



# Digital Panel Meters



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# Powering Innovation...

## Power Electronics Division

**C&D Technologies was founded on innovation - when Frank Carlyle and Leon Doughty began a career converting gas lighting to electricity in the early 1900s.**

Since then the organization has grown into a global force in power conversion and storage and is now a world-leading manufacturer, listed on the New York Stock Exchange (NYSE:CHP).

As we have changed, so have the demands of our customers. Where a simple light bulb would have amazed Carlyle and Dougherty's first customers, today's electronic design engineers need innovative solutions for their ever more complex power needs. We aim not only to meet these needs, but

to design the solutions that provide the power to drive the innovations of the future.

With half a million square feet of manufacturing in six facilities on three continents, eight development labs and 12 sales offices around the world, C&D Technologies' Power Electronics Division boasts some of the best resources in the power electronics industry.

Our product range is the widest available today and is constantly being updated to keep pace with the many markets we serve.

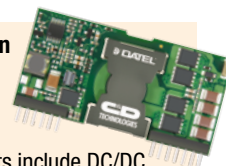
Value, quality, reliability and innovation go hand-in-hand with total customer support to ensure that our products and services are second to none.

## C&D Technologies, Inc.

C&D Technologies, Inc. is a technology company that produces and markets systems for the power conversion and storage of electrical power, including industrial batteries and electronics. The organization comprises three operating divisions:

### Power Electronics Division

designs, manufactures and markets products for the conversion of power within electronic systems. Products include DC/DC & AC/DC converters, support magnetics, digital panel meters and data acquisition products.



**Standby Division** designs, manufactures and markets batteries for standby power in telecommunications, uninterruptible power systems (UPS), broadband, CATV and mobility traction applications.



**Motive Power Division** develops, manufactures and markets the world's leading motive power batteries, advanced chargers, electronic monitoring modules, maintenance tools and computerized management systems.



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The site offers an interactive resource for engineers sourcing all our product ranges and features:

- Intelligent product search
- Technical support details
- RoHS information
- Online purchasing
- Product datasheets
- Application notes
- Sample requests
- Custom parts requests



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- 1 Safety Critical Component means any component whose failure to perform could cause the failure of, or affect the operation of a Life Support Device.
- 2 Life Support Device means any device, system or ancillary equipment intended for implant into the body or used in relation to supporting or sustaining life.

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## 3½ Digit, Subminiature LED/LCD Panel Meters

	<ul style="list-style-type: none"> <li>• Large (0.37"/9.4mm) LED or LCD displays</li> <li>• 12-pin DIP packages, panel or board mountable</li> <li>• Low-current LED models (7mA)</li> <li>• 4 input ranges: <math>\pm 200\text{mV}</math>, <math>\pm 2\text{V}</math>, <math>\pm 20\text{V}</math>, <math>\pm 200\text{V}</math></li> <li>• Built-in color filters and bezels (LED models)</li> <li>• Single +5V supply or 9V battery (LCD models)</li> <li>• Moisture/vibration resistant encapsulated packages</li> <li>• DISPLAY ENABLE function for "power down" mode</li> <li>• DISPLAY TEST and HOLD functions (optional)</li> </ul>	<b>Ordering Guide</b> <b>DMS-20PC-1-R-S</b> <div> <div>LED Model</div> <div>Input Range</div> </div> <div> <div>Intensity/Power (+5V Supply)</div> <div>LED Color</div> </div> <div> <div>0 <math>\pm 200\text{mV}</math></div> <div>1 <math>\pm 2\text{V}</math></div> <div>2 <math>\pm 20\text{V}</math></div> <div>3 <math>\pm 200\text{V}</math></div> </div> <div> <div>S Standard Brightness</div> <div>H High Intensity (Red LED only)</div> <div>L Low Power (Red LED only)</div> </div> <div> <div>Y</div> <div>O</div> <div>A</div> <div>R</div> <div>G</div> <div>B</div> </div>
	<b>Package Dimensions</b> 1.38"L x 0.88"W x 0.475"D (LED) or 0.425"D (LCD) 35.1mm L x 22.4mm W x 12.07mm D (LED) or 10.8mm D (LCD)	<b>Datasheets</b> LED: DMS-20PC Series / LCD: DMS-20LCD Series

