



KROHNE

▶ *achieve more*

▶ IFC 100 Signal Converter

For Electromagnetic flowmeters

- Simple and easy to install and start up
- Increased diagnostic features
- Highest possible measurement accuracy



Product Features

The IFC 100 signal converter is designed to measure the flow velocity, conductivity, volume and mass flow of electrically conductive liquid media.

IFC 100 signal converter can be combined with any KROHNE flow sensor, making it very widely used. Available in compact version, in which the signal converter is connected to the flow sensor, at 0° and 45° version. If the measuring point is difficult to access or the ambient conditions prevent the use of the compact version, the signal converter is available in a remote wall-mounted housing.



[Signal converter in wall-mounted housing]



[Compact designs with 45° and 0° versions]

1. Large back lit graphic display with 4 push buttons to operate the signal converter.
2. Supply voltage: 85...250 VAC, 24 VDC or 24 VDC/AC (4 wire).

Highlights

- Simple installation and start-up
- Available inputs and outputs: Current output (incl. HART®), pulse/frequency output, status output and control input
- Large back lit graphic display with intuitive operation
- A variety of operating languages integrated as standard
- Maintenance free
- Excellent price to performance ratio
- Extremely quick signal conversion

Applications and Industries

- Suitable for diverse flow measuring applications from clear liquids to slurries
- Media with solid content and aggressive chemicals
- Water & Wastewater
- Water treatment and distribution network
- Agriculture
- Heating, Ventilation & Air Conditioning (HVAC)
- Machinery
- Power plants
- Oil and Gas etc

Signal converter / Flow sensor combinations

Flow sensor	Signal converter	
	Compact (0° / 45°) version	Remote version
IFS 4000	IFM 4100C	IFS 4000 + IFC 100W
Aquaflux	Aquaflux 100C	Aquaflux + IFC 100W
Optiflux 2000	Optiflux 2100C	Optiflux 2100W
Optiflux 4000	Optiflux 4100C	Optiflux 4100W
Optiflux 5000	Optiflux 5100C	Optiflux 5100W
Optiflux 6000	Optiflux 6100C	Optiflux 6100W
Ecomag	Ecomag 100C	Ecomag + IFC 100W
Aquamag	Aquamag 100C	Aquamag + IFC 100W

Measuring Principle – Faraday’s law

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:

$$U = V * K * B * D$$

Where

V = Mean flow velocity

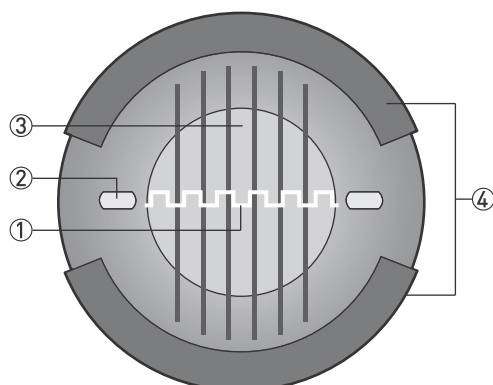
K = Meter constant / correction factor for geometry

B = Magnetic field strength

D = Inner diameter of flowmeter

The signal voltage **U** is picked up by electrodes and is directly proportional to the mean flow velocity **V** and thus the flow rate **Q**. The generated signal voltage is very low.

Signal converter is used to amplify this signal voltage, filter it (separate from noise) and convert it into signals for totalising, recording and output processing.



1. Voltage (Induced voltage is directly proportional to flow velocity)
2. Electrodes
3. Magnetic field
4. Field coils

Technical Data

Measuring System

Measuring principle	Faraday's law of electromagnetic induction
Application range	Continuous measurement of instantaneous and totalized flow, velocity, mass flow (at constant density), conductivity and coil temperature

