

# red-y industrial series

## 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.

### Benefits

#### 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

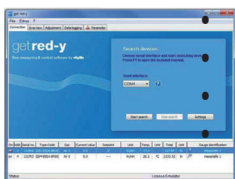
- The flow meters & controllers make use of the latest CMOS technology and have a digital (Modbus RTU) and analog interface as standard

#### IP67 / NEMA 6 protection

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

#### 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

#### 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

#### 3-year warranty\*

- High-quality components ensure long and trouble-free operation

\*does not apply to calibration, options and accessories



# red-y industrial series – Available connections

Cable gland (standard)



Cable gland with optional Profibus



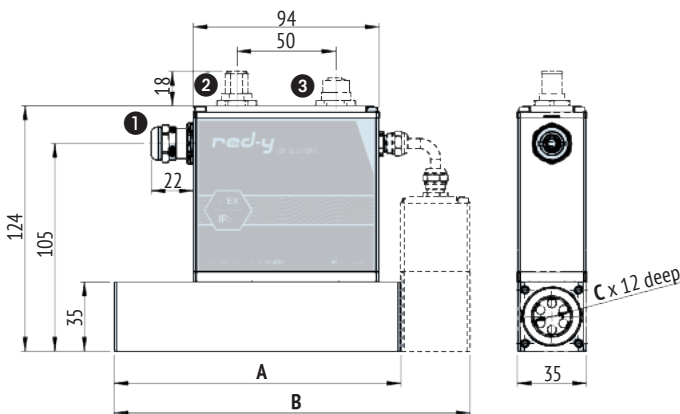
M12 plug (option)



M12 plug with optional Profibus



## Dimensions <red-y industrial series>



### Electrical Connection

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

Type	Length (mm)		Process Connection
	A	B	C
GIM-A	94	-	-
GIM-B	94	-	G $\frac{1}{4}$ "
GIM-C	94	-	G $\frac{1}{4}$ "
GIM-D	145	-	G $\frac{1}{2}$ "
GIC-A	-	134	G $\frac{1}{4}$ "
GIC-B	-	134	G $\frac{1}{4}$ "
GIC-C	-	134	G $\frac{1}{4}$ "
GIC-D	-	180	G $\frac{1}{2}$ "
GIC-D (double valve)	-	198	G $\frac{1}{2}$ "

# red-y industrial series

## Thermal Mass Flow Meters and Controllers for Gases

### 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

### Technical Data

Instrument types				
<b>⟨Standard⟩</b> The economic solution	Accuracy:	± 1.0% of full scale*		
	Turndown ratio:	1 : 50		
<b>⟨Hi-Performance⟩</b> With highest accuracy and turndown ratio (available for GIM < 200 lN/min / GIC < 150 lN/min (air))	Accuracy:	± 0.3% of full scale + ± 0.5% of reading*		
	Turndown ratio:	1 : 100		
*An additional error of ±0.25% may apply for analogue signals				
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 lN/min	to 0 ... 60 lN/min	G¼"
	GIM-D	from 0 ... 60 lN/min	to 0 ... 450 lN/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 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, O <sub>2</sub> *, N <sub>2</sub> *, 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) *O <sub>2</sub> & N <sub>2</sub> are calibrated with air			
Response time	Meter (GIM): ± 80ms <sup>(3)</sup> ; Controller (GIC): ± 500ms <sup>(3)</sup> <sup>3</sup> depending on device configuration & according to SEMI standard E17-1011, 5-100% of range under optimized conditions			
Repeatability	± 0.2% of full scale			
Longterm stability	< 1% of measured value / year			
Power supply	24 Vdc (18 – 30 Vdc), 15 Vdc on request			
Current consumption	Meter (GIM): max. 100 mA; Controller (GIC): max. 250 mA (GIC with valve type 8 max. 410mA)			
Operation pressure	0.2 – 11 bar a (GIC with valve type 4.5 and 8 max. 8 bar a)			

Technical data continuing overleaf

# red-y industrial series

## Thermal Mass Flow Meters and Controllers for Gases

Technical Data (Continuation)	
Performance data (Continuation)	
Temperature (environment/gas)	0 – 50°C
Pressure sensitivity	Less than 0.2% RD per bar (typical N <sub>2</sub> )
Temperature sensitivity	Less than 0.025% FS per °C (typical N <sub>2</sub> )
Warm-up time	< 1 sec. for full accuracy
Materials	
Body	Stainless steel 316L (see operating instructions for wetted parts)
Electronic Housing	Aluminium
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
Process connection	G $\frac{1}{4}$ " (BSPP* female) up to 60 l/min, G $\frac{1}{2}$ " (BSPP* female) up to 450 l/min *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 us for further information.
Safety	
Test pressure	16 bara
Leak rate	< 1 x 10 <sup>-6</sup> mbar l/s He
Environmental protection	IP67 (conforms to NEMA 6)
EMC	CE EN 61326-1
ATEX Certification	Ex II 3G nA IIC T4 Gc (Category 3 / Zone 2) Ex II 3D Ex tc IIIC T100°C Dc (Category 3 / Zone 22)

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# red-y industrial series – Type code

<b>Instrument type</b>	red-y industrial series (Gas)	G	I																
<b>Function</b>	Meter																		M
	Controller																		C
	Controller with external valve																		E
<b>Full scale of measuring range (air)</b> 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									
<b>Instruments version</b>	Standard ( $\pm 1.0\%$ full scale, 1 : 50)																		S
	Hi-Performance ( $\pm 0.3\%$ full scale, $\pm 0.5\%$ reading, 1 : 100)																		T
	Customer-specific / OEM																		K
<b>Connection / Materials (body, seals)</b>	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
<b>Analog signals (output)</b>	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
<b>Analog signals (input)</b>	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
<b>Control valve (integrated)</b> defined by manufacturer	Type 0.1																		2 1
	Type 0.2																		2 2
	Type 0.5																		2 3
	Type 1.2																		2 6
	Type 4.5																		1 2
	Type 8.0																		1 3
	Valve mounted																		9 5
	Customer-specific / OEM																		9 9
	No valve																		0 0
	<b>Type Code</b>		G	I		-													

\*\* standard

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