

Magnetic-Inductive Flow Meter IZMSA

Application/Specified usage

- Magnetic-inductive flowmeter for the measurement of flow rate and volume in food applications
- Suitable for liquids, mash and pastes with a minimum conductivity of 5 $\mu\text{S}/\text{cm}$
- Precise measurement of media containing solids
- Measurement range from 30 l/h to 280 000 l/h
- Suitable for dosing and filling applications
- Version with Evaluation Certificate TC7520 for installation in official measuring systems according to 2014/32/EU possible (option)

Hygienic design/Process connection

- All wetted materials are FDA-conform
- Wear-free measuring principle
- Meter tube in flow tube with PFA coating
- Vacuum-tight and piggable
- Electrodes made of stainless steel 1.4404 / AISI 316L
- Sensor available with or without process connections

Special features/Advantages

- CIP/SIP cleaning up to 130 °C / 266 °F for max. 30 minutes
- High measurement accuracy even at low flow rates
- Measurement independent of density, viscosity, pressure and temperature
- Switch input for resetting the quantity-/volume counter (option)
- Automatic empty pipe detection avoids undefined readings for empty pipes
- PFA lining for maximum resistance to aggressive substances such as acids and bases
- Vacuum-tight, rigid meter tube lining, even at high temperatures
- Swiveling housing head, illuminated LC display (optional)
- Minimal maintenance effort
- Self-monitoring with automatic fault diagnosis

Options/Accessories

- Various configurations possible, e.g. temperature recording incl. date and time ("TO") or quantity preselection control ("SV")
- Official usage version available

Functional principle

The principle behind this measurement method is Faraday's law of induction. This law states that a voltage is induced in a conductor that moves in a magnetic field. In the magnetic-inductive measurement method, the flowing, conductive medium acts as the conductor. Two vertically positioned field coils generate a constant magnetic field. The voltage induced in the flowing medium is measured by two stainless steel electrodes that are arranged horizontally. The voltage is directly proportional to the flow rate and can be expressed as the flow volume using the nominal tube width. The determined measurement values are made available as a counting pulse and 4...20 mA standard signal.

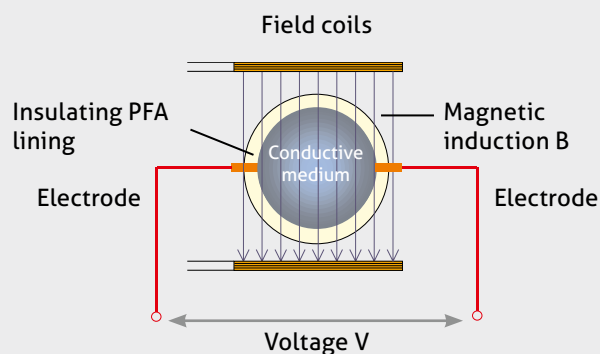
Communication

 0/4...20 mA  Hz  0/1

IZMSA flowmeter



Magnetic-inductive measurement



Configurations

- S0: 4x optocoupler digital outputs and 1x analog output
- SV: 4x optocoupler digital outputs and 1x analog output
- T0: 4x active outputs, 1x analog output and 1x temperature input
- TV: Combination of "T0" and "SV"
- Special customer setting

Versions / Options

- Compact and remote version for different applications
- Illuminated LC display with 2x 20 digits
- Quantity preselection control
- Temperature recording
- Official usage version

