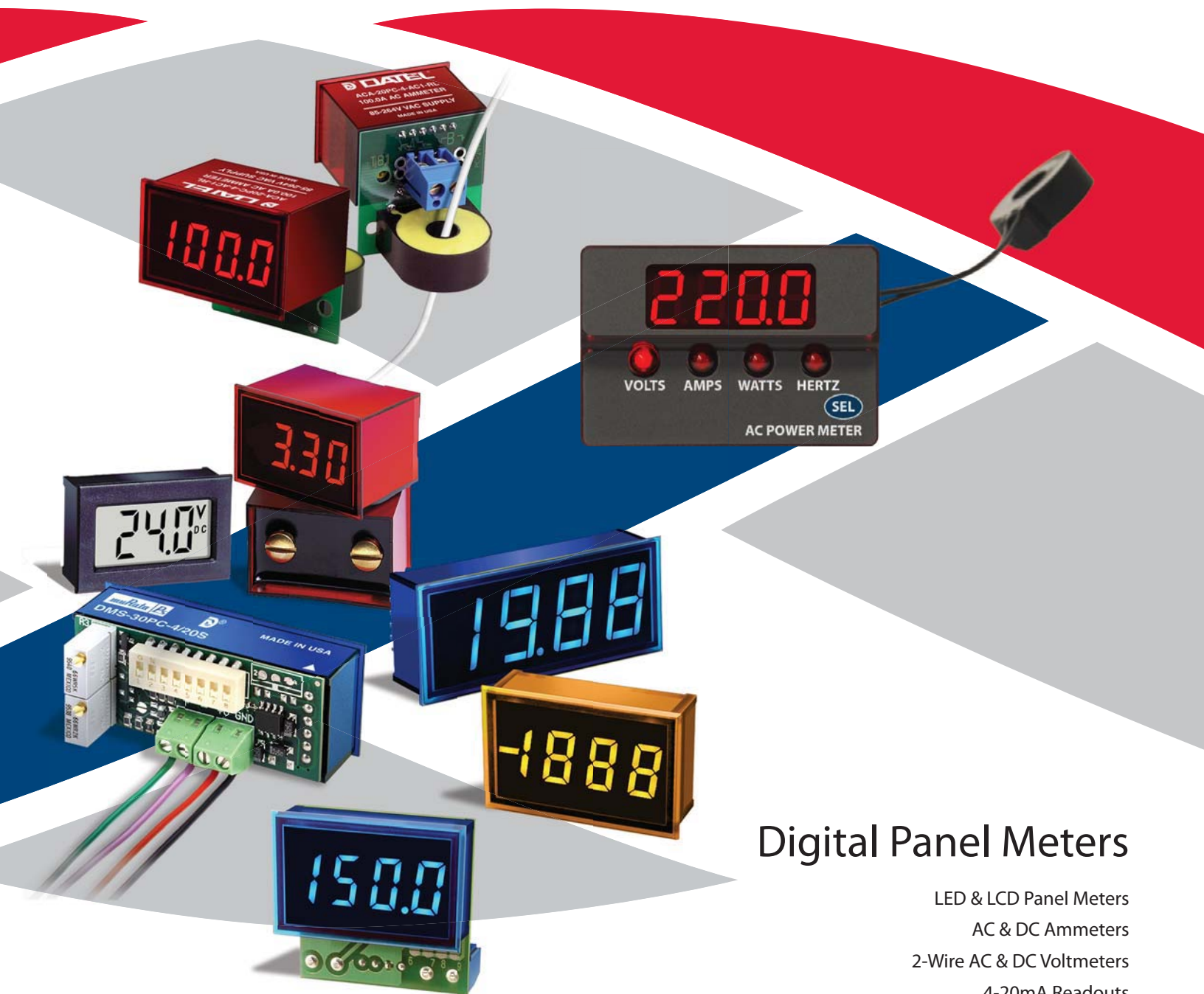


**DATTEL**

# Digital Panel Meters



## Digital Panel Meters

LED & LCD Panel Meters  
AC & DC Ammeters  
2-Wire AC & DC Voltmeters  
4-20mA Readouts  
Process Monitors  
AC Power Meters

### MeterCenter

2046 W. Peninsula Circle  
Chandler, AZ 85248  
Telephone: (480) 659-8351 Toll Free: (800) 230-6008  
Fax: (480) 659-8361  
Email: Sales@MeterCenter.com

[www.DattelMeters.com](http://www.DattelMeters.com) - [www.MeterCenter.com](http://www.MeterCenter.com)

**muRata** **Ps**  
Murata Power Solutions

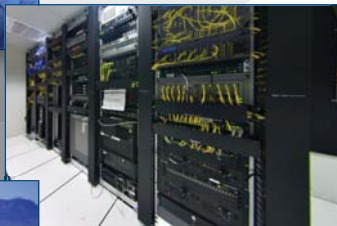
## DATTEL Digital Panel Meters

For more than 35 years, the DATTEL offering of digital panel meters has been recognized as the industry's most versatile. If a standard product does not meet your requirements, our experienced team of designers can quickly develop a custom solution. DATTEL digital panel meters are expertly designed for a variety of applications, including:



Test & Measurement

Data Centers



Marine



Recreational Vehicles



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## About Murata Power Solutions

Murata Power Solutions was established by Murata Manufacturing Corporation in September 2007 with its acquisition of the Power Electronics Division of C&D Technologies, Inc. The acquisition brought with it a comprehensive offering of products and capabilities from market leading companies including:

- **DATTEL, Inc.**
  - Medium to high power DC/DC converters
  - Data acquisition products
  - Digital panel meters
- **Newport Components Ltd.**
  - Miniature low power DC/DC converters
  - Inductors, transformers, and filters
- **Power Systems Division of Celestica, Inc.**
  - AC/DC front end power supplies
  - Processor power (VRMs)
- **Celab Ltd.**
  - Power conversion products for harsh environments

Murata Power Solutions is one of the top five suppliers of power electronics, with sales, manufacturing, and design teams operating from facilities in the United States, Canada, China, Japan, Singapore, England, France, and Germany. Backed by a network of the leading electronics distributors, Murata Power Solutions can effectively support your local and global requirements. Manufactured to the highest standards in ISO 9001:2000 Certified facilities, our products undergo the strictest verification testing, so you can be sure that they perform to, and often beyond, their specifications.

## 3½ Digit, Subminiature LED Panel Meters



**DMS-20PC Series**

- Large LED displays: 0.37"/9.4mm
- 12-pin DIP packages, panel or board mountable
- Low-current LED models (7mA)
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Built-in color filters and bezels
- Moisture/vibration resistant encapsulated packages
- DISPLAY ENABLE function for "power down" mode
- DISPLAY TEST and HOLD functions (optional)

**Package Dimensions** 1.38"W x 0.88"H x 0.475"D  
35.1mm W x 22.4mm H x 12.07mm D

### Ordering Guide

#### DMS-20PC-1-R S-C

LED Model

Input Range

0 =  $\pm 200\text{mV}$

1 =  $\pm 2\text{V}$

2 =  $\pm 20\text{V}$

3 =  $\pm 200\text{V}$

RoHS Compliant

Intensity/Power (+5V Supply)

S = Standard Brightness

H = High Intensity (Red)

L = Low Power (Red, green, blue)

LED Color

Y O A R G B

Now available  
with low-power  
blue and green  
LEDs!

