# red lion

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## MODEL LDD - LARGE DIGIT DISPLAY

- ● *WIDE SELECTION OF INPUT MODULES*
- ● *3.32 INCH (84.4 mm) HIGH DIGITS*
- ● *115/230 VAC SWITCH SELECTABLE*
- ● *RUGGED STEEL CONSTRUCTION*
- ● *AVAILABLE IN 4 OR 6-DIGIT VERSIONS*
- ● *AVAILABLE WITH RED OR GREEN LED DISPLAY*
- ● *SEALED FRONT PANEL CONSTRUCTION (NEMA 4/IP65)*
- ● *VERSATILE MOUNTING OPTIONS*
- ● *TEMPLATE PROVIDED FOR EASY INSTALLATION*

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## DESCRIPTION

The Large Digit Display, Model LDD, is a versatile display which can increase your productivity by offering your plant floor or production area a visual display of their current status, such as counting, rate indication, real time, or any engineering unit required. The LDD is available in either a 4-digit or a 6-digit display version with Red or Green LED displays, that accepts a selection of personality boards to meet your specific application needs *(see Personality Module Bulletins for more information)*.

There are four panel wiring knock-outs provided, two 7/8" *(22.2 mm)* knock-outs and two 1/2"*(12.7 mm)* knock-outs. Also provided is a removeable cover located on the rear panel which will expose one open ended cut-out for easy wire installation.
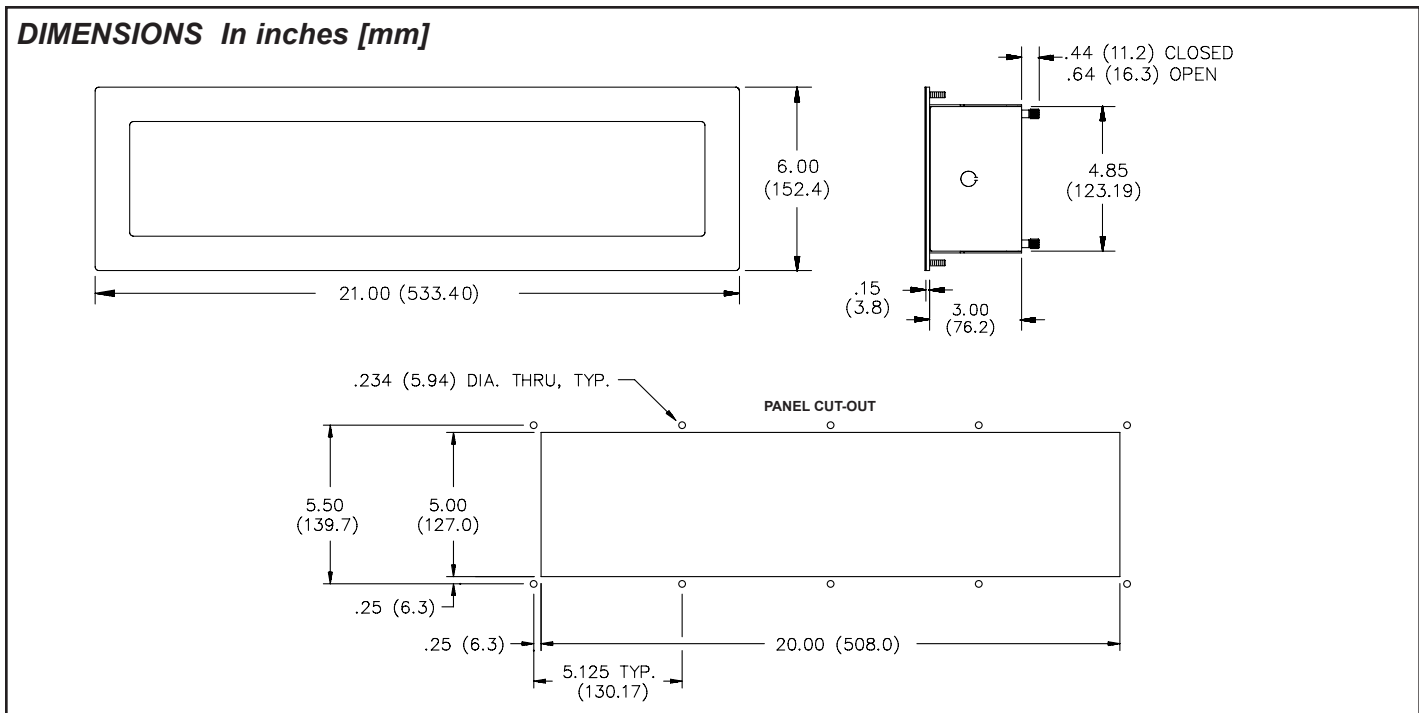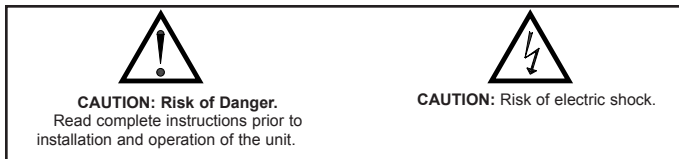
The LDD has a sealed front panel which meets NEMA 4/IP65 requirements for wash-down and dusty environments when properly installed. The 3.32" *(84.4 mm)* digits are readable to 130 feet *(40 M)*.

