

Sight Flow Indicators

880 series flanged sight glass flowmeters in cast iron, steel or stainless steel



Straight through with spout

Ideal for gravity feed systems, intermittent flow, liquids containing entrained air and low flow rates. This model has an integral drip lip and can be mounted in any pipeline position.

Rotor

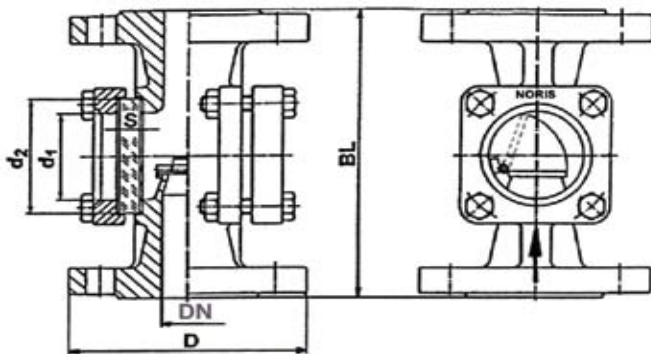
This model has a rotor to show you if the liquid is flowing. The indicator can be mounted in any pipeline position, and the light weight rotors will operate over a wide flow range.

Flap

The basic model is suitable for horizontal and vertically upward flow.

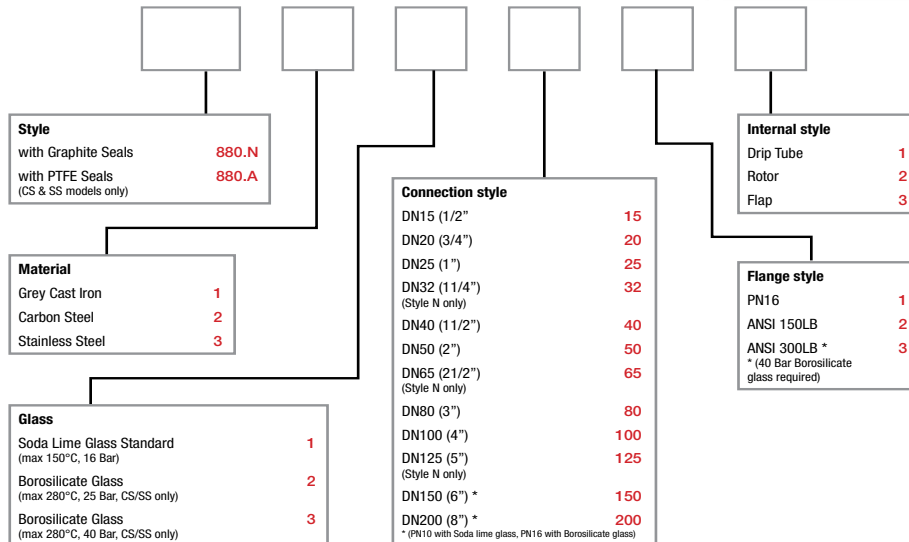
- Sizes up to 10"
- DIN or ANSI flanges
- Soda Lime or Borosilicate glass
- Pressure ratings up to 40 Bar

Dimensional Information



DN	D	BL	d ₁	d ₂	Glass plate		
					S		
					PN 16	PN 25	PN 40
15	95	130	32	45	10	10	10
20	105	150	32	45	10	10	10
25	115	160	48	63	10	12	15
32	140	180	48	63	10	12	15
40	150	200	65	80	12	15	20
50	165	230	80	100	15	20	25
65	185	290	80	100	15	20	25
80	200	310	100	125	20	25	30
100	220(235)*	350	125	125	25	30	35
125	250(270)*	400	150	150	25	30	a.A
150	285(300)*	480	175	175	30**	35	a.A
200	340(360/375)*	600	175	175	30**	35	a.A
250	405(425/450)*	730	175	175	30**	35	a.A

Options & Ordering Information



Materials	
Cast Iron	GG 25 (EN-GJL-250) max 16 bar
Cast Steel	GS-C 25 (1.0619 /GP240GH)
Stainless Steel	WN 1.4408

