

### Model IMT31A Magnetic Flow Transmitter



The IMT31A magnetic flow transmitter can be used with 8400A, 8500A, 9500A, 9600A and 9700A magnetic flow tubes.

- ▶ Extended accuracy option
- ▶ Diagnostics of device and application
- ▶ Certified for use in hazardous areas

*Equipment should be installed, operated, serviced, and maintained only by qualified personnel.*

*No responsibility is assumed by Schneider Electric for any consequences arising from the use of this material.*

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## 1.1 The comprehensive solution

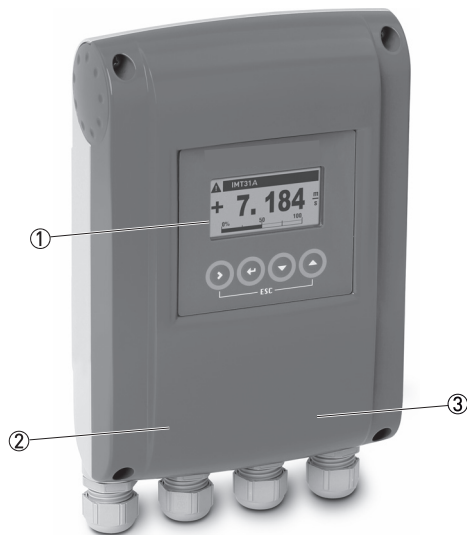
The **IMT31A** electromagnetic transmitter combines an attractive price with a wide range of features and benefits including an excellent measuring accuracy.

The transmitter is compatible with the 8400A, 8500A, 9500A, 9600A and 9700A flow tubes.

The transmitter supplies the current required by two field coils to generate a magnetic field. It converts the flow proportional signal voltage into digital values and filters out electrical noise and interference signals. From the filtered signal, the flow velocity, the volume flow and the mass flow are calculated.

The **IMT31A** transmitter provides a large variety of flowmeter and process diagnostic functions guaranteeing reliable measurements. Detection of deposits or coating on the electrodes, temperature and conductivity changes in the medium, gas bubbles or solids, and an empty pipe are good examples of process diagnostics functions.

The flow velocity and volume can be read from the display or in analogue form via the current output (4...20 mA) as well as by frequency, pulse and status outputs. Measuring values and diagnostic information can be transmitted via the HART<sup>®</sup> interface.



(transmitter in wall-mounted housing)

- ① Large graphic display with backlit
- ② Push buttons (4) for operator control without opening the housing
- ③ Intuitive navigation and quick menu setup

## Highlights

- For operation with the 8400A, 8500A, 9500A, 9600A and 9700A flow tubes
- For flow tubes over a diameter range from DN2.5 up to DN1200
- Housing in aluminium with a polyester topcoat or in stainless steel (option)
- Tropicalized electronics to protect it from humidity (option)
- Available outputs: 4...20 mA current output, pulse/frequency output and status output/limit switch
- Control input option
- HART® as standard
- Power supply via 100...230 VAC (standard) or 24 VDC or 24 VAC/DC (optional)
- Clearly readable values due to angle of the transmitter housing which prevents dirt and dust on the display
- Extended calibration option for higher measuring accuracy down to 0.2% of the measuring value
- Excellent price/performance ratio

## Industries

- Machinery
- Water & Wastewater
- HVAC, energy management
- Chemical
- Food and Beverages
- Metals and Mining

## Applications

- Flow in electrically conductive mediums with a minimum conductivity of 5  $\mu\text{S}/\text{cm}$
- Water flow measurements in a wide range of industries
- Water based chemicals
- Sludge and slurries
- Sanitary applications (CIP, SIP) for food & beverage

## 1.2 Options and variants

### Compact or remote wall-mounted housing



(transmitter in wall-mounted aluminium housing)

For an optimal reading of the display, the compact variant comes in a 0° and a 45° version.

The transmitter can be rotated in 90° increments to suit different installation positions.

The compact 0° version is designed for flowmeters in vertical pipelines, the compact 45° version for horizontal installations.

The wall mounted transmitter can be installed remotely for locations where the flow tube is difficult to access, or ambient temperature conditions or vibrations prevent a compact variant.

### Variant for use in hazardous areas



(Compact version as 0° version)

The IMT31A transmitter is available in a variant suitable for hazardous areas with approvals to ATEX, IECEx, FM, CSA and NEPSI.

### Stainless steel housing (option)



(transmitter in wall-mounted stainless steel housing)

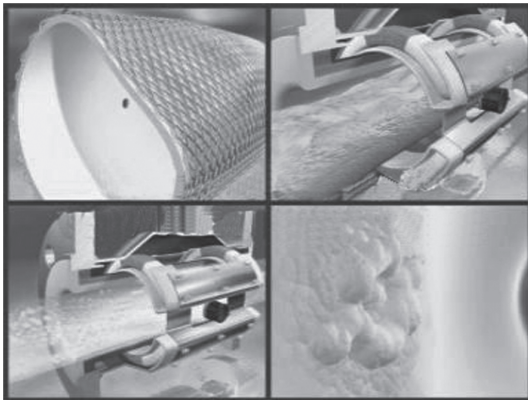
Whereas the standard housing material is aluminium with a polyester topcoat, the **IMT31A** can optionally be ordered in a stainless steel housing.

The robust housing is suitable for many applications in the food and beverage industry. It is designed for environments where extreme chemicals or aggressive cleaning are used.

The housing is dual rated to IP67/69 protection category to resist wash down cleaning and no glass is used for the display window.

