



OPTIFLUX 4040 C

Technical Datasheet

Electromagnetic Flowmeter

- 2-wire connection without additional cabling
- As dynamic, reliable and accurate as a 4-wire EMF
- Unimpeded pipe cross-section
- No additional pressure loss
- Minimum conductivity 5 $\mu\text{S}/\text{cm}$
- Intrinsically safe connection



KROHNE

2-wire solution

OPTIFLUX 4040 C is an electromagnetic flowmeter in 2-wire technology with the dynamics, reliability and accuracy of a 4-wire EMF. OPTIFLUX 4040 C is suitable for steady or pulsating flows.



- 1 All Ex approvals
- 2 Most dimensionally stable PFA liner with stainless steel mesh
- 3 Housing and flanges also available in stainless steel

Highlights

- 2-wire EMF with 4-wire functionality
- Reliable readings even in case of pulsating or fast changing flows due to rapid signal processing
- Low power consumption and operating costs
- Protection classes "I", "e" or "d" selectable by the user during installation
- The only 2-wire electromagnetic flowmeter suitable for conductivities down to 5 $\mu\text{S}/\text{cm}$

Industries

- Chemicals
- Iron, Steel & Metals
- Minerals & Mining
- Pharmaceuticals
- Power Plants
- Pulp & Paper
- Water
- Wastewater

Applications

- Pulsating flows
- For aggressive chemicals
- For products with high solid contents
- Suitable for control loop applications

Electromagnetic product range

OPTIFLUX converters: All converters fit to all sensors



- ① IFC 300 High-performance solution
- ② IFC 010 Economical solution

OPTIFLUX sensors



- ① OPTIFLUX 1000 Economical solution
- ② OPTIFLUX 2000 Solution for the water and wastewater industry
- ③ OPTIFLUX 4000 Standard solution for the process industry
- ④ OPTIFLUX 5000 Solution with high-tech ceramics
- ⑤ OPTIFLUX 6000 Sanitary and hygienic solution

Special-purpose flowmeters



- ① WATERFLUX 2070 Battery powered watermeter solution
- ② OPTIFLUX 4040 C 2-wire solution
- ③ TIDALFLUX 4110 PF Solution for partially filled pipelines
- ④ BATCHFLUX 5015 C Solution for volumetric filling
- ⑤ OPTIFLUX 7300 C Electrode-free solution

Technical Data

Nominal diameter											
ASME [inch]	3/8"	1/2"	3/4"	1"	2"	2 1/2"	3"	4"	5"	6"	
DN [mm]	10	15	20	25	50	65	80	100	125	150	

Versions

Compact + IFC 040 C											
with local display											

Nominal pressure

ASME B16.5 - 150 lbs RF											
ASME B16.5 - 300 lbs RF											
DIN 2501 - PN 16											
DIN 2501 - PN 25											
DIN 2501 - PN 40											
JIS 10 K											
JIS 20 K											

Flanges

Steel A105 (1.0038)											
Stainless steel 304 (1.4306)											
Stainless steel 316 L (1.4404)											
Stainless steel 316 Ti (1.4571)											

Liner

PTFE											
PFA											

Electrodes

Hastelloy C4											
Hastelloy B2											
Platinum											
Stainless steel 1.4401 (AISI 316 L)											
Stainless steel 1.4571 (AISI 316 Ti)											
Titanium											
Tantalum											
Low noise HC4											
Low noise SS 316 Ti (1.4571)											
contruction	fixed mounted										

Grounding rings

Stainless steel 316 Ti (1.4571)**											
Hastelloy C4*											
Hastelloy B2*											
Titanium*											
Tantalum (ring No1 and No2 only)											
	* ring No1, 2 and 3 available										
	** DN 2,5...6: ring No 1 available; DN 10...150: Ring No1, 2 and 3 available										

Nominal diameter											
ASME [inch]	3/8"	1/2"	3/4"	1"	2"	2 1/2"	3"	4"	5"	6"	
DN [mm]	10	15	20	25	50	65	80	100	125	150	

