

red-y Smart Series

THERMAL MASS FLOW METERS AND CONTROLLERS FOR GASES



Reliable technology and standardized interfaces make the red-y smart series thermal mass flow meters and controllers

particularly suitable for measurement and control in gas delivery systems and plant engineering applications.

Reliable and accurate:

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

Operating status indication

- The instruments offer an inbuilt LED status indication

Safe & fast control

- The controller uses a tightly sealed control valve with leak rate less than 1×10^{-6} mbar l/s He. The fast control response of approx. 300 ms significantly reduces the setting time

3-year warranty*

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

Options

Built-in display

- Display of flow rate, total and measuring unit. Defining a set point (controller only)



Multigas

- One meter or controller 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

«get red-y» software



Efficient device management with the free «get red-y» software:

- View flow rate & temperature
 - Change set points
 - Select measured gas
 - Visualization of measured data
 - Adjusting control parameter
- Optional modules «get red-y» software:
 - Datalogging
 - Gasmixing
 - Adjustment/Calibration



red-y Smart Serie

High-quality technology offers maximal value for any application

Through the application of high-precision MEMS technology (CMOS sensors), the thermal flow meters and controllers from Vögtlin Instruments GmbH set new standards in terms of response characteristics and measuring accuracy, and are characterized by



High-tech in a very compact design

The flow meters and controllers use advanced

- Standardized signals enable simple connection to control systems
- Measurements are insensitive to pressure and temperature changes
- All devices are calibrated with real gas. This ensures high accuracy and reproducibility.

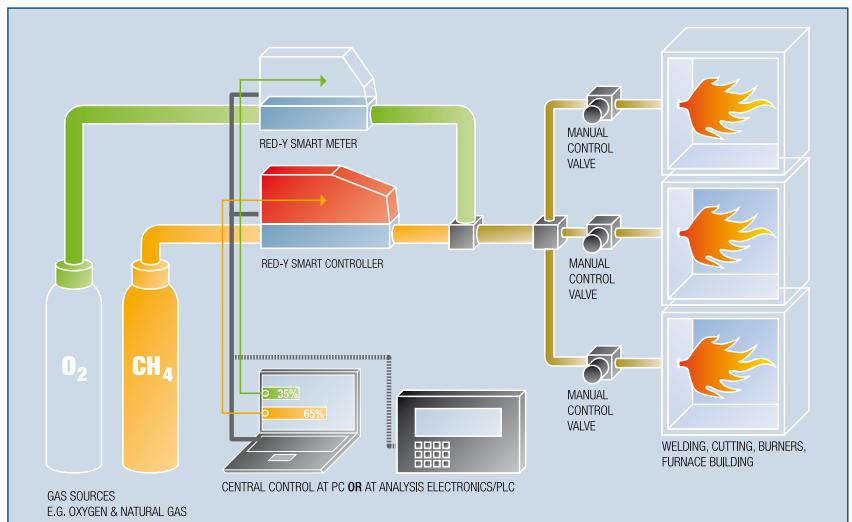
The calibration is traceable to the METAS standard (Federal Office of Metrology, Switzerland)

- Meters and controllers are easy to service and maintain
- The devices have minimal pressure drop
- A full range of accessories is available: Cables, fittings, etc.
- «Plug & control» with the free software «get red-y»: Simple access via any PC (no additional electronic equipment required)
- High quality: All flow meters are produced and calibrated at our European

Flexibility in mixing processes and consumption measurement

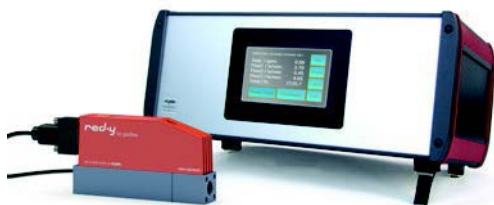
Devices with high measuring accuracy and stable control characteristics are important for ensuring precise and consistent quality of gas mixtures.

The thermal mass flow meters and controllers from Vögtlin offer unbeatable technological performance and cost-effectiveness.






Wide range of accessories – immediately ready for operation

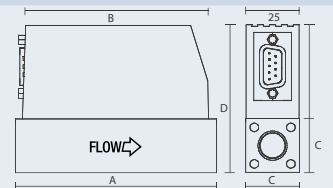
- **Connection cables, power supplies**
Optimal range of cables and power supply units for fast integration of flow meters and controllers:
Cables for communication with PC (USB), cables for analog communication, power supply (24 Vdc)
- **Display and control devices**
Permit the operation of up to 10 flow meters and controllers with predefined process recipes.
- **Fittings, filters**
All flow meters and controllers are available with fittings and filters.
Contact our sales department for more information.



