

# Magnetic inductive flow sensors

## VMM induQ®



### Your advantages

#### Series

VMM

- Magnetic inductive flow sensors for nominal sizes DN15...200
- No mechanical wear
- Robust industrial design
- Easy menu-driven operation and programming by display
- Delivery including works calibration certificate

### Outputs

- Analogue output (0)4...20 mA
- Frequency or Impulse output
- 1 alarm / status output

### Units

- Divers, e.g. m<sup>3</sup>/h, l/s, USG/min, kg/h (density programmed)

### Displays

- Flow rate, several total flows
- Flow velocity
- Relative flow rate [%]
- Mass and mass flow (enter density)

Type	VMM15	VMM25	VMM32	VMM40	VMM50	VMM65	VMM80	VMM100	VMM125	VMM150	VMM200
<b>Characteristics</b>											
<b>Nominal diameter</b>	DN 15	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200
<b>Process connection</b>	Flange connection in accordance with EN 1092-1, JIS B2220 10K or ANSI B16.5										
<b>Inner diameter</b>											
→ <b>Hard rubber</b>	14.0	27.0	33.3	38.0	48.5	64.3	76.9	102.5	127.7	156.3	205.1
→ <b>PTFE</b>	14.0	27.0	33.3	38.0	48.5	63.3	75.9	102.5	124.7	152.3	201.1
<b>Flow range</b>											
→ <b>Flow velocity [m/s]</b>	0...10										
→ <b>Volumetric flow [m³/h]</b>	0...6.3	0...17.6	0...28.9	0...45.2	0...70.6	0...119.4	0...180.9	0...282.7	0...441.7	0...636.1	0...1130
<b>Accuracy*</b>											
<b>v = 1...10 m/s</b>	±0.5 % of reading										
<b>v &lt; 1 m/s</b>	±0.4 % of reading ±1 mm/s										
<b>additionally</b>											
<b>Frequency output</b>	±0.05 % per 10 K										
<b>Analogue output</b>	±0.1 % per 10 K										
<b>Repeatability</b>	±0.15 %										
<b>Response time</b>	< 100 ms**										
<b>Signal output starting from</b>	> 0 m/s										
<b>Medium</b>	Water and other conductive liquids										
<b>Min. conductivity of medium</b>	20 µS/cm										
<b>Medium temperature</b>											
→ <b>Hard rubber</b>	0...90 °C										
→ <b>PTFE</b>	-20...100 °C at 40 bar -20...130 °C at 25 bar -20...180 °C at 16 bar (only for separate version)										
→ <b>Process connections</b>	Min. -10 °C (steel)										
→ <b>Process connections</b>	Min. -20 °C (stainless steel)										
<b>Ambient temperature</b>											
→ <b>Hard rubber</b>	0...80 °C										
→ <b>PTFE</b>	-20...100 °C										
→ <b>Process connections</b>	Min. -10 °C (steel)										
→ <b>Process connections</b>	Min. -20 °C (stainless steel)										
→ <b>Display</b>	-20...50 °C***										
<b>Storage and transport temperature</b>	-20...60 °C										
<b>Pressure rating</b>											
→ <b>EN1092-1</b>	PN 40	PN 40	PN 40	PN 40	PN 40	PN 16**** PN 40	PN 16 PN 40	PN 16 PN 40	PN 16 PN 40	PN 16 PN 40	PN 10 PN 16 PN 25 PN 40
→ <b>JIS B2220 10K</b>	9.8 bar										
→ <b>ANSI B16.5 150 RF</b>	19.6 bar (Process connection, steel) 15.9 bar (Process connection, stainless steel)										
<b>Display</b>	LCD two-line, backlight										
<b>Operation</b>	6 keys, menu-driven										
<b>Degree of protection EN 60529</b>	IP67										

\* Reference conditions: Media temperature 10...30 °C; Ambient temperature 20...30 °C; warm-up period 30 min.; straight pipe lengths; inlet 5 x DN, outlet 2 x DN, regularly centered and earthed

