RHE07/RHE08

Multifunction Coriolis Mass Flow Transmitter Series

Features

- Wall mount or rack mount versions
- 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
- Dual Analog outputs (0/4 – 20/22 mA) individually configurable for Mass, Volume, Density or Temperature
- Configurable digital outputs for status and alarm
- Configurable digital inputs for batch control, zeroing and totalizer operations
- Connectivity to control systems with optional digital data interfaces: RS422, RS485, RS232 or HART over analog
- Simple user interface – LCD display and three pushbuttons with intuitive menu design
- Password protected setup
- Single stage and two stage batch control functions
- Brix measurement
- % 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
- RHE07c double pulse output version available for dispenser applications

Applications

- General and critical process flows
- Filling, batching and dispensing
- Feed stocks and transfers

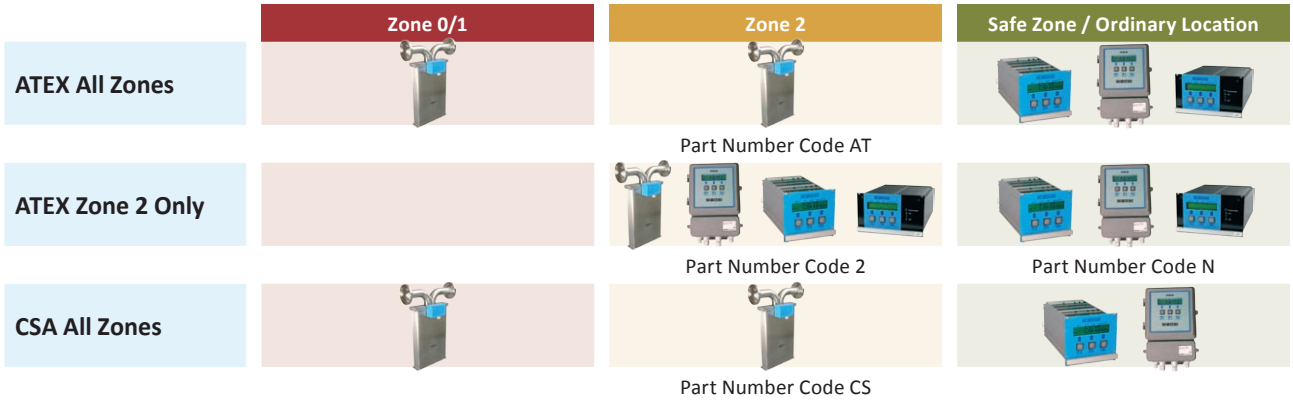
Benefits

- Different packages with the same operation and menu structure – only one instrument to learn and operate
- Common spare parts
- Works with all sizes of Rheonik RHM flow sensors
- Remote electronics provides installation flexibility