Process Control Unit PCU-10

Technical Data

Instrument types						
	smart meter GSM Thermal mass flow meter		smart controller GSC Thermal mass flow controller		OEM Version For customer-specific requirements	
Instrument versions						
Standard The economic solution	Accuracy: ± 1.0 % of full scale*					
Hi-Performance With highest accuracy and turndown ratio (available for GSM < 200 lln/min / GSC < 150 lln/min (air))	Turndown ratio: 1 : 50 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)			Connection	
red-y smart meter GSM Meter	GSM-A	from 0 ... 25 ml/min	to 0 ... 600 ml/min	G¼"		
	GSM-B	from 0 ... 600 ml/min	to 0 ... 6000 ml/min	G¼"		
	GSM-C	from 0 ... 6 lln/min	to 0 ... 60 lln/min	G¼"		
	GSM-D	from 0 ... 60 lln/min	to 0 ... 450 lln/min	G½"		
red-y smart controller GSC Controller	GSC-A	from 0 ... 25 ml/min	to 0 ... 600 ml/min	G¼"		
	GSC-B	from 0 ... 600 ml/min	to 0 ... 6000 ml/min	G¼"		
	GSC-C	from 0 ... 6 lln/min	to 0 ... 60 lln/min	G¼"		
	GSC-D	from 0 ... 60 lln/min	to 0 ... 450 lln/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 (GSM): ± 80ms ⁽³⁾ ; Controller (GSC): ± 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	Meter (GSM): max. 100 mA; Controller (GSC): max. 250 mA (GSC with valve type 8 max. 410mA)					
Operation pressure	0.2 – 11 bar a (GSC with valve type 4.5 and 8 max. 8 bar a)					
Temperature (environment/gas)	0 – 50°C					
Materials	Anodized aluminium, optional stainless steel electropolished					
Seals	FKM, NBR, optional EPDM					
Pressure sensitivity	< 0.2% / bar of reading (typical N ₂)					
Temperature sensitivity	< 0.025% FS measuring range type / °C					
Warm-up time	< 1 sec. for full accuracy					
Integration						
Output signals analog	0..20 mA, 4..20 mA, 0..5 V, 1..5 V, 0..10 V, 2..10 V					
Output signals digital	RS-485; Modbus RTU (Slave); Lab View-VIs available / option: Profibus DP-V0, DP-V1 / Profinet RT / EtherCAT					
Process connection	G¼" (BSPP* female) up to 60 lln/min, G½" (BSPP* female) up to 450 lln/min *British Standard Pipe Parallel					
Inlet section	None required					
Electrical connection	Sub D plug, 9 pole (Option Profibus: Sub D 9 pole / Option Profinet RT or EtherCAT: 2x RJ45 (IN/OUT))					
Mounting orientation	Any position (consult manufacturer above 5 bar or vertical mounting)					
Safety						
Test pressure	16 bar a					
Leak rate	< 1 x 10 ⁻⁶ mbar l/s He					
Environmental protection	IP-50					
EMC	EN 61326-1					
Dimensions						
Dimensions in mm		A	B	C	D*	D**
GSM G¼"		94	87	25	69	87
GSM G½"		145	87	35	79	97
GSC G¼"		124	117	25	69	87
GSC G½"		170	117	35	79	97
GSC G½" valve type 8		186.4	117	35	79	97
* Standard version						
** Profinet RT / EtherCAT version						



red-y smart series

Type code		G	S																				
Instrument type	red-y smart series (Gas)																						
Function	Meter																						
	Controller																						
Full scale of measuring range (air) defined by manufacturer	Customer-specific (Divider A, up to 600mln/min)																						
	Customer-specific (Divider B, up to 6000mln/min)																						
	Customer-specific (Divider C, up to 60 lln/min)																						
	Customer-specific (Divider D, up to 450ln/min)																						
Instruments version	Standard ($\pm 1.0\%$ full scale, 1 : 50)																						
	Hi-Performance ($\pm 0.3\%$ full scale, $\pm 0.5\%$ reading, 1 : 100)																						
	Customer-specific / OEM																						
Materials (body, seals)	Aluminium, FKM**																						
	Aluminium, EPDM																						
	Stainless steel, FKM																						
	Stainless steel, EPDM																						
	Customer-specific / OEM																						
Analog signals (output)	Current 4..20 mA**																						
	Current 0..20 mA																						
	Voltage 0..5 V																						
	Voltage 1..5 V																						
	Voltage 0..10 V																						
	Voltage 2..10 V																						
	Customer-specific / OEM																						
Analog signals (input)	Current 4..20 mA**																						
	Current 0..20 mA																						
	Voltage 0..5 V																						
	Voltage 1..5 V																						
	Voltage 0..10 V																						
	Voltage 2..10 V																						
	Not defined																						
	Customer-specific / OEM																						
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 not defined																					8	8
	Valve mounted																					9	5
	Customer-specific / OEM																					9	9
	No valve																					0	0

**Standard