

Level sensor with reed measuring chain,  
Model T/TD/TP/HT/HTD/ST, FLR

EN



Level Sensor model TD12, T12

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Prior to starting any work, read the operating instructions!  
Keep for later use!

Vor Beginn aller Arbeiten Betriebsanleitung lesen!  
Zum späteren Gebrauch aufbewahren!



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# 1. General information

- The magnetic Level sensors described in the operating instructions have been designed and manufactured using state-of-the-art technology. All components are subject to stringent quality and environmental criteria during production. Our management systems are certified to ISO 9001.
- These operating instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time. Pass the operating instructions on to the next operator or owner of the instrument.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.
- Further information:

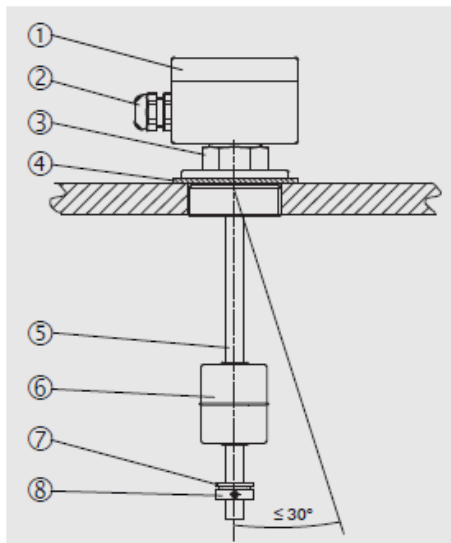
Internet address:            [www.ksr-kuebler.com](http://www.ksr-kuebler.com) / [www.wika.com](http://www.wika.com)

Relevant data sheet:      FLR / LM 20.02

## 2. Design and function

### 2.1 Functional description

Level sensors work on the float principle with magnetic transmission. A permanent magnet built into the float  $\square$  triggers, with its magnetic field, the resistance measuring chain built into the guide tube. The entire assembly corresponds to a 3-wire potentiometer circuit. The float  $\square$  changes its height with the level of the medium it is monitoring. The measured resistance signal is proportional to the level. The measurement voltage is very finely-stepped due to the contact separation of the resistance measuring chain and is thus virtually continuous.



- 1 Connection housing
- 2 Cable bushing
- 3 Mounting thread
- 4 Gasket
- 5 Guide tube
- 6 Float
- 7 Teflon washer
- 8 Float stop

### 2.2 Scope of delivery

Cross-check scope of delivery with delivery note.

## 3. Safety

### 3.1 Symbols



#### **DANGER!**

... indicates an immediately hazardous situation which might result in death or severe injuries if it is not avoided.



#### **WARNING!**

... indicates a potentially hazardous situation which might result in death or severe injuries if it is not avoided.



#### **CAUTION!**

... indicates a potentially hazardous situation which might result in light or minor injuries or property or environmental damages if it is not avoided.



#### **Installation, electrotechnical expertise!**

For the installation particular electrotechnical expertise is required.



#### **Installation, mechanical expertise!**

For the installation particular mechanical expertise is required.



#### **Information**

... highlights useful tips and recommendations and information for efficient and fault-free operation.

### 3.2 Proper intended use

Level sensors are solely intended for monitoring the liquid level of fluids. The area of use is based on the technical performance limits and materials.

- The fluids must not be contaminated nor contain coarse particles nor tend to crystallize. It must be ensured that the magnetic switch materials that come into contact with the media are sufficiently resistant to the

monitored medium. Not suitable for dispersion, abrasive fluids, highly viscous media and paints.

- Compliance with the usage conditions specified in the operating instructions is required.
- Do not operate the unit in direct proximity of ferro-magnetic environments (distance min. 50mm).
- Do not operate the unit in direct proximity of strong electromagnetic fields or in direct proximity of facilities that can be impacted by magnetic fields (distance min. 1m).
- The level sensors must not be exposed to heavy mechanical strain (impact, bending, vibration).
- Compliance with the relevant safety regulations for the use is required.
- Compliance with the technical specifications in these operating instructions is required. Improper use or operation of the unit outside the technical specifications requires immediate shut-down and inspection by an authorized KSR or WIKA service technician.

Claims of any kind due to improper use are excluded.



### **DANGER!**

When working on containers, there is a risk of poisoning or suffocation. Work may only be performed using suitable personal safety equipment (e.g. respiratory protection, protective clothing, etc.).

An explosive atmosphere may develop in a container. Measures must be taken to prevent sparking. Work in such areas must be done by qualified personnel in accordance with the relevant safety regulations and guidelines.

