DMS-20RM Series



True-rms ac Voltmeters with Isolated Inputs



FEATURES

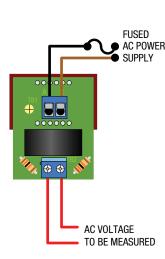
- Measures the rms value of complex ac voltages
- Three input ranges: 20Vac, 200Vac and 300Vac
- Two operating-supply options: 85-264Vac, or +10-40Vdc
- Input circuit fully isolated from operating power supply
- 47-1kHz input frequency range
- Fully encapsulated plastic package measures 1.38" x 0.88" (35mm x 22.4mm)
- Large, easy-to-read, red LED display is visible from 12 feet (4m)

Murata Power Solutions' DMS-20RM series are four-wire, self-contained ac voltmeters that measure and display the true-rms values of complex ac waveforms. Because the input circuitry is electrically isolated from the unit's operating power source, these voltmeters can measure signals down to zero volts. No external isolation transformers or auxiliary power supply conditioning components are required. Simply connect the input signal and a source of operating power (85-264Vac, or an optional +10-40Vdc) to the two rear-mounted terminal blocks and the unit is fully operational.

DMS-20RM rms voltmeters are available in a choice of three input ranges: 20Vac (with 0.01V resolution); 200Vac (0.1V resolution); and 0-300Vac (1V resolution). An input frequency range of 47-1kHz makes these voltmeters ideal for all ac voltage monitoring applications. And, unlike conventional, average-responding products, these meters can measure and accurately display the true-rms value of triangle waves, square waves, or other irregularly shaped waveforms with 0.4% full-scale accuracy.

The large (0.37"/9.4mm), bright red LED display makes the DMS-20RM ac voltmeters easily readable from as far as 12 feet (4 meters). All units are packaged in a red-filter case with a built-in bezel; these meters are fully encapsulated to make them moisture and vibration resistant. Their miniature size is perfect for high-end consumer electronics, laboratory instrumentation, alternative power generators and other products requiring precise ac line monitoring.

TYPICAL WIRING DIAGRAMS



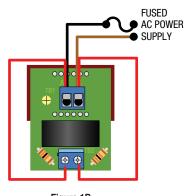


Figure 1B. Powered by and measuring the same AC power source.

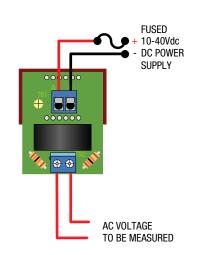


Figure 1A. Powered by AC supply while measuring separate AC signal.

Figure 2. Powered by DC power supply while measuring AC signal.





