EK220

Volume conversion device with flexible data logging function and configurable serial interface

APPLICATIONS

- Volume conversion for billing purposes
- Data logging for different applications
- Monitoring of measurement values and station functions

BRIEF INFORMATION

The EK220 is a battery-operated volume converter. The device records the low frequency operating volume pulses of a gas meter, measures the operating pressure and temperature of the gas and calculates the compressibility K as well as the conversion factor C. The standard volumes, standard flow rates and operating flow rates can be calculated using this initial data.

The volume converter consists of a central unit with either an integrated or external pressure sensor and a temperature sensor. The sensors are permanently connected to the unit. The compressibility K can be programmed as a constant for all gases or calculated according to various methods of calculation.

The device is also available without a pressure sensor and can be used as a temperature conversion device. In this case the gas pressure for the volume conversion will be considered with a fi xed value, which has to be configured during the commission of the device.

The EK220 can be used in many applications in the field of natural gas measurement and station monitoring thanks to four digital outputs, a flexible data logging function in conjunction with a freely configurable serial interface and different communication protocols.

Additional components for explosion-proof isolation of the interfaces and the intrinsically safe external voltage supply, and for data communication, extend the range of use of the volume converter.

STATION MONITORING

In addition to volume conversion and data logging, the EK220 may be used for the flexible data recording of different measurements and, in conjunction with either a modem or RTU, for system monitoring.

Two additional digital inputs can be used for registering and monitoring the signal sensors such as the safety shut-off valves on regulators, the differential pressure switches in filters or for a simple door contact. The signals from such sensors can be saved in an archive as an event and can also be sent as a spontaneous message by text message or by e-mail via a connected modem.

MAIN FEATURES

- T, PT, PTZ volume conversion
- Conforms to European standard EN 12405
- MID approval
- Compressibility calculated in accordance with different methods
- Flexible, integrated data logging function
- High accuracy
- Mains-free operation
- Suitable for use in Zone 1 hazardous areas
- Three digital inputs
- Four freely programmable, sealable digital outputs
- Various communication protocols
  - IEC 62056-21
  - Modbus
  - IDOM
- Optical interface for parameterisation and readout (IEC 62056-21)
- Integrated serial interface can be used as RS232 or RS422/RS485

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EK220 VOLUME CONVERSION DEVICE WITH FLEXIBLE DATA LOGGING FUNCTION AND CONFIGURABLE SERIAL INTERFACE

TECHNICAL DATA	
Order number	83462550
Housing	Cast aluminium, wall or meter mounting
Dimensions	H 126 mm x W 120 mm x D 90 mm (not including connections)
Weight	Approx. 1.5 kg (including batteries)
Metrological approval	Conforms to the European standard EN 12405-1:2005 +A2:2010 MID DE 17-MI 002-PTB 002 volume conversion device (PTZ-conversion) MID DE 17-MI 002-PTB 003 temperature volume conversion device (T-conversion)
Ex Certification	ATEX Zone 1, II 2 G Ex ia [ia] IIC T4 (with Elster battery type 73015774) or IEC Ex Zone 1, II 2 G Ex ia [ia] IIC T4 (with Elster battery type 73020663)
Protection class	IP 66 (suitable for outdoor installation)
Ambient conditions	Temperature: -25 to +55 ºC
Battery power supply	1 lithium battery 3.6 V, size D (service life › 5 years under standard operating conditions) Optional additional battery to double the service life
External power supply	5 – 10 V DC, I ‹ 30 mA suitable mains power supply unit available (in conjunction with a serial interface)
Control panel	Keypad with 4 buttons
Display	2-line dot-matrix display with plain-text description of the values displayed. All parameters, settings and archived values can be displayed.
Inputs	3 digital inputs for connecting LF pulse generators and message signals (e.g. manipulation contact)
Pressure sensor for volume conversion	Absolute sensor, Type ENVEC CT30*, integrated in housing or, as an option, provided as an external sensor connection for precision steel pipe (Ermeto 6L) or flexible pressure tube, M12 x 1.5 thread Pressure ranges 0.7 – 2 bar / 0.8 – 5 bar / 1.4 – 7 bar / 2 – 10 bar / 2.4 – 12 bar / 4 – 20 bar / 6 – 30 bar / 8 – 40 bar / 14 – 70 bar / 16 – 80 bar *alternative Absolute sensor, Type 17002 provides as an external sensor (cable length 2.5 m) Connection 1/4 " NPT male thread Presseure range 0.9 – 7 bar / 0.9–10 bar
Temperature sensor	Pt-500 (or Pt-1000 as an option) resistance thermometer to DIN 60751 with protective tube, Fitting length 50 mm Ø 6 mm, length of supply cable 2.5 m
Compressibility	Calculation in accordance with S-GERG 88, AGA 8 DC, AGA 8 (GC1 or GC2), AGA NX-19, AGA-NX19 following Herning & Wolowsky or fixed
Archives	2 monthly archives, 1 daily archive, 1 measurement archive (content and recording interval are fi xed) 1 process data archive, 1 measurement archive, 4 additional fl exible archives (content, recording interval and additional events which cause a record can be selected)
Logbooks	Event logbook (Storage capacity 500 records) - Recording of non-periodic events (e.g. time changes with time stamp) Change logbook (audit trail, Storage capacity 200 records) - Recording of all parameter and value changes (time stamp, old and new values) Certifi cation data log (Storage capacity 50 records) - Recording of changes of certain parameters and values (time stamp, old and new values), which are normally under the access rights of the calibration lock
Signal outputs	4 digital transistor outputs, freely programmable and protectable via calibration lock as - Pulse output for all operating or standard volume meters - Signal output for alarm and/or warning status information
Data interface	Optical interface in accordance with IEC 62056-21 Internal serial interface usable as RS232 or RS422/RS485
Communication protocols	- IEC 62056 21 (IEC 1107) - Modbus ASCII / RTU / TCP - IDOM-Protocol - SMS

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