## 3½ Digit, Miniature LED/LCD Panel Meters

	<ul style="list-style-type: none"> <li>• Large displays: 0.56"/14.2mm (LED) 0.40"/10.2mm (LCD)</li> <li>• Low-current LED models (12mA)</li> <li>• 12-pin DIP packages, panel or board mountable</li> <li>• 4 input ranges: <math>\pm 200\text{mV}</math>, <math>\pm 2\text{V}</math>, <math>\pm 20\text{V}</math>, <math>\pm 200\text{V}</math></li> <li>• Built-in color filters and bezels (LED models)</li> <li>• Moisture/vibration resistant encapsulated packages</li> <li>• Single +5V supply or 9V battery (LCD models)</li> <li>• Numerous application boards available</li> </ul>	<b>Ordering Guide</b> <b>DMS-30PC-1-R-S</b> <div> <div>LED Model</div> <div>Input Range</div> </div> <div> <div>Intensity/Power (+5V Supply)</div> <div>LED Color</div> </div> <div> <div>0 <math>\pm 200\text{mV}</math></div> <div>1 <math>\pm 2\text{V}</math></div> <div>2 <math>\pm 20\text{V}</math></div> <div>3 <math>\pm 200\text{V}</math></div> </div> <div> <div>S Standard Brightness</div> <div>H High Intensity (Red LED only)</div> <div>L Low Power (Red, orange and green LED's only)</div> </div> <div> <div>Y</div> <div>O</div> <div>A</div> <div>R</div> <div>G</div> <div>B</div> <div>Q</div> </div>
	<b>Package Dimensions</b> 2.17"L x 0.92"W x 0.56"D (LED) or 0.43"D (LCD) 55.1mm L x 23.4mm W x 14.22mm D (LED) or 10.92mm D (LCD)	<b>Datasheets</b> LED: DMS-30PC Series / LCD: DMS-30LCD Series

## 4½ Digit, Miniature LED/LCD Panel Meters

	<ul style="list-style-type: none"> <li>• Scientific-grade accuracy, <math>\pm 2</math> counts</li> <li>• Large displays: 0.52"/13.2mm (LED) 0.40"/10.2mm (LCD)</li> <li>• 12-pin DIP packages, panel or board mountable</li> <li>• Low-current LED models (35mA)</li> <li>• Display HOLD function standard</li> <li>• 4 input ranges: <math>\pm 200\text{mV}</math>, <math>\pm 2\text{V}</math>, <math>\pm 20\text{V}</math>, <math>\pm 200\text{V}</math></li> <li>• LCD models have dual input ranges</li> <li>• Moisture/vibration resistant encapsulated packages</li> </ul>	<b>Ordering Guide</b> <b>DMS-40PC-1-R-S</b> <div> <div>LED Model</div> <div>Input Range</div> </div> <div> <div>Intensity/Power (+5V Supply)</div> <div>LED Color</div> </div> <div> <div>1 <math>\pm 2\text{V}</math></div> <div>2 <math>\pm 20\text{V}</math></div> <div>3 <math>\pm 200\text{V}</math></div> </div> <div> <div>S Standard Brightness</div> <div>H High Intensity (Red LED only)</div> <div>L Low Power (Red LED only)</div> </div> <div> <div>Y</div> <div>R</div> <div>G</div> </div>
	<b>Package Dimensions</b> 2.17"L x 0.92"W x 0.56"D (LED) or 0.43"D (LCD) 55.1mm L x 23.4mm W x 14.22mm D (LED) or 10.92mm D (LCD)	<b>Datasheets</b> LED: DMS-40PC Series / LCD: DMS-40LCD Series

