

Reed sensor For bypass level indicators Model BLR for nuclear power plants

KSR data sheet BLR for NPP



Applications

- Sensor for continuous level measurement of liquids in bypass level indicators
- Chemical and petrochemical industries, oil and natural gas extraction (on- and offshore)
- Shipbuilding, machine building
- Power generating equipment, power plants
- Pharmaceutical, food, water treatment, environmental engineering industries

Special features

- Installation of head-mounted transmitters in the connection housing possible
- Various contact separations selectable
- Programmable and configurable head-mounted transmitters for field signal 4 ... 20 mA, HART®, PROFIBUS® PA or FOUNDATION™ Fieldbus
- Explosion-protected versions
- Temperature ranges from -100 ... +350 °C

Description

The model BLR reed sensors are used for continuous monitoring and recording of the liquid level in connection with transmitters. They work on the float principle with magnetic transmission (permanent magnet, reed switch and resistance measuring chain) in a 3-wire potentiometer circuit.

A magnetic system built into the float actuates, through the walls of the bypass chamber and of the sensor tube, reed contacts at a resistance measuring chain (potentiometer). The measurement voltage generated by this is proportional to the fill level.



Reed sensor, model BLR-S

The resistance measuring chain is made up from reed contacts and resistors soldered onto a PCB. Depending on requirements and design several different contact separations from 5 to 18 mm are available.

For selecting the optimum sensor (sensor model, connection housing, electrical connection, sensor tube (material and total length), contact separation, head-mounted transmitter, measuring range, approval) we offer application-related technical advice.

Model overview

Sensor model	Description	Approval								Temperature range
		without	Ex i	Ex d	GL	DNV	Ex i + GL	Ex i + DNV	IEEE 323	
BLR-S	Reed sensor, standard	x			x	x			x	-50 ... +350 °C
BLR-S-Ex i	Reed sensor, intrinsically safe version Ex i		x				x	x	x	-50 ... +100 °C

Ex approvals

Explosion protection	Ignition protection type	Model	Zone	Approval number
ATEX	Ex i	BLR-S-Ex i	Zone 1, gas	KEMA 01ATEX1052 X II 2G Ex ia IIC T4 ... T6 Gb
	Ex i + GL	BLR-S-Ex i	Zone 1, gas	KEMA 01ATEX1052 X II 2G Ex ia IIC T4 ... T6 Gb + GL 35949-87 HH
	Ex i + DNV	BLR-S-Ex i	Zone 1, gas	KEMA 01ATEX1052 X II 2G Ex ia IIC T4 ... T6 Gb + DNV A-11451

Type approval

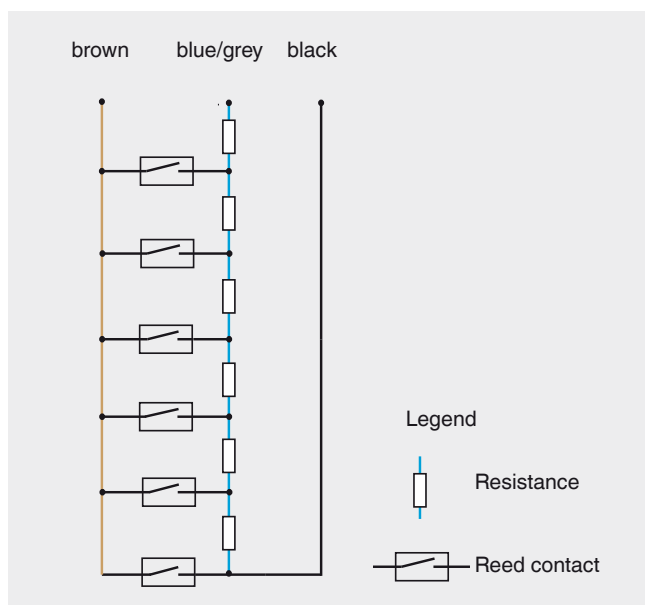
Approval	Model	Approval number
GL	BLR-S	GL - 35 949 - 87 HH
DNV	BLR-S	DNV A-11451
IEEE 323, 344	BLR-S	-
GOST-R	all	0959333

