KROHNE

05/98

Electromagnetic flowmeters

- **Primary heads**
- **Compact flowmeters**

Installation instructions

PROFIFLUX
IFS 5000 F

IFM 5010 K
IFM 5020 K
IFM 5080 K

IFS 5000 F

CONTENTS


IFM 5010 K

IFM 5080 K

3.1M46EA1 059821

Order No. DIN size 7.02142.31.00
US size 7.02142.71.00

Contents

System description

PROFIFLUX electromagnetic flowmeters are precision measuring instruments designed for the linear flow measurement of process liquids.

The process liquids must be electrically conductive: ≥ 5 µS/cm (≥ 10 µS/cm for DN 2.5/$^1/_{10}$")
≥ 20 µS/cm for demineralized cold water

The **full-scale range $Q_{100\%}$** can be set as a function of the **meter size**:
DN 2.5 - 100 / $^1/_{10}$" - 4" $Q_{100\%}$ = 0.01 - 340 m³/hr = 0.03 - 1500 US Gal/min
This is equivalent to a flow velocity of 0.3 - 12 m/s, or 1 - 40 ft/s.

Product liability and warranty

PROFIFLUX electromagnetic flowmeters are designed solely for measuring the volumetric flowrate of electrically conductive, liquid process products.

Special codes and regulations apply to their use in hazardous locations, and these are referred to in the special “Ex” installation and operating instructions (supplied only with hazardous-duty equipment).

Responsibility as to suitability and intended use of these electromagnetic flowmeters rests solely with the operator.

Improper installation and operation of the flowmeters (systems) may lead to loss of warranty.

In addition, the “General conditions of sale” forming the basis of the purchase contract are applicable.

If PROFIFLUX flowmeters need to be returned to Krohne, please note the information given on the last-but-one page of this manual. Krohne regret that they cannot repair or check your flowmeter(s) unless accompanied by the completed form sheet.

Standards and approvals

Please refer to the installation and operating instructions for the signal converter.

Items included with supply

IFS 5000 F
primary head

- primary head
  in the size as ordered
- certificate of calibration data
- installation material as specified
  in the following table
- installation instructions

IFM 5010 K, IFM 5020 K and IFM 5080 K
compact flowmeters

- compact flowmeter
  in the size as ordered
- certificate of calibration data
- installation material as specified
  in the following table
- installation instructions
- installation and operating instructions for the signal converter

Flowmeter					**Scope of supply ...**		X = Standard		O = Option
Size of measuring tube to ...	**Pipe flanges**		**max. allowable operating pressure 1)**		... with centering material	... with stud bolts	... with **2)** grounding rings E and gaskets ...		... without **2)** grounding rings but with gaskets D3 and wires V
	Meter sizes	Pressure rating flange class	bar	psig			D1	D1+D2	
... DIN 2501 (BS 4504)									
DN 2.5 – 10	DN 10,15	PN 40	≤ 40	≤ 580	2 x ring	4 x M12	X		
DN 15	DN 15	PN 40	≤ 40	≤ 580	2 x ring	4 x M12	X		
DN 25	DN 25	PN 40	≤ 40	≤ 580	2 x ring	4 x M12		O	X
DN 40	DN 40	PN 40	≤ 40	≤ 580	4 x sleeve	4 x M16		O	X
DN 50	DN 50	PN 40	≤ 40	≤ 580	4 x sleeve	4 x M16		O	X
DN 80	DN 80	PN 40	≤ 40	≤ 580	6 x sleeve	8 x M16		O	X
DN 100	DN 100	PN 16	≤ 16	≤ 230	6 x sleeve	8 x M16		O	X
		PN 25	≤ 25	≤ 360	6 x sleeve	8 x M20		O	X
... ANSI B 16.5									
1/10"–3/8"	1/2"	150 lb	≤ 20	≤ 290	2 x ring	4 x 1/2"	X		
		300 lb	≤ 40	≤ 580	2 x ring	4 x 1/2"	X		
1/2"	1/2"	150 lb	≤ 20	≤ 290	4 x sleeve	4 x 1/2"		O	X
		300 lb	≤ 40	≤ 580	2 x ring	4 x 1/2"		O	X
1"	1"	150 lb	≤ 20	≤ 290	4 x sleeve	4 x 1/2"		O	X
		300 lb	≤ 40	≤ 580	4 x sleeve	4 x 5/8"		O	X
1 1/2"	1 1/2"	150 lb	≤ 20	≤ 290	4 x sleeve	4 x 1/2"		O	X
		300 lb	≤ 40	≤ 580	4 x sleeve	4 x 3/4"		O	X
2"	2"	150 lb	≤ 20	≤ 290	4 x sleeve	4 x 5/8"		O	X
		300 lb	≤ 40	≤ 580	6 x sleeve	8 x 5/8"		O	X
3"	3"	150 lb	≤ 20	≤ 290	4 x sleeve	4 x 5/8"		O	X
		300 lb	≤ 40	≤ 580	6 x sleeve	8 x 3/4"		O	X
4"	4"	150 lb	≤ 20	≤ 290	6 x sleeve	8 x 5/8"		O	X
		300 lb	≤ 25	≤ 360	6 x sleeve	8 x 3/4"		O	X

