Trigas DM

Durchflussmesser-Manufaktur



GH2+ XXXX-4-XX-XX-XX-XX-XX
(HXPW)
H2- Flow measurement system

For Hydrogen Trailers

Date Sheet

2026-11-17 EN V06

1. Product description

Product Overview

The GH2+ metering system is a reliable, custody-transfer-capable solution for mobile flow measurement during the unloading of hydrogen trailers. This robust system was developed specifically for use in hydrogen logistics, enabling precise billing of hydrogen deliveries in compliance with legal metrology requirements.

Flexible control tailored to your requirements

The GH2+ offers maximum flexibility for integration into existing processes:

- Adaptation to individual operational and safety requirements
- Easy integration into existing control systems

This flexibility allows for optimal adjustment to various application scenarios within hydrogen logistics.

Robust construction for demanding environments

The GH2+ has been specifically developed for continuous use in industrial environments:

- Suitable for high pressure levels
- Robust industrial design for demanding operating conditions
- Compact construction for easy integration
- Optional weather-resistant equipment cabinet for additional protection

As a result, the GH2+ ensures reliable operation even under extreme conditions.

Calibration service

The legally required recalibration takes place every two years.

- Performed in the ISO 17025-certified calibration laboratory at TrigasFI
- Precise calibration in compliance with standards
- Complete documentation

TrigasDM handles the organization of the calibration process as well as communication with the authorities.

Your benefits at a glance

- Certified and approved quantity measurement system for hydrogen deliveries
- Suitable for use with trailers/MEGCs
- Robust design for high-pressure applications
- Compact construction and easy integration
- Optional protective cabinet for outdoor installations
- Regulatory-compliant hydrogen billing

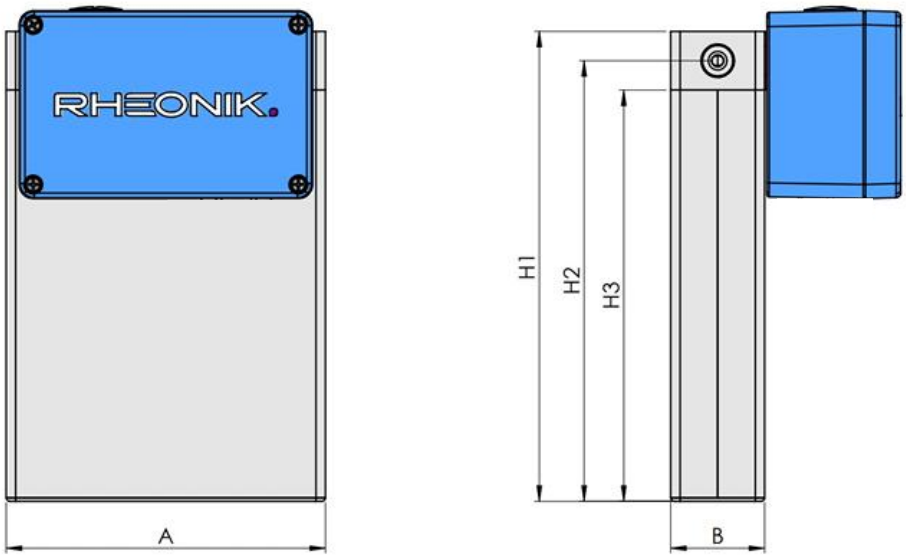
2. Technical Data – Overall System

Standard version. We would be happy to advise you on available options.