## 3½ Digit, Miniature LED Panel Meters



**DMS-30PC Series**

- Large displays: 0.56"/14.2mm
- Low-current LED models (12mA)
- 12-pin DIP packages, panel or board mountable
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Built-in color filters and bezels
- Moisture/vibration resistant encapsulated packages
- Numerous application boards available

**Package Dimensions** 2.17"W x 0.92"H x 0.56"D  
55.1mm W x 23.4mm H x 14.22mm D

### Ordering Guide

#### DMS-30PC-1-R S-C

LED Model

Input Range

0 =  $\pm 200\text{mV}$

1 =  $\pm 2\text{V}$

2 =  $\pm 20\text{V}$

3 =  $\pm 200\text{V}$

RoHS Compliant

Intensity/Power (+5V Supply)

S = Standard Brightness

H = High Intensity (Red only)

L = Low Power (Red, orange and green only)

LED Color

Y O A R G B Q

## 3½ Digit, Daylight Readable Panel Meters



**DMS-30DR Series**

*with Auto-Dimming LED Displays*

- Super-bright LED displays are readable in direct sunlight
- Automatic display-brightness adjustment
- Includes provision for external brightness adjustment
- Power consumption: Less than 1W at max. brightness  
Less than 0.1W at normal brightness

**Package Dimensions** 2.17"W x 0.92"H x 0.56"D  
55.1mm W x 23.4mm H x 14.22mm D

### Ordering Guide

#### DMS-30DR-1-R-C

LED Model

Input Range

0 =  $\pm 200\text{mV}$

1 =  $\pm 2\text{V}$

2 =  $\pm 20\text{V}$

3 =  $\pm 200\text{V}$

RoHS Compliant

LED Color

R

## 4½ Digit, Miniature LED Panel Meters



**DMS-40PC Series**

- Scientific-grade accuracy,  $\pm 2$  counts
- Large displays: 0.52"/13.2mm (LED)
- 12-pin DIP packages, panel or board mountable
- Low-current LED models (35mA)
- Display HOLD function standard
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Moisture/vibration resistant encapsulated packages

**Package Dimensions** 2.17"W x 0.92"H x 0.56"D  
55.1mm W x 23.4mm H x 14.22mm D

### Ordering Guide

#### DMS-40PC-1-R S-C

LED Model

Input Range

1 =  $\pm 2\text{V}$

2 =  $\pm 20\text{V}$

3 =  $\pm 200\text{V}$

RoHS Compliant

Intensity/Power (+5V Supply)

S = Standard Brightness

H = High Intensity (Red only)

L = Low Power (Red only)

LED Color

Y R G



## 3½ Digit, Subminiature LCD Panel Meters



### DMS-20LCD Series

- Large LCD displays: 0.37"/9.4mm
- 12-pin DIP packages, panel or board mountable
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Single +5V supply or 9V battery
- Moisture/vibration resistant encapsulated packages
- Low-battery annunciator
- Low power consumption (2mW)

**Package Dimensions** 1.38"W x 0.88"H x 0.425"D  
35.1mm W x 22.4mm H x 10.8mm D

#### Ordering Guide

#### DMS-20LCD - 1 - 5 - C

LCD Model

Input Range  
0 =  $\pm 200\text{mV}$   
1 =  $\pm 2\text{V}$   
2 =  $\pm 20\text{V}$   
3 =  $\pm 200\text{V}$

RoHS Compliant  
Leave blank for standard models.  
Add -B for backlit models.

Power Source:  
5 = +5V  
9 = +9V

## 3½ Digit, Miniature LCD Panel Meters



### DMS-30LCD Series

- Large displays: 0.40"/10.2mm
- 12-pin DIP packages, panel or board mountable
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Moisture/vibration resistant encapsulated packages
- Single +5V supply or 9V battery
- Numerous application boards available
- Backlit displays optional

**Package Dimensions** 2.17"W x 0.92"H x 0.43"D  
55.1mm W x 23.4mm H x 10.92mm D

#### Ordering Guide

#### DMS-30LCD - 1 - 5 - C

LCD Model

Input Range  
0 =  $\pm 200\text{mV}$   
1 =  $\pm 2\text{V}$   
2 =  $\pm 20\text{V}$   
3 =  $\pm 200\text{V}$

RoHS Compliant  
Leave blank for standard models.  
Add -B for backlit models.

Power Source:  
5 = +5V  
9 = +9V

## 4½ Digit, Miniature LCD Panel Meters



### DMS-40LCD Series

- Scientific-grade accuracy,  $\pm 2$  counts
- Large displays: 0.40"/10.2mm (LCD)
- 12-pin DIP packages, panel or board mountable
- Display HOLD function standard
- 4 input ranges:  $\pm 200\text{mV}$ ,  $\pm 2\text{V}$ ,  $\pm 20\text{V}$ ,  $\pm 200\text{V}$
- Dual input ranges
- Moisture/vibration resistant encapsulated packages
- Backlit displays optional

**Package Dimensions** 2.17"W x 0.92"H x 0.43"D  
55.1mm W x 23.4mm H x 10.92mm D (LCD)

#### Ordering Guide

#### DMS-40LCD - 0/1 - 5 - C

LCD Model

Input Range  
0/1 =  $200\text{mV}/\pm 2\text{V}$   
1/2 =  $\pm 2\text{V}/\pm 20\text{V}$   
2/3 =  $20\text{V}/\pm 200\text{V}$

RoHS Compliant  
Leave blank for standard models.  
Add -B for backlit models.

Power Source:  
5 = +5V  
9 = +9V

## New! Ruggedized True-rms AC Voltmeters



### DMU-30ACV Series

- Measures and displays the true-rms value of complex AC voltages
- Three input ranges: 20Vac, 200Vac and 300Vac
- Daylight-readable LED display with automatic brightness adjustment
- Moisture & impact resistant package offers NEMA-4/IP65 protection
- Operates from universal 85-264Vac or 110-300Vdc supplies
- Input circuit fully isolated from operating AC power source

Measures and displays the true-rms values of complex AC waveforms. Large 0.56" (14.2mm) high super-bright red LED display is readable in full sunlight. An auto-dimming circuit automatically adjusts the display brightness for all viewing conditions. All DMU-30ACV AC voltmeters are designed to meet NEMA-4/IP65 for moisture resistance in outdoor applications.

**Package Dimensions** 2.85"L x 2.34"H x 1.76"D  
72.4mm L x 59.4mm H x 44.7mm D

#### Ordering Guide

#### DMU-30ACV-1 - DR - C

Input Range  
0 = 0 to 19.99Vac  
1 = 0 to 199.9Vac  
2 = 0 to 300Vac

Daylight Readable

RoHS Compliant

## New! True-rms AC Voltmeters with Isolated Inputs



### DMS-20RM Series

- 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
- 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)

Measures and displays the true-rms value of complex AC waveforms. No external isolation transformers or auxiliary power supplies are required. Simply connect the input signal and a power source to the two rear-mounted terminal blocks and the unit is fully operational.