Electrical connection

- Cable gland
- Power supply 24 V DC

Meter tube

Aseptic flange DIN 11864-2, form A

Pipe standard

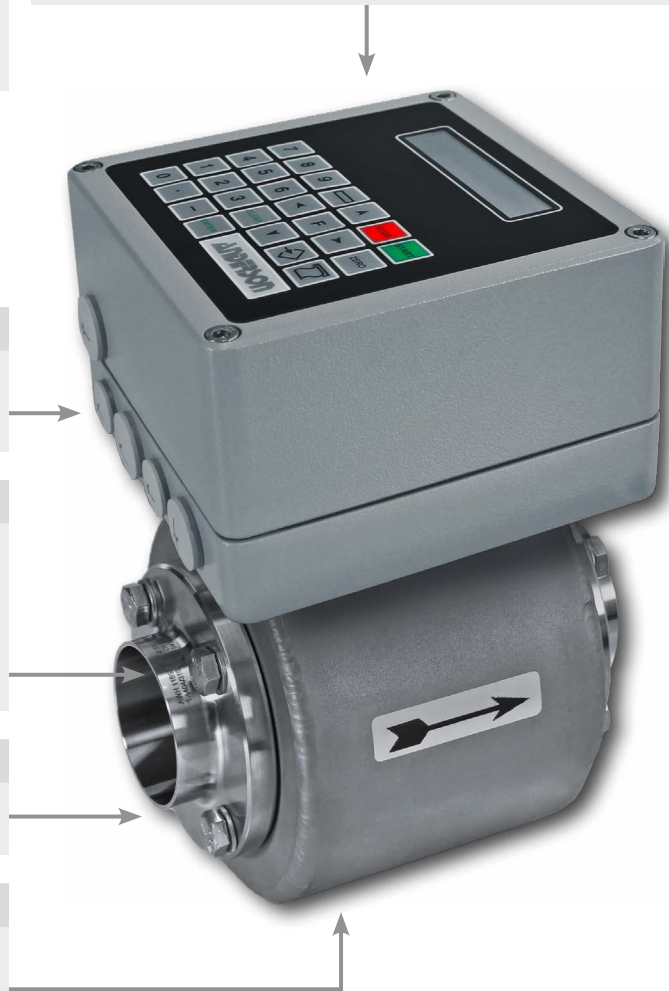
- DIN 11850 series 2
- DN 10...DN 100

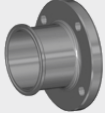
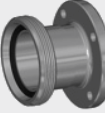
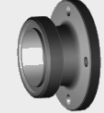
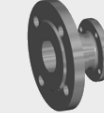
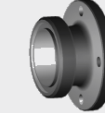
Process connection

- Wide variety of process connections available

Measurement flow tube

- PFA liner, vacuum-tight, piggable, FDA-approved
- Measurement electrodes, 1.4404 / AISI 316L

**Process adapters (optional available)**

							
SS Weld flange	TC Tri-Clamp	GG Milk pipe fitting	HH Aseptic fitting	VN Varivent	FG FG hygienic flange	DF DIN flange	SM SMS threaded connector

Note

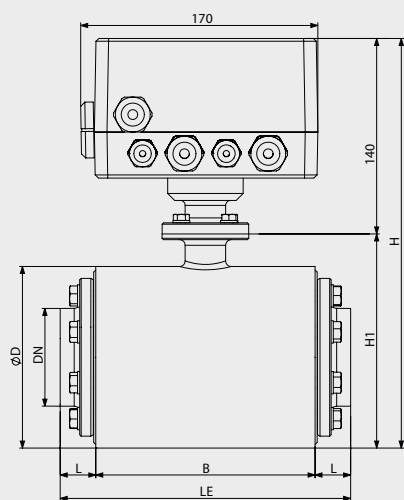
This product information is not an operating manual. Please note the information on device safety, installation and operation in the product operating manual.

Technical data		
Measurement flow tube	Measuring principle Measurement range Nominal width Pipe standard	Magnetic-inductive 0.15...10 m/s DN 10...DN 100 DIN 11850 Series 2
Process connection (optional)	Pipe standards	DIN 11850 Series 2 OD tube (ASME BPE)
Material	Seal Flow tube housing Flow tube lining Electrodes Transmitter housing Cable gland	EPDM, FDA number 21 CFR 177.2600 1.4301 / AISI 304, blasted PFA, FDA number 21 CFR 177.1550 1.4404 / AISI 316L Cast aluminum (with special anti-corrosion paint) Brass galvanic nickel plated
Pipe connection		1.4404 / AISI 316L
Temperature ranges	Ambient Compact design Remote design	-25...60 °C / -13...140 °F Process: 0...100 °C / 32...212 °F CIP/SIP cleaning: up to 130 °C / 266 °F max. 30 min Process: 0...165 °C / 32...329 °F
Operating pressure	PN16	0.1...17 bar / 1.5...246 psi absolute, vacuum-tight (may be lower depending on the selected process adapter)
Protection class		IP 65
Transmitter	Display Electrical connection Supply voltage Power consumption	2x 20 digits, illuminated LC display Cable gland 3x M20x1.5 and 3x M16x1.5 10...30 V DC / 0.8...0.3 A Max. 15 VA / 8 Watt
Measurement accuracy		±0.5 % ±2 mm/s, under reference conditions as per DIN EN 29104 and VDI/VDE 2641
Product conductivity	Standard Demineralized water	> 5 µS/cm > 20 µS/cm
Digital input	4x optocoupler	Activation: 10...30 V DC Counter interruption (standby) and zero setting
Analog output		0/4...20 mA (active) Burden max. 500 Ω