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DMS-20RM Series

True-rms ac Voltmeters with Isolated Inputs

Performance/Functional Specifications

Typical at TA=+ 25° C with 60Hz sine-wave input, unless otherwise noted

Number of the production of the productio	Full-Scale Input Voltage (TB2)	Min.	Тур.	Max.	Units	
DMS-20RM-2 DMS-20RM-3 0 0 300 199.9 Vac Vac Frequency Range 47 60 1000 Hz Performance Justicity State 1000 Hz Sampling Rate 2.5 read/wFS ± 2 courts Vac Accuracy ① Justicity Herbornance Justicity Justicity Measurement Type TUS-Var/WFS ± 2 courts Vac Counts/PC Temperature Drift (0 to 60°C) 4.0.4 £0.4 Counts/PC Zero-Volt Reading (within 30 sec.) 0.01 000 001 Counts/PC DMS-20RM-1 2.0 Vdc Input Impedance 2.0 KΩ DMS-20RM-1 2.0 KΩ DMS-20RM-3 2.66 KΩ DMS-20RM-3 2.66 KΩ DMS-20RM-3 2.66 KΩ DMS-20RM-3 3.0 5.0 MA/47-63Hz						
Frequency Range 47 60 1000 Hz Performance			_			
PerformanceSampling Rate2.5 reading per secondAccuracy ① $\pm 0.4\% FS \pm 2 \text{ counts} with 60Hz sine wave inputMeasurement Typerms responding, Crest Factors of 1-5Temperature Drift (0 to 60°C)\pm 0.2\pm 0.4Counts/°CZero-Volt Reading (within 30 sec.)001000001CountsBreakdown Voltage, TB1 to TB22000VdcInput ImpedanceU200kΩDMS-20RM-120kΩDMS-20RM-2200kΩDMS-20RM-3266kΩPower Supply Voltage (TB1)266kΩDMS-20RM-X-AC185264Vac/47-63HzDMS-20RM-X-DC2+10.0+40.0VdcPower Supply Current (TB1, @)3050mA/47-63HzDMS-20RM-X-DC21015mAdcTerminal Block Wiring (TB1 and TB2)Wire Size16-22AWG, Solid or stradedInsulation Strip Length0.250 inchesScrew Tightening Torque3.6 pound-inches (0.4Nm)Rated Voltage3½ Digit LED, 0.37"/9.4mm highOverrange Indication"1"Physical/Environmental-25Operating Pemperature-25Operating Temperature-25Operating Temperature-25Operating Temperature-25Operating Temperature-25$	DMS-20RM-3	0		300	Vac	
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Accuracy ① $\pm 0.4\%FS \pm 2 \text{ counts}$ with 60Hz sine wave inputMeasurement Typerms responding. Crest Factors of 1-5Temperature Drift (0 to 60°C) ± 0.2 ± 0.4 Counts/°CZero-Volt Reading (within 30 sec.)-001000001CountsBreakdown Voltage, TB1 to TB22000VdcInput Impedance2000VdcDMS-20RM-120kΩDMS-20RM-2200kΩDMS-20RM-3266kΩPower Supply Voltage (TB1)+40.0VdcDMS-20RM-X-AC185264Vac/47-63HzDMS-20RM-X-DC2+10.0+40.0VdcPower Supply Current (TB1, 2)3050mA/47-63HzDMS-20RM-X-DC21015mAdcTerminal Block Wiring (TB1 and TB2)Wire Size16-22AWG, Solid or strandedInsulation Strip Length 0.250 inchesScrew Tightening Torque3.6 pound-inches (0.4Nm)Rated VoltageDisplay Type and Size3½ Digit LED, 0.37"/9.4mm highOverrange IndicationPhysical/EnvironmentalFixed, model dependent (see full-scale input voltage above)Physical/environmentalOperating Temperature-25+60°CStorage Temperature-25+60°COther Subore Subore Subor	Performance					
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Input Impedance - 20 - kΩ DMS-20RM-1 - 200 - kΩ DMS-20RM-2 - 200 - kΩ Power Supply Voltage (TB1) - 266 - kΩ DMS-20RM-X-AC1 85 - 264 Vac/47-63Hz DMS-20RM-X-DC2 +10.0 - +40.0 Vdc Power Supply Current (TB1, @) - 30 50 mA/47-63Hz DMS-20RM-X-AC1 - 30 50 mA/47-63Hz DMS-20RM-X-AC1 - 30 50 mA/47-63Hz DMS-20RM-X-DC2 - 10 15 mAdc Terminal Block Wiring (TB1 and TB2) Wire Size 16-22AWG, Solid or stranded Insulation Strip Length 0.250 inches Screw Tightening Torque 3.6 pound-inches (0.4Nm) Rated Voltage 300Vac Display Dype and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1"" Decimal Point Fixed, model dependent (see full-scale input voltage above)	Zero-Volt Reading (within 30 sec.)	-001	000	001	Counts	
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DMS-20RM-X-AC1 85 — 264 Vac/47-63Hz DMS-20RM-X-DC2 +10.0 — +40.0 Vdc Power Supply Current (TB1, ②)			200		K12	
DMS-20RM-X-DC2 +10.0 — +40.0 Vdc Power Supply Current (TB1, ②) DMS-20RM-X-AC1 — 30 50 mA/47-63Hz DMS-20RM-X-DC2 — 10 15 mAdc Terminal Block Wiring (TB1 and TB2) Wire Size 16-22AWG, Solid or straded Insulation Strip Length 0.250 inches Screw Tightening Torque 3.6 pound-inches (0.4Nm) Rated Voltage 30/2 Uigit LED, 0.37"/9.4mm high Display Type and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) voltage Scale input voltage above) Physical/Environmental		85	_	264	Vac/47-63Hz	
