

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



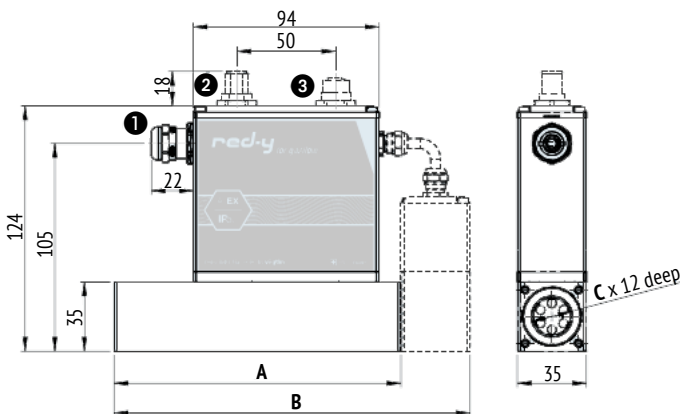
M12 plug (option)



M12 plug with optional Profibus



Dimensions <red-y industrial series>



Electrical Connection

- ❶ Cable gland / cable diameter 6-8mm
- ❷ M12 connector A-Coding 8pol male
- ❸ M12 connector B-Coding 5pol female

Type	Length (mm)		Process Connection
	A	B	C
GIM-A	94	-	G1/4"
GIM-B	94	-	G1/4"
GIM-C	94	-	G1/4"
GIM-D	145	-	G1/2"
GIC-A	-	134	G1/4"
GIC-B	-	134	G1/4"
GIC-C	-	134	G1/4"
GIC-D	-	180	G1/2"
GIC-D (double valve)	-	198	G1/2"

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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				
⟨Standard⟩ The economic solution	Accuracy:	± 1.0% of full scale*		
	Turndown ratio:	1 : 50		
⟨Hi-Performance⟩ 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
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, O ₂ *, N ₂ *, He, Ar, CO ₂ , H ₂ , CH ₄ , C ₃ H ₈ (other gases and gas mixtures on request) *O ₂ & N ₂ 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			
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

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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 ₂)
Temperature sensitivity	Less than 0.025% FS per °C (typical N ₂)
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 ⁻⁶ 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

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 ($\pm 1.0\%$ full scale, 1 : 50)															S
	Hi-Performance ($\pm 0.3\%$ full scale, $\pm 0.5\%$ reading, 1 : 100)															T
	Customer-specific / OEM															K
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 4.5															1 2
	Type 8.0															1 3
	Valve mounted															9 5
	Customer-specific / OEM															9 9
	No valve															0 0
Type Code		G	I	-	-	-	-	-	-	-	-	-	-	-	-	

** standard

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