Further approvals on request

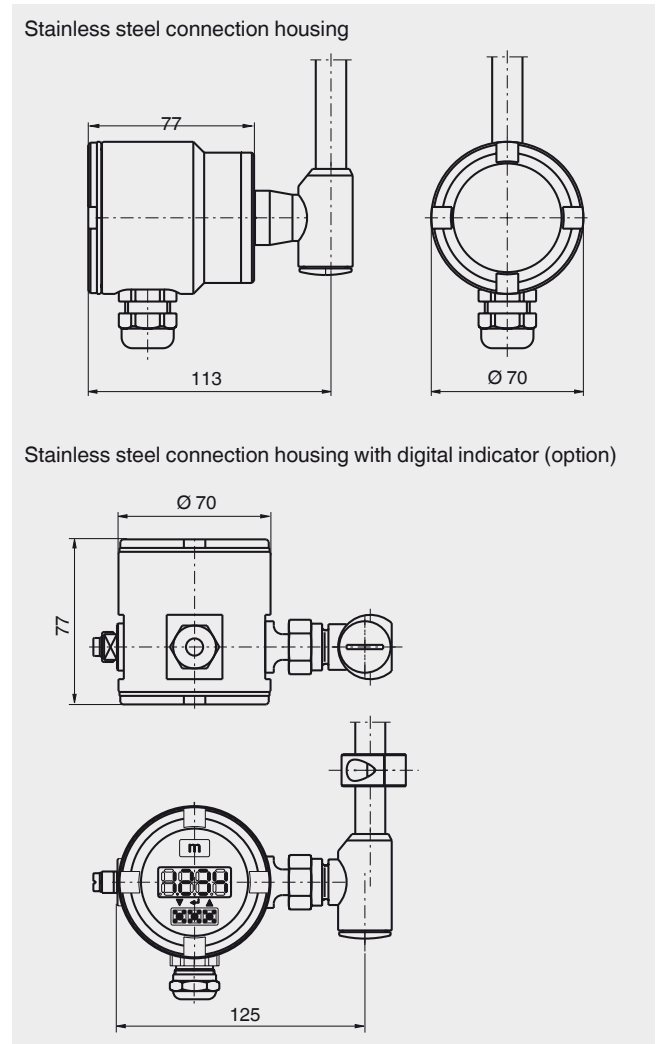
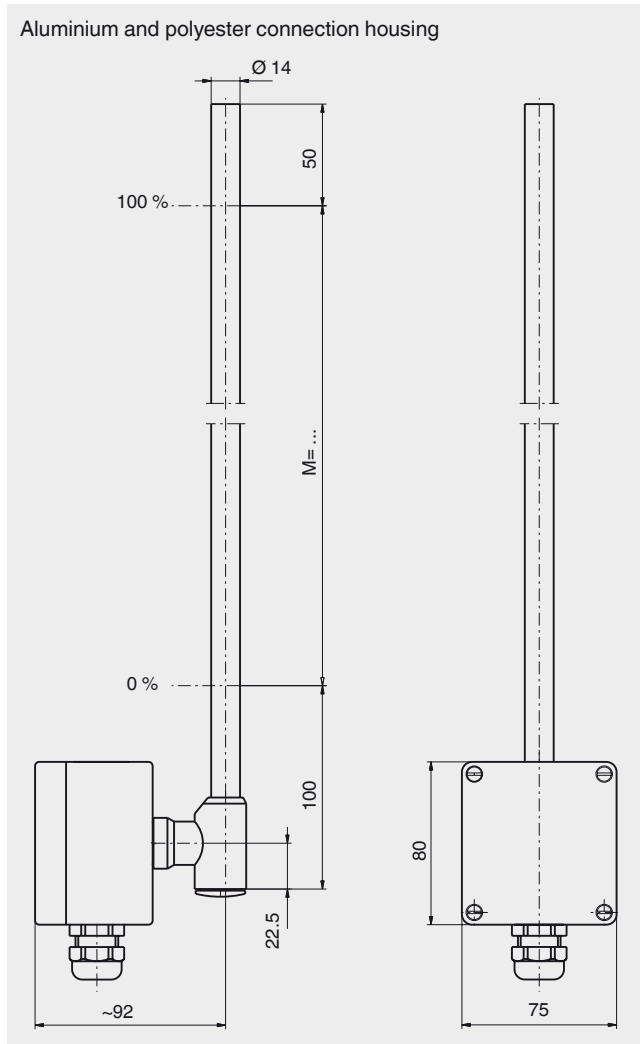
Options

