Trigas DM

Durchflussmesser-Manufaktur



# GH2+ XXXX-20-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

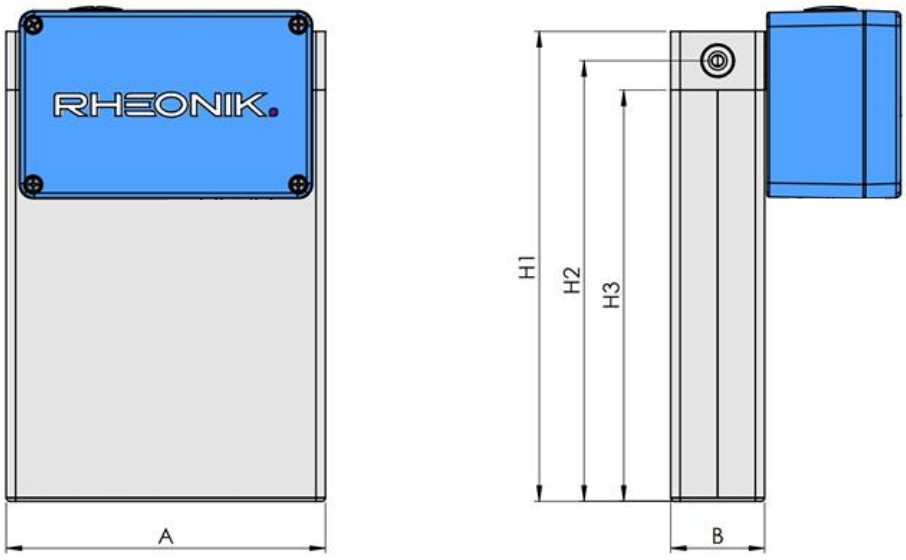
## 2. Technical Data – Overall System

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** | 540/970 bar |
| **$Q_{min}$ (Minimum flow rate)** | 1.00 kg/min |
| **$Q_t$ (Transitional flow rate)** | 5.00 kg/min |
| **$Q_{max}$ (Maximum flow rate)** | 20 kg/min |
| **$Q_{cutoff}$ (Cut-off limit)** | 0.2 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<br>IP66 with Housing |
| **Inputs** | Modbus RS485 |
| **Outputs** | 2 Analog 4-20 mA<br>1 Digital output (Pulse/Frequency/Status; )<br>1 Modbus RTU RS485 for external Computer<br>1 Modbus RS232 for external printer |
| **Certifications and approvals** | ATEX / IECEx Certification<br>PED 2014/68/EU Art4 (3) SEP<br>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<br>- Industrial Connector for variations without a housing, 8 Pins |

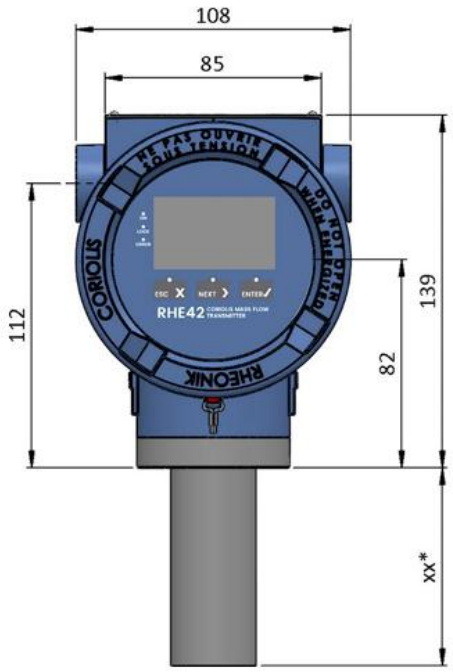
# 3. Components and Technical Specifications

| 3.1 Coriolis flowmeter | |
|---|---|
| **Manufacturer** | RHEONIK Messtechnik GmbH |
| **Coriolis flow sensor** | RHM10 |
| **Housing material** | Stainless-steel |
| **Wetted parts material** | SS 316 / HP160 |
| **Medium** | Hydrogen Gas |
| **Flow range** | 1.00 bis 20 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/970 bar |
| **Approvals** | ATEX/IECEx: Zone 1<br>ATEX: <Ex> II 2G Ex ib IIC T6…T1 Gb<br>IECEx: <Ex> ib IIC T6…T1 Gb<br>PED 2014/68/EU Art4 (3) SEP |
| **Dimensions (A×BxH1xH2xH3)** | 189x58x274x256x240 mm |