Power Supply Current (TB1, ②)DMS-20RM-X-AC1—3050mA/47-63HzDMS-20RM-X-DC2—1015mAdcTerminal Block Wiring (TB1 and TB2)Wire Size16-22AWG, Solid or strandedInsulation Strip Length0.250 inchesScrew Tightening Torque3.6 pound-inches (0.4Nm)Rated Voltage300VacDisplay300VacDisplay3½ Digit LED, 0.37"/9.4mm highOverrange Indication"1"Physical/Environmental-25Operating Temperature-25-25—460°CStorage Temperature-40-40-450%DimensionsModel dependent; see product datasheet.						
DMS-20RM-X-AC1—3050mA/47-63HzDMS-20RM-X-DC2—1015mAdcTerminal Block Wiring (TB1 and TB2)Wire Size16-22AWG, Solid or stradedInsulation Strip Length0.250 inchesScrew Tightening Torque3.6 pound-inches (0.4Nm)Rated Voltage300VacDisplayUDisplay Type and Size3½ Digit LED, 0.37"/9.4mm highOverrange Indication"1"Physical/EnvironmentalFixed, model dependent (see full-scale input voltage above)Physical/Environmental-25Operating Temperature-25-400—4500°CStorage Temperature-400-8500%DimensionsModel dependent; see product datasheet.	Power Supply Current (TB1, 2)					
Terminal Block Wiring (TB1 and TB2) Wire Size 16-22AWG, Solid or stranded Insulation Strip Length 0.250 inches Screw Tightening Torque 3.6 pound-inches (0.4Nm) Rated Voltage 300Vac Display 31½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Pecimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental -25 - +60 °C Storage Temperature -40 - +75 °C Humidity (non-condensing) 0 - 85 %			30	50	mA/47-63Hz	
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Screw Tightening Torque 3.6 pound-inches (0.4Nm) Rated Voltage 300Vac Display 300Vac Display Type and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental -25 - +60 °C Operating Temperature -40 - +75 °C Humidity (non-condensing) 0 - 85 %	Wire Size	16-22AWG, Solid or stranded				
Rated Voltage 300Vac Display 300Vac Display Type and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental Operating Temperature -25 — +60 °C Storage Temperature -40 — +60 °C Humidity (non-condensing) 0 — +60 °C Dimensions Model dependent; see product datasheet.	Insulation Strip Length	0.250 inches				
Display Display Type and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental -25 +60 °C Storage Temperature -40 +75 °C Humidity (non-condensing) 0 85 %	Screw Tightening Torque	3.6 pound-inches (0.4Nm)				
Display Type and Size 3½ Digit LED, 0.37"/9.4mm high Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental -25 - +60 °C Operating Temperature -25 - +75 °C Humidity (non-condensing) 0 - 85 % Dimensions Model dependent; see product datasheet.	Rated Voltage	300Vac				
Overrange Indication "1" Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental Fixed, model dependent (see full-scale input voltage above) Operating Temperature -25 +60 °C Storage Temperature -40 +75 °C Humidity (non-condensing) 0 85 % Dimensions Model dependent; see product datasheet.	Display					
Decimal Point Fixed, model dependent (see full-scale input voltage above) Physical/Environmental -25 - +60 °C Operating Temperature -25 - +75 °C Humidity (non-condensing) 0 - 85 % Dimensions Model dependent; see product datasheet.	Display Type and Size	3½			m high	
Notify and the voltage above)Voltage above)Physical/EnvironmentalOperating Temperature-25—+60°CStorage Temperature-40—+75°CHumidity (non-condensing)0—85%DimensionsModel dependent; see product datasheet.	Overrange Indication	"1"				
Operating Temperature -25 +60 °C Storage Temperature -40 +75 °C Humidity (non-condensing) 0 85 % Dimensions Model dependent; see product datasheet.	Decimal Point					
Storage Temperature -40 +75 °C Humidity (non-condensing) 0 85 % Dimensions Model dependent; see product datasheet.	Physical/Environmental					
Humidity (non-condensing) 0 85 % Dimensions Model dependent; see product datasheet.	Operating Temperature	-25	_	+60	°C	
Dimensions Model dependent; see product datasheet.	Storage Temperature	-40	_	+75	°C	
	Humidity (non-condensing)	0		85	%	
Weight: 1.3 Ounces (36 grams) nominal	Dimensions	Model dependent; see product datasheet.				
	Weight:	1.3 Ounces (36 grams) nominal				

