GEMÜ®

Magnetically Inductive Flowmeter

Construction

The GEMÜ 3030 mFlow flowmeter operates according to the magnetically inductive measurement principle.
It is suitable for electrically conductive media and enables exact measurement of flow velocities and flow rates of inert and corrosive liquids.
The simple mechanical construction of the GEMÜ 3030 mFlow magnetically inductive immersion-type flowmeter offers quick and easy installation.
The device has a backlit display and is operated via a membrane key-pad at the front of the housing. Electrical connections are at the rear.

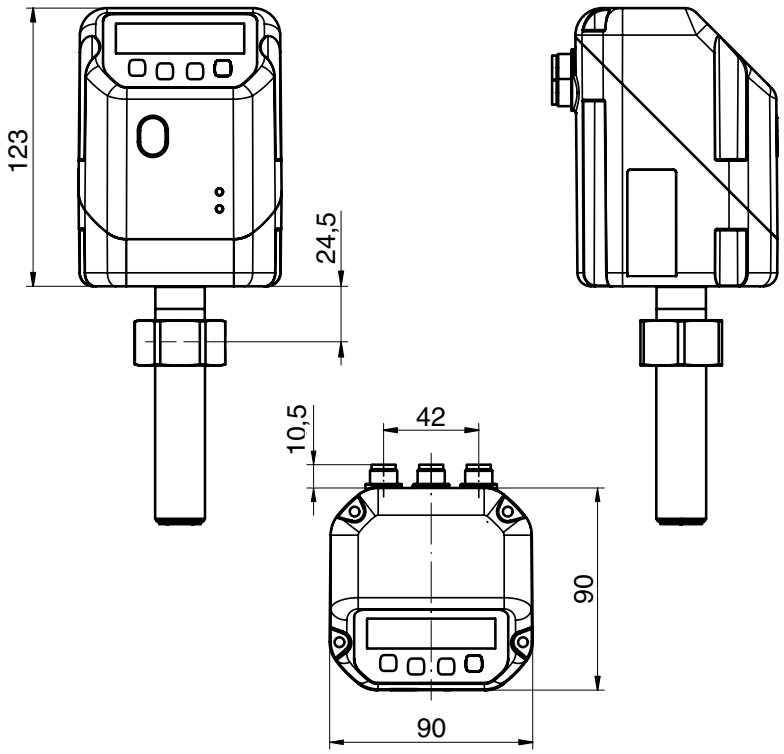
Features

- Choice of measuring ranges for optimal resolution
- Parameterization during operation
- Adjustable relay functions
- On-site calibration possible
- 2 totals counter
- Measurement of flow velocity and flow rate

Advantages

- The same measurement device can be used for different nominal sizes
- No moving parts in the medium
- Access rights via different user levels
- Integrated webserver
- Simple commissioning and versatile operating facilities
  - Key-pad at the front of the unit
  - PC connection with Internet browser
  - Field bus interfaces, e.g. Profibus-DP

Dimensions - GEMÜ 3030 mFlow [mm]



