

# Reed level transmitter For food applications Model FLR-F

WIKA data sheet LM 20.06



for further approvals  
see page 2

## Applications

- Level detection for almost all liquid media
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

## Special features

- Process- and procedure-specific solutions possible
- Operating limits:
  - Operating temperature:  $T = -80 \dots +200 \text{ °C}$  [ $-112 \dots +392 \text{ °F}$ ]
  - Operating pressure:  $P = \text{Vacuum to } 25 \text{ bar}$  [ $362,6 \text{ psi}$ ]
  - Limit density:  $\rho \geq 400 \text{ kg/m}^3$  [ $25,0 \text{ lbs/ft}^3$ ]
- Wide variety of different electrical connections, process connections and materials
- Optionally with programmable and configurable head-mounted transmitter for 4 ... 20 mA field signals, HART®, PROFIBUS® PA and FOUNDATION™ Fieldbus
- Explosion-protected versions (option)

## Description

The model FLR level transmitters with reed measuring chain are used for level measurement in liquid media. They work on the float principle with magnetic transmission.

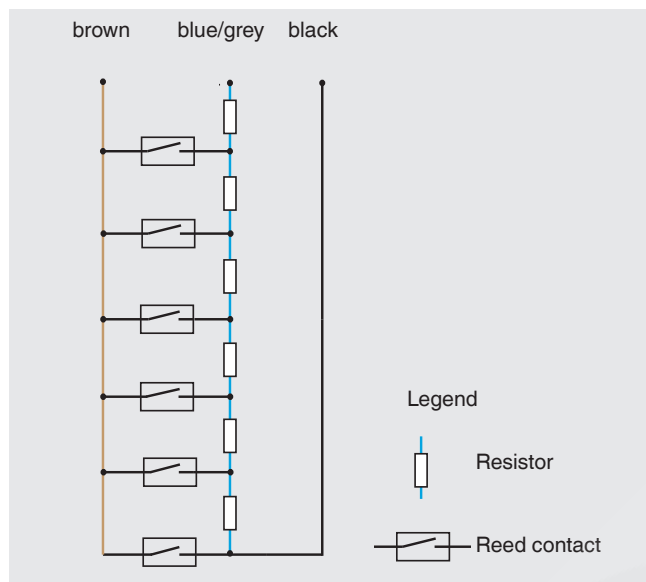
The float's magnetic system in the guide tube actuates a resistance measuring chain that corresponds to a 3-wire potentiometer circuit. The measurement voltage generated by this is proportional to the fill level.

The measurement voltage is very finely stepped due to the contact separation of the measuring chain and is thus virtually continuous. Depending on the requirements several different contact separations are available.



Reed level transmitter, model FLR-F

## Internal circuit diagram of the reed level transmitters



## Model overview

Level transmitter	Description
FLR-FA	Version without head-mounted transmitter
FLR-FB	Version with head-mounted transmitter

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application)</li> <li>■ RoHS directive</li> <li>■ ATEX directive (option) Hazardous areas            - Ex i II 1/2G Ex ia IIC T4 ... T6 Ga/Gb or II 2D Ex ib IIIC T80 °C Db            - Ex d II 2G Ex d IIC T6 Gb / II 2 D Ex tb IIIC T80 °C Db</li> </ul>	European Union
	No. KEMA 01 ATEX 1052 X No. TÜV 13 ATEX 7399 X	

The model FLR- F complies with the requirements of EC regulation no. 1935/2004.