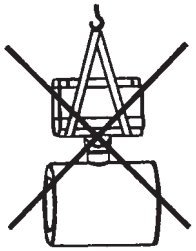
1) For ANSI pipe flanges the max. allowable operating pressure is dependent on the process temperature, see Sect. 10 “Technical data”.

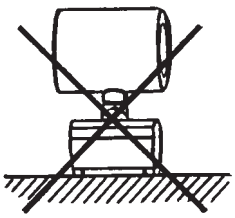
2) **For arrangement of gaskets and connection of wires V,** see Section 7 “Grounding”.

1 Important information for installation: PLEASE NOTE

- **Handling**
  Do not lift flowmeter by the signal converter housing or the terminal box.

  Do not set flowmeter down on signal converter housing or terminal box.





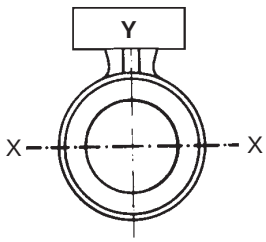
- Use only solventless detergents to **clean** the signal converter housing (polycarbonate).

- **Temperatures**
  For operating pressure and vacuum load based on flange standards, see Section 10 “Technical data“.

		Ambient temperature	Process temperature
Compact systems	Standard	-25 to +**60** °C (-13 to +**140** °F)	-60 to + **60** °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 (separate):	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)

- **Location and position as required,**
  but electrode axis **X – • – • – • – X** must be approximately horizontal in a horizontal pipe run.

  Y terminal box or converter housing



- **Measuring tube must be completetly filled at all times.**

- **Direction of flow is arbitrary.** Arrow on flowmeter can normally be ignored.
  For exceptions, refer to Section ”Factory settings” in the installation and operating instructions for the signal converter.

- **Stud bolts and nuts:** to fit, make sure there is sufficient room next to the pipe flanges.

- **Vibration:** support the pipeline on both sides of the compact flowmeter.
  Level of vibration in conformity with IEC 068-2-34:
  20-500 Hz, ran dom / 2 g rms / 30 minutes / x, y, z directions.

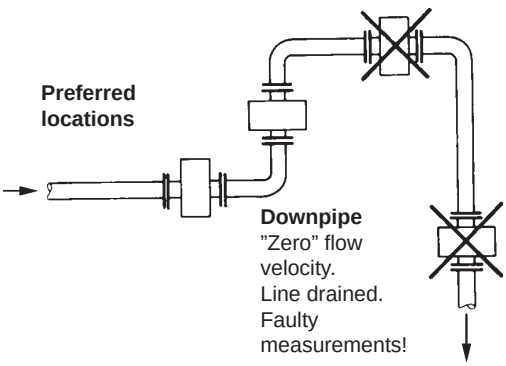
- **Do not expose to direct sunlight,**
  fit a sunshade if necessary, not included with flowmeter, to be provided by customer.

