MOORE INDUSTRIES

DSM

Digital Scaling Meter

July 1993

Data Sheet 10.25

Description

Moore Industries' Digital Scaling Meter, the DSM, is a highly reliable, panel mount display module. It accepts input from current or voltage analog transmitters, and provides user-programmable offset and scaling of digital readouts, as well as optional 20-point linearization for non-linear inputs.

The DSM comes standard in an impact-resistant, thermoplastic housing made to fit 1/8 DIN panel cutouts. Its standard feature package includes independent high and low alarm displays, overrange warning, a "Display Hold" to manually freeze readout processing, and an Auto-calibration function that continuously checks and corrects the display for maximum long-term stability.

Application versatility means that the DSM is capable of accepting a wide range of inputs, satisfying most common process instrumentation metering needs. The unit has a signal-limited, high common mode rejection ratio that makes it ideal as a replacement for existing equipment in many environments.

There are no jumpers to set; no potentiometers to adjust. The DSM is microprocessor-controlled. The easy-to-use front panel keypad is all that is needed to program offset and scaling, alarm trip points, and linearity curve (optional). An input simulator is not required.

The availability of many different options make the DSM more than just another panel meter. Its optical isolators separate digital and analog ground by up to ±2500V peak. A gasket provides NEMA 12 protection, and a NEMA 4 protective boot is also available.

Moore Industries' DSM *provides exceptional accuracy and ease of operation in a compact, standard-sized housing.*

Features

- **Digital, 20-point Linearization.** Easily user-programmed, the unit's microprocessor delivers accuracy of up to 0.01% of range on non-linear inputs.
- **User Configurability; User Friendliness.** Choose current or voltage input and configure for digitally scaled readouts from –9999 to +9999. No special calibration equipment is needed. Program everything with the simple, three-button keypad on the unit front panel.
- **High/Low Alarm Capability.** The DSM comes standard with both a high and a low alarm display. Trip points and deadbands (hysterisis) are user-set. Relay outputs are available as an option.
- **Microprocessor Control and Auto-Calibration.** Our meters are exceptionally accurate and reliable. Internal reference circuitry compares and updates the display once every 4 seconds. All operating parameter information is stored in on-board memory—safe from power outages or surges.

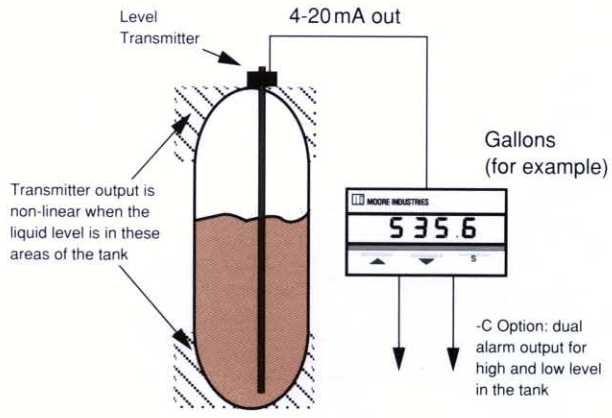

Figure 1. *The DSM Works with Transmitters in Non-linear Applications*

DSM

Digital Scaling Meter

Specifications

Display

Range: –9999 to +9999 counts (4-digit); Decimal point position factory-set according to customer specification
Type: 7-segment, vacuum fluorescent available in green (standard) or red characters 13 mm (0.5 in) high
Indicators: "OFLO" when input is overrange; "HI" and "LO" messages when input trips alarm

Performance

Accuracy (±1 count): ±0.02% of reading, ±0.01% of range
Auto-Calibration: Continuous comparison of display to internal reference corrects display every 4 seconds

Performance (continued)

Ambient Temperature Effect: ±0.008% of reading (±0.002% of full scale) per °C change
Response Time: 750 msec for step change
Display Update: Integrating differential A/D converter; 2/sec nominal
Overload Protection: Floating protection to 300V, minimum, 1MΩ min. input impedance
Normal Mode Rejection: 60dB @ 50/60 Hz, typical
Common Mode Rejection Ratio: 80dB @ 50/60 Hz, input-to-line
Common Mode Voltage: ±2500V peak, input-to-power line; 1500V, input-to-line when DC powered

Performance (continued)

Common Mode Voltage: ±2500V peak, input-to-line; 1500V, input-to-line when using DC

Transmitter Excitation (standard)

Unregulated 24Vdc, 25mA (available in addition to analog output provided with -AO option)

Ambient Temperature Ratings

Operating Range: 0°C to 50°C (-32°F to 122°F)
Storage Range: -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

20 to 80%, non-condensing

Case

NEMA 12 splash-proof, high-impact plastic

Weight

553 g (approximately 1.22 lbs)

Ordering Specifications

Unit	Input	Display (Output)	Power	Option(s)	Housing
DSM	**0-1V** **0-5V** **1-5V** **0-10V** **(–10)-10V** **0-20MA** (50Ω shunt) **1-5MA** (50Ω shunt) **4-20MA** (50Ω shunt) **0-50MA** (20Ω shunt) **10-50MA** (20Ω shunt)	**X.X.X.X-X.X.X.X** Factory set to customer specification; typically 0% reading to 100% reading; Include decimal position and unit (e.g. gallons, feet, LBS, etc.) Display range must fall within a -9999 to +9999 count span. Decimal position must be in the same relative position for both 0% and 100% (see example below)	**117AC** **230AC** **9-30DC** (@ 16W) ±10%, 10VA Internally fused; Multiple edge connections permit field re-configuring	**-C** Dual, 5 Amp relays (5A @ 125Vac maximum, 0.6A @ 110Vdc, 0.1A max @ 50Vdc inductive) **-AO** Analog output (4-20mA or 0-10V, proportional to input display) **-BCD** Binary Coded Decimal (tri state parallel output, isolated from inputs up to 1500V peak) **-LIN** 20-point linearizing capability, user-programmable **-N4** NEMA 4-rated front panel **-RD** Red character display	**P** Panel mount, corrosion-resistant molded plastic, complete with mounting hardware.

When ordering, specify: Unit / Input / Display / Power / Option(s) [Housing]
For example: DSM / 4-20MA / 0.0-500.0 GALLONS / 117AC / -C -LIN -N4 [P]

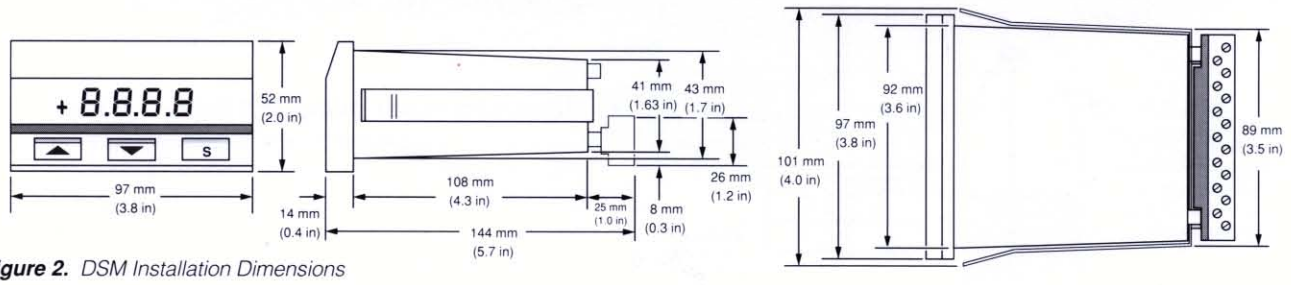

Figure 2. *DSM Installation Dimensions*

The Interface Solution Experts

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