



EN Corus Evo Compact Gas Volume Converter

Safety and basic installation instructions

810-2010-03

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Product Description

The Corus Evo Compact is an Electronic Gas Volume Converter (EVC) designed to receive volume pulses from the gas meter, and considering pressure, temperature and compressibility, convert volume measured at metering conditions (V_m unconverted) to volume at base conditions (V_b converted). The device can be supplied as a P, PT or PTZ version, where P = Pressure, T = Temperature, Z = Super-compressibility.

The device has an LCD with menus and submenus that can be navigated by means of a keypad. Some configuration is possible through the keypad, though service software Wincor Evo is used primarily to configure and customise the device as required. Some areas are protected by a service switch and/or password. Metrological areas are protected by a switch and seal. Optional higher level security encryption is also available.

The device has been designed, and assessed by third party notified bodies where necessary, to meet all relevant EU directives and related EN standards. The device is marked accordingly, allowing placement on the EU market.

Example:



Directive 2014/32/EU (MID), Type examination certificate:

TCM 143/25 - 6003

IECEx Certificate of Conformity:

IECEx FTZU 25.0003X

Directive 2014/34/EU (ATEX), Type examination certificate:

FTZU 25 ATEX 0004X



Explosive Atmospheres Safety Marking:



II 1G Ex ia IIB T4 Ga

without internal modem



II 2G Ex ib IIB T3 Gb

with internal modem

Environmental

Mechanical classification: M2

Electromechanical classification: E2

Ingress protection: IP66

Climate: -25 to 70 °C*

Open or closed location, condensing and non-condensing humidity

*(optional -40 to 70 °C, refer to nameplate)



Pressure Range: refer to device nameplate, and pressure sensor label as multiple variants are available. Pressure sensors are Absolute reference.

Installation



Safety Measures

Only trained competent persons working in accordance with the specifications, safety regulations and EN standards may install and operate the device. All legal and safety regulations for the installation and use of devices and accessories in potentially explosive atmospheres **MUST** be followed, including the conditions stated in the ATEX certificate.

IP66 rating is valid only when cable glands are tightened correctly on appropriate diameter cable and the enclosure is fully closed. Any unused cable glands **MUST** be plugged.



Location

The device may be operated in ZONE 0 only if "II 1G" category is indicated on the nameplate, and a modem is **NOT** fitted. If a modem is fitted, the device may be placed in ZONE 1. Explosive atmospheres safety marking:



II 1G Ex ia IIB T4 Ga without internal modem



II 2G Ex ib IIB T3 Gb with internal modem



Special Conditions of Use

Under certain circumstances, the plastic enclosure may store an ignition-capable level of electrostatic charge. Therefore, the device shall **NOT** be installed in a location where the external conditions are conducive to the build-up of electrostatic charge. **The equipment shall only be cleaned with a damp cloth.**