- **Strong electromagnetic fields,** avoid in vicinity of flowmeter.
- **Straight inlet run minimum of 5 × DN and outlet run minimum of 2 × DN,** (DN = meter size), measured from the electrode axis.
- **Vortex and corkscrew flow:** increase length of inlet and outlet runs or install flow conditioners.
- **Mixing different process liquids:** install flowmeter upstream of mixing point or at an adequate distance downstream (minimum of 30 x DN), otherwise display may be unsteady.
- **Plastic pipes and internally coated metal pipelines:** grounding rings required, see Section 7 ”Grounding”.
- **Insulated pipeline:** do not insulate flowmeter.
- **Zero setting not necessary.** To check, it should be possible to set ”zero” flow velocity in the completely filled measuring tube. Shutoff valves should therefore be provided either downsteam of the flowmeter or upsteam and downstream of the flowmeter.

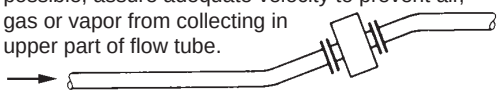
2 Suggestions for installation

To avoid measuring errors due to gas/air inclusion or to pipe runing empty please observe the following:

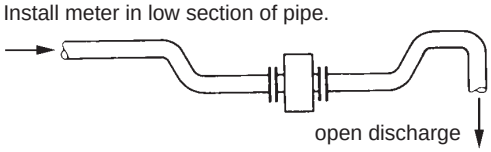
Highest point of pipe run
(Air bubbles collect in measuring tube - faulty measurements!)



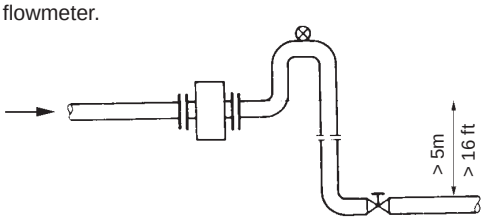
Horizontal pipe run
Install in slightly ascending pipe section. If not possible, assure adequate velocity to prevent air, gas or vapor from collecting in upper part of flow tube.



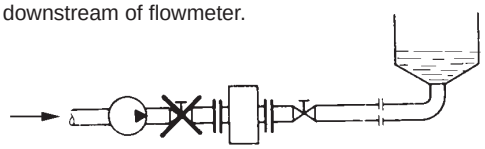
Open feed or discharge
Install meter in low section of pipe.



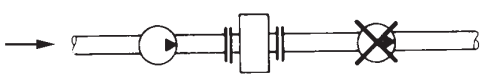
Downpipe over 5 m (16 ft) length
Install air valve ⊗ downstream of flowmeter.



Long pipeline
Always install control and shutoff valves downstream of flowmeter.

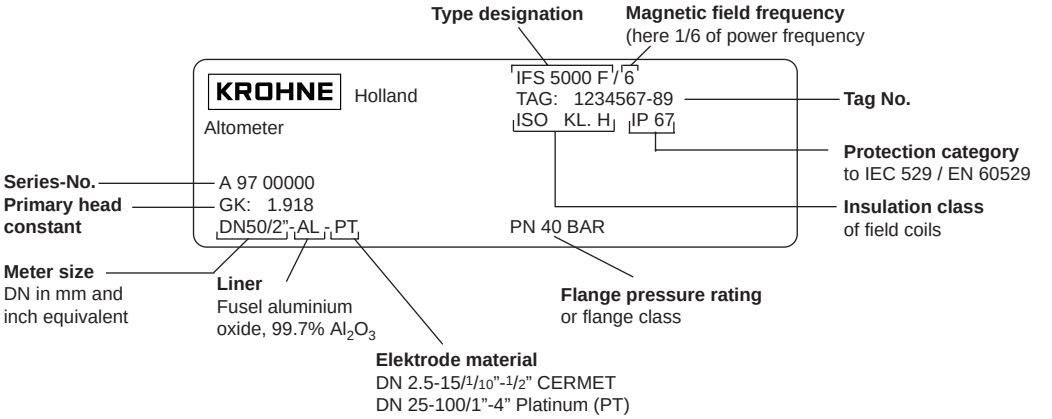


Pumps
Never install flowmeter on pump suction side.