Communication configuration "S0"		
Digital output	4x optocoupler	Load max. 30 V / max. 20 mA (passive)
Communication configuration "SV"		
Digital output	4x optocoupler	Load max. 30 V / max. 20 mA (passive) Volume pulse, status signal
Communication configuration "T0"		
Digital output	4x active outputs	200 mA, Volume pulse, status signal
Temperature input		Pt100, 4-wire
Communication configuration "TV"		
Digital output	4x active outputs	200 mA, Volume pulse, status signal
Temperature input		Pt100, 4-wire

IZMSA dimensions and optional process connections

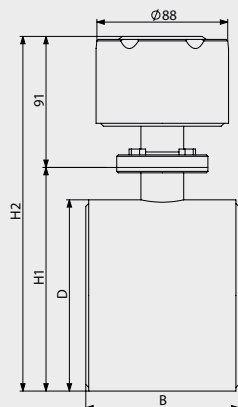
IZMSA-C dimensional drawing



Dimensions and weight IZMSA-C without process connection

Flow tube type	DN flow tube	B	D	H	L	LE	H1	Weight [kg]
FT010	10	104	90	250	25.5	155	110	6.1
FT015	15	104	90	250	25.5	155	110	6.2
FT025	25	104	90	250	25.5	155	110	6.5
FT032	32	104	105	265	25.5	155	125	6.9
FT040	40	104	105	265	25.5	155	125	7.8
FT050	50	104	130	290	25.5	155	150	8.3
FT065	65	160	130	290	25.5	211	150	10.7
FT080	80	160	155	315	27.5	215	175	14.1
FT100	100	200	170	330	27.5	255	190	13.6

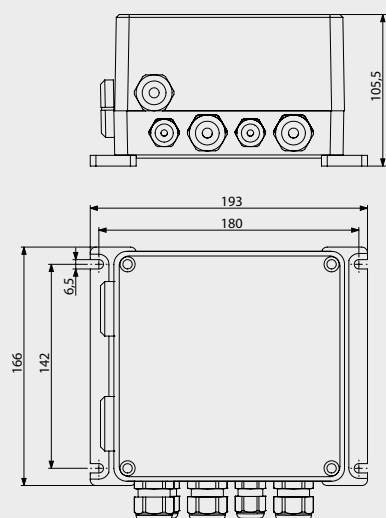
IZMSA-R dimensional drawing flow tube



Dimensions, measurement range and weight of the flow tube for IZMSA without process connection

Flow tube type	DN flow tube	B	D	H1	H2	Measurement range [l/h]	Weight [kg]
FT010	10	104	90	110	201	30...3,000	2.6
FT015	15	104	90	110	201	70...7,000	2.7
FT025	25	104	90	110	201	180...18,000	3.0
FT032	32	104	105	125	216	300...30,000	3.4
FT040	40	104	105	125	216	450...45,000	4.3
FT050	50	104	130	150	241	700...70,000	4.8
FT065	65	160	130	150	241	1,200...120,000	7.2
FT080	80	160	155	175	266	1,800...180,000	10.6
FT100	100	200	170	190	281	2,800...280,000	10.1

IZMSA-R dimensional drawing electronics



Dimensions: pipe standard DIN 11850 Series 2 and flow tube type

DN pipe	Pipe dimension Da x S	Installation length LE							Flow tube type
		SS	TC as per DIN 32676 (plate size)	GG	HH	DF	VN	FG	
10	13 x 1.5	152	200 (34)	200	190	200	200	200	FT010
15	19 x 1.5	152	200 (34)	200	190	200	200	200	FT015
25	29 x 1.5	152	200 (50)	200	204	225	200	200	FT025
32	35 x 1.5	152	200 (50)	200	212	225	200	200	FT032
40	41 x 1.5	152	200 (50)	200	214	225	200	200	FT040
50	53 x 1.5	152	200 (64)	200	214	225	200	200	FT050
65	70 x 2.0	208	256 (91)	256	280	306	256	256	FT065
80	85 x 2.0	212	255 (91)	255	296	305	255	255	FT080
100	104 x 2.0	252	340 (119)	340	352	340	340	340	FT100

Dimensions: pipe standard OD tube (ASME-BPE) and flow tube type

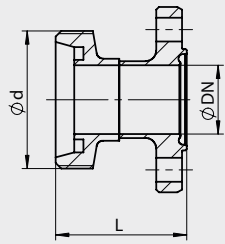
DN pipe	Pipe dimension Da x S	Installation length LE			Flow tube type
		SS	TC as per ASME-BPE (plate size)	SM	
1/2"	12.7 x 1.65	152	170.8 (25)	-	FT010
3/4"	19.05 x 1.65	152	204.6 (25)	-	FT015
1"	25.4 x 1.65	152	202.8 (50)	182	FT025
1½"	38.1 x 1.65	152	202.8 (50)	192	FT040
2"	50.8 x 1.65	152	202.8 (64)	192	FT050
2½"	63.5 x 1.65	208	229.4 (77)	256	FT065
3"	76.2 x 1.65	212	252.6 (91)	260	FT080
4"	101.6 x 2.11	252	299.2 (119)	312	FT100