The mounting angle for the compact housing and the rounded edges in the wall-mount position prevent dirt and water from building up on the surface.

### Diagnostics of device and application



The primary focus of a user for a flowmeter is that it delivers reliable measurements. To achieve this all our electromagnetic flowmeters are calibrated before leaving the factory.

In addition, the **IMT31A** provides a range diagnostic functions on the flow tube, transmitter and process, integrated in the transmitter.

Potential problems including gas bubbles, solids, electrode corrosion, deposits on electrodes, conductivity changes, empty pipe can be detected by the diagnostics features.

### 1.3 Measuring principle

An electrically conductive fluid flows inside an electrically insulated pipe through a magnetic field. This magnetic field is generated by a current, flowing through a pair of field coils.

Inside of the fluid, a voltage  $U$  is generated:

$$U = v * k * B * D$$

in which:

$v$  = mean flow velocity

$k$  = factor correcting for geometry

$B$  = magnetic field strength

$D$  = inner diameter of flowmeter

The signal voltage  $U$  is picked off by electrodes and is proportional to the mean flow velocity  $v$  and thus the flow rate  $Q$ . A signal transmitter is used to amplify the signal voltage, filter it and convert it into signals for totalizing, recording and output processing.

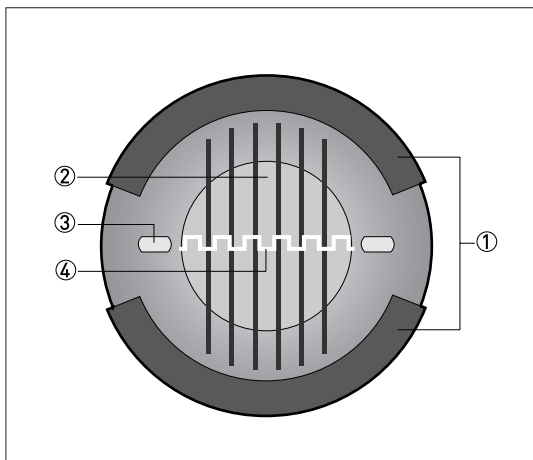


Figure 1-1: Measuring principle

- ① Field coils
- ② Magnetic field
- ③ Electrodes
- ④ Induced voltage (proportional to flow velocity)

## 2.1 Technical data

- *The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.*
- *Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website.*

### Measuring system

Measuring principle	Faraday's law of induction
Application range	Continuous measurement of current volume flow, flow velocity, conductivity, mass flow (at constant density), coil temperature of the flow tube

### Design

Modular construction	The measuring system consists of a flow tube and a transmitter.
<b>Flow tube</b>	
8400A	DN10...150 / 3/8...6"
8500A	DN2.5...100 / 1/10...4"
9500A	DN25...1200 / 1...48"
9600A	DN2.5...150 / 1/10...6"
9700A	DN2.5...1200 / 1/10...48"
	With the exception of the 8400A all flow tubes are also available in an Ex version.
<b>Transmitter</b>	
Compact (integral) version (C)	IMT31A-4 (0°) & IMT31A-6 (45°)
Wall-mounted remote version (W)	IMT31A-N
<b>Options</b>	
Outputs	Current output (including HART®), pulse output, frequency output, status output and/or limit switch
Counter	2 internal counters with a max. of 10 counter places (e.g. for counting volume and/or mass units)
Verification	Integrated verification, diagnostic functions: measuring device, empty pipe detection, stabilisation
Communication interfaces	HART® as standard



<b>Display and user interface</b>	
Graphic display	LC display, backlit white.
	Size: 128 x 64 pixels, corresponds to 59 x 31 mm = 2.32" x 1.22"
	Ambient temperatures below -25°C / -13°F may affect the readability of the display.
Operating elements	4 push buttons for operator control of the transmitter without opening the housing.
Remote control	PACTware™ (including Device Type Manager (DTM))
	HART® Communicator
	AMS®
	All DTMs and drivers are available free of charge from the manufacturer's website.
<b>Display functions</b>	
Operating menu	Setting the parameters using 2 measuring pages, 1 status page, 1 graphic page (measured values and graphics are freely adjustable)
Language display texts (as language package)	Standard: English, French, German, Dutch, Portuguese, Swedish, Spanish, Italian
	Eastern Europe: English, Slovenian, Czech, Hungarian
	Northern Europe: English, Danish, Polish, Finnish, Norwegian
	China: English, German, Chinese (check <a href="http://www.BuyAutomation.com">www.BuyAutomation.com</a> for availability)
	Russia: English, German, Russian
Units	Metric, British and US units selectable as required from lists for volume / mass flow and counting, flow velocity, electrical conductivity, temperature

### Measuring accuracy

Max. measuring accuracy	<b>Standard:</b> ±0.3% of the measured value ± 1 mm/s; depending on the flow tube
	<b>Option (optimised accuracy with extended calibration):</b> ±0.2% of the measured value ± 1.5 mm/s; depending on the flow tube
	For detailed information and accuracy curves refer to <i>Measuring accuracy</i> on page 24.
	Special calibrations are available on request.
	Current output electronics: ±10 µA; ±100 ppm/°C (typically: ±30 ppm/°C)
Repeatability	±0.1%