RHE07/08 General Specifications

	RHE07	RHE08	RHE07c
Housing:	Type 4 DIN cassette, 3U high x 28HP wide, 19" rack/panel mount	Coated aluminium wall mount	Type 4 DIN cassette, 3U high x 42HP wide, 19" rack/panel mount
Enclosure Rating:	IP 20	IP 65	IP 20
Ambient Temperature:	-20°C to +60°C (-4°F to +140°F)		
Dimensions:	142 x 128 x 256 mm (5.59 x 5.05 x 10.08 in)	332 x 218 x 146 mm (13.07 x 8.58 x 5.75 in)	213 x 128 x 300 mm (8.39 x 5.05 x 11.81 in)
Display:	High contrast LCD 16 characters, 2 lines		
Operation:	3 pushbuttons for all menu navigation and settings		
Analog Outputs:	2 active outputs, configurable for 0-20, 4-20, 4-22 *(fail high)* or 3.7-20 mA *(fail low)*		
Digital Outputs:	3 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:	RHE07/08: 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)* RHE07c: Double pulse 90° phase shifted outputs		
Digital Inputs:	2 passive galvanically isolated opto-coupler type. Max. voltage 24 VDC		
Power Supply:	230 VAC, 115 VAC or 24 VDC +/- 10%		24 VDC +/- 10%
Digital Data Communications:	Simple ASCII protocol over RS422, RS485, RS232 or HART RHE08 only) over analog output 1		Simple ASCII protocol over RS232
Cable Entries:	N/A	4 x M20/25 x 1.5 or 4 x ½"/¾" NPT	N/A
ATEX:	1) ATEX approval Ex II(1) G [Ex ia Ga] IIC – use with ATEX sensor Ex II 1 G Ex ia IIC T1-T6 Ga in Zone 0/1 *(transmitter installed in safe area only)* 2) ATEX rating EX II 3 G Ex nA IIC T4 Gc – use with ATEX rated sensor Ex II 3G Ex nA IIC T1-T6 Gc in Zone 2 *(transmitter installed in Zone 2)* 3) Unlabeled transmitter installed in safe area can be used with ATEX rated sensor Ex II 3 G Ex nA IIC T1-T6 Gc in Zone 2		
CSA Approval:	RHE07/RHE08 support sensors in Class 1 / Div. 1 areas (transmitter installed in ordinary locations only)		
Weight:	1.9 kg (4.2 lb)	4.7 kg (10.4 lb)	3.7 kg (8.2 lb)

Hazardous Area Installation Overview



Firmware Program Features

Batch Controller

Each RHE07/08 transmitter is equipped with an onboard batch controller that, in conjunction with external pumps and/or valves allows the precise delivery of a preset mass or volume of process fluid on demand. Operated from the instrument front panel or remotely via operator switches, the controller is configured to utilize either a one stage or a two stage delivery strategy in ensuring the right amount of fluid is batched through the meter. The electronics self-learns, adjusting shut off times as more and more batches are delivered to further refine the amount of delivery, saving material costs and improving quality.

FIXDENS 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.

BRIX Measurement Capability

The unit can be configured to read out in °Brix. Used extensively in the sugar industry, knowing the concentration of sugar solution as well as its flow rate is critical for plant operation and end product quality. The RHE07/08 firmware set produces a °Brix value from the measured density in the flow sensor.

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:

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

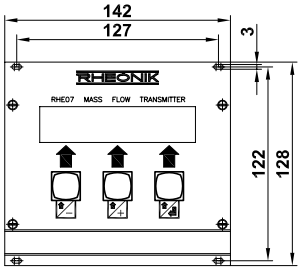
where:
Vn= standard volume in Nm3
M = mass
dn= standard density for the gas

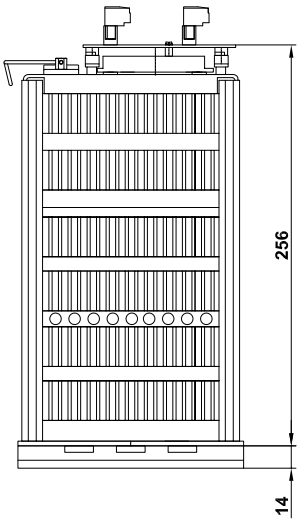
Standard volume measurement is often required for measurements of natural gas. This useful function replaces the need for an expensive flow computer and removes the need for complex calculations to convert actual volume to standard volume using temperature and pressure.

Password Protection

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

RHE07 Rack Mount Transmitter / Dimensions





The RHE07 is designed to sit in a standard 19" Eurocard style rack. The transmitter has two Eurocard connectors on the back to allow the unit to be plugged into an integrated rack system directly. For standalone applications, the RHE07 is easily adapted to panel mount and has a screw terminal adapter accessory to allow field wiring to be connected directly to the rear of the unit.

The RHE07 transmitter can be used with an RHM sensor in a hazardous area (RHE07 in safe area). CSA certified versions of the RHE07 must be mounted in a safe area.

