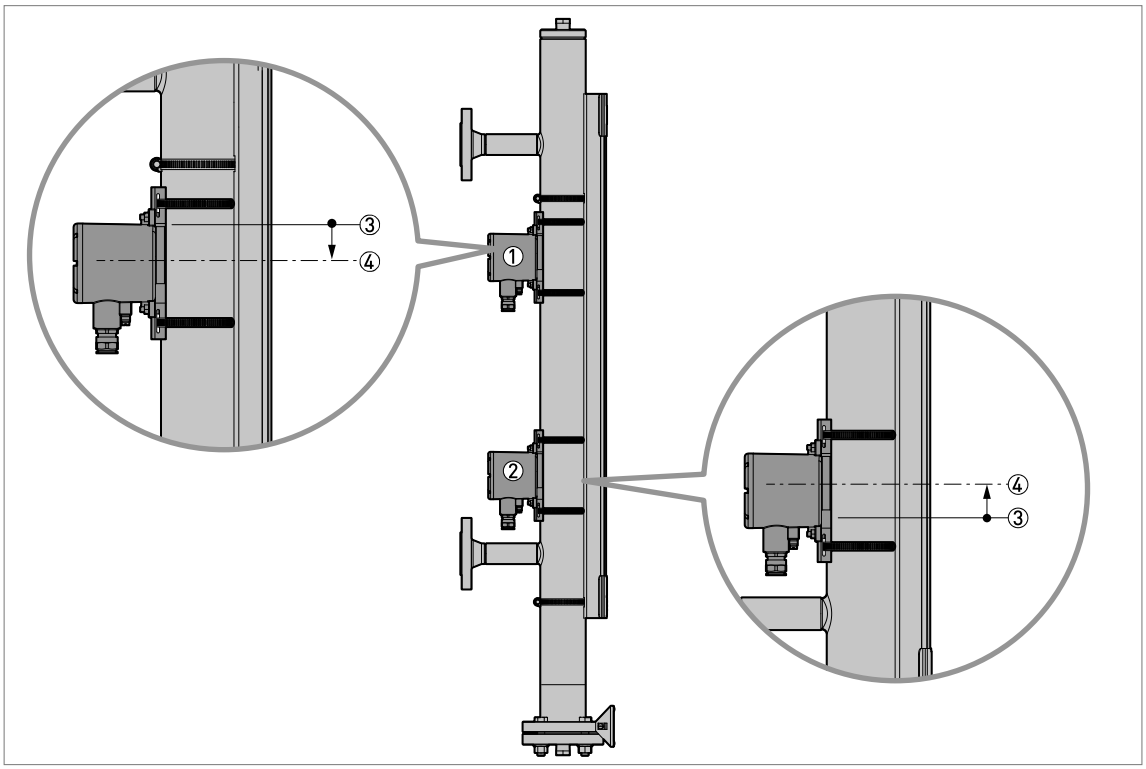


Figure 3-2: Definitions

① Limit switch in "HIGH limit" position
② Limit switch in "LOW limit" position
③ Switching point (the level at which the limit switch changes its condition from "closed" to "open")
④ Correct position of the limit switch in relation to the switching point. If it is a "HIGH limit" switch, put it below the switching point (at a distance equal to the switching point offset value). If it is a "LOW limit" switch, put it above the switching point (at a distance equal to the switching point offset value).

3.4.2 Thermal insulation

If you put thermal insulation around the magnetic level indicator, do not cover the housing of the limit switch. Make sure that there is approximately 15 mm / 0.6¨ of empty space between the housing and the thermal insulation.

Too much heat can cause damage to the limit switch.