For full datasheets go to: [www.cd4power.com](http://www.cd4power.com)



## AC Ammeters



### ACA-20PC Series

#### Built-in CT's for AC currents to 100A

- 4 ranges from 0-2A to 0-100A; 12 models
- Functionally complete with on-board CT's; Red LED's
- 2A and 20A models include all connections for load and power
- AC (85-264V @ 50/60Hz with "self-power") or DC (5-40V)
- 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"L x 1.36"W x 2.01"D 35.1mm L x 34.54mm W x 51.05mm D
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#### Ordering Guide

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

LED Model

LED Color **RL** **GL**

##### Input Range

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

##### Power Supply

- AC1 85-264Vac @ 50/60Hz
- AC2 85-140Vac @ 400Hz
- DC1 +5-40Vdc

**Datasheets** ACA-20PC Series



### ACA5-20PC Series

#### External CT's 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

ACA5-20PC Series scale and display the output of 5A current transformers (50:5A, 500:5A, 1000:5A, etc.). 14 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"L x 1.36"W x 2.01"D 35.1mm L x 34.54mm W x 51.05mm D
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#### Ordering Guide

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

LED Model

LED Color **RL** **GL**

##### Input Range

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

##### Power Supply

- AC1 85-264Vac @ 50/60Hz
- AC2 85-140Vac @ 400Hz
- DC1 +5-40Vdc

**Datasheets** ACA5-20PC Series

## NEW! RMS Reading AC Ammeters

### ACA-20RM Series

*World's first digital ac-ammeters with built-in CTs to directly measure the true-rms value of complex non-sinusoidal ac currents.*



<b>Package Dimensions</b>	2.100"L x 1.400"W x 1.25"D 53.3mm L x 35.56mm W x 31.75mm D
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- Accurately measure complex waveforms
- Built-in CTs measure up to 50A
- Self-powered from 120Vac or 220Vac
- Large 0.37 inch red LED displays
- UL and CSA recognized

#### Ordering Guide

##### ACA-20RM -1-AC1-RL

LED Model

LED Color **RL**

##### 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)


##### Power Supply

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

**Datasheets** ACA-20RM Series

## DC Ammeters

	<p><b>Built-in shunts for DC currents to 20A</b></p> <ul style="list-style-type: none"> <li>• 6 ranges from 0-200µA to 0-20A; 24 models</li> <li>• Functionally complete with on-board 20mV shunts</li> <li>• On-board load/supply connections for 3-wire operation</li> <li>• 8-36Vdc isolated supplies for high-side shunts</li> <li>• 5-40Vdc supplies for 5/12/24V; 48V telecom option</li> </ul> <p>DCA-20PC Series are 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.</p>	<p><b>Ordering Guide</b></p> <p><b>DCA-20PC-1-DC1-RL</b></p> <p>LED Model   LED Color <b>RL</b> <b>GL</b> <b>BL</b></p> <p><b>Input Range</b> 6 selections, 199.9µA-19.99A. See data sheet for details.</p> <p><b>Power Supply</b> <b>DC1</b> 5-40Vdc non-isolated (available with red LED only) <b>DC4</b> 8-36Vdc isolated power</p>
<p><b>DCA-20PC Series</b></p>	<p><b>Package Dimensions</b> 1.38"L x 1.46"W x 1.04"D 35.1mm L x 37.08mm W x 26.41mm D</p>	<p><b>Datasheets</b> DCA-20PC Series</p>

