



## FEATURES

- Self-powered, 2-Wire operation
- 350 to 600Vac (50/60Hz) measurement range
- Digital replacement for analog panel meters
- Permanent, tamper-proof calibration
- Half-wave averaging, rms calibrated input
- Large, easy-to-read, bright red or green LED display
- Flashing display warns of overvoltage conditions
- Reliable screw-style terminal block simplifies hookup
- Rugged bezel assembly with secure metal fasteners
- Small footprint: 1.94W" x 1.27H" (49mm x 32mm)

## PRODUCT OVERVIEW

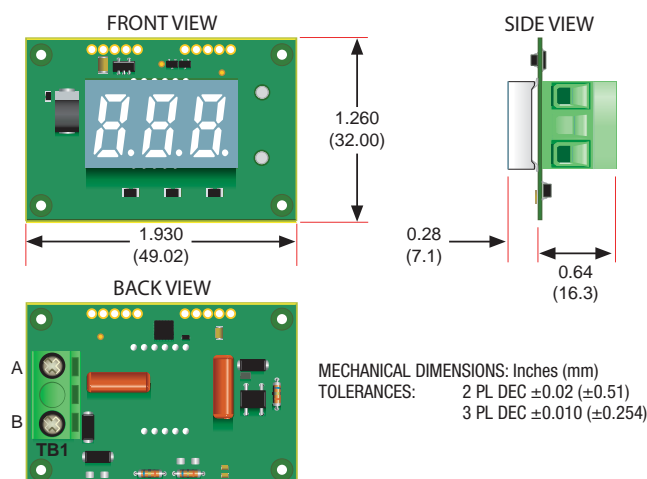
Murata Power Solutions' DMS-20ACV-3 is a low-cost, self-powered, 2-wire digital AC voltmeter designed for monitoring 3-phase, 480Vac primary ac power sources. The DMS-20ACV-3's unique power-supply design allows a single model to operate from 350 to 600Vac, at line frequencies of 50 to 60Hz. No user-supplied external components or auxiliary power sources are needed for full operation. Its large, 0.40 inch (10.2mm), bright red or green LED display is easily readable under virtually all lighting conditions.

DMS-20ACV-3 AC voltmeters employ a microprocessor driven, half-wave averaging, analog-to-digital converter to achieve a display resolution of 1Vac over its entire operating range. Also, the unit is permanently calibrated at the factory, ensuring stable, long-term accuracy by eliminating issues caused by user-accessible adjustment potentiometers.

The DMS-20ACV-3 measures only 1.94" wide x 1.27" high (49.3mm x 32.3mm), and has an installed behind-the-panel depth of less than 1.0" (25.4mm). Panel mounting is greatly simplified by the use of a bezel assembly that includes a color filter and secure metal fasteners.

This easy-to-use AC voltmeter is the ideal digital upgrade for fragile, less accurate, analog panel meters used in 480Vac power distribution environments. It similarly excels in any new application requiring accurate, high-voltage, AC line monitoring. Simply connect the AC power source to its 2-position terminal block and the unit is fully operational.

## MECHANICAL SPECIFICATIONS





### Performance/Functional Specifications

Typical at TA=+ 25°C, 480Vac @ 60Hz, unless otherwise noted

Input Supply Voltage (Vin @ TB1)	Min.	Typ.	Max.	Units
AC (rms) Voltage @ 47-63Hz	350	480	600	Volts AC
Performance				
Sampling Rate		2		samples/sec
Voltage Accuracy @ 25° C		±2	±4	Volts
Temperature Drift (0 to 60°C)		0.05		Volts/°C
Measurement Type	Half-wave averaging, rms calibrated for sinusoidal inputs			
Supply Current				
@ 50Hz		8	11	mA
@ 60Hz		9	13	mA
Display				
Display Type	3 Digit LED			
Display Size	0.40 inches (10.16mm) high			
Overrange Indication	Flashing display for Vin > 600 Volts			
Physical/Environmental				
Weight	1.0 ounces (28 grams)			
Operating Temperature	-25		60	°C
Storage Temperature	-40		75	°C
Relative Humidity (Non Condensing)	0		85	%

<b>Ordering Information</b>	
<b>DMS-20ACV-3-R-C</b>	350 to 600Vac (50/60Hz) Red LED Display
<b>DMS-20ACV-3-G-C</b>	350 to 600Vac (50/60Hz) Green LED Display