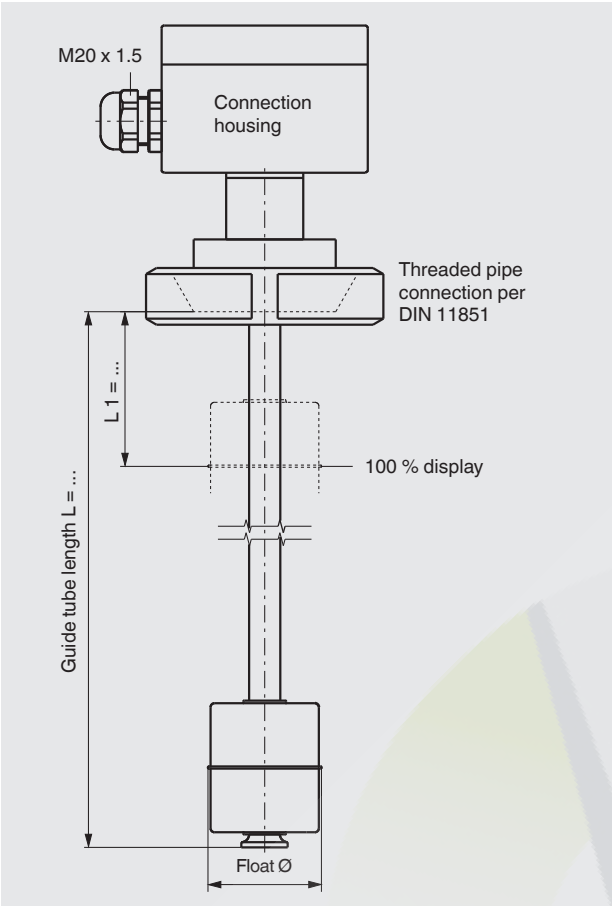
Approvals and certificates, see website

## Specifications

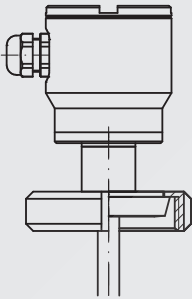
	Model FLR-FA	Model FLR-FB
<b>Electrical connection</b>	Connection housing: Aluminium 80 x 75 x 57 mm [3.1 x 3.0 x 2.2 in] without head-mounted transmitter Option: Polyester, stainless steel	Connection housing: Aluminium 80 x 75 x 57 mm [3.1 x 3.0 x 2.2 in] with head-mounted transmitter Option: Polyester, stainless steel
<b>Material (process connection, guide tube, float)</b>	<ul style="list-style-type: none"> <li>■ Stainless steel 1.4435 (316L)</li> <li>■ Stainless steel 1.4404 (316L)</li> </ul> Electropolished surface	
<b>Process connection</b>	<ul style="list-style-type: none"> <li>■ Threaded pipe connection DIN 11851, downwards, DN 50 ... DN 150</li> <li>■ Clamp pipe connection DIN 32676, DN 25 ... DN 100 or 1" ... 4"</li> <li>■ Clamp pipe connection ISO 2852, DN 25 ... DN 150</li> </ul> Others on request	
<b>Guide tube diameter</b>	<ul style="list-style-type: none"> <li>■ 12 mm [0.5 in]</li> <li>■ 14 mm [0.6 in]</li> <li>■ 18 mm [0.7 in]</li> </ul>	
<b>Max. guide tube length L</b>	<ul style="list-style-type: none"> <li>■ 1,500 mm (guide tube diameter 12 mm [0.5 in])</li> <li>■ 3,500 mm (guide tube diameter 14 mm [0.6 in])</li> <li>■ 6,000 mm (guide tube diameter 18 mm [0.7 in])</li> </ul>	
<b>Float diameter</b>	44 ... 120 mm [1.7 ... 4.7 in]	
<b>Float selection</b>	Depending on guide tube diameter and process conditions (see page 5)	
<b>Max. operating pressure</b>	See page 5	
<b>Temperature range</b>	-20 ... +120 °C [-4 ... +248 °F] Option: <ul style="list-style-type: none"> <li>■ High-temperature version: 120 ... 200 °C [248 ... 392 °F]</li> <li>■ Low-temperature version: -80 ... -20 °C [-112 ... -4 °F]</li> </ul>	
<b>Contact separation</b>	<ul style="list-style-type: none"> <li>■ 5 mm [0.2 in]</li> <li>■ 10 mm [0.4 in]</li> <li>■ 15 mm [0.6 in]</li> <li>■ 18 mm [0.7 in]</li> </ul>	
<b>Resolution</b>	<ul style="list-style-type: none"> <li>■ 2.7 mm [0.1 in]</li> <li>■ 5.5 mm [0.2 in]</li> <li>■ 7.5 mm [0.3 in]</li> <li>■ 9 mm [0.4 in] <sup>1)</sup></li> </ul> (dependent on contact separation)	
<b>Overall resistance of the measuring chain</b>	Depending on length and separation	
<b>Head-mounted transmitter</b>	External transmitter	Head-mounted transmitter, see page 6
<b>Tube end</b>	<ul style="list-style-type: none"> <li>■ Float limitation welded to guide tube</li> <li>■ Float limitation removable (with FDA conform sealing per CFR21 Food and Drugs for guide tube diameters 12 mm [0.5 in] and 14 mm [0.6 in])</li> </ul>	
<b>Output</b>	3-wire potentiometer	4 ... 20 mA
<b>Connection cable to transmitter/ control room</b>	Cable length max. 2,000 m, 3-wire, shielded	2-wire, shielded
<b>Permissible supply voltage</b>	< AC 50 V < DC 75 V	See the data sheet of the head-mounted transmitter used
<b>Mounting position</b>	Vertical ±30°	
<b>Ingress protection</b>	Up to IP66 or IP68 per IEC/EN 60529 (depending on version)	