**Package Dimensions** 1.38"L x 1.60"H x 2.01"D  
35.1mm L x 40.6mm H x 51.1mm D

#### Ordering Guide

#### DMS-20RM - 1 - AC1 - R - C

Input Range  
1 = 0 to 19.99Vac  
2 = 0 to 199.9Vac  
3 = 0 to 300Vac

LED Color **R**

Power Supply  
AC1 = 85-264Vac @ 47/63Hz  
DC2 = +10-40Vdc

RoHS Compliant

## New! Ruggedized DC Voltmeters



### DMU-30DCV Series

- Measure and accurately display DC voltages in harsh environments
- Four input ranges:  $\pm 200$ mVdc,  $\pm 2$ Vdc,  $\pm 20$ Vdc, and  $\pm 200$ Vdc
- Daylight-readable LED display with automatic brightness adjustment
- Moisture & impact resistant package offers NEMA-4/IP65 protection
- Operates from universal 85-264Vac mains, or 110-300Vdc supplies
- Input circuit fully isolated from AC power supply

Measures and displays dc signals as low as  $\pm 200$ mV and as high as  $\pm 200$ V. Large 0.56" (14.2mm) high super-bright red LED-display is readable in full sunlight. An auto-dimming circuit automatically adjusts the display brightness for all viewing conditions. All DMU-30DCV dc voltmeters are designed to meet NEMA-4/IP65 for moisture resistance in outdoor applications.

**Package Dimensions** 2.85"L x 2.34"H x 1.76"D  
72.4mm L x 59.4mm H x 44.7mm D

#### Ordering Guide

#### DMU-30DCV-1 - DR - C

Input Range  
0 = 0 to  $\pm 199.9$ mVdc  
1 = 0 to  $\pm 1.999$ Vdc  
2 = 0 to  $\pm 19.99$ Vdc  
3 = 0 to  $\pm 199.9$ Vdc

Daylight Readable

RoHS Compliant

## AC Ammeters



**ACA-20PC Series**

### Built-in CTs for AC currents to 100A

- 4 ranges from 0-2A to 0-100A
- Functionally complete with on-board CTs; Red LEDs
- 2A and 20A models include all connections for load and power
- AC (85-264V @ 50/60Hz with "self-power") or DC (5-40V) power
- UL/CSA recognized; 2000V isolation between load and supply

ACA-20PC Series are the first digital AC ammeters to incorporate on-board current transformers. Simply pass the current-carrying load wire through the on-board CT, apply power to the two power supply terminals, and you're instantly measuring AC currents up to 100A. No external shunts or expensive CTs are required.

|                           |  |
|---------------------------|--|
| <b>Package Dimensions</b> | 1.38"W x 1.36"H x 2.01"D<br>35.1mm W x 34.54mm H x 51.05mm D |
|---------------------------|--|

### Ordering Guide

#### ACA-20PC-1-AC1-RL-C

LED Model

RoHS Compliant

Input Range

- 1 = 1.999A
- 2 = 19.99A
- 3 = 50.0A
- 4 = 100.0A

LED Color

**RL**

Power Supply

AC1 = 85-264Vac @ 50/60Hz  
DC1 = +5-40Vdc

Now available with leaded CTs

## AC Ammeters



**ACA5-20PC Series**

### External CTs for AC currents to 2000A

- 14 ranges from 0-50A to 0-2000A; 42 models
- Functionally complete; Bright red LED readouts
- Scales/digitizes/displays the signal from 5A current transformers
- UL/CSA recognized; Zero-burden inputs with 2000V isolation
- AC (120/220V @ 50/60Hz) or DC (5-40V) power

Scales and displays the output of 5A current transformers (50:5A, 500:5A, 1000:5A, etc.). Fourteen input ranges measure AC currents from 0-50A to 0-2000A. They accept outputs from previously installed high-current CTs to instantly bring digital precision to older AC ammeter installations.

|                           |  |
|---------------------------|--|
| <b>Package Dimensions</b> | 1.38"W x 1.36"H x 2.01"D<br>35.1mm W x 34.54mm H x 51.05mm D |
|---------------------------|--|

### Ordering Guide

#### ACA5-20PC-1-AC1-RL-C

LED Model

RoHS Compliant

Input Range  
14 selections,  
50.0A to 1999A.  
See data sheet  
for details

LED Color

**RL**

Power Supply

AC1 = 85-264Vac @ 50/60Hz  
DC1 = +5-40Vdc

## RMS Reading AC Ammeters



**ACA-20RM Series**

### Built-In CTs for AC currents to 50A

- Accurately measure complex waveforms
- Built-in CTs measure up to 50A
- Self-powered from 120Vac or 220Vac
- Large 0.37"/9.4mm red LED displays
- UL and CSA recognized

World's first digital AC-ammeters with built-in CTs to directly measure the true-RMS value of complex, non-sinusoidal AC currents. Now available with split-core CTs for easy installation.

|                           |  |
|---------------------------|--|
| <b>Package Dimensions</b> | 2.10"W x 1.40"H x 1.25"D<br>53.3mm W x 35.56mm H x 31.75mm D |
|---------------------------|--|

### Ordering Guide

#### ACA-20RM-1-AC3-RL-C

LED Model

RoHS Compliant

Input Range  
0 = 199.9mA  
1 = 1.999mA  
2 = 19.99A  
4 = 50.0A (with split-core flying-lead CT)  
5 = 30.0A (with flying-lead CT)

LED Color

**RL**

Power Supply

AC3 = 85-140Vac @ 50/60Hz  
AC4 = 170-264Vac @ 50/60Hz

# AC Ammeters



**ACA5-20RM Series**

## True-rms-AC Ammeters with 5A CT Inputs

- Scales and displays the true-rms output of 5A current transformers
- Accurately measure complex AC current waveforms
- Available in three input ranges: 0-100A, 0 to 200A, or 0 to 500A
- Functionally complete: On-board, low-burden toroid sensor
- Easy-to-read, red LED display with 0.37"/9.4mm digits
- Two AC power options: 85-140Vac & 170-264Vac (50/60Hz)
- 2000V isolation between AC supply and external CT

DATel's ACA5-20RM Series AC ammeters accept the output of external 5A current transformers (CTs) and accurately display the true-rms value of complex, non-sinusoidal AC currents up to 500A. Operation and setup is straightforward: simply pass the external 5A CTs secondary output leads through the on-board toroid sensor, apply AC power, and the ammeter is fully operational.