3 Instrument nameplate

IFS 5000 F
separate primary head



Instrument nameplate for compact flowmeters
see installation and operating instructions for the signal converter.

4 Flowmeter versions

IFS 5000 F **Separate primary head (F)** , electrically connected to the signal converter by signal and field current cables.

IFM 5010 K **Compact flowmeter (K),** IFC 010 K or IFC 020 K signal converter mounted direct
IFM 5020 K on the primary head.

IFM 5080 K **Compact flowmeter (K),** IFC 090 K signal converter mounted direct on the primary head.

Versions for hazardous locations
IFS 5000 F and IFM 5080 K are approved as electrical equipment to the harmonized European Standards and to Factory Mutual (FM).
Test certificate, certificate of conformity and wiring instructions for these devices are attaches to the **"Ex" installation instructions**, provided only with hazardous-duty equipment.

5 Installation in the pipeline

- **Installation material**, refer to table on page 3.
- **Pipe flanges, and torques,**
  see Sect. 6, Page 7.
- **Pipe flange spacing** (fitting dimension)

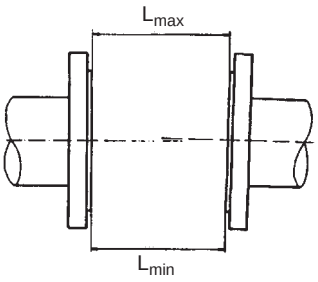
Flowmeter		**Fitting dimensions "a"** in mm (inch)			
Meter size		**with**		**without**	
DN mm	inch	grounding rings		grounding rings	
2.5 - 15	$^1/_{10}$" - $^1/_2$"	65 (2.56)	**1)**	–	
25	1	68 (2.68)	**2)**	58 (2.28)	**3)**
40	1 $^1/_2$"	93 (3.66)	**2)**	83 (3.27)	**3)**
50	2	113 (4.45)	**2)**	103 (4.06)	**3)**
80	3	163 (6.42)	**2)**	153 (6.02)	**3)**
100	4	213 (8.39)	**2)**	203 (7.99)	**3)**

1) **plus** 2 x thickness of gasket D2 between grounding rings and pipe flanges, gasket D2 not included with supply, customer supplied.

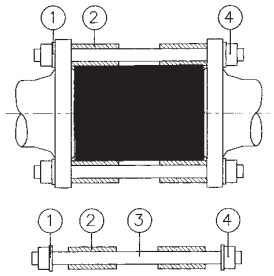
2) **incl.** gasket D2 between grounding rings and pipe flanges.

3) **incl.** gasket D3 between measuring tube and pipe flanges.

- **For arrangement of gaskets,** see Sect. 7 "Grounding".
- **Dimensions and order numbers of gaskets,** see Sect. 9 and 11.
- **High-temperature pipelines**
  Where process temperatures exceed 100 °C/212 °F, provide for facilities to compensate for longitudinal expansion on heat-up of the pipeline.
  For **short** pipelines use resilient gaskets and
  for **long** pipelines install flexible pipe elements (e.g. elbows).
- **Position of flanges**
  Install flowmeter in line with the pipe axis. Pipe flange faces must be parallel to each other,
  max. permissible deviation:
  $L_{max} - L_{min} \leq 0{,}5$ mm
  ≤ 0.02"



- **Arrangement of centering sleeves**
  1 washer
  2 centering sleeve (≥ DN 40 / ≥ 1$^1/_2$")
  3 stud bolt
  4 hex. nut