Body	GG25	GS-C 25	1.4408
Covers	GG 25 / S235JRG2	GS-C 25 / S235JRG2	1.4408 / 1.4301
Screws	4.6 / 5.6 gal		A4-70
Glass	Borosilicate glass DIN 7080 Soda lime glass DIN 8902		
Gaskets	Graphite, (or other materials)		
Spinner	Plastic up to 120°C PTFE up to 260°C		
Flap	1.4571		

Level Sensors, Switches & Controllers

LCSFS series side mounted float level switches

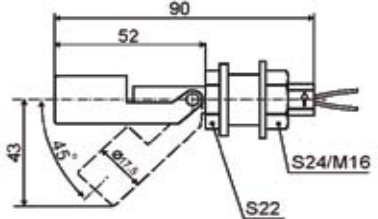
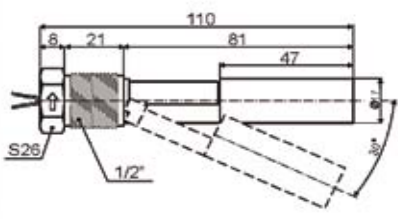
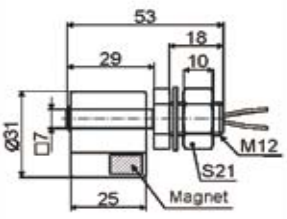


The operation of the Flowtechnik level probe for liquids LCSFS is based on the switching of a reed switch by a magnetic float, rotating around a fixed point or sliding along a stem.

This switch is designed for external or internal mounting on the side vessel walls and is electrically terminated by lead wires. Large variety of versions based on different body and float materials is available for use at operating temperature up to 120 °C, process pressure up to 5 bar, and specific gravity of the liquid down to 0.6 g/cm³.

- Low cost
- Inside or outside installation
- Rotating or sliding float
- 120 °C maximum liquid temperature
- Stainless and various plastic versions
- Cable electrical termination

Technical & Dimensional Information

Variant	rotating around fixed point			sliding up-down		
Specifications	 					
Sensor material	polypropylene	nylon	PVDF	polysulfone	stainless steel 1.4301 (304)	polypropylene
Liquid density [g/cm³]	> 0.65				> 0.85	> 0.60
Contact type	reed switch, NO					
Sensor function	NO or NC (depending on float position)					
Contact ratings	max. 240 VAC (200 VDC), max. 0.5 A (1 A carry current), max. 50 VA					
Process temperature	-20...80 °C		-20...100 °C		-20...120 °C	
Ambient temperature	-20...90 °C					
Max. process pressure	4 bar			5 bar		atmosphere
Wiring	30 cm XLPE wires					30 cm PVC wires
Protection	IP67					
Process connection (incl. nut & washer)	M16x1.5			1/2"		M12x1.25

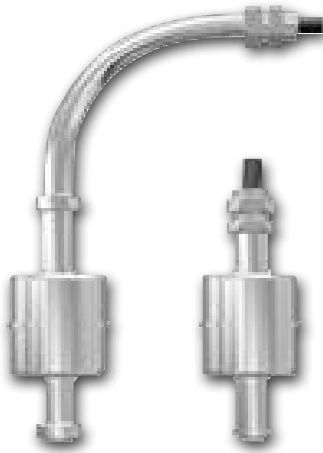
Options & Ordering Information

Feature or option	Order Code LCSFS-X.X
Variant	1 - with float rotating around fixed point, 2 - with float sliding along stem
Housing	PP - polypropylene, NY - nylon, DF - PVDF, PSU - polysulfone, SS - stainless steel 1.4301 (304)

Ordering Example LCSFS-2.PSU

Level Sensors, Switches & Controllers

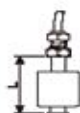


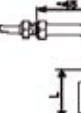




LCSF series top & side mounting float level switches



The operation of the Flowtechnik level probe LCSF is based on the switching of a reed switch by a magnetic float, moving alongside a protective tube. Large variety of versions based on different floats is available. The float can be made of stainless steel or plastic; floats with various dimensions and specific gravity are available for use with different liquid density (down to 0.7 g/cm³) and liquid temperature up to 135 °C. Cable wiring is available with various insulations and lengths. The LCSF switch is available in variants designed for inside vessel mounting and in a special submersible variant with additional weight and forced cable insulation.