**Package Dimensions** 2.1"L x 1.40"H x 0.73"D  
53.3mm L x 35.6mm H x 18.5mm D

## Ordering Guide

**ACA5-20RM-3-AC3-RL-C**

Input Range  
3 = 100.0A  
5 = 199.9A  
9 = 500.0A

LED Color **RL**

Power Supply  
AC3 = 85-140Vac @ 47/63Hz  
AC4 = 170-264Vac @ 47/63Hz

RoHS Compliant



**ACA-20RM-ALM Series**

## True-rms-AC Ammeters with Alarm Function

- User-settable, visual alarm function
- Flashing display indicates overcurrent faults
- Measures the true-rms value of complex AC current waveforms
- Includes built-in current transformers
- Available in two input ranges: 0-30.0A, and 0 to 50A
- 50A model features convenient split-core CT
- Easy-to-read, red LED display with 0.37"/9.4mm high digits
- Two AC power options: 85-140Vac & 170-264Vac (50/60Hz)

Displays the true-rms value of non-sinusoidal AC currents and provide a user settable, over current alarm function. When the preset over current level is exceeded, the LED display continuously flashes from high to low intensity. A built-in current transformer greatly simplifies most AC ammeter applications: just pass the load conductor through the built-in current transformer, apply AC power, and the ammeter is fully operational.

**Package Dimensions** 2.1"L x 1.40"H x 0.73"D  
53.3mm L x 35.6mm H x 18.5mm D

## Ordering Guide

**ACA-20RM-4-AC3-RL-ALM-C**

Input Range  
4 = 50.0A  
5 = 30.0A

LED Color **RL**

Power Supply  
AC3 = 85-140Vac @ 47/63Hz  
AC4 = 170-264Vac @ 47/63Hz

RoHS Compliant

Alarm Function

## AC Current Transformers

| Part No.     | Current Ratio | Accuracy | Burden--VA (Ohms) |
|--------------|---------------|----------|-------------------|
| 7020-01036-0 | 50:5          | ±2%      | 1.5 (0.06)        |
| 7020-01037-0 | 75:5          | ±2%      | 3.0 (0.12)        |
| 7020-01038-0 | 100:5         | ±1%      | 3.0 (0.12)        |
| 7020-01039-0 | 150:5         | ±1%      | 6.0 (0.24)        |
| 7020-01040-0 | 200:5         | ±1%      | 8.0 (0.32)        |
| 7020-01041-0 | 250:5         | ±1%      | 10.0 (0.40)       |
| 39-3681407*  | 300:5         | ±1%      | 12.5 (0.50)       |
| 39-3681408*  | 400:5         | ±1%      | 12.5 (0.50)       |
| 39-3681409*  | 500:5         | ±1%      | 20.0 (0.80)       |
| 7020-01042-0 | 600:5         | ±1%      | 10.0 (0.40)       |
| 7020-01043-0 | 750:5         | ±1%      | 10.0 (0.40)       |
| 7020-01044-0 | 1000:5        | ±1%      | 10.0 (0.40)       |
| 7020-01045-0 | 1500:5        | ±1%      | 12.5 (0.50)       |
| 7020-01046-0 | 2000:5        | ±1%      | 15.0 (0.60)       |

\*Not available as RoHS compliant.

These 5A output, "donut" style AC current transformers can be used with our ACA5-20PC and ACA5-20RM series AC ammeters to measure currents from 50 to 2000 Amps. All models have 2-foot-long (0.6m) wire leads and are UL recognized components.



## AC Power Meters



### ACM20 Series

#### Four-Function AC Power Meters

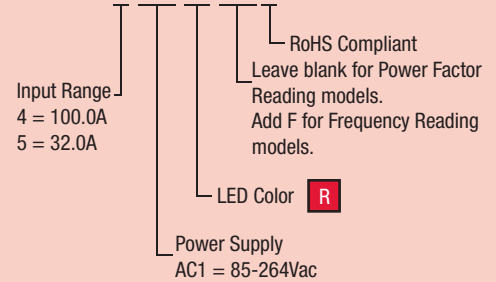
- Displays AC Volts, Amps, Watts, and Power Factor
- Two display modes: continuous auto-cycling or fixed reading
- Universal 85-264Vac (47-63Hz) operating range
- Built-in current transformers simplify installation; choice of 32A (9999 Watts max.) or 100A (26.4kW max.) ranges
- Ideal for power distribution units (PDUs) in IT installations
- True-rms readings of complex voltage and current waveforms
- One-piece polycarbonate housing fits '0U' & '1U' racks
- Bright red LED-display with four annunciators
- Optional Frequency reading models (0.1Hz resolution)

Displays the most critical measurements in mains-powered equipment: voltage, amperage, active power (watts or Kilowatts), and power factor. A front panel selector-switch provides two modes of operation: a fixed reading of any of the four parameters, or a continuous cycling through all four measurements. All ACM20 multi-function power meters include built-in current transformers—no other user-supplied components are required.

**Package Dimensions** 2.1"L x 1.43"H x 1.1"D  
53.3mm L x 36.3mm H x 27.9mm D

#### Ordering Guide

##### ACM20 - 4 - AC1 - R - F - C



## DC Ammeters



### DCA-20PC Series

#### Built-in shunts for DC currents to 20A

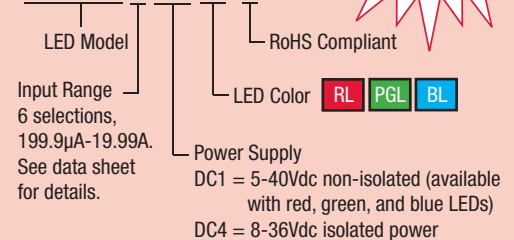
- 6 ranges from 0-200μA to 0-20A; 24 models
- Functionally complete with on-board 20mV shunts
- On-board load/supply connections for 3-wire operation
- 8-36Vdc isolated supplies for high-side shunts
- 5-40Vdc supplies for 5/12/24V; 48V telecom option

The first digital DC ammeters to include built-in low loss shunts for measuring currents up to 20A. Six ranges provide for precision measurement of DC currents from 200μA to 20A. These ammeters are 100% self-contained, so no calibration or user-supplied components are required.

**Package Dimensions** 1.38"W x 1.46"H x 1.04"D  
35.1mm W x 37.08mm H x 26.41mm D

#### Ordering Guide

##### DCA-20PC-1-DC1-RL-C



Now available with low-power blue and green LEDs!

## DC Ammeters



### DCA5-20PC Series

#### External shunts for DC currents to 2000A

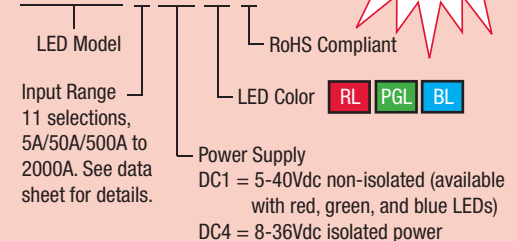
- 11 ranges from 0-1A to 0-2000A; 44 models
- Functionally complete with on-board interface circuitry
- Scales/digitizes/displays the output of 50/100mV shunts
- Wide-range, isolated/non-isolated power; 48V telecom option
- Subminiature packages with screw-style terminal blocks

Scales and displays the output of 50mV and 100mV DC-shunts. Twenty-five ranges provide for measurement of DC currents from 1A to 2000A. With the exception of an external shunt, the unit is 100% self-contained—no calibration or additional components are required.

