

Gas Volume Converter CORUS PTZ

- ▶ T, PT, PTZ Gas Volume Converter
- ▶ Large integrated database
- ▶ Compressibility according to AGANX19, S-GERG, AGA 8 or Table of Z
- ▶ RS 232 and optical port for local / distant communication
- ▶ Approved according to the European metrology standard (EN12405)
- ▶ High accuracy on the whole temperature range
- ▶ ATEX approval for installation in hazardous area
- ▶ Autonomous or external power supply
- ▶ Graphic display
- ▶ Possibility to download a new firmware
- ▶ Optional slot for "Ex" internal PSTN modem



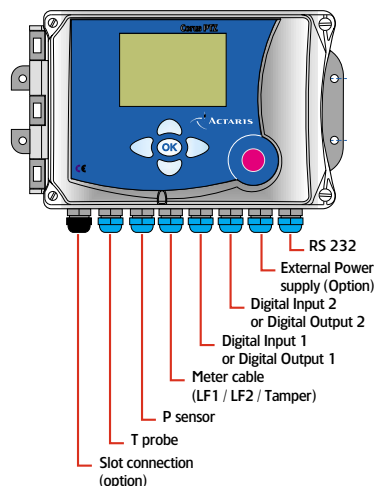
▶ Corus PTZ

Application

CORUS PTZ is an electronic volume converter dedicated to commercial and industrial applications. It converts the actual volume measured by the gas meter to reference conditions. Then, CORUS is a key element in the whole Actaris chain, from the meter to the billing data.

CORUS uses the measured working values of volume, pressure and temperature to provide:

- ▶ the converted volume
- ▶ the conversion factor
- ▶ the compressibility factor (several formulas available)
- ▶ a large database
- ▶ pulse retransmission



▶ Inputs / Outputs

Description

The volume registered by the meter is converted to reference conditions using the formula :

$$V_b = \frac{P_m}{P_b} \frac{T_b}{T_m} \frac{Z_b}{Z_m} V_m$$

Terminology

V_m unconverted volume registered by the meter
 V_b converted volume in the reference (base) conditions
 T_m gas temperature in operating conditions
 T_b reference (base) temperature
 P_m gas pressure in operating conditions
 P_b reference (base) pressure
 Z_m compressibility factor in operating conditions
 Z_b compressibility factor in reference (base) conditions

The CORUS is constructed in an IP65 enclosure, for wall or meter mounting. Thanks to its accurate piezo-resistive pressure sensor and its 4 wires PT1000 temperature probe, CORUS provides an accurate conversion on the whole temperature range.

The CORUS uses state-of-the-art micro-technology: SMD components, Flash memory allowing to download a new firmware.

The CORUS is the base element of a complete and extremely flexible system, perfectly adaptable to customer's requirement:

- ▶ consumption, pressure, temperature monitoring through large database,
- ▶ local programming through 5-button keyboard,
- ▶ many remote reading solutions through PSTN or GSM modem.



▶ DELTA meter with CORUS PTZ



▶ FLUXI 2000 meter with CORUS PTZ

Accessories

- ▶ Configuration software
- ▶ Thermowell
- ▶ 3-Way pressure connection kit
- ▶ Optical head
- ▶ ISB Box with cables
- ▶ External supply "Ex" module
- ▶ Converter F/I for 4/20 mA output

Technical features

▶ Approvals

- Metrology: approval according to EN12405 (European Standard)
- ATEX: device of category 1 approved to be used in hazardous area (zone 0)
- iaIICT4 classification without internal modem
- iaIIBT3 with internal modem
- CE Marking: compliant with 89/336/CE (EMC) and 94/9/CE (ATEX)

▶ Temperature Sensor

- Platinum PT 1000 (1000Ω at 0° C) probe
- Class A accuracy according to EN60751
- Casing: stainless steel tube for insertion into a thermowell (Ø 6 mm)
- Cable length: 2.5m or 0.8 m

▶ Pressure Sensor

- Absolute pressure sensor designed for CORUS application
- Silicon piezo-resistive sensor
- Overpressure up to 150% of Pmax
- Available in 2 ranges:
 - 0.9 to 10 bar absolute
 - 7.2 to 80 bar absolute
- Connection adapter: 1/4" BSP (Gas) male
- Typical Accuracy: <0.3 % of the measurement on the whole pressure and temperature range

▶ Volume Input

- Dry contact, passive LF Reed type switch
- Maximum frequency 2Hz
- Programmable input pulse weight (0.01, 0.1, 1, 10, 100)
- Second LF input for coherence function
- Associated tampering detection input

▶ Compressibility

- Main formulas available:
 - S-GERG
 - AGA8
 - AGANX19
 - AGANX19 modified
 - Table of Z

▶ Accuracy

According to EN12405, overall accuracy on conversion factor is better than $\pm 0.5 \%$ at reference conditions and better than 1% at rated operating conditions.

