RHE11

Hazardous Area Multifunction Coriolis Flow Transmitter

Features

- Wall or Pipe Bracket Mount
- Built in safety barriers allow operation with RHM sensor in hazardous area
- Selectable Metric and English Units for Mass, Volume, Density and Temperature
- Configurable pulse/frequency output
- Up to two Analog outputs (0/4 – 20/22 mA) individually configurable for Mass, Volume, Density or Temperature
- Configurable digital output for status or alarm
- Configurable digital input for zeroing and totalizer operations
- Connectivity to control systems with optional digital data interfaces: RS485 serial port or HART over analog
- Simple user interface – LCD display and three behind-glass operator buttons with intuitive menu design
- Password Protected Setup
- % solids and concentration measurement
- Live density measurement on meters 1"/DN25 and above
- Unique FIXDENS function allows density calculation with small size meters
- Standard gas volume function
- Power consumption less than 15 W

Applications

- General and critical process flows
- Feed stocks and transfers

Benefits

- Works with all sizes of Rheonik RHM flow sensors
- Remote electronics provides tremendous installation flexibility

RHE11 General Specifications

Housing:	316Ti stainless steel
Enclosure Rating:	IP 66 / Type 4X
Ambient Temperature:	-20°C to +60°C (-4°F to +140°F)
Dimensions:	255 x 199 x 236 mm (10.04 x 7.83 x 9.29 in)
Display:	High contrast LCD, 16 characters, 2 lines
Operation:	3 behind-window photosensors for all menu navigation and settings
Sensor Connection:	Integral sensor cable with 2m or 10m length. Optional terminal box for separate custom length cable connection available
Analog Outputs:	Up to 2 active outputs, configurable for 0-20, 4-20, 4-22 (fail high) or 3.7-20 mA *(fail low)*
Digital Outputs:	1 passive opto-isolated open collector type, max current 50 mA *(requires external power supply and site installed current limiting/pull up resistors)*
Pulse/Frequency Output:	1 passive opto-isolated open collector type, max current 50 mA, max frequency 10 kHz *(requires external power supply and site installed current limiting/pull up resistors)*
Digital Inputs:	1 passive galvanically isolated opto-coupler type. Max voltage 24 VDC
Power Supply:	230 VAC, 115 VAC or 24 VDC +/- 10%
Digital Data Communications (Optional):	Simple ASCII protocol over RS 485 or HART over analog output 1
Cable Entries:	4 x M20/25 x 1.5 or 4 x ½"/¾" NPT
ATEX Approval:	Transmitter: Ex II 2(1) G Ex db eb [ia Ga] IIC T5 Sensor: Ex II 1 G Ex ia IIC T1-T6
Weight:	10 kg (22 lb)

Hazardous Area Installation Overview

	Zone 0	Zone 1	Zone 2
ATEX			

Part Number Code E (transmitter) and AT (sensor)

Firmware Program Features

Fixed Density Function

Smaller Coriolis meters do not provide enough resolution for accurate density measurement. Because of this, small Rheonik meters are shipped with density functions disabled. The Fixed Density function allows density to be generated based upon line temperature. Users to enter a base/ reference density at a known temperature and a coefficient describing the change per temperature unit. The firmware in the transmitter calculates flowing density based upon this information to use for volumetric flow calculations. This method is accurate and repeatable.

%Solids Measurement

The transmitter can be configured to generate a %Solids measurement based upon density. A site developed factor is entered into the transmitter and used in conjunction with measured density to calculate the %solids value of the fluid in the meter.

Password Protection

All setup and calibration parameters within the meter are protected with passwords to prevent unintentional or unauthorized change once installed.