6 Torques

Flowmeter					Max. allowable torques						
Size of measuring tube	Pipe flanges		max. allowable operating pressure 1)		with gaskets made of ...						2) 3) 4)
					...Gylon		...Chemo-therm		...e.g. built-up material		
to ...	Meter sizes	Pressure rating flange class	bar	psig	**Nm**	ft×lb	**Nm**	ft×lb	**Nm**	ft×lb	
... DIN 2501 (BS 4504)											
DN 2.5 – 10	DN 10,15	PN 40	≤ 40	≤ 580					**32**	23	**5)**
DN 15	DN 15	PN 40	≤ 40	≤ 580					**36**	23	**5)**
DN 25	DN 25	PN 40	≤ 40	≤ 580	**22**	16	**32**	23			
DN 40	DN 40	PN 40	≤ 40	≤ 580	**47**	34	**66**	48			
DN 50	DN 50	PN 40	≤ 40	≤ 580	**58**	42	**82**	59			
DN 80	DN 80	PN 40	≤ 40	≤ 580	**48**	35	**69**	50			
DN 100	DN 100	PN 16	≤ 16	≤ 230	**75**	54	**106**	77			
		PN 25	≤ 25	≤ 360	**94**	68	**133**	96			
... ANSI B 16.5											
1/10"–3/8"	1/2"	150 lb	≤ 20	≤ 290					**35**	25	**5)**
		300 lb	≤ 40	≤ 580					**35**	25	**5)**
1/2"	1/2"	150 lb	≤ 20	≤ 290					**35**	25	**5)**
		300 lb	≤ 40	≤ 580					**35**	25	**5)**
1"	1"	150 lb	≤ 20	≤ 290	**24**	17	**33**	24			
		300 lb	≤ 40	≤ 580	**30**	22	**42**	30			
1 1/2"	1 1/2"	150 lb	≤ 20	≤ 290	**38**	28	**54**	39			
		300 lb	≤ 40	≤ 580	**57**	41	**81**	59			
2"	2"	150 lb	≤ 20	≤ 290	**58**	42	**83**	60			
		300 lb	≤ 40	≤ 580	**30**	22	**42**	30			
3"	3"	150 lb	≤ 20	≤ 290	**98**	71	**138**	100			
		300 lb	≤ 40	≤ 580	**59**	43	**84**	61			
4"	4"	150 lb	≤ 20	≤ 290	**75**	54	**108**	78			
		300 lb	≤ 25	≤ 360	**92**	67	**131**	95			

1) For ANSI pipe flanges the max. allowable operating pressure is dependent on the process temperature, see Sect. 10 “Technical data”.
2) Arrangement of gaskets, see Sect. 7 “Grounding”
3) Size of gaskets D2, see Sect. 11.
4) The max. allowable torque is dependent on the gasket material, **10 Nm ~ 1.0 kpm = 7.23 ft x lbf**
5) Gaskets D1 are special O-rings, for Order No. see Sect. 9.

7. Grounding

- **Warning**: All flowmeters must be properly grounded to avoid personnel shock hazard.
- The ground conductor should not transmit any interference voltages, therefore do not ground any other electrical devices together with this conductor.

IFS 5000 F separate primary head with terminal box

- A **functional ground FE** must always be connected.
- **Signal converters with a field power supply of > 125 mA / > 60 V:**

  IFS 5000 F primary head: because of the higher field current from the signal converter, a **PE protective conductor** must be connected to the primary head, see grounding diagrams below.