GH2+	
Medium	Hydrogen Gas (H_2)
Minimum operating pressure	20 bar
Maximum operating pressure	540/1048 bar
Q_{min} (Minimum flow rate)	0.17 kg/min
Q_t (Transitional flow rate)	0.83 kg/min
Q_{max} (Maximum flow rate)	4.17 kg/min
Q_{cutoff} (Cut-off limit)	0.033 kg/min
Measurement accuracy (Q_t bis Q_{max})	±1.5%
Measurement accuracy (Q_{min} bis Q_t)	±2.5%
Permissible operating temperature for pressurized parts	-50 to +120°C
Permissible temperature range	-40 to +55 °C
Permissible ambient temperature range	-25 to +55 °C
Mechanical/electrical environment	M2/E2
Power supply	12-24 VDC +/-10%
Wetted materials	SS 316 / HP160
Process connections	Autoclave 9/16" MP - 13/16" - 16 UN, Internal thread
Enclosure protection ratings	IP54 without Housing IP66 with Housing
Inputs	Modbus RS485
Outputs	2 Analog 4-20 mA 1 Digital output (Pulse/Frequency/Status;) 1 Modbus RTU RS485 for external Computer 1 Modbus RS232 for external printer
Certifications and approvals	ATEX / IECEx Certification PED 2014/68/EU Art4 (3) SEP Conformity assessment according to PTB BMPB
Validity of calibration (conformity assessment)	2 Years
Billing unit	kg or Nm^3
Electrical connections	- Industrial connector for variations with a housing, 10 Pins - Industrial Connector for variations without a housing, 8 Pins

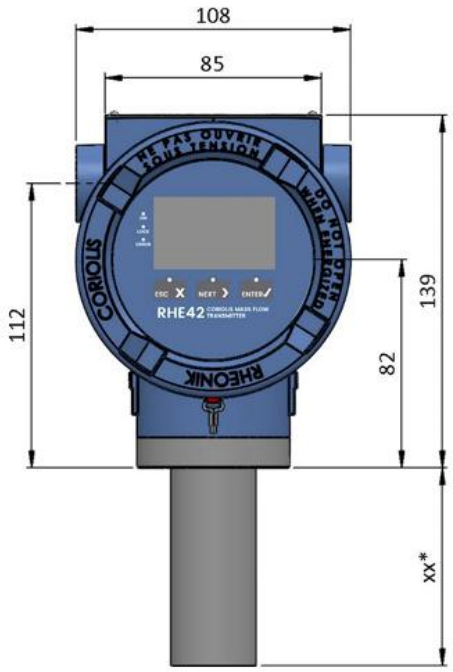
3. Components and Technical Specifications

3.1 Coriolis flowmeter	
Manufacturer	RHEONIK Messtechnik GmbH
Coriolis flow sensor	RHM04
Housing material	Stainless-steel
Wetted parts material	SS 316 / HP160
Medium	Hydrogen Gas
Flow range	0.17 bis 4.17 kg/min
Process connection	Autoclave 9/16“ MP (13/16“-16 UN)
Design type	parallel measuring tube arrangement, without seals
Temperature range	-50 bis +120°C
Max. permissible operating pressure	540 bar/1048 bar
Approvals	ATEX/IECEx: Zone 1 ATEX: <Ex> II 2G Ex ib IIC T6…T1 Gb IECEx: <Ex> ib IIC T6…T1 Gb PED 2014/68/EU Art4 (3) SEP
Dimensions (A×BxH1xH2xH3)	136x40x200x188x175 mm

