

Reed level transmitter With Bluetooth® function Model FLR-SC

WIKA data sheet LM 20.08



Applications

- Level detection for almost all liquid media
- Simple and wireless configuration of the head-mounted transmitter via Bluetooth® 5.0 (BLE) and smartphone and/or tablet
- With Bluetooth® beacon function

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: $P = \text{vacuum to } 80 \text{ bar } [1,160.3 \text{ psi}]$
 - 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
- 4 ... 20 mA output signal with additional Bluetooth® interface for wireless configuration and level monitoring



Description

The model FLR-SC 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.

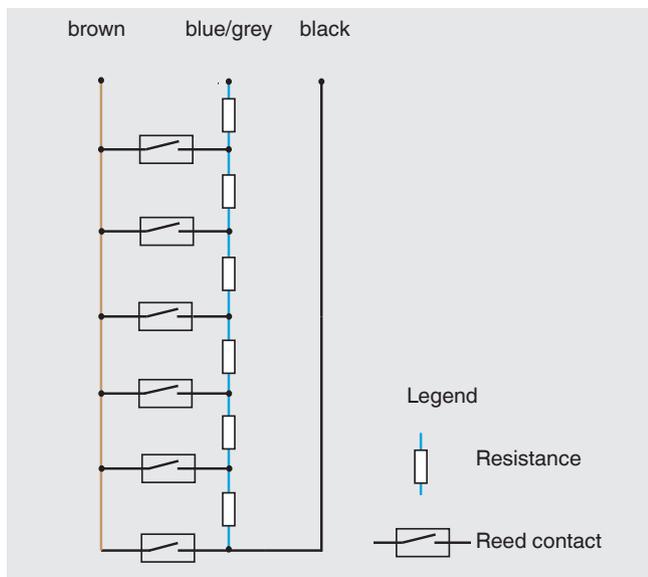
The measurement voltage is very finely stepped due to the contact separation of the measuring chain and is thus virtually continuous. Depending on the requirements, several different contact separations are available.

Reed level transmitter with Bluetooth®, model FLR-SC

The head-mounted transmitter in the case can be configured wirelessly via an app. The head-mounted transmitter communicates the measured values, via Bluetooth®, to a device such as a smartphone or a tablet, which displays the level graphically. In addition, the instrument description, the TAG number and also the 0 % and 100 % marks can be easily configured via the app.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc.
Bluetooth® is a trademark used under licence.

Internal circuit diagram of the reed level transmitters



Approvals

Logo	Description	Country
CE	EU declaration of conformity <ul style="list-style-type: none"> EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application) Low voltage directive RoHS directive 	European Union

Manufacturer's information and certificates

Logo	Description
NAMUR	NAMUR NE 021 with head-mounted transmitter, model XT44-NIV

For approvals and certificates, see website

Specifications

Reed level transmitter with Bluetooth®, model FLR-SC	
Electrical connection	Connection housing: <ul style="list-style-type: none"> ■ Aluminium 80 x 75 x 57 mm [3.1 x 3.0 x 2.2 in] ■ Stainless steel
Material	
Process connection, guide tube	Stainless steel
Float	<ul style="list-style-type: none"> ■ Stainless steel 1.4571 ■ Buna ■ Titanium ■ Polypropylene ■ PVC ■ PVDF
	→ see page 7 and 8
Process connection	<ul style="list-style-type: none"> ■ Mounting thread downwards <ul style="list-style-type: none"> - G 3/8 ... G 2 - 1/2 NPT ... 2 NPT ■ Mounting flange <ul style="list-style-type: none"> - DIN DN 50 ... DN 200, PN 6 ... PN 100 - ANSI 2 ... 8", class 150 ... 600
Guide tube diameter	<ul style="list-style-type: none"> ■ 8 mm [0.3 in] ■ 12 mm [0.5 in] ■ 14 mm [0.6 in] ■ 18 mm [0.7 in]
Max. guide tube length L	<ul style="list-style-type: none"> ■ 500 mm [19.7 in] (guide tube diameter 8 mm [0.3 in]) ■ 3,000 mm [118.1 in] (guide tube diameter 12 mm [0.5 in]) ■ 3,500 mm [137.8 in] (guide tube diameter 14 mm [0.6 in]) ■ 6,000 mm [236.2 in] (guide tube diameter 18 mm [0.7 in])
Float diameter	27 ... 120 mm [1.1 ... 4.7 in]
Float selection	Depending on guide tube diameter and process conditions (→ see page 7)
Max. operating pressure	80 bar [1,160.3 psi]
Temperature range	
Standard version	-40 ... +120 °C [-40 ... +248 °F]
High-temperature version	-40 ... +200 °C [-40 ... +392 °F]
Low-temperature version	-80 ... +120 °C [-112 ... +248 °F]
Resolution (depending on contact separation)	<ul style="list-style-type: none"> ■ 2.7 mm [0.1 in] with 5 mm [0.2 in] contact separation ■ 5.5 mm [0.2 in] with 10 mm [0.4 in] contact separation ■ 7.5 mm [0.3 in] with 15 mm [0.6 in] contact separation ■ 9 mm [0.4 in] with 18 mm [0.7 in] contact separation
Overall resistance of the measuring chain	Depending on length and separation
Output	4 ... 20 mA, Bluetooth® 5.0 (BLE)
Connection cable to transmitter/control room	2-wire, shielded
Permissible supply voltage	→ see page 5
Ingress protection	Up to IP66/IP68 per IEC/EN 60529 (depending on version)

