End-of-Life
successor: GDR 1501

Speed | Pressure | Flow Rate | Temperature

1-/2-Channel Flow Computer GDR 1403

with Ethernet TCP/IP, Profibus-DP, MODBUS-RTU, MODBUS-TCP

The Flow Computer GDR 1403 measures volume or mass flow of flow rate sensors.

Within volume flow rate measurements the flow rate optionally can be obtained in Nm³ by additional logging of pressure and temperature.

The device is programmed by PC using the 32 bit software "E3DM" via USB interface or Ethernet TCP/IP.

- Integrated recording function to register measurement data (ring buffer 4 GB)
- Linearisation through max. 12 data points
- Special version “Precision” with high resolution (0,1 l)
- Limit values / relays
- Digital input for start-stop function to operate over SPS
- Integration into IT networks using Ethernet TCP/IP to remote data transmission
- Integration into industrial bus systems, e.g. Profibus-DP, Modbus-RTU, Modbus-TCP
- Up to 12 devices curable through internal CAN bus
- At network loss persistent data management of the total counter reading for a period of 5 years

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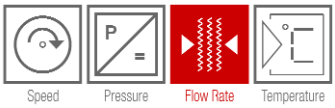

Technical data

The devices of the series GDR 1403 are available as 1- or 2-channel devices. The series is designed as a modular system. The system enables the configuration of inputs, outputs, interfaces and software options which are required according to the individual requirements of the installation and application. This section provides an overview of all technical information of the series.

Measuring inputs	
Input 1 (channel "A") Temperature	0 (4) - 20 mA, 2-/3-wire (temperature) = -100 - 2000 °C (14 bit), input resistance < 100 ohm using 20 mA
Input 2 (channel "A") Flow rate	0 (4) - 20 mA (flow rate) = 0 - 20.000 m³/h (14 bit), input resistance < 100 ohm using 20 mA or pulse input for gas flowmeter GD 300/GD 500 (flow rate), up to 1 kHz at 5 % duty cycle, pulse length > 500 µs
Input 1 and 2 (Channel "A") Temperature and flow rate	RS 485 interface for gas flow sensor Ecoflow 3 (hot wire anemometer)
Input 3 (channel "B") Temperature	0 (4) - 20 mA, 2-/3-wire (temperature) = -100 - 2000 °C (14 bit), input resistance < 100 ohm using 20 mA
Input 4 (Channel "B") Flow rate	0 (4) - 20 mA (flow rate) = 0 - 20.000 m³/h (14 bit), input resistance < 100 ohm using 20 mA or pulse input for gas flowmeter GD 300/GD 500 (flow rate), up to 1 kHz at 5 % duty cycle, pulse length > 500 µs
Input 3 and 4 (Channel "B") Temperature and flow rate	RS 485 interface for gas flow sensor Ecoflow 3 (hot wire anemometer)
Input 5 (Channel "A") Pressure	0 (4) - 20 mA, 2-/3-wire (pressure) = 0 - 30 bar (14 bit), input resistance < 100 ohm or virtual input using a programmable fixed value
Input 6 (Channel "B") Pressure	0 (4) - 20 mA, 2-/3-wire (pressure) = 0 - 30 bar (14 bit), input resistance < 100 ohm or virtual input using a programmable fixed value
Digital Input S1 (channel "A")	digital gate input
Digital Input S2 (channel "B")	digital gate input

Output	
Output 1 (Channel "A")	0(4) - 20 mA = 0 - (x) Nm³/h flow rate (freely programmable), load 500 ohm
Output 2 (Channel "B")	0(4) - 20 mA = 0 - (x) Nm³/h flow rate (freely programmable), load 500 ohm
Output 3 (Channel "A")	0(4) - 20 mA = 0 - (x) Nm³ partial quantity (freely programmable), load 500 ohm
Output 4 (Channel "B")	0(4) - 20 mA = 0 - (x) Nm³ partial quantity (freely programmable), load 500 ohm

Relays (Standard)	
K1: Counting output (Channel "A")	relay 1 or 10 or 100 or 1.000 or 10.000 Nm³ per pulse (freely programmable), counting output quantity, NO switch
K2 Counting output (Channel "B")	relay 1 or 10 or 100 or 1.000 or 10.000 Nm³ per pulse (freely programmable), counting output quantity, NO switch
K3: Limit value (Channel "A")	limit value, NO switch, 250 V, AC, 1A inductive
K4: Limit value (Channel "B")	limit value, NO switch, 250 V, AC, 1A inductive