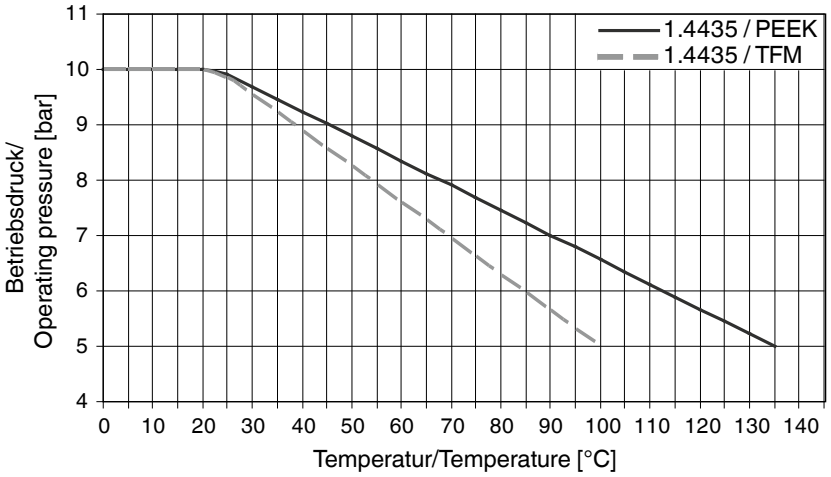
GEMÜ® 3030 mFlow

Technical data

Operating conditions

Ambient temperature	0 to +60 °C	
Storage temperature	0 to +60 °C	
Medium temperature	Sensor material 1.4435 / PEEK	max. 135 °C*
	Sensor material 1.4435 / TFM1600	max. 100 °C*
	*see pressure/temperature diagram	
Type of medium	Conductive liquid media which have no negative impact on the physical and chemical properties of the housing and sensor material. Conductivity ≥ 20µS / cm	
Operating pressure	max. 10 bar (see pressure/temperature diagram)	

* see information on resistance of media wetted materials



Electrical data

Power supply		
Power supply	Uv = 24 V DC ± 10%	
Power consumption	Analogue version	typ. 2.4 W (at 24 V DC)
	Profibus version	typ. 3.6 W (at 24 V DC)
Current consumption	Analogue version	typ. 100mA (at 24 V DC), max. 1.65 A incl. relay load (with closed K1, K2 and K3 with 0.5 A load each)
	Profibus version	typ. 150 mA (at 24 V DC)
Reverse battery protection	yes	
Duty cycle	continuously rated	
Output signals		
Analogue output		
Current output	4-20 mA (adjustable in the event of error or failure as 2 or 22 mA)	
Output type	Active	
Load resistor	max. 400 Ω	
Accuracy	1 %	
Digital outputs		
Selectable function	Min., Max. Min./Max., TQ1, TQ2, T, direction, warning or pulse (only K3)	
Adjustable delay time	0…100 s	
Relay output K1 and K2		
Type of contact	Make contact	
Switching voltage	Uv	
Switching current	max. 500 mA	
Current limitation	No (not short-circuit proof)	
Pulse output		
Type of contact	PNP	
Switching voltage	Uv	
Drop voltage	max. 2V at 500 mA	
Switching current	max. 500 mA	
Switching frequency	max. 500 Hz	
Current limitation	Yes	
Particulars	Pulse pause ratio 1:1	

Electrical data

Electrical connection		
Analogue version	X1	M12 plug, A-coded
	X2	M12 plug, B-coded
	X3	M12 plug, A-coded
Profibus version	X1	M12 plug, B-coded
	X2	M12 plug, A-coded
	X3	M12 socket, B-coded

Measured data	
Display of measured data	v, Q, TQ1, TQ2, T selectable
Measurement unit (Q)	l/h, m^3/h, l/min, m^3/min, GAL/h, BBL/h, GAL/min, BBL/min, gal/h, bbl/h, gal/min, bbl/min selectable
Flow measurement	
Measuring range	0.1 – 4 m/s, 0.1 – 10 m/s selectable
Measuring range switchover	Automatic, manual
Measuring span	0.1 m/s – end value of measuring range

Accuracy / repeatability	
Reference conditions	Factory calibration with water at 25 °C, 0.1 m/s < v < 10 m/s
GEMÜ 3030 with GEMÜ in-line housing	1 %* of active end value of measuring range (under reference conditions)
GEMÜ 3030 with GEMÜ wafer-type flange	1 %* of active end value of measuring range (under reference conditions)
GEMÜ 3030 with Tuchenhagen in-line housing	1 %* of active end value of measuring range (under reference conditions)
GEMÜ 3030 with Neumo in-line housing	1 %* of active end value of measuring range (under reference conditions)
GEMÜ 3030 with GEMÜ weldolet	2 %* of active end value of measuring range with on-site adjustment
	5 % of active end value of measuring range without on-site adjustment

* Sterilising cycles (RT/135 °C) for sensor material 1.4435/PEEK or temperature changes (0/100 °C) for sensor material 1.4435/TFM, as well as gauge pressure (40 bar) and vacuum load (~0 mbar) of the sensor may cause up to 2.5%.