	<p><b>External shunts for DC currents to 2000A</b></p> <ul style="list-style-type: none"> <li>• 11 ranges from 0-1A to 0-2000A; 44 models</li> <li>• Functionally complete with on-board interface circuitry</li> <li>• Scales/digitizes/displays the output of 50/100mV shunts</li> <li>• Wide-range, isolated/non-isolated power; 48V telecom option</li> <li>• Subminiature packages with screw-style terminal blocks</li> </ul> <p>DCA5-20PC Series dc ammeters scale and display the output of 50mV and 100mV dc-shunts. 25 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.</p>	<p><b>Ordering Guide</b></p> <p><b>DCA5-20PC-1-DC1-RL</b></p> <p>LED Model   LED Color <b>RL</b> <b>GL</b> <b>BL</b></p> <p><b>Input Range</b> 11 selections, 5A/50A/500A to 1200A. See data sheet for details.</p> <p><b>Power Supply</b> <b>DC1</b> 5-40Vdc non-isolated (available with red LED only) <b>DC4</b> 8-36Vdc isolated power</p>
<p><b>DCA5-20PC Series</b></p>	<p><b>Package Dimensions</b> 1.38"L x 1.46"W x 1"D 35.1mm L x 37.08mm W x 25.4mm D</p>	<p><b>Datasheets</b> DCA5-20PC Series</p>

## Custom Designs



Lowest possible cost! For high-volume OEM applications, DATEL can quickly and easily modify any of our standard LED or LCD-display instruments to accommodate your specific needs. For minimal additional cost, you can have a finished product that displays the exact readings you want for the input signal you are monitoring, without the need for any user modifications or external components.

The products shown here are full customs, designed to meet their customers' unique physical and electro-optical requirements. Both products incorporate user-selectable range settings via 2-position slide switches and precision trim pots. We even designed a completely new LED for the 1-inch round (25.4mm) display. Contact our Applications Engineering Group for complete details.

For full datasheets go to: [www.cd4power.com](http://www.cd4power.com) **5**

## 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, epoxy-encapsulated construction

DMS-20PC-LM Series ac voltmeters are component-size, self-contained, low-cost, 2-wire ac voltmeters. They 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	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM (Red)	DMS-20PC-1-LM
	85-264Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM-F (Red)	DMS-20PC-1-LM
	85-264Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM-B (Blue)	DMS-20PC-1-LM
	85-264Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM-BF (Blue)	DMS-20PC-1-LM
	85-264Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM-G (Green)	DMS-20PC-1-LM
	85-264Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-LM-GF (Green)	DMS-20PC-1-LM
	85-140Vac @ 350-450Hz 240-310Vac @ 47-99Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-2-LM (Red)	DMS-20PC-2-LM
	350-600Vac @ 47-63Hz	1V	$\pm 1V$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-3-LM (Red)	DMS-20PC-3-LM

① Panel-mount front bezels, with or without sealing gaskets, may be ordered separately. Visit [www.cd4power.com](http://www.cd4power.com) for details.

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.

For full product data download a datasheet at [www.cd4power.com](http://www.cd4power.com)



## 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, epoxy-encapsulated construction

DMS-20PC-FM Series are 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 epoxy encapsulated construction and an ultra-stable, quartz-crystal-controlled, microcontroller to provide accuracies of  $\pm 0.1\text{Hz}$  (50/60Hz models) or  $\pm 1\text{Hz}$  (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	$\pm 0.1\text{Hz}$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-FM	DMS-20PC-FM
	85-140Vac @ 47-99Hz	0.1Hz	$\pm 0.1\text{Hz}$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-1-FM-F	DMS-20PC-FM
	85-140Vac @ 350-450Hz	1Hz	$\pm 1\text{Hz}$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-2-FM	DMS-20PC-FM
	170-246Vac @ 47-99Hz	0.1Hz	$\pm 0.1\text{Hz}$	50mA	1.38 x 0.88 x 1	35.1 x 22.4 x 25.4	DMS-20PC-3-FM	DMS-20PC-FM

① Panel-mount front bezels, with or without sealing gaskets, may be ordered separately. Visit [www.cd4power.com](http://www.cd4power.com) for details.

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.