Design

Measuring sensor	
IFS 4000	DN 10 ... DN 600 / 3/8" ... 24"
Aquaflux	DN 50 ... DN 1200 / 3/8" ... 48"
Optiflux 2000	DN 25 ... DN 1200 / 1" ... 48"
Optiflux 4000	DN 2.5 ... DN 1200 / 1/10" ... 48"
Optiflux 5000	DN 2.5 ... DN 300 / 1/10" ... 12"
Optiflux 6000	DN 2.5 ... DN 150 / 1/0" ... 6"
Ecomag	DN 25 ... DN 150 / 1" ... 6"
Aquamag	DN 50 ... DN 150 / 2" ... 6"
Signal converter	
Compact version (C)	IFC 100C (0° and 45° version)
Remote version (W)	IFC 100W
Version	Standard: Non-Ex, Optional: Ex-version
Outputs	
Current	0 / 4 ... 20mA, HART® (active / passive)
Pulse	10 kHz (active / passive)
Status output Passive	Adjustable as automatic measuring range conversion, display of flow direction, counter overflow, error, switching point or empty pipe detection $U_{ext} \leq 32 \text{ VDC}$, $I \leq 100 \text{ mA}$ Open: $I \leq 0.05 \text{ mA}$ at $U_{ext} = 32 \text{ VDC}$ Closed: $U_0, \text{ max} = 0.2 \text{ V}$ at $I \leq 10 \text{ mA}$ $U_0, \text{ max} = 2 \text{ V}$ at $I \leq 100 \text{ mA}$
Optional output	
Relay	2nos
Rating	230VAC, 5A / 24VDC, 5A
Counters	2 internal counters with a max. of 8 digit counter places (e.g. for counting volume and/or mass units)
Verification	Integrated verification, diagnostics functions: Empty pipe detection, Coil temperature
Display and User interface	
Graphic display	LC Display, backlit white, Size: 128 x 64 pixel
Units	Metric, British and US units selectable as required from lists for volume / mass flow and counting, flow velocity, electrical conductivity, temperature
Programming	4 push buttons for operator control of the signal converter
Remote programming	PACTware® (incl. Device Type Manager (DTM)) HART® through Hand Held Communicator
Measuring Accuracy	
Measuring error	$\pm 0.3\%$ of the measured value + 1mm/s
Optional	$\pm 0.25\%$ of the measured value + 1mm/s
Repeatability	$\pm 0.1\%$
Calibration media	Water

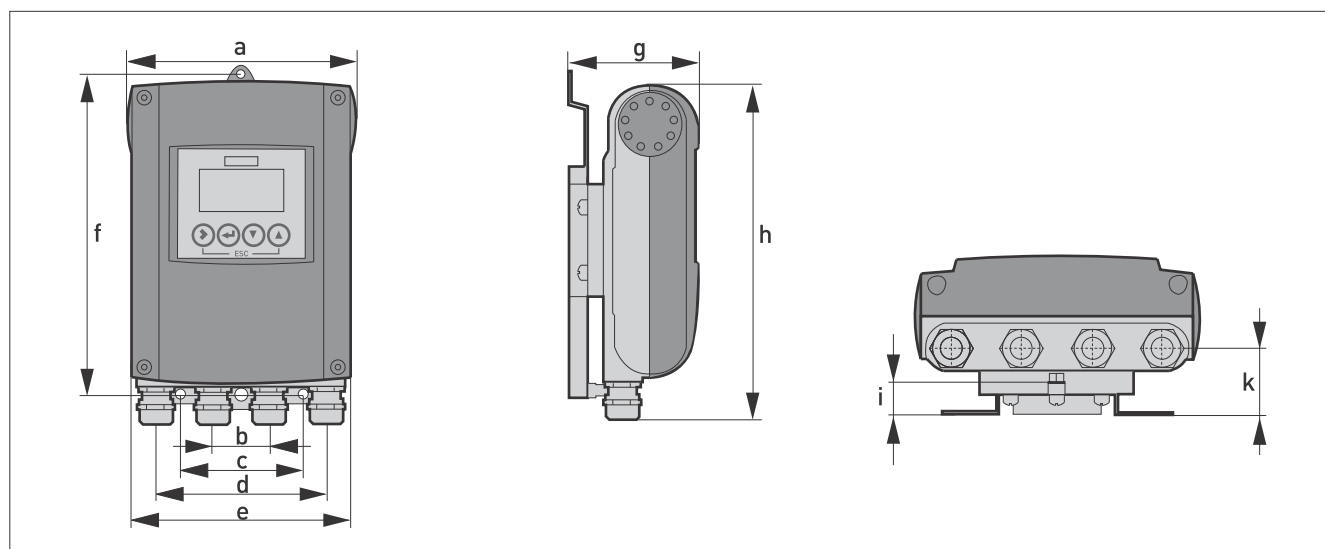
Operating conditions	
Temperature	
Process temperature	Refer to technical data for the measuring sensor.
Ambient temperature	-40...+65°C / -40...+149°F
Storage temperature	-40...+70°C / -40...+158°F
Chemical properties	
Electrical conductivity	≥ 5 μS/cm
Gas content (volume)	≤ 3% by volume
Materials	
Signal converter housing	Die-cast Aluminum - Polyurethane coated
Electrical connection	
Power supply	Universal power supply 100...230 VAC (-15% / +10%), 50/60 Hz
	12...24 VDC (-55% / +30%)
	24 VAC/DC (AC: -15% / +10%; DC: -25% / +30%)
Power consumption	AC: 8 VA DC: 4 W
Cable length	Maximum 600 m / 1950 ft
Cable entry	Standard: M20 x 1.5 (8...12 mm) Option: ½" NPT, PF ½
Error Identification	Without HART®: 0 ... 22mA With HART®: 3.5 ... 22mA
Low flow cut-off	
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)
Time Constant	0 ... 100s
Settings	Set in increments of 0.1
	0...100 s
Approvals and Certifications	
Protection category to	IP 66 / 67 (eq. to NEMA 4X/6)
IEC 529 / EN 60529	
CE	The device fulfils the statutory requirements of the EC directives.
Hazardous area	ATEX II 2 G Ex e [ia] mb IIC T4 and CCOE
Shock and vibration resistance	IEC 68-2-3
Electromagnetic compatibility (EMC)	89/336/EEC and 93/68/EEC in conjunction with EN 61326-1 (A1, A2)