### 3.3 Improper use

Any use that exceeds the technical performance thresholds or that is incompatible with the materials is considered improper use.



#### **WARNING!**

#### **Injury due to improper use**

Improper use of the unit can result in hazardous situations and injuries.

Do not modify the unit without authorization

Any use beyond the proper intended use or any other use is considered improper use.

Do not use this unit in safety or emergency off equipment.

### 3.4 Responsibility of the operator

The unit is used in the industrial sector. The operator is therefore subject to statutory obligations with respect to occupational safety.

Compliance with the safety instructions in these operating instructions and the applicable safety, accident prevention and environmental protection regulations for the area of use of the unit is required.

In order to safely work on the unit, the operator must ensure

- the operating personnel is regularly trained in all matters pertaining to occupational safety, first aid and environmental conservation and is familiar with the operating instructions and, in particular, the safety instructions contained therein
- the unit is suitable for the application in accordance with the proper intended use (check for improper use).

After check, improper use is excluded.



### 3.5 Personnel qualification



#### **WARNING!**

#### **Risk of injury due to insufficient qualifications**

Improper use can result in significant personal injury and property damages.

- The activities described in these operating instructions may only be performed by specialist technicians with the following qualifications.

#### **Specialist personnel**

The specialist personnel authorized by the operator is capable of executing the described work and autonomously detect potential hazards due their technical training, knowledge of measuring and control technology and their experience and knowledge of country-specific regulations, applicable standards and guidelines.

### 3.6 Personal safety equipment

The personal safety equipment serves to protect the technicians against hazards that might impact the safety or health while working. When executing the various tasks on and with the unit, the technicians must wear personal safety equipment.

#### **Comply with warning signs posted in the work area regarding personal safety equipment!**

The required personal safety equipment must be provided by the operator.

## 4. Transport, packaging and storage

### 4.1 Transport

Check the magnetic Level sensor for any damage that may have been caused by transport. Obvious damage must be reported immediately.



#### **CAUTION!**

#### **Damage due to improper transport**

With improper transport, a high level of damage to property can occur.

- Observe the symbols on the packaging.
- Handle packed goods with care

### 4.2 Transport and storage

Do not remove packaging until just before commissioning.

## 5. Commissioning, operation

- Observe all instructions given on the shipment packaging for removing the transportation safety devices.
- Remove the magnetic Level sensor carefully from the packaging!
- When unpacking, check all components for any external damage.

## 5.1 Functional check

Prior to installation, a functional test of the level sensor can be carried out with a resistance measuring instrument and manual movement of the float.

The following table describes the measurements and the expected measured values for the movement of the float, starting from the float stop in the direction of the tank opening.

Resistance measurement of the wire colours	Measured value
<b>BK — BN (R1)</b>	Resistance value rises proportionally with the position of the float.
<b>BU — BN (R2)</b>	Resistance value drops in inverse proportion to the position of the float.
<b>BK — BU (Ri)</b>	Resistance value remains constant, irrespective of the position of the float.



### **WARNING!**

Ensure that the functional check does not start any unintended processes.

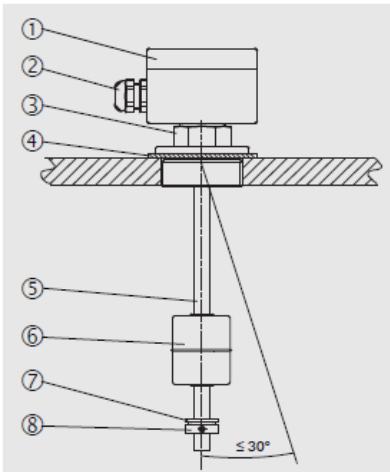
Functional tests must only be carried out with equipment that is approved for use in hazardous area. Tests must be conducted by qualified personnel in accordance with the relevant safety regulations and guidelines.

## 5.2 Mounting preparations

Ensure that the sealing faces of the vessel or the level sensor are clean and do not show any mechanical damage.

## 5.3 Mounting

- Observe the torque values of screws specified in pipefitting work.
- In the selection of the mounting material (seals, bolts, washers and nuts), take the process conditions into account. The suitability of the sealing must be specified with regard to the medium and its vapours. In addition, ensure it has corresponding corrosion resistance.
- Mount the level sensor either via mounting thread (3) or mounting flange (not illustrated).
- The guide tube (5) should not be inclined more than a maximum of 30° to the vertical.
- If the geometry of the float (6) does not fit through the process connection, the float must be removed before mounting.
- Before removal, mark the position of the float stops with a waterproof pen
- Mark the mounting position of the floats (e.g. "Up")
- After the level sensor has been mounted, the float should be re-attached within the inside of the tank (pay attention to the mounting position!).
- Float stops (8) must then be re-attached at the marked points.