For full product data download a datasheet at [www.cd4power.com](http://www.cd4power.com)



## 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, epoxy-encapsulated construction
- Subminiature 1.38" x 0.88" x 1.0" packages
- $-25$  to  $+60^\circ\text{C}$  operating temperature range (LED)
- Available in red, blue, or green LEDs

DMS-20PC-DCM Series of self-powered dc voltage monitors are 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  $-48\text{Vdc}$  power buses in telecom, datacom and computer/networking equipment
- $-36.0$  to  $-75.0\text{Vdc}$  input range
- 0.1V resolution;  $\pm 0.1\text{V}$  accuracy
- Negligible power consumption (13mA, max.)
- Self-powered, only two connections required
- $-25$  to  $+60^\circ\text{C}$  operating temperature range
- Withstands  $-200\text{V}$  input transients
- Reverse polarity protected to  $+100\text{V}$
- Subminiature 1.38" x 0.88" x 1.0" plastic package

DMS-20PC-7-DCM self-powered digital voltage monitor is designed for monitoring  $-36$  to  $-75\text{V}$  intermediate bus voltages in modern telecom, datacom and computer equipment. Its compact size, large LED display, and low power consumption (8mA typ. at  $-48\text{V}$ ) make it the ideal replacement analog panel meters.

Display Type ①	Input Range	Resolution	Accuracy	Maximum Current Drain	Package Dimensions ②		Model Number (Display Color)	Datasheet Title
					Inches	mm		
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 (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 (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 (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 (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 (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 (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 (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 (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 (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 (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 (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 (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 (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	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	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	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	DMS-20LCD-2/3-DCM

For full product data download a datasheet at [www.cd4power.com](http://www.cd4power.com)

For full datasheets go to: [www.cd4power.com](http://www.cd4power.com) 7



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## 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

DATEL's loop-powered LED and LCD displays derive 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

#### Datasheets

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

#### Package Dimensions

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

## Locally Powered 4-20mA Readouts



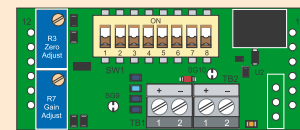
### DMS-30, -40 Series

- 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

DMS-30PC and DMS-40PC 4-20mA 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 LED's
- DMS-40PC-4/20S Series** Available in red, and green LED's



Back View

#### Datasheets

LED: DMS-30PC-4/20 & DMS-40PC-4/20 Series

#### Package Dimensions

2.17"L x 0.92"W x 1.02"D  
55.1mm L x 23.4mm W 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

DMS-20PC-0/5 3½ digit process monitors provide 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** +5V supply, standard-intensity red LED's
- DMS-20PC-0/5-5GS** +5V supply, standard-intensity green LED's
- DMS-20PC-0/5-5BS** +5V supply, bright blue LED's
- DMS-20PC-0/5-5RL** +5V supply, low-power red LED's
- DMS-20PC-0/5-5RH** +5V supply, high-intensity red LED's
- DMS-20PC-0/5-24RL** +5V to +40V supply, low-power red LED's

#### Datasheets

LED: DMS-20PC-0/5 Series

#### Package Dimensions

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



## Panel Meter Accessories



### Applications Boards

Description	DATEL Part No.
Multi-Purpose Application Board for DMS-30 -40 Series	DMS-EB
Multi-Purpose Application Board for DMS-20PC/LCD Series	DMS-EB2
AC Primary Power Application Board for DMS-30PC-X-RL and DMS-40LCD Meters	DMS-EB-AC/DC
DC/DC Converter and Isolation Board for DMS-30PC/LCD	DMS-EB-DC/DC
Temperature (Celsius) Sensor for DMS-30PC/LCD Meters	DMS-EB-HTBC
Temperature (Fahrenheit) Sensor for DMS-30PC/LCD Meters	DMS-EB-HTBF
AC-to-RMS Converter Board for DMS-30PC/LCD Meters	DMS-EB-RMS
Thermocouple Input (J type) Board for DMS-30PC/LCD Meters	DMS-EB-TCJ
Thermocouple Input (K type) Board for DMS-30PC/LCD Meters	DMS-EB-TCK