Dimensions in mm

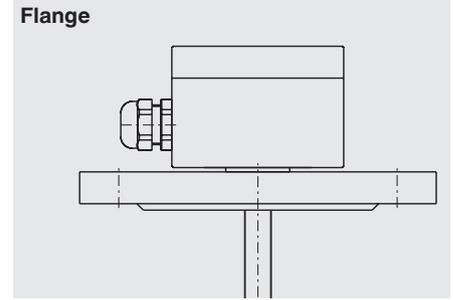
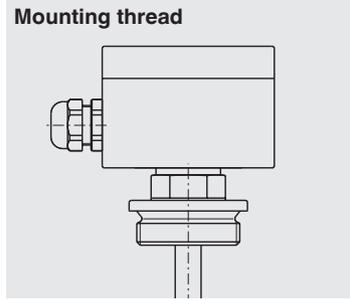
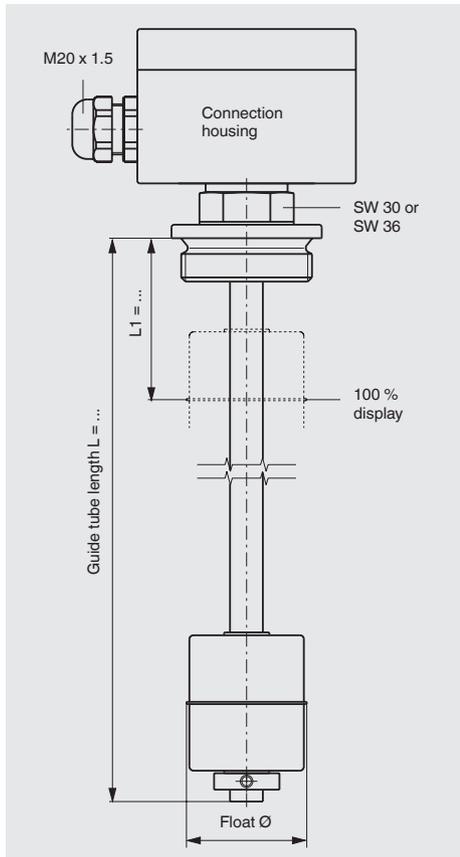
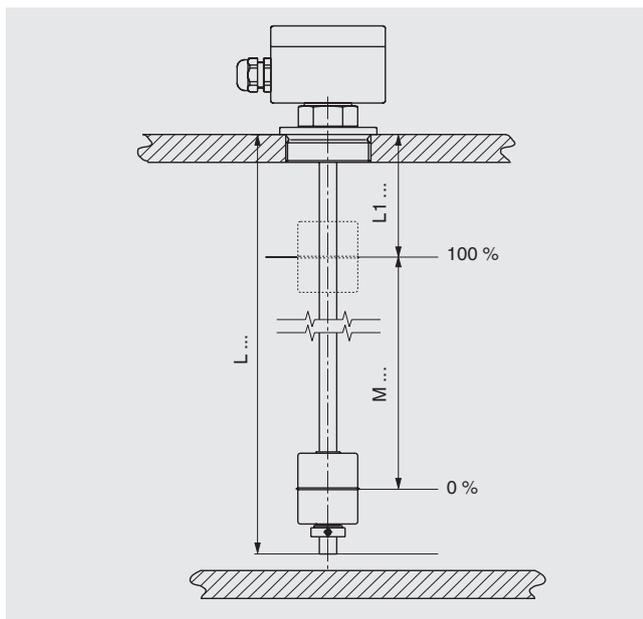


Illustration with the required dimensions for ordering



Legend

L₁ = 100 % mark (distance sealing face-float centre)

M = Measuring range (span 0 ... 100 %)

L = Guide tube length and/or insertion length of the level transmitter

On ordering, the dimension L₁ and the guide tube length (insertion length) L must be specified.