⚠ **CAUTION: Risk of Danger.**
Read complete instructions prior to installation and operation of the unit.

⚠ **CAUTION:** Risk of electric shock.

## SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in the manual or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

## SPECIFICATIONS

1. **DISPLAY:** 3.32" *(84.4 mm)* High, Red or Green LED display.
2. **POWER REQUIREMENTS:** Switch selectable 115/230 VAC *(±10%)*, 50/60 Hz, 17 VA 4-digit, 21 VA 6-digit *(including module)*.
3. **CONSTRUCTION:** Steel construction textured with polyurethane paint for scratch and corrosion resistance protection. Front panel meets NEMA 4/IP65 requirements for indoor use when properly installed. Installation Category II, Pollution Degree 2. (Panel gasket included with unit.)
4. **ENVIRONMENTAL CONDITIONS:**
   **Operating Temperature**: SEE MODULE LITERATURE
   **Storage Temperature**: -40 to 70°C
   **Operating and Storage Humidity**: 85% max. relative (non-condensing) over operating range
   **Altitude**: Up to 2000 meters

## DIMENSIONS  In inches [mm]



.44 (11.2) CLOSED
.64 (16.3) OPEN

6.00 (152.4)

4.85 (123.19)

21.00 (533.40)

.15 (3.8)

3.00 (76.2)

.234 (5.94) DIA. THRU, TYP.

**PANEL CUT-OUT**

5.50 (139.7)

5.00 (127.0)

.25 (6.3)

.25 (6.3)

20.00 (508.0)

5.125 TYP. (130.17)

## SPECIFICATIONS (Cont'd)

5. **CERTIFICATIONS AND COMPLIANCES:**
   **SAFETY**
   IEC 61010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.
   IP65 Enclosure rating (Face only), IEC 529
   Type 4 Enclosure rating (Face only), UL50
   **EMC EMISSIONS:** Meets EN 50081-2: Industrial Environment.
   **EMC IMMUNITY:** Meets EN 50082-2: Industrial Environment.
   *Refer to individual personality module specifications for aditional information.*
6. **MOUNTING REQUIREMENTS:**
   Max. panel thickness is 0.375" *(9.5 mm)*.
   Min. panel thickness for NEMA 4/IP65 sealing is 0.125" *(3.2 mm)*.
7. **WEIGHT:** 8 lbs *(3.6 kg) (less module)*.

⚠ *Warning: Disconnect all power before installing or removing module.*

## SET-UP

To place the personality module into the LDD, first remove the rear cover by unscrewing the two captive fasteners. Then, before installing the module into the LDD, configure the module for the specific application by SETTING ALL APPLICABLE DIP SWITCHES AND JUMPERS AT THIS TIME *(see accompanying module data sheet)*. Place the module on the plastic standoffs *(see figure 1)*. Push on the four posts as shown in figure 2 until the carrier snaps into place.

*Note: Power should NOT be applied until the terminal block is plugged into the module AND the module is properly installed into the Large Digit Display.*

Select the proper voltage by setting the switch to either 115 or 230 volts. Connect the display and power cables on the module to the appropriate connectors on the power supply board *(see figure 2)*.