### Bezels and Panel Cutout Punches

Description	DATEL Part No.
Bezel for DMS-30 and DMS-40	DMS-BZL1
Bezel with EPDM sealing gasket for all DMS-30 -40 Meters	DMS-BZL2
Bezel for all DMS-20 Meters	DMS-BZL3
Bezel with EPDM sealing gasket for all DMS-20 Meters	DMS-BZL4
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

Description	DATEL Part No.
6-position connector housing. Use with crimp terminal 39-2099090.	39-2079400
Crimp terminal for connector housing 39-2079400. Accepts 22-26 AWG wire.	39-2099090
Crimp tool for 39-2099090 terminals	39-2099000

### High-Efficiency Switching Regulators

DATEL Part No.	Output Voltage	Output Current	Input Voltage
Standard Pin Package			
7803SR	+3.3Vdc	0.5A	+7.5-36Vdc
7805SR	+5.0Vdc	0.5A	+7.5-36Vdc
7812SR	+12.0Vdc	0.4A	+15-36Vdc
Horizontal Pin Package			
7803SRH	+3.3Vdc	0.5A	+7.5-36Vdc
7805SRH	+5.0Vdc	0.5A	+7.5-36Vdc
7812SRH	+12.0Vdc	0.4A	+15-36Vdc

### AC/DC Instrumentation Power Supplies

DATEL Part No.	Rated Power (Watts)	V1 Output (Vdc/A)	V2 Output (Vdc/A)	V3 Output (Vdc/A)
DMS-PS1-CM	5	5/1	N/A	N/A
DMS-PS2-CM	5	5/0.65	4.85/0.2	N/A
DMS-PS3-CM	5	5/0.35	4.85/0.2	4.85/0.2
DMS-PS4-CM	10	24/0.45	N/A	N/A
DMS-PS5-CM	10	24/0.35	4.85/0.2	N/A
DMS-PS6-CM	10	24/0.30	4.85/0.2	4.85/0.2
DMS-PS7-CM	16	24/0.70	N/A	N/A
DMS-PS8-CM	16	24/0.60	4.85/0.2	N/A
DMS-PS9-CM	16	24/0.55	4.85/0.2	4.85/0.2
DMS-PS10-CM	16	12/1.35	N/A	N/A

### Current Transformers

DATEL Part No.	Current Ratio	Accuracy	Burden--VA (Ohms)
39-3681401	50:5	±2%	1.5 (0.06)
39-3681402	75:5	±2%	3.0 (0.12)
39-3681403	100:5	±1%	3.0 (0.12)
39-3681404	150:5	±1%	6.0 (0.24)
39-3681405	200:5	±1%	8.0 (0.32)
39-3681406	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)
39-3681410	600:5	±1%	10.0 (0.40)
39-3681411	750:5	±1%	10.0 (0.40)
39-3681412	1000:5	±1%	10.0 (0.40)
39-3681413	1500:5	±1%	12.5 (0.50)
39-3681414	2000:5	±1%	15.0 (0.60)

### DC Current Shunts

DATEL Part No	Rated Current/Output	Resistance @ 25°C
39-1734101	50A/50mV	0.001
39-1734102	5A/50mV	0.01
39-1734103	20A/50mV	0.0025
39-1734104	100A/50mV	0.0005
39-1734106	150A/50mV	0.00033
39-1734107	200A/50mV	0.00025
39-1734108	300A/50mV	0.000167
39-1734109	500A/50mV	0.0001
39-1734111	800A/50mV	0.0000625
39-1734112	1000A/50mV	0.00005
39-1734113	1200A/50mV	0.0000417
39-1734119	10A/100mV	0.01
39-1734120	100A/100mV	0.001

## 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

All products listed to the right were 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

#### AC/DC Instrumentation Power Supplies

Series	Rated Output	Voltage Outputs	Efficiency	Operating Temp.
DMS-PSX-CM	5, 10, 16 Watts	Single, Dual, Triple	To 82%	-25 to +70°C