Temperature measurement (optional)	
Measurement unit	°C
Temperature range	0 to 100 °C
Resolution	0.1 °C
Accuracy / repeatability	±2 °C

Operating and display elements	
Display	
Type	Alphanumeric
Number of digits	2-line display with 16 digits each
Background light	White
Keys	
Number	4
Type	Membrane protected keys
LED (only for Profibus version)	
Number	1
Display type	Optical fibre
Colour	Red

Parameterisation	
At the device	Via 4 keys and display; menu selection with help texts or context sensitive
At PC	Via RS232 connection with PPP protocol: Internet Explorer

Interfaces	
PC interface	
Interface type	RS232
Protocol	PPP protocol
Operating software	Internet Explorer
Field bus	
Field bus type	Profibus DP
Field bus version	DPV0
Baud rate	Max. 12 Mbit/s
Profibus address	27 (default setting)

Technical data

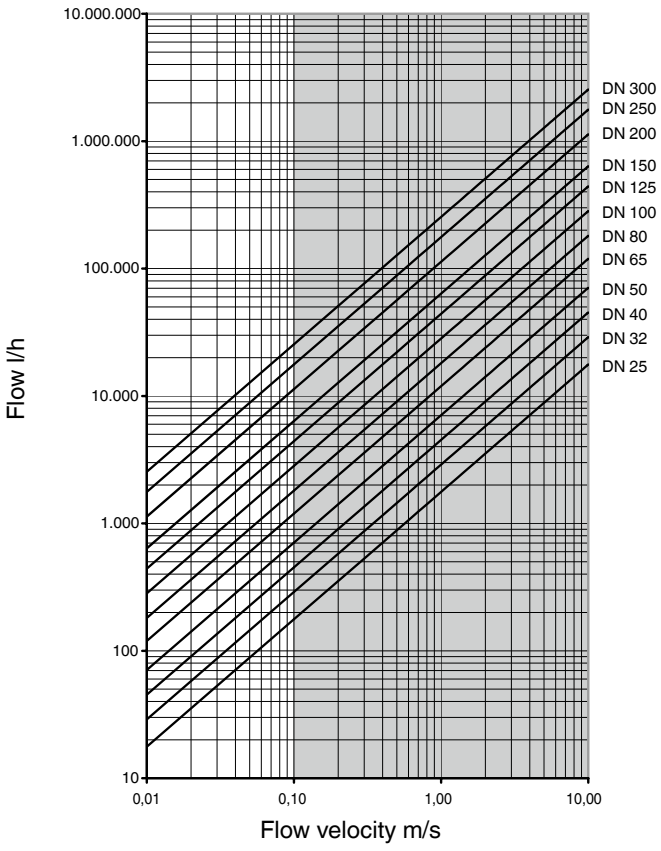
General information

Protection class to EN 60529	IP 65
Electrical protection class	II
Mounting position	Vertical rising pipeline recommended, angular section with horizontal installation position horizontal ± 45°
Installation note	Inlet/outlet distance min. 10x / 5x DN Earth fitting and pipeline before and after the flowmeter
Particulars	Filled pipeline required (preferably rising pipeline), prior to commissioning the sensor must be in the medium to be measured for 24 h. Deposits in the measuring fitting have to be reduced to a minimum in order to avoid additional measurement errors.
Directives	
Low voltage directive	73/23/EEC
EMC directive	89/336/EEC
Interference resistance	EN 61000-6-2
Interference emission	EN 61000-6-4

