PTZ-BOX 5.0

Gas volume and energy electronic conversion device with intergrated GSM 2G/3G modem

PTZ-BOX is a gas volume corrector that enables PTZ, PT or T conversion. The device is designed to measure volume, energy and flow of gas. Primarily battery powered with the possibility to connection to an external power supply. The device converts the volume of gas counted by the gas meter (turbine, rotary, diaphragm) into the base conditions. Gas compressibility factor is calculated with the use of algorithms SGERG-88, MGERG-88, AGA8-92DC, AGA8-G1, AGA8-G2, AGA NX-19 mod or constant value of relative compression factor. PTZ-BOX is an intrinsically safe device ready to be installed in explosive hazardous zone 0.

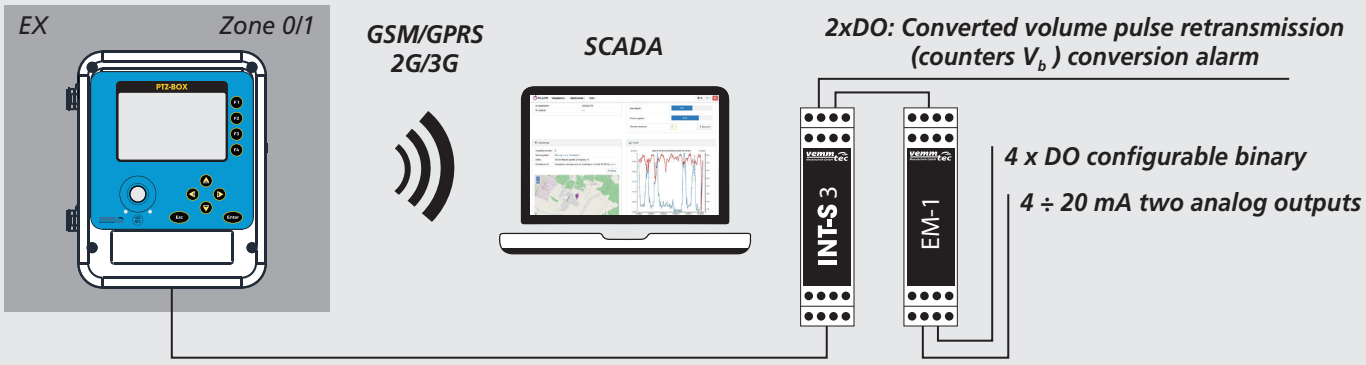
Main features of the PTZ-BOX

- Industrial housing cooperates with various types of gas meter like turbine, rotary, diaphragm directly by LF, HF, Namur, Encoder, Wiegand
- 4 independent serial transmission ports (2 x RS485 + optica interface 62056-21+ NFC IEC 14443)
- Built-in GSM/GPRS modem (option)
- Backlit graphic display
- 5 configuable binary Ex inputs
- 2 configuable binary NAMUR Ex inputs (working on batery mode)
- Binary and frequency outputs
- Eco power operatio mode
- Internal or external pressure transducers available
- 10 years of archivable registered data storage (with monthly sampling interval)