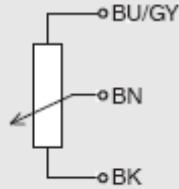
## 5.4 Electrical connection

- The electrical connection must only be made by qualified skilled personnel.
- Wire the level sensor in accordance with the connection diagram of the electrical output (see product label). The connection terminals are appropriately marked.
- Seal the cable gland at the connection housing.
- Install a pour-seal (conduit seal) fitting within 18 inches of the housing to prevent water from entering the housing and for compliance with the National Electrical Code.
- Transmitters with integral electronics (puck and/or display) must be connected in a series loop with the readout or data acquisition device and the power supply. Shielded cable must be used for noise immunity and for Intrinsically Safe applications an agency approved safety barrier must be installed. A ground wire must be provided and connected to the ground block inside the housing.
- To connect a transmitter with a built-in digital display, unscrew and remove the housing cover and carefully remove the plastic label from around the display by grasping each side and pulling upwards. Remove the digital display by carefully pulling up on two diagonal sides of the display. The indicator is held in place by two banana plugs which plug into the baseboard where the 4 to 20 mA puck is mounted. Field wiring connections are made to a two point, compression type, terminal block located on the baseboard (see Fig. 2 for Explosion Proof or drawing 095-3201-001 Pg. 1 for Intrinsically Safe applications). Attach a ground wire directly to the ground screw inside the housing.
- To connect a transmitter without a built-in display, unscrew and remove the housing cover. Field wiring connections are made directly to the puck (see Fig 3 for Explosion Proof, drawing 095-3201-001 Pg. 2 for single puck Intrinsically Safe applications, or drawing 095-3201-001 Pg. 4 for dual puck Intrinsically Safe applications). Attach a ground wire directly to the ground screw inside the housing.

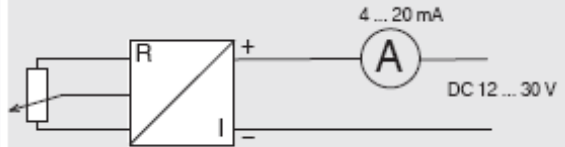
## Electrical output

The entire assembly corresponds to a 3-wire potentiometer circuit

## Connection diagram



Head-mounted transmitter with 4 ... 20 mA



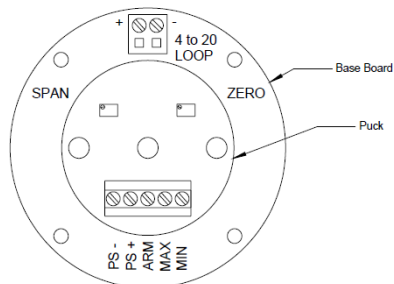
### WARNING!

Malfunctions through voltage spikes due to running cables together with mains connection leads or due to large cable lengths.

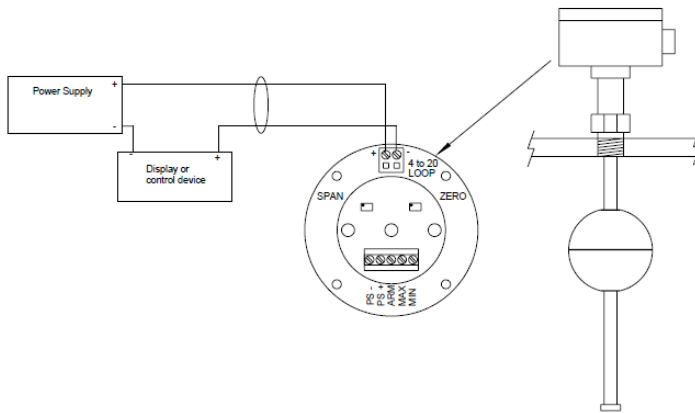
This can lead to a malfunction in the plant and thus lead to injury to personnel or damage to equipment.