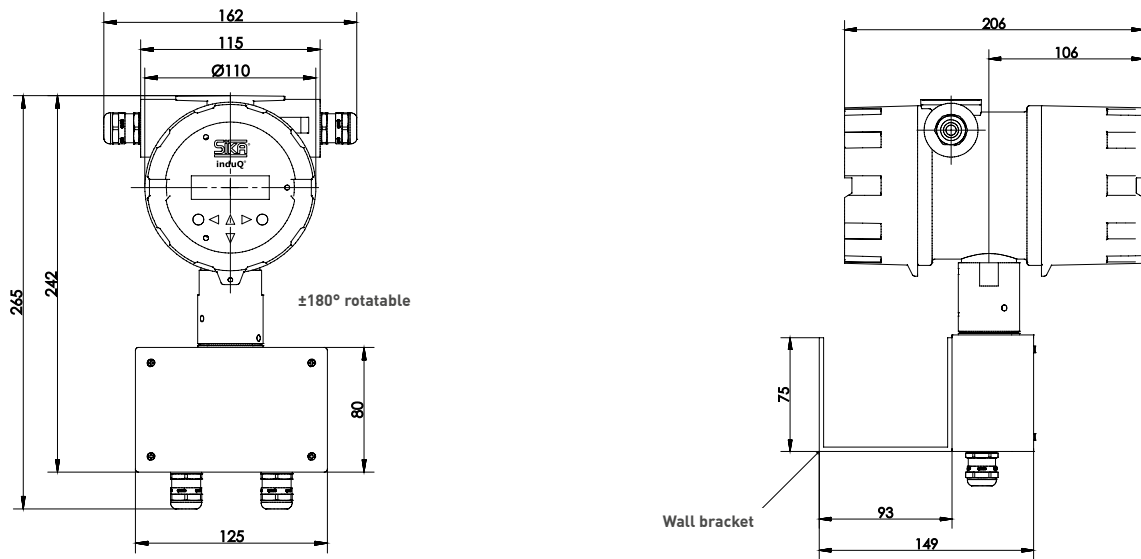
\*\* Depending on the electronics settings

\*\*\*\* 8 bolt flanges

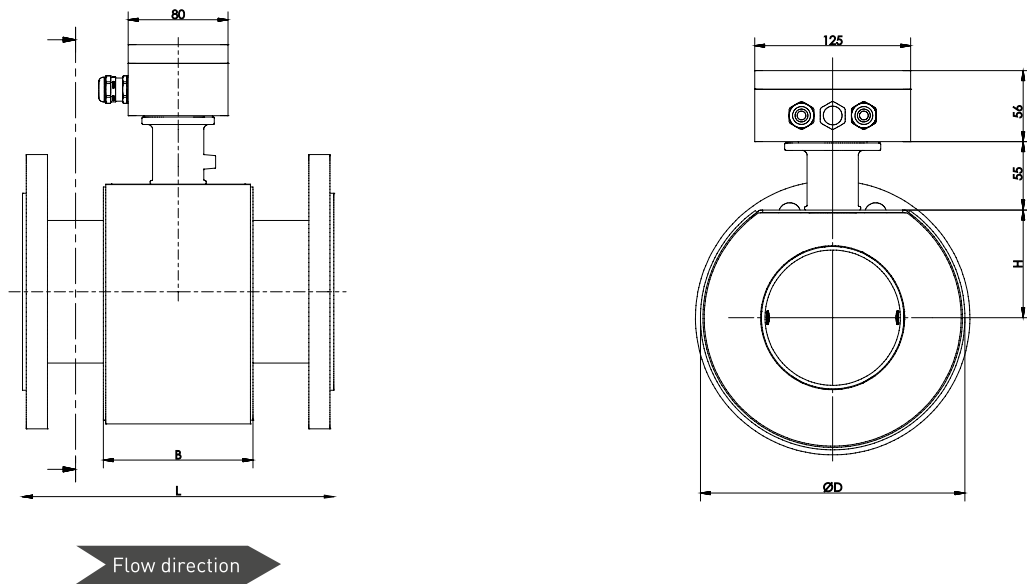
\*\*\* The readability of the LCD display is restricted below 0 °C