Compact systems

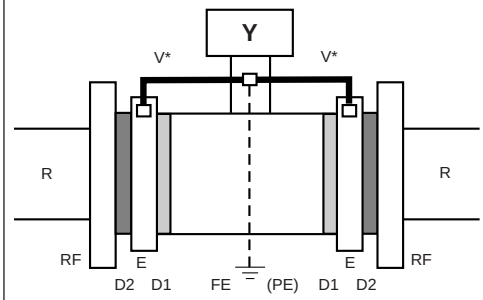
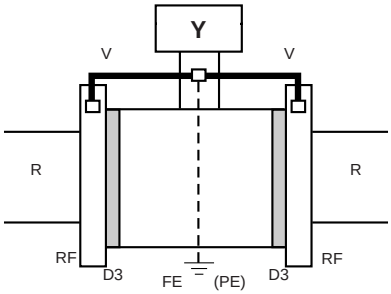
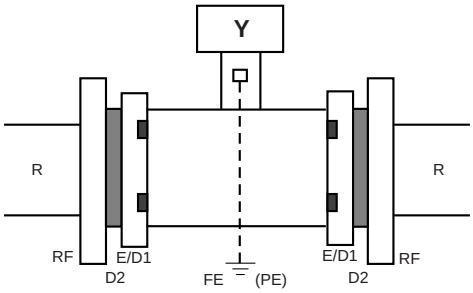
Supply power > 50 V AC

- Grounding is via the **PE protective ground conductor** incorporated in the power supply cable, see also Section “Connection to power” in the installation and operating instructions for the signal converter.
- **EXCEPTION: Do not connect up the PE protective ground conductor in the terminal box** if e.g. compact units are operated in the proximity of electric furnaces, electrolysis plants, etc., and large potential differences occur in the pipeline system. An FE functional ground must simultaneously take over the function of the protective conductor (combined protective/functional ground). Refer to appropriate national codes for specific requirements for this type of installation, which may require the addition of a ground fault detection circuit interrupter.

Power supply 24 V AC or DC

- Protective separation (PELV) must be ensured (VDE 0100/VDE 0106 or IEC 364/IEC 536 or equivalent national regulations).
- An **FE functional ground conductor** must be connected for measurement reasons.

Grounding diagrams

	Metal pipelines, with or without internal coating, and plastic pipelines grounding with grounding rings	**Metal pipelines, not internally coated** grounding without grounding rings
DN 25 - 100 / 1” - 4”		
DN 2.5 - 15 / 1/10” - 1/2”		

V* not required for plastic pipelines

D1/D3	Gaskets glued to measuring tube.
D2	Gaskets not included in supply, to be provided by customer. Use standard flat gaskets, dimensions see Sect. 11.
E	Grounding rings (option) with glued-on gaskets D2, supplied loose and must be screwed to the housing.
E / D1	Grounding rings, screwed to housing, with inserted gaskets D1, special O-rings.
FE	Functional ground, conductor ≥ 4 mm² Cu/AWG 10.
PE	Protective conductor, required if the IFS 5000 F is operated with a signal converter that supplied a field current of **> 125 mA / > 60 V.**
R	Pipeline
RF	Pipe flanges
V	Interconnecting wires, bolted to housing.
Y	Terminal box or signal converter.

8 Replacement of the separate primary head

Switch off power source before commencing work!

1) Note down terminal assignment before dismantling the “old“ primary head.

2) Install the new primary head as described in the supplied installation instructions.

3) Make electrical connection at the signal converter as described in the installation and operating instructions for the signal converter.

4) Specific calibration data are defined during factory calibration for each primary head, which are indicated on the instrument nameplate.
This includes the primary constant GK and the magnetic field frequency. These data need to be reset in the signal converter.

5) If the size of primary head is also different from the old one, the full-scale range $Q_{100\%}$ and the meter size will need to be reset.

6) After resetting the signal converter, carry out a zero point check.

7) If necessary, reset the internal electronic totalizer of the signal converter.