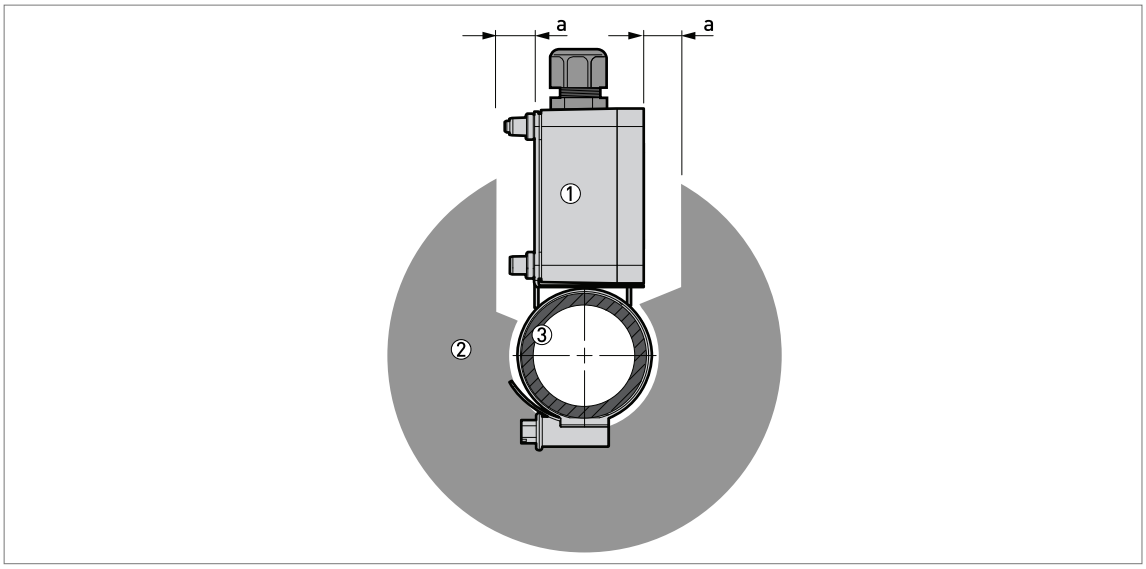


Figure 3-3: Limit switches and thermal insulation for the measuring chamber

① Limit switch housing
② Thermal insulation around the measuring chamber (cross-section)
③ Measuring chamber (cross-section)

Empty space between the limit switch and the thermal insulation for the measuring chamber, a ≥ 15 mm / 0.6¨.

4.1 Reed-chain level transmitter

4.1.1 General notes

The reed-chain level transmitter has 4 output options:

- 4...20 mA
- 4...20 mA + HART®
- PROFIBUS PA
- FOUNDATION™ fieldbus

Obey the wiring instructions that follow.

For more data about the reed-chain level transmitter, refer to *LT40 reed-chain level transmitter* on page 9.

Make sure that the current is not more than 5 A or that there is 5 A-rated fuse in the electrical circuit that energizes the device.

4.1.2 Electrical schematics and procedure

4...20 mA and 4...20 mA + HART output modules

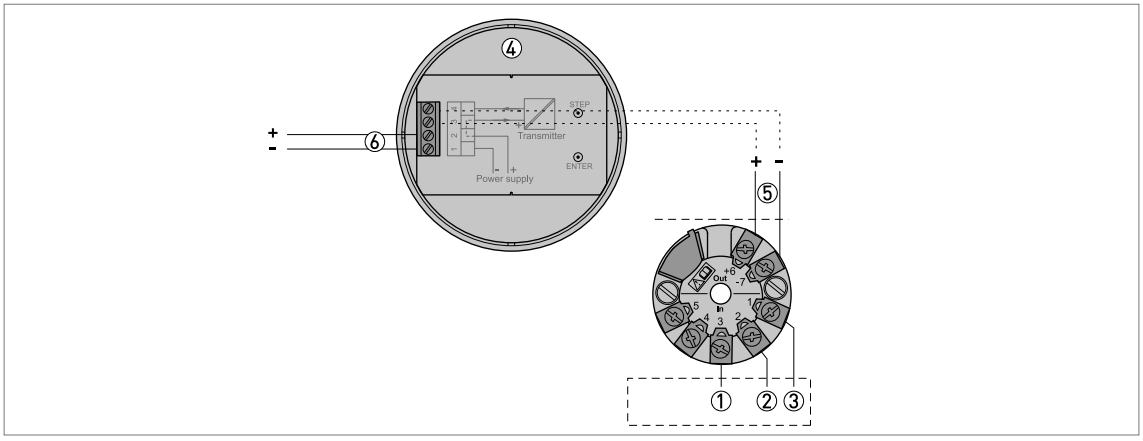


Figure 4-1: Electrical schematic for the 4...20 mA and 4...20 mA + HART output module