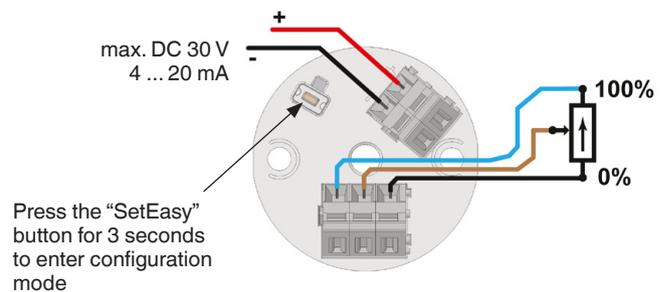
The measuring range can be adjusted later via Bluetooth® app.

Bluetooth® head-mounted transmitter, model XT44-NIV

Specifications	
Input	
Measuring range	1 ... 100 kΩ
Measuring current	100 μA
Protection	Input ±35 V
Filter	50 and 60 Hz
Resolution	9 bits
Repeat accuracy	< 0.05 %
Cursor resistance	Max. 10 kΩ
Refresh rate	5 measurements per second
Output	
Output signal	4 ... 20 mA, 2-wire
Power	DC 12 ... 30 V
Vibration resistance	1 Vms
Charge equation	$RL < (DC\ 12\ V) / 23\ [k\Omega]$
Configuration limits of the output signal	20.5 mA / 3.8 mA per NAMUR NE43
Response time	4 s
Resolution	< 0.25 % of full scale
IoT data	
Programs	See Ap3 Android ©app
Beacon function	Measure curve and values, warnings, real-time chart
Temperature drift	Typ. 0.005 % / °C
Connecting time to the app	3 ... 10 s
Current during communication with the app	23 mA
Operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +85 °C
Air humidity	< 98 % r. h.

Wireless transmitting beacon function

The Bluetooth® transmitter continuously emits its data wirelessly. Data can be read by a smartphone using the specific app (IOS/ANDROID). The transmitter is then identified by its marker (TAG) and its data are accessible in mA and in curve on the digital display of the smartphone. The frequency of data transfer is around 100 ms.



App for Bluetooth® configuration

Via the app, the model FLR-SC level transmitter can be conveniently connected with a smartphone over Bluetooth® Low Energy (BLE).

One calls up the configuration as follows:

Start the app on the end device.

Press the “SetEasy” button on the head-mounted transmitter for 3 seconds.

The status LED changes to flashing blue. The head-mounted transmitter searches for end devices that have the app installed and a connection is able to be established via Bluetooth®.

If a firm connection is established, the status LED changes to blue and stops flashing (pairing mode).

The model FLR-SC is now displayed on the smartphone, and it can now be configured.

In addition to the graphic display of the level (e.g. in percent), the instrument status and the instrument temperature are also displayed.

The instrument description, TAG number and the 0 % and 100 % marks can easily be individually configured via the app.

Press the “Connect” button for 5 seconds to return to the measuring mode.

After 5 minutes without interaction with the application, the level transmitter automatically returns to measuring mode.



For iOS-based smartphones, the app is available in the Apple Store via the link below.

[Download here](#)



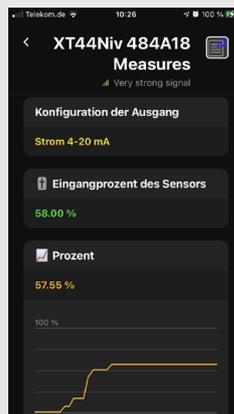
For smartphones with an Android operating system, the app is available in the Play Store via the link below.

[Download here](#)

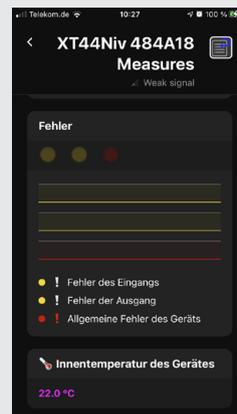


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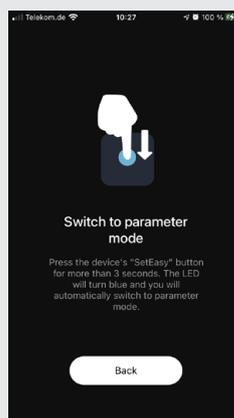
Graphical representation of the level in percent



