

Large Displays Panel or Wall Mount

For Temperature, Process, Rate, Total, ASCII, Modbus®, and Time 4 or 6-Digits



LDB Series



LDB-24 large display meter shown next to a DPF20 panel meter.



- ✓ Bright 60 or 100 mm (2.3 or 4") Red or Green Digits
- ✓ Wall, Suspension or Panel Mount
- ✓ Full NEMA 4 (IP65) Metal Enclosure
- ✓ Control, Alarm and Retransmission Capability with Field Installable Cards
- ✓ Power Options of 85 to 260 Vac and 11 to 36 Vdc Sensor Power Built-In
- ✓ Display of Current, Max or Min Values
- ✓ Temperature: Thermocouples K, T, J, E, R, S, N, C; RTD/Pt100
- ✓ Process: 4 to 20 mA, 0 to 20 mA, ± 10 Vdc, 0 to 10 Vdc
- ✓ Rate, Total, Count, Period: PNP, NPN, Namur, Inductive, TTL, Quadrature
- ✓ Clock: Time, Timer with Start, Stop and Reset
- ✓ Remote Display: ASCII RS232, RS485, Modbus RTU

Applications

- ✓ Ideal for Informing Customers and Colleagues of Key Information
- ✓ Time Keeping, Incident Free Days, Output, Productivity, Targets
- ✓ Product/Piece Counting or Production Rate Indication

The LDB Series of large displays offer a wide range of measurement, alarm, and display capabilities for all types of industrial and commercial applications. Data can be seen at distances of up to 50 m (160') and by a large audience.

These displays can provide control, alarms, and/or retransmission of measured data with field-installable options for relay or transistor outputs, SSR controls, analog retransmission signals, and communications in Modbus RTU, RS485 or RS232 ASCII protocols. All circuits are isolated for reliable performance and protection.

The LDB series features a full NEMA 4 (IP65) metallic housing, designed to be panel mounted, wall mounted or suspended. The front keypad allows for easy configuration, and an optional remote keypad is also available.

The front lens is made from anti-reflective tinted methacrylate, which provides a sharp and clear reading at long distances. Additionally, 5 levels of LED brightness allow for adjustments to suit most environments.

Specifications

Display Digits & Range:

Six 999999/-199999 or four 9999/-1999

Decimal Point: Configurable

LED Color:

Red standard; Green optional

Digit Height: 60 mm (2.36") or 100 mm (4")

Operating Temperature: 0 to 50°C (32 to 122°F)

Storage Temperature: -20 to 70°C (-4 to 158°F)

Connections: Plug-in screw terminal

Signal Wire Diameter: Max. 0.5 mm²

Power Wire Diameter: Max. 2.5 mm²

Specifications cont.

PROCESS METER

Signal Ranges: 4 to 20 mA, 0 to 10 Vdc, ± 20 mA, ± 10 Vdc

Excitation Voltage: 20 Vdc, 15 Vdc, 10 Vdc, 5 Vdc (max. 35 mA)

Accuracy: 0.05% F.S. ± 1 digit

Offset Drift: 10 ppm/ $^{\circ}$ C

Span Drift: 25 ppm/ $^{\circ}$ C

(includes offset drift)

Read Rate: 15 readings / second

Refresh Rate: 15 / second

Response Time: <120 mSec. (0 to 99% signal)

Input impedance: 11 Ohm for mA, 932 k(Ω) for Vdc

TEMPERATURE METER (4-DIGIT ONLY)

Pt100: 2 or 3 wire

Resolution: 1 $^{\circ}$ or 0.1 $^{\circ}$

Measuring Range: 800 to -200 $^{\circ}$ C (1472 to -328 $^{\circ}$ F)

Accuracy: $\pm 0.2^{\circ}$

Cable Compensation: Automatic up to 14 Ω

Offset Drift: 0.05 $^{\circ}$ / $^{\circ}$ C

Span Drift: 0.10 $^{\circ}$ / $^{\circ}$ C (includes offset drift)

Thermocouples:

J, K, T, E, S, R, N, C, L

Resolution: 1 $^{\circ}$

Measuring Ranges: See user manual

Accuracy: $\pm 2^{\circ}$ to $\pm 4^{\circ}$ depending on thermocouple type

Thermocouple Cold Junction: automatic (configurable)

Offset Drift: 0.05 $^{\circ}$ / $^{\circ}$ C to 0.2 $^{\circ}$ / $^{\circ}$ C

Span Drift: 0.02 $^{\circ}$ / $^{\circ}$ C to 0.2 $^{\circ}$ / $^{\circ}$ C (includes offset drift)

