red-y industrial series product information

Thermal Mass Flow Meters and Controllers for Gases with IP67 & Ex Protection

vögtlin instruments

High accuracy for heavy duties:
Mass Flow Meters & Controllers with IP67 & Ex Protection

**Reliable technology and industry standard interfaces for rough environments:
Our tried and tested thermal mass flow meters and controllers for gases now available as IP67 / NEMA 6 version.**

Accurate measurement

The devices offer high accuracy and a wide dynamic range.
2 instrument versions:
‹Standard› and ‹Hi-Performance›

Accuracy up to ± 0.3% of full scale + ±0.5% of reading
Turndown ratio 1 : 100
Extended turndown ratio on request

Analog & digital: 2 in 1

The flow meters & controllers make use of the latest CMOS technology and have a digital (Modbus RTU) and analog interface as standard

IP67 / NEMA 6 protection

The instruments offer IP67 / NEMA 6 protection against solid particles and water

ATEX certification

red-y industrial devices come along with ATEX certification (Category 3 / Zone 2 & 22)

Multiple connections

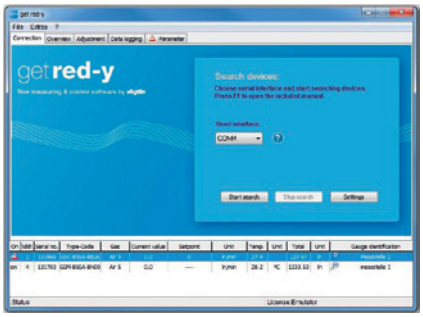
The industrial series are available with different connection types: Cable gland with compression fitting or optional M12 plug on top

Options

Multigas device
A device can be used for up to 10 different gases or gas mixtures

Profibus
The instruments are available with Profibus interface:
DP-V0 & DP-V1 protocols

Industrial Ethernet
Two industrial ethernet protocols *Profinet RT* and *EtherCAT* are available



Setup tool ‹get red-y›

Efficient device setup with the free ‹get red-y› software:

- **Service tool for remote maintenance**
- **Switch gas type**
- **Switch measurement units**
- **Adjust control parameters**

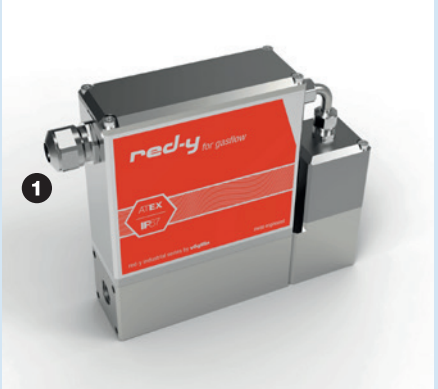
3-year warranty*

High-quality components ensure long and trouble-free operation
*does not apply to calibration, options and accessories

swiss safety center ISO 9001 certified system

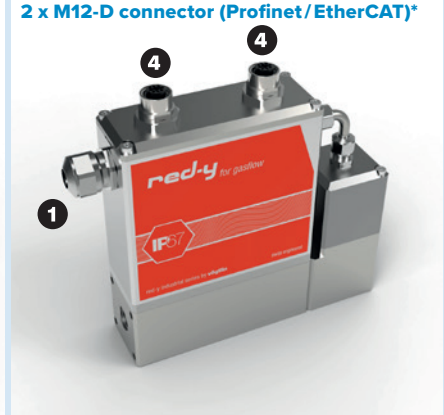
Available connections red-y industrial series

Cable gland (Power / Modbus / Analog)



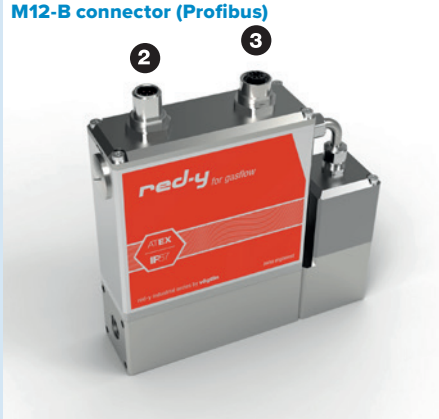
M12-A connector (Power / Modbus / Analog)

Cable gland and 2 x M12-D connector (Profinet / EtherCAT)*

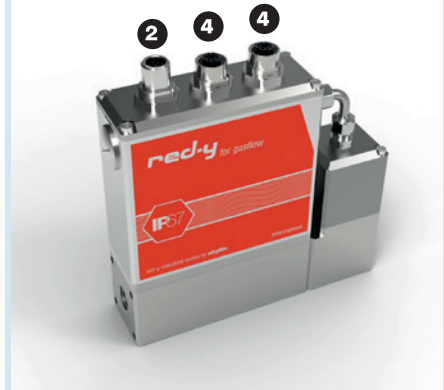


Cable gland and M12-B connector (Profibus)