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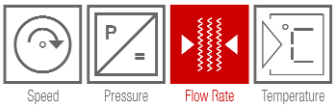

Electrical values	
Accuracy	± 0,05 % EW ± 1 digit at 23 °C
Power supply	24 V, DC ± 3 V

Environmental influences	
Ambient temperature	-10 to +55 °C
Storage temperature	-20 to +85 °C
Test voltage	3 kV
Humidity class	E-DIN 40040
Electromagnetic compatibility	acc. to EN 61000

Display, housing, weight	
Display	6-digit LCD-display for flow rate in Nm³/h (resolution 0,1 Nm³) 8-digit LCD-display in Nm³ (resolution 0,1 Nm³) display height 8 mmm
Standard housing Rail Mounting	dimensions: 100 mm (W) x 100 mm (H) x 107 (D) mm protection class: IP20 net weight: approx. 480 g
Protective housing (option M104) Wall mounting	dimensions: 343 mm (W) x 330 mm (H) x 210 mm (D) with tab and high-strength cable gland protection class: IP65
Protective housing with Ex-zone (option M105) Wall mounting	dimensions: 385,5 mm (W) x 487 mm (H) x 210 mm (D) with tab and high-strength cable gland protection class: IP65
Switchboard housing (option M112) Switchboard door mounting	switchboard disruption: $151^{\pm 1}$ mm x $332{,}5^{\pm 1}$ mm front frame: 169,7 mm (W) x 351 mm (H) front frame height: 51 mm installation depth: 140 mm max. wall thickness: 23 mm protection class: IP30
Portable housing (option M122)	dimensions: 147 mm (W) x 364 mm (H) x 261 mm (D) protection class: IP30
Switchboard housing (option M113) Switchboard door mounting	switchboard disruption: $151^{\pm 1}$ mm x $332{,}5^{\pm 1}$ mm front frame: 169,7 mm (W) x 351 mm (H) front frame height: 51 mm installation depth: 140 mm max. wall thickness: 23 mm protection class: IP65
Portable housing (option M123)	dimensions: 147 mm (W) x 364 mm (H) x 261 mm (D) protection class: IP65

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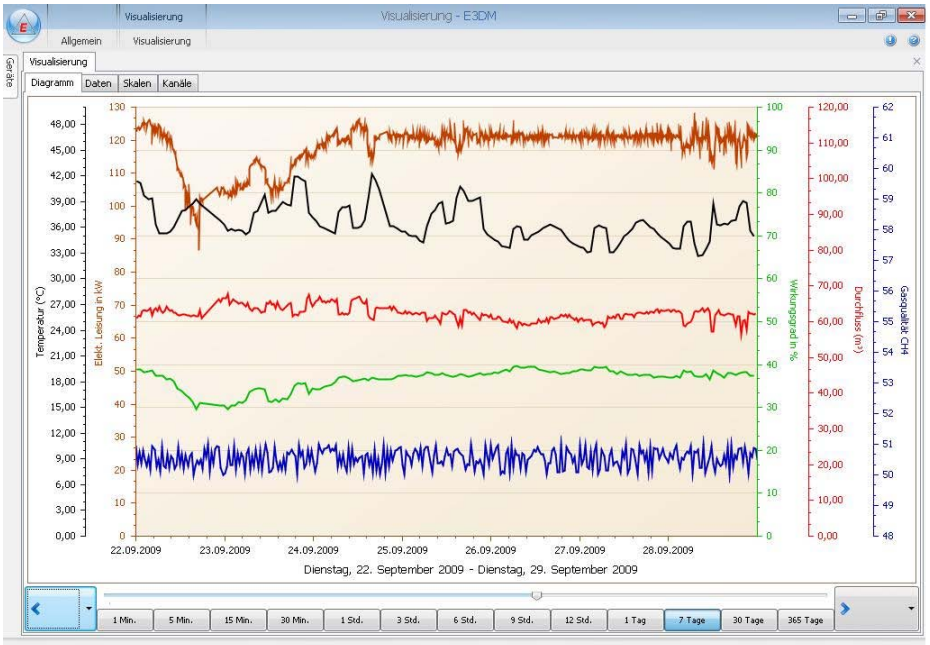
Speed | Pressure | Flow Rate | Temperature