- Use shielded connection leads
- Ground connection leads at one end

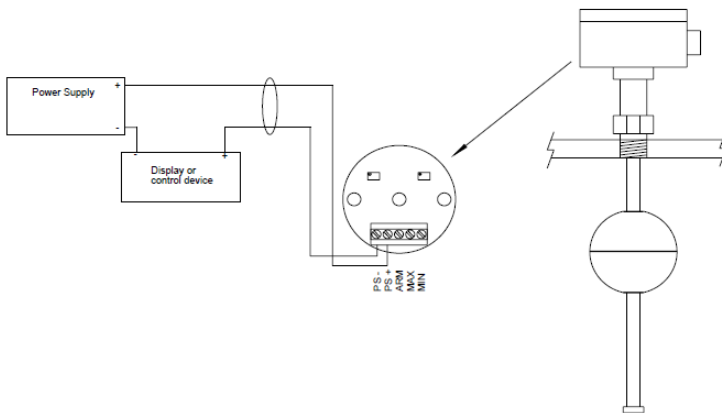
Always observe the mounting and operating instructions of accessories when commissioning them.



PCB layout and components



Wiring for transmitters with integral display



Wiring for transmitters without integral display

## 6. Faults



The following table contains the most frequent causes of faults and the necessary countermeasures.

Faults	Causes	Measures
<b>Level sensor cannot be mounted at the planned place on the vessel</b>	Process connection of the magnetic Level sensor does not match the process connection of the vessel.	Modification of the vessel Return to the factory
	Process connection at the vessel defective	Rework the thread or replace the screwed coupling
	Mounting thread at the magnetic Level sensor defective	Return to the factory
<b>No signal, non-linear or undefined signal</b>	Electrical connection incorrect	See chapter 5.4 "Electrical connection". Check assignment with the aid of the connection diagram.
	Measuring chain defective	Return to the factory
	Head-mounted transmitter defective	Return to the factory
	Head-mounted transmitter adjusted incorrectly	Return to the factory





### **CAUTION!**

#### **Physical injuries and damage to property and the environment**

If faults cannot be eliminated by means of the listed measures, the instrument must be taken out of operation immediately.

- Ensure that there is no longer any pressure present and protect against being put into operation accidentally.
- Contact the manufacturer.
- If a return is needed, please follow the instructions given in chapter 8.2 “Return”.

## **7. Maintenance and cleaning**

### **7.1 Maintenance**

When used properly, the level sensors work maintenance-free. They must be subjected to visual inspection within the context of regular maintenance, however, and included in the vessel pressure test.



### **DANGER!**

Work on vessels involves the danger of intoxication and suffocation. No work is allowed to be carried out unless by taking suitable personal protective measures (e.g. respiratory protection apparatus, protective outfit etc.).

Repairs must only be carried out by the manufacturer.



Perfect functioning of the level sensors can only be guaranteed when original accessories and spare parts are used.

## 7.2 Cleaning



### **CAUTION!**

#### **Physical injuries and damage to property and the environment**

Improper cleaning may lead to physical injuries and damage to property and the environment. Residual media in the dismantled instrument can result in a risk to persons, the environment and equipment.

- Rinse or clean the removed instrument.
- Sufficient precautionary measures must be taken.

1. Prior to cleaning the unit, properly disconnect it from the process and the power supply.
2. Carefully clean the unit with a damp cloth.
3. Do not let electrical connections come into contact with moisture!



### **CAUTION!**

#### **Damage to property**

Improper cleaning may lead to damage to the instrument!

- Do not use any aggressive cleaning agents.
- Do not use any pointed and hard objects for cleaning.

## 8. Dismounting, return and disposal



### **WARNING!**

#### **Physical injuries and damage to property and the environment through residual media**

Residual media in the dismantled instrument can result in a risk to persons, the environment and equipment.

- Wash or clean the dismantled instrument, in order to protect persons and the environment from exposure to residual media.

### 8.1 Dismounting

Only disconnect the measuring instrument once the system has been depressurised and the power disconnected!

### 8.2 Return

Wash or clean the dismantled magnetic Level sensor before returning it, in order to protect personnel and the environment from exposure to residual media.



Information on returns can be found under the heading “Service” on our local website.

### 8.3 Disposal

Incorrect disposal can put the environment at risk.

Dispose of instrument components and packaging materials in an environmentally compatible way and in accordance with the country-specific waste disposal regulations.

