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GR/PRINTO

PROFIFLUX IFS 5000
Electromagnetic Flowmeter

Aluminium oxide liner for demanding applications

- Aluminium oxide (Al_2O_3) measuring tube, dimensionally stable, long-time stability
- Flow profile-optimizing cross-section
- Exact measurement, even under unfavourable installation conditions

PROFIFLUX IFS 5000
Electromagnetic Flowmeter

Aluminium oxide liner for demanding applications

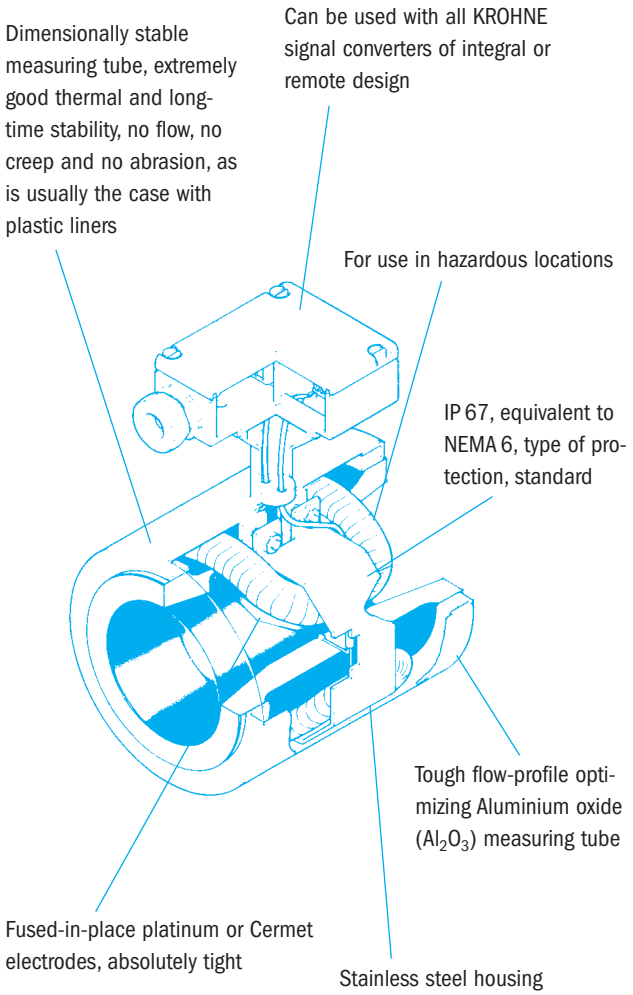
PROFIFLUX flowmeters measure the volumetric flowrate of electrically conductive liquids, acids, alkaline solutions, pastes and slurries, also with very high solids contents.

Fields of application

- All fields in which high measuring stability is called for under tough operating conditions
- Abrasion resistance: extremely high
- Chemical resistance: alkaline solutions (e.g. NaOH) up to 50% at 50 °C/122 °F
  acids (e.g. HNO_3) up to 99% at 90 °C/194 °F
  (HF=hydrofluoric acid, all concentrations at 50 °C/122 °F)

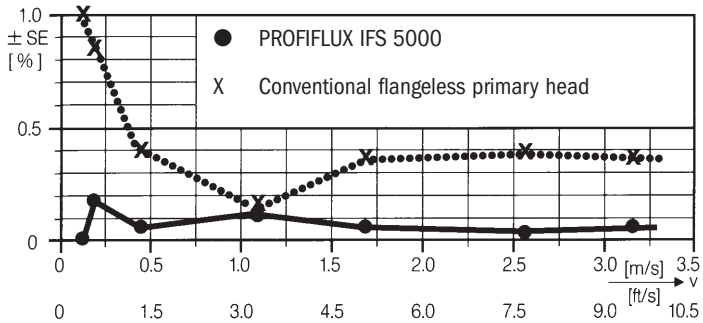
Calibrated on **EN 45 001** certified calibration rigs, accuracy of calibration better than 99.97% of the measured value.

