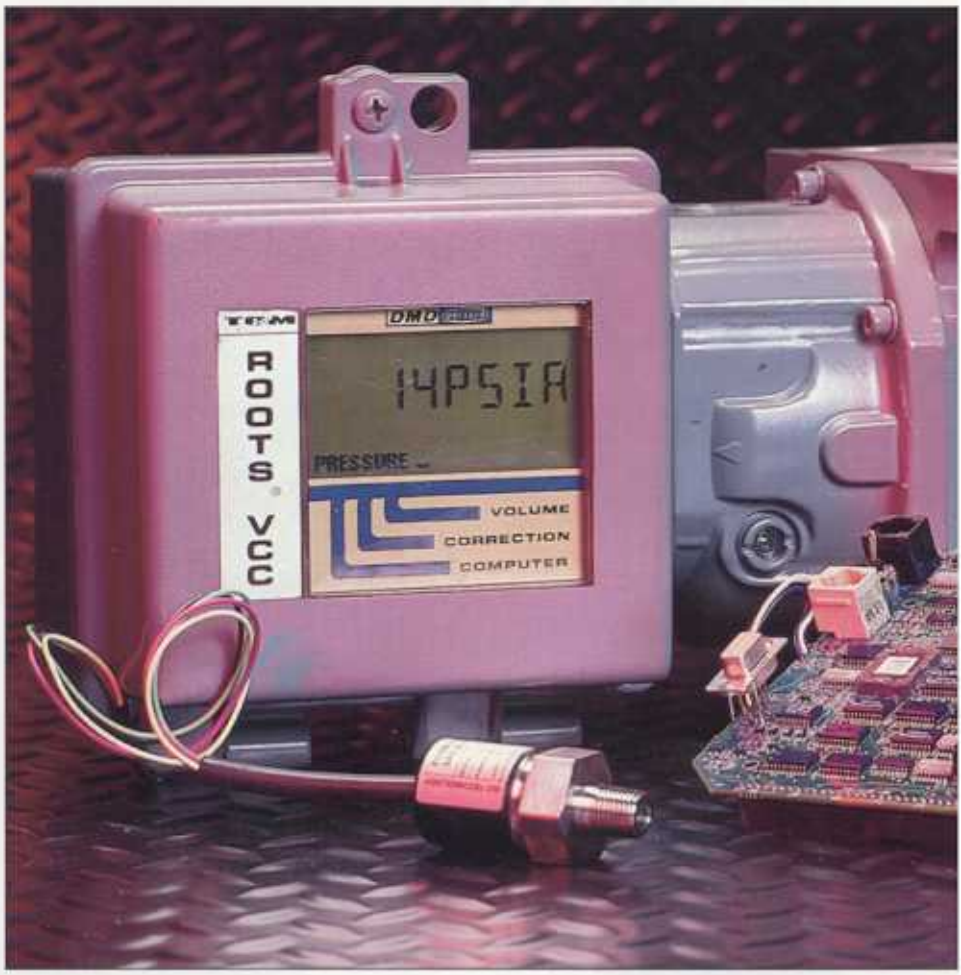
ROOTS®
Volume Correction Computer/VCC®

The ROOTS® Volume Correction Computer (VCC®) corrects metered volume for pressure, temperature and supercompressibility. It is a battery powered microprocessor based instrument that can be mounted on either a standard Instrument Drive, Wall or Pipe, or Integrally to any aluminum body ROOTS® Meter.

Offering high accuracy and the greatest flexibility at economical prices, the VCC® is specifically designed for exceptional reliability and data security.



DMD DRESSER

ROOTS® VCC® FEATURES

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Single point adjustment or double point calibration for temperature, and three point calibration for pressure.

Totally user configurable; default or custom files factory loaded, by request, for "out of the box" operation.

Internal RS-232 interface provides communication to laptop computer via Modbus RTU protocol.

ROOTS® VCC®

Highly accurate - 0.5% typical with P, T options.

Flexible correction - live P & T or fixed factoring.

Supercompressibility to NX-19, any combination of live or fixed P & T or fixed factor.

Three styles available; Integral, ID, and Wall or Pipe Mount.