### Operating conditions

<b>Temperature</b>	
Process temperature	Refer to technical data for the flow tube.
Ambient temperature	Depending on the version and combination of outputs.
	It is a good idea to protect the transmitter from external heat sources such as direct sunlight as higher temperatures reduce the life cycle of all electronic components.
	Ambient temperatures below -25°C / -13°F may affect the readability of the display.
Storage temperature	-40...+70°C / -40...+158°F
<b>Pressure</b>	
Medium	Refer to technical data for the flow tube.
Ambient pressure	Atmospheric
<b>Chemical properties</b>	
Electrical conductivity	All media except for water: $\geq 5 \mu\text{S}/\text{cm}$ (also refer to the technical data for the flow tube)
	Water: $\geq 20 \mu\text{S}/\text{cm}$
State of aggregation	Conductive, liquid media
Solid content (volume)	$\leq 10\%$
Gas content (volume)	$\leq 3\%$
Flow rate	For detailed information, refer to chapter "Flow tables".
<b>Other conditions</b>	
Ingress protection according to IEC 60529	Standard version with aluminium housing: IP66/67 (according to NEMA 4/4X)
	Optional version with stainless steel housing: IP69

### Installation conditions

Installation	For detailed information, refer to chapter "Installation".
Inlet / outlet sections	Refer to technical data for the flow tube.
Dimensions and weight	For detailed information refer to chapter "Dimensions and weight".

### Materials

Transmitter housing	Standard: Aluminum with a polyester topcoat
	Option: Stainless steel 1.4404 / AISI 316L
Flow tube	For housing materials, process connections, liners, grounding electrodes and gaskets, refer to technical data for the flow tube.

### Electrical connection

General	Electrical connection is carried out in conformity with the VDE 0100 directive "Regulations for electrical power installations with line voltages up to 1000 V" or equivalent national specifications.
Power supply	100...230 VAC (-15% / +10%), 50/60 Hz; 240 VAC + 5% is included in the tolerance range.
	24 VDC (-55% / +30%); 12 VDC - 10% is included in the tolerance range.
	24 VAC/DC (AC: -15% / +10%; DC: -25% / +30%); 12 V is <b>not</b> included in the tolerance range.
Power consumption	AC: 7 VA
	DC: 4 W
Signal cable	Only necessary for remote versions.
	<b>DS 300 (type A)</b> Max. length: 600 m / 1968 ft (depending on electrical conductivity and flow tube version)
Cable entries	Standard: M20 x 1.5 (8...12 mm)
	Option: 1/2 NPT, PF 1/2

### Inputs and outputs

General	All outputs are electrically isolated from each other and from all other circuits.
	All operating data and output values can be adjusted.
Description of abbreviations	$U_{ext}$ = external voltage; $R_L$ = load + resistance; $U_0$ = terminal voltage; $I_{nom}$ = nominal current

<b>Current output</b>	
Output data	Volume flow, mass flow, diagnostic value, flow velocity, coil temperature, conductivity
Settings	<b>Without HART®</b>
	Q = 0%: 0...20 mA; Q = 100%: 10...21.5 mA
	Error identification: 20...22 mA
	<b>With HART®</b>
	Q = 0%: 4...20 mA; Q = 100%: 10...21.5 mA
Error identification: 3...22 mA	
<b>Operating data</b>	
Active	U <sub>int, nom</sub> = 20 VDC
	I ≤ 22 mA R <sub>L</sub> ≤ 750 Ω
	HART® at terminals A
Passive	U <sub>ext</sub> ≤ 32 VDC
	I ≤ 22 mA U <sub>0</sub> ≥ 2 V at I = 22 mA R <sub>L</sub> ≤ (U <sub>ext</sub> - U <sub>0</sub> ) / I <sub>max</sub>
	HART® at terminals A
<b>HART®</b>	
Description	HART® protocol via active and passive current output
	HART® version: V5
	Universal Common Practice HART® parameter: completely supported
Load	≥ 230 Ω at HART® test point; Note maximum load for current output!
Multi-drop mode	Yes, current output = 4 mA
	Multi-drop address adjustable in operation menu 1...15
Device drivers	Available for HART® Communicator, AMS®, FDT/DTM
Registration (HART Communication Foundation)	Yes

<b>Pulse output / frequency output</b>	
Output data	Pulse output: volume flow, mass flow
	Frequency output: volume flow, mass flow, diagnostic value, flow velocity, coil temperature, conductivity
Function	Can be set as a pulse output or frequency output
Pulse rate/frequency	0.25...10000 Hz
Settings	Pulses per volume or mass unit or max. frequency for 100% flow
	Pulse width: adjustable as automatic, symmetric or fixed (0.05...2000 ms)
<b>Operating data</b>	
Passive	$U_{\text{ext}} \leq 32 \text{ VDC}$ $f_{\text{max}}$ in operating menu set to $f_{\text{max}} \leq 100 \text{ Hz}$ : $I \leq 100 \text{ mA}$ open: $I \leq 0.05 \text{ mA}$ at $U_{\text{ext}} = 32 \text{ VDC}$ closed: $U_{0, \text{max}} = 0.2 \text{ V}$ at $I \leq 10 \text{ mA}$ $U_{0, \text{max}} = 2 \text{ V}$ at $I \leq 100 \text{ mA}$
	$f_{\text{max}}$ in operating menu set to $100 \text{ Hz} < f_{\text{max}} \leq 10 \text{ kHz}$ : $I \leq 20 \text{ mA}$ open: $I \leq 0.05 \text{ mA}$ at $U_{\text{ext}} = 32 \text{ VDC}$ closed: $U_{0, \text{max}} = 1.5 \text{ V}$ at $I \leq 1 \text{ mA}$ $U_{0, \text{max}} = 2.5 \text{ V}$ at $I \leq 10 \text{ mA}$ $U_{0, \text{max}} = 5.0 \text{ V}$ at $I \leq 20 \text{ mA}$
<b>Low flow cut off</b>	
Function	Switching point and hysteresis separately adjustable for each output, counter and the display
Switching point	Set in increments of 0.1%.
	0...20% (current output, frequency output) or 0...±9.999 m/s (pulse output)
Hysteresis	Set in increments of 0.1%.
	0...5% (current output, frequency output) or 0...5 m/s (pulse output)
<b>Time constant</b>	
Function	The time constant corresponds to the elapsed time until 67% of the end value has been reached according to a step function.
Settings	Set in increments of 0.1 seconds.
	0...100 seconds

