

# Extra Large Display Meter For Temperature and Process Inputs



LDP63100-E, \$695, shown  
smaller than actual size.

LDP63100  
Starts at  
**\$695**



- ✓ Large 101 mm (4") LED Display Readable to 180°
- ✓ Various Input Types Available
- ✓ Alarms, Analog Outputs, and Communication
- ✓ Custom Units Label with Backlight
- ✓ Programmable User Inputs
- ✓ Universal AC Powered
- ✓ NEMA 4 (IP65)
- ✓ Field Installable Output Cards (Optional)

The LDP63100 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, voltage, current

or process information, the LDP63100 can satisfy your requirements. The LDP63100 accepts various analog inputs which allow the unit to adapt to most any application. Additional plug-in option cards add alarms, analog outputs, and communication/bus capabilities, making the LDP63100 an "intelligent" panel meter. The unit has a large display, designed to be remotely mounted, therefore the unit does not have a programming keypad. Unit programming can be accomplished through the use of external switches that can be wired via the terminal block; a minimum of 3 switches is required. An optional programming remote option provides a 10' interconnecting cable and programming box. The remote buttons make programming the display easy.

## Specifications

**Display:** 101 mm (4") red LED, 5-digit, -19999 to 99999

**Power Requirements:** 85 to 250 Vac, 50/60 Hz, 18 VA

## Environmental Conditions:

### 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]:** 1.52 mm (0.060")

## Terminal Block Wiring:

**Wire Strip Length:** 7.5 mm (0.3")

**Wire Gauge:** 30-12 AWG copper wire

**Maximum Torque:** 0.58 to 0.81 N-m (5 to 7 in-lb)

**Construction:** Aluminum 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:** 2.25 kg (5 lb)

## 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

## LDP63100-AC Isolation For All 4 Cards:

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

**Working Voltage:** 125V

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

**Working Voltage:** 50V



## Thermocouple Inputs

### Thermocouple Inputs:

**Input Impedance:** 20 MΩ

**Lead Resistance Effect:** 0.03 μV/Ω

**Max Continuous Overvoltage:** 30V

Input Type	Range	Accuracy* (18 to 28°C)	Accuracy* (0 to 60°C)
<b>T</b>	-200 to 400°C (-328 to 752°F) -270 to -200°C (-454 to -328°F)	1.2°C**	2.1°C
<b>E</b>	-200 to 871°C (-328 to 1600°F) -270 to -200°C (-454 to -328°F)	1.0°C**	2.4°C
<b>J</b>	-200 to 760°C (-328 to 1400°F)	1.1°C	2.3°C
<b>K</b>	-200 to 1372°C (-328 to 2502°F) -270 to -200°C (-454 to -328°F)	1.3°C**	3.4°C
<b>R</b>	-50 to 1768°C (-58 to 3214°F)	1.9°C	4.0°C
<b>S</b>	-50 to 1768°C (-58 to 3214°F)	1.9°C	4.0°C
<b>B</b>	100 to 300°C (100 to 572°F) 300 to 1820°C (572 to 3308°F)	3.9°C 2.8°C	5.7°C 4.4°C
<b>N</b>	-200 to 1300°C (-328 to 2372°F) -270 to -200°C (-454 to -328°F)	1.3°C**	3.1°C
<b>C</b>	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:** 30V

Input Type	Range	Accuracy* (18 to 28°C)	Accuracy* (0 to 50°C)
<b>100 Ω Pt alpha = 0.00385</b>	-200 to 850°C (-328 to 1562°F)	0.4°C	1.6°C
<b>100 Ω Pt alpha = 0.003919</b>	-200 to 850°C (-328 to 1562°F)	0.4°C	1.6°C
<b>120 Ω Nickel alpha = 0.00672</b>	-80 to 260°C (-112 to 1562°F)	0.2°C	0.5°C
<b>10 Ω Copper alpha = 0.00427</b>	-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 + 4 μV	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



## Process Inputs— Excitation Power:

**Transmitter Power:** 24 Vdc,  $\pm 5\%$ , regulated, 50 mA max

**Reference Voltage:** 2 Vdc,  $\pm 2\%$

**Compliance:** 1 k $\Omega$  load min (2 mA max)

**Temperature Coefficient:**

40 ppm/ $^{\circ}\text{C}$  max

**Reference Current:** 1.75 mAdc,  $\pm 2\%$

**Compliance:** 10 k $\Omega$  load max

**Temperature Coefficient:**

40 ppm/ $^{\circ}\text{C}$  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 $\mu\text{A}$	0.12% of rdg + 3 $\mu\text{A}$	20 $\Omega$	150 mA	1 $\mu\text{A}$
10 Vdc (-1 to 13 Vdc)	0.03% of rdg + 2 mV	0.12% of rdg + 3 mV	500 k $\Omega$	300V	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.