① Specified accuracy applies to inputs with crest factors (CF) up to 2.0, where CF = Vpeak/Vrms. Crest factors of 2 to 5 introduce an additional error of $\pm 3\%$ of full scale. Voltmeters are calibrated with a near full-scale, 60Hz sine-wave input.

② Specified maximum power supply currents are steady state; larger surge currents can occur at initial application of power.



ORDERING INFORMATION

DMS-20RM-1-AC1-R-C	0 to 19.99Vac, AC Powered
DMS-20RM-2-AC1-R-C	0 to 199.9Vac, AC Powered
DMS-20RM-3-AC1-R-C	0 to 300Vac, AC Powered
DMS-20RM-1-DC2-R-C	0 to 19.99Vac, DC Powered
DMS-20RM-2-DC2-R-C	0 to 199.9Vac, DC Powered
DMS-20RM-3-DC2-R-C	0 to 300Vac, DC Powered

A DMS-BZL4-C bezel assembly with sealing gasket is supplied with each meter.

IMPORTANT! To ensure safe and reliable operation, DMS-20RM 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.

TECHNICAL NOTES

www.murata-ps.com/dpm

- 1. Measurement Type: DMS-20RM series ac voltmeters employ a precision rms-to-dc converter and a high-precision voltage reference to measure and display the rms value of complex ac waveforms. Please note, the rear-mounted potential transformer is used to isolate the input signal being measured (TB2) from the ammeter's operating power source connected to TB1. Do not pass any conductors through this transformer's center hole as this will introduce significant measurement errors.
- 2. Wiring: All power supply and input signal wiring must be rated for the voltages and currents they will carry and must comply with any code or application-mandated requirements pertaining to the user's specific installation.
- 3. Power Supply Polarity, Fusing, and Grounding: As shown in Figures 1A, 1B, and 2, the two power supply inputs, TB1-A and TB1-B, on ac-powered DMS-20RM voltmeters ("-AC1" suffix) are not polarity sensitive, that is, they have no "AC L0" or "AC HI" designations. Also, ac-powered models do not include or require a connection to earth/ chassis ground. DC-powered models ("-DC2" suffix) are reverse-polarity protected, and must be connected as shown in Figure 2 for proper operation.

DMS-20RM voltmeters are not internally fused. Terminal block TB1 is to be used only for powering the power meter's internal circuitry; it must not be used to supply power to external loads. The supply wires feeding these power meters must be fused with a 0.25A/250V time delay/time lag fuse, in accordance with applicable regulatory codes.

Wire insulation must be stripped to within $\pm 10\%$ of the stated dimensions, and wires should be inserted into TB1 such that their insulation is not pinched by the screw terminal. See the Functional Specifications section of this data sheet for wire sizes and tightening torque for TB1's screw terminals.