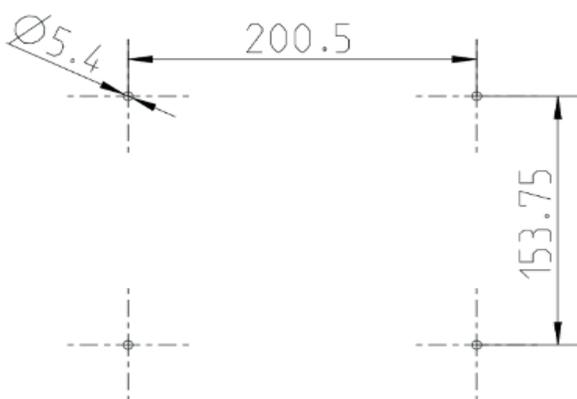


Mechanical Installation

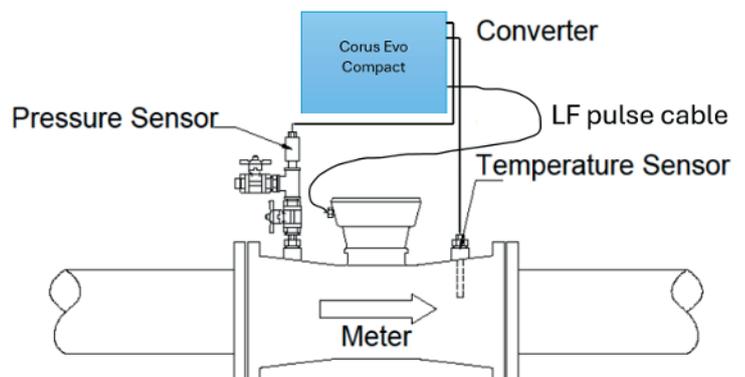
The device can be secured directly to a wall / flat surface, or pipe clamp and bracket assembly.

The pressure sensor should be mounted securely to the pressure tapping (Pm) of the gas meter by means of a valve assembly to provide isolation and a test point for measurement. If a Pm tapping is not available, connection should be made as close upstream to the gas meter as possible and be representative of line pressure, not affected by filters, strainers or pipe bends etc. The pressure sensor is available in various connection types, and it is the responsibility of the installer to use the correct seals or sealing tape to ensure a gas-tight fit.

The temperature sensor should be mounted in a thermowell so that it may be removed for checking without disturbing the gas flow. The thermowell should be partly filled with heat conducting liquid with a freezing point below that of the environment. The position of the thermowell and temperature sensor should be downstream on the meter tapping (Tm) or within 3D (3x diameter of gas pipe) of the gas meter.



Mounting holes dimensions (mm)





Power Supply and Batteries

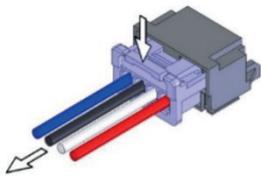
The device can be powered by battery or by optional dedicated external power supply **PS-E** at the PWR1 terminals. **ONLY** batteries prescribed by the manufacturer and identified in the ATEX certificate for the device may be used, namely **SAFT LS33600**, **EVE ER34615C** or **Tekcell SB-DO2**. Batteries for the device should remain in place when an external power supply is used.

The optional modem (where fitted) is powered separately from the main device, either by battery or by optional dedicated external power supply **PS-M** or **PS-M1** at the PWR2 terminals. There are various modems available. **ONLY** batteries prescribed by the manufacturer and identified in the ATEX certificate for the particular modem may be used. Refer to the product manual for further details.

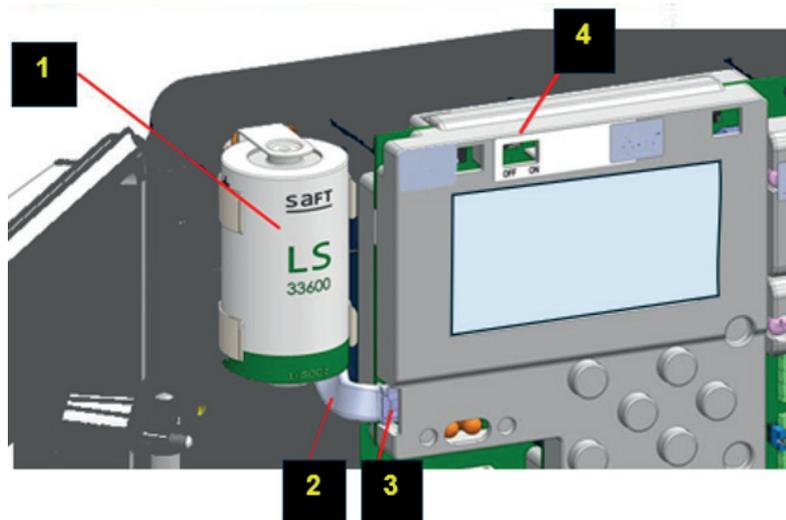
Both the device and modem battery can be replaced in the potentially hazardous area.

The device can be supplied either in an operating state with the battery connected, or in an off state with the battery disconnected. In reference to the diagram below, the battery (1) fits into retaining clips with the positive terminal at the top. A ribbon cable (2) connects the power to the PCBA using connector (3). The battery connector is a locking type, and will “click” into place. To remove, press down to disable the locking mechanism and pull the connector gently out of the socket.

