

## 4 1/2 DIGIT ENHANCED CONTRAST High Resolution Voltage Input with Enhanced Common Mode Rejection



### FEATURES

- Multiple Ranges (User Configurable)
- Large (10 mm), 4 1/2 Digit Enhanced Contrast LCD Display
- Very Low Power Consumption (17.5 milliWatts)
- Choice of Decimal Point Placement
- Extreme Accuracy (0.06%,  $\pm 1$  Digit)
- Common Mode Rejection of 86 db (min)
- Very Low Cost
- World's Smallest Size

### APPLICATIONS

- Automotive/Marine/Avionics/Aerospace
- Field/Mobile Instrumentation
- Pharmaceutical Manufacturing
- Electronic Test
- Biochemical/Biomedical Research & Product Development
- Petrochemical Process Management
- Energy/Environmental Management
- Critical Accuracy Voltage Measurements

### FUNCTIONAL DESCRIPTION

The DP-2000 is a very compact, 4 1/2 digit, low power (17.5 milliWatts), LCD Digital Panel Meter covering a broad range of critical voltage measurement applications for the industrial sector, the Original Equipment Instrument Manufacturer, and other areas where high accuracy and precise resolution over extended periods are crucial. The combination of VLSI components and ACCULEX's well known dedication to advanced Surface Mount Technology (SMT) results in the most reliable, lowest cost, highest resolution LCD Digital Panel Meter available from any source.

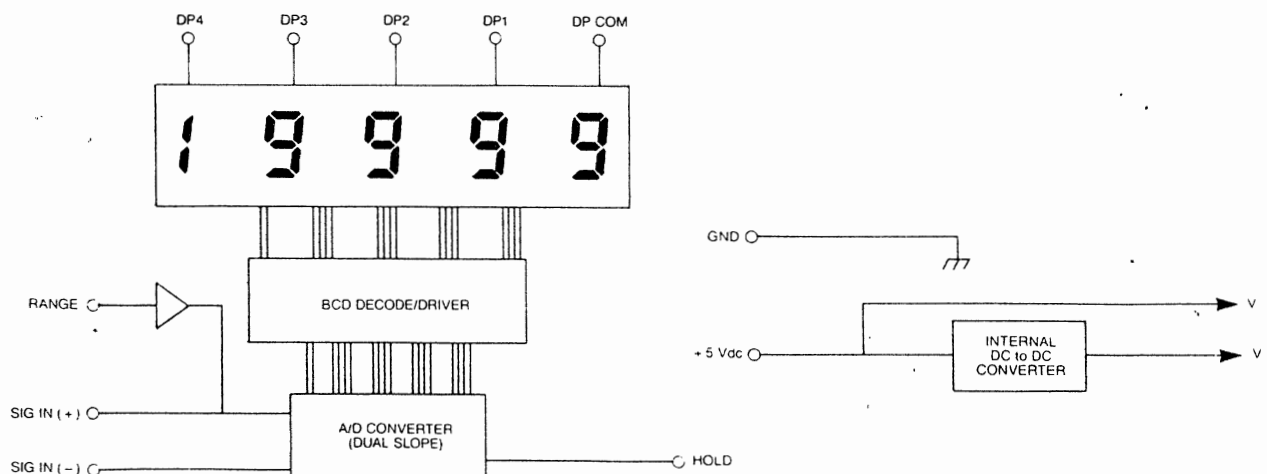
The DP-2000 is a multi-range voltage input DPM with user configurable full scale input ranges ( $\pm 200$  mV or  $\pm 2$  Vdc) and choice of decimal point placement. Using a dual slope integrating A/D converter, differential input, and common mode rejection to 86 db (minimum), the DP-2000 is a rock solid, state-of-the-art DPM designed to be used in virtually any environment. Its extremely large (10 mm numeral height) enhanced contrast 4 1/2 digit LCD display means easy readability in dim light as well as direct sunlight conditions. Drawing only 3.5 mA @ +5 Vdc, the DP-2000 is perfect for field/mobile instruments, marine, aerospace/avionics, and automotive applications as well as for general purpose lab-

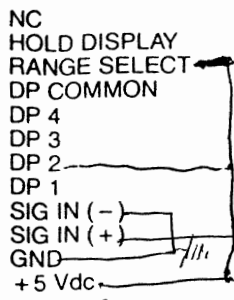
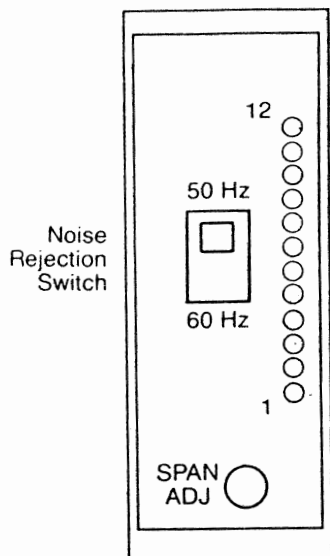
oratory use or harsh, factory floor environments. The DP-2000 features a "LOW BATTERY" indicator (low voltage) as well as automatic polarity and over/under range indication. A "HOLD DISPLAY" pin is also standard and may be wired to a momentary contact (pushbutton) switch for temporarily "freezing" the display. The DP-2000 shares the same overall dimensions and panel cut-out size as the rest of the ACCULEX micro-size LCD DPM family.