<b>Status output / limit switch</b>	
Function and settings	Adjustable as automatic measuring range conversion, display of flow direction, counter overflow, error, switching point or empty pipe detection
	Valve control with activated dosing function
	Status and/or control: ON or OFF
<b>Operating data</b>	
Passive	$U_{\text{ext}} \leq 32 \text{ VDC}$ $I \leq 100 \text{ mA}$ open: $I \leq 0.05 \text{ mA}$ at $U_{\text{ext}} = 32 \text{ VDC}$ closed: $U_{0, \text{max}} = 0.2 \text{ V}$ at $I \leq 10 \text{ mA}$ $U_{0, \text{max}} = 2 \text{ V}$ at $I \leq 100 \text{ mA}$
<b>Control input</b>	
Function	Hold value of the outputs (e.g. for cleaning work), set value of the outputs to "zero", counter and error reset, range change.
	Start of dosing when dosing function is activated.
<b>Operating data</b>	
Passive	$U_{\text{ext}} \leq 32 \text{ VDC}$ $I_{\text{nom}} = 6.5 \text{ mA}$ at $U_{\text{ext}} = 24 \text{ VDC}$ $I_{\text{nom}} = 8.2 \text{ mA}$ at $U_{\text{ext}} = 32 \text{ VDC}$ Contact open (off): $U_0 \leq 2.5 \text{ V}$ at $I_{\text{nom}} = 0.4 \text{ mA}$ Contact closed (on): $U_0 \geq 8 \text{ V}$ at $I_{\text{nom}} = 2.8 \text{ mA}$

### Approvals and certificates

CE	This device fulfils the statutory requirements of the relevant EU directives. The manufacturer certifies successful testing of the product by applying the CE mark. For full information of the EU directives & standards and the approved certifications, please refer to the EU declaration or the manufacturer website.
Non-Ex	Standard
<b>Hazardous areas</b>	
ATEX	<b>Option (only 9500A &amp; 9700A)</b>
	II 2 G Ex e [ia] mb IIC T4 (DN10...20; DN200...300; DN350...3000)
	II 2 G Ex d e [ia] mb IIC T4 (DN25...150)
	II 2 G Ex e [ia] mb q T4/T3 (DN25...150; DN200...300)
	II 2 D Ex tD A21 IP64 T120°C (all nominal sizes)
	<b>Option (Wall-mounted version only)</b>
	II 2 G Ex e [ia] mb IIC T4
II 2 D Ex tD A21 IP64 T135°C	

IECEX	<b>Option (only 9500A &amp; 9700A)</b>
	Ex e [ia] mb IIC T4 (DN10...20; DN200...300; DN350...3000)
	Ex d e [ia] mb IIC T4 (DN25...150)
	Ex tD A21 IP64 T120°C (all nominal sizes)
	<b>Option (Wall-mounted version only)</b>
	Ex e [ia] mb IIC T4
	Ex tD A21 IP64 T135°C
FM/CSA	<b>Option (only 9500A &amp; 9700A)</b>
	Class I, Div 2, Group A, B, C and D
	<b>Option (Wall-mounted version only)</b>
	Class I, Div 2, Group A, B, C and D
	Ordinary location
<b>Other standards and approvals</b>	
Electromagnetic compatibility (EMC)	2004/108/EU in conjunction with EN 61326-1 (A1, A2)
Shock and vibration resistance	IEC 68-2-27, IEC 68-2-64
NAMUR	NE 21, NE 43, NE 53

## 2.2 Dimensions and weight

### 2.2.1 Housing

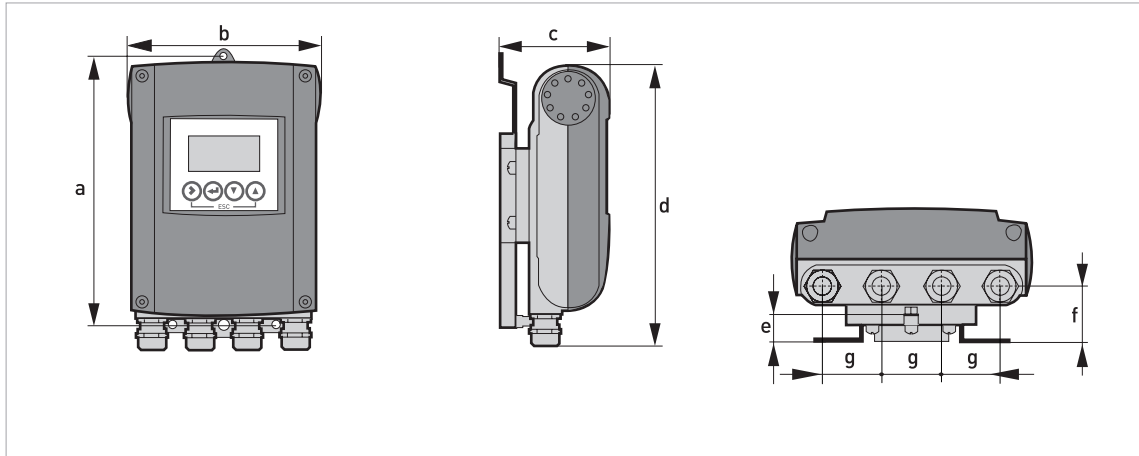


Figure 2-1: Dimensions of the wall-mounted version, aluminium housing

	Dimensions [mm]							Weight [kg]
	a	b	c	d	e	f	g	
Wall-mounted version	241	161	95.2	257	19.3	39.7	40	1.9