### TECHNICAL NOTES

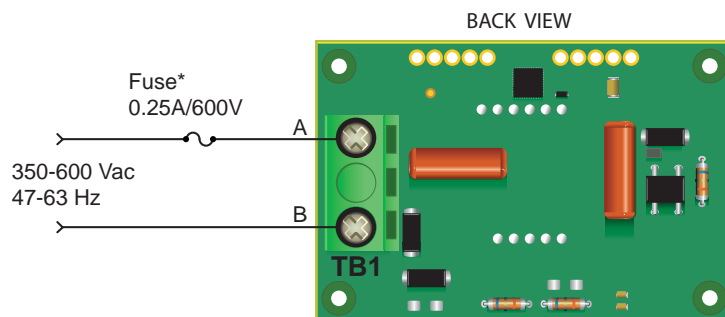
**IMPORTANT!** To ensure safe and reliable operation, DMS-20ACV ac voltmeters must be installed and serviced by qualified technical personnel. Contact Murata Power Solutions if there is any doubt regarding installation and/or operation.

- 1. Measurement Type:** DMS-20ACV series AC voltmeters employ a precision analog-to-digital converter and a stable voltage reference to measure and display the average value of sinusoidal AC mains voltages. Input voltages of 601V and above will cause the display to flash on and off.
- 2. Calibration:** DMS-20ACV voltmeters are digitally calibrated at the factory; there is no provision for calibrating units in the field.
- 3. Power Supply Polarity, Fusing, Wiring, and Grounding:** DMS-20ACV-3's TB1 ac-supply terminals are not polarity sensitive, that is, they have no "AC LO" or "AC HI" designations. These meters do not include nor require a connection to earth/chassis ground.

DMS-20ACV-3 AC voltmeters are not internally fused. Terminal block TB1 is to be used only for powering the voltmeter's internal circuitry; it must not be used to supply power to external loads or auxiliary devices. The supply wires connected to TB1 must be fused with a 0.25A/600V time delay/time lag fuse, in accordance with applicable regulatory codes.

All AC-supply wiring must be rated for the voltages and currents they will conduct and comply with any code or application-mandated requirements pertaining to the user's specific installation. 600V, UL-rated wire suitable for the intended application is required.

The recommended AC supply wire size is 16AWG to 22AWG (1.31mm<sup>2</sup> to 0.325mm<sup>2</sup>) stranded copper wire. The supply wires must be properly stripped and attached to TB1 such that their insulation is not pinched by the screw terminal. Recommended insulation strip length is 0.25" (6.4mm). Rated tightening torque for the TB1's screws is 7 pound-inches (0.8 N-m).



\*See technical note 3.

Figure 1. Wiring Diagram



## PANEL INSTALLATION

All electrical connections to DMS-20ACV must be made after the voltmeter is securely attached to the panel, and with the input AC supply voltage de-energized (off). Care must be exercised when attaching the AC supply wires to terminal block TB1. The installed wire-positions should be such that minimal forces are applied to TB1 or the voltmeter. In high-vibration environments, adequate strain reliefs must be used on all supply wiring.

Using Figure 2 as a guide, carefully insert the bezel/color filter assembly into the panel opening. From the rear of the panel, install the four 8mm plastic standoffs over the bezel's threaded studs. Install the DMS-20ACV pc-board assembly and attach and tighten the four #2-56 hex nuts over the threaded studs. Tighten each hex nut to 15 to 20 ozf-in (0.11 to 0.14 N-m).

Use only the factory-supplied hardware as the use of substitute hardware may result in an unsafe installation and/or adversely affect the reliability of the installation.

The range of panel thicknesses that can be accommodated with the factory supplied hardware is 0.040 inches (1.0mm) to 0.125 inches (3.2mm). Panel thicknesses greater than 3.2mm may require additional user-supplied hardware or modifications to achieve an electrically safe and mechanically secure installation. However, do not use any substitutes for the 8mm round plastic standoffs supplied with the voltmeter. Please note, thick panels will alter the readability of the LED display.

