



**red-y industrial series** product information

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

## 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  $\pm 0.3\%$  of full scale +  $\pm 0.5\%$  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

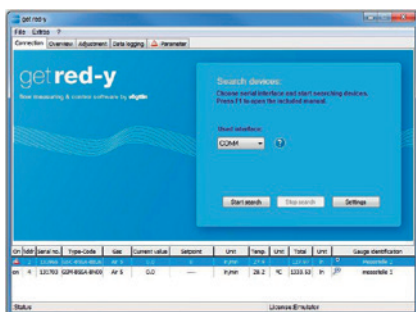


### 3-year warranty\*



High-quality components ensure long and trouble-free operation

\*does not apply to calibration, options and accessories



### 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**



Available connections red-y industrial series

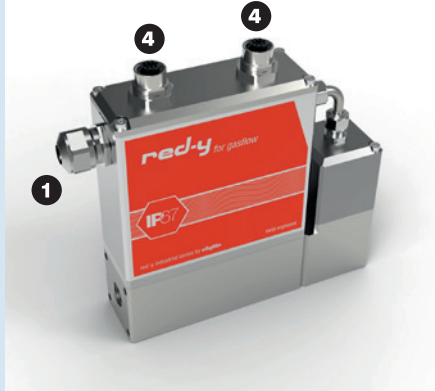
Cable gland  
(Power / Modbus / Analog)



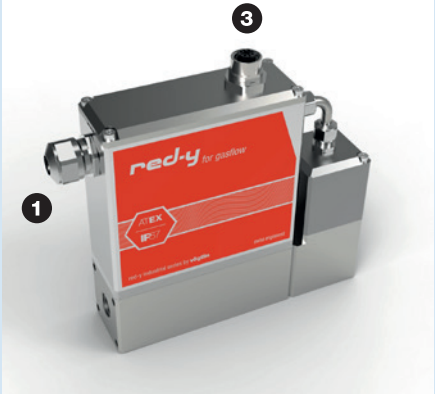
M12-A connector  
(Power / Modbus / Analog)



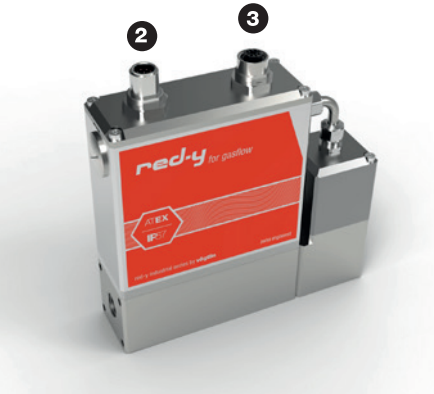
Cable gland and  
2 x M12-D connector (Profinet / EtherCAT)\*



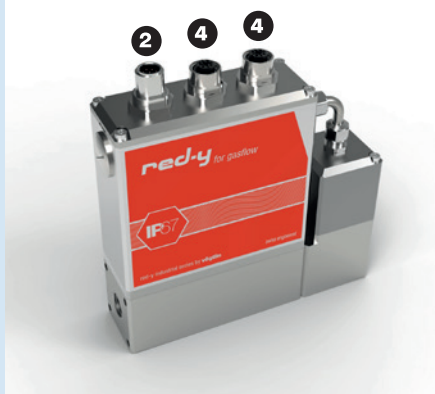
Cable gland and  
M12-B connector (Profibus)



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



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

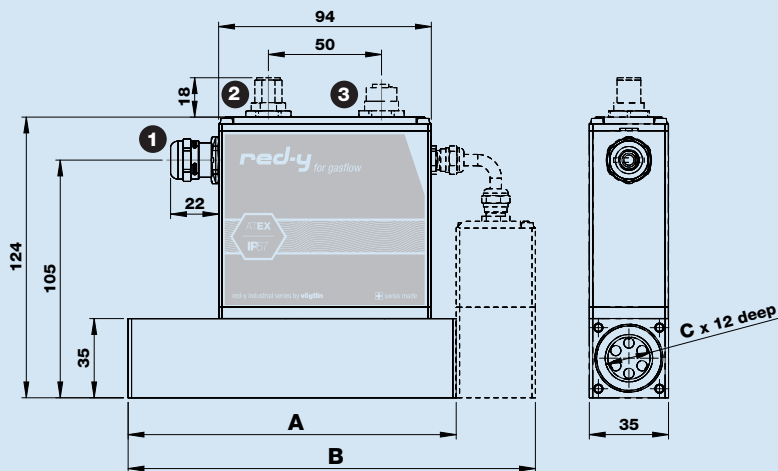


\*IP-67 only / Profinet RT & EtherCAT option not yet ATEX certified. Please contact your sales partner for further information.

