ROOTS® Micro Corrector

Integral Volume Correction Differential Pressure Monitoring

Versions: ptz-dp + LOG,
T-dp + LOG, ptz + LOG,
P + LOG, T + LOG

ROOTS® Meter with IMC/W2,
Model ptz-dp + LOG

Features

- Monitors meter health
- Lowers O&M costs by eliminating unnecessary scheduled maintenance
- Aids in regulatory compliance of DP testing where applicable
- Last valid DP measurement displayed on LCD and Live Data Screen
- Real-time differential pressure measurement
- Compatible with Dresser Series A (LM-MA), Series B, and Romet meters
- DP measurement is independent of volume correction
- Remote monitoring capability with Dresser Micro Modems - GSM/GPRS and telephone line modems
- dp + LOG units feature faults for high DP and meter lock-up

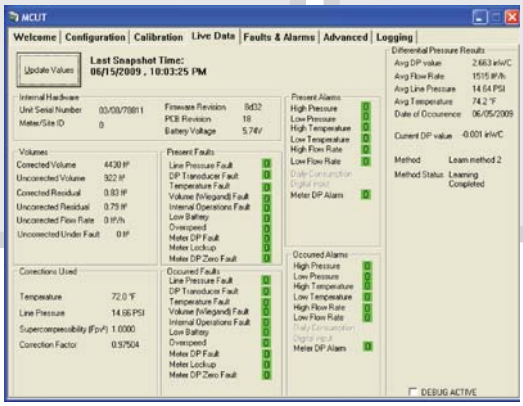
The Differential Pressure (DP) Micro Corrector now offers an integrated solution, which monitors meter health by constantly measuring the differential pressure drop across the meter. The Micro DP is capable of learning the differential pressure curve for an individual meter. During the learning period, DP is monitored using the values present in the Dresser Differential Test Acceptance Calculator (DTAC).

The DP Micro retains the last valid average differential pressure measurement on the LCD of the corrector along with the date when this occurred. It also displays the average line pressure, average line temperature and meter flow rate for that same date. The differential pressure test information required to be in compliance with state PUC requirements is available with the push of a button! This is a significant cost savings as the number of return trips to the meter set is greatly reduced, and is environmentally friendly as it eliminates the need for venting gas during periods of low consumption. Differential pressure test results are also logged in the Data Logs.

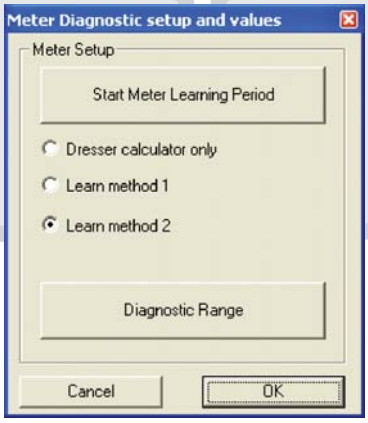
Developed from the proven IMC/W platform, the ROOTS® Micro Corrector continues to provide industry-leading volume correction through a simple-to-use interface. Features such as improved low flow accuracy, greatly enhanced data logging capability, and significantly reduced accuracy test times combine to offer a complete solution with major customer benefits.

The ROOTS® Micro Corrector, model IMC/W2, is the only integral corrector rated for Division 1 hazardous locations.

Dresser GSM/GPRS and Telephone Line Micro Modems



Live Data Screen displays current DP read, as well as last valid DP read, pressure, temperature and flow rate with date of occurance.

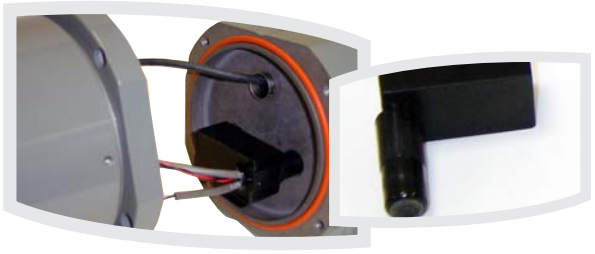


Learning methods are customer selectable in the User Terminal Software.