Materials

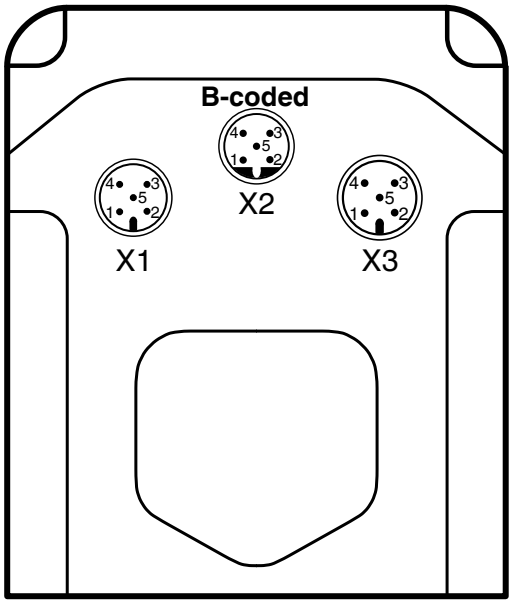
Housing cover of measurement device	PSU
Housing base of measurement device	PP30
Electrodes	1.4435
Sensor rod	1.4435 / PEEK, 1.4435 / TFM1600
Housing material	Fitting 1.4435 insert 1.4571 union nut 1.4408
Seal material	FPM, EPDM, Isolast J9505

Flow characteristics



Electrical connection

Standard version

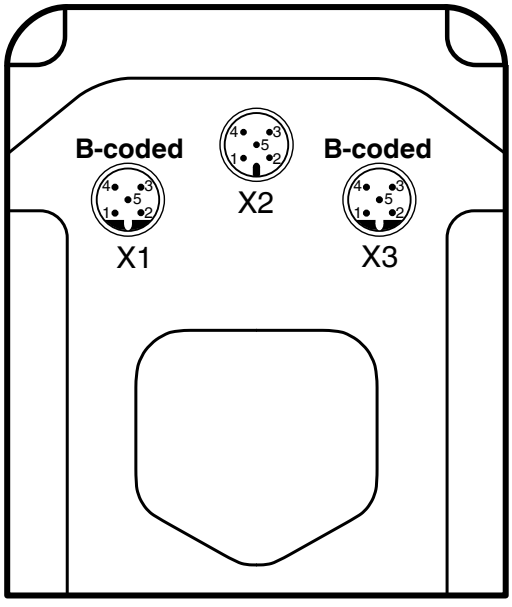


Connection	PIN	Signal name
X1 A-coded M12 plug	1	U_V, 24V DC supply voltage
	2	Make-contact, output K1, 24V DC
	3	GND
	4	Make-contact, output K2, 24V DC
	5	n.c.

Connection	PIN	Signal name
X2 B-coded M12 plug	1	n.c.
	2	n.c.
	3	RxD, RS 232
	4	TxD, RS 232
	5	GND, RS 232

Connection	PIN	Signal name
X3 A-coded M12 plug	1	I+, current output
	2	I-, current output
	3	GND
	4	24V DC, pulse output
	5	GND, pulse output

Profibus DP



Connection	PIN	Signal name
X1 B-coded M12 socket	1	n.c.
	2	RxD/TxD-N
	3	n.c.
	4	RxD/TxD-P
	5	Shield

Connection	PIN	Signal name
X2 A-coded M12 plug	1	U_V, 24 V DC supply voltage
	2	n.c.
	3	GND
	4	n.c.
	5	n.c.

Connection	PIN	Signal name
X3 B-coded M12 socket	1	BUS-VDC, +5V DC
	2	RxD/TxD-N
	3	D_{GND}
	4	RxD/TxD-P
	5	Shield

Overview of types

GEMÜ weldolet

Complete measurement device
3030 ... DH ...

Separate measurement device
3030 ... ZH ...

Separate fitting
3030 ... KH ...

Assembly

GEMÜ in-line housing

Complete measurement device
3030 ... DD ...

Separate measurement device
3030 ... ZD ...

Separate fitting
3030 ... KD ...

