

Variable area flowmeters RA 65 / FA 65



- For liquids and gases
- Direct reading on a calibrated tube
- Ranges from 0.5 l/h up to 160 m³/h
- Materials: Glass, steel or stainless steel
- Adjustable limit value switches
- Analogue output: 4-20 mA or 0-10 V
- ATEX version on request

APPLICATIONS

Direct reading and measuring of flow-rate on liquids and gases:

- Water treatment, Industrial process (paper mill, textiles etc.), chemical and pharmaceutical industries, heating and cooling plants.

DESCRIPTION

The measuring principle is that of the variable area flowmeter, the float is moved by the fluid inside a calibrated conical glass tube. The borosilicate glass conical tube is inside a steel case with a transparent reading window.

Standard versions:

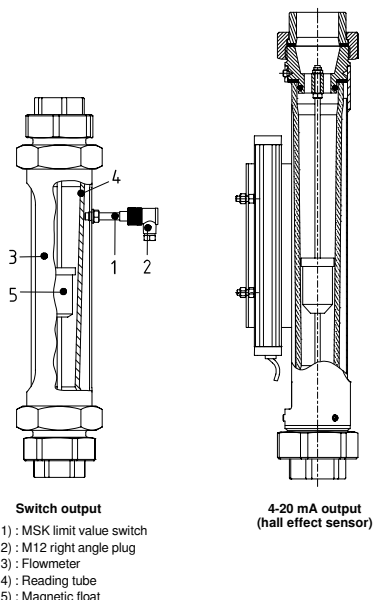
RA 65	Fittings: Unions, BSP-F from 1/4" up to 3"
FA 65	Flanges from ND10 up to ND65
RA/ FA 65-MSK1	With bistable contact N.C.
RA/ FA 65-MSK2	With bistable contact N.O.
RA / FA 65-MSKW	With bistable changeover contact
RA / FA 65-EM	With analogue output 4-20 mA
RA / FA 65... Ex	Explosion proof ATEX version

Limit switches:

These flowmeters can be equipped with a magnetic float and Reed contacts, triggerpoints adjustable over the entire measuring range.

Analogue output 4-20 mA or 0-10 V:

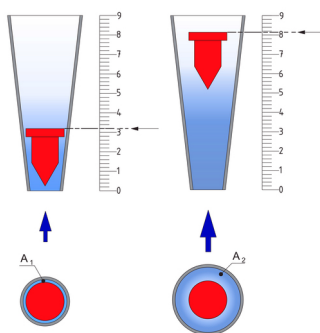
The transmitter is connected to a Hall effect linear signal ruler. The analogue signal is the image of the float position. The transmitter is connected via an M12 connector. This output is useful for applications using a PLC. The device is compact with a high level of repeatability.



Switch output

- 1) : MSK limit value switch
- 2) : M12 right angle plug
- 3) : Flowmeter
- 4) : Reading tube
- 5) : Magnetic float

4-20 mA output
(hall effect sensor)



Principle

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TECHNICAL FEATURES

Nominal pressure	PN 10 at 20 °C
Pressure limits	See the table of measuring ranges
Operating temperature	Max. 80 °C (Option : 100 °C)
Scale factor	1:10
Accuracy class	According to VDE/VDI 3513 page 2 (08/2008)
Error limit (G)	1.6 %
Linear limit (qG)	50 %
Fittings / RA 65	Unions, 2 pieces Inner cylindrical insert, thread according to DIN EN 10226-1 (ISO 7-1)
Fittings / FA 65	Flanges PN 10 according to DIN EN 1092-1, other fittings on request
Corrosion protection	Epoxy coating, glossy blue (RAL 5017)
Corrosion class	C2

Materials

Protective sleeve	Steel Pipe, P235, Option PVC lining ²⁾
Ends RA 65	S355 for sizes 19 to 36; Aluminum for size 43; Option PVC lining ²⁾
Flanges FA 65	S355; Option: with PVC lining ²⁾
Reading tube	Borosilicate glass
Protective screen	Perspex
Gaskets	NBR; Options: FPM, EPDM, Silicone
Floats for liquids ¹⁾	AISI 316 Ti (1.4571); Options : PVC, PP, PVDF, PTFE
Floats for gases ¹⁾	Anodized aluminum; Options: PVC, PP, PTFE, PVDF, AISI 316 Ti (1.4571)
Floats for use of limit value switches ¹⁾	AISI 316 Ti (1.4571) with magnetic core for liquids; PVC with magnetic core for gases Other materials on request

¹⁾ Floats of small sizes are non-guided.
Size 30 and larger: Partly with guiding float rod, detailed table available on request.

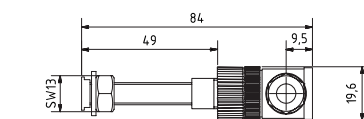
²⁾ PVC lining: All wet parts (excepted the glass tube) are of PVC.
Protection of all parts in contact with media

	Switches features		
	MSK1	MSK2	MSKW
Function	Bistable N.C.	Bistable N.O.	Bist. Changeover
Max. voltage	50 V AC / 75 V DC	50 V AC / 75 V DC	50 V AC/75 V DC
Max. current	0.5 A	0.5 A	0.5 A
Switching capacity	10 W/VA	10 W/VA	5 W/VA
Temperature ¹⁾	-20...+90 °C	-20...+90 °C	-20...+90 °C

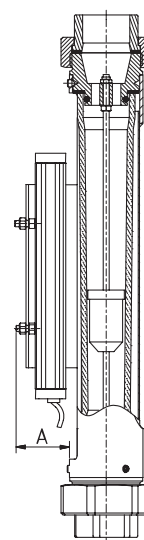
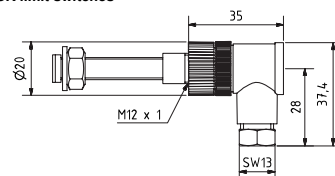
¹⁾ The thermal endurance of the flow meter is crucial.