Output signals											
Type	VMM15	VMM25	VMM32	VMM40	VMM50	VMM65	VMM80	VMM100	VMM125	VMM150	VMM200
<b>Pulse / frequency output</b>											
→ Configuration	Pulse signal or frequency signal selectable										
<b>Pulse output</b>											
→ Pulse rate (factory-set) [pulses/m <sup>3</sup> ]	1000	1000	1000	1000	1000	1000	1000	1000	100	100	100
→ Pulses/Time	≤ 1000 Pulses/s										
→ Pulse width	≥ 0.1 ms (max. 2 s), adjustable										
→ Signal shape	Squarewave signal										
<b>Frequency output</b>											
→ Factory-scaled measuring range [m <sup>3</sup> /h] corresponds to 0...1 kHz	0...3	0...10	0...10	0...10	0...20	0...50	0...50	0...70	0...100	0...150	0...250
→ Frequency	0...1 kHz										
→ Signal shape	Squarewave signal										
<b>Analogue output</b>											
→ Factory-scaled measuring range [m <sup>3</sup> /h] corresponds to 4...20 mA	0...3	0...10	0...10	0...10	0...20	0...50	0...50	0...70	0...100	0...150	0...250
→ Operating range	0 ... 20 mA / 4 ... 20 mA, selectable										
→ Current limitation	21.6 mA										
→ Max. burden	600 Ω										
→ Short-circuit proof	Permanent										
<b>Alarm output</b>											
→ Quantity	1										
→ Version	Optocoupler										
→ Functions	Status output: Preflow, backflow, MIN flow rate, MAX flow rate, alarm (adjustable)										
→ Switching values	U <sub>max</sub> : 30 V; I <sub>max</sub> : 60 mA; P <sub>max</sub> : 1,8 W										
<b>Electrical data</b>											
Electrical connection	Cable gland M20 x 1.5										
Power supply	230 VAC (-15 % / +10 %), 50/60 Hz or 115 VAC (-15 % / +10 %), 50/60 Hz or 18...36 VDC										
Power consumption	15 VA										

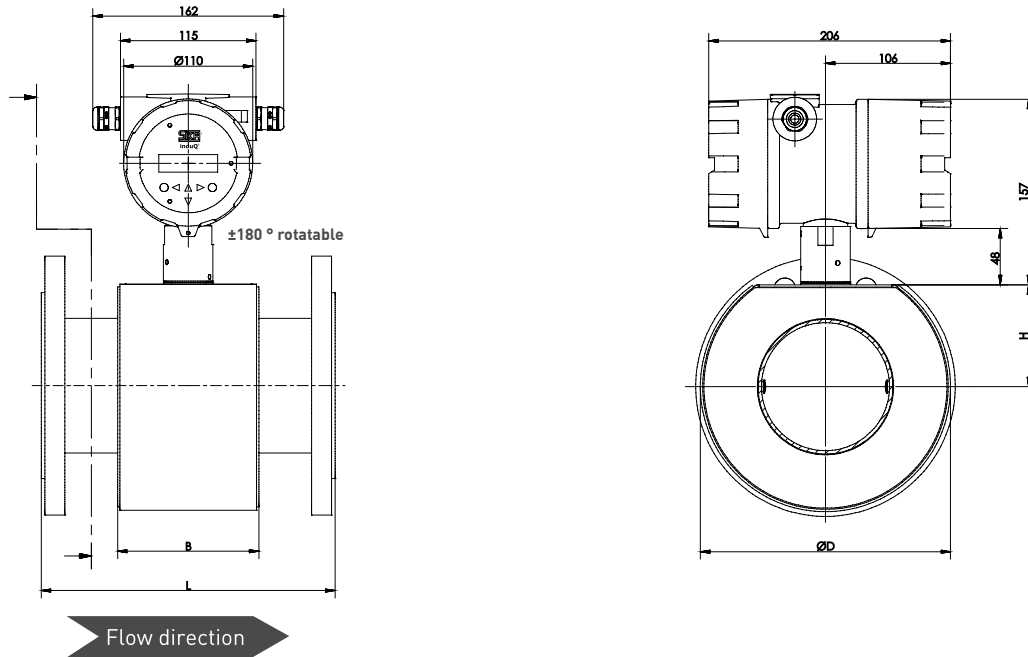
Separate version (Display)



