

Dresser Micro Corrector 2 (MC2) PTZ+Log Single or Dual Pressure Volume Converter Model 197



Wall Mount
Version

The Dresser ROOTS® Micro Corrector 2 (MC2) is the updated and enhanced version of the highly successful Micro Corrector. Recent technological advancements have been incorporated giving huge improvements with respects to flexibility and functionality over previous and competitive models.

The Micro Corrector 2 measures live pressure(s), temperature and calculates the conversion factor including super compressibility (Z) based on these live values. A large and fully flexible logging memory allows users to evaluate, measure and monitor a wide variety of parameters including peak flow rates and totalised flows.

"Now with Email facility for data & alarms/faults"

Technically superior and commercially competitive; the MC2 is the one model solution to all your converter needs with GPRS automatic meter reading facility suitable for the smallest low pressure commercial premises to the largest high pressure industrial user.

- ▶ **Logged Data Available: -**
 - Converted Volume
 - Unconverted Volume
 - Converted Factor
 - Unconverted Volume Under Fault
 - Measurement Ptx (min/max/mean)
 - Monitoring Ptx (min/max/mean)
 - Temperature (min/max/mean)
 - Average Corrected Flow Rate
 - Peak Corrected Flow Rate
 - Super Compressibility (Z)
 - Battery Voltage
- ▶ **Logging rates are fully from 1 minute to 1 month**
- ▶ **Super Compressibility (Z) to SGERG 88 or AGA 8**
- ▶ **5 Year battery life (standard alkaline cells) with voltage display**
- ▶ **Super Capacitors (SuperCaps) give approximately 20 minutes power with the battery pack disconnected**
- ▶ **Email capability from site via the GPRS network or connection through the standard GSM network**
- ▶ **Internal &/or External transducer option**
- ▶ **2, 12, 30, 70 Bar Absolute or 2, 12, 24 Bar Gauge Pressure transducer range options**

Micro Corrector with
an Instrument Drive
inc. Mechanical Counter



Dresser Micro Corrector 2 (MC2) - PTZ+Log

Pressure Measurement:

Absolute Pressure Transducers available; 0.9 to 2, 0.9 to 12, 3 to 30 & 7 to 70 Bar. Gauge Transducers available; 0 to 2, 0 to 12 & 3 to 24 Bar. Pressure is displayed as Bar, psi, KPa or Kg/cm². Pressure transducers can be internal or external. Internal transducers terminate 1/8" NPT Male, external transducers 1/4" NPT or BSPT Male. All wetted parts are 316 stainless steel. The external transducer option is connected to the Micro Corrector via a 3.0 or 6.0m non armoured screened 'flying' lead and the transducer installed inside an aluminium weatherproof enclosure (IP66). The external transducer option has been designed to aid the replacement of the MeterMan 184/IS and similar converters, by removing mechanical pressure piping requirements on site.

Each Micro Corrector (MC2) supplied has a detailed pressure test certificate giving the accuracy of the transducer through the whole operating temperature range. Accuracy is typically <0.1%, certified accuracy <0.5% through the operating temperature range of -40 to 60°C.

Temperature Measurement:

Class A standard 4-wire PT100 available in 1.5, 3.0 & 6.0 metre lengths, armoured or non armoured. Temperature is displayed in °C or °F and has a temperature sensing range between -40 to 60°C. Each Micro Corrector supplied has a detailed temperature test certificate. Accuracy is better than 0.5°C.

Calibration:

Both the pressure and temperature sensors can be calibrated easily, either on site or back at the workshop. Calibration can be achieved in two ways; single point (off-set) or over the whole range (span).

Super Compressibility (Z):

The Super Compressibility factor can be manually set or calculated live (recommended for metering pressures in excess of 0.5 Bar) to the following methods; SGERG 88 or AGA 8. Super Compressibility is calculated from; Specific Gravity, percentage Carbon Dioxide (%CO₂) and percentage Nitrogen (%N₂) or Heating Value (MJ/m³ or BTU).

Safety:

The MC2 is intrinsically safe and certified; Certified for EEx ia IIC T4 Tamb = -40 to 60°C, Zone 0 Certificate number ATEX BAS98ATEX1083.

Logging:

The Micro Corrector (MC2) has a fully flexible extensive logging capability. Up to 3 logs can be generated; each capable of logging any number of the following parameters;

- ▶ Converted Volume
- ▶ Unconverted Volume
- ▶ Converted Factor
- ▶ Unconverted Volume Under Fault
- ▶ Measurement Ptx (min/max/mean)
- ▶ Monitoring Ptx (min/max/mean)
- ▶ Temperature (min/max/mean)
- ▶ Average Converted Flow Rate
- ▶ Peak Converted Flow Rate
- ▶ Super Compressibility
- ▶ Battery Voltage

Logging rates from 1 minute to 1 month. Please contact Dresser or your distributor to find out the maximum logging period for your required parameter and rate of logging. Logged data is downloaded in CSV or directly in to Excel format for simple data manipulation or data sharing.