Protection category

IP 67 eq. NEMA 6											
Iso insertion length											

Conductivity

Non-water	≥ 5 μS/cm
Water	≥ 20 μS/cm

Performance

Process conditions	Liquids with maximum solid particle / gas content < 3% (by volume)
Inaccuracy (under reference conditions)	± 0,5 % of MV
Measuring range (see flow table)	0,3...12 m/s (1...40 ft/s)

Temperature limits

Process temperature	See table
Ambient temperature	See table
Storage temperature	-50...70°C (-58...158°F)

■ standard ■ optional □ on request

Current output

Function	All operating data configurable, galvanically isolated
	Standard HART communication
	For passive mode
Current	Fixed ranges: 4...20 mA
	Variable ranges
	for Q = 0%, I0% = 4...14 mA
	for Q = 100%, I100% = 10...20 mA
	for Q > 100%, I _{max.} = 21 mA
	(adjustable in 0,1 mA increments)
Error identification (to NE 43)	3,6...4 mA or 20...22,4 mA adjustable in 0,1 mA increments
Bidirectional flow measurement (forwards/reverse)	Direction identified via status output

Binary output

Function	Selectable at pulse or status output
	All operating data configurable, galvanically isolated
Pulse output	Digital pulse division, interpulse period non-uniform, therefore if frequency and cycle meters are connected allow for minimum counting interval:
	Gate time counter => 10/P100% [Hz]
	Pulse width: 30-1000 ms adjustable in 10 ms increments
Status output	Configurable as measuring range identification for automatic range change, indicator of flow direction, overflow, errors, trip point or empty pipe indication
Passive mode	Selectable according NAMUR (DIN 19 234) or as contact:
	Open: < 1 mA current, max. 36 V
	Closed: 100 mA, max. voltage drop < 2 V

Time constant

Time constant	0.2 to 99.9 seconds
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Low flow cut-off

Cut-off ON-value	1...19 %
Cut-off OFF-value	2...20 %

Local display

	3-field LCD
Display functions	Actual flowrate, forward, reverse and sum totalizers (7-digit) and status messages
Units	Actual flowrate in liter/s, m3/h, US gallons/min or user-defined unit (e.g. US million gallons/day) Totalizers in liter, m3, US gallons or user-defined unit (e.g. hectoliter)
Language	English, German, French (others on request)
Display	Top field: 6-character, 7 segment numeral and sign display, plus symbols for key acknowledgements. Middle field: 4-character, 14 segment text display Bottom field: 6 markers to identify display in measuring mode and messages of outputs.

Power supply

Current output (2-wire connection)	4...20 mA via proprietary power supply, 14...36 V
Power booster (2 x 2 wire connection)	Optionally available, for demanding applications. Proprietary power supply 22 mA, 14...36 Vdc or to 24 V DC, max. 1 W

Cable connection

1/2" NPT	Optional
PF 1/2	Optional
M20 x 1,5	Standard

Approvals

Non-Ex	Standard
EEx zone 1 / 2	Optional
FM - class I div. 1 / 2	Optional
	Available approvals for combined flowmeter, OPTIFLUX 4040 C always
	Field selectable intrinsic safety "i", increased safety "e" or flameproof enclosure "d"

Housing

Material	Die-casted aluminium (polyurethane coated)
Ambient temperature	-25...60°C / -13...140°F
Protection category	IP67, equivalent to NEMA 6

Temperature and pressure limits

Ambient temperature [°C]:	Process temperature [°C]:
-25...60	-25...60
-25...40	-25...140

Ambient temperature [°F]:	Process temperature [°F]:
-13...140	-13...140
-13...104	-13...284

Liner	Diameter	Max. pressure	Vacuum load in mbar abs. at a process temperature [°C] of ...								
	[mm]	[bar]	40	60	70	80	90	100	120	140	180
PTFE	10...20	50	0	0	0	0	0	0	500	750	1000
PFA	25...150	50	0	0	0	0	0	0	0	0	0

Liner	Diameter	Max. pressure	Vacuum load in psia at a process temperature [°F] of ...								
	[inch]	[psi]	104	140	158	176	194	212	248	284	356
PTFE	3/8" - 3/4"	725	0	0	0	0	0	0	7,3	10,9	14,5
PFA	1" - 6"	725	0	0	0	0	0	0	0	0	0