① Internal wiring - brown wire
② Internal wiring - red wire
③ Internal wiring - orange wire
④ Optional LCD indicator
⑤ Power supply terminals +/-, without LCD indicator (DC voltage range: 10...35 V (non-Ex or Ex db) or 10...30 V (Ex ia))
⑥ LCD indicator power supply terminals +/- (DC voltage range: 17...35 V)

If the reed-chain level transmitter has the LCD indicator option, then there is a red wire between the positive (+) terminals and a black wire between the negative (-) terminals of the output module and the LCD indicator. Use the +/- terminals on the back the LCD indicator to connect the reed-chain level transmitter to the power supply.

FOUNDATION™ fieldbus / PROFIBUS PA module

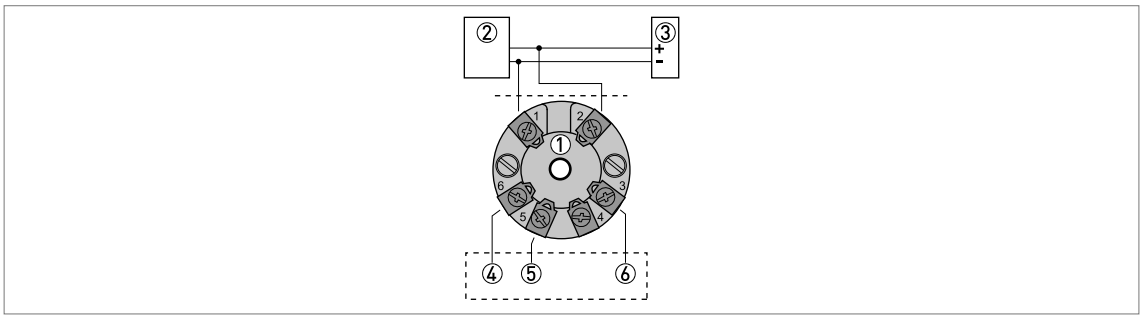


Figure 4-2: Electrical schematic for the FOUNDATION™ fieldbus / PROFIBUS PA module

① Bus connection terminals
② Segment coupler
③ Bus termination
④ Internal wiring - orange wire
⑤ Internal wiring - red wire
⑥ Internal wiring - brown wire

4.2 Limit switches

4.2.1 General notes

There are four limit switch models:

- MS15
- MS15 NAMUR
- MS40
- MS40 NAMUR

Obey the wiring instructions that follow.

For more data, refer to *MS15-series and MS40-series limit switches* on page 13.

4.2.2 Electrical schematics and procedure

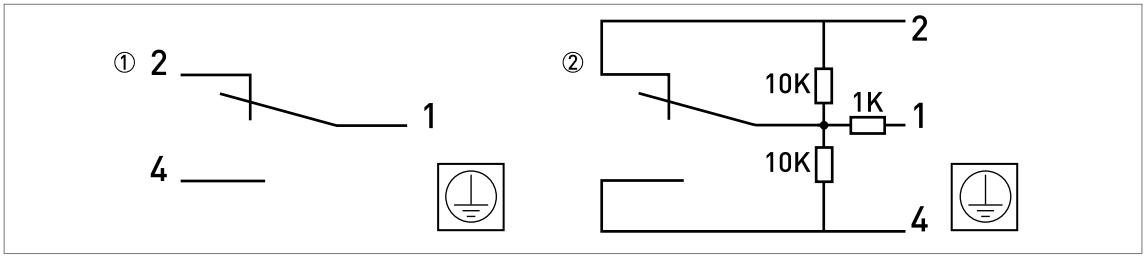


Figure 4-3: Electrical schematics for the MS15-series and MS40-series limit switches

① MS15 or MS40 limit switch
② MS15 or MS40 limit switch with a NAMUR output

If the limit switch is set to "LOW limit", make sure that it is open when the float is below the switch position. If the limit switch is set to the "HIGH limit", make sure that it is open when the float is above the switching point.

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