4. Calibration: Periodic recalibration of DMS-20RM voltmeters is not required under normal, indoor operating environments. If calibration is necessary, it should only be performed by qualified technical personnel. Calibration is performed with potentially lethal voltages applied to the DMS-20RM and its associated wiring. A plastic, fully-insulated adjusting tool must be used to access the recessed calibration potentiometer located on the back of the unit (see Mechanical Specifications). Contact Murata Power Solutions if additional information is required regarding calibration, setup, or any other technical issue pertaining to DMS-20RM ac voltmeters.

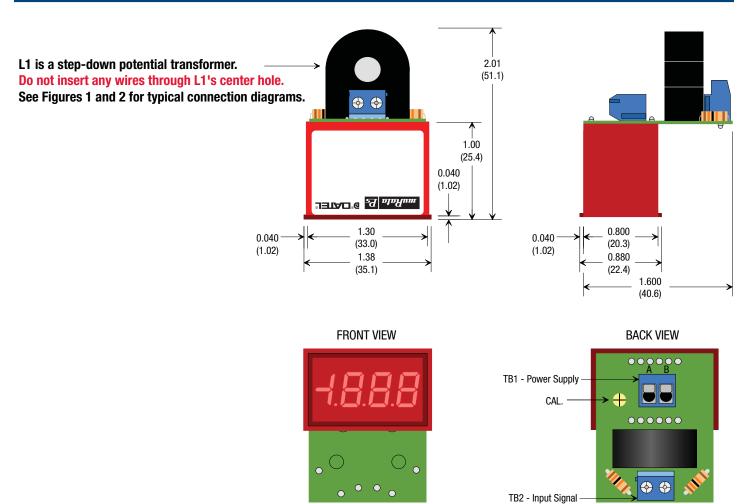
email: sales@murata-ps.com



DMS-20RM Series

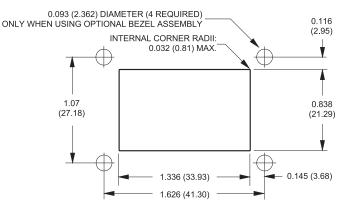
True-rms ac Voltmeters with Isolated Inputs

MECHANICAL SPECIFICATIONS



RECOMMENDED DRILL AND PANEL CUTOUT

FRONT VIEW



RECOMMENDED DRILL AND PANEL CUTOUT DIMENSIONS

#2-56 INSERT 0.156 (3.96) DEEP

1.826 (46.38)

0.187

(4.75)

1.280

(32.51)



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DMS-20RM Series

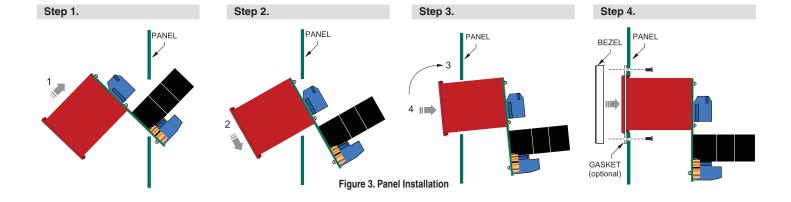
True-rms ac Voltmeters with Isolated Inputs

Panel Installation

All connections to DMS-20RM ac voltmeters must be made after the meter is securely attached to the panel, with all associated ac supply power sources de-energized (off). The installed wire positions should be such that minimal forces are applied to terminal blocks TB1 and TB2. In high-vibration environments, proper strain reliefs must be used for all wiring.

To ensure a secure panel-mount installation, MPS recommends using the DMS-BZL4-C bezel assembly (with sealing gasket) supplied with each DMS-20RM voltmeter. See the 'Mechanical Specifications' section for detailed cutout and voltmeter dimensions.

Following the four-step sequence shown in Figure 3 — being careful not to apply excessive force or twisting motions — insert the DMS-20RM into the panel opening. When using the DMS-BZL4-C, install its sealing gasket so it is positioned between the voltmeter's front flange and panel front surface (see Mechanical Specifications). Be sure to use and securely tighten all four screws supplied with the bezel assembly.



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DATEL

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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. © 2011 Murata Power Solutions, Inc.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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