# Large Display Meter


**LDP63000-E shown smaller than actual size.**

## LDP63000 Series

- **Large 38 mm (1.5") LED Display Readable to 21 m (70')**
- **Various Input Types Available**
- **Alarms, Analog Outputs, and Communication**
- **Custom Units Label with Backlight**
- **Programmable User Inputs and Function Keys**
- **Universal AC/DC Powered**
- **NEMA 4 (IP65)**
- **Field Installable Output Cards (Optional)**

The LDP63000 Series is a versatile display that can increase productivity by offering the plant floor or production area a large visual display of their current status. Whether your measurement needs are for temperature or process information, the LDP63000 can satisfy your requirements. With the use of a units label and backlighting, the display can be tailored to show the actual engineering unit. The LDP63000 display accepts various analog inputs through the use of input modules which allow the unit to adapt to most any application. Additional plug-in option cards can add alarms, analog output, and communication/bus capabilities, making the LDP63000 an "intelligent" panel meter.

## Specifications

**Display:** 38 mm (1.5") red LED, 5-digit, (-19999 to 99999)

**Power Requirements:**

**AC Modules:** 85 to 250 Vac, 50/60 Hz, 18 VA

**DC Modules:** 11 to 36 Vdc or 24 Vac ±10%, 50/60 Hz, 14 W

**Input:** Accepts analog input modules

**Keypad:** Five tactile membrane switches integrated into the front panel

**Environmental Conditions:**

**Operating Temperature Range:** Determined by the input module

**Storage Temperature Range:** -40 to 60°C (-40 to 140°F)

**Operating and Storage Humidity:** 0 to 85% max RH (non-condensing)

**Altitude:** Up to 2000 meters

**Mounting Requirements:**

**Max Panel Thickness:** 9.5 mm (0.375")

**Min Panel Thickness [NEMA 4 (IP65) Sealing]:** 1.57 mm (0.060")

**Connections:** All wiring connections are made to the input module via high-compression, cage-clamp terminal blocks

**Construction:** Steel front panel, enclosure, and rear cover with textured black polyurethane paint for scratch and corrosion resistance protection; sealed front panel meets NEMA 4 (IP65) specifications for indoor use when properly installed—Installation Category II, Pollution Degree 2, panel gasket and keps nuts included

**Weight:** 1.2 kg (2.7 lbs) (less module)

**Readout:**

**Resolution:** Variable—0.1, 0.2, 0.5, or 1, 2, or 5°

**Scale:** °F or °C

**Offset Range:** -19,999 to 99,999 display units

## Thermocouple Inputs

**Thermocouple Inputs:**

**Input Impedance:** 20 MΩ

**Lead Resistance Effect:** 0.03µV/Ω

**Max Continuous Overvoltage:** 30 V

| Input Type | Range | Accuracy* (18 to 28°C) | Accuracy* (0 to 60°C) |
|---|---|---|---|
| T | -200 to 400°C (-328 to 752°F)<br>-270 to -200°C (-454 to -328°F) | 1.2°C** | 2.1°C |
| E | -200 to 871°C (-328 to 1600°F)<br>-270 to -200°C (-454 to -328°F) | 1.0°C** | 2.4°C |
| J | -200 to 760°C (-328 to 1400°F) | 1.1°C | 2.3°C |
| K | -200 to 1372°C (-328 to 2502°F)<br>-270 to -200°C (-454 to -328°F) | 1.3°C** | 3.4°C |
| R | -50 to 1768°C (-58 to 3214°F) | 1.9°C | 4.0°C |
| S | -50 to 1768°C (-58 to 3214°F) | 1.9°C | 4.0°C |
| B | 100 to 300°C (100 to 572°F)<br>300 to 1820°C (572 to 3308°F) | 3.9°C<br>2.8°C | 5.7°C<br>4.4°C |
| N | -200 to 1300°C (-328 to 2372°F)<br>-270 to -200°C (-454 to -328°F) | 1.3°C** | 3.1°C |
| C | 0 to 2315°C (32 to 4199°F) | 1.9°C | 6.1°C |