RHE07 Part Number Code

Supply Voltage

A1	230 VAC
A2	115 VAC
D1	24VDC

Communications Interface

NN	No communications interface
I0	RS485 (9 pin female D-type socket)
I1	RS422 (9 pin female D-type socket)
I2	RS232 (25 pin female D-type socket)

Hazardous Area Approval

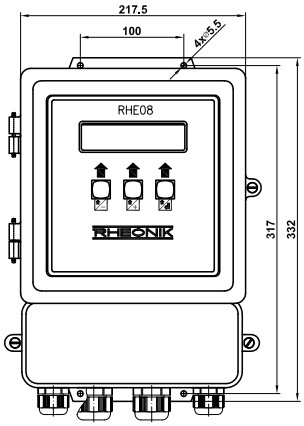
N	None
2	ATEX rating Ex II 3 G Ex nA IIC T4 Gc (transmitter in Zone 2)
AT	ATEX approval Ex II(1) G [Ex ia Ga] IIC (transmitter in safe area)
CS	CSA Class 1, Div 1, Gr. BCD (transmitter in ordinary location)

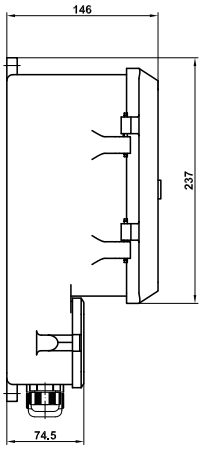
RHE07 [ ][ ][ ]

RHE07 Accessories

Part Number	Description
ARHE07-A	Eurocard screw terminal aadapter (required for new installations)
ARHE07-PC	RHECom ASCII communicator software incl. 9 pin D-type to 25 pin D-type serial cable for RS 232 interface option *(for RS 422/485 option an additional 3rd party 25pin to 9 pin adapter will be required)*
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)

RHE08 Field Mount Transmitter / Dimensions





The RHE08 transmitter is designed for field mounting. With a weatherproof exterior, the RHE08 can be wall or panel-front mounted. The UV resistant display window will not crack, craze or cloud over time. Externally mounted buttons provide convenient operator access to all process variables and setup information. Cable entries are adaptable for flex, armoured cable or conduit and all terminations are accessible through a separate cover plate.

The RHE08 transmitter can be used with an RHM sensor in a hazardous area (RHE08 in safe area or in Zone 2). CSA certified versions of the RHE08 can be mounted in a Class 1, Div 2 area.

RHE08 Part Number Code

Supply Voltage

A1	230 VAC
A2	115 VAC
D1	24VDC

Communications Interface

NN	No communications interface
I0	RS485 (9 pin female D-type socket)
I1	RS422 (9 pin female D-type socket)
I2	RS232 (25 pin female D-type socket)
HH	HART

Hazardous Area Approval

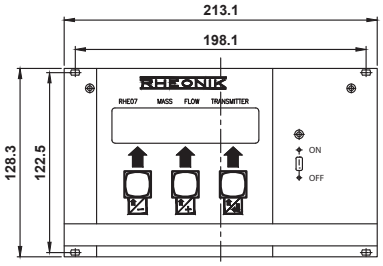
N	None
2	ATEX rating: Ex II 3 G Ex nA IIC T4 Gc (transmitter in Zone 2)
AT	ATEX approval Ex II(1) G [Ex ia Ga] IIC (transmitter in safe area)
CS	CSA Class 1, Div 1, Gr. BCD (transmitter in ordinary location)

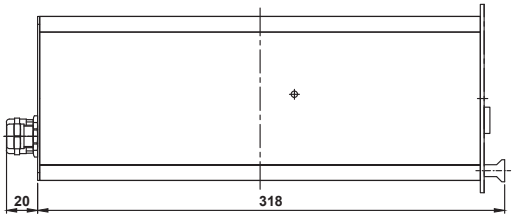
RHE08 [ ] [ ] [ ]

RHE08 Accessories

Part Number	Description
ARHE08-PC	RHECom ASCII communicator software incl. 9 pin D-type to 25 pin D-type serial cable for RS 232 interface option (for RS 422/485 option an additional 3rd party 25pin to 9 pin adapter will be required)
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)
Cable Entry Options – (Std. is M25 x 1.5mm)	
ORHE-E1	½" NPT cable entry option
ORHE-E2	M20 x 1.5 cable entry option
ORHE-E3	¾" NPT cable entry option

RHE07c Dual Pulse Output Version / Dimensions





The RHE07c is a modified version of the RHE07 that provides a second pulse output 90 degrees out of phase with the standard output and the facility to physically lock and apply a seal to the unit so that the configuration of the instrument cannot be tampered with.