**Package Dimensions** 1.38"W x 1.46"H x 1"D  
35.1mm W x 37.08mm H x 25.4mm D

#### Ordering Guide

##### DCA5-20PC-1-DC1-RL-C



Now available with low-power blue and green LEDs!



## 2-Wire AC Voltmeters



### DMS-20 LM Series

- The easiest-to-use products of their type
- 120V model plugs directly into wall outlets
- Screw-terminal inputs simplify panel mounting
- Large, easy-to-read, red, green, or blue LED displays
- 3-digit readouts;  $\pm 1V$  accuracies
- Rugged encapsulated construction

Component-size, self-contained, low-cost, 2-wire AC voltmeters require no additional components or auxiliary power. Just connect an AC voltage to their two rear terminals and you are instantly reading AC voltages with one-volt resolution. The large (0.37"/9.4mm), bright red, blue, or green LED display makes DMS-20PC-LM voltmeters easily readable under any lighting conditions.

| Display Type | Input Range                                   | Resolution | Accuracy | Maximum Current Drain | Package Dimensions ①② |                    | Model Number (Display Color) | Datasheet Title |
|--------------|---|------------|----------|-----------------------|-----------------------|--------------------|------------------------------|-----------------|
|              |   |            |          |                       | Inches                | mm                 |                              |                 |
| LED          | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-C (Red)        | DMS-20PC-1-LM   |
|              | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-F-C (Red)      | DMS-20PC-1-LM   |
|              | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-B-C (Blue)     | DMS-20PC-1-LM   |
|              | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-BF-C (Blue)    | DMS-20PC-1-LM   |
|              | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-G-C (Green)    | DMS-20PC-1-LM   |
|              | 85-264Vac @ 47-63Hz                           | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-LM-GF-C (Green)   | DMS-20PC-1-LM   |
|              | 85-140Vac @ 350-450Hz<br>240-310Vac @ 47-99Hz | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-2-LM-C (Red)        | DMS-20PC-2-LM   |
|              | 350-600Vac @ 47-63Hz                          | 1V         | $\pm 1V$ | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-3-LM-C (Red)        | DMS-20PC-3-LM   |

① Panel-mount front bezels, with or without sealing gaskets, may be ordered separately (see [www.murata-ps.com/dpm](http://www.murata-ps.com/dpm)).

② AC voltmeters have screw terminals on the back of their packages. DMS-20PC-1-LM-F has "blade" terminals that plug directly into USA-style wall outlets.



## 2-Wire Frequency Meters



### DMS-20 FM Series

- Ideal for emergency power-generating equipment
- 50/60Hz or 400Hz versions; 120/220Vac inputs
- 60Hz/120V model plugs directly into wall outlets
- 3-digit readouts accurate to  $\pm 0.1$  Hertz (60Hz models)
- Easy-to-read, large (0.4"/10.2mm), red LED displays
- Rugged encapsulated construction

The world's smallest, self-powered, AC frequency meters. Simply connect the AC line to the two rear terminals, and the unit is fully operational. All models feature encapsulated construction and an ultra-stable, quartz-crystal-controlled, microcontroller to provide accuracies of  $\pm 0.1$ Hz (50/60Hz models) or  $\pm 1$ Hz (400Hz model) over the entire operating temperature range of  $-25$  to  $+60^{\circ}\text{C}$ .

| Display Type | Input Range           | Resolution | Accuracy     | Maximum Current Drain | Package Dimensions ①② |                    | Model Number      | Datasheet Title |
|--------------|-----------------------|------------|--------------|-----------------------|-----------------------|--------------------|-------------------|-----------------|
|              |                       |            |              |                       | Inches                | mm                 |                   |                 |
| LED ③        | 85-140Vac @ 47-99Hz   | 0.1Hz      | $\pm 0.1$ Hz | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-FM-C   | DMS-20PC-FM     |
|              | 85-140Vac @ 47-99Hz   | 0.1Hz      | $\pm 0.1$ Hz | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-1-FM-F-C | DMS-20PC-FM     |
|              | 85-140Vac @ 350-450Hz | 1Hz        | $\pm 1$ Hz   | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-2-FM-C   | DMS-20PC-FM     |
|              | 170-246Vac @ 47-99Hz  | 0.1Hz      | $\pm 0.1$ Hz | 50mArms               | 1.38 x 0.88 x 1       | 35.1 x 22.4 x 25.4 | DMS-20PC-3-FM-C   | DMS-20PC-FM     |

① Panel-mount front bezels, with or without sealing gaskets, may be ordered separately (see [www.murata-ps.com/dpm](http://www.murata-ps.com/dpm)).

② All AC frequency meters have screw terminals on the back of their packages. The DMS-20PC-1-FM-F has "blade" terminals that plug directly into USA-style wall outlets.

③ All LED displays are red and have a digit height of 0.4"/10.2mm.



## 2-Wire DC Voltmeters



### DMS-20 DCM Series

#### 12V and 24V Battery Monitors

##### Ideal replacements for analog panel meters

- Monitor 9/12/24/28/36V batteries or power supplies
- LED or LCD displays with 0.37"/9.4mm digit heights
- Input ranges:
  - 12V models: 4.5-19.99V (LED), 6.5-18V (LCD)
  - 24V models: 8-50.0V (LED and LCD)
- $\pm 10\text{mV}$  accuracy (12V models);  $\pm 0.1\text{V}$  (24V models)
- 13mA/3mA (LED/LCD) maximum current drains
- Built-in "VDC" annunciator (LCD models)
- Reverse polarity protected
- Self-powered, only two connections required
- Reliable encapsulated construction
- Subminiature 1.38" x 0.88" x 1.0" packages
- -25 to +60°C operating temperature range (LED)
- Available in red, blue, or green LEDs

Great replacements for older, hard-to-read, analog panel meters. Simply connect your DC voltage across the two rear terminals and the meters are fully operational—no additional components or power supplies are required. Their large, 0.37" (9.4mm), displays can be easily read from 15 feet away. Built-in reverse polarity protection assures simple, trouble-free installation.