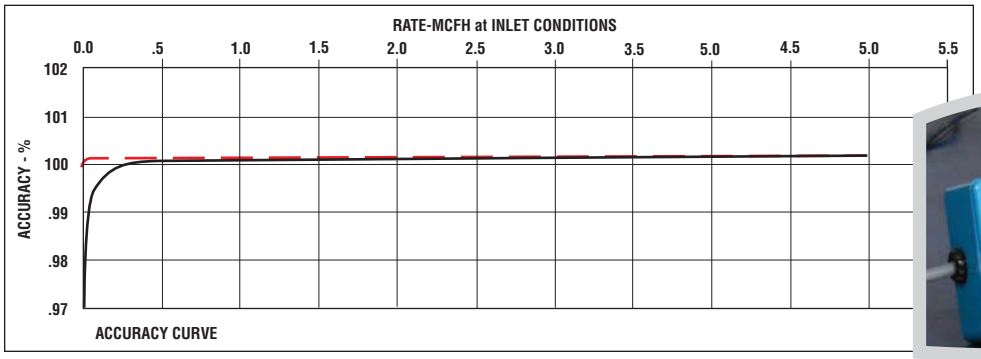
Features Include

- Rotating Index makes meter reading easier, especially in non-typical installations
- Uncorrected Instantaneous Flow Rate Displayed on LCD aids meter differential testing in the field.
- Maximum Uncorrected Peak Flow also Displayed on LCD
- The SmartProve™ Interface not only reduces meter and corrector test times by as much as 90%, but allows the meter and corrector to be tested as a complete measurement system. This feature is unique to Dresser!
- User Selectable Trim Table improves rotary meter accuracy at flow rates less than 10% of meter Qmax, adding revenue to the utility's bottom line.
- Micro Generator™ adds years to main battery life, extending the interval between battery changes.
- Simple User Terminal Software allows for easy configuration, calibration and data log downloads.
- 1 to 3 Data Logs provide for years of historical information and are configurable in increments from 1 minute to 1 month. Data logs include the option to log live battery voltage.
- Audit Log maintains a record of configuration and calibration changes.
- Alarms notify the user of over-range conditions for pressure, temperature, and flow rate.
- On units with DP transducer installed, alarms are present for higher than normal differential pressure
- Alarm & Fault activity is displayed in the Data Log and Audit Log reports, and the Live Data screen.
- E^2PROM provides non-volatile storage of recorded data and corrector configuration regardless of battery condition.
- Uncorrected Volume Under Fault register in E^2PROM replicates a backup mechanical index.
- MS Excel® Formatted Reports allow for easy manipulation and sharing of information.

These features provide compelling value that can add thousands of dollars annually to the bottom line!



Micro Generator™



Trim Table

Dresser SmartProve™ Interface

Performance

Resolution	
Volume	0.01 ft^3 (0.01 m^3)
Pressure	0.01 psi (1 mbar)
Temperature	0.1 ºF (0.1 ºC)
Supercompressibility (Fpv^2)	0.0001
Correction Factor	0.00001
Accuracy over Operating Temperature Range	-40 °F to 140 °F (-40 °C to 60 °C)
Line Pressure	±0.25% reading
Line Temperature	±0.9 °F (0.5 °C)
Differential Pressure	±0.1 in. WC
IMC/W2-PTZ	±0.5% corrected volume
IMC/W2-P	±0.35% corrected volume
IMC/W2-T	±0.25% corrected volume

Long Term Stability	
Pressure	0.1% FS/yr non-cumulative
Temperature	0.3 ºF (0.2 ºC)/yr non-cumulative

Meter Trim Table	
Meter Accuracy Correction Range	0.3% to 10% Qmax

E^2PROM Data Log Memory	
Time-stamped Entries	up to 32,161 (depending on the number of Parameters logged)
Parameters Logged	Corr Vol; Uncorr Vol; Fault Vol; Corr Factor; Supercomp; Avg and Peak Corr Flow Rate; 4 Pressures – Min, Max, Avg and Ending; 4 Temps – Min, Max, Avg and Ending; Batt Voltage; Differential pressure test results on units fitted with DP transducer

Battery	
Sealed Pack	5-years nominal life
Micro Generator™	7-years nominal life
Low Battery Reserve	3-months approximately