## True RMS—Excitation Power:

**Transmitter Power:** 24 Vdc,  $\pm 5\%$ , 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	$\pm 10\text{V}$	686 k $\Omega$	30V	0.01 mV
2V	0.1% of rdg + 2 mV	$\pm 50\text{V}$	686 k $\Omega$	30V	0.1 mV
20V	0.1% of rdg + 20 mV	$\pm 300\text{V}$	686 k $\Omega$	300V	1 mV
300V	0.2% of rdg + 0.3V	$\pm 300\text{V}^{***}$	686 k $\Omega$	300V	0.1V
200 $\mu\text{A}$	0.1% of rdg + 0.4 $\mu\text{A}$	$\pm 15\text{ mA}$	1.11 k $\Omega$	15 mA	0.01 $\mu\text{A}$
2 mA	0.1% of rdg + 2 $\mu\text{A}$	$\pm 50\text{ mA}$	111 $\Omega$	50 mA	0.1 $\mu\text{A}$
20 mA	0.1% of rdg + 20 $\mu\text{A}$	$\pm 150\text{ mA}$	11.1 $\Omega$	150 mA	1 $\mu\text{A}$
200 mA	0.1% of rdg + 0.2 mA	$\pm 500\text{ mA}$	1.1 $\Omega$	500 mA	10 $\mu\text{A}$
5 A	0.5% of rdg + 5 mA	$\pm 7\text{ A}^{***}$	0.02 $\Omega$	7 A**	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, add 0.2% reading + 10 counts error for crest factors up to 3, add 1% reading up to 5, add 0.5% reading + 10 counts of DC component and add 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.

## Option Boards Specifications RS232/RS485

### RS485 Communication Card

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

**Isolation To Sensor and User Input**

**Commons:** 500 Vrms for 1 min

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

**Baud Rate:** 300 to 19.2 K

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

## MODBUS® Specifications

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

**Isolation To Sensor and User Input**

**Commons:** 500 Vrms for 1 minute

**Working Voltage:** 50V, 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:** 50V, 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 k $\Omega$  load minimum

**20 mA:** 500  $\Omega$  ( $\Omega$ ) load max

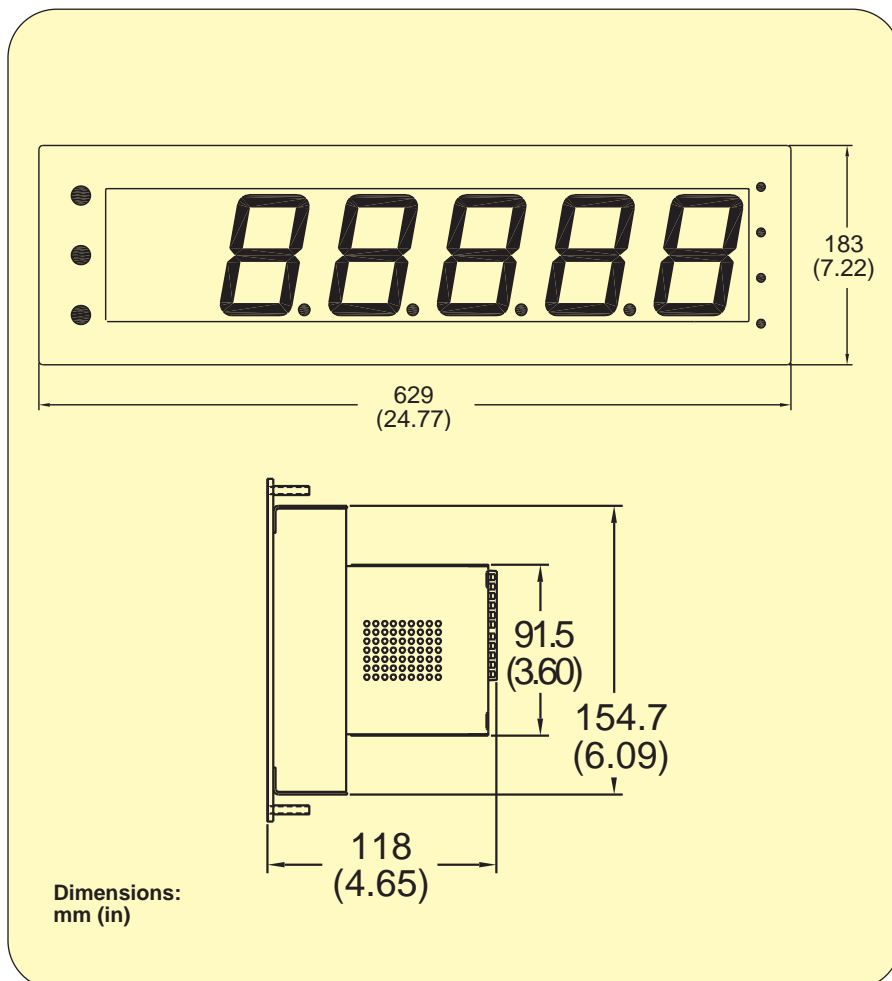
**Update Time:** 200 ms max to within 99% of final readout value (digital filter and internal zero correction disabled), 700 ms max (digital filter disabled, internal zero correction enabled)

