



GRF18S

EASY, COMPACT AND RUGGED

Level Sensors

SICK
Sensor Intelligence.

THE HIGHEST LEVEL OF COST EFFICIENCY

The GRF18S optical level switch stands for reliable level measurement of water and water-based liquids. Since previous medium calibration is not necessary, the level switch can be put into operation quickly even if space is tight, thanks to its small and compact design. The easy and low-maintenance functionality according to the optical principle makes the GRF18S a reliable detection solution with an excellent price-performance ratio.

Application possibilities

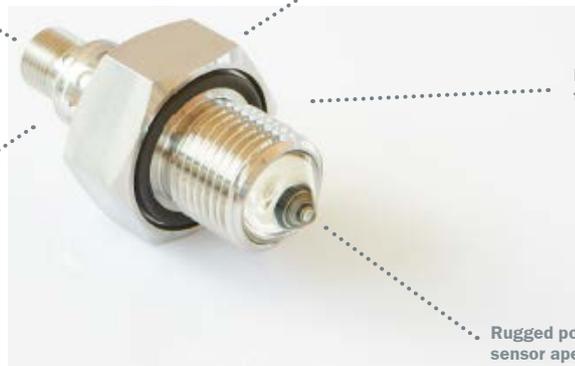
The GRF18S is particularly well-suited for level monitoring of water and water-based liquids. Whether for dry-run protection of pumps, liquid detection in cooling units or level monitoring of wash emulsions in cleaning systems, the GRF18S reliably fulfills level applications in industrial processes in different sectors.

Thanks to its high-quality housing made of 1.4404 stainless steel as well as the rugged polysulfone sensor prism, the GRF18S is reliable even under harsh ambient conditions. It can be put into operation quickly and easily, which saves time and

money. Furthermore, the lack of mechanically-moving parts makes the sensor very resistant and low-maintenance. Based on the optical technology, the GRF18S is well-suited for water and water-based liquids.

Process connection G 1/2, optionally with PNP or NPN output

Resistant housing made of 1.4404 stainless steel with enclosure rating IP67 and IP69



Low space requirements thanks to compact design

FDA-compliant and UL-listed

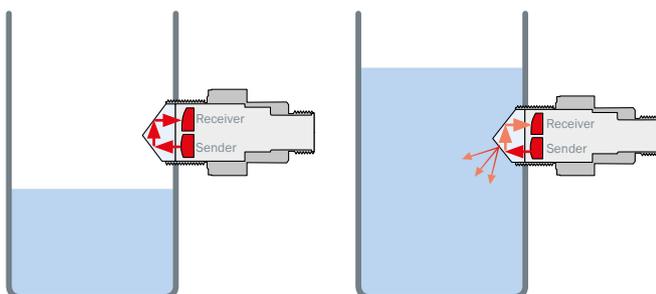
Rugged polysulfone sensor apex

Functionality

The GRF18S is a compact level switch which works using the optical principle. The red light transmitted by the sender LED is reflected inside the prism and redirected back to the receiver diode. Depending on the level, the light scattering of the transmitted red light and therefore the quantity of the light reflected back to the receiver LED varies. The output is optionally available as a PNP or NPN transistor.

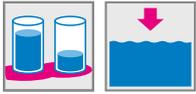
The benefits at a glance

- Space-saving thanks to the compact design – the ideal solution even in difficult installation situations
- Quick commissioning without medium calibration saves time and money
- Reduced need for maintenance, as there are no mechanically-moving parts
- No recalibration necessary, even after long periods of use



Schematic representation of the principle of operation of the GRF18S

EASY, COMPACT AND RUGGED



Product description

The GRF18S is a compact optical level switch which is characterized mainly by its extremely simple commissioning. The proven technology of the energetic photoelectric proximity sensor from SICK is the foundation for the sensor. This allows for easy, rugged and reliable sensor construction. Thanks to the use of high-quality materials such as stainless steel 1.4404 and polysulfone as

well as the housing design in enclosure rating IP69, the GRF18S guarantees high process reliability, even under harsh ambient conditions outside the tank. Quick and problem-free commissioning, without medium calibration, reduces not only commissioning costs, but also maintenance. Due to the optical technology, the GRF18S is particularly well-suited for water-based media.