** After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.*

*** The accuracy over the interval -270 to -200°C (-454 to -328°F) is a function of temperature, ranging from 1°C at -200°C and degrading to 7°C at -270°C. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.*

## RTD Inputs

**Type:** 3- or 4-wire, 2-wire can be compensated for lead wire resistance

**Excitation Current:**

**100 Ω Range:** 165 µA

**10 Ω Range:** 2.6 mA

**Lead Resistance:**

**100 Ω Range:** 10 Ω/lead max

**10 Ω Range:** 3 Ω/lead max

**Max Continuous Overload:** 30 V

| Input Type | Range | Accuracy* (18 to 28°C) | Accuracy* (0 to 50°C) |
|---|---|---|---|
| **100 Ω Pt alpha = .00385** | -200 to 850°C (-328 to 1562°F) | 0.4°C | 1.6°C |
| **100 Ω Pt alpha = .003919** | -200 to 850°C (-328 to 1562°F) | 0.4°C | 1.6°C |
| **120 Ω Nickel alpha = .00672** | -80 to 260°C (-112 to 1562°F) | 0.2°C | 0.5°C |
| **10 Ω Copper alpha = .00427** | -100 to 260°C (-148 to 500°F) | 0.4°C | 0.9°C |

** After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.*

## Custom Ranges

**Custom Ranges:** Up to 16 data point pairs

**Input Range:** -10 to 65 mV

**0 to 400 Ω:** High range

**0 to 25 Ω:** Low range

**Display Range:** -19999 to 99999

| Input Type | Range | Accuracy* (18 to 28°C) | Accuracy* (0 to 50°C) |
|---|---|---|---|
| **Custom mV Range** | -10 to 65 mV (1 µV res) | 0.02% of rdg + 4µV | 0.12% of rdg + 5 µV |
| **Custom 100 Ω Range** | 0 to 400 Ω (10 MΩ res) | 0.02% of rdg + 0.04 Ω | 0.12% of rdg + 0.05 Ω |
| **Custom 10 Ω Range** | 0 to 25 Ω (1 MΩ res) | 0.04% of rdg + 0.005 Ω | 0.20% of rdg + 0.007 Ω |