▶ Display and keyboard

- Graphic display
- All metrologic data and alarm status available
- Translatable labels
- Specifics icons for application (see page 3)
- Possibility to show graphs for P, T, Z, C, Qm, Qb
- 5-Button keyboard
- Possibility to program main parameters by keyboard
- Possibility to display the whole database

▶ Digital Inputs (On/Off1, On/Off2, Tamper)

- Activation / deactivation by programming
- Normally open or normally closed programmable status
- Connection to any On/Off signal type (Station door contact, Safety valve position, Pressostat,...)

▶ Digital Outputs

2 Digital, isolated outputs fully programmable as:

- Unconverted volume pulse transmission
- Converted volume pulse retransmission
- Alarm retransmission
- 4/20 mA output (through an external F/I "Ex" module)

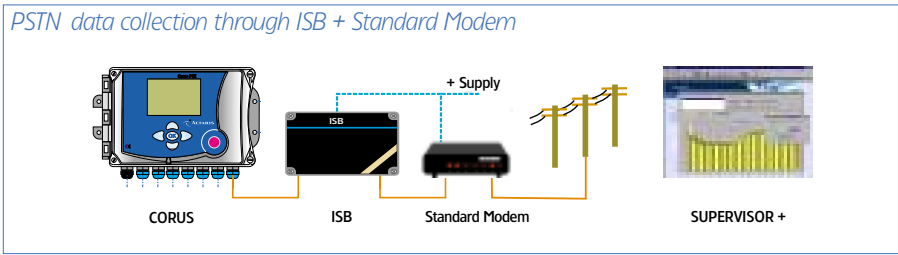
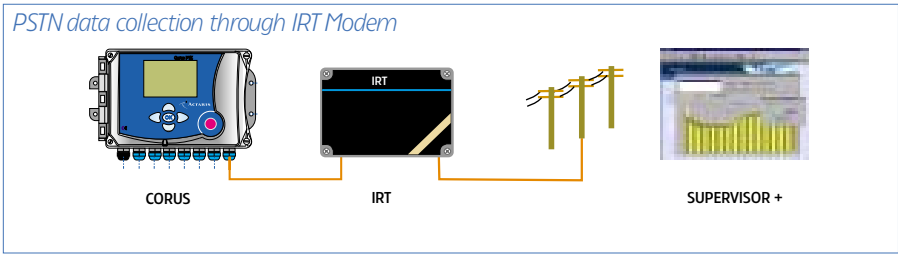
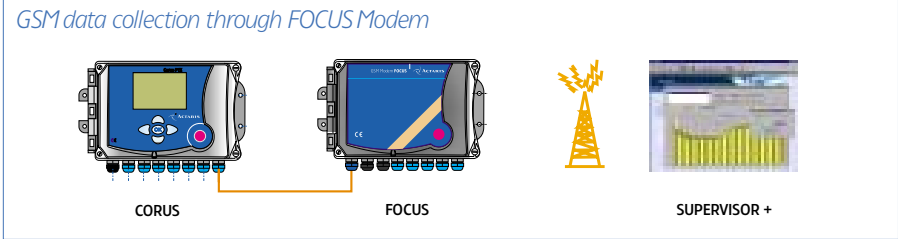
▶ Alarms

The following alarms are managed by the CORUS:

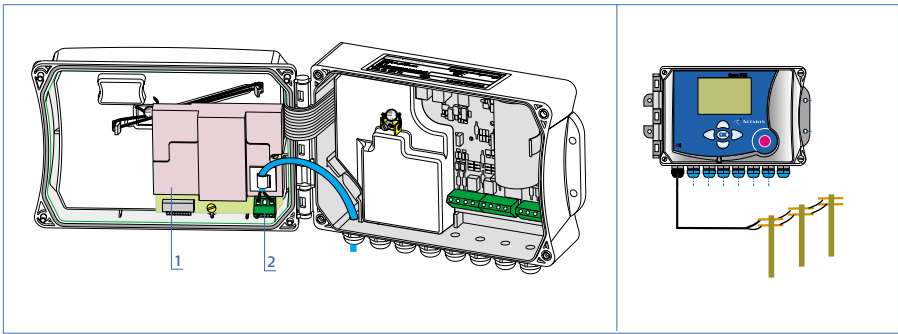
- Temperature (Min, Max, Sensor failure)
- Pressure (Min, Max, Sensor failure)
- Conversion factor (Min, Max)
- Unconverted and converted flow-rate (Min, Max)
- Coherence
- Interval consumption
- Tamper
- On/Off 1 and On/Off 2
- External power supply cuts

System Overview

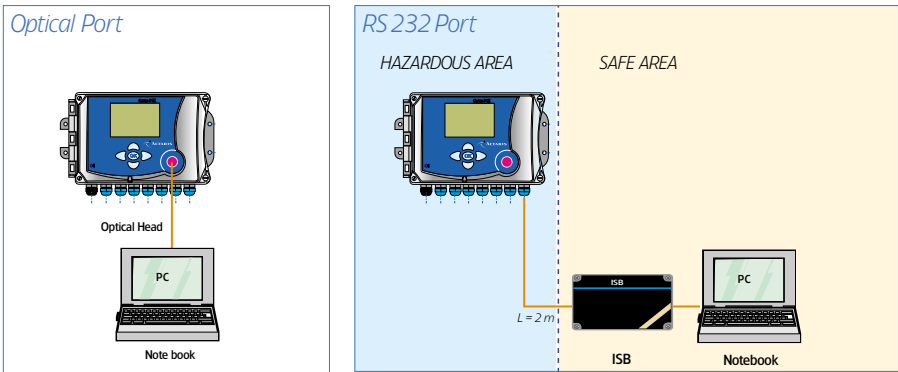
► Distant communication through external modem (Connection to CORUS RS 232 port)