Software & Recorder	
Precision (optional)	integrator with high-resolution (0,1 l) within liter mode
E3DM	Esters Energy Efficiency and Device Manager Energy Management- and Configuration Software for Microsoft Windows (32-Bit)
Recorder (optional)	ring buffer 4 GB data recorder for logging of measurement values over a period of several years

Interfaces	
RS 232	9-pin connection to update the firmware
USB	Mini-USB connection (5-pin, USB 2.0) for configuration and data transfer through PC
CAN bus (optional)	internal communication of up to 12 curable devices
PROFIBUS-DP (optional)	data transmision via Profibus-DP protocol
MODBUS-RTU (optional)	data transmision via MODBUS-RTU protocol
MODBUS-TCP (optional)	data transmision via MODBUS-TCP protocol
ETHERNET TCP/IP (optional)	integration into the IT network for configuration and data transfer by PC

Software E3DM - Esters Energy Efficiency and Device Manager



The graphic visualization of the measured values continuously recorded in the ring buffer can be freely configurated by the user. In the illustration the following measured values are displayed:

- efficiency factor in %
  (Wirkungsgrad in %)
- flow (m^3)
  (Flow rate m^3)
- gas quality (CH_4)
  (Gasqualität (CH_4)
- electrical capacity in kW
  (elektrische Leistung in kW)
- temperature in °C
  (Temperatur in °C)

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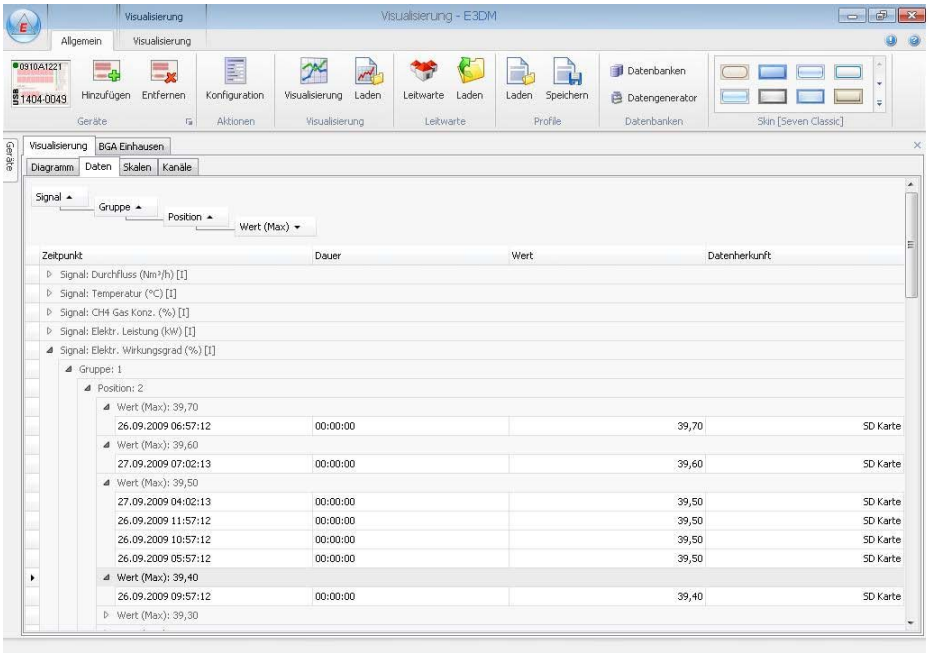
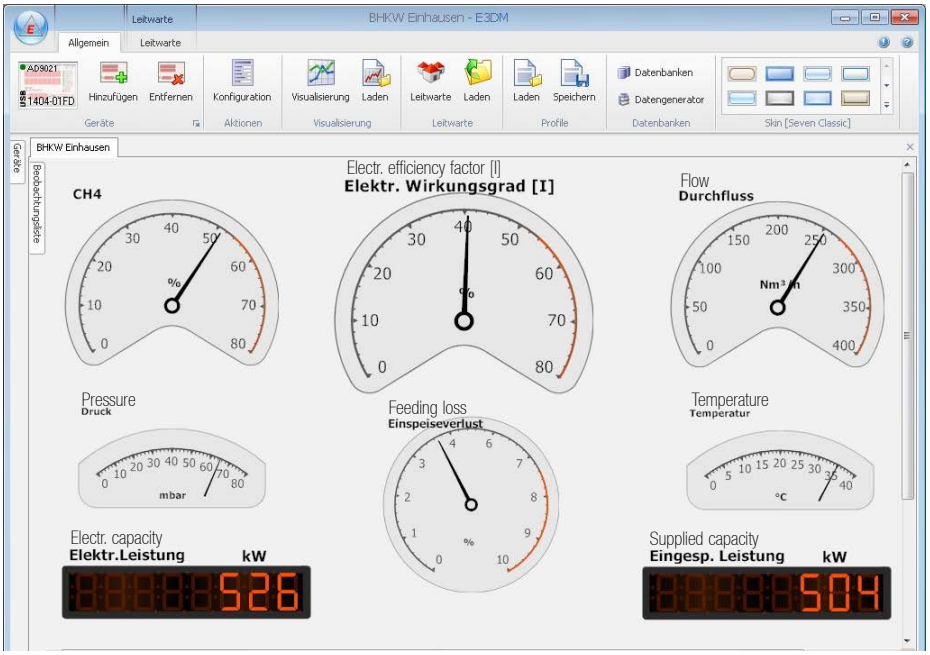
Speed | Pressure | Flow Rate | Temperature