At a glance

- Rugged fill level measurement in fluid media
- Small, compact design; no medium calibration required
- Process temperature up to 55 °C, process pressure up to 16 bar
- IP 67 and IP 69 enclosure rating
- Process connection G ½
- Highly medium resistant due to stainless steel housing 1.4404, polysulfone apex
- Output available as PNP or NPN transistor
- FDA compliant, UL

Your benefits

- Small, compact sensor ideal for difficult installation conditions with limited space
- Quick commissioning without medium calibration saves time and money
- No moving mechanical parts reduce maintenance and eliminate the need to recalibrate, even after long periods of use



Additional information

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→ www.sick.com/GRF18S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Detailed technical data

Features

Medium	Fluids
Measurement	Switch
Light source	LED
Type of light	Visible red light
Wave length	650 nm
Process pressure	-0.5 bar ... 16 bar
Process temperature	-25 °C ... +55 °C
UL approval	✓
RoHS certificate	✓

Performance

Response time	10 ms
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Mechanics

Wetted parts	Stainless steel 316L, polysulfon, FPM
Process connection	G 1/2
Housing material	Stainless steel 1.4404

Electronics

Supply voltage	10 V DC ... 30 V DC ¹⁾
Residual ripple	≤ 5 V _{pp} ²⁾
Power consumption	≤ 30 mA at 24 V DC without output load
Protection class	III
Connection type	M12 round connector x 1, 4-pin
Output signal	1 x NPN ³⁾ 1 x PNP ³⁾ (depending on type)
Switching mode	Normally open / Normally closed (depending on type)
Signal voltage HIGH	V _s - 3 V
Signal voltage LOW	Approx. 0 V (PNP) ≤ 3 V (NPN)
Output current	≤ 100 mA ³⁾
Switching frequency	250 Hz ⁴⁾
Enclosure rating	IP67 / IP69

¹⁾ U_v connections, reverse polarity protected.

²⁾ May not exceed or fall below U_v tolerances.

³⁾ Output overcurrent and short-circuit protected.

⁴⁾ With light/dark ratio 1:1.

Ambient data

Ambient operating temperature	-25 °C ... +55 °C
Ambient storage temperature	-25 °C ... +70 °C

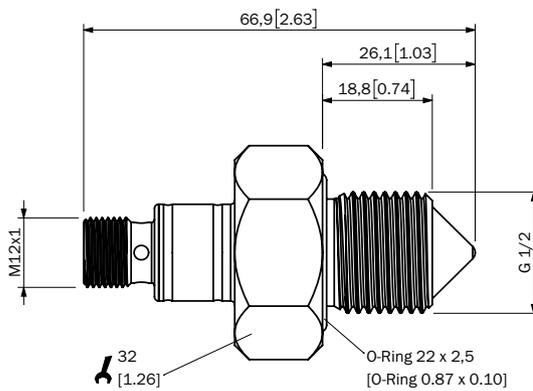
Ordering information

- **Enclosure rating:** IP67 / IP69
- **Process connection:** G 1/2
- **Process temperature:** -25 °C ... +55 °C
- **Process pressure:** -0.5 bar ... 16 bar
- **Housing material:** Stainless steel 1.4404
- **Electrical connection:** M12 round connector x 1, 4-pin

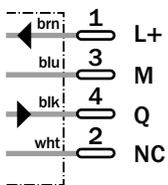
Output signal	Switching mode	Type	Part no.
1 x NPN	Normally open	GRF18S-E234LV	1092960
1 x PNP	Normally open	GRF18S-F234LV	1092958
1 x NPN	Normally closed	GRF18S-N234LV	1092959
1 x PNP	Normally closed	GRF18S-P234LV	1092957

