

The ROOTS[®] VTC has made integral electronic temperature compensation a reality for ROOTS[®] Meters. This battery powered, microprocessor based instrument corrects actual gas volume measured by the ROOTS[®] Rotary Meter for the temperature of the flowing gas to standard temperature conditions.

The unit's solid state electronics are powered by lithium or alkaline batteries that can last 5 years or more. The low powered electronic design uses less than a milliwatt of average power to reduce the cost of maintenance and ownership.

The VTC's "DataSAFE™" non-volatile memory ensures volumetric totals and configuration data can always be retrieved. This highly reliable feature eliminates any need for a mechanical index.

ROOTS[®] Volume Temperature Compensator / VTC[®]



DRESSER **DMD**

ROOTS[®] VTC F E A T U R E S

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Two popular Options include pulse outputs for your preferred Automatic Meter Reading device and fixed factoring capability so your customer sees exactly what is billed without applying factors to the reading.

The VTC is recognized for its flexibility. Many operating parameters are user configurable, including data to be shown on the large, easy to read liquid crystal display; pulse output multipliers to interface with a variety of applications; and the temperature sample rate.

ROOTS[®] Meters with magnetically-coupled gear reduction units can be easily converted to accept a VTC. Meter rangeability is increased by eliminating the inherent drag produced by a mechanical gear reduction assembly. A custom dual sensor magnetic pick-up senses the high speed rotation of the impeller shafts, providing precise and highly reliable volume input with accumulation of volume for forward, reverse, or both directions.

A single or double point calibration can be easily performed. With the sensor at a stable condition, simply input the known temperature onto the display. There is no requirement for conversion of complicated raw data into engineering units. The VTC automatically checks the calibration conditions for stability and span requirements, making the calibration procedure easy and practically foolproof.

These and the many other benefits and features of the VTC make this instrument an ideal investment for temperature compensation requirements with your ROOTS[®] Meters.

Join our fast growing list of satisfied customers. With over 5,000 units and 3 years of proven field service, the VTC has continually demonstrated high reliability, while gaining wide customer acceptance as the preferred TC instrument.

ROOTS[®] VTC B E N E F I T S

Mounted Integral to ROOTS[®] Line Mounted Meters, Series A (LM-MA) sizes 1.5M-16M, and Series B (TQM) sizes 8C-16M. Also available for meter sizes 23M-38M with external temperature armored cable.

Easy conversion for existing Series A and Series B mag-coupled ROOTS[®] Meters.

Microprocessor performs measurements and calculations based on actual gas volume.

Highly reliable magnetic sensors put less drag on the meter, increasing rangeability.

- Impeller rotation is sensed for precise volume input and indication of direction of flow.
- Instantaneous flow rate is displayed to the nearest cubic foot/hour or cubic meter/hour to facilitate differential testing.

Highly Accurate - total correction error is typically within 0.2% of theoretical.

Employs self diagnostic and fault tolerant design techniques.

DataSAFE® ensures retrieval of stored volume data for billing reconciliation in the event of a component failure.

- Last corrected and uncorrected volumes
- Identification of alarms and display codes
- Calibration values

Easily replaceable, intrinsically safe battery case accepts standard alkaline or lithium "C-cell" batteries.

"LOW BTRY" flag is displayed when the battery voltage drops below an established condition.

Two levels of tamper protection for maximum security with passcode and mechanical seal.

Large, easily scrolled, liquid crystal display in Cubic Feet or Cubic Meters.

Configurable reading scale factor (multiplier) for the volume displays.

Volume residuals can be displayed to show volume totals calculated with greater precision than normally displayed. This is useful when checking the accuracy of the correction calculations or to monitor low flow conditions.

Volume totals can be preset in the non-compensated and compensated displays, allowing the user to configure a unit to duplicate the readings from a previously installed instrument.

Easy to perform single or double point calibration, reducing test time and expense.

Up to four isolated, adjustable pulse outputs or alarms for maximum flexibility and value.

Pulse Test feature generates pulses once per second to help check for proper wiring between the VTC and the data collection equipment as well as performing a board functional test.

Precise fixed pressure factoring eliminates putting a factor in the billing computer and allows the meter reader to match the billing volume.

Direct connection to Model 5 ROOTS® Prover for quick, accurate testing - reduces cost and errors.

Designed to be Intrinsically Safe; Class I, Division 1, Group D. CSA Certification No. LR 95528

Gas Temperature Measurement Range from -40° F to 160° F at ± 0.2% typical accuracy.

ROOTS[®] VTC[®] SPECIFICATIONS

Temperature

Operating Range: -40° to +160° F
-40° to +71° C

Measurement Resolution

Temperature: < 0.16° F (0.09° C)

Accuracy at Reference Conditions

(60°F ambient, 4.5 VDC)
±0.5° F (± 0.3° C) maximum

Temperature Display Resolution: 0.1° F (0.1° C)

Non-linearity:

Sensor: ±0.3° F (0.2° C) typical
Circuit: ±0.1° F (0.1° C) maximum

Ambient Effects

Sensor: N/A
Circuit: -40° F to 110° F, ± 1° F
(-40° C to 43° C, ± 0.6° C)

-40° F to 160° F -1° to +2° F
(-40° C to 71° C -0.6° to +1.1° C)

Long Term Drift:

Sensor: < 0.15° F per year, non-cumulative
Circuit: < 0.05° F per year, maximum

Total Correction Error:

0.2% typical; 0.5% maximum

Cumulative Error for Non-compensated Volume**

Imperial (ft.³): None
Metric (m³): 0.0001%, maximum

** Does not include meter error

Volumetric Input

High frequency "no" power magnetic input sensors

Safety

Approved intrinsically safe for Class I, Div. 1, Group D locations (CSA approved).
NEMA 4X Enclosure
EMI/RFI designed for Immunity at 3 V/m, 0.1 to 500 MHz
Designed to meet FCC Part 15 emission requirements

Input Power

Operating Voltage: 3.0 to 7.0 Vdc
Operating Current: 100µA average; 12 mA Peak
Expected Battery Life:

Lithium: 5 to 7 years, typical
(poly-carbonmonofluoride chemistry)

Alkaline: 4 to 6 years, typical
(high-energy manganese dioxide chemistry)

Low Battery Voltage: 3.1 Vdc, ± 0.1 Vdc

"C-Cell" Lithium battery packs are Non-hazardous transport material and contain two user-replaceable cells.

"C-Cell" Alkaline battery pack holds 3 user-replaceable cells.

Pulse Outputs

4 Channels - Form A or Form C
Channels: 1 Non-Compensated
2 Compensated
1 Alarm

Each channel is electrically isolated to 2500 VDC

Zero contact bounce (transistor switch closures)

Applied Loop Voltage: 3-30 Vdc

Maximum Loop Current: 100 mA

Pulse Width: 90 mSec. (± 40mSec.)

Rise/Fall Time: 2 mSec. Maximum
(no bounce)

Switch Resistance:
Open: 2 MΩ, minimum
Closed: 10 Ω, maximum

Physical Characteristics

Dimensions:
8" X 6" X 4"
(20.32cm X 15.24cm X 10.16cm)

Weight (including battery):
5 lbs. (11.02Kg)

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DMD DRESSER

A Halliburton Company

ROOTS[®]
Measurement
Products

POWER EQUIPMENT CO.

Manufacturers Representative

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