In the tabular visualization of the measured values continuously stored in the ring buffer the reported data can be assorted with multi-level column sort.

The illustration shows the data arranged according to signal and height of the measured values.



In the master display the actual measured values are mapped. The amount of the displayed values and the graphical illustration can be adjusted individually.

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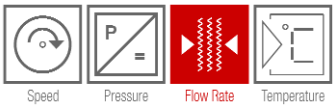

Order information

The ordering code consists of the device type GDR 1403 and an 8-digit code, which is devided into 2 sections with four points:

GDR 1403-xxxx-xxyy

In the following tables the first six points are defined according to the desired equipment. The last two digits define the content of functions (such as ring buffer, interfaces for industrial bus systems).

Example:

GDR 1403-00DF-001C

2 Channel Flow Computer with 2 pulse inputs for flow measurement, input for pressure and temperature sensor and 2 output signals for Nm³/h and Nm³ for each channel as well as 2 digital inputs. The unit is also equipped with the optional functions Profibus-DP interface, Ethernet TPC/IP interface, 2 GB ring buffer.

GDR 1403-001F-111C M104

2 Channel Flow Computer with 2 flow rate sensors with a RS 485 interface for measuring flow rate and temperature as well as 2 inputs for pressure for each channel and 2 digital inputs. Each channel provides an output for Nm³/h and Nm³. The unit is also equipped with the optional functions Profibus-DP interface, Ethernet TPC/IP interface, 2 GB ring buffer and is built into the field housing M104 for wall mounting.

legend:

- ● hardware integrated
- v fixed value programmable via Software E3DM

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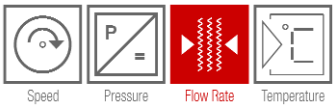

Devices with pulse input for flow measurement (GD 300, GD 500 incl. signal amplifier)

	1-Channel "A"										
GDR 1403-xxxx-00yy	0041	0241	0141	0341	0049	0249	0149	0349	0245	005D	025D
Input											
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●	●	●	●
2: Pulses, flow rate ("A")	●	●	●	●	●	●	●	●	●	●	●
3: 0 (4) - 20 mA, 2/3-wire temperature ("B")											
4: Pulses, flow rate ("B")											
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	v	v	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")											
Digital Input											
7: S1 ("A")									●	●	●
8: S2 ("B")											
Output											
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●		●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")											
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")										●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")											
Software											
Precision		●		●		●		●	●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●	●

	2-Channel "A" and "B"									
GDR 1403-xxxx-00yy	00C3	02C3	01C3	03C3	00CB	02CB	01CB	03CB	00DF	02DF
Input										
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●	●	●
2: Pulses, flow rate ("A")	●	●	●	●	●	●	●	●	●	●
3: 0 (4) - 20 mA, 2/3-wire temperature ("B")	●	●	●	●	●	●	●	●	●	●
4: Pulses, flow rate ("B")	●	●	●	●	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	v	v	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	●	v	v	●	●	v	v	●	●
Digital Input										
7: S1 ("A")									●	●
8: S2 ("B")									●	●
Output										
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●	●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")					●	●	●	●	●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")									●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")									●	●
Software										
Precision		●		●		●		●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●