Standard Volume Measurement for Gas

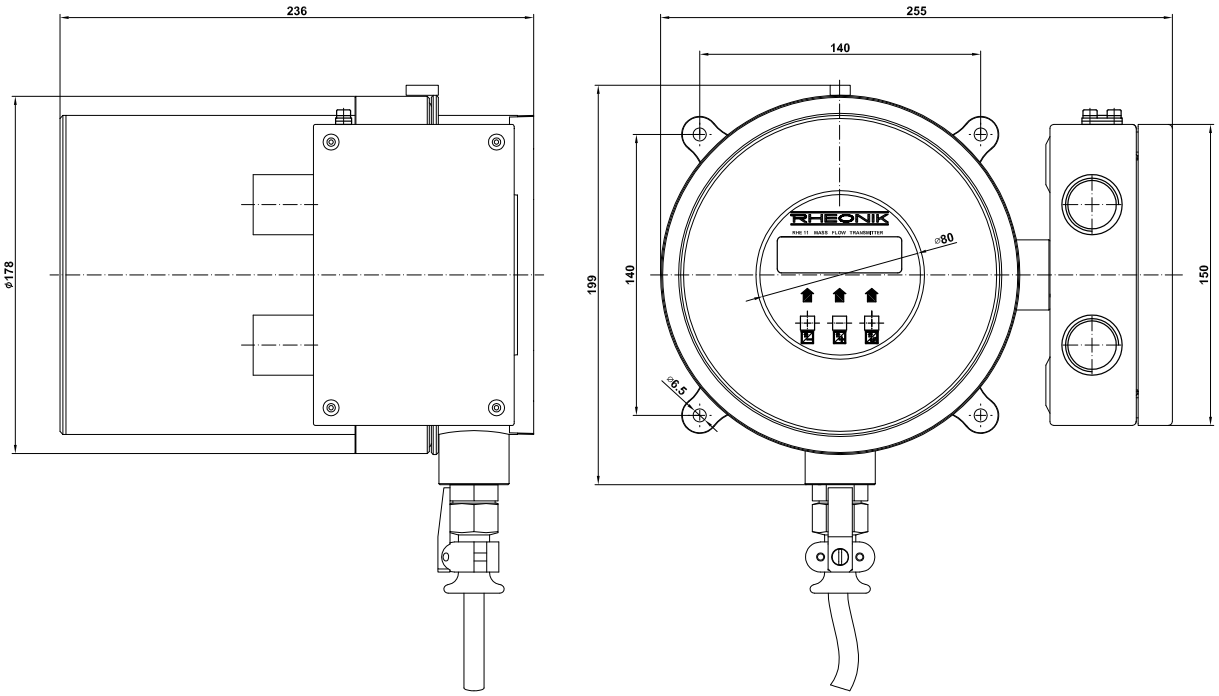
This function calculates the volume of gas passing through the meter at standard conditions. The density of the gas at standard conditions is entered into the transmitter and the volume is calculated using this in conjunction with the flowing mass using the following formula:

$$V_n = \frac{M}{d_n}$$

where:
Vn= standard volume in Nm3
M = mass
dn= standard density for the gas

Standard volume measurement is often required for measurements of natural gas. This useful function replaces the need for an expensive flow computer and removes the need for complex calculations to convert actual volume to standard volume using temperature and pressure.

RHE11 Dimensions



RHE11 Part Number Code

Construction Type

T3	1 terminal box for power and I/O, 2 meter integral sensor cable
T3+	1 terminal box for power and I/O, 10 meter integral sensor cable
T4	2 terminal boxes: 1 for power, I/O and 1 for sensor cable

Supply Voltage

A1	230 VAC
A2	115 VAC
D1	24 VDC

I/O Configuration

IA	2 x 4-20 mA, 1 pulse output, 1 digital output
ID	1 x 4-20 mA, 1 pulse output, 1 digital output, 1 digital input
I0	1 x 4-20 mA, 1 pulse output, RS 485 interface
HH	2 x 4-20 mA, 1 pulse output, 1 digital output, HART
HD	1 x 4-20 mA, 1 pulse output, 1 digital output, 1 digital input, HART