Display:

The 10mm liquid crystal display is configurable to display any value as default, for example flow rate. Progression of the following parameters can be activated through the selector button;

- ▶ Converted Volume
- ▶ Unconverted Volume
- ▶ Flow Rate
- ▶ Converted Factor
- ▶ Meter Pulse Significance
- ▶ Pressure
- ▶ Temperature
- ▶ Unconverted Volume under Fault
- ▶ Converted Residual
- ▶ Firmware version
- ▶ Atmospheric Pressure (Gauge)
- ▶ Base Pressure
- ▶ Pressure Factor
- ▶ Super Compressibility
- ▶ Battery Voltage
- ▶ Time and Date.

In addition a choice of three of the following screens can be shown:

- ▶ Accumulated Corrected Volume previous day
- ▶ Accumulated Corrected Volume current day
- ▶ Accumulated Corrected Volume previous month
- ▶ Accumulated Volume previous month,
- ▶ Highest Daily Volume in the previous month
- ▶ Highest Daily Volume in the current month and the date when it happened

Flash Memory:

The main processor is a flash device, therefore, during periods of no power, no set up or logged data will be lost.

Weatherproof Enclosure:

The Micro Corrector 2 is housed inside a fully weatherproof compact aluminium enclosure rated to IP66 (total dust protection & protection from high pressure water jets from any angle).

Electromagnetic Compatibility:

Compliance to EN50081-2 - Generic Emission Standard for Industrial Environment
Compliance to EN50082-2 - Generic Immunity Standard for Industrial Environment

Battery Power:

The Micro Corrector 2 is a power efficient device and is supplied with an alkaline battery pack giving a minimum of 5 years. The battery pack is intrinsically safe and can therefore be changed in the hazardous area. The cells are standard alkaline type; they are much less expensive than lithium and are much easier and less expensive to environmentally dispose of than lithium. The battery voltage can be seen on screen and a battery warning icon is activated when the battery life has 3 months left. In conjunction with the battery pack the Micro Corrector 2 has: -

Supercaps:

These give the ability to power the Micro Corrector 2 for up to 20 minutes when the battery pack is disconnected; therefore no meter pulses are lost during battery changes.

Faults:

The following faults can be seen on the Micro Corrector 2; pressure, temperature, internal operations (watchdog) and low battery voltage. Faults are not programmable but indicates that the MC2 is operating outside of its 'normal' operating range. All faults are automatically seen on the screen in letters (rather than numerical codes), for example 'P FLT' = pressure fault. Faults can automatically generate a dial out call via the modem &/or generate a pulse output via the telemetry pulse output terminal block.

Alarms:

The following alarms can be programmed in to the MC2; high or low temperature, high or low pressure & high & low flow rate. All alarms can, if selected, be seen on screen &/or generate a pulse output. Alarms on screen are shown in letters, for example 'LP AL' = Low Pressure Alarm. Alarms can automatically generate a dial out call via the modem &/or generate a pulse output via the telemetry pulse output terminal block.

Communication:

There are two methods of communication from the MC2: -

1. Serial Communication via a RS232 port with a weatherproof 7-pin DIN connector. Communication speed is up to 9,600 baud; therefore a full memory download takes less than one minute. Dresser applies an 'open protocol strategy' and support service for communication connectivity. Transfer Interface Modules (TIMs) are being developed on an ongoing basis. Please contact Dresser or your local distributor for the most up to date information.
2. Telemetry pulse outputs. There are three telemetry output pulses available; Corrected, Uncorrected & Fault/Alarm. The pulses are fully configurable, for example the MC2 can transit 2 Converted Pulses and an Unconverted Pulse.

Metric Meter Reading from Imperial Meters:

The Low Frequency (LF) volume input can be set up to any value; therefore it is possible to display and transmit the Converted & Unconverted volume on the Micro Corrector 2 in m³; even if the pulse received from the gas meter corresponds to ft³. For example an imperial meter with a LF pulse output corresponding to 100ft³ can be viewed in m³ by programming the pulse value in the MC2 at 2.832 m³ per pulse; therefore each time a pulse is received the MC2 will increment by 2.832m³. The transmittal of telemetry pulse outputs can be programmed to correspond to either 1 pulse = 0.1, 1, 10 or 100m³.

Security - Physical:

The weatherproof IP66 aluminium enclosure can be lead-wire sealed via spacers fitted on the stainless steel lid screws.

A jumper link on the PCB gives the ability for the Micro Corrector 2 to be in 'Read Write' or 'Read Only'; after initial set up the link can be moved to 'Read Only', therefore removing the ability to change any parameter that may affect the consumption or the conversion factor.

Security - Software

The Micro Corrector 2 can be configured 'Password Protect', this will not allow any personnel to change any details unless the correct changeable password is known.

Packing List:

Each Micro Corrector 2 is supplied with; 4 off mounting screws, 4 off spacers for lead wire sealing, an Allen key for front panel removal, handbook (hardware) and a detailed calibration certificate.