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Speed | Pressure | Flow Rate | Temperature

Devices with mA-input for flow measurement (Ecoflow 2, third-party products)

	1-Channel "A"					2-Channel "A" and "B"					
GDR 1403-xxxx-00yy	0001	0101	0009	0109	001D	0003	0103	0007	000B	010B	001F
Input											
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●	●	●	●
2: 0 (4) - 20 mA, flow rate ("A")	●	●	●	●	●	●	●	●	●	●	●
3: 0 (4) - 20 mA, 2/3-wire temperature ("B")						●	●	●	●	●	●
4: 0 (4) - 20 mA, flow rate ("B")						●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	v	●	v	●	●	v	●	●	v	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")						●	v	●	●	v	●
Digital Input											
7: S1 ("A")					●			●			●
8: S2 ("B")								●			●
Output											
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")			●	●	●				●	●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")									●	●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")					●						●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")											●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●	●

Devices with pulse input and mA-input for flow measurement - diverse measurements

	2-Channel "A" and "B"								
GDR 1403-xxxx-00yy	0043	0243	0143	0343	004B	024B	0247	005F	025F
Input									
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●	●
2: Pulses, flow rate ("A")	●	●	●	●	●	●	●	●	●
3: 0 (4) - 20 mA, 2/3-wire temperature ("B")	●	●	●	●	●	●	●	●	●
4: 0 (4) - 20 mA, flow rate ("B")	●	●	●	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	●	v	v	●	●	●	●	●
Digital Input									
7: S1 ("A")							●	●	●
8: S2 ("B")							●	●	●
Output									
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●		●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")					●	●		●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")								●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")								●	●
Software									
Precision		●		●		●	●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●

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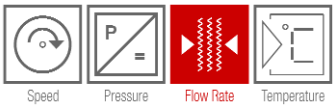

Devices with pulse input and mA-input for flow measurement - diverse measurements

	2-Channel "A" and "B"							
GDR 1403-xxxx-00yy	0083	0283	0183	0383	008B	028B	009F	029F
Input								
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●
2: 0 (4) - 20 mA, flow rate ("A")	●	●	●	●	●	●	●	●
3: 0 (4) - 20 mA, 2/3-wire temperature ("B")	●	●	●	●	●	●	●	●
4: Pulses, flow rate ("B")	●	●	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	●	v	v	●	●	●	●
Digital Input								
7: S1 ("A")							●	●
8: S2 ("B")							●	●
Output								
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")					●	●	●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")							●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")							●	●
Software								
Precision		●		●		●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●

Devices with RS 485 interface for flow measurement (Ecoflow 3, third-party products)

	1-Channel "A"										
GDR 1403-xxxx-01yy	0001	0241	0101	0341	0009	0249	0109	0349	0245	001D	025D
Input											
1, 2: RS 485 for flow rate and temperatur ("A")	●	●	●	●	●	●	●	●	●	●	●
3, 4: RS 485 for flow rate and temperatur ("B")											
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	v	v	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")											
Digital Input											
7: S1 ("A")									●	●	●
8: S2 ("B")											
Output											
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●		●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")											
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")										●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")											
Software											
Precision		●		●		●		●	●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●	●

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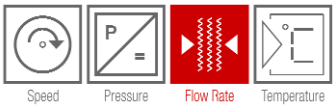

Devices with RS 485 interface flow measurement

	2-Channel "A" and "B"													
GDR 1403-xxxx-11yy	0003	0243	0103	0343	000B	024B	010B	03CB	011B	03DB	0007	0247	001F	025F
Input														
1, 2: RS 485 for flow rate and temperatur ("A")	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3, 4: RS 485 for flow rate and temperatur ("B")	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	v	v	v	v	●	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	●	v	v	●	●	v	v	v	v	●	●	●	●
Digital Input														
7: S1 ("A")											●	●	●	●
8: S2 ("B")											●	●	●	●
Output														
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●	●	●			●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")					●	●	●	●	●	●			●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")									●	●			●	●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")									●	●			●	●
Software														
Precision		●		●		●		●		●		●		●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Devices with pulse input and RS 485 interface flow measurement - diverse measurements