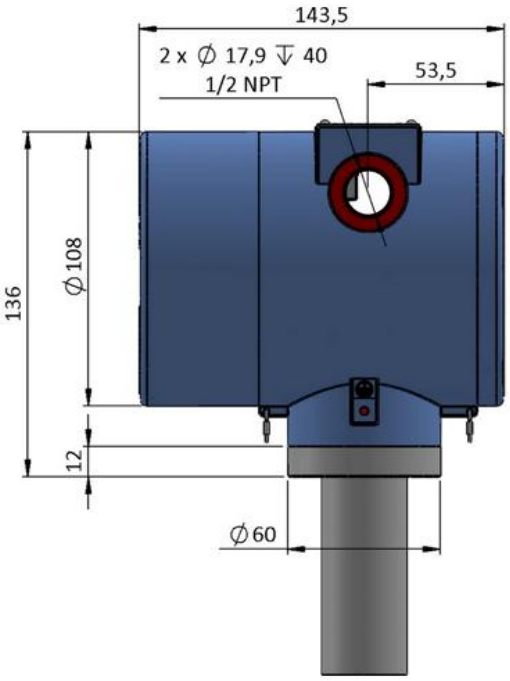


| 3.2 Coriolis Transmitter | |
|---|---|
| **Manufacturer** | RHEONIK Messtechnik GmbH |
| **Type** | E42-RED1-SOEA-A19R-NN-NNH |
| **Enclosure** | Coated aluminum |
| **Model** | RHE42 |
| **Operating temperature** | -20 bis +60°C |
| **Degree of protection** | IP 65 / NEMA 4 |
| **Approvals** | ATEX/IECEx: Zone 1<br>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;<br>– Assurance factor;<br>– API standard volume;<br>– Configuration lockout switch;<br>– Pipe temperature measurement |
| **Outputs** | – 2 analog outputs 4–20 mA,<br>– 2 frequency / pulse / status outputs |
| **Inputs** | – 2 digital signal inputs;<br>– 1 analog input 4–20 mA, active;<br>– All analog inputs/outputs in accordance with NAMUR NE43;<br>– All digital inputs/outputs in accordance with DIN IEC 60946; interfaces: Modbus RS485, HART |
| **Communication interface** | – Modbus RS485<br>– Modbus TCP |
| **Power supply** | 12-24 VDC +/-10% |
| **Cable entry** | 2 x Screw connection ½“ NPT |
| **Weight** | approx. 2.3 kg |