Separate version (Sensor)



## Compact version



## Dimensions [mm]

Process connection		Installation length L							Weight EN 1092-1 [kg]*	
EN 1092-1 JIS B2220 10K	ANSI B16.5	Hard rubber	PTFE		Tolerance	B	D	H	Sensor**	Compact
			Without protection rings	With protection rings						
DN 15	1/2"	200	200	206	+0 / -3	80	130	53	5	8
DN 25	1"	200	200	206	+0 / -3	80	130	53	6	9
DN 32	1 1/4"	200	200	206	+0 / -3	80	130	53	7	10
DN 40	1 1/2"	200	200	206	+0 / -3	80	130	53	7.5	10.5
DN 50	2"	200	200	206	+0 / -3	80	140	57	9	12
DN 65	2 1/2"	200	200	206	+0 / -3	80	155	63	10	13
DN 80	3"	200	200	206	+0 / -3	80	170	70	13	16
DN 100	4"	250	250	256	+0 / -3	120	210	86	15	18
DN 125	5"	250	250	256	+0 / -3	120	240	98	19	22
DN 150	6"	300	300	306	+0 / -3	120	285	117	23	26
DN 200	8"	350	350	360	+0 / -3	200	350	143	36	39

\* valid for DN 15...DN 50 (PN 40), DN 65...DN 150 (PN 16), DN 200 (PN 10)

\*\* additional weight of the display +3.5 kg

## Materials

## Not in contact with fluid

Display housing	Casted aluminium
Sensor housing	Steel
Measuring pipe	Stainless steel
Process connection	Steel 1.0460 or stainless steel 1.4404
<b>In contact with fluid</b>	
Electrodes	Stainless steel 1.4571 or Hastelloy C276
Measuring pipe lining	PTFE or Hard rubber

Order code								
<b>Nominal diameter</b>								
DN 15 / ½"	VMM15							
DN 25 / 1"	VMM25							
DN 32 / 1¼"	VMM32							
DN 40 / 1½"	VMM40							
DN 50 / 2"	VMM50							
DN 65 / 2½"	VMM65							
DN 80 / 3"	VMM80							
DN 100 / 4"	VMM1C							
DN 125 / 5"	VMMV3							
DN 150 / 6"	VMM3L							
DN 200 / 8"	VMM2C							
<b>Process connection</b>								
EN 1092-1 PN 10 starting from DN 200	A							
EN 1092-1 PN 16 starting from DN 65	B							
EN 1092-1 PN 25 starting from DN 200	C							
EN 1092-1 PN 40 starting from DN 15	D							
JIS B2220 10K	J							
ANSI B16.5 150 RF	I							
<b>Material process connection</b>								
Steel 1.0460		1						
Stainless steel 1.4404		2						
<b>Lining</b>								
PTFE			0					
Hard rubber			1					
<b>Material electrodes</b>								
Stainless steel 1.4571				1				
Hastelloy C276				2				
<b>Earth electrode</b>								
Without					0			
One					1			
Two					2			
<b>Type</b>								
Compact version with display							KAMA	
Separate version with display							GAMA	
<b>Power supply</b>								
230 VAC, 50/60 Hz								20
115 VAC, 50/60 Hz								40
19...36 VDC								30
<b>Example order number</b>	<b>VMM15</b>	<b>A</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>KAMA</b>	<b>20</b>