Highlights



Flow profile influence (± SE)

as % of measured value
Example for DN 80 (3") with quarter bend, straight inlet run
5 x DN (= 400 mm) from quarter bend to electrode plane



Pressure drop: $\Delta P = \frac{\varrho \times v^2}{k}$ (in mbar)

ϱ = product density in kg/m³
v = flow velocity in m/s
k = 250 for DN 2.5 – 10, 1/10" – 3/8"
k = 800 for DN 15 – 100, 1/2" – 4"

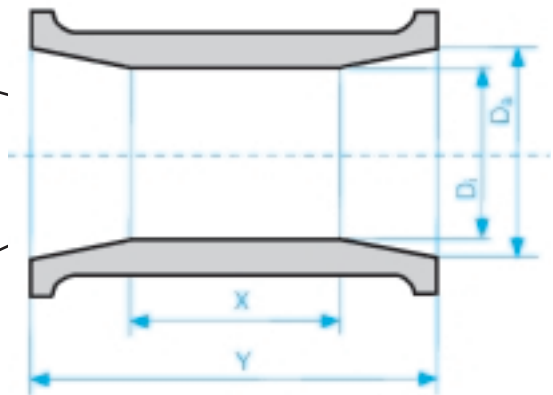
Pressure drop: $\Delta P = \frac{\varrho \times v^2}{k}$ (in psig)

ϱ = specific gravity (e.g. water = 1)
v = flow velocity in ft/s
k = 200 with DN 2.5 – 10, 1/10" – 3/8
k = 550 with DN 15 – 100, 1/2" – 4"

Design

The self-supporting measuring tube of fused aluminium oxide is press-fitted into the stainless steel housing. The electrodes are fused into the measuring tube.

Flangeless 'sandwich' design, easy and quick to install



Meter sizes DN 2.5-100 and 1/10"-4", measurements down to well below 1 ampoule per second

Meter size			Dimensions in mm (inches)			
DN	mm	inches	D_a	D_i	X	Y
DN	2.5	1/10	6 (0.24)	2 (0.08)	20 (0.79)	50 (1.97)
DN	4	1/8	7 (0.28)	3 (0.13)	20 (0.79)	50 (1.97)
DN	6	1/4	9 (0.35)	5 (0.19)	20 (0.79)	50 (1.97)
DN	10	3/8	12 (0.47)	7 (0.28)	20 (0.79)	50 (1.97)
DN	15	1/2	14 (0.56)	12 (0.47)	20 (0.79)	50 (1.97)
DN	25	1	24 (0.95)	20 (0.79)	26 (1.02)	55 (2.17)
DN	40	1 1/2	37 (1.46)	30 (1.18)	36 (1.42)	80 (3.15)
DN	50	2	49 (1.92)	40 (1.57)	51 (2.01)	100 (3.94)
DN	80	3	78 (3.06)	60 (2.36)	70 (2.76)	150 (5.91)
DN	100	4	98 (3.84)	80 (3.15)	103 (4.06)	200 (7.87)

Hazardous-duty (Ex) versions

European Standard

The **IFS 5000-EEx primary heads** are approved in conformity with European Standard:
EEx em ib IIC T3–T6,
KEMA No. 91.C.9694X.

The following certified signal converters with integrated buffer stage are available for the remote primary heads:

IFC 090 F-Ex signal converters in rotatable field housing for use in hazardous areas,
EEx d or de [ib] II C T6.

IFC 110 F-Ex signal converters (field housing) for use outside hazardous areas, [EEx ib] II C.

Additional information on the signal converters is provided in the relevant Data Sheets.

The I**FM 5080 K-EEx integral flowmeters** are approved in conformity with European Standard:
EEx dme ib IIC T3–T6,
KEMA No. 92.C.7162X.

FM Approvals

The **IFS 5000** F primary heads are FM approved:

Div 2: NI / I / 2 / ABCD
S / II / 2 / FG
S / III / 2
J.I. No. 4X7A4.AX

For Division 1 the X 1000 F primary heads are approved:
Div 1: S / I, II, III / 1 / BCDEG
J.I.No.1K0AZ

FM approvals for **IFC 110** and **IFC 090** signal converters are pending.

The **IFM 5080 K** integral flowmeters are FM approved:

Div 2: NI / I / 2 / ABCD
S / II / 2 / FG
S / III / 2
J.I. No. 4X7A4.AX

Additional information on the signal converters is provided in the relevant Data Sheets.

Technical data

Responsibility as to suitability and intended use of our instruments rests solely with the purchaser.