RATE, TOTAL METER

Signals Accepted: NPN, PNP, Namur, pick-up, TTL, inductive, mechanical, quadrature

Excitation Voltage: 5 Vdc, 9 Vdc, 15 Vdc, 18 Vdc (max. 70 mA)

Maximum Vdc at Input Terminals: ± 30 Vdc

Quartz Accuracy: $\pm 0.01\%$

Thermal Stability: 20 ppm/ $^{\circ}$ C

Display Refresh: 15 / second

Maximum Frequencies:

Counter: up to 250 KHz

Rate Meter and Period: meter up to 500 KHz

Minimum Frequencies: Rate meter and period meter down to 1 mHz (0.001 Hz)

CLOCK, TIMER, CHRONOMETER

Reading, Formats:

4-Digit: mm.ss, hh.mm, dd.hh, ssss, sss.s, ss.ss, mmmm, mm.m, mm.mm, hhhh, hhh.h, hh.hh

6-Digit: mm.ss.cc, hh.mm.ss, dd.hh.mm, mmm.ss, hhhh.mm, dddd.hh, ssssss, sssss.s, ssss.ss, mmmmm, mmmmm.m, mmmmm.mm, hhhhhh, hhhhh.h, hhhh.hh (c=1/100 sec, s=sec., m=min., h=hour, d=day)

Counting Direction: Up, down

Controls: Start, stop, reset

Control Activation: Volt-free contact (default), configurable for push-pull, NPN, PNP, inductive



Maximum Vdc at Input Terminals: ± 30 Vdc

Reset Control: Remote, front panel and on alarm

Accuracy: 100 ppm

Display Refresh: 12 / second, reading memory maintained in case of power loss

Modbus RTU, RS485, RS232 METER

Common:

Speed: 38,400 bps to 600 bps

Data Format: 8n1, 8e1, 8o1, 8n2, Bus terminator not included, Watchdog configurable from 1 to 120 seconds

Modbus RTU:

Bus: RS485

Function: "slave" for Modbus RTU protocol

Addresses: 1 to 247

RS485:

Protocol: ASCII

Bus: RS485

Function: Repeater for ASCII code

Addresses: 1 to 31

RS232:

Protocol: ASCII

Bus: RS232

Function: Repeater for ASCII code

Addresses: 1 to 31 ("daisy-chain" connections)

AVAILABLE MODELS AND FEATURES

Features	Models						
	P	T	C1	CR	RTU	232	485
Main Function	Process meter	Temperature meter (4-digit only)	Counter ratemeter periodmeter	Clock, chronometer timer	Modbus RTU	RS232 ASCII repeater	RS485 ASCII repeater
Ranges	0/10 Vdc 4/20 mA ± 10 Vdc ± 20 mA	Pt100 (2 and 3 wires) Thermocouples J, K, T, E, S, R, N, C	Pulse counter up to 250 kHz ratemeter up to 500 kHz period up to 1000 sec	Hours, minutes, seconds, tenths, and cents of second hour or decimal format	Modbus RTU protocol	RS232 ASCII protocol	RS485 ASCII protocol
Digit Height	60 mm (2.36") or 100 mm (4")						
Sensor Excitation Voltage	5 to 20 Vdc (max. 35 mA)	N/A	5 to 18 Vdc (max. 70 mA)	5 to 18 Vdc (max. 70 mA)	N/A	N/A	N/A
Power High	85 to 265 Vac; 120 to 370 Vdc (isolated 2500 Vac)						
Power Low	11 to 36 Vdc (isolated 1500 Vdc)						
Power Consumption (meter only)	60 mm (2.3"): 4 digit = 3.0 W, 6 digit = 3.50 W 100 mm (4"): 4 digit = 5.25 W, 6 digit = 5.50 W						
Protection	Full NEMA 4 (IP65) housing						
Configuration	Front Keypad (Optional remote control)						
Mounting	Panel, wall, suspended						

DIMENSIONS

	4-Digit, 60 mm (2.3")	6-Digit, 60 mm (2.3")	4-Digit, 100 mm (4")	6-Digit, 100 mm (4")
Height	135 mm (5.3")		166 mm (6.54")	
Width	340 mm (13.39")	436 mm (17.17")	542 mm (21.34")	740 mm (29.13")
Depth	80 mm (3.15") behind panel (including cable glands)			
Cutout	322 x 117 mm (12.67 x 4.61")	418 x 117 mm (16.46 x 4.61")	524 x 148 mm (20.63 x 5.83")	722 x 148 mm (28.43 x 5.83")
Weight	2.2 kg (4.8 lb)	3.5 kg (7.7 lb)	2.5 kg (5.5 lb)	4.5 kg (9.9 lb)