#### -48V for Distributed Power Systems

- Precision readout for -48Vdc power buses in telecom, datacom and computer/networking equipment
- -36.0 to -75.0Vdc input range
- 0.1V resolution;  $\pm 0.1\text{V}$  accuracy
- Negligible power consumption (13mA, max.)
- Self-powered, only two connections required
- -25 to +60°C operating temperature range
- Withstands -200V input transients
- Reverse polarity protected to +100V
- Subminiature 1.38" x 0.88" x 1.0" plastic package

Designed for monitoring -36 to -75V intermediate bus voltages in modern telecom, datacom and computer equipment. Compact size, large LED display, and low power consumption (8mA typ. at -48V) make it the ideal replacement for analog panel meters.

| Display Type ① | Input Range        | Resolution | Accuracy           | Maximum Current Drain | Package Dimensions ② |                     | Model Number (Display Color) | Datasheet Title      |
|----------------|--------------------|------------|--------------------|-----------------------|----------------------|---------------------|------------------------------|----------------------|
| LED            | +2 to +11.00Vdc    | 0.01V      | $\pm 0.01\text{V}$ | 50mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-3-DCM-C (Red)       | DMS-20PC-3-DCM       |
|                | +4.50 to +19.99Vdc | 0.01V      | $\pm 0.01\text{V}$ | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-0-DCM-C (Red)       | DMS-20PC-0/1/2/8-DCM |
|                | +4.50 to +19.99Vdc | 0.01V      | $\pm 0.01\text{V}$ | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-0-DCM-B-C (Blue)    | DMS-20PC-0/1/2/8-DCM |
|                | +4.50 to +19.99Vdc | 0.01V      | $\pm 0.01\text{V}$ | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-0-DCM-G-C (Green)   | DMS-20PC-0/1/2/8-DCM |
|                | +8.0 to +50.0Vdc   | 0.1V       | $\pm 0.1\text{V}$  | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-1-DCM-C (Red)       | DMS-20PC-0/1/2/8-DCM |
|                | +8.0 to +50.0Vdc   | 0.1V       | $\pm 0.1\text{V}$  | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-1-DCM-B-C (Blue)    | DMS-20PC-0/1/2/8-DCM |
|                | +8.0 to +50.0Vdc   | 0.1V       | $\pm 0.1\text{V}$  | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-1-DCM-G-C (Green)   | DMS-20PC-0/1/2/8-DCM |
|                | +30.0 to +199.9Vdc | 0.1V       | $\pm 0.1\text{V}$  | 7mA                   | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-8-DCM-C (Red)       | DMS-20PC-0/1/2/8-DCM |
|                | +30 to +264Vdc     | 1V         | $\pm 1\text{V}$    | 7mA                   | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-2-DCM-C (Red)       | DMS-20PC-0/1/2/8-DCM |
|                | -4.50 to -19.99Vdc | 0.01V      | $\pm 0.01\text{V}$ | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-4-DCM-C (Red)       | DMS-20PC-4/5/6-DCM   |
|                | -18.0 to -50.0Vdc  | 0.1V       | $\pm 0.1\text{V}$  | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-5-DCM-C (Red)       | DMS-20PC-4/5/6-DCM   |
|                | -30.0 to -264Vdc   | 1V         | $\pm 1\text{V}$    | 7mA                   | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-6-DCM-C (Red)       | DMS-20PC-4/5/6-DCM   |
| LCD            | -36.0 to -75.0Vdc  | 0.1V       | $\pm 0.1\text{V}$  | 13mA                  | 1.38 x 0.88 x 1      | 35.1 x 22.4 x 25.4  | DMS-20PC-7-DCM-C (Red)       | DMS-20PC-7-DCM       |
|                | +6.50 to +18.00Vdc | 0.01V      | $\pm 0.01\text{V}$ | 3mA                   | 1.38 x 0.88 x 0.66   | 35.1 x 22.4 x 16.76 | DMS-20LCD-0-DCM-C            | DMS-20LCD-0/1-DCM    |
|                | +8.0 to +50.0Vdc   | 0.1V       | $\pm 0.1\text{V}$  | 2.5mA                 | 1.38 x 0.88 x 0.66   | 35.1 x 22.4 x 16.76 | DMS-20LCD-1-DCM-C            | DMS-20LCD-0/1-DCM    |
|                | +18.0 to +90.0Vdc  | 0.1V       | $\pm 0.1\text{V}$  | 3mA                   | 1.38 x 0.88 x 0.66   | 35.1 x 22.4 x 16.76 | DMS-20LCD-2-DCM-C            | DMS-20LCD-2/3-DCM    |
|                | +50.0 to +150.0Vdc | 0.1V       | $\pm 0.1\text{V}$  | 2mA                   | 1.38 x 0.88 x 0.66   | 35.1 x 22.4 x 16.76 | DMS-20LCD-3-DCM-C            | DMS-20LCD-2/3-DCM    |

① Both LED and LCD displays have a digit height of 0.37"/9.4mm.

## Loop-Powered 4-20mA Readouts



### DMS-20 4/20 Series

- Totally loop powered—no external supplies
- 3½ and 4½ digit resolutions; LED/LCD displays
- Industry's only loop-powered, full-size LED readouts
- Small packages; Large digits: 0.37"/9.4mm
- Optional unipolar, bipolar, or "positive" polarities
- DIP-switch selectable span/offset/decimal points

Derives operating power directly from the 4-20mA loop, providing for simple 2-wire operation. Display options include 3½ and 4½ digits; LCD models feature loop burdens as low as 1.8V. All models feature non-interacting, multi-turn trimpots for offset and span adjustments.

### Ordering Guide

|                       |   |
|-----------------------|---|
| DMS-20PC-4/20 Series  | Unipolar, bipolar, and positive reading, loop-powered LED meters          |
| DMS-20LCD-4/20 Series | Unipolar, bipolar, and positive reading, loop-powered LCD meters          |
| DMS-30LCD-4/20 Series | Unipolar, bipolar, positive, and inverse reading, loop-powered LCD meters |
| DMS-40LCD-4/20S       | 4½ digit loop-powered LCD meter   |

### Package Dimensions

1.38"W x 0.88"H x 0.95"D (LED) or 0.9"D (LCD)  
35.1mm W x 22.4mm H x 24.13mm D (LED) or 22.86mm D (LCD)

### Datasheets

LED: DMS-20PC-4/20 Series  
LCD: DMS-20, -30, -40LCD-4/20 Series

## Locally Powered 4-20mA Readouts



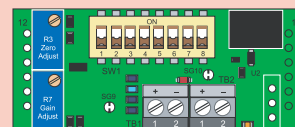
### DMS-30, -40 Series

- 3½ and 4½ digit resolutions; LED/LCD displays
- 4 LED options including low-current & hi-intensity red
- 3 power-supply options: +5V, +24V "I" or 7.5-32V
- 24V "I" models isolate loop inputs from power ground
- DIP-switch selectable span/offset/decimal points
- On-board gain/span and zero/offset trim pots

Current loop displays can be powered from popular 5V, 12V, or 24V supplies and are available with isolated or non-isolated current loop inputs. All models feature a 2V maximum loop burden and large, easy-to-read, digits in a choice of red, blue, or green LEDs.

### Ordering Guide

|                       |  |
|-----------------------|--|
| DMS-30PC-4/20S Series | Available in red, green, and blue LEDs |
| DMS-40PC-4/20S Series | Available in red and green LEDs        |



Back View

### Package Dimensions

2.17"W x 0.92"H x 1.02"D  
55.1mm W x 23.4mm H x 25.91mm

## 0-5V & 0-10V Process Monitors



### DMS-20PC-0/5 Series

- 3½ digit readouts, 0-1V, 0-5V, 1-5V, 0-10V inputs
- 4 connections—2 for signal, 2 for power
- Single +5V or +5-40V supply (9mA drain @24V)
- DIP-switch selectable span/offset/decimal points
- On-board gain/span and zero/offset trim pots

Provides the ultimate in convenience when you need to convert 0-5V or 0-10V analog signals to common process parameters (temperature, pressure, flow, etc.). Built-in DIP-switch activated attenuators and two trim pots greatly simplify setup to get you up and running quickly. LED colors include, red, blue, green, and high-intensity red.