**LDP63100-AC Only:** 1 s max to within 99% of final readout value (digital filter disabled)

## 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	100V	10 µV
±2 Vdc	0.03% of rdg + 0.3 mV	0.12% of rdg + 0.4 mV	1.066 MΩ	300V	0.1 mV
±20 Vdc	0.03% of rdg + 3 mV	0.12% of rdg + 4 mV	1.066 MΩ	300V	1 mV
±300 Vdc	0.05% of rdg + 30 mV	0.15% of rdg + 40 mV	1.066 MΩ	300V	10 mV
100 Ω	0.05% of rdg + 30 MΩ	0.2% of rdg + 40 MΩ	0.175V	30V	0.01 Ω
1000 Ω	0.05% of rdg + 0.3 Ω	0.2% of rdg + 0.4 Ω	1.75V	30V	0.1 Ω
10 kΩ	0.05% of rdg + 1 Ω	0.2% of rdg + 1.5 Ω	17.5V	30V	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.



## Setpoint Output Cards:

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

**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)

**LDP63100-AC Only:** 1 s max to within 99% of final readout value (digital filter disabled)

**LDP63100-T Only:** 200 ms typical, 700 ms max (digital filter disabled)

## 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 Vrms

**Contact Rating:**

**1 Relay Energized:** 5 A @ 120/240 Vac or 28 Vdc (resistive load), ½ 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), ½ 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:** 50V, not isolated from all other commons

**Rating:** 100 mA max @ Vsat = 0.7V max, Vmax = 30V

## 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:** 50V, 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





LDP63100-E, \$700, shown smaller than actual size.

**MOST POPULAR MODELS HIGHLIGHTED!**

### To Order (Specify Model Number)

Model No.	Price	Description (Display Meter Only, No Outputs)
LDP63100-T	\$695	Large display meter, temperature inputs, 85 to 250 Vac power
LDP63100-E	700	Large display meter, process inputs, 85 to 250 Vac power
LDP63100-DC	705	Large display meter, universal DC inputs, 85 to 250 Vac power
LDP63100-AC	770	Large display meter, true RMS AC voltage/current inputs, 85 to 250 Vac power

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

Model No.	Price	Description
<b>Setpoint Alarms (Only 1 Alarm Card Can Be Installed Into Base Meter)</b>		
LDP6-CDS10	\$37	Dual setpoint relay output card
LDP6-CDS20	48	Quad setpoint relay output card
LDP6-CDS30	37	Quad setpoint sinking open collector output card
LDP6-CDS40	37	Quad setpoint sourcing open collector output card
<b>Analog Output</b>		
LDP6-CDL10	\$74	Analog output card
<b>Communications (Only 1 Communications Card Can Be Installed Into Base Meter)*</b>		
LDP6-CDC10	\$48	RS485 serial communications output card with terminal block
LDP6-CDC1C	48	Extended RS485 serial communications output card with dual RJ11 connector
LDP6-CDC20	48	RS232 serial communications output card with terminal block
LDP6-CDC2C	48	Extended RS232 serial communications output card with 9-pin D connector
LDP6-CDC40	58	MODBUS communications card
LDP6-CDC4C	58	Extended MODBUS communications card with dual RJ11 connector

### Accessories (Field Installable)

Model No.	Price	Description
LDP6-PGM	\$61	Programming remote for LDP63100 with 10' cable
LDP6-ENC12	168	NEMA 4 (IP65) enclosure
LDP631-SHR	52	Shroud
LDP6-EN/SH	209	NEMA 4 (IP65) enclosure and shroud

Free software download available at [omega.com/ldp63100](http://omega.com/ldp63100)

Comes complete with 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 Examples:** LDP63100-E, large display meter, process inputs, 85 to 250 Vac power, LDP6-CDL10 analog output card, \$700 + 74 = **\$774**.  
LDP63100-T, large display meter, temperature inputs, 85 to 250 Vac power, **\$695**.

Recommended Reference Book: Grounding and Shielding Techniques,  
EE-1319, \$85. See Section Y for Additional Books



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