► Distant communication through internal "Ex" PSTN Modem



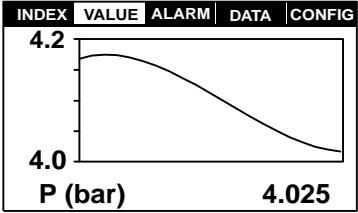
► Local communication through optical or RS232 port



Possibility to translate messages

INDEX	VALUE	ALARM	DATA	CONFIG
	Unconverted volume : 19348725.000 m3			
	Converted volume : 24284651.283 Nm3			

Graphic display function

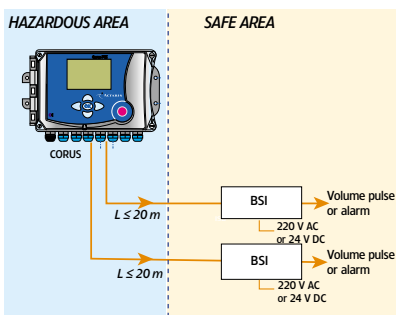
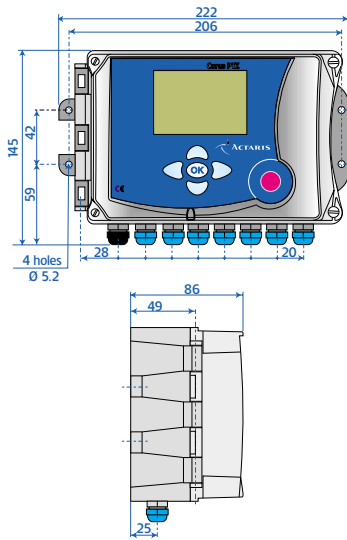


Specific icons for CORUS applications

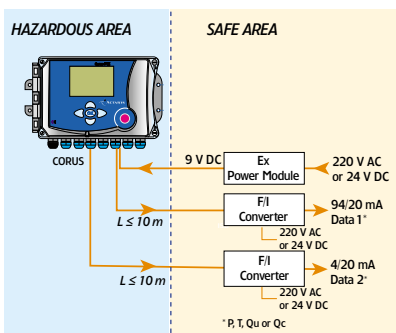
- Battery supply mode and status
- External supply mode and status
- Alarm presence (active, memorized)
- Incoming pulse from meter
- Pressure alarm (active, memorized)
- Temperature alarm (active, memorized)
- Communication in progress

► Graphic Display

Dimensions



► Configuration with pulse outputs



► Configuration with 4 / 20 mA

Main Specifications

Overall accuracy of the C factor	Maximum Error < 0.5 % - Typical Error < 0.3%
Conversion range	Pressure: 0.9 bar to 80 bar - Temperature: according Z formula
Power supply	Battery or external (through Ex module)
Autonomy	5 years (battery version) in typical conditions
Ambient temperature range	-25° C to +55° C
Enclosure	IP65 polycarbonat box
Volume input	LF input (2 Hz max); Reed switch type Second input for coherence function
Temperature sensor	PT1000 class A; 4 wires
Pressure sensor ranges	[0.9 / 10 bar] and [7.2 / 80 bar]
Pressure sensor type	Piezo-resistive sensor
Outputs	2 Channels fully configurable as pulse, alarm or 4/20 mA (through external F/I converter)
User Interface	Graphic display + 5 with button keyboard
Communication	Optical serial port and RS232 serial port
Metrol. cables length (P, T, LF)	2.5 m or 0.8 m
Option	Internal "Ex" PSTN modem (V22bis)

Database

CORUS provides 6 different logs:

- Hourly log: last 1440 hours (2 months)
- Daily log: last 124 days (4 months)
- Monthly log: last 24 months
- Interval log:
 - from 3100 to 5900 records
 - according selected data
 - interval programmable from 1 to 60 mn
- Event log: last 800 events
- Parameter log: last 200 records

Ordering information:

- Pressure range
- Formula for Z calculation
- LF input cable type
- Battery or external supply
- Metrologic cables length
- Language for display
- Accessories

Power supply

- Battery operating or external supply mode
- Battery:
 - Specific 19 A.h lithium battery pack including all required protections for intrinsic safety
 - Pack can be changed in hazardous area without interrupting the normal operation of the device
 - 5 years autonomy in typical conditions
- External power:
 - External "Ex" specific supply module required providing 6 to 12 V DC to the CORUS
 - Main battery (19 A.h) remains in the product, acting as backup battery in case of main cuts.

Actaris SAS

Rue des Temps Modernes - BP 23
86361 Chasseneuil-du-Poitou Cedex - France
For more information, www.actaris.com

tel +33 (0)5 49 62 70 00
fax +33 (0)5 49 62 70 89