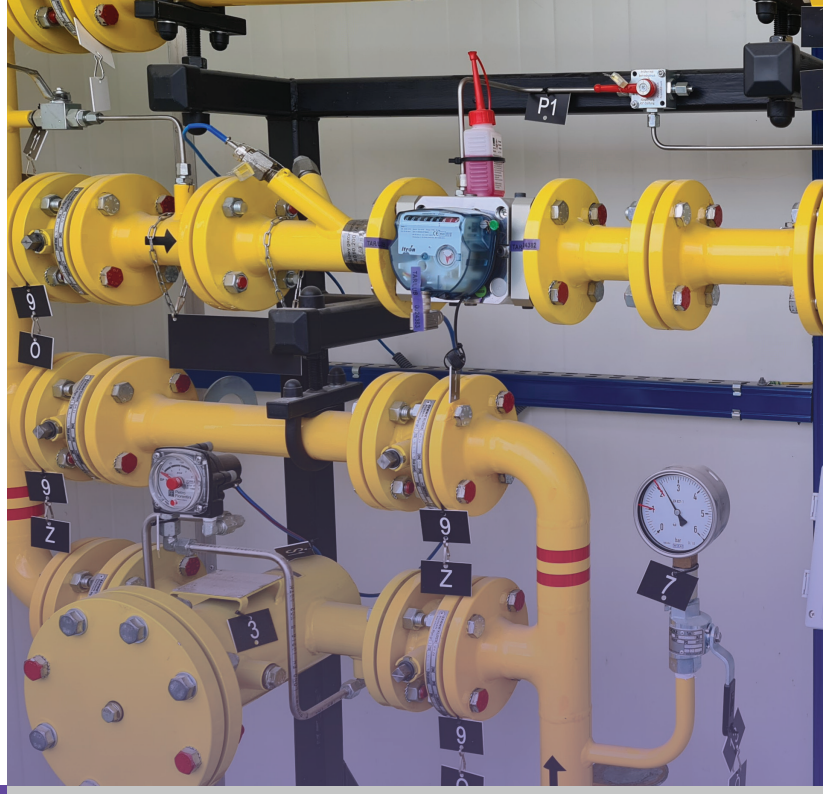
plum GAS



ProVEC 1

gas volume and energy corrector

ProVEC 1 Electronic Volume Corrector is a complete measurement unit designed for installation in Class 1 Div 1.

ProVEC 1 can be used in wide applications extending typical volume conversion thanks to variety of measurement and diagnostic inputs available in standard hardware variant.

Additional dedicated interfaces, modules and sensors are extending ProVEC 1 to be a significant part of meter installation accuracy and monitoring device instead of only being standard electronic volume conversion device.

key benefits

- real time gas composition acquisition from chromatograph
- remote two-way 4G LTE communication module compatible with various data acquisition platforms
- possibility to add any sensor communicating in Modbus protocol
- quick gas meter load diagnostics by using dynamically generated bar graphs

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edition
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technical data