Inputs	
Volume	High speed magnetic pickup in meter magnet cup
Pressure	Proprietary semiconductor strain gauge
Temperature	ITS-90 Platinum 100Ω RTD α=0.00385

LCD Display	
LCD Display	21 user selectable parameters

3 Fully Programmable Pulse Outputs

Corrected, Uncorrected, and Alarm/Fault	
Loop Voltage	5-15 VDC
Loop Current	10 mA maximum
Pulse Width	62.5, 125, 187, or 312 ms
Switch Off Resistance	> 2 Mohms
Switch On Resistance	<10 ohms
Isolation	2,500 VDC

Environment	
Operating Temperature:	-40º F to 140º F (-40º C to 60º C)
Storage Temperature	-58º F to 176º F (-50º C to 80º C)
Humidity	Up to 95% sustained outdoor exposure

Enclosure
NEMA 4X (IP66)

Intrinsic Safety	
Class 1, Division 1, Group D	CSA Approval No. 1224451
Zone 0	EEX ia IIC T4 Tamb = -40º C to 60º C
Class-I, Division-1, Group A, B, C, D	BAS98ATEX 1083

Electromagnetic/Radio Frequency Immunity	
FCC Class B	Meets EMI/RFI immunity at 10 V/m, 0.1 to 1,000 MHz EN50081-1 and EN5088-2

Other
ISO-9001, CE Mark

ROOTS® Micro Corrector also available in ID and wall mount versions.

Ordering Information

The IMC/W2 with or without DP can be ordered as either:

- An integral part of a new meter.
- As a kit to convert existing ROOTS Series-A (LMMA), Series-B (TQM), or Romet meters.

For P and PTZ versions:

The IMC/W2 is available in the following pressure transducer ranges:

Transducer Range	Gauge	Absolute
30 psi (2bar)	X	X
180 psi (12 bar)	X	X
350 psi (24 bar)	X	
1000 psi (70 bar)	X	X
1500 psi (100 bar)		X

- The 350 psi (24 bar), 1000 psi (70 bar), and 1500 psi (100 bar) transducers would typically be used for High Pressure Meter applications
- The IMC/W2 can be ordered with either an external or internal pressure connection.
- IMC/W2's for Series-A meters, 23M - 56M high capacity meters, and high pressure meters require external pressure connections.
- Optional piping kits are available for convenient connection of external pressure connections.

Pressure Piping Kits for Non-DP versions

	Approved for use to 350 psig G	Approved for use to 1480 psig G
Length of SS Tubing	Part Number	Part Number
32"	051416-320	051416-310
84"	051416-420	051416-410
120"	051416-520	051416-510

- For IMC/W2-dp version, the following piping kits are available:

Length of SS Tubing	Part Number
36"	051416-600
36" with Pipe Plugs	051416-610
36" with Test Plugs	051416-620

For PTZ and T versions:

- All 23M - 56M high capacity meters, and high pressure meters require an external temperature probe and thermowell. The probes are available with 5 ft or 10 ft armored cables and in 2" or 8-1/2" in insertion lengths.
- Thermowells are available in sizes 1/4-NPT x 2, 1-NPT x 2, 1-NPT x 4, and 1-NPT x 6; all dimensions are in inches.

A variety of pulse output connectors are available:

- Metal 6-pin Circular twist lock connectors.
- Plastic cable-gland connectors.
- Conduit fittings and other special connectors are available upon request.

The IMC/W2 will be shipped with a factory standard configuration unless the customer specifies otherwise.

A Sealed Battery Pack is included and will provide a nominal 5 years of reliable corrector operation. Adding the optional Micro Generator may extend battery life to 7 years or more.

New users will want to order the User Terminal Software and one or more communication cables to allow local configuration, calibration, and data retrieval. The cables are available in 6, 25, and 50 ft. lengths. Special cables are available for proving the meter and corrector with the ROOTS® Model-5 Transfer Prover. See TS: SmartProve for further details.

Circular

Conduit Plug

Cable Gland

Communication Cables

PC (Serial) to IMC	
Length of Cable	Part Number
6.6'	057135-001
25'	057135-002
50'	057135-003
PC (USB) to IMC	
6.4'	060506-000

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