Note



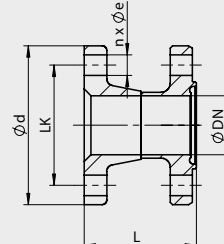
All dimensions in millimeters [mm].

GG | Milk pipe fitting DIN 11851



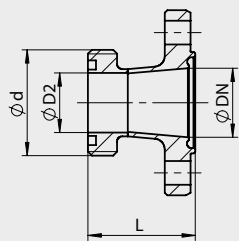
Ø DN	L	Ø d
10	49.5	Rd 28 x 1/8"
15	49.5	Rd 34 x 1/8"
25	49.5	Rd 52 x 1/6"
32	49.5	Rd 58 x 1/6"
40	49.5	Rd 65 x 1/6"
50	49.5	Rd 78 x 1/6"
65	49.5	Rd 95 x 1/6"
80	49.0	Rd 110 x 1/4"
100	71.5	Rd 130 x 1/4"

VN | VARIVENT smooth flange



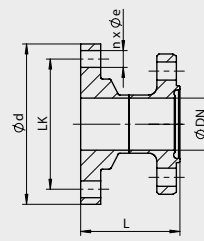
Ø DN	L	Ø d	LK	n x Ø e
10	49.5	-	-	-
15	49.5	-	-	-
25	49.5	70	53	4 x Ø9
32	49.5	-	-	-
40	49.5	82	65	4 x Ø9
50	49.5	94	77	4 x Ø9
65	49.5	113	95	8 x Ø9
80	49.0	128	110	8 x Ø9
100	71.5	159	137	8 x Ø11

SM | SMS threaded connector 1146



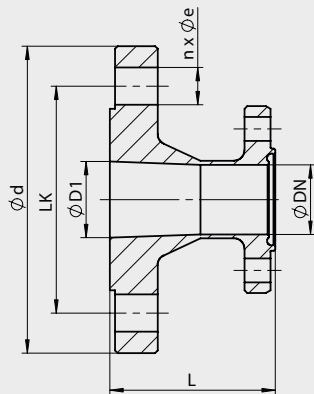
Ø DN	L	Ø D2	Ø d
25	40.5	22.5	Rd 40 x 1/6"
40	45.5	35.5	Rd 60 x 1/6"
50	45.5	48.5	Rd 70 x 1/6"
65	49.5	60.5	Rd 85 x 1/6"
80	51.5	73.1	Rd 98 x 1/6"
100	57.5	97.6	Rd 132 x 1/6"

FG | Hygiene flange, smooth flange



Ø DN	L	Ø d	LK	n x Ø e
10	49.5	-	-	-
15	49.5	62	48	4 x Ø8.4
25	49.5	80	65	4 x Ø8.4
32	49.5	86	71	4 x Ø8.4
40	49.5	92	77	4 x Ø8.4
50	49.5	108	92	4 x Ø8.4
65	49.5	130	110	4 x Ø10.5
80	49.0	146	126	6 x Ø10.5
100	71.5	166	146	8 x Ø10.5

DF | DIN flange DIN EN 1092-1



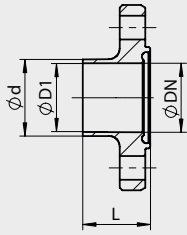
Ø DN	L	Ø D1	Ø d	LK	n x Ø e
10	49.5	10.4	90.0	60.0	4 x Ø14
15	49.5	16.0	95.0	65.0	4 x Ø14
25	62.0	24.8	115.0	85.0	4 x Ø14
32	62.0	32.8	140.0	100.0	4 x Ø18
40	62.0	39.3	150.0	110.0	4 x Ø18
50	62.0	51.2	165.0	125.0	4 x Ø18
65	74.5	70.3	185.0	145.0	8 x Ø18
80	74.0	82.5	200.0	160.0	8 x Ø18
100	71.5	100.8	220.0	180.0	8 x Ø18

Note

- All dimensions in millimeters [mm].
- "Ø DN" always refers to the pipe diameter of the flow tube.