To program the Intelligent Meter, three normally open momentary pushbuttons are connected to *"P", "UP", "DOWN"*, and common of the LDD *(not included with the Intelligent Meter)*. The Model PGM is a small plastic case with three normally open momentary pushbuttons and 10 feet *(3 M)* of shielded cable, and is well suited for programming the Intelligent Meter module. Although, any normally open, momentary pushbutton switches can be used. *(SEE APPROPRIATE MODULE LITERATURE FOR SET-UP AND OTHER CONNECTIONS.)*

To remove module from the LDD, disconnect the display and power cables, then remove the carrier from the standoffs by disengaging the tabs and simultaneously lifting the carrier. Repeat this until the module has cleared all 4 standoffs.

## INSTALLATION ENVIRONMENT

The unit should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation. Placing the unit near devices that generate excessive heat should be avoided.

The LDD may be cleaned using alcohol compounds such as Isopropanol or methanol. Also, liquid glass cleaners may be used if they do **NOT** contain ammonia.

*NOTE: MINIMAL EXPOSURE OF KETONE SOLVENTS TO THE LDD IS GOING TO CAUSE A WHITENING OF THE DISPLAY OVERLAY.*

Continuous exposure to direct sunlight may accelerate the aging process of the bezel.

The LDD is intended to be mounted into an enclosed panel with a gasket to provide a water-tight seal. A gasket and ten 10 to 32 kep nuts are provided for easy installation. The recommended minimum panel thickness for NEMA 4/IP65 applications is 0.125" *(3.2 mm)*. Thinner panels may be used but may distort and not provide a water-tight seal.

For ease of installation, the cardboard template *(supplied with the LDD)* may be used to mark the holes and cut-out locations on the panel. After the panel cut-out has been completed and deburred, insert the unit with the panel gasket, into the panel as depicted in the drawing *(see figure 3)*. Install the ten kep nuts and tighten evenly for uniform gasket compression.

By using additional hardware, the LDD can be surface-wall mounted, suspended, or bottom mounted. To surface-wall mount the unit, two sets of MB6 brackets are required. To suspend or bottom mount the unit, one set of MB6 brackets is required.

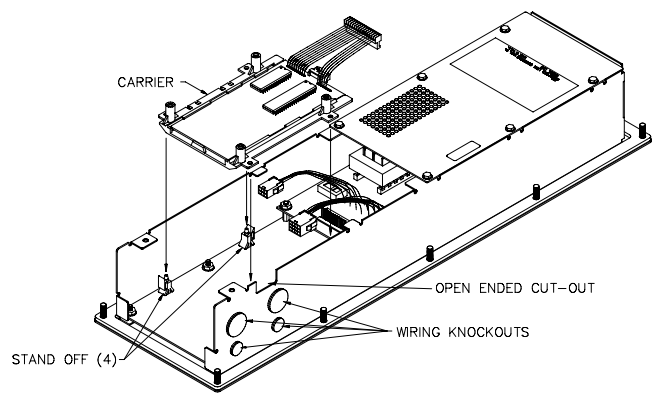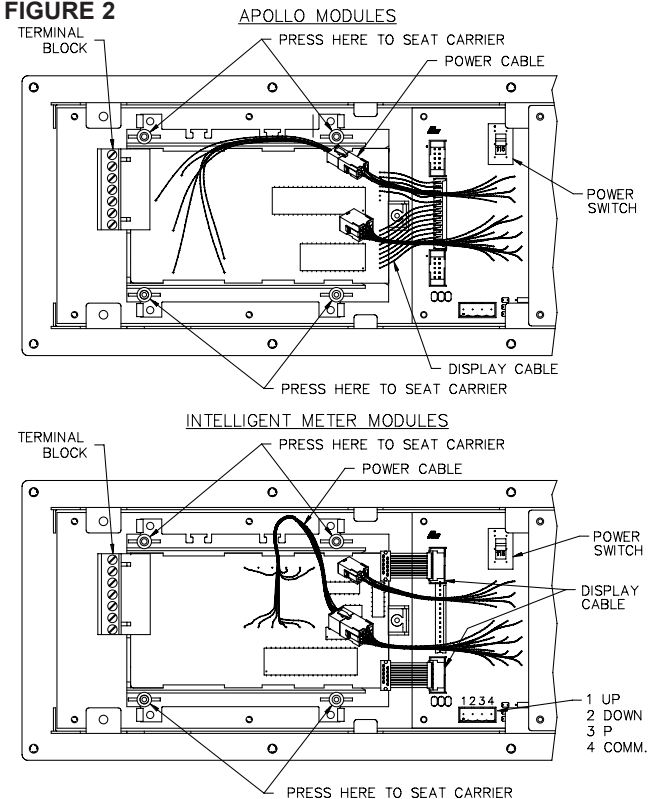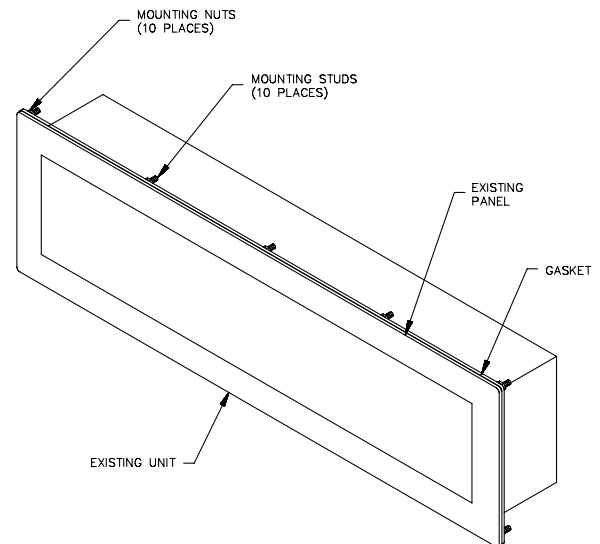**FIGURE 1   (shown with cover removed)**