M12-A connector and M12-B connector (Profibus)



M12-A connector and 2 x M12-D connector (Profinet / EtherCAT)*

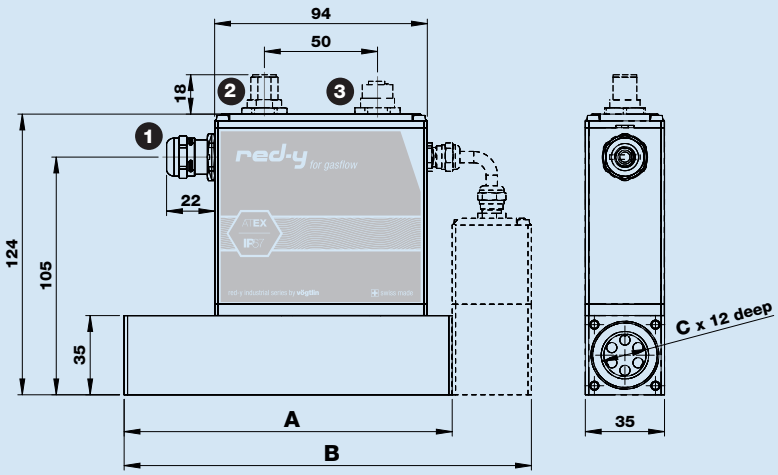


*IP-67 only / Profinet RT & EtherCAT option not yet ATEX certified. Please contact your sales partner for further information.

Electrical Connection

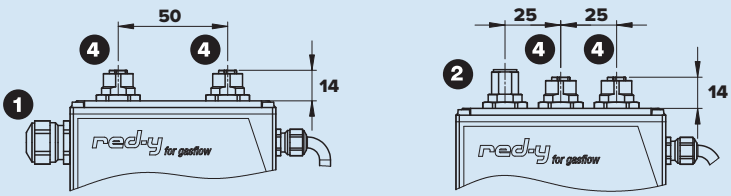
1	Cable gland / cable diameter 6-8mm
2	M12 connector A-Coding 8pol male
3	M12 connector B-Coding 5pol female
4	M12 connector D-Coding 4pol female

Dimensions red-y industrial series



Type	Length (mm) A	Length (mm) B	Process Connection C
GIM-A GIM-B GIM-C	94	–	G1/4"
GIM-D	145	–	G1/2"
GIC-A GIC-B GIC-C	–	134	G1/4"
GIC-D	–	198	G1/2"

Profinet / EtherCAT:

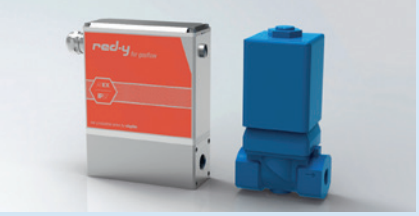


Technical Data red-y industrial series

Instrument types

industrial meter GIM
Thermal mass flow meter

industrial controller GIC
Thermal mass flow controller



industrial controller GIE
Thermal mass flow controller with external valve

Instrument versions

‹Standard› The economic solution	Accuracy: Turndown ratio:	± 1.0% of full scale[1] 1 : 50
‹Hi-Performance› With highest accuracy and turndown ratio (available for GIM < 200 ln/min / GIC < 150 ln/min (air))	Accuracy: Turndown ratio:	± 0.3% of full scale + ± 0.5% of reading[1] 1 : 100

[1]An additional error of ±0.25% may apply for analogue signals

Measuring ranges

(Air/Full scale freely selectable)	Type	Measuring range (air)		Process Connection
red-y industrial meter GIM Meter	GIM-A	from 0 ... 25 mln/min	to 0 ... 600 mln/min	G¼"
	GIM-B	from 0 ... 600 mln/min	to 0 ... 6000 mln/min	G¼"
	GIM-C	from 0 ... 6 ln/min	to 0 ... 60 ln/min	G¼"
	GIM-D	from 0 ... 60 ln/min	to 0 ... 450 ln/min	G½"
red-y industrial controller GIC controller	GIC-A	from 0 ... 25 mln/min	to 0 ... 600 mln/min	G¼"
	GIC-B	from 0 ... 600 mln/min	to 0 ... 6000 mln/min	G¼"
	GIC-C	from 0 ... 6 ln/min	to 0 ... 60 ln/min	G¼"
	GIC-D	from 0 ... 60 ln/min	to 0 ... 450 ln/min	G½"