Optional Extras:

Instrument Drive (ID), supplied with or without a mechanical index.

Thermowells of stainless steel construction, weatherproof or security sealed with threads and lengths to suit any temperature measurement application.

Pipe, meter or 'quick fix' brackets are available for standard installations.

Pressure piping and valve kits are available in plated or stainless steel up to 100 Bar.



Dresser Micro Corrector 2 (MC2)

Pressure Measurement & Monitoring Transducers:

Absolute transducers available: -
 : 0.9 to 2 BarA (13 to 30 psia)
 : 0.9 to 12 BarA (13 to 175 psia)
 : 3 to 30 BarA (45 to 435 psia)
 : 7 to 70 BarA (100 to 1000 psia)

Gauge transducers available: -
 : 0 to 2 BarG (0 to 30 psig)
 : 0 to 12 BarG (0 to 175 psig)
 : 3 to 24 BarG (45 to 350 psig)

Accuracy : <0.5% of reading certified, <0.1% typical through the temperature range of -40 to 60°C (-40 to 140°F)

Long-term stability : 0.1% of full scale per year (non-cumulative)

Measurement resolution : 1 mBar (0.01 psi)

Temperature Measurement:

Type : PT100 (class A), 4-wire armoured or non-armoured

Lengths Available : 1.5, 3.0 or 6.0m (5', 10' or 20')

Accuracy : <0.5°C (0.9°F)

Long-term stability : 0.2°C (0.3°F) per year (non-cumulative)

Measurement resolution : 0.1°C (0.1°F)

Computational Accuracy : <0.01%

Overall Accuracy : <0.5%, <0.2% typical

Electromagnetic Compatibility (EMC/RFI)

: EN50081-1 & EN50082-2

Intrinsic Safety



: Certified for EEx ia IIC T4 Tamb = -40 to 60°C (-40 to 140°F), zone 0 Certificate number Ex98E2082 ATEX BAS98ATEX1083. Class 1, Div. 1, Group A, B, C & D hazardous conditions.

CE Mark

Weatherproof Enclosure : Aluminium, IP66 rated (NEMA 4X)

Ambient Operating Temperature : -40 to 60°C (-40 to 140°F)

Process Operating Temperature : -40 to 60°C (-40 to 140°F)

Storage Temperature Range : -50 to 80°C (-60 to 180°F)

Ambient Humidity : Up to 95% sustained outdoor exposure

Mounting Options : Wall, Pipe, Instrument Drive, Meter Bracket & Integral with the Dresser Meter

Dimensions : 160 x 118 x 62 (W x H x D mm)
 : 6 1/4" x 4 5/8" x 2 1/2" (W x H x D)

Weight : 1.25Kg
 : 2 lbs 12 oz

Volume Input:

Reed switch, solid state Wiegend pulser type.

Pulse Outputs:

Three fully programmable pulse outputs available
 : Uncorrected Volume
 : Corrected Volume
 : Fault &/or Alarm

5 to 15 VDC applied loop voltage
 10mA maximum current loop
 Pulse width configurable to : 125 msec
 : 187 msec
 : 312 msec

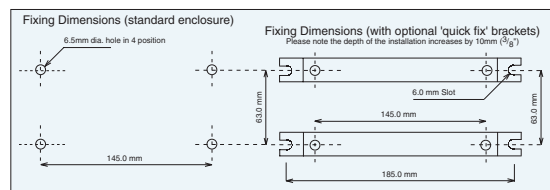
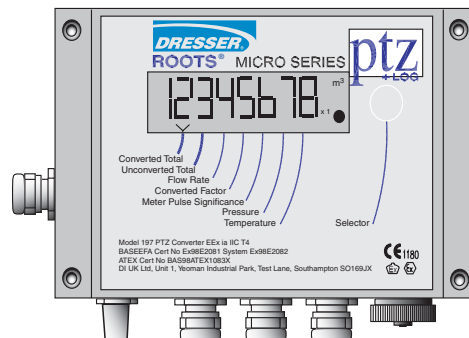
Channels electrically isolated to 2500V DC
 Switch off resistance >2 Mohms
 Switch on resistance <10 Mohms

Power Requirements:

Operating Voltage : 6.6V DC (internal power)
 Operating Current : <100 µA (micro amps)
 Battery lifetime : >5 years based upon 15 minutes communications per week
 Battery Warning : 3 months prior to failure
 Super Caps : 20 minutes without the battery power

Instrument Drive Pulser:

ROOTS® Solid state pulser technology, 1 pulse per ID revolution
 3 to 25 VDC applied loop voltage
 10 mA maximum loop current
 Pulse width > 50msec
 Switch off resistance > 2 Mohms
 Switch on resistance < 10 Mohms



*Some features described in this data sheet are firmware specific.
 If you are in any doubt please consult
 Dresser or your local Dresser distributor / representative*

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