## 9. Specifications

### Models

<b>Model</b>	<b>Change-over</b>
<b>T12</b>	Reed level sensor with guide tube 12 mm
<b>T14</b>	Reed level sensor with guide tube 14 mm
<b>T18</b>	Reed level sensor with guide tube 18 mm
<b>T48</b>	Reed level sensor with guide tube 48 mm
<b>TD14</b>	Reed level sensor with guide tube 14 mm, dual output
<b>TD18</b>	Reed level sensor with guide tube 18 mm, dual output
<b>TD48</b>	Reed level sensor with guide tube 48 mm, dual output
<b>TP16</b>	Reed level sensor with guide tube 16 mm, plastic design
<b>TP20</b>	Reed level sensor with guide tube 20 mm, plastic design
<b>HT12</b>	Reed level sensor with guide tube 12 mm, high temperature design
<b>HT14</b>	Reed level sensor with guide tube 14 mm, high temperature design
<b>HT18</b>	Reed level sensor with guide tube 18 mm, high temperature design
<b>HTD14</b>	Reed level sensor with guide tube 14 mm, dual output, high temperature design
<b>HTD18</b>	Reed level sensor with guide tube 18 mm, dual output, high temperature design
<b>ST14</b>	Reed level sensor with guide tube 14 mm, sanitary design
<b>ST18</b>	Reed level sensor with guide tube 18 mm, sanitary design
<b>FLR-SBF</b>	Reed level sensor with guide tube 12, 14 or 18 mm

## Marking

Model	Rating <sup>*)</sup>	Marking
<b>T12</b> <b>T14</b> <b>T18</b> <b>T48</b> <b>FLR-SBF</b>	XP DIP NI	XP / I / 1 / BCD / T6 Ta = 60°C, DIP / II,III / 1 / EFG / T6 Ta = 60°C, NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X
<b>TD14</b> <b>TD18</b> <b>TD48</b>	XP DIP NI	XP / I / 1 / BCD / T6 Ta = 60°C, DIP / II,III / 1 / EFG / T6 Ta = 60°C, NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X
<b>TP16</b> <b>TP20</b>	NI	NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X
<b>HT12</b> <b>HT14</b> <b>HT18</b>	XP DIP NI	XP / I / 1 / BCD / T6 Ta = 60°C, DIP / II,III / 1 / EFG / T6 Ta = 60°C, NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X
<b>HTD14</b> <b>HTD18</b>	XP DIP NI	XP / I / 1 / BCD / T6 Ta = 60°C, DIP / II,III / 1 / EFG / T6 Ta = 60°C, NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X
<b>ST14</b> <b>ST18</b>	XP DIP NI	XP / I / 1 / BCD / T6 Ta = 60°C, DIP / II,III / 1 / EFG / T6 Ta = 60°C, NI / I / 2 / ABCD / T4 Ta = 60°C Type 4, 4X

### **\*) Ratings (FM-approved for the United States of America)**

XP: Explosionproof for Class I, Division 1, Groups B, C and D

DIP: Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G

NI: Nonincendive for Class I, Division 2 Groups A, B, C and D hazardous (classified) locations, indoors and outdoors (Type 4, 4X)

## Type code T..

Field-No.	Code	Description
<b>Basic type</b>		
1	T	Standard design
	TD	Standard design, dual output
	TP	Plastic design
	HT	High temperature design
	HTD	High temperature design, dual output
	ST	Sanitary design
<b>OD Guide tube</b>		
2	nn	OD Guide tube in mm (2 digits)
<b>Contact separation</b>		
3	a	<b>Contact separation of reed chain</b> A = 5 mm B = 6.35 mm C = 10 mm D = 10 mm HT E = 12.7 mm F = 15 mm HT G = 15 mm H = 20 mm J = 5.5 mm K = 11 mm L = 18 mm
<b>Material of construction (wetted parts)</b>		
4	b	S = Stainless steel 316Ti L = Stainless steel 316L C = Hastelloy C B = Hastelloy B T = Titanium V = PVC P = PP K = Kynar (PVDF)
<b>Length</b>		
5	ccc	Length in full inches (3 digits)

<b>Connection size and type</b>		
6	d	<p><b>NPT thread</b>  N05 = 1/2 NPT  N75 = 3/4 NPT  N10 = 1 NPT  N15 = 1.5 NPT  N20 = 2 NPT  NAD = 1/2 NPT adjustable</p> <p><b>Flange ASME B16.5</b>  F10 = 1"  F15 = 1.5"  F20 = 2"  F25 = 2.5"  F30 = 3"  F40 = 4"  F50 = 5"  F60 = 6"</p> <p><b>BSP thread</b>  G05 = BSP 1/2  G10 = BSP 1  G15 = BSP 1.5  G20 = BSP 2</p>
<b>Connection rating</b>		
7	e	A = Flange Class 150 B = Flange Class 300 C = Flange Class 600 D = Thread
<b>Electronics option</b>		
8	f	0 = Potentiometer output (remote electronics) 1 = Output 4-20mA, loop-powered 3 = Output 4-20mA with indicator, loop-powered
<b>Electrical housing</b>		
9	g	3 = Stainless steel XP with window 4 = Aluminium 7 = Aluminium XP 8 = Stainless steel XP 9 = Aluminium XP with window

For further specifications see data sheet FLR and LM 20.02.