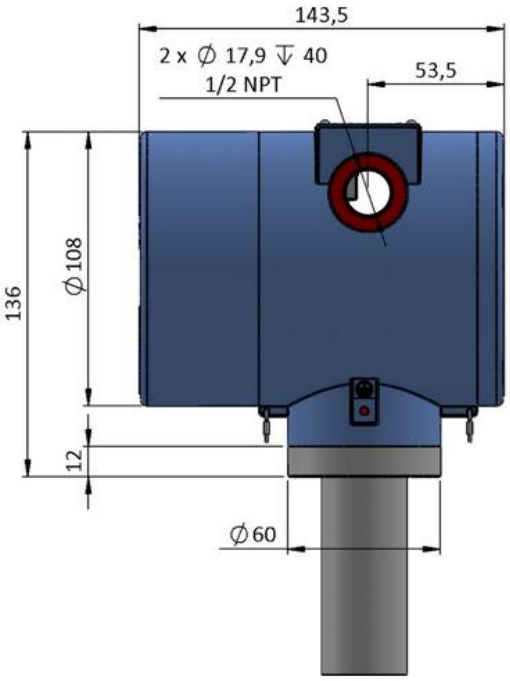


3.2 Coriolis Transmitter	
Manufacturer	RHEONIK Messtechnik GmbH
Type	E42-RED1-SOEA-A19R-NN-NNH
Enclosure	Coated aluminum
Model	RHE42
Operating temperature	-20 bis +60°C
Degree of protection	IP 65 / NEMA 4
Approvals	ATEX/IECEx: Zone 1 ATEX / IEC <Ex> II 2(1)G Ex db eb [ia Ga] IIC T6 Gb
Display	Backlit color LCD display (128 x 64 Pixel)
Operating	via 3 push-buttons, RS485
Software	**V2.46**
Functionality	– Mass flow rate; – Assurance factor; – API standard volume; – Configuration lockout switch; – Pipe temperature measurement
Outputs	– 2 analog outputs 4–20 mA, – 2 frequency / pulse / status outputs
Inputs	– 2 digital signal inputs; – 1 analog input 4–20 mA, active; – All analog inputs/outputs in accordance with NAMUR NE43; – All digital inputs/outputs in accordance with DIN IEC 60946; interfaces: Modbus RS485, HART
Communication interface	– Modbus RS485 – Modbus TCP
Power supply	12-24 VDC +/-10%
Cable entry	2 x Screw connection ½“ NPT
Weight	approx. 2.3 kg