Table 2-1: Dimensions and weight in mm and kg

	Dimensions [inch]							Weight [lb]
	a	b	c	d	e	f	g	
Wall-mounted version	9.50	6.34	3.75	10.12	0.76	1.56	1.57	4.2

Table 2-2: Dimensions and weight in inch and lb



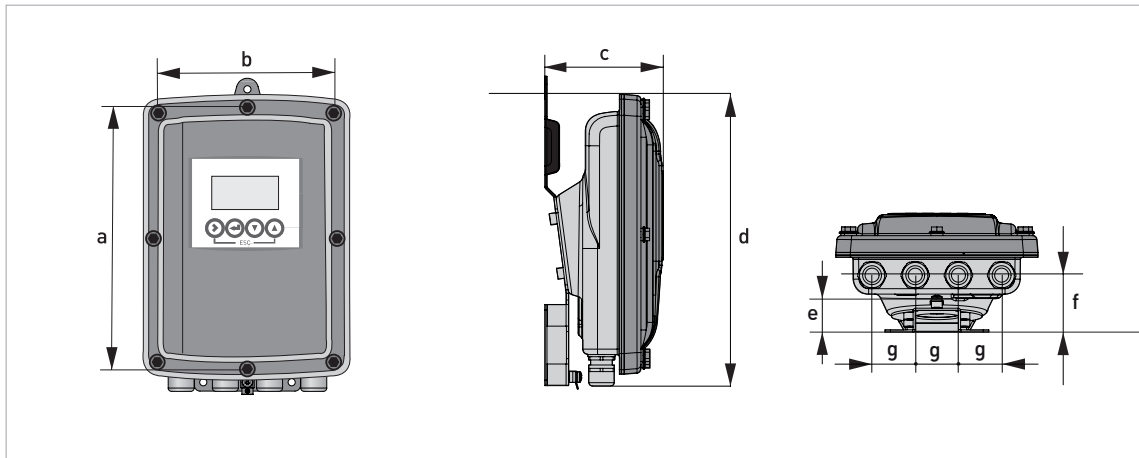


Figure 2-2: Dimensions of wall-mounted and compact 10° version, stainless steel housing

	Dimensions [mm]							Weight [kg]
	a	b	c	d	e	f	g	
Wall-mounted version	268	187	110	276	29	53	40	Approx. 3.5

Table 2-3: Dimensions and weight in mm and kg

	Dimensions [inch]							Weight [lb]
	a	b	c	d	e	f	g	
Wall-mounted version	10.55	7.36	4.33	10.87	1.14	2.09	1.57	Approx. 7.2

Table 2-4: Dimensions and weight in inch and lb

*The compact 10° version is without mounting plate.*

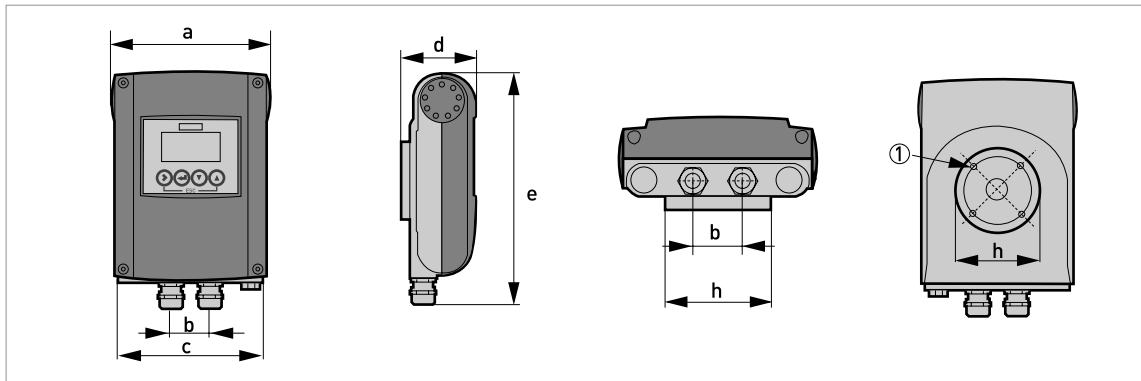


Figure 2-3: Dimensions of compact 0° version, aluminium housing

① 4 x M 6

	Dimensions [mm]								Weight [kg]
	a	b	c	d	e	f	g	h	
0° version	161	40	155	81.5	257	-	-	Ø72	Std: 1.9 Ex: 2.4

Table 2-5: Dimensions and weight in mm and kg

	Dimensions [inch]								Weight [lb]
	a	b	c	d	e	f	g	h	
0° version	6.34	1.57	6.1	3.21	10.12	-	-	Ø2.83	Std: 4.2 Ex: 5.3