## Type code FLR

Field-No.	Code	Description
<b>Basic type</b>		
1	FLR	Reed level sensor
<b>Material of construction</b>		
2	S	Metal SS 316Ti, SS 316L, Titanium Hastelloy C, Hastelloy B
<b>Electrical connection</b>		
3	B	Housing with head-mounted transmitter
<b>Approval</b>		
4	F	XP, DIP

Type: (1) - (2) - (3) - (4)



# CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS
- Certificate No: **FM18US0215**
- Equipment:  
(Type Reference and Name) **Series F, MMS, MRS, S, SS, ELS-SAF, BGU-AXPF, BGU-AMXPF, BGU-AHTXPF, FLS-SAF Level Switch and Series BT, HT, ST, T, TD, TP, HTP, BLR-SBF, FLR-SBF Level Transmitter**
- Name of Listing Company: **KSR Kuebler Niveau-Messtechnik GmbH**
- Address of Listing Company: **Heinrich-Kuebler-Platz 1,  
D-69439 Zwingenberg,  
Germany**
- The examination and test results are recorded in confidential report number:  
**3D4A0.AE dated 8<sup>th</sup> March 1999**
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
**FM Class 3600:2018, FM Class 3611 2004, FM Class 3615:2018, FM Class 3810: 2018,  
NEMA 250:1991**
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:  
**Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G; Nonincendive for Class I, Division 2 Groups A, B, C and D hazardous (classified) locations, indoors and outdoors (Type 4, 4X)**

Certificate issued by:

J.E. Marquedant  
VP, Manager - Electrical Systems

26 January 2021

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

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T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

F 347 (Mar 18)

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## SCHEDULE



US Certificate Of Conformity No: FM18US0215

11. The marking of the equipment shall include:

**BT-a-b. Level Transmitter.**

CL I, Div 2, GP ABCD, T4 Ta = 60°C, Type 4

**BTX-a-b, BTXi-a-b, BLR-SBF Level Transmitter.**

CL I, Div 1, GP BCD T6 Ta = 60°C;

CL II, III, Div 1, GP EFG T3C Ta = 60°C;

CL I, Div 2, GP ABCD, T4 Ta = 60°C, Type 4

**HT12abcdeffg. Level Transmitter.**

**HT14abcdeffg, HT18abcdeffg. Level Transmitter.**

**HTD14abcdeffg, HTD18abcdeffg. Level Transmitter.**

**ST14abcdeffgh, ST18abcdeffgh. Level Transmitter.**

**T12abcdeffg. Level Transmitter. T14abcdeffg, T18abcdeffg. Level Transmitter. T48abcdeffg0. Level Transmitter.**

**TD14abcdeffg, TD18abcdeffg. Level Transmitter.**

**TD48abcdeffg0. Level Transmitter.**

**FLR-SBF. Level Transmitter.**

CL I, Div 1, GP BCD T6 Ta = 60°C;

CL II, III, Div 1, GP EFG T6 Ta = 60°C;

CL I, Div 2, GP ABCD, T4 Ta = 60°C, Type 4/4X

**TP16abcdeffg, TP20abcdeffg. Level Transmitter.**

CL I, Div 2, GP ABCD, T4 Ta = 60°C, Type 4/4X

**F50abcdeffg, F70abcdeffg or ELS-SAF Level Switch.**

CL I, Div 1, GP BCD T6 Ta = 77°C;

CL II, III, Div 1, GP EFG, Type 4

**S12abcdeffg. Level Switch.**

**S18abcdeffg. Level Switch.**

**S48abcdeffg. Level Switch.**

**SS14abcdeffgh. Level Switch.**

**SS18abcdeffgh. Level Switch.**

**FLS-SAF. Level Switch.**

CL I, Div 1, GP BCD T6 Ta = 77°C;

CL II, III, Div 1, GP EFG, T6 Ta = 77°C, Type 4/4X

**SP12abcdeffgS and SP20abcdeffgS. Level Switch.**

Type 4/4X

**MRS-2-XP, MMS-5-XP. Level Switch.**

**MRS-2-XP-HT. Level Switch.**

**BGU-AMXPF, BGU-AXPF or BGU-AHTXPF. Level Switch.**

Type 4

12. Description of Equipment:

**General** – Model F, MMS, MRS, S, SS, ELS-SAF, BGU-AXPF, BGU-AMXPF, BGU-AHTXPF, FLS-SAF Level Switches, and BT, HT, ST, T, TD, TP, HTP, BLR-SBF, FLR-SBF Level Transmitters measure the level of a liquid using a magnetically coupled float.