** After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.*

## Option Boards Specifications

**LDP63000-AC Isolation For All 4 Cards:**

**Isolation To Sensor (Common):** 1400 Vrms for 1 min

**Working Voltage:** 125 V

**Isolation To User Input (Common):** 500 Vrms for 1 min

**Working Voltage:** 50 V

## RS232/RS485 Communication Card

**RS485 Communication Card Type:** RS485 multi-point balanced interface

**Isolation To Sensor and User Input Commons:** 500 Vrms for 1 min

**Working Voltage:** 50 V (not isolated from all other commons)

**Baud Rate:** 300 to 19.2 K

**Data Format:** 7/8 bits; odd, even, or no parity

**Bus Address:** 0 to 99, max 32 m per line

**Transmit Delay:** Selectable, 2 to 50 ms or 50 to 100 msec

## RS232 Communication Card

**Type:** RS232 half duplex

**Isolation To Sensor and User Input (Commons):** 500 Vrms for 1 min

**Working Voltage:** 50 V (not isolated from all other commons)

**Baud Rate:** 300 to 19.2 K

**Data Format:** 7/8 bits; odd, even, or no parity

## MODBUS

**Type:** RS485, RTU and ASCII MODBUS modes

**Isolation To Sensor and User Input Commons:** 500 Vrms for 1 minute

**Working Voltage:** 50 V, not isolated from all other commons

**Baud Rates:** 300 to 38400

**Data:** 7/8 bits

**Parity:** No, odd, or even

**Addresses:** 1 to 247

**Transmit Delay:** Programmable, see transmit delay explanation

## Analog Output Card

**Types:** 0 to 20 mA, 4 to 20 mA and 0 to 10 Vdc

**Isolation To Sensor and User Input Commons:** 500 Vrms for 1 min

**Working Voltage:** 50 V, not isolated from all other commons

**Accuracy:** 0.17% of FS (18 to 28°C); 0.4% of FS (0 to 50°C)

**Resolution:** 1/3500

**Compliance:**

**10 Vdc:** 10 KΩ load minimum

**20 mA:** 500 Ω load max

## True RMS—Excitation Power:

**Transmitter Power:** 24 Vdc, ±5%, regulated, 50 mA max

**True RMS AC Voltage/Current Isolation To Option Card Commons and User Input Commons:** 125 Vrms

**Isolation To AC Power Terminals:** 250 Vrms

**Maximum Crest Factor (Vp/VRMS):** 5 @ FS input

**Input Coupling:** AC, or AC and DC

**Input Capacitance:** 10 pF

**Common Mode Voltage:** 125 Vac working

**Common Mode Rejection (DC to 60 Hz):** 100 dB

### True RMS Voltage/Current Inputs

| Input Range | Accuracy* | Max DC Blocking | Impedance (60 Hz) | Continuous Overload | Resolution |
|---|---|---|---|---|---|
| 200 mV | 0.1% of rdg + 0.4 mV | ±10 V | 686 KΩ | 30 V max | 0.01 Mv |
| 2 V | 0.1% of rdg + 2 mV | ±50 V | 686 KΩ | 30 V max | 0.1 mV |
| 20 V | 0.1% of rdg + 20 mV | ±300 V | 686 KΩ | 300 V max | 1 mV |
| 300 V | 0.2% of rdg + 0.3 V | ±300 V*** | 686 KΩ | 300 V max | 0.1 V |
| 200 µA | 0.1% of rdg + 0.4 µA | ±15 mA | 1.11 KΩ | 15 mA max | 0.01 µA |
| 2 mA | 0.1% of rdg + 2 µA | ±50 mA | 111 Ω | 50 mA max | 0.1 µA |
| 20 mA | 0.1% of rdg + 20 µA | ±150 mA | 11.1 Ω | 150 mA max | 1 µA |
| 200 mA | 0.1% of rdg + 0.2 mA | ±500 mA | 1.1 Ω | 500 mA max | 10 µA |
| 5 A | 0.5% of rdg + 5 mA | ±7 A*** | 0.02 Ω | 7 A** max | 1 mA |

** Conditions for accuracy specification: 20 minutes warm-up, 18 to 28°C (64 to 82°F) temperature range, 10 to 75% RH non-condensing, 50 Hz to 400 Hz sine wave input, 1% to 100% of range. Add 0.1% reading + 20 counts error over 0 to 50°C (32 to 122°F) range, 0.2% reading + 10 counts error for crest factors up to 3, add 1% reading up to 5, 0.5% reading + 10 counts of DC component and 1% reading + 20 counts error over 20 Hz to 10 KHz range.*

*** Non-repetitive surge rating: 15 A for 5 seconds*

**** Inputs are directly coupled to the input divider and shunts. Input signals with high DC component levels may reduce the usable range.*

## Process Inputs—Excitation Power:

**Transmitter Power:** 24 Vdc, ±5%, regulated, 50 mA max

**Reference Voltage:** 2 Vdc, ± 2%

**Compliance:** 1 kΩ load min. (2 mA max)

**Temperature Coefficient:** 40 ppm/°C max

**Reference Current:** 1.75 mAdc, ± 2%

**Compliance:** 10 kΩ load max

**Temperature Coefficient:** 40 ppm/°C max

| Input Range | Accuracy* (18 to 28°C) | Accuracy* (0 to 50°C) | Impedance/ Compliance | Max Continuous Overload | Display Resolution |
|---|---|---|---|---|---|
| 20 mA (-2 to 26 mA) | 0.03% of rdg + 2 µA | 0.12% of rdg + 3 µA | 20 Ω | 150 mA | 1 µA |
| 10 Vdc (-1 to 13 Vdc) | 0.03% of rdg + 2 mV | 0.12% of rdg + 3 mV | 500 KΩ | 300 V | 1 mV |