9 Spare parts and order numbers

Gaskets D1: **O** = O-rings
F = flat rings
Material: **G** = Gylon 3500
C = Chemotherm (graphite)
(Gasket arrangement, see Sect. 7)

Meter size		**Version, material**		**Order No.**
mm	inch			
2.5 - 15	1/10 - 1/2	O	Viton	5.30020.03
			EPDM	5.30020.04
			Kalrez	5.30023.02
25	1	F	G	5.30823.06
			C	5.30823.01
40	1 1/2	F	G	5.30823.07
			C	5.30823.02
50	2	F	G	5.30823.08
			C	5.30823.03
80	3	F	G	5.30823.09
			C	5.30823.04
100	4	F	G	5.30823.10
			C	5.30823.05

10. Technical data

Electrical conductivity

DN 2.5, 1/10" ≥ 10 µS/cm
DN 4 - 100, 1/8" - 4" ≥ 5 µS/cm } ≥ 20 µS/cm for demineralized cold water

Temperatures		**Ambient temperature**	**Process temperature**
Compact systems:	Standard	-25 to +**60** °C (-13 to +**140** °F)	-60 to + **60** °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 (separate)	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:	Δ T = 150 °C or 302 °F	Δ T = 150 °C or 302 °F
	for sudden change:	Δ T = 120 °C or 248 °F	Δ T = 120 °C or 248 °F
Temperature falling	in 10 minutes:	Δ T = 120 °C or 248 °F	Δ T = 100 °C or 212 °F
	for sudden change:	Δ T = 90 °C or 194 °F	Δ T = 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_2O_3
Electrodes	DN 2.5 - 15 / 1/10" - 1/2"	CERMET
	DN 25 - 100 / 1" - 4"	Platin
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 to 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

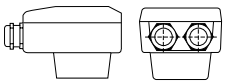
11 Dimensions and weights

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.

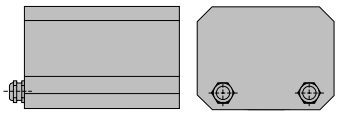
The **total weight** is made up of the weight of the signal converter (see table) **plus** the weight of the terminal box or signal converter, see below.

Terminal box



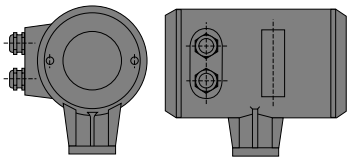
Weight approx.
0.5 kg (1.1 lb)

IFC 010 K and IFC 020 K signal converters



Weight approx.
1.6 kg (3.6 lb)

IFC 090 K signal converter



Weight approx.
2.3 kg (5.1 lb)

Meter size		**Dimensions** in mm and (inch)								Approx. **weight** in	
DN mm	inch	a		b_{max}		d		e		kg	(lb)
2.5 – 15	1/10 – 1/2	65	(2.56)	137	(5.39)	51	(2.01)	44	(1.73)	1.6	(3.53)
25	1	68	(2.68)	130	(5.12)	34	(1.34)	102	(4.02)	1.6	(3.53)
40	1 1/2	93	(3.66)	145	(5.71)	42	(1.65)	117	(4.61)	2.4	(5.29)
50	2	113	(4.45)	163	(6.42)	51	(2.01)	135	(5.31)	2.9	(6.39)
80	3	163	(6.42)	195	(7.68)	67	(2.64)	167	(6.57)	6.4	(14.11)
100	4	213	(8.39)	220	(8.66)	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)

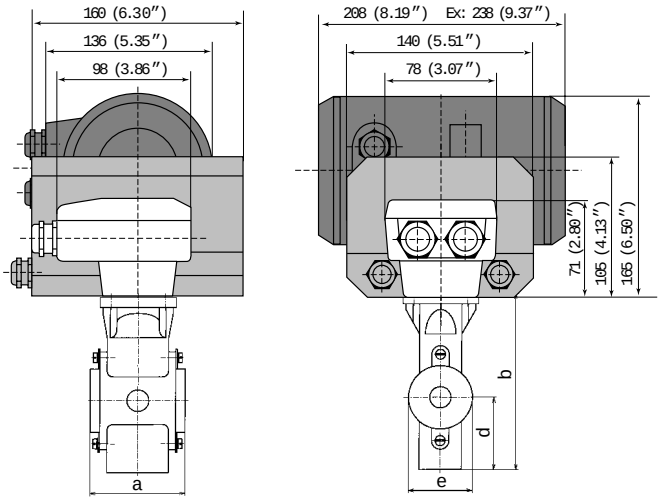
DN 25 – 100, 1" – 4":
without grounding rings: Dimension a incl. gaskets between primary head and pipe flanges
with grounding rings (option): Dimension a + 10 mm or a + 0.4", incl. gaskets between grounding rings and pipe flanges.