**Construction** – Model F, MMS, MRS, S, SS, ELS-SAF, BGU-AXPF, BGU-AMXPF, BGU-AHTXPF, FLS-SAF

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

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Level Switches, and BT, HT, ST, T, TD, TP, HTP, BLR-SBF, FLR-SBF Level Transmitters are coupled to a sensing tube probe assembly. The probe assembly is threaded into an electronics housing where all input/output connections are made.

**Ratings** – See section 11 for the ambient temperature specifics of the Model F, MMS, MRS, S, SS, ELS-SAF, BGU-AXPF, BGU-AMXPF, BGU-AHTXPF, FLS-SAF Level Switches, and BT, HT, ST, T, TD, TP, HTP, BLR-SBF, FLR-SBF Level Transmitters.

**BT-a-b. Level Transmitter.**

- a = Resolution in mm (2 digits).
- b = Length in inches (4 digits).

**BTX-a-b, BTXI-a-b. Level Transmitter.**

- a = Resolution in mm (2 digits).
- b = Length in inches (4 digits).

**BLR-ab. Level Transmitter.**

- a = S, Standard (Metal housing)
- b = B, with head-mounted transmitter

**HT12abcdefg. Level Transmitter.**

- a = Resolution A, D or F.
- b = Wetted parts material S, L, B, C or T.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N05, N75, N10, N15, N20 or NAD.
- e = Connection rating A, B, C or D.
- f = Electronics option 0, 1 or 3.
- g = Housing 4, 7, 8 or 9 (4 intrinsically safe and nonincendive only).

**HT14abcdefg, HT18abcdefg. Level Transmitter.**

- a = Resolution A, D or F.
- b = Wetted parts material S, L, B, C or T.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20 or NAD.
- e = Connection rating A, B, C or D.
- f = Electronics option 0, 1 or 3.
- g = Housing 4, 7, 8 or 9 (4 intrinsically safe and nonincendive only).

**HTD14abcdefg, HTD18abcdefg. Level Transmitter.**

- a = Resolution A, D or F.
- b = Wetted parts material S, L, B, C or T.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20 or NAD.
- e = Connection rating A, B, C or D.
- f = Electronics option 0 or 1.
- g = Housing 7, 8 or 9.

**ST14abcdefg, ST18abcdefg. Level Transmitter.**

- a = Resolution A, D or F.
- b = Wetted parts material S or L.
- c = Sensor length inches (3 digits).
- d = Connection 10, 15, 20, 25, 30, 40, 50, 60 or AD.
- e = Connection rating S or N.
- f = Electronics option 0, 1 or 3.

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g = Housing 4, 7, 8 or 9 (4 intrinsically safe and nonincendive only).  
h = Float stop 1, 2 or 4.

**T12abcdefg. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N05, N75, N10, N15, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Electronics option 0, 1 or 3.  
g = Housing 4, 6, 7, 8 or 9 (4, 6 intrinsically safe and nonincendive only).

**T14abcdefg, T18abcdefg. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Electronics option 0, 1 or 3.  
g = Housing 4, 6, 7, 8 or 9 (4, 6 intrinsically safe and nonincendive only).

**FLR-ab. Level Transmitter.**

a = S, Standard (Metal housing)  
b = B, Connection housing with Head transmitter

**T48abcdefg0. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F20, F25, F30, F40, F50, F60, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Electronics option 0, 1 or 3.  
g = Housing 4, 6, 7, 8 or 9 (4, 6 intrinsically safe and nonincendive only).

**TD14abcdefg, TD18abcdefg. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Electronics option 0 or 1.  
g = Housing 7, 8 or 9.

**TD48abcdefg0. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F20, F25, F30, F40, F50, F60, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Electronics option 0 or 1.  
g = Housing 4, 6, 7, 8 or 9 (4, 6 intrinsically safe and nonincendive only).

**TP16abcdefg, TP20abcdefg. Level Transmitter.**

a = Resolution A, B, C, D, E, F, G or H.  
b = Wetted parts material V, P or K.

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- c = Sensor length inches (3 digits).
- d = Connection type F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20, NAD.
- e = Connection rating A or D.
- f = Electronics option D, 1 or 3.
- g = Housing 1, 4, 7 or 9.

**SP12abcdeFS and SP20abcdeFS. Level Switch.**

- a = Number of switches 1, 2, 3 or 4.
- b = Wetted parts material V, P or K.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N05 (SP12 only), N10, N15, N20 or NAD.
- e = Connection rating A or D.
- f = Housing 1, 4, 5 or 7.