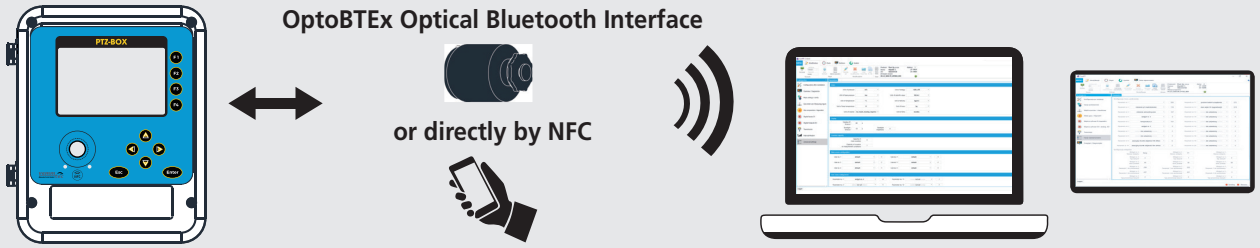
Communication

1. Direct transfer of data to system – Data readout through internal GSM/GPRS modem with the use of internal batteries

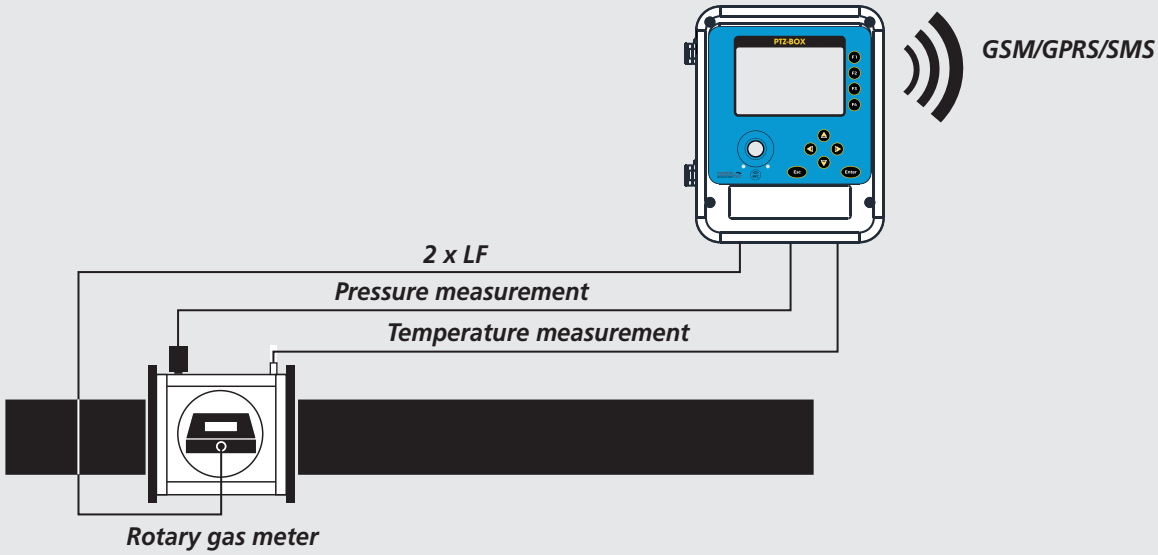
2. Remote data readout – connection through communication interfaces INT-S3 and extension module EM-1