Available versions

X = standard

O = option

– = not included in supply

	Flangeless design	With grounding rings and gaskets between primary head and grounding rings	Gaskets between primary head or grounding rings and pipe flanges	Centering rings	Centering sleeves	Stud bolts	Hazardous-duty version to European standard	FM approval	**Pipe flanges** (not included in supply) **to DIN 2501 (= BS 4504) and ANSI B 16.5**
Meter size to DIN 2501									
DN 2.5, 4, 6, 10	X	X	–	X	–	X	O	–	DN 10, 15 / PN 10
DN 15	X	X	–	X	–	X	O	–	DN 15 / PN 40
DN 25	X	O	X	X	–	X	O	–	DN 25 / PN 40
DN 40	X	O	X	–	X	X	O	–	DN 40 / PN 40
DN 50	X	O	X	–	X	X	O	–	DN 50 / PN 40
DN 80	X	O	X	–	X	X	O	–	DN 80 / PN 40
DN 100	X	O	X	–	X	X	O	–	DN 100 / PN 16 (option PN 25)
Meter size to ANSI B 16.5									
1/10", 1/8", 1/4", 3/8", 1/2"	X	X	–	X	–	X	O	O	1/2", 150 lb, RF
1"	X	O	X	X	–	x	O	O	1", 150 lb, RF
1 1/2"	X	O	X	–	X	X	O	O	1 1/2", 150 lb, RF
2"	X	O	X	–	X	X	O	O	2", 150 lb, RF
3"	X	O	X	–	X	X	O	O	3", 150 lb, RF
4"	X	O	X	–	X	X	O	O	4", 150 lb, RF

option 300 lb, RF

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Electrical conductivity			
DN 2.5, $^1/_{10}$"		≥ 10 µS/cm	} ≥ 20 µS/cm for demineralized cold water
DN 4 – 100, $^1/_8$" – 4"		≥ 05 µS/cm	
Temperatures		Ambient temperature	Process temperature
Integral systems	Standard	–25 to +**60**°C (–13 to +**140**°F)	–60 to +060°C (–76 to +140°F)
		–25 to +**40**°C (–13 to +**104**°F)	–60 to +140°C (–76 to +284°F)
	EEx version	–25 to +**60**°C (–13 to +**140**°F)	–20 to + 60°C (– 4 to +140°F)
		–25 to +**40**°C (–13 to +**104**°F)	–20 to +140°C (– 4 to +284°F)
IFS 5000 F (remote):	Standard	–25 to +60°C (–13 to +140°F)	–60 to +180°C (–76 to +356°F)
	EEx version	–25 to +60°C (–13 to +140°F)	–20 to + 60°C (– 4 to +140°F)
		–25 to +40°C (–13 to +104°F)	–20 to +150°C (– 4 to +302°F)
Temperature change		DN 2.5-15/ $^1/_{10}$"-$^1/_2$"	DN 25-100/1"-4"
Temperature rising	in 10 minutes:	ΔT = 150°C or 302°F	ΔT = 150°C or 302°F
	for sudden change:	ΔT = 120°C or 248°F	ΔT = 120°C or 248°F
Temperature falling	in 10 minutes:	ΔT = 120°C or 248°F	ΔT = 100°C or 212°F
	for sudden change:	ΔT = 90°C or 194°F	ΔT = 80°C or 176°F
Max. operating pressure (at product temperature ≤ 180°C/≤ 356°F)			
DN 2.5 – 80		40 bar or 580 psig	
DN 100		16 bar or 230 psig (option 25 bar/360 psig)	
$^1/_{10}$" – 4"		16 bar or 230 psig, for 150 lb pipe flanges	
$^1/_{10}$" – 3"		40 bar or 580 psig, for 300 lb pipe flanges (option)	
4"		25 bar or 360 psig, for 300 lb pipe flanges (option)	
Vacuum load		0 mbar abs. or 0 psia	
Insulation class of field coils		H	
Electrode design		fused-fitted electrodes	
Power supply for field coils		max. 60 V from signal converter	
Protection category (IEC 529 / EN 60 529)		IP 67, equivalent to NEMA 6	
Materials			
Measuring tube		Fused aluminium oxide, 99.7% $Al_2 O_3$	
Electrodes	DN 2.5 – 15, $^1/_{10}$" – $^1/_2$"	CERMET	
	DN 25 – 100, 1" – 4"	Platinum	
Housing			
DN 2.5 – 15, $^1/_{10}$" – $^1/_2$"		stainless steel 1.4462/Duplex	
DN 25 – 100, 1" – 4"		stainless steel 1.4301 or SS 304 – AISI	
Terminal box		Die-cast aluminium, with polyurethane finish	
Grounding rings		stainless steel 1.4571 or SS 316 Ti – AISI, others on request	
Gaskets between primary head and grounding rings			
DN 2.5 – 15 / $^1/_{10}$" – $^1/_2$"		Viton O-rings, optionally EPDM or Kalrez	
DN 25 – 100 / 1" – 4"		Gylon 3500 (beige) gaskets (application range similar to that of PTFE), optionally Chemotherm (graphite) gaskets	
Gaskets between primary head or grounding rings and pipe flanges (DN 25 – 100, 1" – 4")		Gylon 3500 (beige) gaskets (application range similar to that of PTFE), optionally Chemotherm (graphite) gaskets	
Centering material			
DN 2.5 – 25 / $^1/_{10}$" – 1"		EPDM rings	
DN 40 – 100 / 1$^1/_2$" – 4"		Rubber sleeves	
Stud bolts		Steel electrogalvanized, as option stainless steel 1.4301 or SS 304 – AISI	

Dimensions and weights

Dimensions in mm and (inches)

PLEASE NOTE !