OUTPUT AND COMMUNICATIONS OPTIONS

Option	R1	T1	SSR	A0	RTU	S4	S2
Main Function	Relay Output	Transistor Output	SSR Control Output	Analog Output	Modbus RTU	RS485 ASCII	RS232 ASCII
Characteristics	3 terminals (NC, NO, common) 250 Vac, max. 3A	Open collector	Output to control SSR relay with DC signal I/P	Output 4-20 mA active or passive 0 to 10 Vdc	Function 4 Read_Input_Registers	ASCII protocol	Re-transmission of signal to allow "Daisy Chaining"
Isolation	3500 Vac	1000 Vdc					
Specifications	Max. current: 3 A (resistive load). Max. Voltage: 250 Vac continuous (max. 150 Vac overvoltage Category III)	Type of output: Transistor. Max voltage: 35 Vdc. Max. current: 50 mA. Isolation: 3500 Vac, opto isolated	Type of output: DC pulse output voltage: +15 Vdc Max. current: 45 mA	Load impedances: $\leq 350 \Omega$ (for 4 to 20 mA active) $\leq 800 \Omega$ (passive) Max. external voltage: 27 Vdc. $\geq 10 \text{ K Ohm}$ 0 to 10 Vdc Accuracy: $< 0.1\%$ FS. Thermal stability: 60 ppm/ $^{\circ}\text{C}$ mA; 50 ppm/ $^{\circ}\text{C}$ Vdc. Step response: $< 75 \text{ mS}$ (to 99%). Factory default setting: 0 to 9999 = 4 to 20 mA On error: FS	Addresses: 01 to 247. Bus: RS to 485. Speed: 57.6 Kbps to 600 bps. Data format: 8e1 (standard), 8o1, 8n2. Factory configuration: Address 1; speed 19.2 Kbps; format 8e1; decimal point auto	Speed: 57.6 Kbps to 600 bps. Data format: 8n1, 8o1, 8n2, 8e1. Bus terminator: not included. Protocol: ASCII. Architecture: master - slave. Addresses: 01 to 31. Broadcast address: 128. Factory configuration: Mode Slave; Address 1; Speed 19.2 Kbps; Format 8n1; Decimal point Auto; Mode Master; Destination address 31; Frequency 0.5 sec; Decimal point Auto; Answer delay 0 mS	Speed: 57.6 kbps to 600 bps. Data format: 8n1 (standard), 8o1, 8n2, 8e1. Protocol: ASCII. Architecture: master - slave. Address: 01 to 31. Broadcast address: 128



LDB-24-P-L-R-R1-S2-0.

To Order				
Model No.	Description			
LDB-24	4-digit 60 mm (2.3")			
LDB-26	6-digit 60 mm (2.3")			
LDB-44	4-digit 100 mm (4")			
LDB-46	6-digit 100 mm (4")			
	Input Type	Description		
	-P	Process		
	-T	Temperature		
	-C1	Rate/Total		
	-CR	Clock/Timer		
	-RTU	Modbus		
	-485	RS485		
	-232	RS232		
		Power Supply	Description	
		-H	85 to 265 Vac	
		-L	11 to 36 Vdc	
			Display Color	Description
			-R	Red, standard
			-G	Green
Output Options				
Option 1	Option 2	Option 3	Description	
-R1	-R1	-R1	Single relay	
-T1	-T1	-T1	Open collector	
-SSR	-SSR	-SSR	DC pulse (SSR drive)	
-AO	-AO	-AO	Analog output	
-RTU	-RTU	-RTU	Modbus RTU	
-S4	-S4	-S4	RS485	
-S2	-S2	-S2	RS232	
-0	-0	-0	No option	

Comes complete with installation/user guide and mounting brackets.

Ordering Examples: LDB-44-C1-H-R-R1-R1-S4, large display rate/total indicator: 4-digits, 100 mm (4") high, 85 to 265 Vac powered, red display, 2 relay output options and RS485 communications option.

LDB-46-P-L-G-T1-0-0, large display process meter: 6-digits, 100 mm (4") high, 11 to 36 Vdc powered, green display, 1 open collector output option.