SS | Weld flange DIN 11853-2

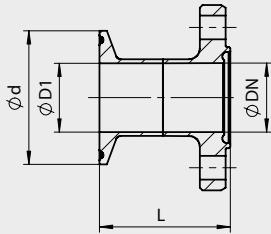


DINA, DIN2		
Ø DN	L	Ø d
10	25.5	13.0
15	25.5	19.0
25	25.5	29.0
32	25.5	35.0
40	25.5	41.0
50	25.5	53.0
65	25.5	70.0
80	27.5	85.0
100	27.5	104.0

DINB			
Ø DN	Ø D1	L	Ø d
10	08	25.5	13.5
15	10	25.5	17.2
25	15	25.5	21.3
	20	25.5	26.9
32	25	25.5	33.7
40	32	25.5	42.4
50	40	25.5	48.3
	50	25.5	60.3
65	65	25.5	76.1
80	80	27.5	88.9
100	100	27.5	114.3

DINC, ASME			
Ø DN	Ø D1	L	Ø d
10	1/2"	25.5	12.7
15	3/4"	25.5	19.05
25	1"	25.5	25.4
40	1½"	25.5	38.1
50	2"	25.5	50.8
65	2½"	25.5	63.5
80	3"	25.5	76.2
100	4"	27.5	101.6

TC | Tri-Clamp DIN 32676 or ASME-BPE

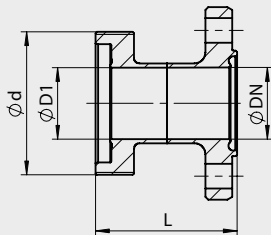


DINA, DIN2		
Ø DN	L	Ø d
10	49.5	34.0
15	49.5	34.0
25	49.5	50.5
32	49.5	50.5
40	49.5	50.5
50	49.5	64.0
65	49.5	91.0
80	49.0	106.0
100	71.5	119.0

DINB			
Ø DN	Ø D1	L	Ø d
10	08	49.5	25.0
15	10	49.5	25.0
25	15	49.5	50.5
	20	49.5	50.5
32	25	49.5	50.5
40	32	49.5	64.0
50	40	49.5	64.0
	50	49.5	77.5
65	65	49.5	91.0
80	80	49.0	119.0
100	100	71.5	130.0

DINC, ASME			
Ø DN	Ø D1	L	Ø d
10	1/2"	34.9	25.0
15	3/4"	51.8	25.0
25	1"	50.9	50.5
40	1½"	50.9	50.5
50	2"	50.9	64.0
65	2½"	36.2	77.5
80	3"	47.8	91.0
100	4"	51.1	119.0

HH | Aseptic fitting 11864-1

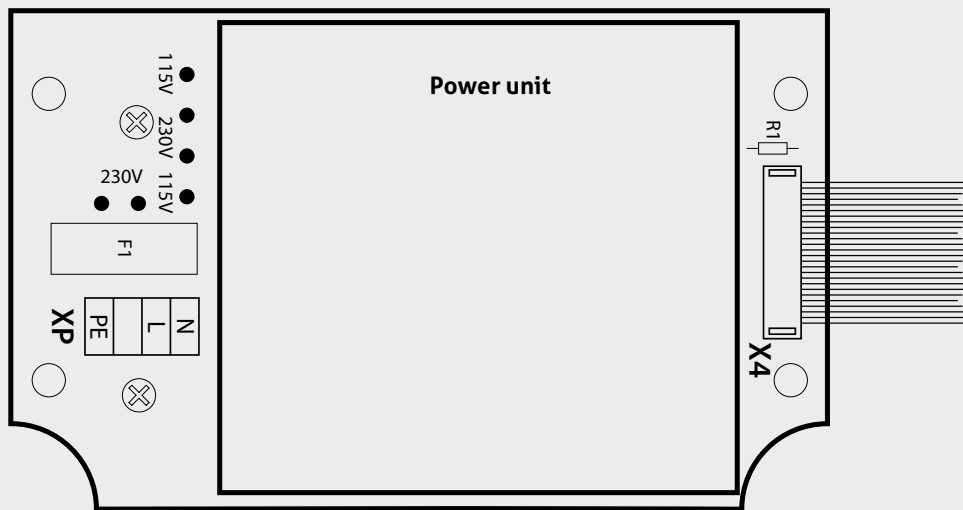


DINA, DIN2		
Ø DN	L	Ø d
10	44.5	Rd 28 x ⅛"
15	44.5	Rd 34 x ⅛"
25	51.5	Rd 52 x ⅛"
32	55.5	Rd 58 x ⅛"
40	56.5	Rd 65 x ⅛"
50	56.5	Rd 78 x ⅛"
65	61.5	Rd 95 x ⅛"
80	69.5	Rd 110 x ¼"
100	77.5	Rd 130 x ¼"