The RHE07c transmitter can be used with an RHM sensor in a hazardous area (RHE07c in safe area).

RHE07c Part Number Code

Supply Voltage

D1 24VDC

Communications Interface

NN No communications interface

I2 RS232 (25 pin female D-type socket)

Hazardous Area Approval

N None

2 ATEX rating: Ex II 3 G Ex nA IIC T4 Gc (transmitter in Zone 2)

E ATEX approval Ex II(1) G [Ex ia Ga] IIC (transmitter in safe area)

RHE07c [ ] [ ] [ ]

RHE07c Accessories

Part Number	Description
ARHE07-PC	RHECom ASCII communicator software incl. 9 pin D-type to 25 pin D-type serial cable for RS 232 interface option *(for RS 422/485 option an additional 3rd party 25pin to 9 pin adapter will be required)*
ARHE-C1	Standard blue PVC sheathed transmitter-sensor interconnecting cable recommended for cable length < 100 meters (< 30 meters for RHM 30 and bigger sensors)
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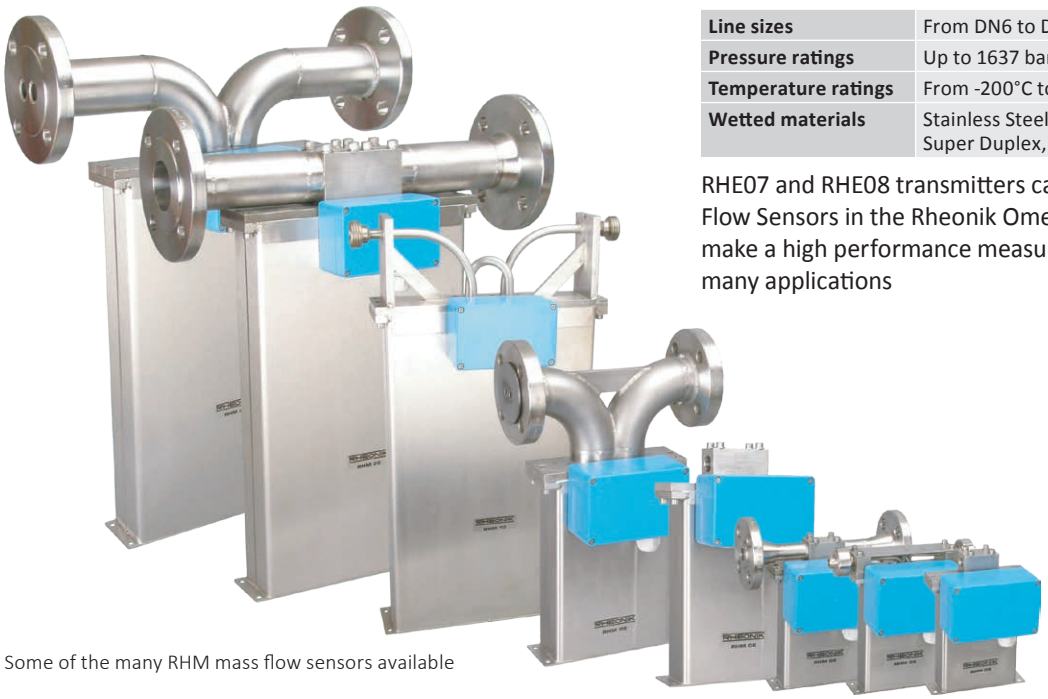
Flow Sensor Range



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 / 23743 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

RHE07 and RHE08 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.