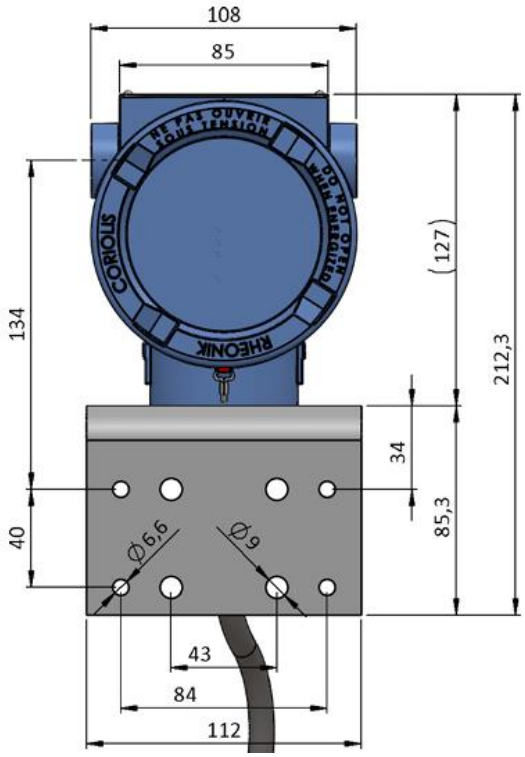
Front view



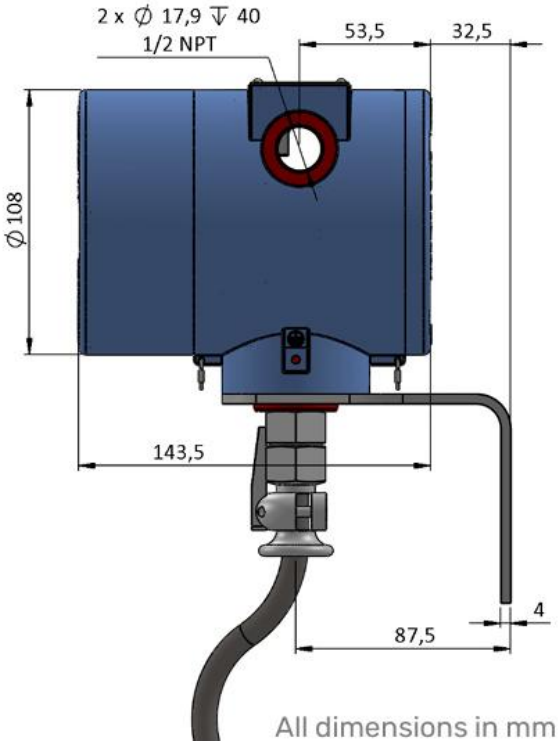

Side view




Back view

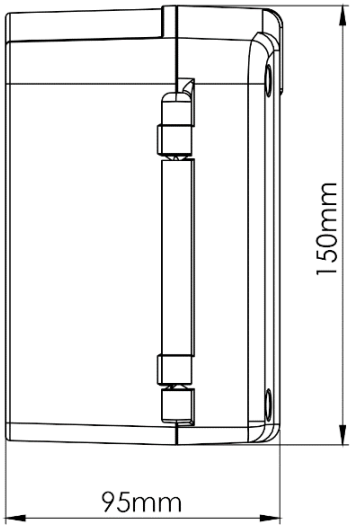


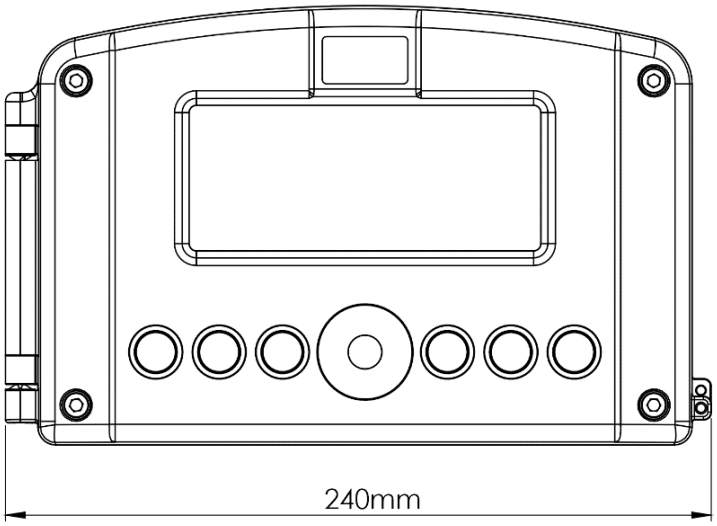

Side view

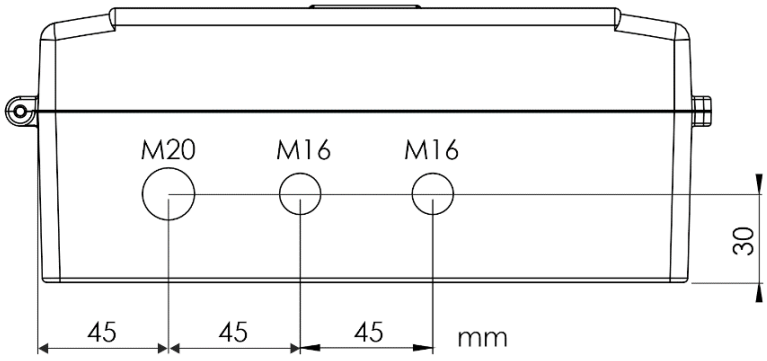


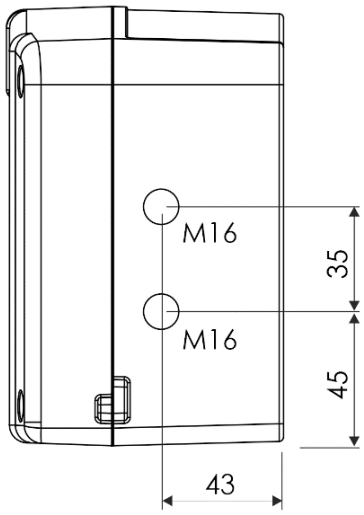

All dimensions in mm

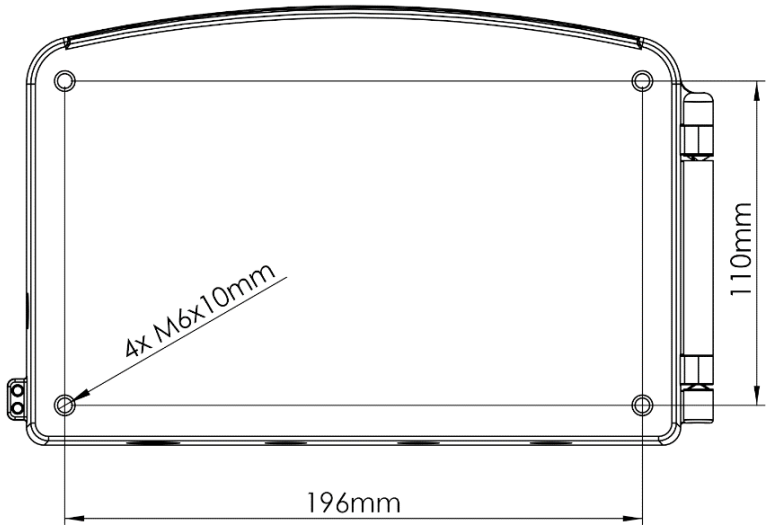
| 3.3 Flow Computer C406 | |
|---|---|
| **Manufacturer** | Fluidwell bv |
| **Enclosure** | Aluminum enclosure |
| **Degree of protection** | IP54 |
| **Approvals** | ATEX/IECEx: Zone 2<br>ATEX <Ex> II 3G Ex ec IIC T4 Gc |
| **Ambient temperature** | -25 bis +55°C |
| **Inputs** | RS485 for the Coriolis sensor |
| **Outputs** | RS232 for external printer<br>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<br>Weight approx. 2.5 kg |
| **Functionality** | – Total quantity delivered (mass)<br>– Total quantity delivered (volume)<br>– Current mass flow rate<br>– Current volume flow rate<br>– Time / Date<br>– Status<br>– Flow alarms<br>– Reset flow meter<br>– Delivery report<br>– Delivery archive, error log, and event log<br>– Flow meter information<br>– (Language selection: German / English / French) |
| **Data logging / Logbooks** | – Delivery log – 1440 entries<br>– Event log – 7200 entries<br>– Error log – 2232 entries |