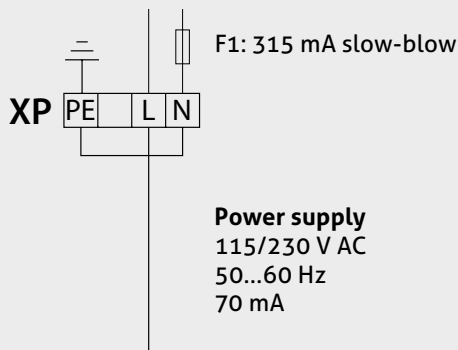
DINB			
Ø DN	Ø D1	L	Ø d
10	08	44.5	Rd 28 x ⅛"
15	10	44.5	Rd 34 x ⅛"
25	15	46.5	Rd 44 x ⅛"
	20	51.5	Rd 52 x ⅛"
32	25	55.5	Rd 58 x ⅛"
40	32	56.5	Rd 65 x ⅛"
50	40	56.5	Rd 78 x ⅛"
	50	61.5	Rd 95 x ⅛"
65	65	67.5	Rd 110 x ¼"
80	80	77.5	Rd 130 x ¼"

DINC, ASME			
Ø DN	Ø D1	L	Ø d
10	1/2"	44.5	Rd 28 x ⅛"
15	3/4"	44.5	Rd 34 x ⅛"
25	1"	51.5	Rd 52 x ⅛"
40	1½"	56.5	Rd 65 x ⅛"
50	2"	56.5	Rd 78 x ⅛"
65	2½"	61.5	Rd 95 x ⅛"
80	3"	69.5	Rd 110 x ¼"
100	4"	77.5	Rd 130 x ¼"

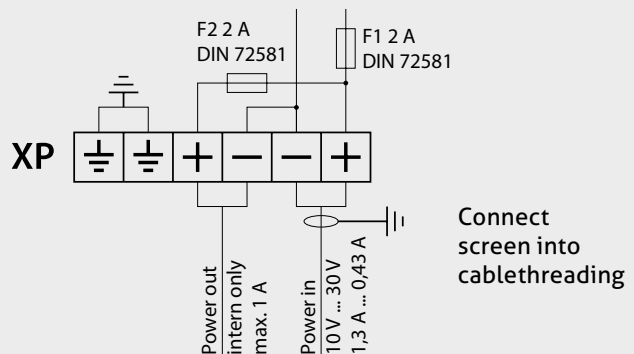
Electrical connection



Electrical connection AC



Electrical connection DC



Mechanical Connection / Installation



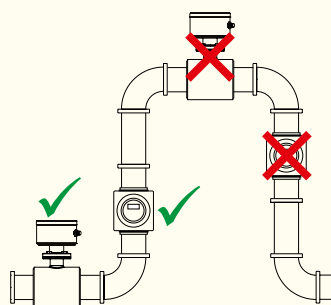
For installation please check also the installation remarks mentioned in the product manual.

Correct installation:

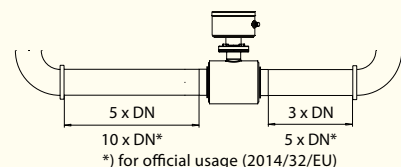
- Before or into an ascending pipe.

Wrong installation:

- Before or into a descending pipe.
- Into the highest point of a pipe, air bubbles will concentrate there.



Flow direction of media



Flow direction of media

Notice on CE



- Applicable directives:
Electromagnetic Compatibility Directive 2014/30/EU
- Compliance with the applicable EU directives is identified by the CE label on the product.
- The operating company is responsible for complying with the guidelines applicable to the entire installation.

Disposal



- Electrical devices should not be disposed of with household trash. They must be recycled in accordance with national laws and regulations.
- Take the device directly to a specialized recycling company and do not use municipal collection points.

Cleaning/Maintenance

- When using a pressure washer, do not point the nozzle directly at the electrical connections.

