PTZ-BOX FCD AMR EXT *EXPANDED CONVERTER WITH INTERNAL MODEM*

Documentation and Technical Specifications

EN ISO
9001
DNV
Certified
Company

vemm tec
Messtechnik GmbH

Advantages

The PTZ-BOX FCD AMR EXT is an expanded electronic converter for gas volume meters for custody transfer. It comes in 3 different models:
- PTZ-BOX FCD AMR: with GSM/GPRS modem
- PTZ-BOX FCD EXT: with extension board for a 2nd gas meter and analogue inputs
- PTZ-BOX FCD AMR EXT: with both the extension board and the GSM/GPRS modem

Some features:
- LF or HF single/dual pulse input or encoder input
- Sensors included, pressure sensor internally or externally mounted
- Additional sensors optionally available
- Software (under Windows™) for configuration and (automatic) read out included

Configurable:
- Calling time slots, service time slots and alarm calls for models with AMR option
- Tariff counters (max. 4) and Energy counter
- Password structure with different access level
- 4 Outputs (digital, pulse or analogue)
- 10 point flow meter curve correction
- Several compressibility calculation methods, including the full composition AGA 8 calculation

Display and buttons

All models are equipped with a display with 128 x 64 pixels and back light. It is operated by the 6 buttons on the front panel. All data and modem functions can be accessed through the buttons at the display. Main data can be changed via the keyboard.

Operation

These models are battery or line powered volume converters for gas measurement applications. Applications are with gas flow meters providing LF/HF pulse or encoder signals. With the measured pressure and temperature the converter calculates the compressibility factor "Z" of the gas as well as the conversionsfactor "C". From these values, it calculates the volume at base conditions and the base flow rate. All calculations are performed according to EN 12405 and AGA 7.

The compressibility factors Z and Zb may be fixed or calculated for natural gas according to:
- AGA NX 19 (mod.)
- AGA 8 G1 or G2
- AGA 8-92 DC (full composition)
- SGERG 88

Base conditions for pressure and temperature as well as the gas composition and other parameters are configurable. Specific approvals might limit the configurability.

Communication

All models can be easily configured and read out by using the included software and a computer. Available serial interfaces are IEC1107 infrared (via USB 2.0 connection), wired RS 232 or RS 485.

The AMR models can be connected to a computer or a network via the internal GSM/GPRS modem. Remote configuration (with password protection) is an included option.

These models can be operated in push mode (PTZ-BOX calls the computer) or in pull mode (computer calls the PTZ-BOX). Each of these modes has its dedicated requirements and settings.

The GASCcomm software is suitable for communication and automatic read out. For bigger systems optional dedicated software is recommended.

Digital Inputs and Outputs

Digital inputs (4, 6 or 8) are configurable as LF-pulse, HF-pulse (max 2) or binary inputs. The EXT models provide 2 or 4 analogue inputs. Encoder input is an option.

Four outputs are available, configurable as:
- Binary output
- Pulse output (adjustable pulse value and pulse length)
- Analogue output (4-20mA) (option)

Memory

All data is stored in FLASH memory that provides capacity for independent configurable records:
- 25 monthly records
- 400 daily records
- Configurable archive with programmable intervals of 1 second to 1 hour (size depending on configuration)
- Binary, extremes and settings archive for the traceability of changes
- Billing archive and Tariff counters

Power Supply

The converter part of these models is powered with a standard lithium battery; typically life time 6 years (at normal use). Low battery level generates an alarm 90 days before the battery change is required. Line powering is possible. The use of HF gas meter sensors always requires line powering. Please enquire for intrinsically safe power modules.

The modem part of the AMR models has a dedicated battery. The life of this battery mainly depends on the communication settings but will last for at least 5 years with usual settings. The AMR2 modem unit can be line powered as an option.

Documentation and Software

All models come with:
- Installation, Operation and Maintenance Manual (as PDF-softcopy) and GASCcomm software for configuration and (automatic) read out by computer
- Specification sheet with the pre-set parameters of the measuring system and calibration factors
- Calibration certificate (when ordered)
- Printed IOM Manual (when ordered)

Installation

These converters can optionally be supplied with mounting equipment. A thermowell with weldolet, a 2-way or a 3-way valve can be included in the order.

For the best metering practice the temperature sensor should be located close to the gas meter: Downstream of a gas turbine meter or upstream of a rotary gas meter. The pressure sensor should be connected to the pressure reference point at the gas meter (the use of a 2-way or a 3-way valve is recommended).

The AMR models need a suitable GSM/GPRS signal for communication. For communication via GSM you need a GSM/GPRS modem connected to your computer system. Both the modem and the SIM cards (not provided) need to be enabled for CSD.

For communication via GPRS you need a computer connected to internet with a static IP address. The use of a VPN is preferred. The SIM card (not provided) need to be enabled for GPRS. In certain operation modes the SIM card needs to have a static IP address.