## Quality Assured

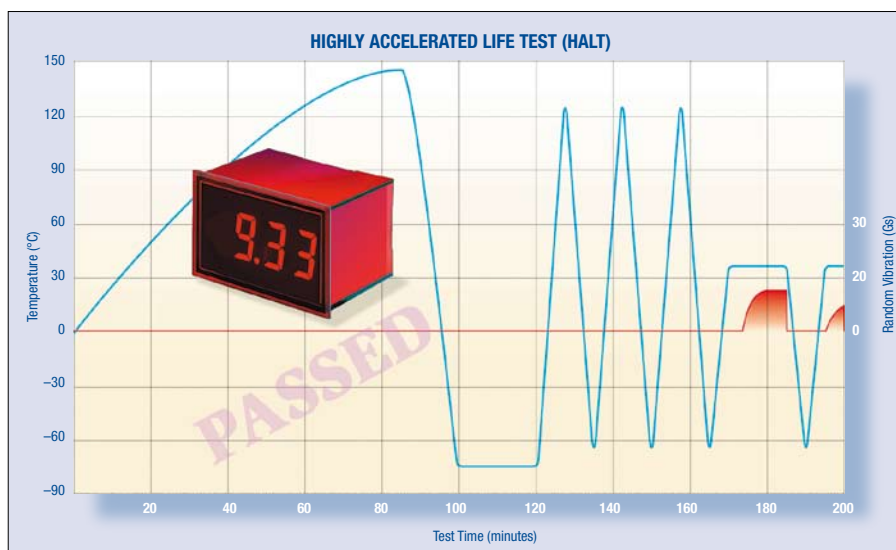
The QA Engineer who instituted our Design-for-Reliability Program performed routine HALT (Highly Accelerated Life Testing) on a randomly selected 2-wire meter and the device "passed." Devices are not supposed to pass HALT. The intent of HALT is to "reveal latent defects or design weaknesses that may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

The Engineer 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 15G's; 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 Engineer 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 Engineer's 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, epoxy-encapsulated packages.



## DC/DC Converters

C&D Technologies are proud to offer the largest range of DC/DC Converters available from a single manufacturer. Our ever increasing product portfolio includes all the options you'll ever need, including:



- **Isolated DC/DC Converters**  
Single, dual, triple and quad output from 0.25 to 340 Watts.
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- **Bus Converters**  
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- **Digital Power**  
Digital IBA - a multi-source open architecture power solution that utilizes an industry-standard 1<sup>2</sup>C interface to allow you to configure your power system (up to 32 PoLs) in less than 1 hour.
- **Factorized Power**  
V•I Chips delivering up to 300W available in 'in-board' BGA configuration or as 'on-board' J-lead SMDs.

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C&D Technologies has AC/DC power supplies to meet every possible application requirement in terms of power, performance, efficiency, protection, size, approvals compliance, and cooling requirements.



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Over 400 highly advanced and optimized inductor and transformer solutions with the emphasis on miniaturization, reliability and ease of handling. These power oriented designs are available in a variety of styles including:
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  - surface mount
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 Tape and reel packaging is available for surface mount devices making them ideal for pick and place assembly lines
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Differential common-mode
- **Databus Isolators**  
Dual and Quad

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Our leadership status in high-performance data acquisition components is unchallenged. Our outstanding electrical performance, small packaging, low-power consumption and ease-of-use will genuinely impress you.



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Resolution from 8 to 18-bits and sampling rates 20MSPS, Low cost commercial and military high-reliability versions
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Ideal for high-end applications such as medical or life-science imaging, analytical instrumentation and military pulse and spread-spectrum applications
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Settling times to 20 nanoseconds, update rates to 100MHz
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Accuracies from 0.01% to 0.0008% (12 to 16 bit equivalent resolution)
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Multi-channel with differential or single-ended options
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