- Inside installation
- Low cost
- High reliability
- 135 °C maximum liquid temperature
- Various float and cable types
- Submersible variant
- Wide range of applications

Technical & Dimensional Information

Variant	straight			angled		submersible ⁽¹⁾		
Specifications								
Float type	N1	P1	P2	S1	S2	S7	S10	S20
Liquid density [g/cm³]	> 0.80	> 0.70	> 0.70	> 0.80	> 0.70	> 0.82	> 0.82	> 0.75
Ext. tube diameter	8(9) mm	8(9) mm	10 mm	8 mm	10 mm	8 mm	8 mm	8 mm
Contact type	reed							
Contact function	NO, NC, or NO/NC							
Contact ratings	1: max. 120 VAC, max. 0.5 A, max. 10 W; 2: max. 230 VAC, max. 0.5 A, max. 10 W; 3: max. 230 VAC, max. 2 A, max. 50 W							
Probe length (L)	33 mm	33 mm	60 mm	38 mm	55 mm	38 mm	42 mm	55 mm
Process temperature	-20...100 °C	-20...80 °C	-20...80 °C	-20...135 °C	-20...135 °C	-20...135 °C	-20...135 °C	-20...135 °C
Ambient temperature	PVC cable: -20...75 °C; PUR cable: -20...90 °C; silicone or Teflon® cable: -20...135 °C							
Max. process pressure	0 bar	4 bar	4 bar	10 bar	30 bar	30 bar	50 bar	30 bar
Wiring	up to 10 m cable							
Wetted parts	float: NBR, PP, or stainless steel; sheath: stainless steel							
Protection	IP67 (IP68 for submersible variant up to 10 m)							
Process connection (incl. nut & washer)	1/8" or 1/4" M10 or M12	1/8" or 1/4" M10 or M12	3/8" M14 or M16	1/8" or 1/4" M10 or M12	3/8" M14 or M16	1/8" or 1/4" M10 or M12	1/8" or 1/4" M10 or M12	1/8" or 1/4" M10 or M12

⁽¹⁾ With additional weight mounted

Options & Ordering Information

Feature or option	Order Code LCSF-X.X.X.X.X.X.X
Variant	I - straight, L - angled, U - submersible (1)
Float	N1 - plastic, ø17.5x25, P1 - plastic, ø25x25, P2 - plastic, ø30x45, S1 - stainless steel, ø28x28, S2 - stainless steel, ø41x38, S7 - stainless steel, ø30x28, S10 - stainless steel, ø30x32, S20 - stainless steel, ø22x40
Contact function (no float)	A - NO, B - NC, C - NO/NC
Contact ratings	1 - 120V/0.5A/10W, 2 - 230V/0.5A/10W (2), 3 - 230V/2.0A/50W
Cable length 'k' (1 to 10m) and type	1...10PV - PVC, 1...10TF - Teflon®, 1...10SL - silicone, 1...10PU - polyurethane*
Process connection	X - none, Q0 - M16x1.5, Q3 - G3/8", Q7 - M12x1.5, Q8 - M14x1.5, Q18 - G1/8", Q19 - 1/8" NPT, Q20 - M10x1, Q23 - G1/4", Q24 - 1/4" NPT, Q30 - M10x1.5, Z - other (specify!)
Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
RC suppressors (1 to 10pcs)	X - none, 1...10RC - RC suppressors in bulk

* Contact Flowtechnik

Ordering Example

LCSF-L.S1.B.2.5PV.Q18.M3.X

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Level Sensors, Switches & Controllers

LCF series two point float level controller



Flowtechnik's level controller LCF combines a 2-point float-type level probe LCSFC and a standard LC05 controller installed inside an ABS protection enclosure with IP66. Large variety of versions based on different plastic and stainless steel floats is available. Floats with different dimensions and specific gravity are available for liquid density down to 0.45 g/cm³, temperature up to 135 °C, and pressure up to 50 bar.