Dimensional drawing (Dimensions in mm [inch])

GRF18S

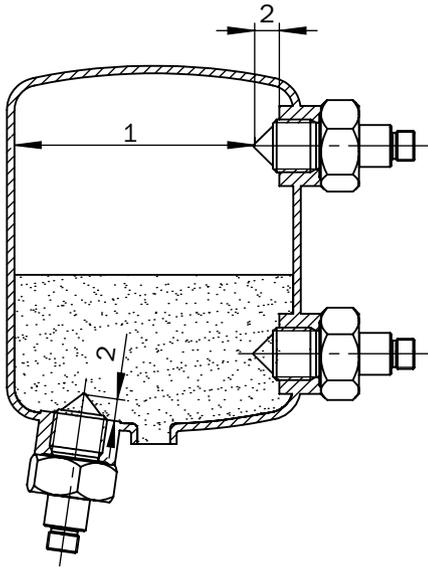


Connection type and diagram



Instruction for installation

Installation in containers

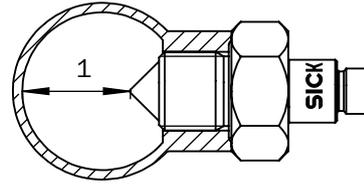


The apex should protrude into the container

① Distance ≥ 40 mm

② Filler tip = 8 mm

Installation in pipelines for pump dry-run protection



① Distance ≥ 40 mm

Note:

Fluids which leave heavy coatings can cause sensor deposits and disrupt the function.

Applications with foam:

- Foam with low foam density is not detected by the GRF18S.
- Foam with high foam density can be detected by the GRF18S and cause switching errors.

Accessories

Mounting systems

Flanges

Weld-in flange

	Brief description	Type	Part no.
Illustration may differ	Welded flange G 1/2, Stainless steel V4A (1.4404, 316L)	BEF-FL-316G12-LMH1	4065669

Connection systems

Plug connectors and cables

Connecting cables

	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: PVC, unshielded, 5 mm ^{1) 2)}	2 m	DOL-1204-G02MNI	6052613
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: PP, unshielded, 4.6 mm ³⁾	2 m	DOL-1204-G02MRN	6058291
		5 m	DOL-1204-G05MRN	6058476
		10 m	DOL-1204-G10MRN	6058478
		15 m	DOL-1204-G15MRN	2092884
		25 m	DOL-1204-G25MRN	6058480

¹⁾ Tested detergent: P3-topactive DES, P3-topax 19, P3-topax 56, P3-topax 66 and P3-topax 99; Insulating material group: Cat I.

²⁾ Insulating material group: Cat I.

³⁾ Tested detergent: P3-topactive DES, P3-topactive 200, P3-topax 52, P3-topax 66 und P3-topax 91.

	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 4-pin, angled with LED Head B: Flying leads Cable: PP, unshielded, 4.6 mm ³⁾	2 m	DOL-1204-L02MRN	6058482
		5 m	DOL-1204-L05MRN	6058483
		10 m	DOL-1204-L10MRN	6058484
		25 m	DOL-1204-L25MRN	6058485
	Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: PP, unshielded, 4.6 mm ³⁾	2 m	DOL-1204-W02MRN	6058474
		5 m	DOL-1204-W05MRN	6058477
		10 m	DOL-1204-W10MRN	6058479
		25 m	DOL-1204-W25MRN	6058481
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: PUR, halogen-free, unshielded, 5.9 mm	2 m	DOL-1204G02MC75KM0	2079290
		5 m	DOL-1204G05MC75KM0	2079291
		10 m	DOL-1204G10MC75KM0	2079292
		20 m	DOL-1204G20MC75KM0	2089703
	Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: PUR, halogen-free, unshielded, 5.9 mm	2 m	DOL-1204W02MC75KM0	2079293
		5 m	DOL-1204W05MC75KM0	2079294
		10 m	DOL-1204W10MC75KM0	2079295
		20 m	DOL-1204W20MC75KM0	2089704
	Head A: female connector, M12, 5-pin, straight Head B: Flying leads Cable: PP, unshielded, 5 mm ³⁾	2 m	DOL-1205-G02MRN	6058494
		5 m	DOL-1205-G05MRN	6058495
		10 m	DOL-1205-G10MRN	6058496
		25 m	DOL-1205-G25MRN	6058497
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	2 m	YF2A14-020UB3X-LEAX	2095607
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	2 m	YF2A14-020VB3X-LEAX	2096234
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	5 m	YF2A14-050UB3X-LEAX	2095608
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	5 m	YF2A14-050VB3X-LEAX	2096235
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	10 m	YF2A14-100UB3X-LEAX	2095609