** After 20 minute warm-up. Accuracy is specified in 2 ways: accuracy over an 18 to 28°C (64 to 82°F) with a 10 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) with a 0 to 85% RH (non-condensing environment). Accuracy over the 0 to 50°C (32 to 122°F) range includes the temperature coefficient effect of the meter.*

**Update Time:** 200 ms max to within 99% of final readout value (digital filter and internal zero correction disabled), 700 ms max (digital filter disabled, internal zero correction enabled)

**LDP63000-AC:** 1 s max to within 99% of final readout value (digital filter disabled)

**Response Time:** 200 ms max to within 99% of final readout value (digital filter and internal zero correction disabled), 700 ms max (digital filter disabled, internal zero correction enabled)

**LDP63000-AC Only:** 1 s max to within 99% of final readout value (digital filter disabled)

**LDP63000-T Only:** 200 ms typical, 700 ms max (digital filter disabled)

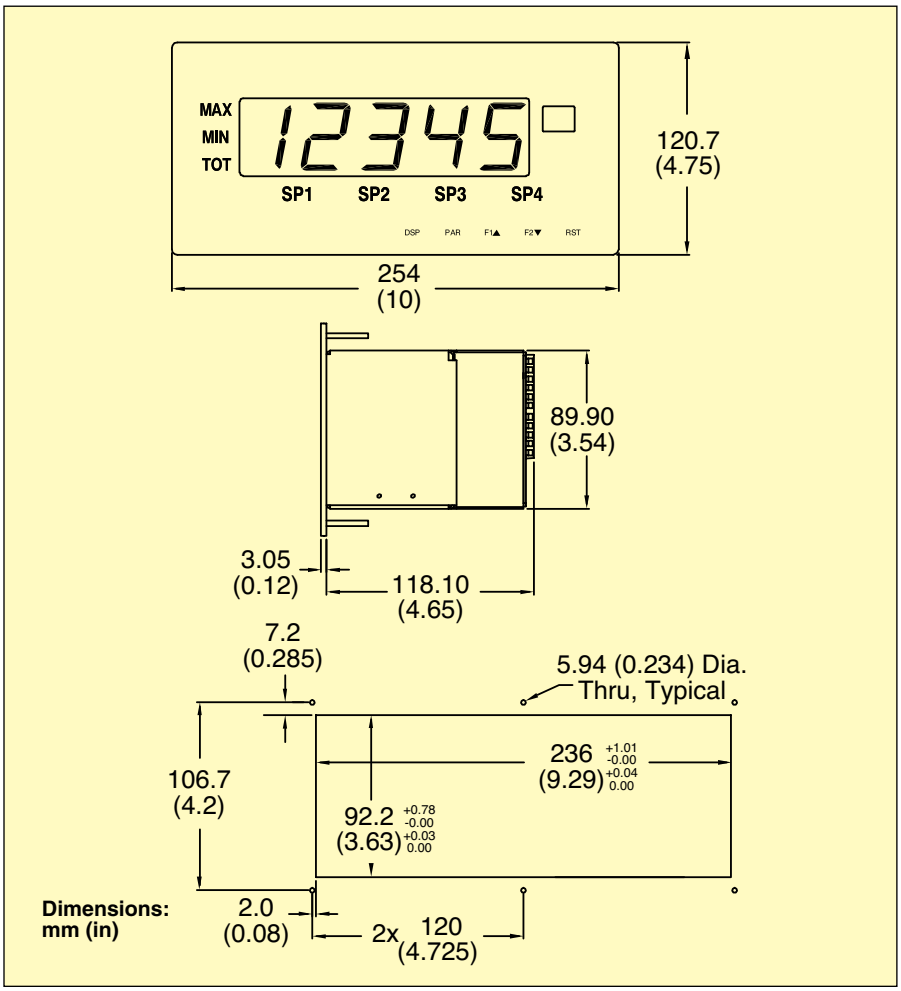
## Setpoint Output Cards:

**Type:** Four types of field-installable cards

## DC Inputs

| Input Range | Accuracy* (18 to 28°C) | Accuracy* ( 0 to 50°C) | Impedance/ Compliance | Max Continuous Overload | Resolution |
|---|---|---|---|---|---|
| ±200 µAdc | 0.03% of rdg + 0.03 µA | 0.12% of rdg + 0.04 µA | 1.11 KΩ | 15 mA | 10 nA |
| ±2 mAdc | 0.03% of rdg + 0.3 µA | 0.12% of rdg + 0.4 µA | 111 Ω | 50 mA | 0.1 µA |
| ±20 mAdc | 0.03% of rdg + 3 µA | 0.12% of rdg + 4 µA | 11.1 Ω | 150 mA | 1 µA |
| ±200 mAdc | 0.05% of rdg + 30 µA | 0.15% of rdg + 40 µA | 1.1 Ω | 500 mA | 10 µA |
| ±2 Adc | 0.5% of rdg + 0.3 mA | 0.7% of rdg + 0.4 mA | 0.1 Ω | 3 A | 0.1 mA |
| ±200 mVdc | 0.03% of rdg + 30 mV | 0.12% of rdg + 40 mV | 1.066 MΩ | 100 V | 10 µV |
| ±2 Vdc | 0.03% of rdg + 0.3 mV | 0.12% of rdg + 0.4 mV | 1.066 MΩ | 300 V | 0.1 mV |
| ±20 Vdc | 0.03% of rdg + 3 mV | 0.12% of rdg + 4 mV | 1.066 MΩ | 300 V | 1 mV |
| ±300 Vdc | 0.05% of rdg + 30 mV | 0.15% of rdg + 40 mV | 1.066 MΩ | 300 V | 10 mV |
| 100 Ω | 0.05% of rdg + 30 MΩ | 0.2% of rdg + 40 MΩ | 0.175 V | 30 V | 0.01 Ω |
| 1000 Ω | 0.05% of rdg + 0.3 Ω | 0.2% of rdg + 0.4 Ω | 1.75 V | 30 V | 0.1 Ω |
| 10 KΩ | 0.05% of rdg + 1 Ω | 0.2% of rdg + 1.5 Ω | 17.5 V | 30 V | 1 Ω |

** After 20 minute warm-up. Accuracy is specified in two ways: Accuracy over an 18 to 28°C and 10 to 75% RH environment; and accuracy over a 0 to 50°C and 0 to 85% RH (non-condensing environment). Accuracy over the 0 to 50°C range includes the temperature coefficient effect of the meter.*




## Dual Relay Card (LDP6-CDS10)

**Type:** Two form "C" relays

**Isolation To Sensor and User Input Commons:** 2000 Vrms for 1 minute

**Working Voltage:** 250 V

**Contact Rating:**

**1 Relay Energized:** 5 A @ 120/240 Vac or 28 Vdc (resistive load), ⅛ HP @ 120 Vac (inductive load); total current with both relays energized not to exceed 5 A

**Life Expectancy:** 100 K cycles min at full load rating; external RC snubber extends relay life for operation with inductive loads

## Quad Relay Card (LDP6-CDS20)

**Type:** Four form "A" relays

**Isolation To Sensor and User Input Commons:** 2300 Vrms for 1 minute

**Working Voltage:** 250 Vrms

**Contact Rating:**

**1 Relay Energized:** 3 A @ 250 Vac or 30 Vdc (resistive load), ¹⁄₁₀ HP @ 120 Vac (inductive load); total current with all 4 relays energized not to exceed 4 A