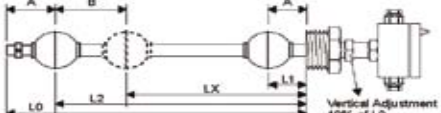
Various process connections as well as an option for vertical adjustment are available. LCF can be used for liquid filling or emptying control by switching on and off vessel supply or drainage devices such as pumps and magnet valves. The controller allows the operator to select relevant output relay action for either supply or drainage control. Thanks to the compact combination of probe and in-head controller, LCF can be very useful for building cost-saving level control applications.

- 2-level control with 1 relay output
- User-selectable filling or drainage control
- Various float types & adjustment options
- 135 °C maximum liquid temperature
- Mains or low-voltage power supply

Technical & Dimensional Information

Input type	float position – low or high
Relay electromechanical o/p	8A/250V w/ NO/NC contact
Solid state relay (1)	1A/250VAC
MOS gate (1)	0.1A/60V, optically isolated
Output for external SSR	5...24 V, 30 mA
Control algorithm	ON/OFF,
Operation mode	filling or emptying, user-selectable
Indication LEDs	red LED for output state

Mains supply voltage	230 VAC or 115 VAC
Isolated low voltage	12...24 VAC/DC (1) or 24 VAC
Non-isolated low voltage	24 VDC
Consumption	max. 2 VA
Ambient temperature	-10...65 °C
Case material	ABS plastic
Dimensions	80x80x60 mm (w/o glands)
Protection class	IP66

Model	LCF										
											
Specifications											
Float type	N1	P1	P19	P2	P3	P4	S2/S10/S10	S2	S3	S4	S5
Float material	NSP	FP	FP	FP	FP	PVCF	S3	S3	S3	S3	S3
Liquid density [g/cm ³]	> 0.82	> 0.80	> 0.72	> 0.80	> 0.50	> 0.70	> 0.80	> 0.70	> 0.65	> 0.55	> 0.50
Ext. tube diameter [d']	8 mm	8 mm	10 mm	12 mm	15 mm	10 mm	8 mm	10 mm	14 mm	14 mm	15/18 mm
Probe length (L0) [mm]	100...500	100...150	100...200	200...4000	200...4000	100...1000	100...2000	200...3000	200...3000	300...4000	300...5000
Min. end-to-float distance (A) [mm]	23	31	15	37	47	47	22/25/25/29	34	43	39	50
Min. float running distance (B) [mm]	27	24	17	62	62	62	25/28/32/34	43	57	64	75
Process temperature	-20...100 °C		-20...80 °C			-33...125 °C			-20...135 °C		
Abs. process pressure	0 bar	5 bar	5 bar	3 bar	3 bar	2 bar	5/10/20/30 bar	30 bar	12 bar	30 bar	30 bar
Wetted parts	stainless steel or plastic										
Process connection	min. 3/8" (Ø42.5)	min. 1" (Ø45.3)	min. 1" (Ø45.3)	min. 1" (Ø45.3)	min. 1 1/4" (Ø48.3)	min. 1 1/4" (Ø48.3)	min. 1 1/4" (Ø48.3)	min. 1 1/2" (Ø50.8)	min. 2" (Ø50.8)	min. 2" (Ø50.8)	min. 2" or Range

