Rflo®

www.rmftek.com

MICRO-C3

Single Stream Compact Electronic Volume Corrector

KEY FEATURES

- **Approved for legal metrology. EN 12405 and MID compliant**
- **Software compliant to Welmec 7.2**
- **Certified for use in hazardous locations**
- **Commonly processed flow computer calculations included AGA 8, NX19, GERG, and ISO 6976**
- **Holds up LF meters**
- **Use of internal or external pressure sensors**
- **External DC power input**
- **Duplex volume flow operation**
- **Direct mounting on gas meters using mechanical encoder**
- **Up to 4 coincident TCP connections via the GPRS interface**
- **Supports SMS and GSM**
- **4G aided with 3G and 2G automatic fallback**
- **Remote monitoring, configuration, diagnostics and firmware update**
- **Extensive archiving capacity**
- **Alarm and event logging**
- **Monthly battery consumption history (per battery pack)**
- **Modbus RTU/TCP support with configurable addressing**
- **Enron Modbus protocol support**
- **Integrated RS-232, RS-485 and optical interfaces**
- **Pluggable RS-232 and RS-485 interface options**
- **Station telemetry through I/O channels, and local communiction interfaces**
- **Nano power consumption. 10+ years battery life**
- **Distinctive battery for remote communications**
- **Large graphics LCD. Always on display option**
- **IP66 rugged, stainless housing**
- **Exhaustive software solution**

MICRO-C3 is a compact, high accuracy, single stream electronic volume corrector intended for high performance industrial gas metering with or without remote telemetry.

This best in class EVC offers superior measurement stability, accuracy, and reliability. Full set of calculations commonly processed in flow computers are included in a compact EVC.

Utilizing local communication ports and I/O channels, it can be easily interfaced with variety of field devices and systems. Its advanced remote communication capabilities allows realization of large scale centralized metering systems. It contributes to superior remote communication performance adopting newly added 4G interface.

Approved for Legal Metrology

MICRO-C3 has been approved by NMI Netherlands for legal gas metering as per the EN 12405 standard. This involves a complete set of stringent test procedures to verify that the product performs its functions and maintains performance under severe environmental conditions.

Instrument software is also compliant to Welmec 7.2 of the MID 2014/32/EU/2015 and includes extensions L, S, T, D and I-2.

Self-Contained for Hazardous Locations

MICRO-C3 supports completely self-contained operation in hazardous locations.

Certified DC output for powering external analog or smart type transmitters, eliminate the need for costly external intrinsically safe power supplies and zener barriers.

Broad Range of Calculations

Calculations include nine compressibility methods, namely AGA 8-DC92, AGA 8 gross methods 1 & 2, NX 19, MGERG, SGERG methods 1, 2, 3, 4, AGA 5 energy & mass methods, and ISO 6976 heating value method.

Extensive Remote Communication Features

MICRO-C3 offers comprehensive features for modern, Internet based remote access via GPRS networks. All configuration, reporting, monitoring and diagnostics facilities are also available remotely via designated communication channels, to form a modern supervisory distribution management system which requires very low number of visits to remote stations and fewer personnel for network operations and maintenance.

MICRO-C3 supports multiple, simultaneous TCP connections. This means number of host systems in different locations may access a remote instrument without influencing each other. This allows concurrent operation of multiple remote monitoring systems in different nature, such as utility SCADA systems, distribution management systems, and other legal monitoring systems belonging to upper level government organizations.

MICRO-C3 is also able to maintain most of its remote communications features even in battery mode. This gives a great advantage when remote sites are difficult to reach and mains power is unavailable, and also eliminates the need for costly solar power systems. It can perform periodic reporting at scheduled times of day via the GPRS interface, exchange data with remote center, transfer runtime and archive information, and execute scheduled tasks.

The internal GPRS/GSM interface, when operating in GSM mode, also accepts incoming data calls originated by authorized remote systems. It also allows any instrument alarm(s) be associated with number of SMS recipients, to send text messages upon alarm occurences.