**Life Expectancy:** 100 K cycles min at full load rating; external RC snubber extends relay life for operation with inductive loads

## Quad-Sinking Open Collector (LDP6-CDS30)

**Type:** Four isolated sinking NPN transistors

**Isolation To Sensor and User Input Commons:** 500 Vrms for 1 min

**Working Voltage:** 50 V, not isolated from all other commons

**Rating:** 100 mA max @ $V_{SAT}$ = 0.7 V max, $V_{MAX}$ = 30 V

## Quad-Sourcing Open Collector (LDP6-CDS40)

**Type:** Four isolated sourcing PNP transistors

**Isolation To Sensor and User Input Commons**: 500 Vrms for 1 min

**Working Voltage:** 50 V, not isolated from all other commons

**Rating:**

**Internal Supply:** 24 Vdc ± 10% , 30 mA max total for all 4

**External Supply:** 30 Vdc max, 100 mA max each output


LDP63000-E shown smaller than actual size.

## To Order

| Model No. | Description (Display Meter Only, No Outputs) |
|---|---|
| **LDP63000-T** | Large display meter, temperature inputs, 85 to 250 Vac power |
| **LDP63000-T-LV** | Large display meter, temperature inputs, 11 to 36 Vdc/24 Vac |
| **LDP63000-E** | Large display meter, process inputs, 85 to 250 Vac power |
| **LDP63000-E-LV** | Large display meter, process inputs, 11 to 36 Vdc/24 Vac |
| **LDP63000-DC** | Large display meter, universal DC Inputs, 85 to 250 Vac power |
| **LDP63000-DC-LV** | Large display meter, universal DC Inputs, 11 to 36 Vdc/24 Vac |
| **LDP63000-AC** | Large display meter, True RMS AC voltage/current inputs, 85 to 250 Vac power |

**Optional Plug-in Output Cards (Field Installable)**

| Model No. | Description |
|---|---|
| **Setpoint Alarms (Only 1 Alarm Card Can Be Installed Into Base Meter)** | |
| **LDP6-CDS10** | Dual setpoint relay output card |
| **LDP6-CDS20** | Quad setpoint relay output card |
| **LDP6-CDS30** | Quad setpoint sinking open collector output card |
| **LDP6-CDS40** | Quad setpoint sourcing open collector output card |
| **Analog Output** | |
| **LDP6-CDL10** | Analog output card |
| **Communications (Only 1 Communications Card Can Be Installed Into Base Meter)*** | |
| **LDP6-CDC10** | RS485 serial communications output card with terminal block |
| **LDP6-CDC1C** | Extended RS485 serial communications output card with dual RJ11 connector |
| **LDP6-CDC20** | RS232 serial communications output card with terminal block |
| **LDP6-CDC2C** | Extended RS232 serial communications output card with 9-pin D connector |
| **LDP6-CDC40** | MODBUS communications card |
| **LDP6-CDC4C** | Extended MODBUS communications card with dual RJ11 connector |

**Software is free. Visit us online for download.*
*Comes with complete operator's manual.*

***Note:*** *Adding option cards—meters can be fitted with up to 3 optional plug-in cards, however, only 1 card from each function type can be installed at a time. The function types include setpoint alarms, analog output and communications. The cards can be installed initially or at a later date. Each optional plug-in card is shipped with installation and programming instructions.*

***Ordering Example: LDP63000-T-LV,*** *large display meter, temperature inputs, 11 to 36 Vdc/24 Vac,* ***LDP6-CDL10*** *analog output card.*

**Accessories (Field Installable)**

| Model No. | Description |
|---|---|
| **LDP6-ENC9** | NEMA 4 enclosure |
| **LDP6-SHR** | Shroud |
| **LDP6-MB** | Mounting bracket |