**F50abdefg or F70abdefg. Level Switch.**

- a = Number of switches 1, 2, 3 or 4.
- b = Wetted parts material S, L, C, B or T.
- c = Chamber A, B or K.
- d = Connection orientation H or V.
- e = Connection F05, F75, F10, F15, F20, N05, N75 or N10.
- f = Connection rating A, B, C or D.
- g = Housing 4, 5 or 7 (4, 5 nonhazardous location rated).

**ELS-ab. Level Switch.**

- a = S, Stainless steel
- b = A, Terminal housing / plug > 50V (low voltage)

**MRS-2-XP, BGU-AXPFMMS-5-XP or BGU-AMXPF. Level Switch.**

**MRS-2-XP-HT or BGU-AHTXPF. Level Switch.**

**S12abcdefg. Level Switch.**

- a = Number of switches 1, 2, 3 or 4.
- b = Wetted parts material S, L, C, B or T.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N05, N75, N10, N15, N20 or NAD.
- e = Connection rating A, B, C or D.
- f = Housing 4, 5, 7 or 8 (4, 5 nonhazardous location rated).
- g = Switch temperature S, L or H.

**S18abcdefg. Level Switch.**

- a = Number of switches 1, 2, 3, 4, 5 or 6.
- b = Wetted parts material S, L, C, B or T.
- c = Sensor length inches (3 digits).
- d = Connection F10, F15, F20, F25, F30, F40, F50, F60, N75, N10, N15, N20 or NAD.
- e = Connection rating A, B, C or D.
- f = Housing 4, 5, 7, 8 or 9 (4, 5 nonhazardous location rated).
- g = Switch temperature S, L or H.

**FLS-ab. Level Switch**

- a = S, Standard (Metal housing)
- b = B, Connection housing with Head transmitter

**S48abcdefg. Level Switch.**

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a = Number of switches 1, 2, 3, 4, 5 or 6 (4 max for S12).  
b = Wetted parts material S, L, C, B or T.  
c = Sensor length inches (3 digits).  
d = Connection F20, F25, F30, F40, F50, F80, N20 or NAD.  
e = Connection rating A, B, C or D.  
f = Housing 4, 7, 8 or 9 (4 nonhazardous location rated).  
g = Switch temperature S, L or H.

**SS14abcdefgh. Level Switch.**

a = Number of switches 1, 2, 3 or 4.  
b = Wetted parts material S or L.  
c = Sensor length inches (3 digits).  
d = Connection 10, 15, 20, 25, 30, 40, 50, 60 or AD.  
e = Connection rating S or N.  
f = Housing 4, 7 or 8 (4 nonhazardous location rated).  
g = Switch temperature S, L or H.  
h = Float stop 1, 2 or 4.

**SS18abcdefgh. Level Switch.**

a = Number of switches 1, 2, 3, 4, 5 or 6.  
b = Wetted parts material S or L.  
c = Sensor length inches (3 digits).  
d = Connection 10, 15, 20, 25, 30, 40, 50, 60 or AD.  
e = Connection rating S or N.  
f = Housing 4, 7, 8 or 9 (4 nonhazardous location rated).  
g = Switch temperature S, L or H.  
h = Float stop 1, 2 or 4.

**13. Specific Conditions of Use:**

None

**14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

**15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

**16. Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
8 <sup>th</sup> March 1999	Original Issue.

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## SCHEDULE



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27 <sup>th</sup> August 2018	<u>Supplement 2:</u> Report Reference: – RR214205 dated 27 <sup>th</sup> August 2018. Description of the Change: Company transfer of Project ID 3D4A0.AE listed in this certificate from KSR Kuebler of America to KSR Kuebler Niveau-Messtechnik AG. Standard editions FM3600, FM3615 and FM3810 have been updated as the new standard edition changes are non-technical. Certificate updated to new format.
26 <sup>th</sup> January 2021	<u>Supplement 3:</u> Report Reference: – RR226046 dated 26 <sup>th</sup> January 2021. Description of the Change: Change of company name from KSR KUEBLER Niveau-Messtechnik AG to KSR KUEBLER Niveau-Messtechnik GmbH. Extension of type designation without any technical or design changes. Model ELS-SAF, BGU-AXPF, BGU-AMXPF, BGU-AHTXPF, FLS-SAF Level Switches and BLR-SBF, FLR-SBF Level Transmitters are new codes but are the same design as in the existing approval.

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WIKA subsidiaries worldwide can be found online at [www.wika.com](http://www.wika.com).

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