ID Mount version also available without uncorrected counter, for ROOTS® Meters only.

Three power options: Lithium or Alkaline battery, or external DC power.

Large scrollable display - up to 19 parameters.

Displays flow rate.

Displays P, T, NX-19 and total factors.

Temperature can be displayed in °F or °C.

Can be programmed to sense Forward and Reverse Flow.

Precision strain gauge pressure transducer - available in Gauge or Absolute.

Four isolated, programmable Form A or Form C standard pulse outputs - can be configured to represent volume or events.

Uncorrected volume accumulation continues during battery change-out.

24 hours of hourly data and 92 days of daily data stored - each with 13 parameters.

Capability to provide Peak Hour and Peak Day Data for last three months.

DataSAFE® feature ensures retrieval of stored volume data.

SoftFail provides on-site estimated correction in case of detected failure.

ROOTS® VCC®
SPECIFICATIONS

Measurement Resolution

Pressure:	0.1% of full scale
Temperature:	0.25°F (0.14°C)
Volume Input	Magnetic volume input sensors for Integral, Wall/Pipe mount (umbilical) and ID mounting styles Switch pulse inputs to accept Form A or Form C volume input pulses (wall/pipe mount)

Accuracy at Reference Conditions

(60° F ambient, full temperature sensor range, 20% to 100% pressure range)

Pressure:	0.3% of full scale, typical
Temperature:	±0.5° F, typical
Combined corrected volume accuracy:	< 0.4% typical

Battery Characteristics:

DMD "C-cell" lithium battery modules are non-hazardous transport material.(3)
"D-cell" Alkaline battery pack holds 6 user-replaceable cells.(4)

(3) Lithium batteries must be poly-carbonmonofluoride chemistry, provided by DMD Dresser.
(4) Alkaline batteries must be high-energy manganese dioxide chemistry cells.

Physical:

Dimensions:	7.5" x 8" x 7.5"
Weight:	11 lbs 3 oz. (5.1 kg)
Operating Temp.:	-40° to 160° F
Ambient Humidity:	Up to 95% sustained, outdoor exposure
Storage Temp.:	-60° to 180° F
Safety:	Designed for Class I, Div. 1, Group D hazardous locations. NEMA 4X enclosure Designed for EMI/RFI immunity at 3V/m, 0.1 to 500 MHz CSA, FM and other approvals pending

Pulse Outputs

SPO interface card:

4 channels, Form A or Form C transistor outputs
3-30 VDC applied loop voltage
100 mA maximum loop current
80 msec nominal pulse width, 50 msec minimum.
Each channel electrically isolated to 2500 VDC
Switch off resistance > 2 Megohms
Switch on resistance < 10 ohms

Ambient Temperature Effects

Pressure:	0.5% of full scale, maximum, -20° to 140° F 1% of full scale, maximum, -40° to 160° F
Temperature:	-1° to +2° F, maximum, from -20° to 140° F -1° to +2.5° F, maximum, from -40° to 160° F

Long Term Stability

Pressure:	0.5% of full scale per year
Temperature:	0.5° F per year, non-cumulative

Power Requirements

Operating Voltage:	6.5 to 15 VDC
Operating current:	150 µA DC, 25 mA pulsed, typical
Battery Lifetime (1) :	3.5 years, alkaline battery pack (2) 2 years, single lithium pack (2) 4 years, double lithium pack (2)

(1) 2 to 6 months of normal operation after "low battery" warning appears on display. (2) Typical configuration: live P, T measurement every 30 seconds, flowing gas conditions of 30 psig and 60° F, NX-19 correction every ten minutes, 3,000 CFH flow rate, one 100 CF uncorrected pulse output and one 1,000 CF corrected pulse output, one display scroll per day, one 15 minute user terminal connection per month.

ID Pulser:

1 Form A or Form C transistor output
ROOTS solid-state pulser technology
Provides independent uncorrected pulse output
1 pulse per ID revolution
3-30 VDC applied loop voltage
10 mA maximum loop current
pulse width > 50 msec
Switch off resistance > 2 Megohms
Switch on resistance < 10 ohms

DMD DRESSER
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