150mm
95mm


240mm


M20
M16
M16
30
45
45
45
mm

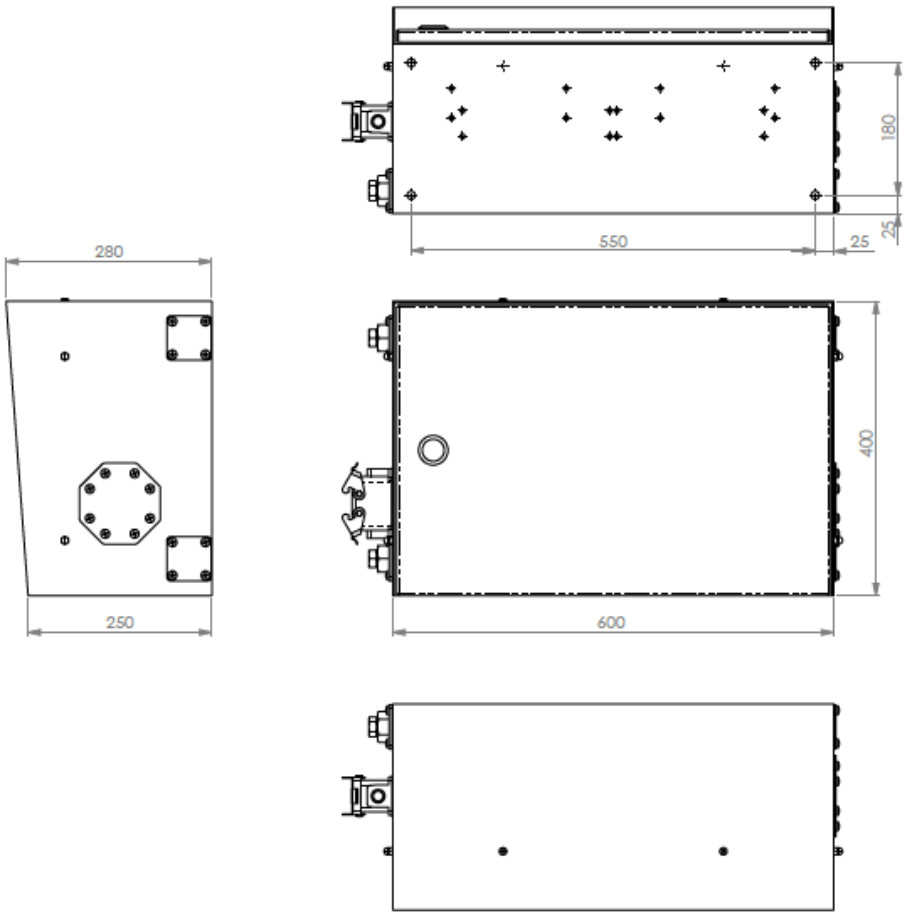

M16
M16
35
45
43

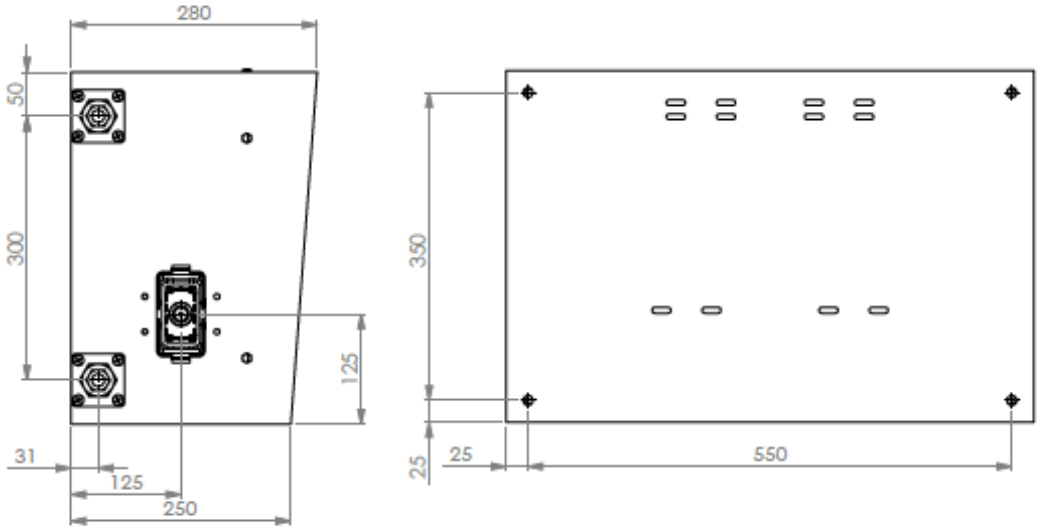

4x M6x10mm
110mm
196mm

| 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;<br>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)<br>includes a 5-meter grounding connection with a protective corrugated conduit |
| **Electrical Plug:** | - Industrial connector for variations with a housing, 10 Pins<br>- Industrial Connector for variations without a housing, 8 Pins |

## Housing

| | |
|---|---|
| **Material** | 1.4301 polished |
| **Dimensions** | Width: 600mm<br>Height: 400mm<br>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