Hazardous Area Approval

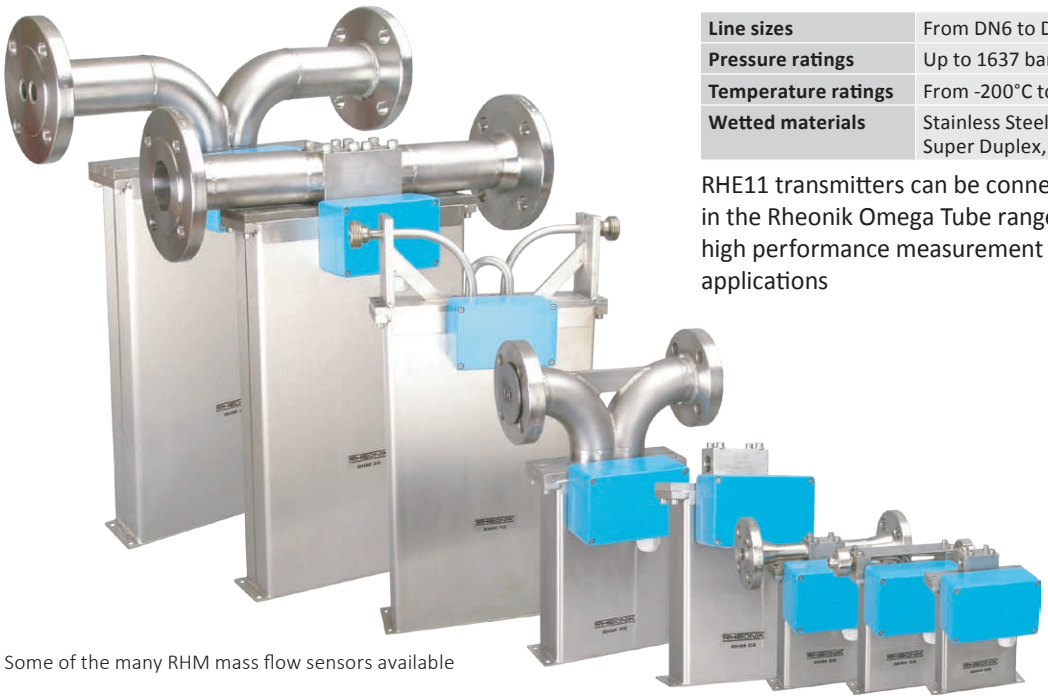
E	ATEX approval Ex II 2(1) G Ex db eb [ia Ga] IIC T5

RHE11				E

RHE11 Accessories

Part Number	Description
ARHE11-H	Mounting bracket set
ARHE-C1	Standard blue PVC sheathed transmitter-sensor interconnecting cable recommended for cable length < 100 meters (< 30 meters for RHM 30 and bigger sensors)
ARHE-C3	High performance blue PVC sheathed steel armoured transmitter-sensor interconnecting cable recommended for cable length > 100 meters. Max. 300m (max. 100m for RHM 30 and bigger sensors) *Requires RHE11 T4 construction type*
Cable Entry Options – (Std. is M25 x 1.5mm)	
ORHE11-E1	½" NPT cable entry option
ORHE11-E2	M20 x 1.5 cable entry option
ORHE11-E3	¾" NPT cable entry option

Flow Sensor Range



Some of the many RHM mass flow sensors available

The RHM range of mass flow sensors features

Line sizes	From DN6 to DN300 / ¼" to 12"
Pressure ratings	Up to 1637 bar / 23741 psi
Temperature ratings	From -200°C to 350°C / -328°C to 662°F
Wetted materials	Stainless Steel, Alloy C22, Duplex, Super Duplex, Tantalum, Others

RHE11 transmitters can be connected to all RHM Flow Sensors in the Rheonik Omega Tube range. Together they make a high performance measurement package suitable for many applications

For specific details on any size of meter, please see the relevant specification sheet.

About Rheonik

Rheonik has the single purpose: to design and manufacture the very best Coriolis meters available. Our research and engineering resources are dedicated to finding new and better ways to provide cost effective accurate mass flow solutions. Our manufacturing group care for each and every meter we produce from raw materials all the way to shipping and our service and support group are available to help you specify, integrate, start-up and maintain each and every Rheonik meter you have in service. Whether you own just one meter or have hundreds, you will never be just another customer to us, you are a valued partner. Need a special configuration for your plant – don't compromise with a "standard" product from elsewhere, if we can't configure it from our regular product range, we can build you what you need as a custom meter.

Rheonik only make Coriolis meters – we are **The Coriolis Experts** – contact us for all of your Coriolis meter requirements.