- 2-wire head-mounted transmitter in the connection housing.
- Stainless steel connection housing with digital indicator.
- External transmitter can be mounted directly in switchboards.
- Nuclear qualified plug (Han® 7D) on request.

Internal circuit diagram of the reed sensors



Reed sensors, models BLR-S and BLR-S-Ex i



Model BLR-S

Specifications

Connection housing	Aluminium	80 x 75 x 57 mm
	Stainless steel 1.4571	Ø 70 x 77 mm
	Stainless steel 1.4571 with digital indicator	Ø 70 x 77 mm
Sensor tube	Stainless steel 1.4571, tube Ø 14 x 1 mm	
Contact separation	18 mm, standard	
	15 mm, high temperature, low temperature	
	10 mm, standard, high temperature, low temperature	
	5 mm, standard, high temperature, low temperature	
	5 mm, standard, high temperature, low temperature	
Overall resistance of the measuring chain	Length and separation dependent	
Ambient temperature	Standard version	-50 ... +100 °C
	High temperature version	-50 ... +200 °C
	Low temperature version	-100 ... +100 °C
	Standard version with Microtherm®	-50 ... +250 °C
	High temperature version with Microtherm®	-50 ... +350 °C
	High temperature version with Microtherm®	-50 ... +350 °C
Ingress protection	Aluminium connection housing: IP 65 Stainless steel connection housing: IP 67	

Model BLR-S-Ex i

Specifications

Connection housing	Aluminium	80 x 75 x 57 mm
	Polyester	80 x 75 x 55 mm
	Stainless steel 1.4571	Ø 70 x 77 mm
	Stainless steel 1.4571 with digital indicator	Ø 70 x 77 mm
	Stainless steel 1.4571 with digital indicator	Ø 70 x 77 mm
Sensor tube	Stainless steel 1.4571, tube Ø 14 x 1 mm	
Contact separation	18 mm	
	10 mm	
	5 mm	
Overall resistance of the measuring chain	3.2 ... 50 kΩ	
Max. permissible surface temperature at the sensor tube	T4	+100 °C
	T5	+65 °C
	T6	+50 °C
Ingress protection	Aluminium connection housing: IP 65	
	Stainless steel connection housing: IP 67	
Approval	Ex i	

Nuclear qualified plug (Han® 7D) on request.

Head-mounted transmitter



Model TE

Model T32E

Model T53F

Model TLEH

Model	4 ... 20 mA	HART®	PROFIBUS® PA	Fieldbus™	Exi	SIL2	IEEE 323, 344	Display
TE	x				x		x	
TS	x							
T32E	x	x			x	x		
T32S	x	x				x		
T53F				x	x			
T53P			x		x			
TLH	x	x						x
TLEH	x	x			x			x

CE conformity

Electromagnetic compatibility (EMC)

2004/108/EC

ATEX directive (option)

94/9/EC, ignition protection type Ex i and Ex d, zone 1, gas

Approvals

- **GL**, ships, shipbuilding, offshore, Germany
- **DNV**, ships, shipbuilding, offshore, Norway
- **GOST**, national standard for Russia, Kazakhstan and Belarus
- **IEEE 323**, standard for qualifying class 1E equipment for nuclear power generating stations
- **IEEE 344**, standard for seismic qualification of equipment for nuclear power generating stations

Approvals and certificates, see website