1. Battery cell
2. Battery connection cable
3. Cable connector
4. Service switch



Cable connector



Configuration

Customisable parameters are assigned using the Wincor Evo software. In addition, some configuration can be performed via the device keypad in the “**CONF**” menu on the LCD. The keypad is used to navigate to the menu. Configuration is typically protected by a password defined by the customer at the time of purchase. When using the keypad to enter the password, the first three digits represent the password level being requested and the following six digits are the password. Example “**821-123456**” where **821** = User level and **123456** is the customer’s specific password.



Connections to Terminals

Only approved and certified intrinsically safe devices (where safety parameters are compatible, see Annex 1) and “simple devices” meeting the requirements of EN 60079-11, may be connected to the device. To connect non-certified products, an approved safety barrier **MUST** be used. The safety barrier **MUST** be physically located in the non-hazardous (safe) area.

Use shielded cables such as LappKabel Unitronic LiYCY. The electrical characteristics of connecting cables must

also be considered with regards to the certified safety parameters, see **Annex 1**. The shielding of the cable can be grounded at the metal cable gland of the device. All cable glands in the device are conductively connected to each other. This ensures high resistance to electromagnetic interference.

Pressure and Temperature Metrology Transducers

Pressure and temperature sensors are connected to IBO P1 and T1 respectively. In case of disconnection/reconnection, all power (i.e. battery and external power supply if fitted) must be disconnected.

Binary Input Connections DIN (E.g. Gas Meter)

The LF pulse from the gas meter is typically connected to DI1. DI2 to DI4 can be assigned for any additional binary input requirements.

Binary Output Connections DOUT



For third party devices connected to DOUT terminal strip that provide greater than 3.6vdc jumper link JP1 **MUST** be removed or risk damage to the device.

Jumper link **MUST** be removed when connecting **B-DO**. Jumper link should remain in place when connecting **Dresser Chatterbox-e**.

DO1 and DO2 provide two assignable digital outputs. E.g. a pulse output for Vm or Vb. Outputs must be configured using service software Wincor Evo. Please refer to the product manual for further information.

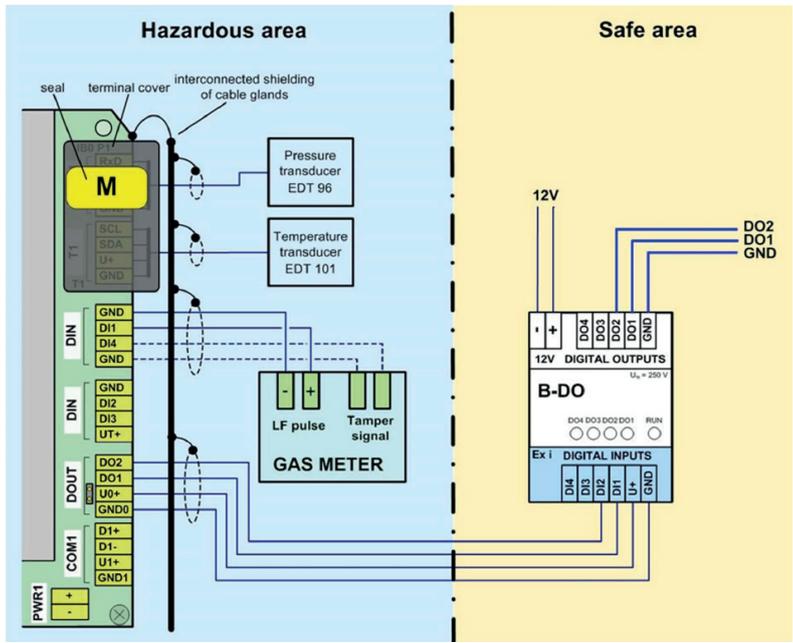
RS232/RS485 Communication COM1

Third party devices with common communication (such as Modbus) must be connected via the B-RS barrier. Please refer to the product manual for further information.

External Power PWR1

A PS-E intrinsically safe power supply can be used to supply external power if required. Please refer to the product manual for further information.