Some of the more common application areas for the DP-2000 are petrochemical processing, pharmaceutical manufacturing, biochemical/biomedical research and product development, plastics manufacturing and processing, avionics, marine instrumentation, automotive instrumentation, food processing, energy management, environmental chambers, electronic test and burn-in chambers, power supply monitoring, power transmissions, medical instrumentation and much more.

ACCULEX is proud to offer the DP-2000 as the world's smallest, most accurate, and lowest cost 4 1/2 digit LCD Digital Panel Meter in the world. And... like all ACCULEX products, the DP-2000 is available from stock in quantity or singles.

### BLOCK DIAGRAM





## Analog I/O

Input Configuration  
Full Scale Input

Bipolar, Fully Differential

DP-2000:  $\pm 200$  mV

$\pm 2$  Vdc

DP-2002:  $\pm 2$  Vdc

$\pm 20$  Vdc

DP-2020:  $\pm 20$  Vdc

$\pm 200$  Vdc

2 readings per second

0.06% of FS  $\pm 1$  Digit

Dual Slope Integration

50 pA (typical)

$\pm 1$  Vdc (max)

86 db (min)

Bipolar, automatic changeover

DP-2000: 1000 M Ohms

DP-2002: 1 Meg Ohms

DP-2020: 10 Meg Ohms

$\pm 10$  Vdc (DP-2000)

$\pm 100$  V (DP-2002)

$\pm 350$  V (DP-2020)

$\pm 50$  ppm/Deg C (typ) (DP-2000)

$\pm 75$  ppm/Deg C (all others)

Sample Interval

Accuracy

A/D Converter Type

Input Bias Current

Common Mode Voltage

Common Mode Rejection

Input Polarity

Input Impedance

Input Voltage (max)

Temperature Coef.

## Display

Display Type

Number of Digits

Display Size

Over Range Indication

Under Range Indication

Display Polarity

Display Hold

Display Update

Decimal Point

Enhanced Contrast LCD

4 1/2 (19999, max)

10 mm

1

-1

Positive not displayed ("—" for negative)

Pin 11 tied to +5 Vdc (pin 1)

Pin 11 Open

4 Positions (Selectable)

RANGE SELECT:  $\pm 200$  mV (Pin 10 OPEN) low range  
 $\pm 2$  Vdc (Pin 10 to +5Vdc) high range

HOLD: Pin 11 to +5 Vdc

SPAN ADJ: May be adjusted at zero Vdc

NOISE REJECTION SWITCH: May be used to decrease 50/60 Hz line noise.

## Electrical / Environmental

Supply Voltage

Other

Storage Temp

Operating Temp

Weight

Dimensions

+5 Vdc ( $\pm 7\%$ ) @ 3.5 mA

Low Battery Indication (Low Voltage)

-10 to 60 Deg C

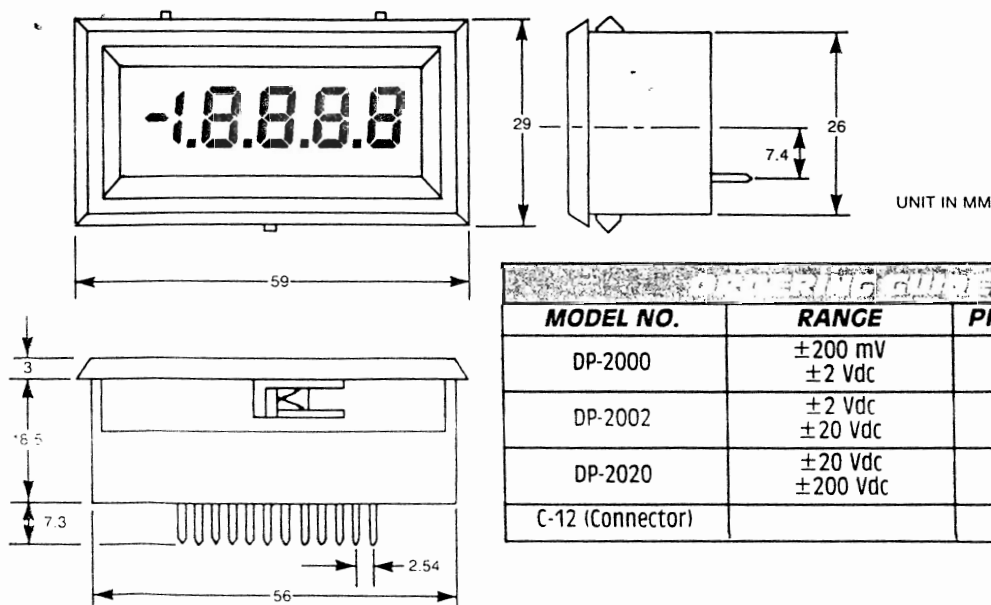
0 to 50 Deg C

30 grams

2.33"(W)  $\times$  1.14"(H)  $\times$  0.83"(D)

(59  $\times$  29  $\times$  21 mm)

## OUTLINE DRAWING



MODEL NO.	RANGE	PRICE (SINGLES)
DP-2000	$\pm 200$ mV $\pm 2$ Vdc	\$95.00
DP-2002	$\pm 2$ Vdc $\pm 20$ Vdc	\$95.00
DP-2020	$\pm 20$ Vdc $\pm 200$ Vdc	\$95.00
C-12 (Connector)		\$ 4.00

MODEL	5 +	10 +	25 +	50 +	100 +
DP-2000	\$90	\$85	\$79	\$73	Call
C-12	\$4.00	\$3.75	\$3.75	\$3.50	