Table 2-6: Dimensions and weight in inch and lb

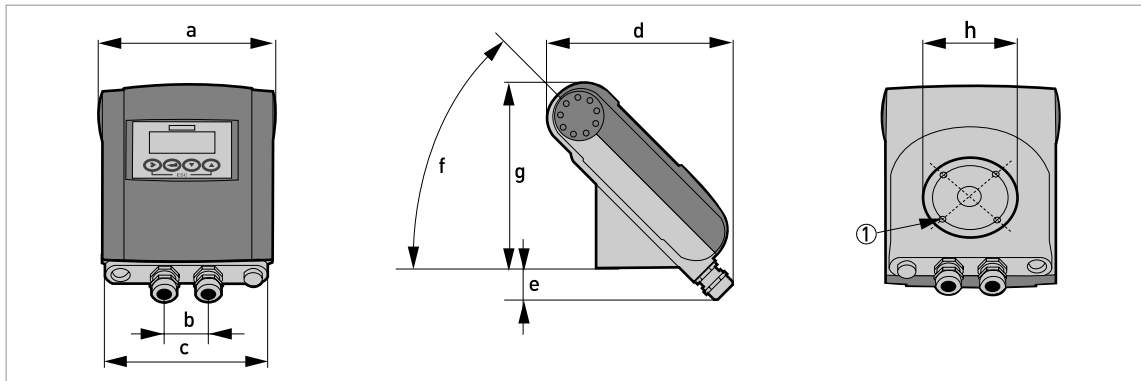


Figure 2-4: Dimensions of compact 45° version, aluminium housing

① 4 x M 6

	Dimensions [mm]								Weight [kg]
	a	b	c	d	e	f	g	h	
45° version	161	40	155	184	27.4	45°	186	Ø72	Std: 2.1 Ex: 2.6

Table 2-7: Dimensions and weight in mm and kg

	Dimensions [inch]								Weight [lb]
	a	b	c	d	e	f	g	h	
45° version	6.34	1.57	6.10	7.24	1.08	45°	7.32	Ø2.83	Std: 4.6 Ex: 5.7

Table 2-8: Dimensions and weight in inch and lb

2.2.2 Mounting plate of wall-mounted version, aluminium housing

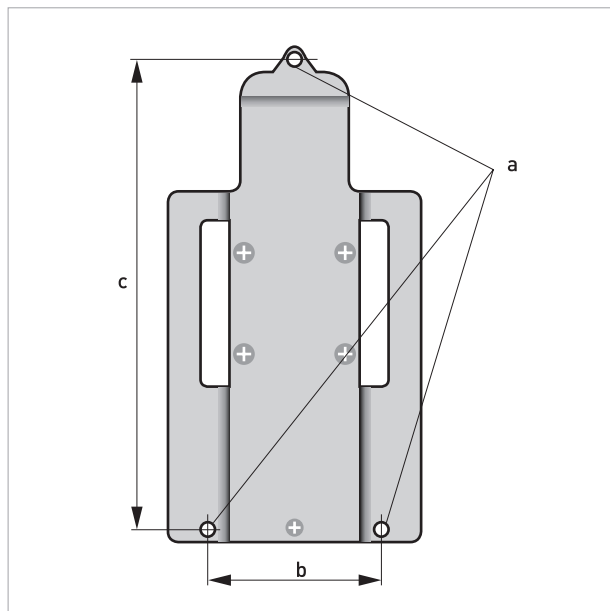


Figure 2-5: Dimensions of mounting plate of wall-mounted version, aluminium housing

	[mm]	[inch]
a	Ø6.5	Ø0.26
b	87.2	3.4
c	241	9.5

Table 2-9: Dimensions in mm and inch

### 2.2.3 Mounting plate of wall-mounted version, stainless steel housing

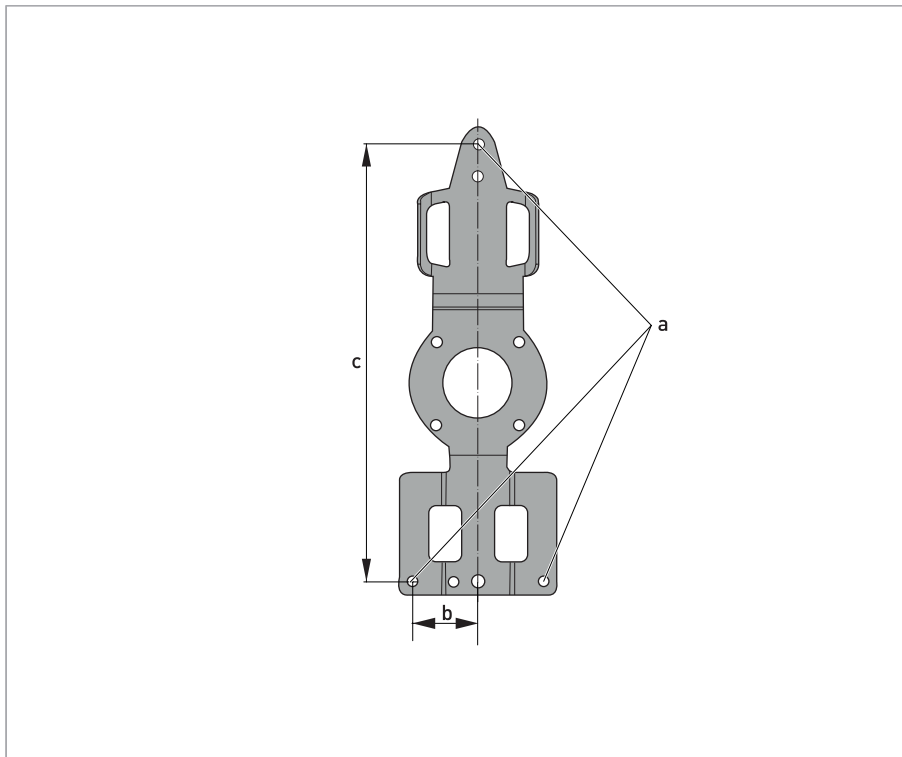


Figure 2-6: Dimensions of mounting plate of wall-mounted version, stainless steel housing