Dimensions and weights

Nominal size		Dimensions [mm]					Approx. weight [kg]**
DN	PN	L*		H	W	T 040	
[mm]	[bar]	DIN	ISO 13 359				
10	40	150	150	165	121	330	7,5
15	40	150	150	165	121	330	7,5
25	40	150	150	165	121	330	9,5
50	40	200	200	218	160	383	10,5
80	40	200	200	235	173	400	14,5
100	16	250	250	286	233	451	17,5
150	16	300	300	327	257	492	24,5

Nominal size		Dimensions for 150 lbs flanges [inches]				Approx. weight [lbs]**
ASME	Pressure	L*	H	W	T 040	
[inch]	[psig]					
3/8"	284	5,12	8,23	3,5	14,72	19
1/2"	284	5,12	8,23	3,5	14,72	19
1"	284	5,91	5,39	4,3	11,89	25
2"	284	7,87	7,05	6	13,54	25
3"	284	7,87	8,03	7,5	14,53	36
4"	284	9,84	9,49	9	15,98	46
6"	284	11,81	11,69	11	18,19	46
* Total fitting length:						
Flowmeter supplied with separate grounding rings:						
dimension L + 2 x 0.12" + 2 x gasket thickness						
** approx. weight of meter body with ASME flanges						
All flanges according ASME B 16.5						

Nominal size		Dimensions for 150 lbs flanges [mm]				Approx. weight [kg]**
ASME	Pressure	L*	H	W	T 040	
DN	PN					
10	16	130	209	88,9	88,9	8,6
15	16	130	209	88,9	88,9	8,6
25	16	150	137	108	108	11,3
50	16	200	179	152,4	152,4	11,3
80	16	200	204	190,5	190,5	16,3
100	16	250	241	228,6	228,6	20,9
150	16	300	297	279,4	279,4	20,9
* Total fitting length:						
Flowmeter supplied with separate grounding rings:						
dimension L + 2 x 0.12" + 2 x gasket thickness						
** approx. weight of meter body with ASME flanges						
All flanges according ASME B 16.5						

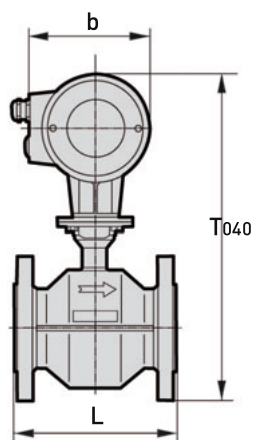
Nominal size		Dimensions for 300 lbs flanges [inches]				Approx. weight [lbs]**
ASME	Pressure	L*	H	W	T 040	
[inch]	[psig]*					
3/8"	739,5	5,12	8,23	3,75	14,72	①
1/2"	739,5	5,12	8,23	3,75	14,72	①
1"	739,5	5,91	5,71	4,87	12,2	①
2"	739,5	9,85	7,32	6,5	13,82	①
3"	739,5	9,85	8,43	8,25	14,92	①
4"	739,5	11,81	10	8,25	16,5	①
6"	739,5	12,6	12,44	12,5	18,94	①
* Total fitting length:						
Flowmeter supplied with separate grounding rings:						
dimension L + 2 x 0.12" + 2 x gasket thickness.						
** Approx. weight of flowmeter with ASME flanges.						
Flanges according ASME B 16.5.						

① on request

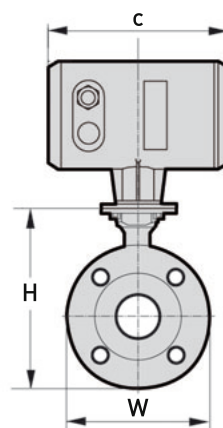
Nominal size		Dimensions for 300 lbs flanges [mm]				Approx. weight [kg]**
ASME	Pressure	L*	H	W	T 040	
DN	PN					
10	16	130	209	95,2	374	①
15	16	130	209	95,2	374	①
25	16	150	145	123,8	310	①
50	16	250	186	165,1	351	①
80	16	250	214	209,6	379	①
100	16	300	254	209,6	419	①
150	16	320	316	317,4	481	①
* Total fitting length:						
Flowmeter supplied with separate grounding rings:						
dimension L + 2 x 0.12" + 2 x gasket thickness.						
** Approx. weight of flowmeter with ASME flanges.						
Flanges according ASME B 16.5.						