Performance data

Media (real gas calibration)	Air, O2[2], N2[2], He, Ar, CO2, H2, CH4, C3H8 (other gases and gas mixtures on request) [2]O2 & N2 are calibrated with air
Response time	Meter (GIM): ± 80ms[3]; Controller (GIC): ± 500ms[3] [3]depending on device configuration & according to SEMI standard E17-1011, 5-100% of range under optimized conditions
Repeatability	± 0.2% of full scale (according to SEMI standard E56-0309)
Longterm stability	< 1% of measured value / year
Power supply	24 Vdc (18 – 30 Vdc), 15 Vdc on request
Current consumption Standard	Meter (GIM): max. 100mA; Controller (GIC): max. 250mA (GIC with valve type xDV[4] max. 490mA) [4]DV = Double Valve
Current consumption Profinet RT / EtherCAT	Meter (GIM): max. 100mA; Controller (GIC): max. 340mA (GIC with valve type xDV[4] max. 560mA)
Operation pressure	0.2 – 11 bar a (GSC with valve type 4.5/EQP and 8/EQP DV[4] up to max. 8 bar a)
Temperature (environment/gas)	0 – 50°C
Pressure sensitivity	Less than 0.2% RD per bar (typical N2)
Temperature sensitivity	Less than 0.025% FS per °C (typical N2)
Warm-up time	< 1 sec. for full accuracy

Materials

Body	Stainless steel 316L (see operating instructions for wetted parts)
Electronic Housing	Aluminum
Seals	EPDM (FDA), optional FKM and FFKM

Integration

In- / Output signals analog	0..20 mA, 4..20 mA, 0..5 V, 1..5 V, 0..10 V, 2..10 V
In- / Output signals digital	RS-485; Modbus RTU 2 wire (Slave); Lab View-VIs available Option: ProfiBus DP-V0, DP-V1 / Profinet RT / EtherCAT
Process connection	G¼" (BSPP[5] female) up to 60 ln/min, G½" (BSPP[5] female) up to 450 ln/min [5]British Standard Pipe Parallel
Inlet section	None required
Electrical connection	Cable gland with compression fitting M16x1.5 / Option: M12 plug (DIN-standard) (both connection IP67 protected)
Mounting orientation	All orientations are possible. We recommend horizontal mounting. Please contact the manufacturer for further information.

Safety

Test pressure	16 bara
Leak rate	< 1 x 10^{-6} mbar l/s He
Ingress protection class	IP67 (conforms to NEMA 6)
EMC	CE EN 61326-1
ATEX Certification[6]	Ex II 3G nA IIC T4 Gc (Category 3/Zone 2) Ex II 3D Ex tc IIIC T100°C Dc (Category 3/Zone 22)

[4]DV=Double Valve. [6]Profinet RT & EtherCAT option not yet ATEX certified. Please contact your sales partner for further information.

Type code red-y industrial series

Instrument type	red-y industrial series (Gas)	G I
Function	Meter	M
	Controller	C
	Controller with external valve	E
Full scale of measuring range (air) defined by manufacturer	Customer-specific (Divider A, up to 600 mln/min)	A X
	Customer-specific (Divider B, up to 6000 mln/min)	B X
	Customer-specific (Divider C, up to 60 ln/min)	C X
	Customer-specific (Divider D, up to 450 ln/min)	D X
Instruments version	Standard (±1.0% full scale, 1 : 50)	S
	Hi-Performance (±0.3% full scale, ±0.5% reading, 1 : 100)	T
	Customer-specific / OEM	K
Connection / Materials (body, seals)	Cable gland / Stainless steel / EPDM (FDA)**	S
	M12 plug / Stainless steel / EPDM (FDA)	T
	Cable gland / Stainless steel / FKM	U
	M12 plug / Stainless steel / FKM	V
	Customer-specific / OEM	K
Analog signals (output)	Current 4..20 mA**	B
	Current 0..20 mA	C
	Voltage 0..5 V	D
	Voltage 1..5 V	E
	Voltage 0..10 V	F
	Voltage 2..10 V	G
	Customer-specific / OEM	K
Analog signals (input)	Current 4..20 mA**	B
	Current 0..20 mA	C
	Voltage 0..5 V	D
	Voltage 1..5 V	E
	Voltage 0..10 V	F
	Voltage 2..10 V	G
	Not defined	N
	Customer-specific / OEM	K
Control valve (integrated) defined by manufacturer	Type 0.1	2 1
	Type 0.2	2 2
	Type 0.5	2 3
	Type 1.2	2 6
	Type 2.4 DV***	5 2
	Type 4.5	1 2
	Type 8 DV***	1 3
	Type EQP	1 4
	Type EQP DV***	2 8
	Valve mounted	9 5
	Customer-specific / OEM	9 9
	No valve	0 0
Type code		G I – –

**standard

***DV=Double Valve

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