Options & Ordering Information

Feature or option	Order Code LCF-X.X.X.X.X.X
Power Supply	A - 230 VAC, B - 115 VAC, D - 24 VDC, non-isolated, Q - 12...24 V, isolated*, R - 24 VAC
Float	N1 - plastic, Ø17.5x25, P1 - plastic, Ø25x25, P2 - plastic, Ø30x45, P3 - plastic, Ø48x45, S1 - stainless steel, Ø28x28, S2 - stainless steel, Ø41x38, S3 - stainless steel, Ø45x55, S4 - stainless steel, Ø52x52, S5 - stainless steel, Ø73x73, S6 - stainless steel, Ø75x108, S7 - stainless steel, Ø30x28, S8 - stainless steel, Ø100x100, S9 - stainless steel, Ø150x150, S10 - stainless steel, Ø30x32, S20 - stainless steel, Ø22x40
Relay Output	C - relay NO/NC, D - SSR*, J - for external SSR, M - isolated MOS gate*
Operating Lengths (mm)**	L0/L1/L2
Process connection	X - none, Q4 - G1/2", Q6 - G3/4", Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q13 - G1 1/2", Q14 - G2", Q15 - 1" NPT, Q16 - 1 1/2" NPT, Q17 - 2" NPT, Q21 - G3", Q22 - 3" NPT, F - flange (specify!), Z - other (specify!)
Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
Vertical adjustment	X - none, A - vertical adjustment via stainless steel ferrule installed

** Specify the exact length (step 50 mm) from the thread, flange, or box bottom to the respective contact according to the limits given in the specification table, strictly observing 'A' and 'B' minimum distances! 1st contact - 'L1'; e.g.: LCF - A.S1.C.500/50/200.Q12.M1

* Contact Flowtechnik

Level Sensors, Switches & Controllers

LCSF100 series float level transmitter



The operation of the LCSF100 level transmitter is based on the switching of reed switches by a magnetic float, moving alongside a protective tube, and the reed switches act on the elements of a resistor matrix, changing the total matrix resistance in linear proportionality with the level measured. In addition to providing a 2-wire 4...20 mA output signal with 6 or 12 mm level resolution, the transmitter may be equipped with up to 2 alarm contacts.

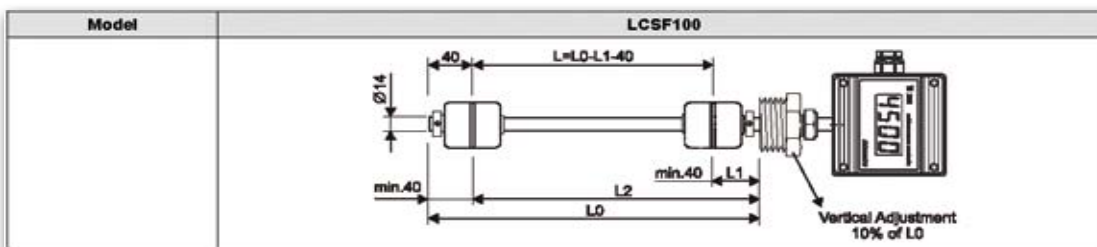
Moreover, LCSF100 can be equipped with an integrated loop-powered programmable indicator with independent alarm outputs. This level transmitter is very useful in applications where ultrasonic or capacitive transmitters would not work because of the foam, dense vapor, or non-homogeneous gas layer above the liquid surface.

- High reliability
- 4...20 mA loop-powered output
- Up to 2 alarm contacts
- 135 °C maximum liquid temperature
- Local programmable indicator available
- ATEX certified Ex version available

Technical & Dimensional Information

Float type	ø45x55 mm, stainless steel
Liquid density	0.65 g/cm ³
Measurement range ('L')	60...3000 mm
Resolution	6 mm or 12 mm
Signal type	4...20 mA, 2-wire
ZERO & SPAN adjustment	±20%, by multiturn trimmers
Maximum line load	750 Ω at 24V/20mA
Under-scale current limit	0.2 mA
Over-scale current limit	32 mA
Alarm contacts	2 NO contacts for Low / High level
Contact ratings	max. 60 V, max. 0.5 A, max. 10 W
Local indicator (1) (option)	T1200-Y or T1200-Z

Loop supply voltage	8...32 VDC
Admissible variations	10% p-p at 50 Hz
Medium temperature	-40...135 °C
Ambient temperature	-20...70 °C (-20...60 °C for Ex housing)
Ambient humidity	0...95 %RH, non-condensing
Storage temperature	-40...80 °C
Process pressure	max. 20 bar
Wetted parts	stainless steel
Process connection	G2", NPT 2", or flange
Housing	protective head or plastic box
Housing protection	IP55...IP68 (depending on housing type)



(1) With windowed head only! See indicator datasheet and order separately!