① on request

Frontview OPTIFLUX 4040 C



Sideview OPTIFLUX 4040 C



	dimension b		dimension c	
	[mm]	[inch]	[mm]	[inch]
IFC 040 converter	136	5,3	208	8,2



KROHNE Overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Mass flowmeters
- Ultrasonic flowmeters
- Vortex flowmeters
- Flow controllers
- Level measuring instruments
- Pressure gauges
- Temperature measuring instruments
- Water solutions & analysis
- Oil and gas turnkey solutions

Addresses:

Germany

Northern sales office

KROHNE Messtechnik GmbH & Co. KG
Bremer Str. 133
D-21073 Hamburg
Phone: +49 [0]40 767 3340
Fax: +49 [0]40 767 33412
nord@krohne.de
ZIP code: 10000 - 29999, 49000 - 49999

Western and middle sales office

KROHNE Messtechnik GmbH & Co. KG
Ludwig-Krohne-Straße
D-47058 Duisburg
Phone: +49 [0]203 301 416
Fax: +49 [0]203 301 10416
west@krohne.de
ZIP code: 30000 - 34999, 37000 - 48000, 50000 - 53999, 57000 - 59999, 98000 - 99999

Southern sales office

KROHNE Messtechnik GmbH & Co. KG
Landsberger Str. 392
D-81241 Munich
Phone: +49 [0]89 121 5620
Fax: +49 [0]89 129 6190
sued@krohne.de
ZIP code: 0 - 9999, 80000 - 89999, 90000 - 97999

Southwestern sales office

KROHNE Messtechnik GmbH & Co. KG
Rüdesheimer Str. 40
D-65239 Hochheim/Main
Phone: +49 [0]6146 827 30
Fax: +49 [0]6146 827 312
rhein-main@krohne.de
ZIP code: 35000 - 36999, 54000 - 56999, 60000 - 79999

Instrumentation and control equipment catalog

TABLAR Messtechnik GmbH
Ludwig-Krohne-Straße 5
D-47058 Duisburg
Phone: +49 [0]2 03 305 880
Fax: +49 [0]2 03 305 888
kontakt@tablar.de www.tablar.de

KROHNE sales companies

International

Australia

KROHNE Australia Pty Ltd
Quantum Business Park 10/287
Victoria Rd Rydalmere NSW 2116
Phone: +61 2 8846 1700
Fax: +61 2 8846 1755
krohne@krohne.com.au

Austria

KROHNE Austria Ges.m.b.H.
Modectentstraße 14
A-1030 Vienna
Phone: +43 [0]1 203 45 32
Fax: +43 [0]1 203 47 78
info@krohne.at

Belgium

KROHNE Belgium N.V.
Brusselstraat 320
B-1702 Groot Bijgaarden
Phone: +32 [0]2 4 66 00 10
Fax: +32 [0]2 4 66 08 00
krohne@krohne.be

Brazil

KROHNE Conaut Controles
Automaticos Ltda.
Estrada Das Águas Espraiadas, 230
C. P. 56 06835 - 080 EMBU - SP
Phone: +55 [0]11 4785-2700
Fax: +55 [0]11 4785-2768
conaut@conaut.com.br

China

KROHNE Measurement Instruments
[Shanghai] Co. Ltd., (KMIC)
Room 1501
1033 Zhaojiabang Road
Shanghai 200030
Phone: +86 21 6487 9611
Fax: +86 21 6438 7110
info@krohne-asia.com

Czech Republic

Soběšická 156
63800 Brno
Phone: +420 [0]545.242.627
Fax: +420 [0]545 220 093
brno@krohne.cz

France

KROHNE S.A.S.
Les Ors BP 98
F-26103 ROMANS Cedex
Phone: +33 [0]4 75 05 44 00
Fax: +33 [0]4 75 05 00 48
info@krohne.fr

