



Design and applications

Measuring units RA 65 and FA 65 are based on the variable area float principle.

In pipelines the RA 65 is installed by means of screwed pipe joints and the FA 65 is mounted between flanges. The borosilicate glass measuring cone is located inside a protection steel tube with an inspection window.

VA flow meters RA 65 and FA 65 are most suitable for the flow measurement of transparent fluids and gases. Each unit is customized with a scale specific for the medium to be measured. RA 65 and FA 65 are used in plant engineering (e.g. furnace construction and water treatment).

By installation of electrical limit switches, which are adjustable throughout the entire measuring range, these units can be employed as detectors too.

The technical documents provide a detailed explanation of the function and measuring principle of VA flow meters.



- calibrated borosilicate measuring cone
- armature with protective steel tube
- perspex half-shell as shatter protection
- reliable due to simple mode of operation
- with limit switches usable as detectors
- optionally analogue output 4 - 20 mA
- scales specific for the media to be measured
- optionally explosion-protected design



Kirchner und Tochter



RA 65/FA 65

Types

Desing	Description
RA 65	With threaded connection
FA 65	With flange connection

Technical data

Nominal pressure	FA 65: PN 10 at 20 °C RA 65: PN 10 at 20 °C
Max. operating pressure	see table measuring ranges on page 3
Thermal endurance	80 °C, optionally 100 °C
Ambient temperature	90 °C
Turn-down ration	1:10
Accuracy class	VDE/VDI 3513 page 2 (08/2008)
Error limit (G)	1,6 %
Linear limit (qG)	50 %
Connection RA 65	Two-part pipe fitting: Insert with cylindrical internal thread to ISO 7-1
Connection FA 65	Flanges PN 10 to DIN EN 1092-1, others on request
Corrosion protection	Epoxy paint kiln-dried, traffic blue (RAL 5017), satin-finished
Corrosion class	C2

Materials

Proctective sleeve	Precision steel tube made of P235
Heads RA 65	S355
Threaded joint	Malleable cast iron, galvanized
Flanges FA 65	Grey cast iron, size 9,5 S355
Measuring glass	Borosilicate glass
Splinter shield	Perspex
Gaskets	Standard NBR optionally FPM, EPDM, silicone
Floats for liquids ¹⁾	Standard: 1.4571 optionally: PVC, PP, PVDF or PTFE with lead core
Floats for gases ¹⁾	Aluminium optionally: PVC, PP, PTFE, PVDF or 1.4571
With limit contacts ¹⁾	1.4571 with magnetic core (liquids) PVC with magnetic core (gases)

¹⁾ Floats of small sizes are nonguided. Size 30 and larger: Partly with guided float. Optionally sizes 9,5 (without limits switches only) and 19 are deliverable. A detailed table is available on request.

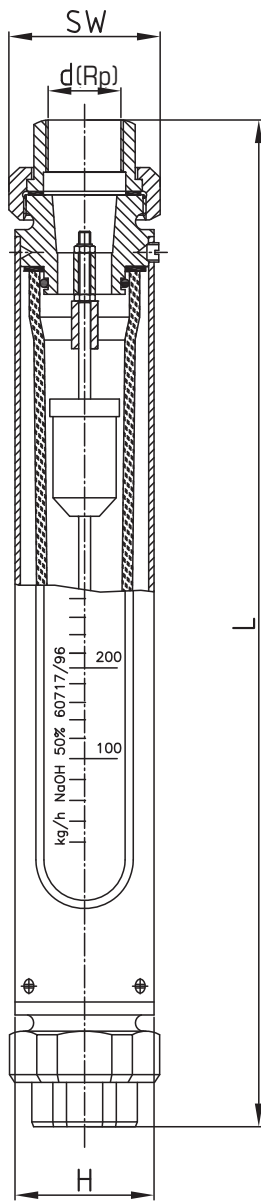
Dimensions

RA 65					
Size	Pipe fitting	SW	d ¹⁾	L	H
9,5	Rp ¼	28	12	308	25
	Rp ¾	32	16	310	
	Rp ½	39	20	312	
19	Rp ½	39	20	413	45
	Rp ¾	48	25	420	
	Rp 1	55	32	424	
30	Rp 1	55	32	424	60
	Rp 1 ¼	67	40	428	
	Rp 1 ½	74	50	430	
36	Rp 1 ¼	67	40	428	70
	Rp 1 ½	74	50	430	
	Rp 2	90	63	445	
43	Rp 1 ½	74	50	430	90
	Rp 2	90	63	445	
	Rp 2 ½	111	75	446	
	Rp 3	131	90	450	