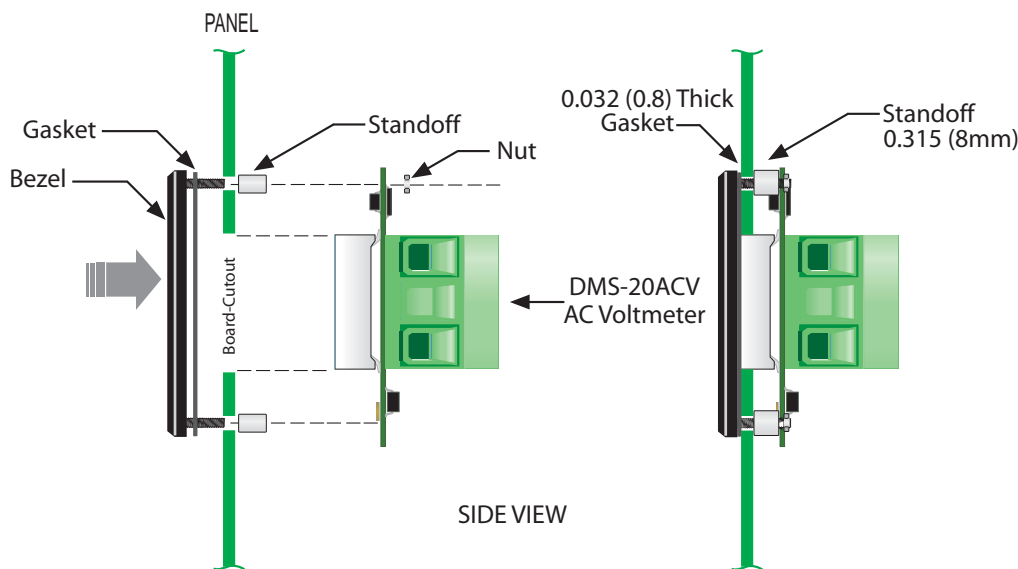
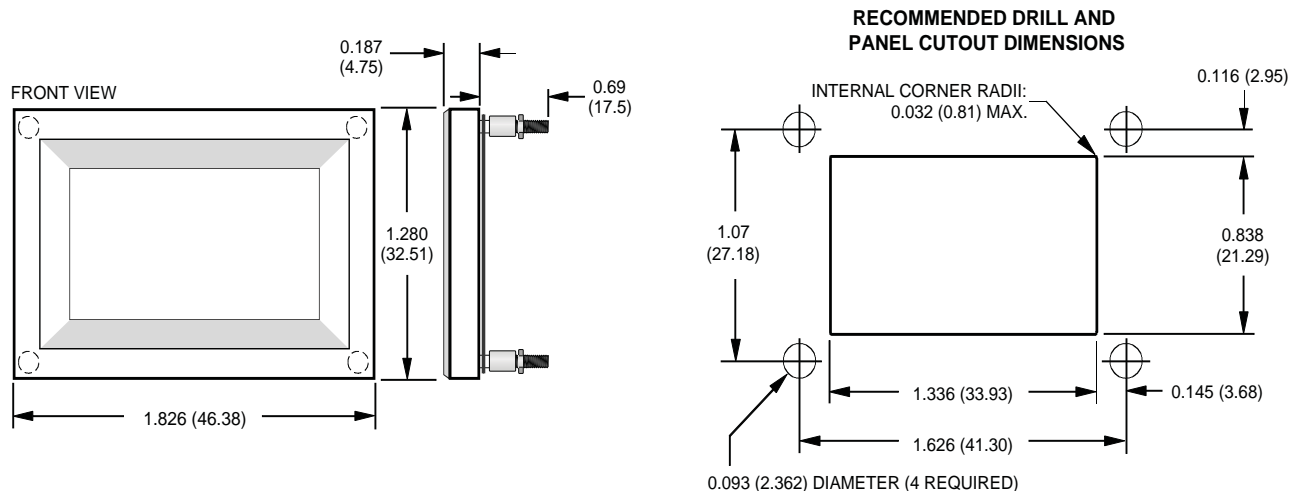


Figure 2. Panel Installation

## BEZEL AND PANEL CUTOUT





## NOTES

---

Murata Power Solutions, Inc.  
11 Cabot Boulevard, Mansfield, MA 02048-1151 U.S.A.  
ISO 9001 and 14001 REGISTERED



**This product is subject to the following operating requirements and the Life and Safety Critical Application Sales Policy:**  
**Refer to:** <http://www.murata-ps.com/requirements/>

Murata Power Solutions, Inc. makes no representation that the use of its products in the circuits described herein, or the use of other technical information contained herein, will not infringe upon existing or future patent rights. The descriptions contained herein do not imply the granting of licenses to make, use, or sell equipment constructed in accordance therewith. Specifications are subject to change without notice.

© 2015 Murata Power Solutions, Inc.



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Murata:

[DMS-20ACV-3-R-C](#) [DMS-20ACV-3-G-C](#)