### Ordering Guide

|                     |   |
|---------------------|---|
| DMS-20PC-0/5-5RS-C  | +5V supply, standard-intensity red LEDs   |
| DMS-20PC-0/5-5GS-C  | +5V supply, standard-intensity green LEDs |
| DMS-20PC-0/5-5BS-C  | +5V supply, bright blue LEDs              |
| DMS-20PC-0/5-5RL-C  | +5V supply, low-power red LEDs            |
| DMS-20PC-0/5-5RH-C  | +5V supply, high-intensity red LEDs       |
| DMS-20PC-0/5-24RL-C | +5V to +40V supply, low-power red LEDs    |

### Package Dimensions

1.38"W x 0.88"H x 0.95"D  
35.1mm W x 22.4mm H x 24.13mm D

# Panel Meter Accessories



## Applications Boards

These application / prototype boards are designed to solder to the back of many of our 12-pin DMS-20 and DMS-30 Series meters. These rugged, low-cost boards can quickly configure DMS meters for a wide variety of popular applications, such as engineering scaling and rms-to-DC conversion. All application boards feature either screw-style terminal blocks or Molex brand crimp connections for connecting signal and power lines. Convenient solder gaps are provided for decimal point selection.

| Description   | Part No.       |
|---|----------------|
| Multi-Purpose Application Board for DMS-30 -40 Series                     | DMS-EB-C       |
| Multi-Purpose Application Board for DMS-20PC/LCD Series                   | DMS-EB2-C      |
| AC Primary Power Application Board for DMS-30PC-X-RL and DMS-40LCD Meters | DMS-EB-AC/DC-C |
| DC/DC Converter and Isolation Board for DMS-30PC/LCD                      | DMS-EB-DC/DC-C |
| AC-to-RMS Converter Board for DMS-30PC/LCD Meters                         | DMS-EB-RMS-C   |

## DC Current Shunts

Thirteen 50mV and 100mV, base-mounted DC shunts are designed to connect directly to the rear-mounted terminal block on DCA5-20PC DC ammeters. All shunts feature ultra-stable manganin shunt elements that have an accuracy of  $\pm 0.25\%$  (max.).

| DATEL Part No. | Rated Current/Output | Resistance @ 25°C |
|----------------|----------------------|-------------------|
| 3020-01096-0   | 50A/50mV             | 0.001             |
| 3020-01097-0   | 5A/50mV              | 0.01              |
| 3020-01098-0   | 20A/50mV             | 0.0025            |
| 3020-01099-0   | 100A/50mV            | 0.0005            |
| 3020-01100-0   | 150A/50mV            | 0.00033           |
| 3020-01101-0   | 200A/50mV            | 0.00025           |
| 3020-01102-0   | 300A/50mV            | 0.000167          |
| 3020-01103-0   | 500A/50mV            | 0.0001            |
| 3020-01104-0   | 800A/50mV            | 0.0000625         |
| 3020-01105-0   | 1000A/50mV           | 0.00005           |
| 3020-01106-0   | 1200A/50mV           | 0.0000417         |
| 3020-01107-0   | 10A/100mV            | 0.01              |
| 3020-01108-0   | 100A/100mV           | 0.001             |

## High-Efficiency Switching Regulators

78xxSR series switching regulators can be used with many of our application boards to enable DMS meters to operate from DC power sources as high as +36Vdc. Unlike conventional linear devices, these switching regulators are so efficient that no heat sinks or fans are required for full-load operation.

| Part No.               | Output Voltage | Output Current | Input Voltage |
|------------------------|----------------|----------------|---------------|
| Standard Pin Package   |                |                |               |
| 7803SR-C               | +3.3Vdc        | 0.5A           | +7.5-36Vdc    |
| 7805SR-C               | +5.0Vdc        | 0.5A           | +7.5-36Vdc    |
| 7812SR-C               | +12.0Vdc       | 0.4A           | +15-36Vdc     |
| 78SR-3.3/2-C           | +3.3Vdc        | 2.0A           | +8-32Vdc      |
| 78SR-5/2-C             | +5.0Vdc        | 2.0A           | +8-32Vdc      |
| Horizontal Pin Package |                |                |               |
| 7803SRH-C              | +3.3Vdc        | 0.5A           | +7.5-36Vdc    |
| 7805SRH-C              | +5.0Vdc        | 0.5A           | +7.5-36Vdc    |
| 7812SRH-C              | +12.0Vdc       | 0.4A           | +15-36Vdc     |
| 78SRH-3.3/2-C          | +3.3Vdc        | 2.0A           | +8-32Vdc      |
| 78SRH-5/2-C            | +5.0Vdc        | 2.0A           | +8-32Vdc      |

## AC Current Transformers

These 5A output, "donut" style AC current transformers can be used with our ACA5-20PC and ACA5-20RM series AC ammeters to measure currents from 50 to 2000 Amps. All models have 2-foot-long (0.6m) wire leads and are UL recognized components.

| Part No.     | Current Ratio | Accuracy  | Burden--VA (Ohms) |
|--------------|---------------|-----------|-------------------|
| 7020-01036-0 | 50:5          | $\pm 2\%$ | 1.5 (0.06)        |
| 7020-01037-0 | 75:5          | $\pm 2\%$ | 3.0 (0.12)        |
| 7020-01038-0 | 100:5         | $\pm 1\%$ | 3.0 (0.12)        |
| 7020-01039-0 | 150:5         | $\pm 1\%$ | 6.0 (0.24)        |
| 7020-01040-0 | 200:5         | $\pm 1\%$ | 8.0 (0.32)        |
| 7020-01041-0 | 250:5         | $\pm 1\%$ | 10.0 (0.40)       |
| 39-3681407*  | 300:5         | $\pm 1\%$ | 12.5 (0.50)       |
| 39-3681408*  | 400:5         | $\pm 1\%$ | 12.5 (0.50)       |
| 39-3681409*  | 500:5         | $\pm 1\%$ | 20.0 (0.80)       |
| 7020-01042-0 | 600:5         | $\pm 1\%$ | 10.0 (0.40)       |
| 7020-01043-0 | 750:5         | $\pm 1\%$ | 10.0 (0.40)       |
| 7020-01044-0 | 1000:5        | $\pm 1\%$ | 10.0 (0.40)       |
| 7020-01045-0 | 1500:5        | $\pm 1\%$ | 12.5 (0.50)       |
| 7020-01046-0 | 2000:5        | $\pm 1\%$ | 15.0 (0.60)       |

\*Not available as RoHS

## Bezels and Panel Cutout Punches

Four ABS plastic bezel assemblies simplify panel mounting of DMS series meters. These bezel assemblies are available with and without EPDM sealing gaskets for applications that demand environmental protection from dust and moisture. Two matching panel cutout punches make accurate mounting holes for prototype or small production runs.