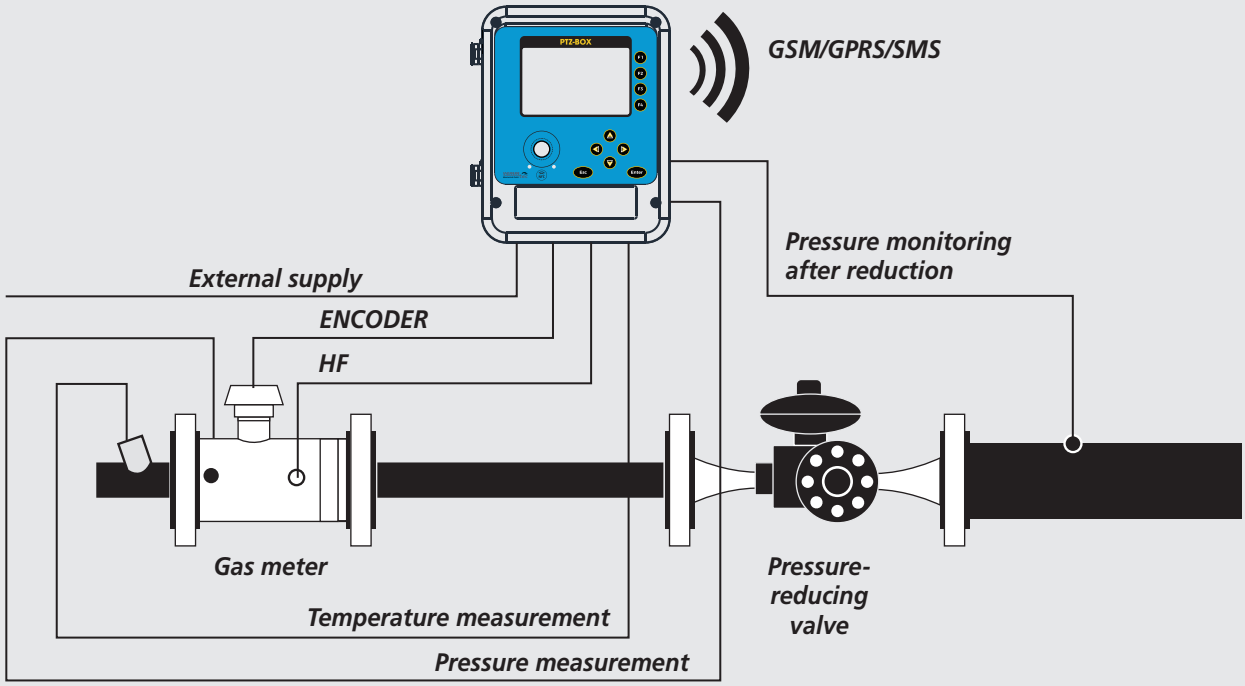
3. Local readout and configuration



4. Process of measurement using PTZ-BOX (with external pressure sensor) and rotary gas meter



5. Process of measurement using PTZ-BOX and turbine gas meter



PTZ-BOX accessories

INT-S3 | Transmission interface

Performs as an external power supply to the intrinsically safe measurement device (located in stationary telemetric systems that are supplied from 230 V or a battery that is located in explosive zone 0, 1, or 2). Additionally, data is transmittable to a readout device (i.e. computer) via RS485 port.

IM-1 | Extension module

Extends the functionality of PTZ-BOX by adding two additional current outputs operating in 4-20 mA current loop and four binary relay type outputs. Can operate as a standalone device as it has its own parameters that can be modified remotely using MODBUS RTU transmission protocols. Data readout and modification can be performed with the use of SCADA system.

EM-2 | Extension module

Extends the functionality of the PTZ-BOX by adding eight additional digital inputs that operate as a namur type or co-operate with Potential-free connector. Can also operate as a standalone device as it has its own table of parameters for remote modification using MODBUS RTU transmission protocols. Data readout and modification can be performed with the use of SCADA system.

OptoBTEx | Opticalgaz-Bluetooth Interface

A wireless transmitter of data from compatible devices. The transmission is performed through Bluetooth 2.1+ EDR Class 2 standard. Data is transmitted to a compatible device, which has IEC 62056-21 standard and the readout software installed (usually a mobile device running MS Windows or Android operating system). OptoBTEx does not modify data and wireless communication is performed in Bluetooth 2.1+ EDR Class 2 standard.