1) Not with high- and low-temperature version

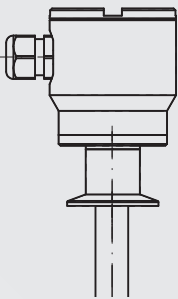
Dimensions in mm



Threaded pipe connection per DIN 11854

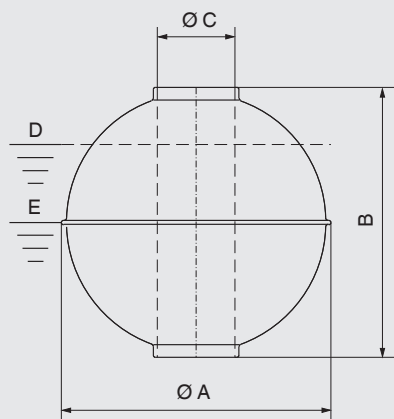


Clamp pipe connection per DIN 32676



# Float

## Spherical float

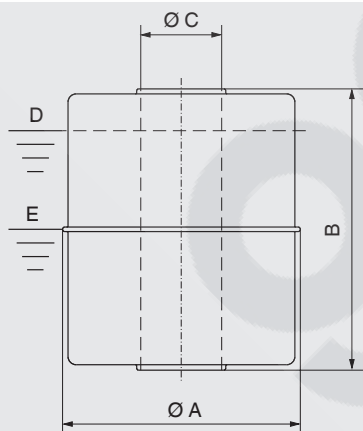


D = Limit density of the medium, immersed float volume 85 %

E = Nominal density of the medium, immersed float volume 50 %

Material	Version	Suits guide tube Ø in mm [in]	Ø A in mm [in]	B in mm [in]	Ø C in mm [in]	Max. operating pressure in bar [psi]	Max. operating temp. in °C [°F]	Limit density 85 % in kg/m <sup>3</sup> [lbs/ft <sup>3</sup> ]
1.4404 or 1.4571	VE52R	■ 12 [0.5] ■ 14 [0.6]	52 [2.0]	52 [2.0]	15 [0.6]	25 [362.6]	250 [482]	700 [43.7]
	VE62R	■ 12 [0.5] ■ 14 [0.6]	62 [2.4]	61 [2.4]	15 [0.6]	16 [232.1]	250 [482]	597 [37.3]
	VE80R	18 [0.7]	80 [3.1]	76 [2.9]	23 [0.9]	16 [232.1]	250 [482]	617 [38.5]
	VE83R	■ 12 [0.5] ■ 14 [0.6]	83 [3.3]	81 [3.2]	15 [0.6]	16 [232.1]	250 [482]	412 [25.7]
	VE98R	18 [0.7]	98 [3.9]	96 [3.8]	23 [0.9]	16 [232.1]	250 [482]	561 [35.0]
	VE105R	18 [0.7]	105 [4.1]	103 [4.1]	23 [0.9]	16 [232.1]	250 [482]	520 [32.5]
	VE120R	18 [0.7]	120 [4.7]	117 [4.6]	23 [0.9]	16 [232.1]	250 [482]	394 [24.6]

## Cylindrical float



D = Limit density of the medium, immersed float volume 85 %

E = Nominal density of the medium, immersed float volume 50 %

Material	Version	Suits guide tube Ø in mm [in]	Ø A in mm [in]	B in mm [in]	Ø C in mm [in]	Max. operating pressure in bar [psi]	Max. operating temp. in °C [°F]	Limit density 85 % in kg/m <sup>3</sup> [lbs/ft <sup>3</sup> ]
1.4404 or 1.4571	VE44R	■ 12 [0.5] ■ 14 [0.6]	44 [1.7]	52 [2.0]	15 [0.6]	16 [232.1]	250 [482]	740 [46.2]

## Head-mounted transmitter

Model T15



Model T32



Model T53



Model	4 ... 20 mA	HART®	PROFIBUS® PA	FOUNDATION™ Fieldbus	Ex i	Order umber
TE	x	-	-	-	x	014832
TS	x	-	-	-	-	005894
T32E	x	x	-	-	x	025216
T32S	x	x	-	-	-	114795
T53F	-	-	-	x	x	025727
T53P	-	-	x	-	x	034422
T15	x	-	-	-	x	122955 122954

### Ordering information

Model / Version / Electrical connection / Process connection / Guide tube diameter / Guide tube length (insertion length) L / Contact separation / 100 % mark L1 / Measuring range M (span 0 ... 100 %) / Process specifications (operating temperature and pressure, limit density) / Options

To order the described floats and head-mounted transmitters the order number is sufficient.

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