Assembly

GEMÜ wafer-type flange

Complete measurement device
3030 ... DF ...

Separate measurement device
3030 ... ZF ...

Separate fitting
3030 ... KF ...

Assembly

Tuchenhagen Varivent® in-line housing

Complete measurement device
3030 ... DU ...

Separate measurement device
3030 ... ZU ...

Separate fitting
3030 ... KU ...

Assembly

Neumo BioControl® in-line housing

Complete measurement device
3030 ... DN ...

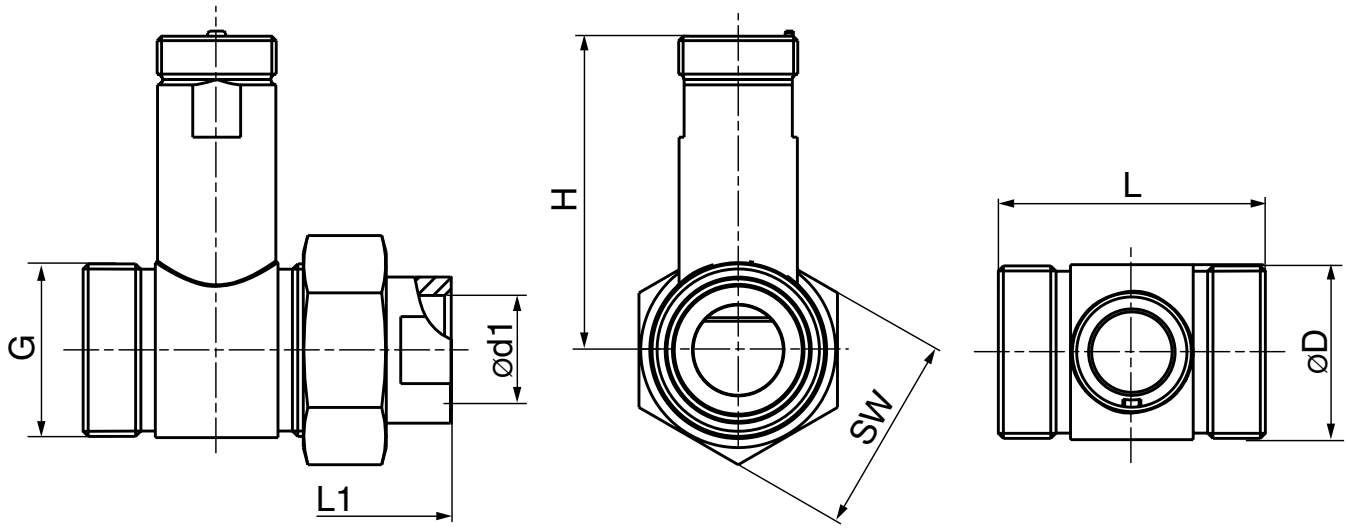
Separate measurement device
3030 ... ZN ...

Separate fitting
3030 ... KN ...

Assembly

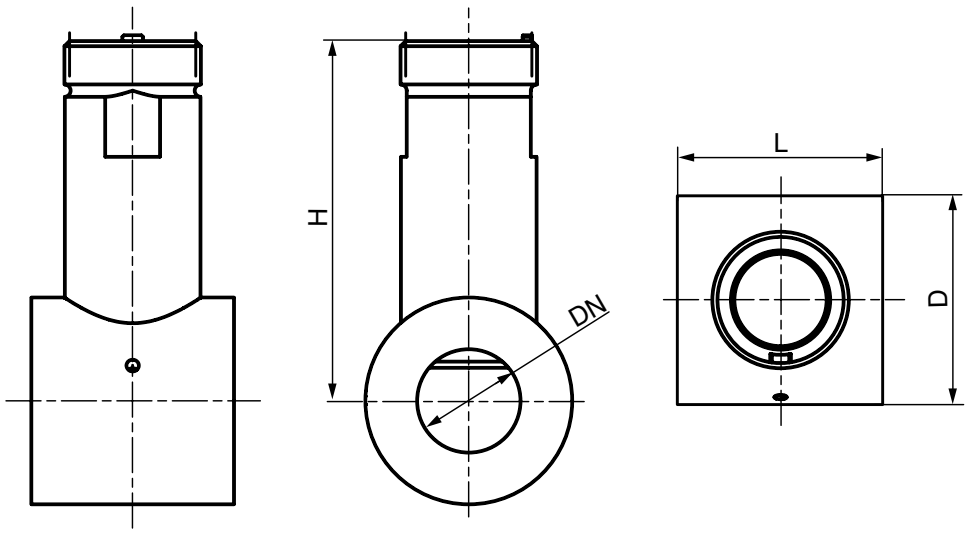
Dimensions of installation fittings [mm]