Accuracy

Flow sensor	Size	Accuracy
IFS 4000	DN 10 ... DN 600 / 3/8" ... 24"	0.3% of mv + 1mm/s
Aquaflux	DN 50 ... DN 1200 / 2" ... 48"	0.3% of mv + 1mm/s
Optiflux 2000	DN 25 ... DN 1200 / 1" ... 48"	0.3% of mv + 1mm/s
Optiflux 4000	DN 10 ... DN 1200 / 3/8" ... 48"	0.3% of mv + 1mm/s
Optiflux 4000 / 5000 / 6000	DN 2.5 ... DN 6 / 1/10" ... 1/4"	0.5% of mv + 1mm/s
Ecomag	DN 25 ... DN 150 / 1" ... 6"	0.5% of mv + 1mm/s
Aquamag	DN 50 ... DN 150 / 2" ... 6"	0.5% of mv + 1mm/s

Dimensions and weights

Wall-mounted version



Dimensions and weights in mm and kg

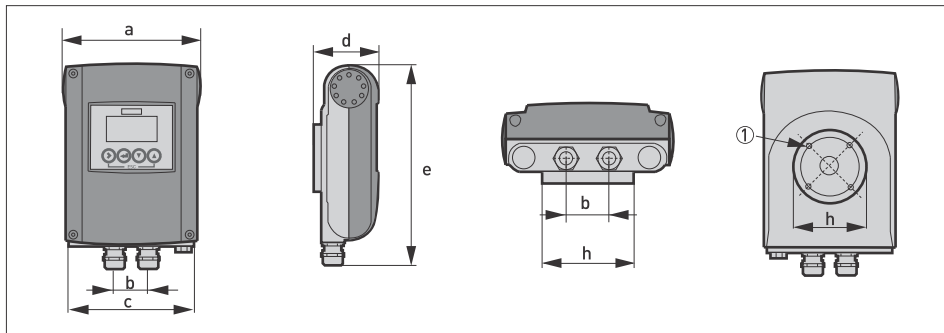
	Dimensions (mm)										Weight (kg)
	a	b	c	d	e	f	g	h	i	k	
Wall-mounted version	161	40	87.2	120	155	241	95.2	257	19.3	39.7	Std: 1.9 Ex: 2.4

Dimensions and weights in inches and lbs

	Dimensions (inches)										Weight (lbs)
	a	b	c	d	e	f	g	h	i	k	
Wall-mounted version	6.34	1.57	3.43	4.72	6.10	9.50	3.75	10.12	0.76	1.56	Std: 4.2 Ex: 5.3

Dimensions and weights

Compact 0° version



① 4 x M6

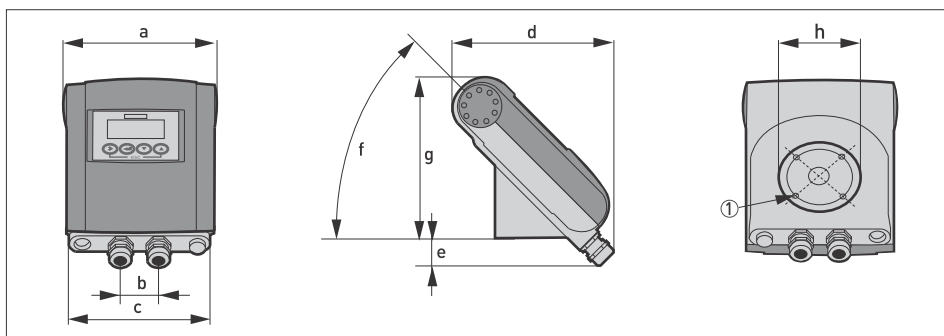
Dimensions and weights in mm and kg

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

Dimensions and weights in inches and lbs

	Dimensions (inches)							Weight	
	a	b	c	d	e	f	g	h	(lbs)
0° version	6.34	1.57	6.1	3.21	10.12	-	-	Ø2.83	Std: 4.2 Ex: 5.3

Compact 45° version



① 4 x M6

Dimensions and weights in mm and kg

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

Dimensions and weights in inches and lbs

	Dimensions (inches)							Weight	
	a	b	c	d	e	f	g	h	(lbs)
45° version	6.34	1.57	6.10	7.24	1.08	45°	7.32	Ø2.83	Std: 4.6 Ex: 5.7

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