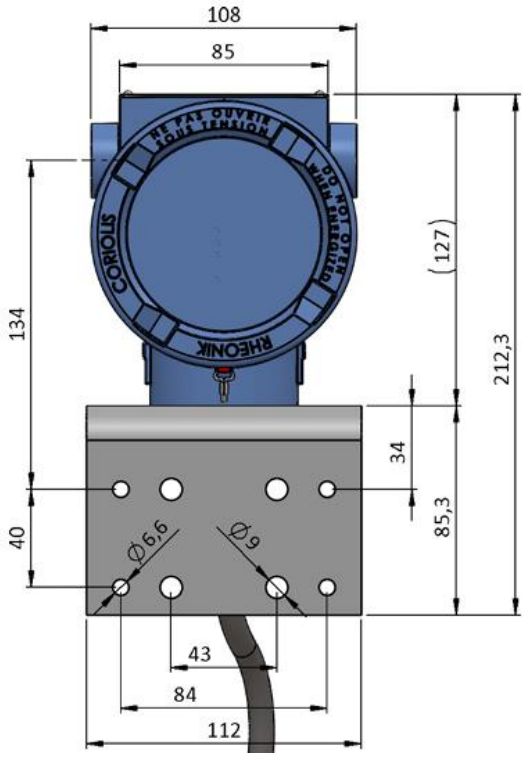
Front view



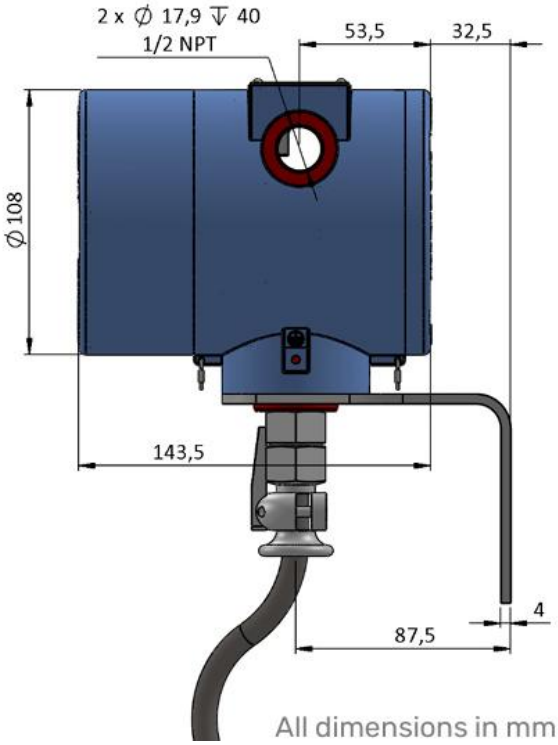
Side view



Back view

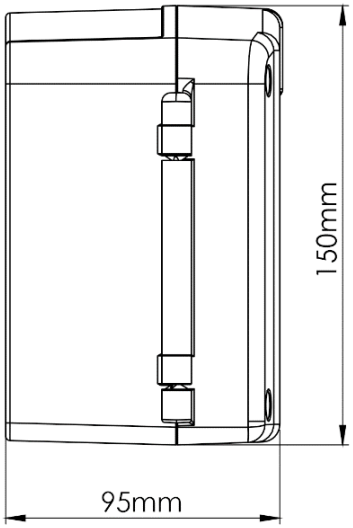


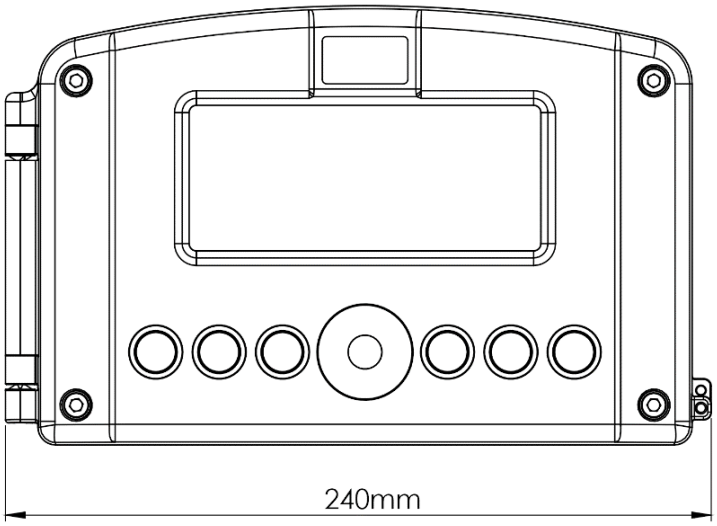
Side view

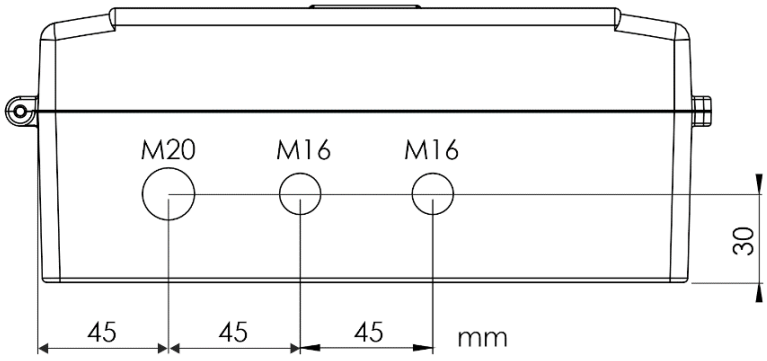


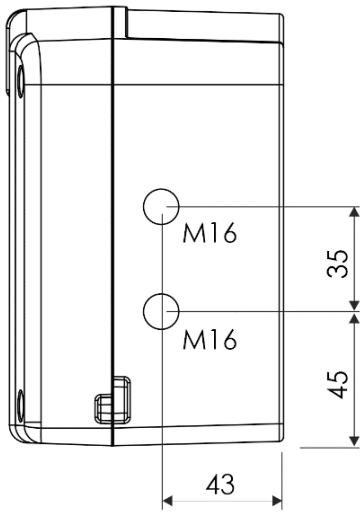
All dimensions in mm

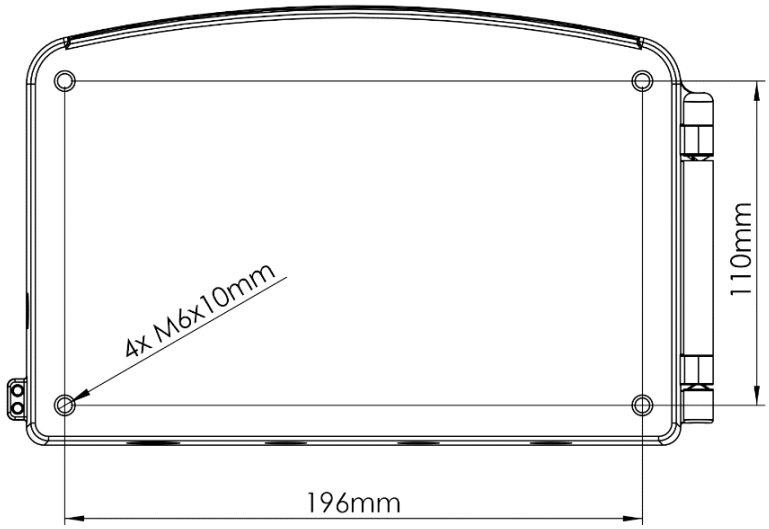
3.3 Flow Computer C406	
Manufacturer	Fluidwell bv
Enclosure	Aluminum enclosure
Degree of protection	IP54
Approvals	ATEX/IECEx: Zone 2 ATEX <Ex> II 3G Ex ec IIC T4 Gc
Ambient temperature	-25 bis +55°C
Inputs	RS485 for the Coriolis sensor
Outputs	RS232 for external printer RS485 for external computer
Operating	6 Push-button, USB, RS485
Billing unit	Kg / Nm³
Power supply	16-27 VDC max. 2W
Dimensions	Enclosure approx. 95 x 240 x 150 mm Weight approx. 2.5 kg
Functionality	– Total quantity delivered (mass) – Total quantity delivered (volume) – Current mass flow rate – Current volume flow rate – Time / Date – Status – Flow alarms – Reset flow meter – Delivery report – Delivery archive, error log, and event log – Flow meter information – (Language selection: German / English / French)
Data logging / Logbooks	– Delivery log – 1440 entries – Event log – 7200 entries – Error log – 2232 entries