GEMÜ in-line housing



DN	H	L	L1	SW	d1	D	G
25	87.0	74	130	55	Rp 1	48.5	G 1 1/2
32	89.0	74	140	65	Rp 1 1/4	60.0	G 2
40	91.8	74	142	75	Rp 1 1/2	66.0	G 2 1/4
50	95.8	106	186	90	Rp 2	81.5	G 2 3/4
65	101.5	106	192	110	Rp 2 1/2	101.0	G 3 1/2

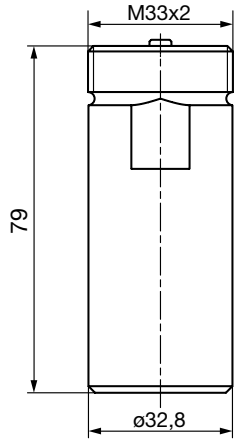
GEMÜ wafer-type flange



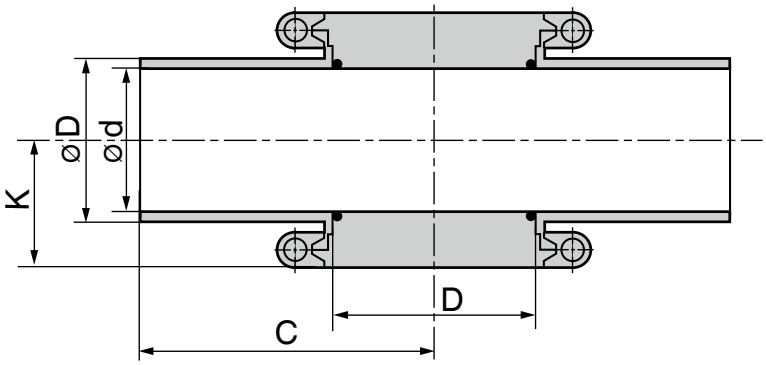
DN	H	L	D
25	87.0	49	50
32	89.0	49	60
40	91.8	49	70
50	95.7	49	107
65	101.5	49	100

Dimensions of installation fittings [mm]