**FIGURE 2**



**FIGURE 3**

## PERSONALITY MODULES

The following Apollo and IM capabilities are available as modules for the Large Digit Display *(LDD)*. These modules are ordered separately from the LDD *(see ordering information)*, and can quickly be installed by the user *(see "Set-up" for further details)*.

| Application | Model Number | Digit Display Required |
|---|---|---|
| *Counting (Totalization)* | *PBLT0600* | *4/6-digit* |
| *Tachometer/Rate (Time Base)* | *PBLR0600* | *4/6-digit* |
| *Tachometer/Rate (Time Interval)* | *PBLRI600* | *4/6-digit* |
| *Process Time (Decimal Point)* | *PBLPT400* | *4-digit* |
| *Process Time (Chronometer)* | *PBLPT500* | *6-digit* |
| *Real Time Clock/Elapsed Time* | *PBLCK000* | *6-digit* |
| *Intelligent Decade Voltmeter (IMD1)* | *PBD1xxxx* | *6-digit* |
| *Intelligent Decade Current Meter (IMD2)* | *PBD2xxxx* | *6-digit* |
| *Intelligent Rate Meter (IMI)* | *PBIxxxxx* | *6-digit* |
| *Intelligent Slave Display (IMA)* | *PBAxxxxx* | *6-digit* |
| *Apollo Slave Display (APLSP)* | *PBLSP600* | *4/6-digit* |

## ORDERING INFORMATION FOR APOLLO PERSONALITY MODULES

| MODEL NO. | DESCRIPTION | PART NUMBER |
|---|---|---|
| PBLCK | Apollo Real Time Clock Module for use with the 6-digit Large Digit Display [1] | PBLCK000 |
| PBLPT | Apollo 4-digit Process Time Module for use with the 4-digit Large Digit Display | PBLPT400 |
| | Apollo 5-digit Process Time Module for use with the 6-digit Large Digit Display [2] | PBLPT500 |
| PBLR | Apollo Time Base Rate Module for use with the 4 or 6-digit Large Digit Display [3] | PBLR0600 |
| PBLRI | Apollo Time Interval Rate Module for use with the 4 or 6-digit Large Digit Display [4] | PBLRI600 |
| PBLT | Apollo 6-digit Totalizer Module for use with the 4 or 6-digit Large Digit Display [5] | PBLT0600 |

(1) *See APLCK Bulletin for operating specifications.*
(2) *See APLPT Bulletin for operating specifications.*
(3) *See APLR Bulletin for operating specifications.*
(4) *See APLRI Bulletin for operating specifications.*
(5) *See APLT Bulletin for operating specifications.*