	[mm]	[inch]
a	Ø6.5	Ø0.26
b	40	1.6
c	267.9	10.55

Table 2-10: Dimensions in mm and inch

## 2.3 Flow tables

v [m/s]	Q <sub>100 %</sub> in m <sup>3</sup> /h			
	0.3	1	3	12
DN [mm]	Minimum flow	Nominal flow		Maximum flow
2.5	0.005	0.02	0.05	0.21
4	0.01	0.05	0.14	0.54
6	0.03	0.10	0.31	1.22
10	0.08	0.28	0.85	3.39
15	0.19	0.64	1.91	7.63
20	0.34	1.13	3.39	13.57
25	0.53	1.77	5.30	21.21
32	0.87	2.90	8.69	34.74
40	1.36	4.52	13.57	54.29
50	2.12	7.07	21.21	84.82
65	3.58	11.95	35.84	143.35
80	5.43	18.10	54.29	217.15
100	8.48	28.27	84.82	339.29
125	13.25	44.18	132.54	530.15
150	19.09	63.62	190.85	763.40
200	33.93	113.10	339.30	1357.20
250	53.01	176.71	530.13	2120.52
300	76.34	254.47	763.41	3053.64
350	103.91	346.36	1039.08	4156.32
400	135.72	452.39	1357.17	5428.68
450	171.77	572.51	1717.65	6870.60
500	212.06	706.86	2120.58	8482.32
600	305.37	1017.90	3053.70	12214.80
700	415.62	1385.40	4156.20	16624.80
800	542.88	1809.60	5428.80	21715.20
900	687.06	2290.20	6870.60	27482.40
1000	848.22	2827.40	8482.20	33928.80
1200	1221.45	3421.20	12214.50	48858.00

Table 2-11: Flow rate in m/s and m<sup>3</sup>/h

	Q <sub>100</sub> % in US gallons/min			
v [ft/s]	1	3.3	10	40
DN [inch]	Minimum flow	Nominal flow		Maximum flow
1/10	0.02	0.09	0.23	0.93
1/6	0.06	0.22	0.60	2.39
1/4	0.13	0.44	1.34	5.38
3/8	0.37	1.23	3.73	14.94
1/2	0.84	2.82	8.40	33.61
3/4	1.49	4.98	14.94	59.76
1	2.33	7.79	23.34	93.36
1.25	3.82	12.77	38.24	152.97
1.5	5.98	19.90	59.75	239.02
2	9.34	31.13	93.37	373.47
2.5	15.78	52.61	159.79	631.16
3	23.90	79.69	239.02	956.09
4	37.35	124.47	373.46	1493.84
5	58.35	194.48	583.24	2334.17
6	84.03	279.97	840.29	3361.17
8	149.39	497.92	1493.29	5975.57
10	233.41	777.96	2334.09	9336.37
12	336.12	1120.29	3361.19	13444.77
14	457.59	1525.15	4574.93	18299.73
16	597.54	1991.60	5975.44	23901.76
18	756.26	2520.61	7562.58	30250.34
20	933.86	3112.56	9336.63	37346.53
24	1344.50	4481.22	13445.04	53780.15
28	1829.92	6099.12	18299.20	73196.79
32	2390.23	7966.64	23902.29	95609.15
36	3025.03	10082.42	30250.34	121001.37
40	3734.50	12447.09	37346.00	149384.01
48	5377.88	17924.47	53778.83	215115.30

Table 2-12: Flow rate in ft/s and US gallons/min

## 2.4 Measuring accuracy

Every electromagnetic flowmeter is calibrated by direct volume comparison. The wet calibration validates the performance of the flowmeter under reference conditions against accuracy limits.

The accuracy limits of electromagnetic flowmeters are typically the result of the combined effect of linearity, zero point stability and calibration uncertainty.

### Reference conditions

- Medium: water
- Temperature: +5...+35°C / +41...+95°F
- Operating pressure: 0.1...5 barg / 1.5...72.5 psig
- Inlet section: ≥ 5 DN; outlet section: ≥ 2 DN