GEMÜ weldolet

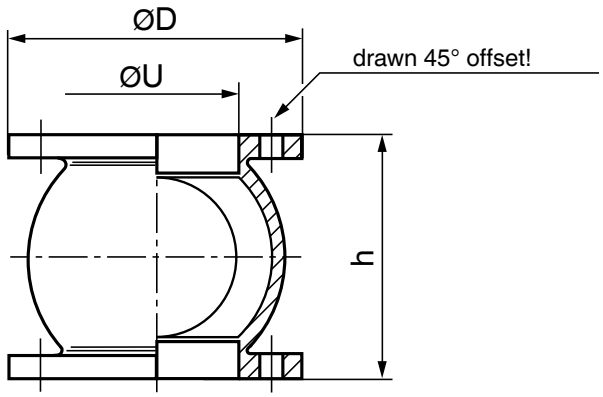


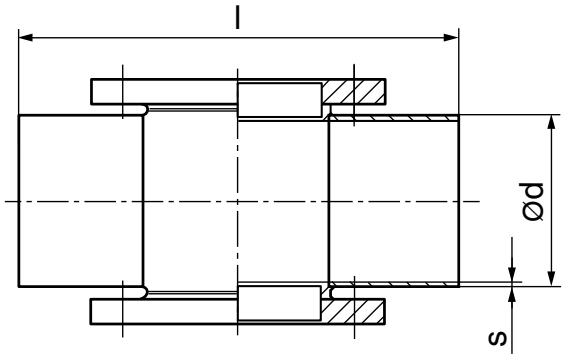
Tuchenhagen VARIVENT® in-line housing



DN	ød	øD	C	D	K
25	26	29	90	50	31
50	50	53	90	68	44

Neumo BioControl® in-line housing





DN	øD	øU	h	l	s	ød
25	90	50.1	60	150	1.5	29
50	90	50.1	84	150	1.5	53

Overview of nominal sizes

DN	3030...H...	3030...D...	3030...F...	3030...U...	3030...N...
40 - 300	X	-	-	-	-
25	-	X	X	X	X
32	-	X	X	-	-
40	-	X	X	-	-
50	-	X	X	X	X
65	-	X	X	-	-

Connection kit

Field bus	Code
Connection kit	S02

Accessory	Code
Accessory	Z

Connections X1*and X3*, A-coded	Code
without connector socket, with M12 cap	0000
M12 socket, A-coded, angle, without cable, screw terminal	00M0
M12 socket, B-coded, angle, can be shielded, M12 plug, B coded, angle, can be shielded, for Profibus DP	DPM0
M12 socket, A-coded, angle, with 5 m cable, 0.34 mm^2 PUR cable	05M0
M12 socket, A-coded, angle, with 10 m cable, 0.34 mm^2 PUR cable	10M0

Connection X2**, B-coded	Code
without connector socket, with M12 caps	0000
M12 socket, B-coded, angle, without cable, screw terminal	00M0
M12 socket, A-coded, angle, without cable for Profibus DP	DPM0
Y cable + 1 x M12 socket, B-coded, angle, without cable, screw terminal	00Y0
Y cable + M12 socket, B-coded, angle, with 10 m cable, 0.34 mm^2 PUR cable 10 m Sub-D connecting cable	10Y0
Y cable + M12 socket, B-coded, angle, with 10 m cable, 0.34 mm^2 PUR cable 10 m Sub-D connecting cable	10Y0

*** X1 and X3 with Profibus DP version: B-coded**

**** X2 with Profibus DP version: A-coded**

Order example	3030	S02	Z	00M0	00M0
Type	3030				
Field bus (code)		S02			
Accessory (code)			Z		
Connection X1 and X3*, A-coded (code)				00M0	
Connection X2**, B-coded (code)					00M0

Order data - Complete measurement device

Housing configuration	Code
Measurement device with GEMÜ in-line housing	DD
Measurement device with GEMÜ wafer-type flange	DF
Measurement device with GEMÜ weldolet	DH
Measurement device with Neumo BioControl® in-line housing	DN
Measurement device with Tuchenhagen Varivent® in-line housing	DU

Connection	Code
GEMÜ weldolet (only housing configuration DH)	WS
Union ends with insert (threaded socket Rp) (only housing configuration DD)	7R
DIN wafer-type flange (only housing configuration DF)	8
Butt weld spigot DIN 11850 series 2 (only housing configuration DU, DN)	17

Housing material		Code
1.4435	stainless steel	41

Seal material	Code
FPM (only housing configuration DH, DD, DF)	4
EPDM	14
FFKM (Isolast J9505) (only housing configuration DH, DD, DF)	F5

Sensor material	Code
1.4435 / PEEK	C
1.4435 / TFM 16	E

Device version	Code
Measurement device with field bus interfaces (only for Option DP)	M02
Measurement device 4 - 20 mA, 1 pulse output, 2 relay outputs (not for Option DP)	M42
Measurement device temperature sensor, 4 - 20 mA, 1 pulse output, 2 relay outputs	MT2

