

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

Safe & fast control

The controller uses a tightly sealed control valve with leak rate less than 1x10^{-6}mbar l/s He. The fast control response of approx. 300 ms significantly reduces the setting time

Operating status indication

The instruments offer an inbuilt LED status indication



Fig. 1 red-y smart controller GSC with Industrial Ethernet interface at the top of the device

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**



Fig. 2 Configuration of the devices via the free get red-y software

3-year warranty*

High-quality components ensure long and trouble-free operation

*does not apply to calibration, options and accessories

swiss safety center ISO 9001 certified system

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 maximum convenience:

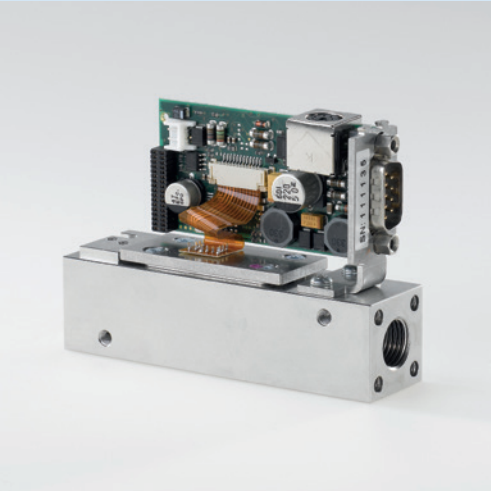


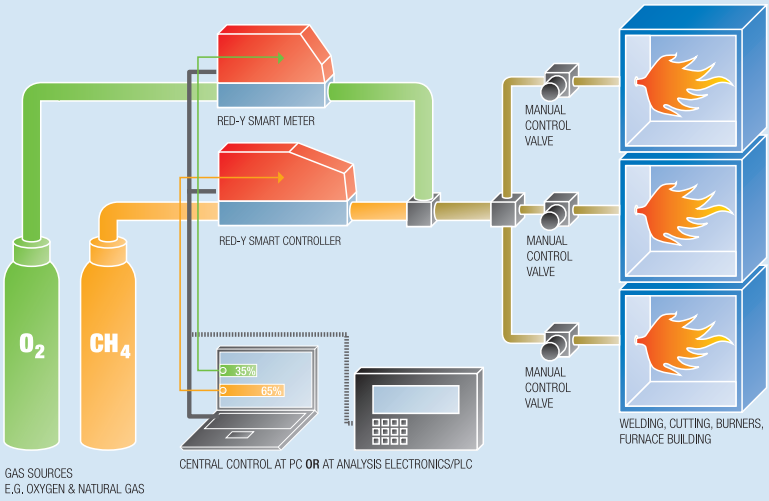
Fig. 3 High-tech in a very compact design: The flow meters and controllers use advanced MEMS technology

- **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



Fig. 4 Process Control Unit PCU-10

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.

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: Turndown ratio:	± 1.0 % of full scale[1] 1 : 50 (available on request up to 1:1000)
‹Hi-Performance› With highest accuracy and turndown ratio (available for GSM < 200 ln/min / GSC < 150 ln/min (air))	Accuracy: Turndown ratio:	± 0.3 % of full scale + ± 0.5% of reading[1] 1 : 100 (available on request up to 1:1000)

[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, O2[2], N2[2], He, Ar, CO2, H2, CH4, C3H8 (other gases and gas mixtures on request) [2]O2 & N2 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 Standard	Meter (GSM): max. 100mA; Controller (GSC): max. 250mA (GSC with valve type xDV[4] max. 490mA) [4]DV = Double Valve
Current consumption Profinet RT / EtherCAT	Meter (GSM): max. 125mA; Controller (GSC): max. 340mA (GSC with valve type xDV[4] max. 560mA)
Operation pressure	0.2 – 11 bar a (GSC with valve type 4.5/EQP and 8/EQP DV[4] up to 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 N2)
Temperature sensitivity	< 0.025% FS measuring range type / °C
Warm-up time	< 1 sec. for full accuracy

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 (Slave); Lab View-VIs available Additional option: ProfiBus DP-V0, DP-V1/Profinet RT/EtherCAT
Process connection	G¼" (BSPP[5] female) up to 60 ln/min, G½" (BSPP[5] female) up to 450 ln/min [5]British Standard Pipe Parallel
Inlet section	None required
Electrical connector(s) on device	Sub-D 9pin male Additional option: Sub-D9pin female for ProfiBus, 2xRJ45 (In/Out) for Profinet RT, or EtherCAT
Mounting orientation	Any position (consult manufacturer above 5 bar or vertical mounting)

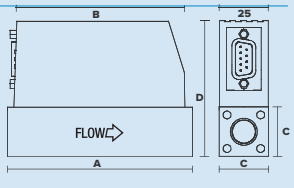
Safety

Valve (GSC only)	Normally closed when powered-off
Test pressure	16 bar a
Leak rate to external (open valve)	< 1 x 10-6 mbar l/s He, (on request <1x10-8 mbar l/s He)
Leak rate through (closed valve)	< 1 x 10-6 mbar l/s He
Ingress protection class	IP-50
EMC	EN 61326-1

Dimensions

Dimensions in mm	A	B	C	D[6]	D[7]
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

[6]Standard version [7]Profinet RT/EtherCAT version [8]xDV = Double Valve



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
Instrument versions	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 2.4 DV***	5 2
	Type 4.5	1 2
	Type 8.0 DV***	1 3
	Type EQP	1 4
	Type EQP DV***	2 8
	Valve not defined	8 8
	Valve mounted	9 5
	Customer-specific / OEM	9 9
	No valve	0 0
Type code		G S – –

**Standard

***DV = Double Valve

Worldwide TASi Flow Network



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