## ORDERING INFORMATION FOR LARGE DIGIT DISPLAY

| MODEL NO. | DESCRIPTION | PART NUMBER |
|---|---|---|
| LDD | 4-digit, Red Large Digit Display | LDD00400 |
| | 4-digit, Green Large Digit Display | LDD0G400 |
| | 6-digit, Red Large Digit Display | LDD00600 |
| | 6-digit, Green Large Digit Display | LDD0G600 |
| MB6 | Mounting Brackets | MB600000 |
| ENC7 | LDD NEMA 4/IP65 Enclosure | ENC70000 |
| SHR | Shroud For LDD | SHR10000 |

## ORDERING INFORMATION FOR APOLLO BCD SLAVE MODULE

| MODEL NO. | DESCRIPTION | PART NUMBER |
|---|---|---|
| PBLSP | Apollo BCD Slave Display Module for use with 4 or 6-digit Large Digit Display *(See APLSP Bulletin for operating specifications.)* | PBLSP600 |

## ORDERING INFORMATION FOR APOLLO INTELLIGENT METER MODULES

| MODEL NO. | DESCRIPTION | +18 VDC EXCITATION | 1. TOTALIZER 2. LINEARIZER 3. PEAK/VALLEY 4. TARE 5. E2-CON 6. EFFICIENCY | DUAL ALARM | SERIAL OUTPUT | 4-20 mA ANALOG OUTPUT | PART NUMBER |
|---|---|---|---|---|---|---|---|
| PBD1 | Intelligent Meter Modules For Decade Voltage Inputs* *(See IMD1 Bulletin for operating Specifications.)* | NO | NO | NO | NO | NO | PBD10000 |
| | | YES | NO | NO | NO | NO | PBD10100 |
| | | YES | NO | YES | NO | NO | PBD10102 |
| | | YES | 1, 2, 3, 4, 5 | NO | NO | NO | PBD13100 |
| | | YES | 1, 2, 3, 4, 5 | YES | YES | YES | PBD13107 |
| PBD2 | Intelligent Meter Modules For Decade Current Input* *(See IMD2 Bulletin for operating Specifications.)* | NO | NO | NO | NO | NO | PBD20000 |
| | | YES | NO | NO | NO | NO | PBD20100 |
| | | YES | NO | YES | NO | NO | PBD20102 |
| | | YES | 1, 2, 3, 4, 5 | NO | NO | NO | PBD23100 |
| | | YES | 1, 2, 3, 4, 5 | YES | YES | YES | PBD23107 |
| PBA | Intelligent Serial Slave Display Module* *(See IMA Bulletin for operating Specifications.)* | 20 mA SRC | 3, 5 | NO | YES | NO | PBA04101 |
| | | 20 mA SRC | 3, 5 | YES | YES | NO | PBA04104 |
| | | 20 mA SRC | 3, 5 | YES | YES | YES | PBA04107 |
| PBI | Intelligent Digital Rate Meter* *(See IMI Bulletin for operating Specifications.)* | +12 VDC | 1, 2, 3, 5, 6 | NO | NO | NO | PBI04100 |
| | | +12 VDC | 1, 2, 3, 5, 6 | NO | YES | NO | PBI04101 |
| | | +12 VDC | 1, 2, 3, 5, 6 | YES | NO | NO | PBI04102 |
| | | +12 VDC | 1, 2, 3, 5, 6 | NO | NO | YES | PBI04103 |
| | | +12 VDC | 1, 2, 3, 5, 6 | YES | YES | YES | PBI04107 |
| PGM | Programming Box | | | | | | PGM00000 |
| * Note: All the above Intelligent Meter modules require a 6-digit Large Digit Display, Model LDD00600 or LDD0G600. | | | | | | | |

## TROUBLESHOOTING

For further technical assistance, contact technical support at the appropriate company numbers listed.

## LIMITED WARRANTY

The Company warrants the products it manufactures against defects in materials and workmanship for a period limited to two years from the date of shipment, provided the products have been stored, handled, installed, and used under proper conditions. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

The customer agrees to hold Red Lion Controls harmless from, defend, and indemnify RLC against damages, claims, and expenses arising out of subsequent sales of RLC products or products containing components manufactured by RLC and based upon personal injuries, deaths, property damage, lost profits, and other matters which Buyer, its employees, or sub-contractors are or may be to any extent liable, including without limitation penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (P.L. 93-637), as now in effect or as amended hereafter.

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