Verification and Calibration

The factory verification certificate is usually sufficient when a calibration document is required.
Legal calibration certificates for separate countries can be provided on request.

Optional Equipment

- Additional pressure or temperature sensors
- Infrared head with cable to be used for easy read out and configuration via computer (USB or serial connection)
- Cables for connecting RS 232 or RS 485
- Intrinsically safe communication modules and power supplies (also combined, several models available)
- Analogue output module 4 – 20 mA (one for each analogue output)
- Thermo-wells, 2-way valves, 3-way valves and other accessories
- Gas meters of all kinds
- An alternative antenna for cases that GSM/GPRS signal is not sufficient

PTZ-BOX FCD EXT AMR

PTZ-BOX FCD AMR EXT: Technical specifications

PTZ-BOX FCD model **Modem** if required: - Battery powered - Battery and line powered	AMR AMR2	AMR AMR2	AMR AMR2
Extension card	**No**	**EXT1**	**EXT2**
- No. of gas meters	1	1 or 2	1 or 2
Inputs			
- Pulse or binary	4	6	8
- Pressure sensors (analogue)	1	1 or 2	1
- Temp. sensors (analogue)	1	1 or 2	1
- 4 to 20 mA input	No	2	4
- Optional digital P or T sensors	1	2	2
Outputs			
- Digital, pulse or 4-20mA	4	4	4

Enclosure	Dimensions: 307 x 222 x 87 mm Weight: 1.5 kg Material: Lexan® IP 65: According to EN 60529
Operating conditions	Temperature: -25 to +60 °C Ambient temperature: -25 to +70 °C Storage temperature: -40 to +85 °C

Power	- Standard SAFT Lithium battery
	  (D-size 3.6V / 17 Ah)
	  Life time with battery power: 6 to 8 years
	  typically (depending on the conditions)
	  Optional: External power supply (IS)
	- Life time modem battery pack (AMR
	  version): 5 years (depending on
	  communication settings)

Inputs Pulses	4 or 6 digital inputs for pulse or status, single or dual pulse stream of 1 or 2 gas meters, LF (Reed, Wiegand) or HF (NAMUR) signals, encoder input (HF signals require external power)
Pressure	1 or 2 internal or external pressure transmitter. Standard ranges: Limited ranges:[2]) 0.8 - 5.2 bar(a) 0.8 – 2.5 bar(a) 2.0 - 10 bar(a) 1.5 – 5.2 bar(a) 4.0 - 20 bar(a) 3.0 – 10 bar(a) 7.0 - 35 bar(a) Extended ranges: 14 - 70 bar(a) 0.8 - 10 bar(a) 4.0 - 70 bar(a) [2]) Not MID approved Connection: 6 mm Ermeto M12x1.5
Temperature	1or 2 temperature sensor Pt-1000, ø 5.9 mm. As an option 1 or 2 digital sensors can be added.

Display and buttons	Graphical LCD display with backlights (128 x 64 pixels), showing all settings and values. 6 buttons for navigation. Configuration via Keypad is possible.
Calculation	Calculations according to EN 12405 and AGA 7. Compressibility according to: AGA NX 19 (mod) AGA 8 G1 or G2 AGA 8-92 DC (full composition) SGERG 88 or fixed value
Sample frequency	Measurement period can be set between 1 and 60 seconds
Accuracy	Base volume: < ± 0.15 % under reference conditions < ± 0.50 % in the whole specified pressure and temperature range
Registers Monthly Daily Configurable Binary archive Extremes Settings	1 MB 25 monthly records 400 daily records Interval selectable between 1 second and 1 hour (The stored values can be chosen for every register.) 500 records of events Records of max. and min. values 500 records of setting changes
Serial outputs	Infra-red port IEC-1107 RS 232 port RS 485 port Communication speed selectable between 9.6 and 57.7 kBd (Infra-red port 9.6 - 38.4 kBd)
Alarms	The error status is fully configurable. Alarms can be raised for high or low values, for internal errors or for external events. Warning message to dispatch computer possible.

Intrinsical safety	Models:
	– with modem and battery power supply:
	  II 1G Ex ia IIA T3 Ga - with modem
	– with modem and line power supply:
	  II 2G Ex ib IIA T3 Gb
	– without modem:
	  II 1G Ex ia IIC T4/T3 Ga

Metrological approval	2004/22/EC (MID) approval TCM 143/15 5277
Software	The included software package enables configuration and automatic read out of devices via modem and computer. Tariff counters, energy counters, communication, archiving and curve correction are user configurable. Values can be exported to standard software packages, to text formats, CSV or to XML. For extended systems dedicated software can be provided.
Data exchange	DCS and Scada systems can access the device via Modbus RTU, TCP/IP or via optionally dedicated protocols.