BEST  
SELLER

Type	Nominal Diameter	Pressure rating		Order number							
VMM	DN 15	PN 40	Material process connection: Steel Lining: Hard rubber	VMM15	D	1	1	1	0	KAMA	20
	DN 25	PN 40		VMM25	D	1	1	1	0	KAMA	20
	DN 32	PN 40	Material electrodes: Stainless steel	VMM32	D	1	1	1	0	KAMA	20
	DN 40	PN 40		VMM40	D	1	1	1	0	KAMA	20
	DN 50	PN 40		VMM50	D	1	1	1	0	KAMA	20
	DN 65	PN 16	Without earth electrode, compact version	VMM65	B	1	1	1	0	KAMA	20
	DN 80	PN 16		VMM80	B	1	1	1	0	KAMA	20
	DN 100	PN 16	Power supply: 230 VAC 50/60 Hz	VMM1C	B	1	1	1	0	KAMA	20
	DN 125	PN 16		VMMV3	B	1	1	1	0	KAMA	20
	DN 150	PN 16		VMM3L	B	1	1	1	0	KAMA	20
	DN 200	PN 10		VMM2C	A	1	1	1	0	KAMA	20

## Accessories



### Earthing ring

An earthing ring is used for the electrical reference and earthing of the medium being measured. It is necessary if the pipes are not electrically conductive or lined (plastic or concrete pipes, etc.). The earthing ring must be connected to the provided earthing screw of the sensor. Retrofitting is possible. Material stainless steel 1.4571.

### Sensor cable set

Sensor cable between sensor and display unit (separate design) consisting of magnetic power cable and electrode cable for configuration of M16 x 1.5 screw connection.



### Pair of protection rings

Protection rings protect the inlet and outlet edges of the sensor against mechanical damage, in particular when abrasive media such as gravel, sand, etc. are concerned. At the same time, they also serve as earthing rings. The protection rings are firmly screwed to the sensor. Material stainless steel 1.4571.



Order example			
<b>Type</b>			
Earthing ring	VMMZEW		
Protection rings (pair)	VMMZPR		
<b>Nominal diameter</b>			
DN 15 / ½"		15	
DN 25 / 1"		25	
DN 32 / 1¼"		32	
DN 40 / 1½"		40	
DN 50 / 2"		50	
DN 65 / 2½"		65	
DN 80 / 3"		80	
DN 100 / 4"		1C	
DN 125 / 5"		V3	
DN 150 / 6"		3L	
DN 200 / 8"		2C	
<b>Process connection</b>			
EN 1092-1			E
JIS B2220 10K			J
ANSI B16.5 150 RF			A
<b>Lining</b>			
PTFE			0
Hard rubber			1
<b>Example order number</b>	<b>VMMZEW</b>	<b>15</b>	<b>E 1</b>

Order code		
<b>Accessories</b>	<b>Cable length</b>	<b>Order number</b>
<b>Sensor cable set</b>	5 m	VMMZSC000Z0005
	10 m	VMMZSC000Z0010
<b>Measuring point designation</b>		ONSITETAG
<p>Laser-inscribed stainless steel plate with fixing wire for easy attachment to measuring points</p> <p>→ <b>Scope of delivery:</b> Designation plate inscribed according to specification and enclosed fixing wire (sealing wire)</p> <p>→ <b>Fastening:</b> Wire (included in delivery), alternatively sealing, cable ties or similar (not included in delivery)</p> <p>→ <b>Materials:</b> Plate stainless steel 1.4571, wire stainless steel</p> <p>→ <b>Dimensions:</b> Plate 55 x 10 x 0.8 mm, wire length 180 mm</p> <p>→ <b>Inscription:</b> one-sided, single-line, max. 11 characters, character height 5 mm, designation width max. 40 mm, letters, numbers, symbols, barcodes, QR codes</p> <p>→ <b>Transmission of designations:</b> digital list, file formats Excel, Word or CSV</p>		