	2-Channel "A" and "B"										
GDR 1403-xxxx-10yy	0043	0243	0143	0343	004B	024B	01CB	03CB	005F	025F	0247
Input											
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●	●	●	●	●	●
2: Puls, Flow rate ("A")	●	●	●	●	●	●	●	●	●	●	●
3, 4: RS 485 for flow rate and femperatur ("B")	●	●	●	●	●	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	●	v	v	●	●	v	v	●	●	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	●	v	v	●	●	v	v	●	●	●
Digital Input											
7: S1 ("A")									●	●	●
8: S2 ("B")									●	●	●
Output											
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")					●	●	●	●	●	●	
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")					●	●	●	●	●	●	
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")									●	●	
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")									●	●	
Software											
Precision		●		●		●		●		●	●
Power supply: 24 V, DC	●	●	●	●	●	●	●	●	●	●	●

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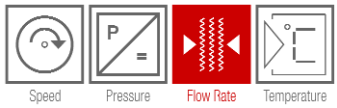
End-of-Life
successor: GDR 1501



Devices with mA-input and RS 485 interface for flow measurement - diverse measurements

	2-Channel "A" and "B"					
GDR 1403-xxxx-10yy	0003	0103	0007	000B	010B	001F
Input						
1: 0 (4) - 20mA, 2/3-wire temperature ("A")	●	●	●	●	●	●
2: 0 (4) - 20 mA, flow rate ("A")	●	●	●	●	●	●
3, 4: RS 485 for flow rate and temperature ("B")	●	●	●	●	●	●
5: 0 (4) - 20 mA, 2/3-wire pressure ("A")	●	v	●	●	v	●
6: 0 (4) - 20 mA, 2/3-wire pressure ("B")	●	v	●	●	v	●
Digital Input						
7: S1 ("A")			●			●
8: S2 ("B")			●			●
Output						
9: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("A")				●	●	●
10: 0 (4) - 20 mA = 0 - (x) Nm³/h flow rate ("B")				●	●	●
11: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("A")						●
12: 0 (4) - 20 mA = 0 - (x) Nm³ part. quantity ("B")						●
Software						
Precision						
Power supply: 24 V, DC	●	●	●	●	●	●

Optional device funtions and housings

GDR 1403-xxxx-xx	
0	without option
1	PROFIBUS-DP interface
2	Modbus-RTU interface
4	Modbus-TCP interface
0	without option
1	CAN bus interface
4	Ethernet TCP/IP interface
5	CAN bus, Ethernet TCP/IP interface
8	ring buffer 2 GB (data recorder)
9	ring buffer 2 GB (data recorder), CAN bus interface
C	ring buffer 2 GB (data recorder), Ethernet TCP/IP interface
D	ring buffer 2 GB (data recorder), CAN bus, Ethernet TCP/IP interface

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Speed | Pressure | Flow Rate | Temperature

Housing	
M104	field housing for wall mounting, protection class IP65
M105	field housing with Ex zone for wall mounting, protection class IP65
M112	switchboard door housing, protection class IP30
M122	portable housing, protection class IP30
M113	switchboard door housing, protection class IP65
M123	portable housing, protection class IP65

Fluidistor Gas Flowmeter GD 300

The Fluidistor Gas Flowmeter measures all technical and medical gases with a nominal width of DN 25 to DN 400 and a measurement range of 0,2 ... 20 ... 16.000 m^3/h.
Accuracy: ± 1,5 %

For further information see datasheet DS 312 E.

Compact Fluidistor Gas Flowmeter GD 500

The Compact Fluidistor Gas Flowmeter (stainless steel 1.4571) measures all technical and medical gases with a measurement range of 0,21 - 16,8 m^3/h (process connection G 1/2", G 1").
Accuracy: ± 1,5 %

For further information see datasheet DS 312 E.

Thermal Mass Flowmeter Ecoflow 3

The thermal mass flow meter measures pressured air, nitrogen, oxygen and carbon dioxide with a measurement range of 0,32 ... 1.400 Nm3/h (nominal size DN 15 - DN 50) in industrial and medical areas.
Accuracy: ± 2,5 % + 0,3 %

For further information see datasheet DS 313 E.

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