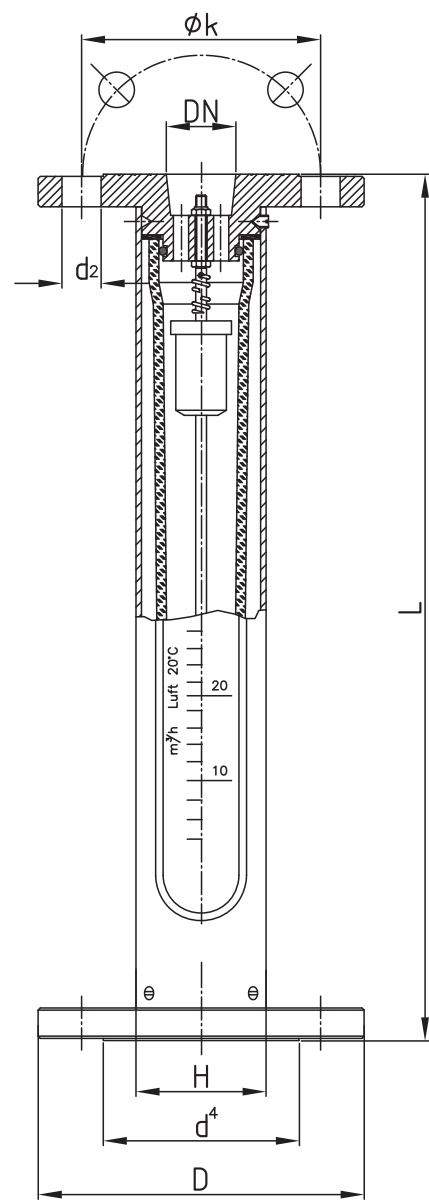
¹⁾ d for bonding and welding sleeves

FA 65									
Size	DN	L	H	D	d ₄	k	Screws		d ₂
							Qty	Thread	
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			95	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

RA 65



FA 65



Measuring range (min. and max. measuring range; all intermediate measuring ranges are possible)

Size	Measuring range m³/h H ₂ O	Measuring range m³/h air at STP ¹⁾	RA 65 Threaded connection	FA 65 Flange connection DN	max. operating pressure bar at 20°C
9,5	0,5 – 5 l/h 20 – 200 l/h	0,006 – 0,06 0,3 – 3,3	Rp ¼ Rp ¼ Rp ½	10 15	10
19	0,012 – 0,12 0,12 – 1,2	0,15 – 1,5 1,6 – 16	Rp ½ Rp ¾ Rp 1	10 15 20 25	10
30	0,1 – 1 0,3 – 3	1,3 – 13 3,6 – 36	Rp 1 Rp 1 ¼ Rp 1 ½	25 40	10
36	0,4 – 4 0,8 – 8	4 – 40 8 – 80	Rp 1 ¼ Rp 1 ½ Rp 2	40 50	8
43	0,9 – 9 1,6 – 16	5 – 50 16 – 160	Rp 1 ½ Rp 2 Rp 2 ½ Rp 3	50 65	8

Measuring ranges for other substances and operating conditions on request.

¹⁾ at STP: at standard conditions (0 °C and 1,013 bar abs.)



Limit switches MSK1/MSK12/MSKW

In order to realize a local display with a monitoring function the flowmeter can be equipped with limit switches. The limit switch consists of a connector housing and a bistable reed contact.

A magnet integrated in the float switches this reed contact. The limit switch is guided in a guide slot on the back of the protective tube and can be adjusted throughout the entire measuring range. In case of inductive or capacitive load applications, e.g. caused by contactors or solenoid valves, uncontrolled current and voltage peaks may occur. In dependence on their geometry such peaks also occur in lines, if they exceed a certain length. It is therefore recommended to use an additionally available arc suppression relay "MSR". This increases the switching capacity and avoids the appearance of inductive and capacitive peaks. It thereby ensures a long lifetime of the contact.

Technical data of the limit switches

Design	MSK1	MSK12
Switching voltage	50V AC/75V DC	50V AC/75V DC
Switched current	0,5 A	0,5 A
Switching capacity	10 W/VA	10 W/VA
Dielectric strength	230V AC/400V DC	230V AC/400V DC
Temperature range ¹⁾	-20 to +90°C	-20 to +90°C
Switching function	Normally closed	Normally open
Connection		

Design	MSKW
Switching voltage	50V AC/75V DC
Switched current	0,5 A
Switching capacity	5 W/VA
Dielectric strength	110V AC/200V DC
Temperature range ¹⁾	-20 to +90°C
Switching function	change over
Connection	

¹⁾ the deciding factor is the thermal endurance of the flow meter

Low voltage directive

Above 50 V AC/ 75 V DC, contacts are subject to the EU Low-Voltage Directive. The user is required to verify their use accordingly.

Proper use

The user is responsible for assessing the suitability of the flow meters for his case of application, for use as prescribed, and for material compatibility as regards the liquid product used in his process.

The manufacturer shall not be liable for any damage arising from incorrect or improper use of the devices.

Pressure surges can cause glass breakage, and should therefore generally be avoided. The limit values given in the data sheet should be observed.

In all other respects we advise following the installation recommendations specified in Code VDI/VDE 3513, Sheet 3.

The equipment from **Kirchner und Tochter** has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

Technical data supplied without liability. The current valid version of our documents can be found under this URL: www.kt-web.de

The **Kirchner und Tochter** QM-System is certified in accordance with DIN-EN-ISO 9001:2008. The quality is systematically adapted to the continuously increasing demands.



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