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Technical specification

Dimensions	197 x 181 x 82 mm
Weight	1,3 kg
Housing material	Polycarbonate enclosure
Relative humidity	max 95 % at temp. 55 °C
Ambient temperature range	-25 °C +70 °C, battery Saft LS33600, Tadiran SL2780 -25 °C +50 °C, battery EVE 34165
Housing protection class	IP 66 (for outdoor installation)
Keyboard	10 pushbuttons
Display	LCD-graphic 128 x 64 pixels, with backlight, 4"
Ex classification	Ⓔx II 1G Ex ia IIB T4 Ga certificate FTZU 17 ATEX 0165X
Internal EVC supply	D-size lithium battery 3,6 V/17 Ah (up to 3 batteries), operating time: One battery: 5 years
Internal GSM supply	Two D-size lithium batteries 3,6 V/17 Ah, operating time: 5 years (two communications per day)
External supply	• Intrinsically safe power supply and transmission interface INT-S3 (RS485, Supply output 5.7 V, 2 digital inputs/outputs OC type, Supply input 11 ÷ 30 V DC)
Transmission ports	• 2 independent serial transmission ports, speed up to 115 200 b/s: COM1, COM2 standard RS-485 • Optical Interface IEC 62056-21 • NFC interface IEC 14443 • GSM/GPRS 2G/3G (option)
Transmission protocols	MODBUS RTU, MODBUS TCP (in version with internal modem), MODBUS RTU (MASTER MODE) Other protocols can be used on request.
Environment conditions class (Mechanical/Electromagnetic)	M2/E2
Base conditions	Adjustable by authorized service personnel, available options: • Base pressure (absolute) pb: range (1,00 ÷ 1,02) bar, default 1,01325 bar • Base temperature Tb: range (270 ÷ 300) K, default 273,15K (0 °C) • Reference temperature for combustion process T1: range (270 ÷ 300) K, default 298,15 K (25 °C)
The maximum permissible error (MPE) according to standard „EN 12405-1"	0,5 % at reference conditions 1 % at nominal operating conditions typical error < 0,15 %
The maximum permissible error (MPE) according to standard „EN 12405-2"	ECD Class B
Used algorithms for calculations of compression factor	SGERG-88, MGERG-88, AGA8-92 Detailed Composition, AGA8-G1, AGA8-G2, AGA NX-19 mod constant compression factor K1
Registration periods	• Data registered periodically: logging interval from 1 up to 60 minutes – 24000 records • Hourly data: more than 2 years • Daily data: more than 3 years • Monthly data: more than 10 years • Events memory: approximately 4000 records
	Meets the requirements specified in Standard 2004/22/WE (MID)
Inputs	• 5 configurable potential-free contact inputs: - Measuring inputs LF1, LF2 (inputs DI3, DI4) – frequency up to 60 Hz with the possibility of cooperation with Wiegand transmitters, - TS input – tamper switch, normally short (input DI5), - Up to 5 digital inputs (inputs DI1, DI2, DI3, DI4, DI5),1 • 2 configurable NAMUR inputs (inputs DI6, DI7): - 2 HF pulse inputs, frequency 0 ÷ 5000 Hz, - HF2 (DI7) input can work with NAMUR encoder, - Up to 2 NAMUR digital inputs,1 • SCR input for SCR encoder (alternate with DI8 potential-free digital input)

Pressure sensor p1 (internal or external) - measurement range in standard option - up to 6 bar. End of the sensor is a metric screw thread M12 x 1.5 (Ermeto)

Temperature sensor Pt1000 class A or B, 2-wire or 4-wire (with the cable length compensation), diameter 5,7 mm

pressure ranges	Maximum permissible errors for measurements of p		Maximum permissible errors for measurements of t	
(0.8 ÷ 6) bar abs (0.8 ÷ 10) bar abs (2 ÷ 10) bar abs (4 ÷ 20) bar abs (7 ÷ 35) bar abs (4 ÷ 70) bar abs (10 ÷ 70) bar abs (10 ÷ 100) bar abs	20 °C (± 3 °C) ± 0,2 % of measured value	(-25 ÷ 55) °C ± 0,35 % of measured value	20 °C (± 3 °C) ± 0,8 %	(-25 ÷ 70) °C ± 0,13 %

Control outputs	• Pressure sensor p2 (internal, optional) – absolute or gauge, ranges from 0 ÷ 100 mbar g to 10 ÷ 100 bar abs • 2 digital pressure or temperature transducers (external, working on battery mode) • 4 Ex OC type digital outputs (separated): - DO1: configurable – binary or frequency (1 ÷ 1000 Hz), - DO2-DO4: binary

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