red-y smart series product information

Thermal Mass Flow Meters and Controllers for Gases

vögtlin
instruments

Reliable and accurate:
Thermal Mass Flow Meters and Controllers

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.

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 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

Options

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

$N_2 \rightleftarrows CO_2$ 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

‹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**

3-year warranty*

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

ISO 9001

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 AG set new standards in terms of response characteristics and measuring accuracy, and are characterized by maximum convenience:
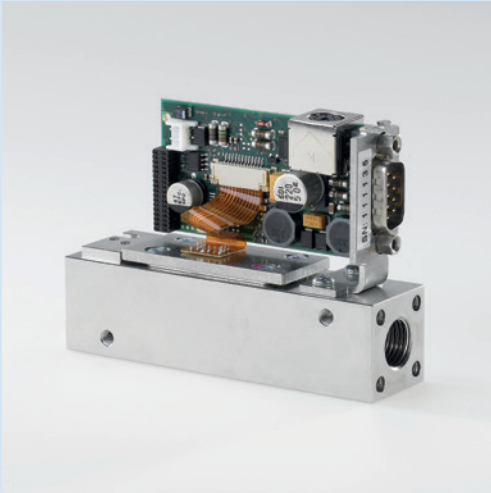

▲ *High-tech in a very compact design*
The flow meters and controllers use advanced MEMS technology

» **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 production center in Germany**

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.
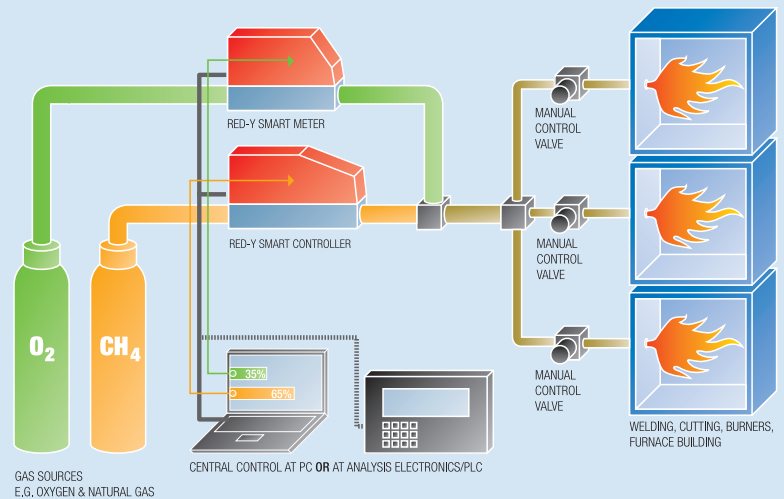
Wide range of accessories – immediately ready for operation

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.

Our specialists will be happy to advise: **+41 61 756 63 00** or **www.voegtlin.com**

Technical Data ‹red-y smart series›

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[1]
	Turndown ratio:	1 : 50
‹Hi-Performance› With highest accuracy and turndown ratio (available for GSM < 200 ln/min / GSC < 150 ln/min (air))	Accuracy:	± 0.3 % of full scale + ± 0.5% of reading[1]
	Turndown ratio:	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)		Connection
red-y smart meter GSM Meter	GSM-A	from 0 ... 25 mln/min	to 0 ... 600 mln/min	G¼"
	GSM-B	from 0 ... 600 mln/min	to 0 ... 6000 mln/min	G¼"
	GSM-C	from 0 ... 6 ln/min	to 0 ... 60 ln/min	G¼"
	GSM-D	from 0 ... 60 ln/min	to 0 ... 450 ln/min	G½"
red-y smart controller GSC Controller	GSC-A	from 0 ... 25 mln/min	to 0 ... 600 mln/min	G¼"
	GSC-B	from 0 ... 600 mln/min	to 0 ... 6000 mln/min	G¼"
	GSC-C	from 0 ... 6 ln/min	to 0 ... 60 ln/min	G¼"
	GSC-D	from 0 ... 60 ln/min	to 0 ... 450 ln/min	G½"

Performance data

Media (real gas calibration)	Air, O_2[2], N_2[2], He, Ar, CO_2, H_2, CH_4, C_3H_8 (other gases and gas mixtures on request) [2]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, EPDM, optional FFKM
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
Process connection	G¼" (BSPP[4] female) up to 60 ln/min, G½" (BSPP[4] female) up to 450 ln/min [4]British Standard Pipe Parallel
Inlet section	None required
Electrical connection	Sub D plug, 9 pole
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
GSM G¼"	94	87	25	69
GSM G½"	145	87	35	79
GSC G¼"	124	117	25	69
GSC G½"	170	117	35	79
GSC G½" valve type 8	186.4	117	35	79

Type code ‹red-y smart series›

Instrument type	red-y smart series (Gas)	G	S								
Function	Meter			M							
	Controller			C							
Full scale of measuring range (air) defined by manufacturer	Customer-specific (Divider A, up to 600mln/min)				A	X					
	Customer-specific (Divider B, up to 6000mln/min)				B	X					
	Customer-specific (Divider C, up to 60 ln/min)				C	X					
	Customer-specific (Divider D, up to 450ln/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				
Materials (body, seals)	Aluminium, FKM**							A			
	Aluminium, EPDM							B			
	Stainless steel, FKM							S			
	Stainless steel, EPDM							T			
	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 not defined										8 8
	Valve mounted										9 5
	Customer-specific / OEM										9 9
	No valve										0 0
Type code		G	S	–					–		

**Standard