Example with Binary Output Connection DOUT:



Pressure and temperature metrology sensors connected to IBO P1 and T1 terminals. A security cover under an MID seal prohibits access.

The gas meter LF pulse is connected to DI1 and GND, and a tamper signal from the gas meter (if available) is connected to DI4 and GND.

B-DO barrier is connected to the digital outputs to take Vm and Vb pulses safely to a third-party uncertified logger. JP1 **MUST** be removed prior to connection.

Note: The battery powered **Dresser Chatterbox-e** can be used in place of a **B-DO** if external 12V is unavailable. JP1 should remain in place.

Annex 1



Intrinsically Safe Parameters

Digital inputs DIN (terminals: GND, DI1, DI2, DI3, DI4, UT+)

$U_o = 6.5\text{ V}$, $I_o = 2\text{ mA}$, $P_o = 3\text{ mW}$, $C_o = 20\text{ }\mu\text{F}$, $L_o = 10\text{ mH}$

$U_i = 5.5\text{ V}$, $I_i = 1\text{ mA}$, $P_i = 1\text{ mW}$, $C_i = 0$, $L_i = 0$ (not applicable to UT+ terminal)

Digital outputs DOUT (terminals: GND0, U0+, DO1, DO2)

$U_i = 15\text{ V}$, $I_i = 0.3\text{ A}$, $\Sigma P_i = 0.5\text{ W}$, $C_i = 3.3\text{ }\mu\text{F}$, $L_i = 0$

RS485 interface (COM1 terminals: GND1, U1+, D1-, D1+)

$U_i = 10\text{ V}$, $I_i = 0.15\text{ A}$, $\Sigma P_i = 0.33\text{ W}$, $C_i = 4\text{ }\mu\text{F}$, $L_i = 0$

RS232 interface (COM1 terminals: GND1, CTS, RXD, TXD)

$U_i = 20\text{ V}$, $I_i = 0.15\text{ A}$, $\Sigma P_i = 0.46\text{ W}$, $C_i = 1\text{ }\mu\text{F}$, $L_i = 0$

(MTL5051 terminals 1, 2, 5, 6)

External power supply PWR1: (terminals: PWR1+, PWR1-)

$U_i = 6.5\text{ V}$, $I_i = 0.2\text{ A}$, $P_i = 0.41\text{ W}$, $C_i = 2\text{ }\mu\text{F}$, $L_i = 30\text{ }\mu\text{H}$

External power supply PWR2: (terminals: PWR2+, PWR2-)

$U_i = 4.5\text{ V}$, $I_i = 1\text{ A}$, $P_i = 4.5\text{ W}$, $C_i = 9700\text{ }\mu\text{F}$, $L_i = 30\text{ }\mu\text{H}$

Ambient temperature: $-40\text{ }^\circ\text{C} \leq T_a \leq 70\text{ }^\circ\text{C}$

Maintenance, Service and Repair



Special Conditions of Use

Under certain circumstances, the plastic enclosure may store an ignition-capable level of electrostatic charge. Therefore, the device shall **NOT** be installed in a location where the external conditions are conducive to the build-up of electrostatic charge. **The equipment shall only be cleaned with a damp cloth.**



Battery Replacement

Both the device and modem battery can be replaced in the potentially hazardous area.

ONLY batteries prescribed by the manufacturer and identified in the ATEX certificate for the device may be used, namely **SAFT LS33600**, **EVE ER34615C** or **Tekcell SB-DO2**. Batteries for the device should remain in place when an external power supply is used.

Performance Checks

A routine pressure and measurement accuracy check is typically recommended or prescribed by national guidelines. The digital pressure and temperature sensors are calibrated by the manufacturer, and no adjustments are possible by the user.

In the unlikely event that the pressure or temperature measuring sensor, or the overall error of correction, is found to be beyond the allowable MPE (Maximum Permissible Error), please contact your local Dresser Utility Solutions facility for advice.

Repair

For devices sealed under the MID (Measuring Instruments Directive), no repairs are practically possible other than by the manufacturer. Please contact your local Dresser Utility Solutions facility for advice.

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