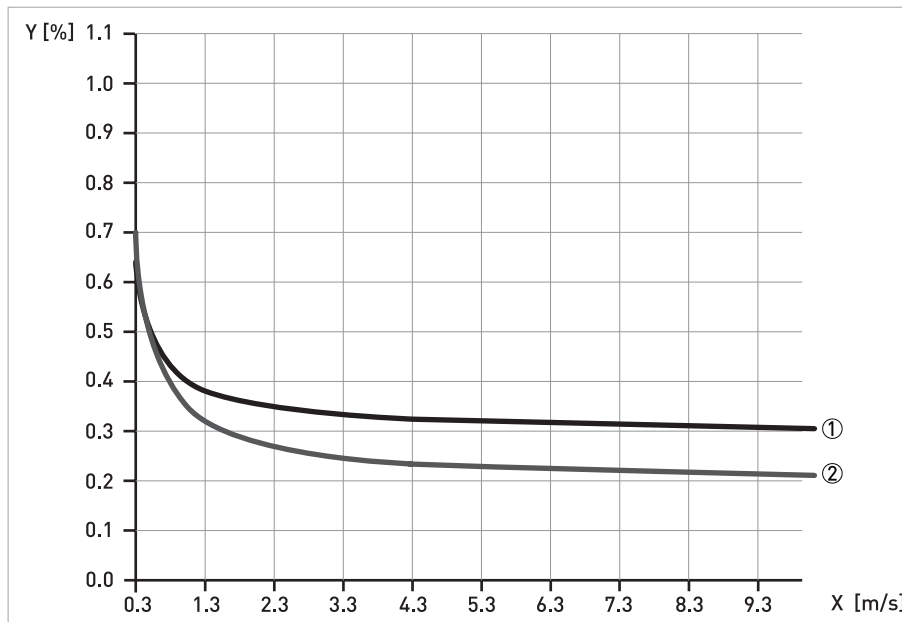


Figure 2-7: Measuring accuracy

X [m/s]: flow velocity

Y [%]: deviation from the actual measured value (mv)

	DN [mm]	DN [inch]	Standard accuracy ①	Optimised accuracy ②
8400A	10...150	3/8...6	±0.4% of mv ± 1 mm/s; as ① + 0.1%	-
8500A / 9600A / 9700A	2.5...6	1/10...1/4		
8500A / 9500A / 9600A / 9700A	10...1200	3/8...48	±0.3% of mv ± 1 mm/s	only 9500A / 9700A: ±0.2% of mv ± 1.5 mm/s  Extended calibration at 2 points

Table 2-13: Measuring accuracy



Model	Description
IMT31A	Model IMT31A Magnetic Flow Transmitter
-4 -6 -N	<b>Type</b> IMT31A compact (0°) IMT31A compact (45°) IMT31A wall-mounted
1 4 A	<b>Power supply</b> 12-24 VDC 24 VDC/AC (9-31 V) 100-230 VAC (85-253 VAC, 50/60 Hz)
0 2 5 A C G  T U V W X Y	<b>Ex version</b> Without - non Ex Ex zone 1 (terminal compartment "e" - compact & wall) (9500A & 9700A) cFMus Class 1 DIV 2 (US) cCSAus OL cFMus Class 1 DIV 2 (Canada) IECEX zone 1 (terminal compartment "e" - compact & wall) (9500A & 9700A tubes only) Check <a href="http://www.BuyAutomation.com">www.BuyAutomation.com</a> for availability of the following items: BE-Ex EAC (Belarus "e" - compact & wall) (9500A & 9700A tubes only) RU-Ex EAC (Russia "e" - compact & wall) (9500A & 9700A tubes only) KA-Ex EAC (Kazakhstan "e" - compact & wall) (9500A & 9700A tubes only) RU EAC (Russia) KA EAC (Kazakhstan) BE EAC (Belarus)
4 5 6	<b>Cable connection</b> 1/2 NPT PF 1/2 M20 x 1.5
5 6 7 8 A B H K L M R X	<b>Operating manual (see "Manuals" section of the Model Code below) / operating language</b> Without / German Without / English GB Without / French Without / Spanish Without / eastern Europe group (GB, CZ, HU, SI, SL, AL, BG & RO) Without / northern Europe group (GB, DK, FI, LT, NO, PL, EE & LV) Without / Italian Without / Portuguese Without / Dutch Without / Swedish Without / Chinese (check <a href="http://www.BuyAutomation.com">www.BuyAutomation.com</a> for availability) Without / Russian
0	<b>Custody transfer</b> Without
0 C	<b>Process diagnostics</b> Standard Tropicalized electronics for non Ex (not for 12-24 VDC)
1* 2	<b>Transmitter housing</b> Aluminum with a polyester topcoat Stainless steel
1	<b>Communication</b> Basic IO (4-20 mA / HART + pulse / frequency + status output + control input)
0	<b>1st IO module</b> Without, no module possible
0	<b>2nd IO module</b> Without, no module possible
0	<b>Reference method</b> Standard

Model	Description
0 2 3	<b>Tag plate (field &amp; wall only)</b> Standard 316/1.4401 tag plate (120 x 46 mm) 316/1.4401 tag plate (67 x 25 mm)
1 3* 4	<b>Manuals</b> German English French

\*: Standard



## ORDERING INSTRUCTIONS

1. Model Number.
2. Flow Data:
  - a. Maximum, minimum, and normal flow rate.
  - b. Fluid composition and viscosity at operating temperatures.
  - c. Fluid density or relative density (specific gravity).
  - d. Maximum, minimum and normal operating temperatures.
  - e. Maximum, minimum and normal operating pressures.
  - f. Mating pipe schedule.
  - g. Type and location (distance) of upstream disturbance.
3. Calibration Information (analog output only); maximum flow rate 20 mA output.
4. Electric Classification.
5. Optional Selections and Accessories.
6. Customer Tag Data.

## FLOWEXPERTPRO SIZING APPLICATION

Website  
[www.FlowExpertPro.com](http://www.FlowExpertPro.com)



App Store (Apple®)



Google Play™ Store  
(Android®)



## ADDITIONAL PRODUCTS

These product lines offer a broad range of measurement and instrument products, including solutions for pressure, flow, analytical, temperature, positioning, controlling and recording.

For a list of these offerings, visit our website at:

[www.se.com](http://www.se.com)

Schneider Electric Systems USA, Inc. Global Customer Support  
38 Neponset Avenue Inside U.S.: 1-866-746-6477  
Foxboro, MA 02035 Outside U.S.: 1-508-549-2424  
United States of America <https://pasupport.schneider-electric.com>  
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