4) With local indicator only!

Options & Ordering Information

Feature or option	Order Code LCSF100-X.X.X.X.X.X.X.X
Housing	B - head type "B", G - head type "G", D - plastic box 80x80x60 mm, DHW - head type "DHW", ES - head type "ES", EG - head type "EG", EGS - head type "EGS", EGW - head type "EGW", EX - explosion-proof instrument housing (specify!)
Alarm contact**	X - none, A - N.O
Resolution	12 - 12mm, 6 - 6mm
Operating Lengths (mm)***	L0/L1/L2
Process connection	Q14 - G2", Q17 - 2" NPT, Q21 - G3", F - flange (specify!), Z - other (specify!)
Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404, M15 - 1.4362
Output signal	X - none (4), F - 4...20 mA
Local indicator	X - none, A - vertical indicator mounted (1)
Vertical adjustment	X - none, A - vertical adjustment via stainless steel ferrule installed

** First code High alarm, then code Low alarm

*** Specify the exact length (step 50 mm) from the thread or flange bottom to the respective contact according to the limits given in the specification table, strictly observing the minimum distances! e.g.: LCSF100 - B.AA.12.500/100/450 (In this case, measurement range L = 360 mm)

Level Sensors, Switches & Controllers

MG1 series guided wave radar level sensor



The MG1 series uses TDR (Time Domain Reflectometry) technology: Energy optimized, high-frequency electromagnetic impulses, generated by the electronics, are propagated along the probe. When these impulses hit the surface of the media, part of the impulse energy is reflected back up the probe to the electronics. The level is calculated from the time difference between the impulse sent and the impulses reflected. The sensor can output the analysed level as a continuous measurement reading through its current output, and it can convert the one value into a freely positionable switching output signal. TDR Sensors are also known as Guided Radars or Guided Wave Radars (GWR).

Application Areas

The innovative TDR technology enables direct, precise and highly reliable continuous level measurement as well as point level detection in almost every liquid and solids-independent of changing process conditions (such as density, conductivity, temperature, pressure, vapour and turbulence). It is suitable for all types of process and storage tank applications and has an exceptional performance in media with low dielectric constant (i.e. low reflectivity) such as oils and hydrocarbons.

- Fast reaction time of 0,5 sec
- Precise continuous level measurement and reliable point level detection in one device
- For liquids as well as powdery solids suitable
- No influences caused by tank / vessel internals
- Unmatched price/performance ratio

Technical Information

Accuracy	± 3mm or 0,03% of measured distance*
Repeatability	<2mm*
Resolution	<1mm*
Ambient temperature	-25°C to +80°C
Application temperature	Single rod / wire rope probe: -40°C to +150°C Coaxial probe EPDM o-ring: -40°C to +130°C Coaxial probe FKM (viton) o-ring: -15°C to +150°C
Process connection	Threads G $\frac{3}{4}$ "A, $\frac{3}{4}$ " NPT (wrench size 32mm)
Power supply	12 to 30 VDC (reverse polarity protected)
Outputs	Analogue: 4...20mA (active) Switch: DC PNP (active)
Materials (wet)	Single rod probe: 1.4404 / 316L, Peek, Ø 6mm Wire rope probe: 1.4404 / 316L, Peek, Ø 4mm Coaxial probe: 1.4404 / 316L, Peek, Ø 17,2mm and o-ring: EPDM or FKM (Viton)
Protection class	IP 68, NEMA6P (housing)

Options & Ordering Information

Model Code	Type	Measuring Range
MG1-E	Single Rod Probe	100 ... 3000mm
MG1-S	Wire Rope Probe	1000 ... 20000mm
MG1-C	Coaxial Probe	100 ... 6000mm