housing material	poycarbonate
dimensions/ weight	8.5 x 7.6 x 3 in/ 2.9 lb
relative humidity	maximum 95% at temperature of 160 °F
ambient temp. range	from -40 °F to 160 °F
housing protection class	IP66 for outdoor installations
keyboard	6 pushbuttons
display	graphical, 4”, backlight, operation in the full range of operating temperatures
Ex feature	II 1G Ex ia IIB T4 Ga certificate: FTZÚ 17 ATEX 0047X
meets the requirements of 2014/ 32/ UE (MID)	certificates: • DE-19-MI002-PTB004 - Plum PTZ converter • DE-21-M-PTB-0012 - Plum load recorder
internal power supply	3 lithium D-size batteries: • 1 battery to supply volume converter • 2 batteries to supply internal modem (1 battery for aluminium housing in special conditions)
transmission protocols	Modbus RTU, Modbus TCP (available in version with integrated modem), Modbus RTU MASTER MODE, GAZ-MODEM 1, 2, 3 (other protocols per request)
transmission ports	• three independent serial transmission ports COM1 - RS485 or optional RS232, COM2 - RS485 - shared with Modbus MASTER input, baud rate up to 256 kb/s, optical interface IEC 62056-21 • NFC IEC 14443 interface • optional integrated modem 4G LTE/ 2G
resistance to mechanical and electromagnetic conditionse	M2/ E2
base conditions	set by authorized personnel; available options: • base pressure (absolute) pb: range (13.7786÷15.229) psi, default 14.6959 psi • base temperature Tb: range (270÷300,2) K, default 273.15 K (32 °F) • reference temperature determined for combustion process T1: range (270÷300,2) K, default 298.15K (77 °F)
maximum permissible error (MPE) according to standard „EN 12405-1”	• 0.5% at reference conditions • 1% at nominal operating conditions • typical error < 0.15%
maximum permissible error (MPE) according to standard „EN 12405-2”	• ECD class A
algorithms for calculation of compressibility factor	AGA8-92DC, AGA8-G1, AGA8-G2, AGA NX-19 mod, SGERG-88, SGERG-mod-H2 (all algorithms with possibility of using full gas composition), fixed compressibility factor value K=1
horizon of data registration	• data registered in period 1-60 minutes – 36000 records (over 4 years @60min) • hourly data – over 16 months • daily data – over 4 years • monthly data – over 10 years • momentary data (triggered 1-second logging) • alarms/ events memory – over 6000 records

inputs

- up to 6 intrinsically safe, configurable, binary digital inputs, shared with:
  - 2 LF inputs, frequency 0÷2 Hz, WIEGAND standard 0÷60 Hz (option), flow direction detection
  - 1 tamper switch input - normally closed
  - 1 SCR ENCODER input (interchangeable with 1 binary digital input as an option)
- up to 10 intrinsically safe, configurable digital inputs NAMUR type (EN60947-5-6):
  - 2 inputs shared with: 2 configurable HF inputs, frequency 0-5000Hz (temporary working on battery in case of power loss ensure measurement continuity); when not used as HF inputs, work with NAMUR proximity sensors on battery mode. 1 input shared with ENCODER (NAMUR type)
- support for gas meters through LF, HF, ENCODER NAMUR, ENCODER SCR, WIEGAND and 10-point gas meter characteristics correction
-

68 °F (± 5 °F)	**(-40 ÷ 160) °F**
± 0.2% of measured value	± 0.5% of measured value

typical error of p1 pressure measurement: 0.15% of measured value

- temperature sensor Pt1000 class A or B with cable length compensation, four wires, diameter 0.22 in or 0.24 in; maximum permissible error for measurements:

68 °F (± 5 °F)	**(-40 ÷ 160) °F**
± 0.1%	± 0.2%

typical error of temperature measurement: 0.08%

- RS485 Modbus MASTER input (shared with COM2 port; with 3.6 V power supply output) for readout of up to 16 external devices with Modbus RTU output (e.g. digital pressure or temperature transducers, gas chromatograph), capable to operate on battery

control outputs

- up to 4 intrinsically safe, configurable digital outputs (OC type):
  - 1 configurable as binary or frequency (0÷5000 Hz) output
  - 3 binary outputs
- binary outputs triggered by alarm/event or counter (Vb, Vm, E, M etc.)
- frequency output triggered by measured value (p1, t, Qb, Qm etc.)

accessories for ProVEC 1

eWebtel

measurement data acquisition system

The eWebtel system is a platform that collects measurement results intended for comprehensive control of the gas network. It enables the location of devices and allows for graphical visualization of data sent from position sensors, manometers, and recorders.

OptoBTEx

optical interface

OptoBTEx is used for reading and wireless (Bluetooth) data transmission from devices equipped with an optical communication interface to configuration software installed mainly on mobile devices with MS Windows and Android operating systems (tablet, smartphone, laptop).

ConfIT!

configuration and diagnostic tool - PC application

The ConfIT! program allows for the configuration of Plum products based on a clear graphical interface and other modules supporting device supervision, such as the software exchange module.

ConfIT!

volume converters - mobile application

The ConfIT! Volume Converters application is designed for the configuration of gas volume converters produced by Plum. The application supports installation at the target site and allows for device configuration, editing of basic converter parameters, and reading of historical data.