The **total dimension for the height** is obtained from **dimension b** (see table) **plus the height** of the terminal box or the signal converter, see drawings.
The **total weight** is made up of the weight of the signal converter (see table) **plus** the weight of the terminal box or signal converter, see below.

Meter size			**Dimensions** in mm and (inches)								Approx. **weight** in	
DN	mm	inches	a		b_{max}		d		e		kg	(lb)
DN	2.5 – 15	$^1/_{10}$ – $^1/_2$	65	(2.56)	123	(4.84)	51	(2.01)	44	(1.73)	1.6	(3.53)
DN	25	1	58	(2.28)	116	(4.57)	34	(1.34)	102	(4.02)	1.6	(3.53)
DN	40	$1^1/_2$	83	(3.27)	131	(5.16)	42	(1.65)	117	(4.61)	2.4	(5.29)
DN	50	2	103	(4.06)	149	(5.87)	51	(2.01)	135	(5.31)	2.9	(6.39)
DN	80	3	153	(6.02)	181	(7.13)	67	(2.64)	167	(6.57)	6.4	(14.11)
DN	100	4	203	(7.99)	206	(8.11)	79	(3.11)	192	(7.56)	8.8	(19.40)

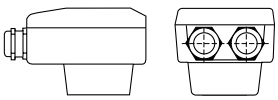
Meter size DN 2.5 – 15 and $^1/_{10}$" – $^1/_2$": Pipe flanges DN 15 / PN 40 or $^1/_2$" / Class 150 lb (300 lb).

Necessary flange spacing

DN 2.5 – 15, $^1/_{10}$" – $^1/_2$": Dimension [a + 2 times gasket thickness]
(gasket between grounding rings and pipe flanges)

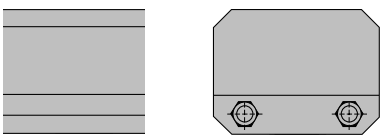
DN 25 – 100, 1" – 4"
without grounding rings: Dimension a incl. gaskets between primary head and pipe flanges
with grounding rings (option): Dimension [a + 10 mm] or [a + 0.40"], incl. gaskets between grounding rings and pipe flanges

Terminal box



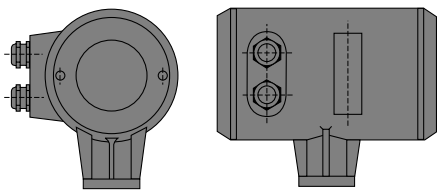
Weight approx. 0.5 kg (1.1 lb)

IFC 010 K and IFC 020 K signal converter



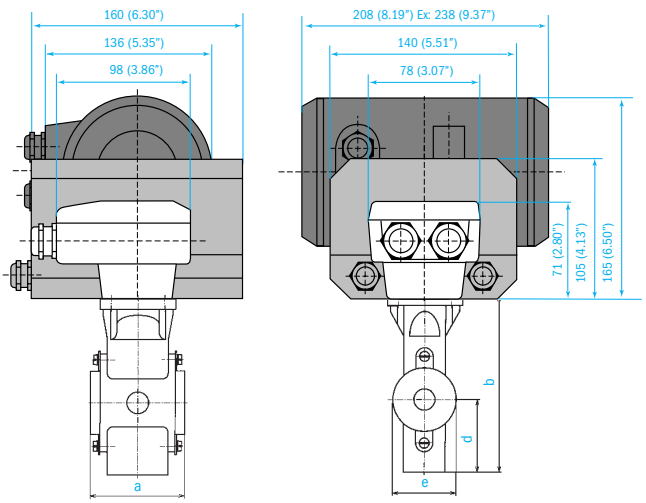
Weight approx. 1.6 kg (3.6 lb)

IFC 090 K signal converter



Weight approx. 2.3 kg (5.1 lb)

DN 2.5 – 15 / $^1/_{10}$" – $^1/_2$"



DN 25 – 100 / 1" – 4"