Analogue output 4-20 mA -- EM features	
Scale height	160 mm, 125 mm
Repeatability	≤ 0,1% F.S.
Ambient temperature	-25...+70 °C
Output signal	4-20 mA; 4-wire
Supply voltage	15...30 V DC
Connections	M12 x 1 connector, right angle
Protection	IP 67
Information LED	Green: Operating Yellow: Position sensor in detection range

* Option: 2-wire on request



MSK limit switches



4-20 mA Output

Size 9.5: A = 45 mm
Size 19: A = 37 mm
Size 30: A = 45 mm
Size 36: A = 46 mm
Size 43: A = 47 mm

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MEASURING RANGES

Below: Limits Min. & Max. for each standard range; Other ranges on request.

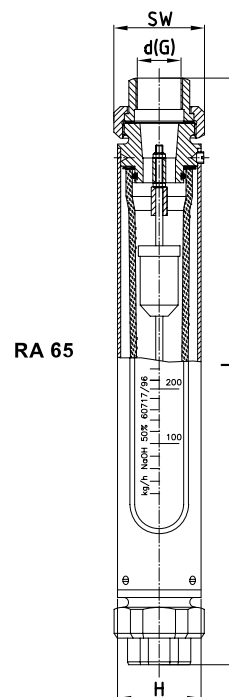
Size	Scale for Water	Scale for Air ¹⁾	RA 65 (Unions fittings)	FA 65 (flanged ND)	P Max. at 0 °C [bar]
9.5	0.5 – 5 l/h	8 – 80 l/h	Rp 1/4"	10	10
	20 – 200 l/h	0.3 – 3.3 m ³ /h	Rp 1/4"	15	
			Rp 1/2"		
19	12 – 120 l/h	0.15 – 1.5 m ³ /h	Rp 1/2"	10	10
	0.12 – 1.2 m ³ /h	1.6 – 16 m ³ /h	Rp 3/4"	15	
			R 1"	20	
				25	
30	0.1 – 1 m ³ /h	1.3 – 13 m ³ /h	R 1"	25	10
	0.3 – 3 m ³ /h	3.6 – 36 m ³ /h	Rp 1 1/4"	40	
			Rp 1 1/2"		
36	0.4 – 4 m ³ /h	4 – 40 m ³ /h	Rp 1 1/4"	40	8
	0.8 – 8 m ³ /h	8 – 80 m ³ /h	Rp 1 1/2"	50	
			R 2"		
43	0.9 – 9 m ³ /h	5 – 50 m ³ /h	Rp 1 1/2"	50	8
	1.6 – 16 m ³ /h	16 – 160 m ³ /h	R 2"	65	
			Rp 2 1/2"		
			R 3"		

¹⁾ For standard operating conditions at 0 °C and 1013 mbar ABS

DIMENSIONS

RA 65					
Size	Unions	S [mm]	d ¹⁾ [mm]	L [mm]	H [mm]
9.5	R 1/4"	28	12	308	25
	R 3/8"	32	16	310	
	R 1/2"	39	20	312	
19	R 1/2"	39	20	413	45
	R 3/4"	48	25	420	
	R 1"	55	32	424	
30	R 1"	55	32	424	60
	R 1 1/4"	67	40	428	
	R 1 1/2"	74	50	430	
36	R 1 1/4"	67	40	428	70
	R 1 1/2"	74	50	430	
	R 2"	90	63	445	
43	R 1 1/2"	74	50	430	90
	R 2"	90	63	445	
	R 2 1/2"	111	75	446	
	R 3"	131	90	450	

¹⁾ For solvent welding sleeves or sleeves to weld on



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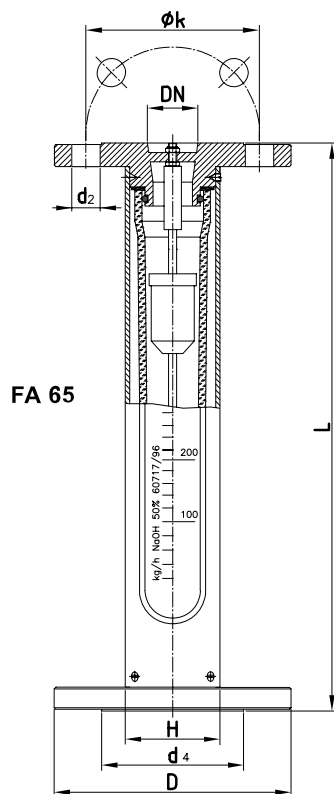
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FA 65

Size	DN	L [mm]	H [mm]	D [mm]	d ₄ [mm]	k [mm]	Screws Qty.	ISO thread	d ² [mm]
9.5	10	260	25	90	40	60	4	M12	14
	15			95	45	65	4	M12	14
19	10	360	45	90	40	60	4	M12	M12
	15			65	45	65	4	M12	14
	20			105	58	75	4	M12	14
	25			115	68	85	4	M12	14
30	20	360	60	105	58	75	4	M12	M12
	25			115	68	85	4	M12	14
	40			150	88	110	4	M16	18
36	25	360	70	115	68	85	4	M12	M12
	40			150	88	110	4	M16	18
	50			165	102	125	4	M16	18
43	50	360	90	165	102	125	4	M16	18
	65			185	122	145	4	M16	18

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