Option	Code
Without option	00
Profibus-DP	DP

Supply voltage	Code
24 V DC	C1

K-Number	Code
Ra ≤ 0.8 µm electropolished (internal/external) surface finish data refer to medium wetted surfaces (only housing configuration DU, DN)	1503

Order example	3030	000	DH	WS	41	4	E	M42	00	C1	-
Type	3030										
Nominal size (code)		000									
Housing configuration (code)			DH								
Connection (code)				WS							
Housing material (code)					41						
Seal material (code)						4					
Sensor material (code)							E				
Device version (code)								M42			
Option (code)									00		
Supply voltage (code)										C1	
K-Number (code)											-

Order data - Separate measurement device

Housing configuration	Code
Separate measurement device for GEMÜ in-line housing	ZD
Separate measurement device for GEMÜ wafer-type flange	ZF
Separate measurement device for GEMÜ weldolet	ZH
Separate measurement device for Neumo BioControl® in-line housing	ZN
Separate measurement device for Tuchenhagen Varivent® in-line housing	ZU

Housing material		Code
1.4435	stainless steel	41

Seal material	Code
FPM (only housing configuration ZH, ZD, ZF)	4
EPDM	14
FFKM (Isolast J9505) (only housing configuration ZH, ZD, ZF)	F5

Sensor material	Code
1.4435 / PEEK	C
1.4435 / TFM 16	E

Device version	Code
Measurement device, with field bus interfaces (only for Option DP)	M02
Measurement device 4 - 20 mA, 1 pulse output, 2 relay outputs (not for Option DP)	M42
Measurement device temperature sensor, 1 pulse output, 2 relay outputs	MT2

Option	Code
Without option	00
Profibus-DP	DP

Supply voltage	Code
24 V DC	C1

K-Number	Code
Ra ≤ 0.8 µm electropolished (internal/external) surface finish data refer to medium wetted surfaces (only housing configuration DU, DN)	1503

Order example	3030	000	ZH	41	4	E	M42	00	C1	-
Type	3030									
Nominal size (code)		000								
Housing configuration (code)			ZH							
Housing material (code)				41						
Seal material (code)					4					
Sensor material (code)						E				
Device version (code)							M42			
Option (code)								00		
Supply voltage (code)									C1	
K-Number (code)										-

Order data - Separate fitting

Housing configuration	Code
GEMÜ in-line housing	KD
GEMÜ wafer-type flange	KF
GEMÜ weldolet	KH
Neumo BioControl® in-line housing	KN
Tuchenhagen Varivent® in-line housing	KU

Housing material		Code
1.4435	stainless steel	41

Seal material		Code
Without	(only housing configuration KH, KF)	00
FPM	(only housing configuration KD, KU, KN)	4
EPDM	(only housing configuration KU, KN)	14

Connection	Code
GEMÜ weldolet (only housing configuration KH)	WS
Union ends with insert (threaded socket Rp) (only housing configuration DD)	7R
DIN wafer-type flange (only housing configuration KF)	8
Butt weld spigot DIN 11850 series 2 (only housing configuration KU, KN)	17

K-Number	Code
Ra ≤ 0.8 µm electropolished (internal/external) surface finish data refer to medium wetted surfaces (only housing configuration DU, DN)	1503

Order example	3030	000	KH	WS	41	00	-
Type	3030						
Nominal size (code)		000					
Housing configuration (code)			KH				
Connection (code)				WS			
Housing material (code)					41		
Seal material (code)						00	
K-Number (code)							-

For further flowmeters, accessories and other products, please see our Product Range catalogue and Price List.
Contact GEMÜ.

GEMÜ Gebr. Müller · Apparatebau GmbH & Co. KG · Fritz-Müller-Str. 6-8 · D-74653 Ingelfingen-Criesbach · Tel. +49 (0) 7940/123-0 · Telefax +49 (0) 7940/123-224
info@gemue.de · www.gemu-group.com