Error and temperature monitoring

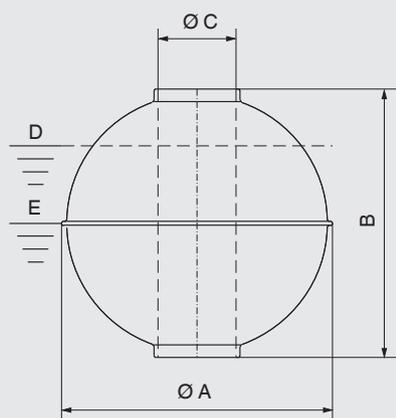


Simple parameterisation by pressing the “SetEasy” button



Float

Spherical float

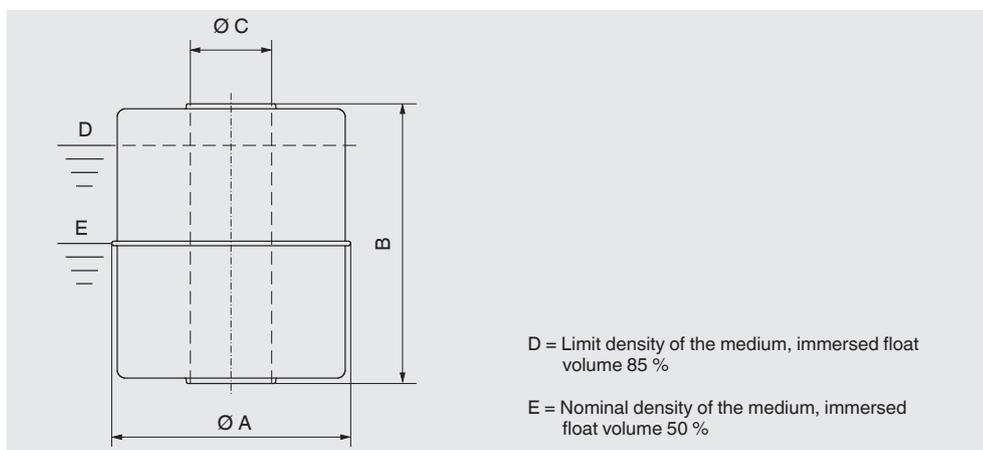


D = Limit density of the medium, immersed float volume 85 %

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

Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³	Order no.
Stainless steel	V29A	8	29	28	9	25	100	920	027355
	V29A/40	12	29	40	13	10	180	720	030352
	V52R	12	52	52	15	40	250	720	020913
	V62R	12	62	61	15	32	250	670	026026
	V83R	12	83	81	15	25	250	430	021089
	V80R	18	80	76	23	25	250	630	005479
	V98R	18	98	96	23	25	250	600	005490
	V105R	18	105	103	23	25	250	560	005494
	V120R	18	120	117	23	25	250	470	026726
	V120R	18 ... 30	120	116	38	25	250	537	-
	V200R	18 ... 30	200	192	56	16	250	581	005503
V300R	18 ... 30	300	294	56	16	250	342	-	
Titanium 3.7035	T52R	12	52	52	15	25	250	680	026655
	T52R	12	52	52	15	60	250	810	034037
	T52R	12	52	52	15	80	250	957	122702
	T62R	12	62	62	15	25	250	390	005538
	T83R	12	83	81	15	25	250	350	005544
	T80R	18	80	76	23	25	250	670	005543
	T105R	18	105	103	23	25	250	440	005549
	T120R	18	120	117	38	25	250	480	115002
Stainless steel 1.4571 ECTFE coated	VEC81R	18	81	77	22	25	Depending on medium	634	110232
	VEC99R	18	99	97	22	25	Depending on medium	653	-
	VEC106R	18	106	104	22	25	Depending on medium	595	-
	VEC121R	18	121	118	22	3	Depending on medium	435	-

Cylindrical float



Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³	Order no.
Stainless steel 1.4571	V27A	8	27	31	10	16	125	787	009679
	V44R	12	44	52	15	16	250	780	034196
Titanium 3.7035	T44R	12	44	52	15	16	250	550	022639
PVC	P55R	16	55	54	22	3	60	805	033696
	P80R	20	80	79	25	3	60	577	033697
Polypropylene	PP55R	16	55	54	22	3	80	592	033700
	PP80R	20	80	79	25	3	80	438	033701
PVDF	PF55R	16	55	69	22	3	100	809	033698
	PF80R	20	80	79	25	3	100	706	033699

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 float, the order number is sufficient.

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