¹⁾ Tested detergent: P3-topactive DES, P3-topax 19, P3-topax 56, P3-topax 66 and P3-topax 99; Insulating material group: Cat I.

²⁾ Insulating material group: Cat I.

³⁾ Tested detergent: P3-topactive DES, P3-topactive 200, P3-topax 52, P3-topax 66 und P3-topax 91.

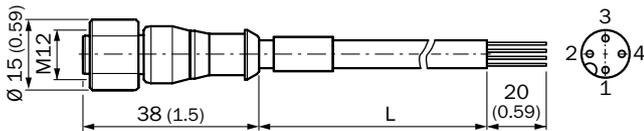
	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	10 m	YF2A14-100VB3X-LEAX	2096236
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	2 m	YG2A14-020UB3X-LEAX	2095766
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	2 m	YG2A14-020VB3X-LEAX	2095895
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	5 m	YG2A14-050UB3X-LEAX	2095767
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	5 m	YG2A14-050VB3X-LEAX	2095897
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 0.34 mm ² , 4.5 mm	10 m	YG2A14-100UB3X-LEAX	2095768
	Head A: female connector, M12, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 0.34 mm ² , 5 mm	10 m	YG2A14-100VB3X-LEAX	2095898
		15 m	YG2A14-150VB3X-LEAX	2096213
		20 m	YG2A14-200VB3X-LEAX	2096214

¹⁾ Tested detergent: P3-topactive DES, P3-topax 19, P3-topax 56, P3-topax 66 and P3-topax 99; Insulating material group: Cat I.

²⁾ Insulating material group: Cat I.

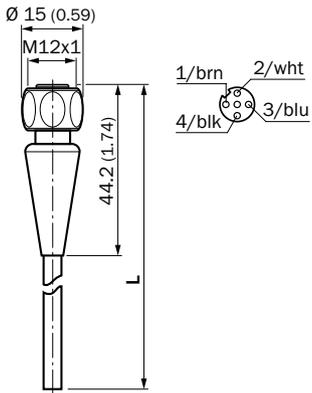
³⁾ Tested detergent: P3-topactive DES, P3-topactive 200, P3-topax 52, P3-topax 66 und P3-topax 91.