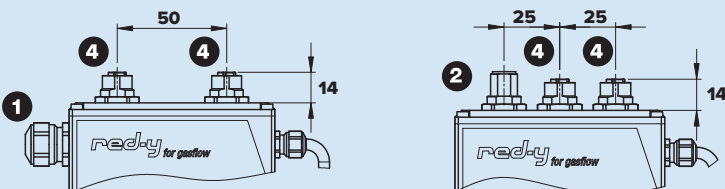
Electrical Connection

- 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



Profinet / EtherCAT:



Type	Length (mm)		Process Connection
	A	B	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"

## 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

<b>«Standard»</b> The economic solution	Accuracy: $\pm 1.0\%$ of full scale <sup>(1)</sup> Turndown ratio: 1 : 50
<b>«Hi-Performance»</b> With highest accuracy and turndown ratio (available for GIM < 200 lln/min / GIC < 150 lln/min (air))	Accuracy: $\pm 0.3\%$ of full scale + $\pm 0.5\%$ of reading <sup>(1)</sup> Turndown ratio: 1 : 100 <small><sup>1</sup>An additional error of <math>\pm 0.25\%</math> may apply for analogue signals</small>

### Measuring ranges

(Air/Full scale freely selectable)	Type	Measuring range (air)		Process Connection
<b>red-y industrial meter GIM</b> 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 lln/min	to 0 ... 60 lln/min	G¼"
	GIM-D	from 0 ... 60 lln/min	to 0 ... 450 lln/min	G½"
<b>red-y industrial controller GIC</b> 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 lln/min	to 0 ... 60 lln/min	G¼"
	GIC-D	from 0 ... 60 lln/min	to 0 ... 450 lln/min	G½"

### Performance data

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




### Materials

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

### Integration

<b>In- / Output signals analog</b>	0..20 mA, 4..20 mA, 0.5 V, 1.5 V, 0..10 V, 2..10 V
<b>In- / Output signals digital</b>	RS-485; Modbus RTU 2 wire (Slave); Lab View-VIs available Option: Profibus DP-V0, DP-V1/Profinet RT/EtherCAT
<b>Process connection</b>	G¼" (BSPP <sup>(5)</sup> female) up to 60 lln/min, G½" (BSPP <sup>(5)</sup> female) up to 450 lln/min <small><sup>5</sup>British Standard Pipe Parallel</small>
<b>Inlet section</b>	None required
<b>Electrical connection</b>	Cable gland with compression fitting M16x1.5 / Option: M12 plug (DIN-standard) (both connection IP67 protected)
<b>Mounting orientation</b>	All orientations are possible. We recommend horizontal mounting. Please contact the manufacturer for further information.

### Safety

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

<sup>4</sup>DV = Double Valve. <sup>6</sup>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			
Control valve (integrated) defined by manufacturer	Customer-specific/OEM															K			
	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	
Type code	No valve																0	0	
		G	I	-															

\*\* standard

\*\*\*DV = Double Valve



## Worldwide TASI<sup>®</sup> Flow Network



Vögtlin Sales & Service Hub North America:

**Sierra Instruments**

20 Ryan Ranch Road, Suite 109  
Monterey, CA 93940, USA

Phone +1 800 866 0200  
Fax +1 831 373 4402

[sales@sierrainstruments.com](mailto:sales@sierrainstruments.com)  
[www.sierrainstruments.com](http://www.sierrainstruments.com)

International Headquarter:

**Vögtlin Instruments GmbH**

St. Jakob-Strasse 84  
4132 Muttentz, Switzerland

Phone +41 61 756 63 00

[info@voegtlin.com](mailto:info@voegtlin.com)  
[www.voegtlin.com](http://www.voegtlin.com)

Vögtlin Sales & Service Hub China:

**KEM flow technology (Beijing) Co., Ltd.**

Rm. 906, Block C, Ruipu Office Bldg,  
No. 15, HongJunYingNan Road,  
Chaoyang District, Beijing 100012, China

Phone +86 10 849 29567

[info@kem-kueppers.cn](mailto:info@kem-kueppers.cn)  
[www.voegtlin.cn](http://www.voegtlin.cn)

Find your local Vögtlin sales partner on our website:  
**[www.voegtlin.com](http://www.voegtlin.com)**



**Vögtlin Instruments GmbH – gas flow technology**

St. Jakob-Strasse 84 | CH-4132 Muttentz  
Phone +41 61 756 63 00  
[www.voegtlin.com](http://www.voegtlin.com) | [info@voegtlin.com](mailto:info@voegtlin.com)

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