Standards and guidelines

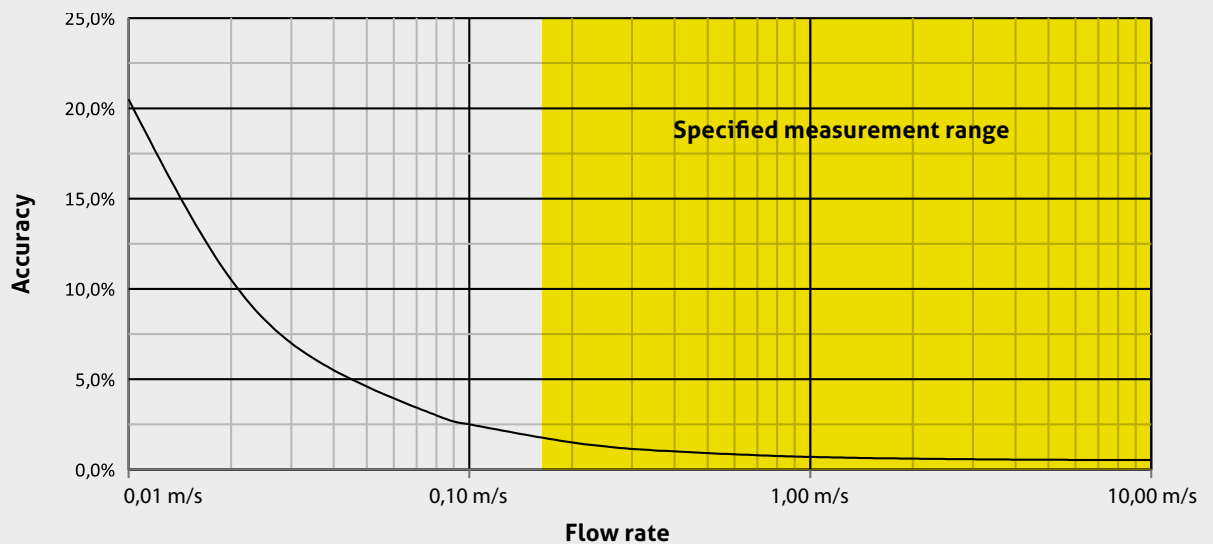
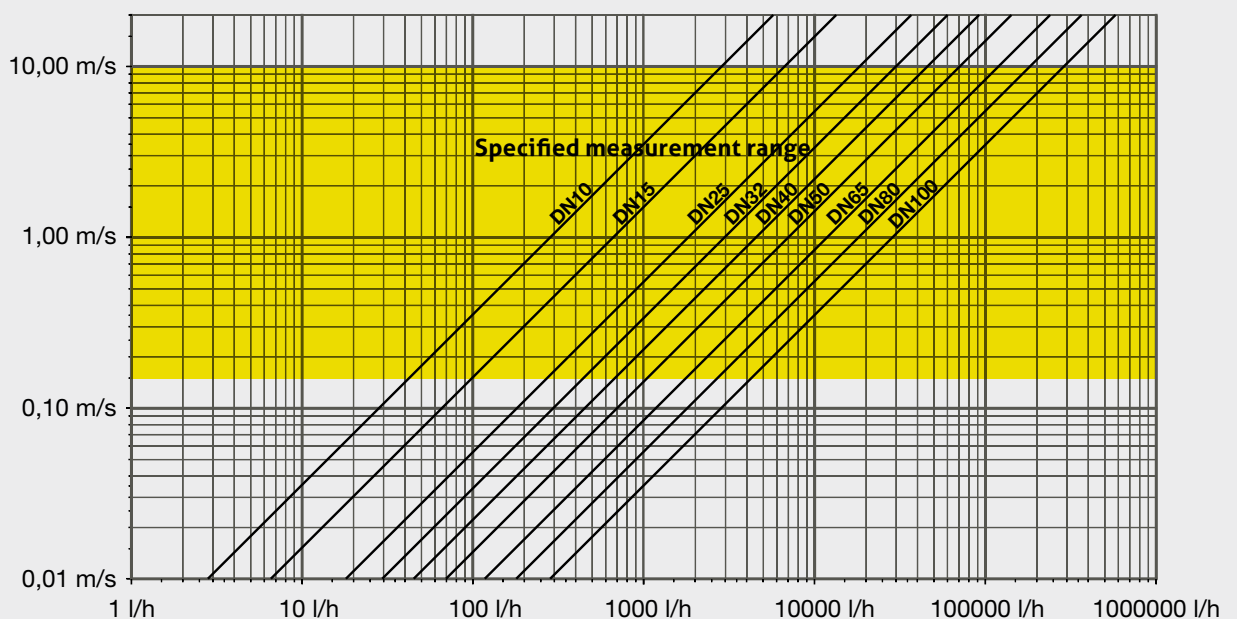
- Compliance with the applicable regulations and directives is mandatory.