MICRO-C3
Single Stream Compact
Electronic Volume Corrector

NMi+ RECOGNISED CE-302

BASIC SPECIFICATIONS

POWER

Primary (EVCD) battery	3.6V certified battery. 10 years typ. 5 years min., under the specified operating conditions.
GPRS/GSM battery	3.6V certified battery, 5 years min., under the specified operating conditions.
External DC input	3.9...4.2V / 0.75A max.

GENERAL

Temperature	25°C...70°C (-13°F...158°F)
Humidity	95% non-condensing
Dimensions	220H x 220W x 121D mm
Weight	1.3 kg
Housing	IP66 (NEMA 4X) polycarbonate
Display	120 x 240 graphics LCD with backlight
Mechanical class	M2
Electromagnetic class	E2

CERTIFICATES AND APPROVALS

Measurements and calculations	NMI EN12405-A2, MID 2014/32/EU (T11476/T11509/TC10745)
Safety	KIWA ATEX II 1 G Ex ia [ia IIC] IIB T3 Ga (KIWA 15ATEX0049X)
CE	IEC 61000-4-2 (ESD), IEC 61000-4-3 (EM), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (Conducted), IEC 61000-6-4 (Emission)

COMMUNICATIONS

Pluggable GPRS/GSM (P3)	4G with 3G and 2G fallback, QUAD band GPRS/GSM, dial-in feature, SMS, TCP/IP client or server
Antenna	2.4 dBi internal standard, external high gain antenna on request
SIM card holder	internal micro-SIM
On board RS232 (P1)	Full duplex, EIA-232 and V.28/V.24 compliant
Pluggable RS232 (P3)	3 wire (RX, TX, GND) inteface, 150...115200 bps, 7...9 bits, 1/1.5/2 Stop bits, none/odd/even Parity
Pluggable RS485 (P3)	Half duplex, fail-safe, 150...115200 bps,7...9 bits, 1/1.5/2 Stop bit, none/odd/even Parity
Front panel optical (P4)	Full duplex, IEC 1107 compliant infrared, 19200 bps, 8 bits,1 Stop bit, none Parity

METROLOGY

Pressure inputs	
Analog	PT1, PT2, AI1, AI2, and AI3 inputs for 0/4...20mA external transmitters, reading accuracy ≤ 0.005% FS
Smart	Industrial RS-485 (P2) interface for type LD20 (TC11267) sensor(s)
Transmitter power	12.6 V / 0.15 A max.
Smart Pressure Interface	for LD20 transmitters, I2C Interface, 3.6 V / 2 mA max transmitter power, scan time ≤ 8 msec, wire length ≤ 0.5 m
Temperature sensor input	RTD1 input, two wire Pt1000 sensors, excitation current 0.5 mA, reading accuracy ≤ 0.01 °C (0.018 °F)
LF mode	Dry reed contact, closed ≤ 10kΩ, open ≥ 500kΩ, 4Hz max., 0.2 sec on/off time min., 5m cable max.
Smart pressure transmitter	Piezo resistive, digital, measurement absolute (zero @ vacuum), sealed gauge (zero @ 1 bara/14.5 psi) vented gauge (zero @ atm), 1.8...3.6 VDC, response time < 8 msec, digital output, accuracy 0.15 % FS
Barometric Pressure Sensor	Piezo resistive, digital, absolute (zero @ vacuum), response time < 17 msec,
Temperature sensor	2 wire Pt1000, DIN EN 60751, class A standard, 4m cable max.

ANALOG INPUTS

Channels	PT1, PT2, AI1-AI3, 0/4...20mA, reading accuracy ≤ 0.005% FS

DIGITAL INPUTS

Channels	DI1-DI8, dry reed contacts, closed ≤ 10kΩ, open ≥ 500kΩ, 50ms debounce filter, 0...60s digital filter

DIGITAL OUTPUTS

Channels	DO1-DO4, open collector, 30V/0.15A max., 10Hz pulse rate max., 50ms on time min.