| Description  | Part No.   |
|--|------------|
| Bezel for DMS-30 and DMS-40                              | DMS-BZL1-C |
| Bezel with EPDM sealing gasket for all DMS-30 -40 Meters | DMS-BZL2-C |
| Bezel for all DMS-20 Meters                              | DMS-BZL3-C |
| Bezel with EPDM sealing gasket for all DMS-20 Meters     | DMS-BZL4-C |
| Panel cutout punch for DMS-30 and DMS-40 Meters          | DMS-30-CP  |
| Panel cutout punch for DMS-20 Meters                     | DMS-20-CP  |

## Panel Mount Connectors

Six-position Molex brand connector-housings with matching crimp terminals are available to make power and signal connections to panel mounted DMS series meters. Each typical DMS meter installation requires two housings and 12 crimp terminals. See the individual product data sheet for more information.

| Description  | Part No.     |
|--|--------------|
| 6-position connector housing. Use with crimp terminal 4400-01032-0.        | 4320-01069-0 |
| Crimp terminal for connector housing 4320-01069-0. Accepts 22-26 AWG wire. | 4400-01032-0 |

## Miscellaneous Items

| Description                  | Part No.     |
|------------------------------|--------------|
| Unpopulated DMS-EB2 PC-Board | 5302-01243-0 |
| Unpopulated DMS-EB PC-Board  | 5302-01236-0 |
| DMS-20 Retaining Clip        | 5252-01127-0 |
| DMS-30 Retaining Clip        | 5252-01126-0 |
| DMS-30 Red Case              | 5252-01145-0 |
| DMS-20 Red Case              | 5252-01130-0 |
| DMS-30 Bezel and Red Filter  | 5252-01160-0 |
| DMS-20 Bezel and Red Filter  | 5252-01161-0 |
| DMS-30 Panel Mount Adapter   | 4652-01101-0 |
| DMS-20 Panel Mount Adapter   | 4652-01100-0 |
| 12-position PC-Board Socket  | 4320-01072-0 |
| 6-position PC-Board Socket   | 4320-01074-0 |



# Energy Efficient Products



- Replacements for hard-to-read LCD displays
- Increase battery life in portable applications
- Eliminate the need for fans and heat sinks
- Excellent long-term reliability

Designed to provide outstanding performance and ultra-low power consumption. These high-efficiency LED display instruments and switching power supplies can significantly reduce long-term energy costs.

## Low Power LED Meters and Accessories

### 3½ and 4½ Digit DC Voltmeters

| Series        | Display Options                    | Digit Height   | Power Consumption | Operating Temp. |
|---------------|------------------------------------|----------------|-------------------|-----------------|
| DMS-20PC-X-RL | 3½ Digit Red LED                   | 0.37in./9.4mm  | 8mA @ 5Vdc        | 0 to +60°C      |
| DMS-30PC-X-XL | 3½ Digit Red, Green, or Orange LED | 0.56in./14.2mm | 15mA @ 5Vdc       | 0 to +60°C      |
| DMS-40PC-X-RL | 4½ Digit Red LED                   | 0.52in./13.2mm | 35mA @ 5Vdc       | 0 to +50°C      |

### 4-20mA Process Monitors

| Series        | Display Options  | Digit Height  | Loop Drop    | Operating Temp. |
|---------------|------------------|---------------|--------------|-----------------|
| DMS-20PC-4/20 | 3½ Digit Red LED | 0.37in./9.4mm | +4Vdc @ 20mA | 0 to +60°C      |

### High-Efficiency Switching Regulators

| Series | Voltage Outputs | Package               | Efficiency | Operating Temp. |
|--------|-----------------|-----------------------|------------|-----------------|
| 78XXSR | 3.3V, 5V, 12V   | LM78XX compatible SIP | To 95%     | -40 to +70°C    |

## Quality Assured

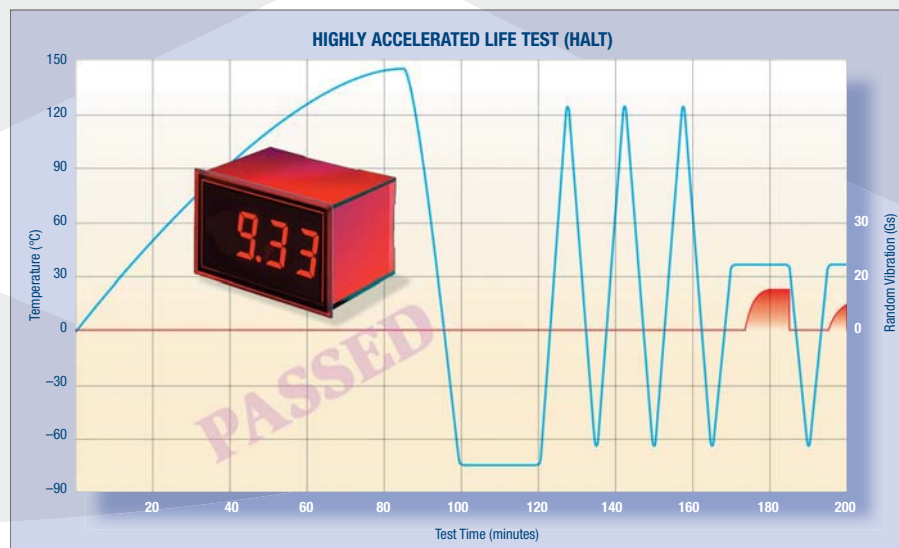
The QA Engineering Team that instituted our Design-for-Reliability Program performed routine HALT (Highly Accelerated Life Testing) on a randomly selected 2-wire meter and the device “passed.” Devices are not supposed to pass HALT. The intent of HALT is to “reveal latent defects or design weaknesses that may eventually cause field failures” by subjecting devices to progressively higher stress levels, until something breaks.

The Engineering Team then decided to see how much stress it would take to make a second meter succumb. With the maximum applied input voltage, the meter (mounted in a metal panel using a DATEL bezel assembly) was subjected to the following: operating case-temperature extremes of +145°C and -75°C; non-operating cold soak at -75°C (after which the meter still operated correctly); three temperature cycles (-65 to +125°C) at a transition rate of 30°C per minute; 15 minutes of 3-axis random longitudinal and rotational vibration at 10 to 15Gs; a temperature spike down to -65°C; and lastly, more vibration.

During the last vibration, the meter pulled away from the bezel assembly (which had melted during the +145°C temperature extreme!), and one segment of one LED digit went blank.

Upon troubleshooting, the Engineers discovered all meter electronics—including the drive circuit to the failed LED segment—were working fine. The failure was traced to the display itself. The Engineers’ report gave the device a “conditional pass,” pending failure analysis of the LED display.

Now you know why we confidently specify our standard digital panel meters with an operating temperature range of 0 to +60°C and boast about their rugged vibration and moisture-resistant encapsulated packages.



## MeterCenter

2046 W. Peninsula Circle  
Chandler, AZ 85248

Telephone: (480) 659-8351 Toll Free: (800) 230-6008

Fax: (480) 659-8361

Email: Sales@MeterCenter.com