DOL-1204-G02MNI

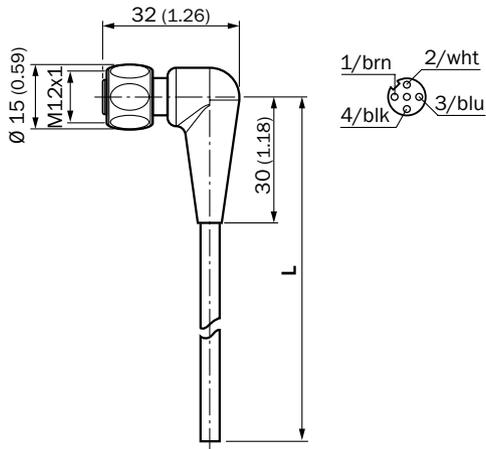


- ① brn
- ② wht
- ③ blu
- ④ blk

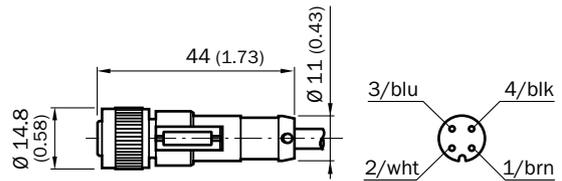
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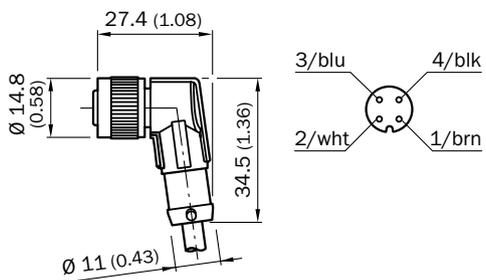
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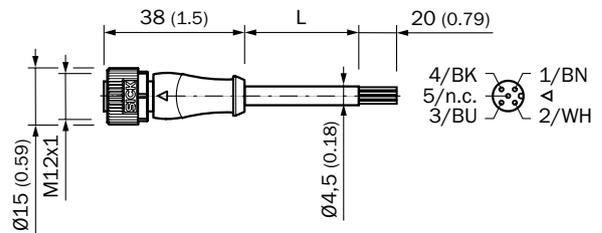
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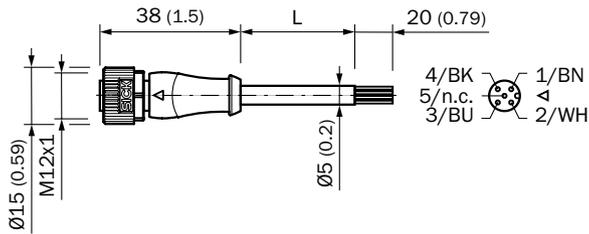
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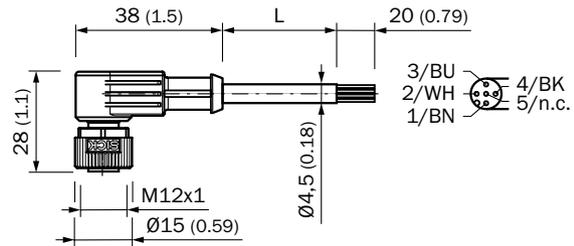
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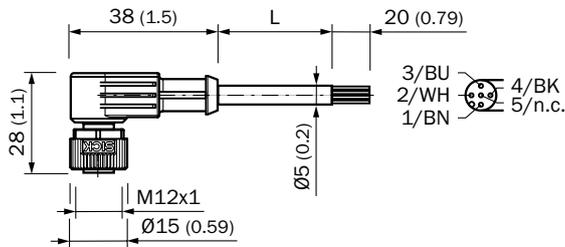
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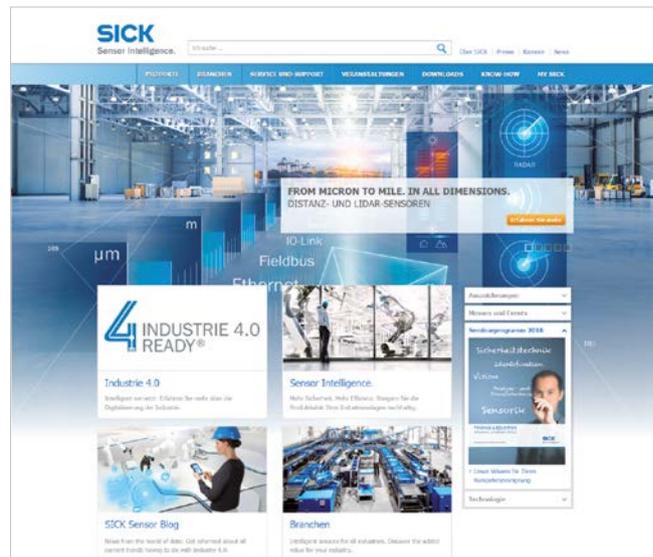


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 YG2A14-200VB3XLEAX



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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

Comprehensive services round out the offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

That is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

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