Transport/Storage

- Do not store outside
- Store in an area that is dry and dust-free
- Do not expose to corrosive media
- Protect against solar radiation
- Avoid mechanical shock and vibration
- Storage temperature 0...55 °C / 32...131 °F
- Relative humidity max. 80 %

Reshipment

- Sensors and process connection must be clean and must not be contaminated with hazardous media and/or heat-conductive paste. Please note the cleaning notice!
- To avoid damage of the equipment, use suitable transport packaging only.

Measurement accuracy by flow rate**Flow rate nomogram**

Note: Minimum flow rates may deviate for official usage versions.

Process connection kit for IZMSA

FMQ-FC Process connection for food applications; material 1.4404 / AISI 316L

Pipe standard

DIN2 DIN11850 Series 2

ASME OD tube as per ASME-BPE

Flow tube (fits the specified nominal widths of the process connections as per standard)

DIN2 **ASME**

010 **1/2"** Suitable for flow tube FT010

015 **3/4"** Suitable for flow tube FT015

025 **1"** Suitable for flow tube FT025

032 **-** Suitable for flow tube FT032

040 **1,5"** Suitable for flow tube FT040

050 **2"** Suitable for flow tube FT050

065 **2,5"** Suitable for flow tube FT065

080 **3"** Suitable for flow tube FT080

100 **4"** Suitable for flow tube FT100

Process connection

GG Milk pipe fitting DIN 11851

VN VARIVENT smooth flange

FG FG hygiene flange, smooth flange

DF DIN flange as per DIN EN 1092-1 Type 11 Form B

SM SMS threaded connector 1146

SS Weld flange DIN 11853-2

TC Tri-Clamp DIN 32676 or ASME-BPE

HH Aseptic fitting DIN 11864-1 threaded side

Surface

08 $R_a \leq 0.8 \mu m$

FMQ-FC / DIN2 / 100 / SS / 08

Note

The process connection kit FMQ-FC (food) contains:

- Process connections made of stainless steel (1.4404 / AISI 316L) including the required screws
- Seals EPDM (FDA number 21 CFR 177.2600)

Remote version with flow tube and head electronics

IZMSA-R Magnetic-inductive flow meter, remote version

Interconnect cable

- 1** 1 meter length
- 2** 2 meter length
- 3** 3 meter length
- 4** 4 meter length
- 5** 5 meter length
- 6** 6 meter length
- 7** 7 meter length
- 8** 8 meter length
- 9** 9 meter length
- 10** 10 meter length

Nominal diameter/size

- FT010** Meter tube nominal width DN 10
- FT015** Meter tube nominal width DN 15
- FT025** Meter tube nominal width DN 25
- FT032** Meter tube nominal width DN 32
- FT040** Meter tube nominal width DN 40
- FT050** Meter tube nominal width DN 50
- FT065** Meter tube nominal width DN 65
- FT080** Meter tube nominal width DN 80
- FT100** Meter tube nominal width DN 100

Certificate

- S** None
- P** 3.1 certificates of all wetted parts and factory calibration certificate

Display

- 0** No display (not available with SV, T0, TV)
- D** LC display

Power supply

- DC** 10...30 V DC

Configuration

- S0** Standard
- SV** Quantity preselection
- T0** Temperature input
- TV** Temperature input and quantity preselection
- MXX** Special customer setting

Version

- X** Standard
- E** For official usage

IZMSA-R / 1 / FT010 / S / 0 / DC / S0 / X

Compact device with flow tube and head electronics

IZMSA-C Compact magnetic-inductive flow meter

Nominal diameter/size

FT010	Meter tube nominal width DN 10
FT015	Meter tube nominal width DN 15
FT025	Meter tube nominal width DN 25
FT032	Meter tube nominal width DN 32
FT040	Meter tube nominal width DN 40
FT050	Meter tube nominal width DN 50
FT065	Meter tube nominal width DN 65
FT080	Meter tube nominal width DN 80
FT100	Meter tube nominal width DN 100

Certificate

S	None
P	3.1 certificates of all wetted parts and factory calibration certificate

Display

0	No display (not available with SV, TO, TV)
D	LC display

Power supply

DC	10...30 V DC
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Configuration

S0	Standard
SV	Quantity preselection
TO	Temperature input
TV	Temperature input and quantity preselection
MXX	Special customer setting

Version

X	Standard
E	For official usage

IZMSA-C / FT010 / S / 0 / DC / S0

Options

CERT / 2.2 / IZMSA	Factory certificate 2.2 as per EN 10204 (product-contacting only)
RE-CAL / IZMSA	Recalibration of a IZMSA (standard calibration certificate, 2...3 calibration points 10 %, 50 %, 100 %)