Great Britain

KROHNE Ltd.
Rutherford Drive
Park Farm Industrial Estate
Wellingborough
Northants NN8 6AE
Phone: +44 [0]19 33 408 500
Fax: +44 [0]19 33 408 501
info@krohne.co.uk

CIS

Kanex KROHNE Engineering AG
Business-Centre Planeta
Office 404 ul.
Marxistskaja 3
109147 Moscow/Russia
Phone: +7 [0]095 911 7165
Fax: +7 [0]095 742 8873
krohne@dot.ru

India

Krohne Marshall Ltd.
A-34/35, M.I.D.C. Industrial Area,
H-Block
Pimpri Poona 411018
Phone: +91 [0]202 744 2020
Fax: +91 [0]202 744 2020
pcu@vsnl.net

Iran

KROHNE Liaison Office
North Sohrvardi Ave. 26,
Sarmad St., Apt. #9
Tehran 15539
Phone: +9821 8874 5973
Fax: +9821 8850 1268
krohne@krohneiran.com

Italy

KROHNE Italia Srl.
Via V. Monti 75
I-20145 Milan
Phone: +39 [0]2 43 30 06 61
Fax: +39 [0]2 43 00 66 66
info@krohne.it

Korea

KROHNE Korea
Room 508 Miwon Bldg 43
Yoido-Dong Youngdeungpo-Ku
Seoul, Korea
Phone: 00-82-2-780-1743
Fax: 00-82-2-780-1749
krohnekorea@krohnekorea.com

Netherlands

KROHNE Nederland B.V.
Kerkeplaat 14
NL-3313 LC Dordrecht
Phone: +31 [0]78 630 6200
Fax: +31 [0]78 630 6405
Service Direct: +31 [0]78 630 6222
info@krohne.nl

Norway

KROHNE Norway A.S.
Ekholtveien 114
NO-1521 Moss
Phone: +47 [0]69 264 860
Fax: +47 [0]69 267 333
postmaster@krohne.no

Poland

KROHNE Endra Sp.z.o.o.
ul. Stary Rynek Otiwskiego 8a
80-324 Gdansk
Phone: +48 [0]58 520 9211
Fax: +48 [0]58 520 9212
wendraszka@krohne.pl

Switzerland

KROHNE AG
Uferstr. 90
CH-4019 Basel
Phone: +41 [0]61 638 30 30
Fax: +41 [0]61 638 30 40
info@krohne.ch

Singapore

Tokyo Keiso - KROHNE (Singapore)
Pte. Ltd.
14, International Business Park,
Jurong East
Chiyoda Building, #01-01/02
Singapore 609922
Phone: (65) 6567 4548
Fax: (65) 6567 9874
tks@tokyokeiso-krohne.com.sg

Republic of South Africa

KROHNE Pty. Ltd.
163 New Road
Halfway House Ext 13
Midrand
Phone: +27 [0]11 315 2685
Fax: +27 [0]11 805 0531
midrand@krohne.co.za

Spain

I.I. KROHNE IBERIA, S.r.l.
Poligono Industrial Nito
Calle Brasil, nº. 5
28806 Alcalá de Henares Madrid
Phone: +34 [0]91 883 2152
Fax: +34 [0]91 883 4854
krohne@krohne.es

USA

KROHNE, Inc.
7 Dearborn Road
Peabody, MA 01960
Phone: +1 [800] FLOWING
Phone: +1 [978] 535 6060 (in MA)
info@krohne.com

Representatives

Algeria
Argentina
Cameroun
Canada
Chile
Columbia
Croatia
Denmark
Ecuador
Egypt
Finland
Gabon
Ghana
Greece
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Romania
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Senegal
Slovakia
Slovenia
Sweden
Taiwan
Thailand
Thunisia
Turkey
Venezuela
Yugoslavia

Other countries

KROHNE Messtechnik GmbH & Co. KG
Ludwig-Krohne-Str. 5
D-47058 Duisburg
Phone: +49 [0]203 301 0
Fax: +49 [0]203 301 389
export@krohne.de