150mm
95mm


240mm


M20
M16
M16
30
45
45
45
mm

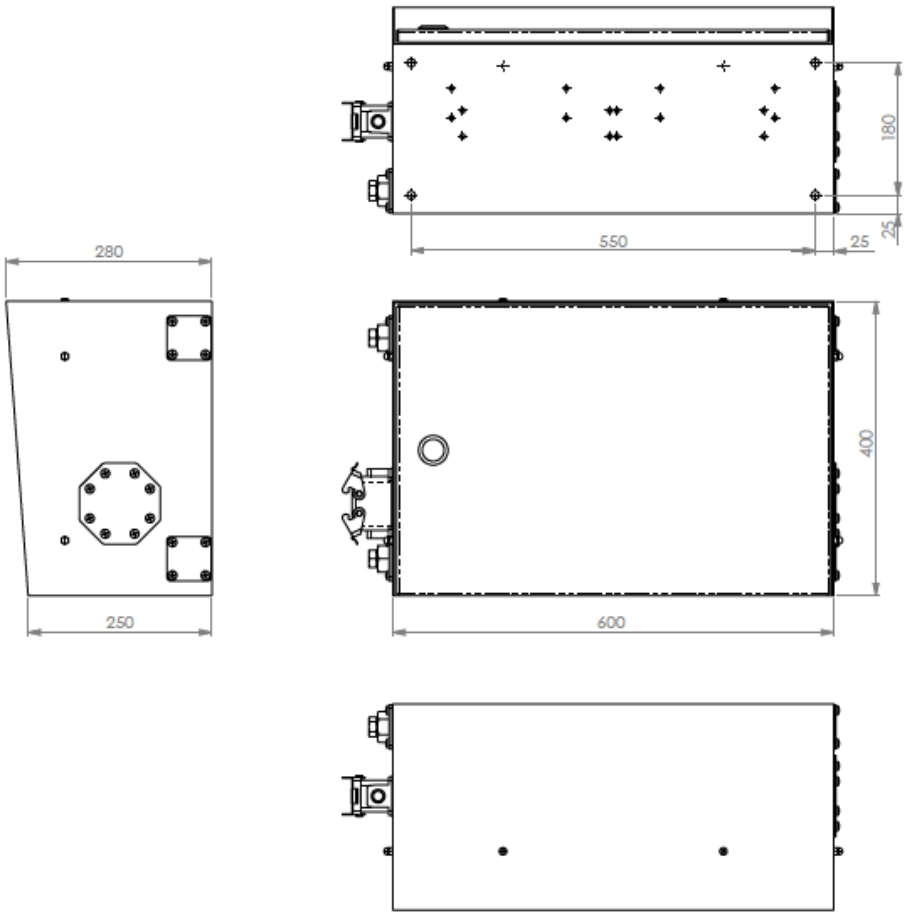

M16
M16
35
45
43

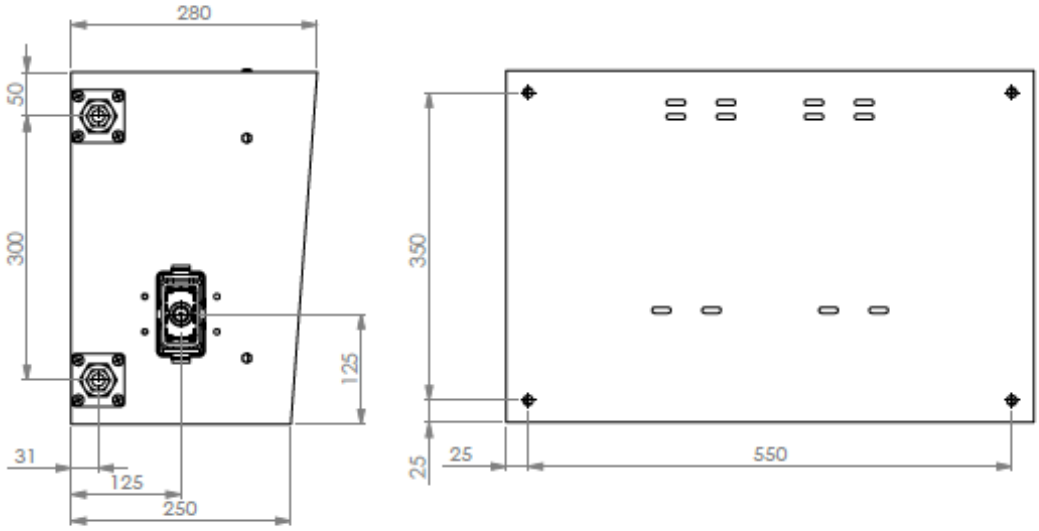

4x M6x10mm
110mm
196mm

Electrical wiring	
Measurement cable	
Length	4 meters, including corrugated protective conduit
Interface	Coriolis and Transmitter
Special features	Blue, UV-resistant, chemically resistant, halogen-free, oil-resistant, low-capacitance, intrinsically safe
Connection cable	
Length	4 meters, including corrugated protective conduit
Interface	Transmitter and Flow computer
Special features	Black, UV-resistant, chemically resistant, halogen-free, oil-resistant, and low-capacitance; includes a 5-meter grounding connection with a protective corrugated conduit.
Power supply cables and communication cables:	
Length	4 meters, including corrugated protective conduit
Interface	Flow computer, power supply, and external PLC
Special features	Flame-retardant, UV-resistant, ozone-resistant, chemically resistant, oil-resistant, free from paint-wetting impairment substances (LABS-free) includes a 5-meter grounding connection with a protective corrugated conduit
Electrical Plug:	- Industrial connector for variations with a housing, 10 Pins - Industrial Connector for variations without a housing, 8 Pins

Housing

Material	1.4301 polished
Dimensions	Width: 600mm Height: 400mm Depth: 280/250mm





Certifications

The devices are supplied with the following certificates:

- Conformity assessment in accordance with the PTB type-examination certificate
  Validity: 2 years
- ATEX- / IECEx- approval for the respective components
- Design in accordance with PED 2014/68/EU Art4 (3) SEP

Documentation

Each system includes the following documentation:

- Maintenance logbook
- Operating manual
- Calibration certificate from Trigas FI GmbH
- Declaration of conformity
- Wiring diagram