Dimensions of gaskets D2

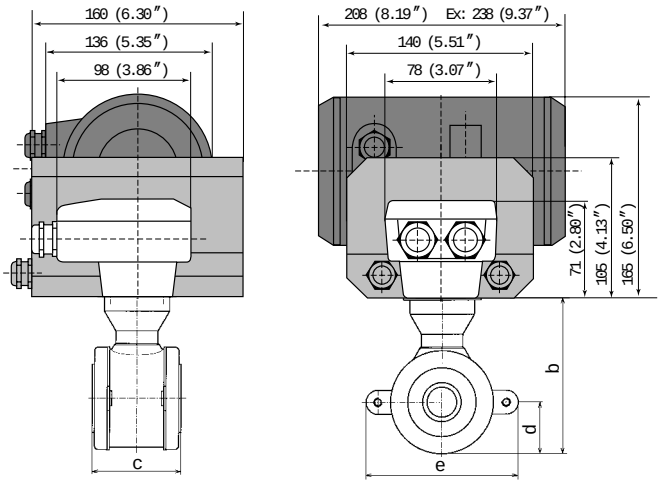
Meter size to ...		**Dimensions**	
... DIN 2501	... ANSI B 16.5	dia. d_{out}	dia. d_{in}
DN 2.5-15	1/10"-1/2"	Use commercial flat gaskets	
DN 25	1"	46 (1.81)	26 (1.02)
DN 40	1 1/2"	62 (2.41)	39 (1.54)
DN 50	2"	74 (2.91)	51 (2.01)
DN 80	3"	106 (4.17)	80 (3.15)
DN 100	4"	133 (5.24)	101 (3.98)

(thickness of the gaskets approx. 1.6 mm / 0.06")

DN 2.5 - 15 / 1/10" - 1/2"



DN 25 - 100 / 1" - 4"



Notes

If you need to return flowmeters for testing or repair to Krohne

Your electromagnetic flowmeter
- has been carefully manufactured and tested by a company with ISO 9001 certification
- and volumetrically calibrated in one of the world's most accurate test rigs.

If installed and operated in accordance with these operating instructions, your flowmeter will rarely present any problems.

Should you nevertheless need to return a flowmeter for checkout or repair, please pay strict attention to the following points:

Due to statutory regulations concerning protection of the environment and the health and safety of our personnel, Krohne may only handle, test and repair returned flowmeters that have been in contact with liquids if it is possible to do so without risk to personnel and environment. This means that Krohne can only service your flowmeter if it is accompanied by a certificate in line with the following model confirming that the flowmeter is safe to handle.

If the flowmeter has been operated with toxic, caustic, flammable or water-endangering liquids, you are kindly requested

- to check and ensure, if necessary by rinsing or neutralizing, that all cavities in the flowmeter are free from such dangerous substances.
  (Directions on how you can find out whether the primary head has to be opened and then flushed out or neutralized are obtainable from Krohne on request.)
- to enclose a certificate with the flowmeter confirming that the flowmeter is safe to handle and stating the liquid used.

Krohne regret that they cannot service your flowmeter unless accompanied by such a certificate.

S P E C I M E N certificate

Company: ..... Address: .....

Department: ..... Name: .....

Tel. No.: .....

The enclosed electromagnetic flowmeter

Type: ..... Krohne Order No. or Series No.: .....

has been operated with the following liquid: .....

Because this liquid is

water-endangering * / toxic * / caustic * / flammable *

we have

– checked that all cavities in the flowmeter are free from such substances *

– flushed out and neutralized all cavities in the flowmeter *

(* delete if not applicable)

We confirm that there is no risk to man or environment through any residual liquid contained in this flowmeter.

Date: ..... Signature: .....

Company stamp: