

PERTRONIC INDUSTRIES LTD

INSTALLATION NOTE

Light Pipe LED Display Units (LDU)

12-Way (PDB12) / 8-Way (PDB8)

1.0 Overview

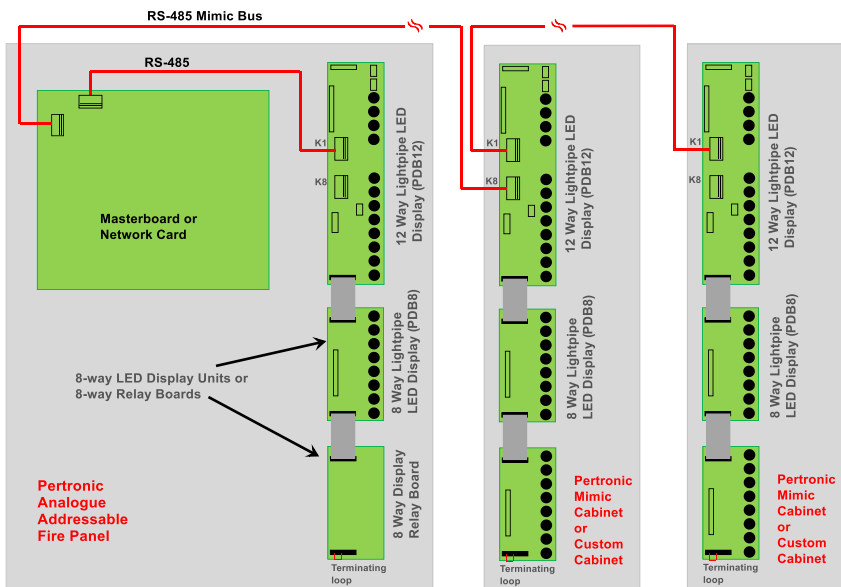
Pertronic Industries' *Light Pipe LED Display Units* (LDU) are Fire Alarm Panel repeater/mimic displays that allow the status of a Fire Alarm Panel to be displayed remotely by LED's.

The *12-Way Display Unit* connects with F220, F100A, F120A, F16e, F4-RMAX fire alarm panels as well as the *F220/Net2 Network Card* (NET2CARD) and *F100/F120 Network card* (NETCARD) via the High Speed (F220 only) or Legacy RS485 Mimic Buses. The 12-Way LDU can automatically adjust its baud rate to match that of the bus it is connected to.

The *8-Way LED Display Unit* connects directly to the *12-Way LED Display Unit*, to previous *8-Way LED Display Units* or the boards listed below, via the ancillary TPIC bus.

Additional related products available:

- *8-Way Display Relay Extender Board (F100ZDRLY)*. This board contains 8 non-latching relays that correspond to LED position numbers in the display.
- *48-Way Open-Collector Board (48 WOC-IF)*. This board provides a cost effective solution to control large numbers of LED's and/or Relays.



2.0 Connection to Panel

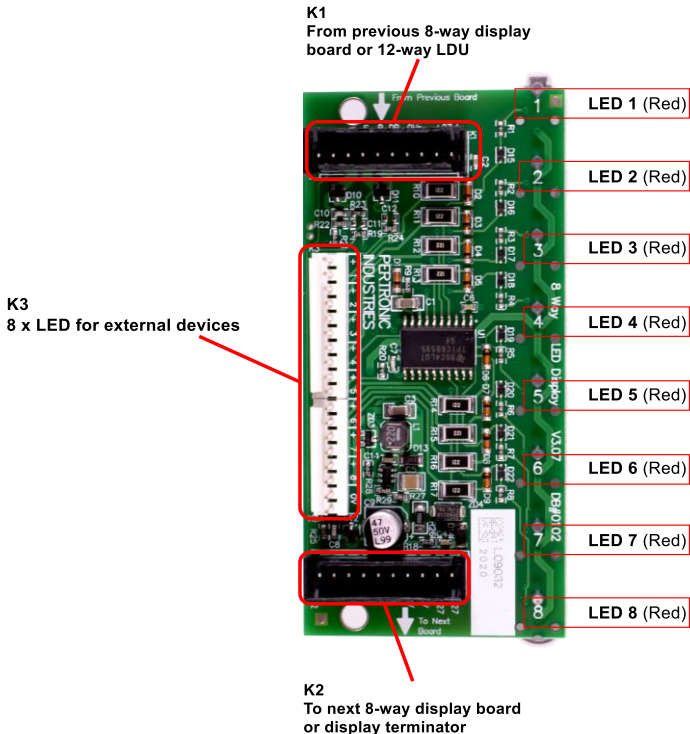
Three connectors are provided: K1 and K8, which use screw terminals; and K4 that uses an IDC connection. These connectors are provided to aid the connection of multiple LDU's or other RS485 devices.

Connections are: '+' 12 V to 24 V supply. Maximum current to LDU is 500 mA.
'0' Supply return.
A / B RS485 signal lines.

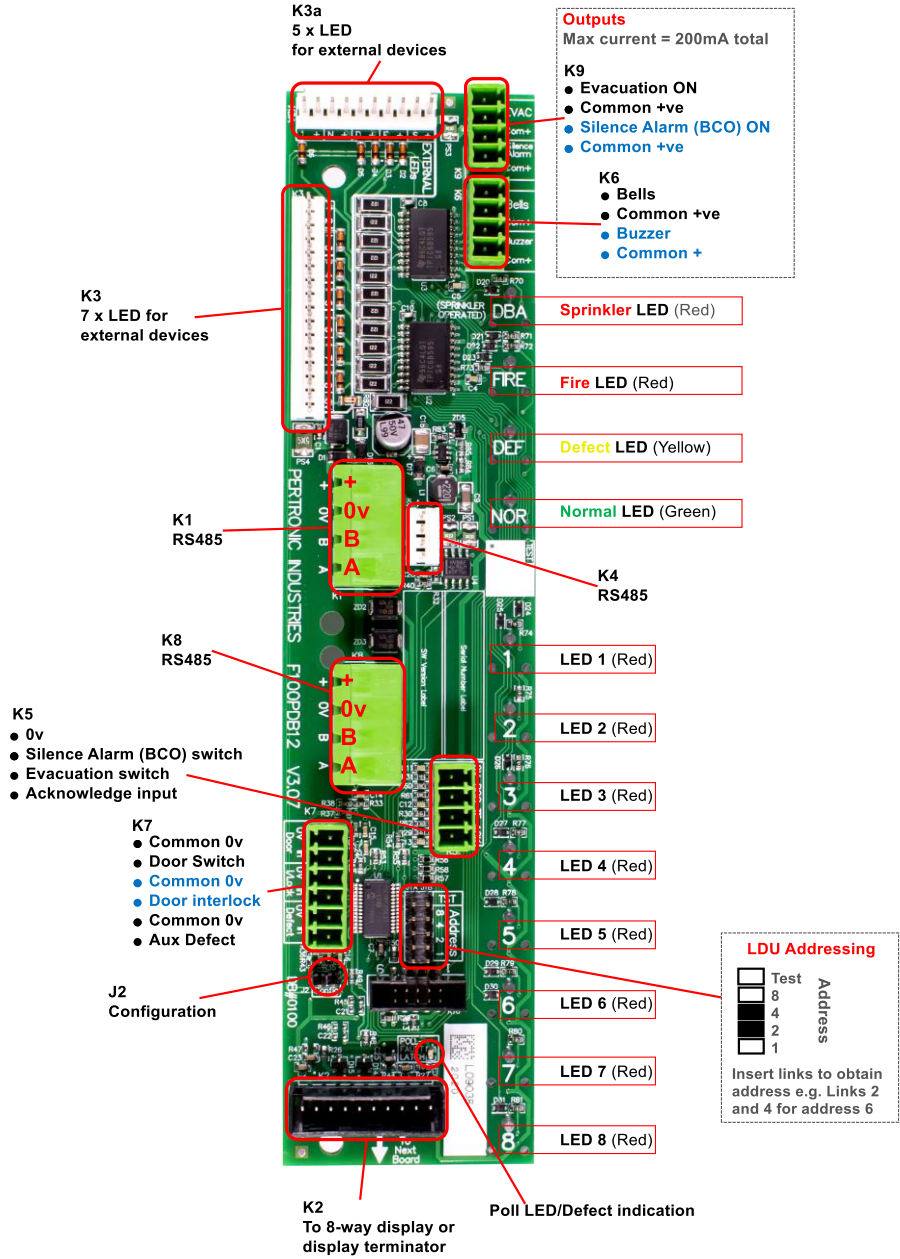
Twisted pair cable is recommended. The maximum length of cable between the last device on the Mimic Port and the Panel is 1.2km.

The A/B signal lines must be terminated at the remote device with a 470Ω resistor placed between A and B.

3.0 8-Way LDU PCB Layout and Connections



3.1 12-Way LDU PCB Layout and Connections



3.2 5-Way or 8-Way LED Operation

For Hardware 2.02 and Software ≥ 4.06 , insert the J2 link for 5-way operation.

For Hardware 3.01 and Software ≥ 5.00 , the function of J2 has changed. With J2 link inserted, the LED display will be 'steady'; with no link, the LEDs will flash.

4.0 Mimics and LED Limits

Up to 32 x RS485 devices (LDU's, LCD Mimics, GPIB's, and such) may be connected to the RS485 line.

Up to 63 x 8-Way Display Boards may be connected to the 12-Way Display Board, giving a total of 520 LED indications for zones, plus the 4 global LED's, which are Sprinkler, Fire, Defect, and Normal. The 8-Way Display Boards connect to the 12-Way Display Board via the 10-Way IDC (TPIC) connector, K2.

The F220 and F120A can control up to 2048 LED addresses, the F100A 255 LED addresses; and the F16e/F16 can control up to a maximum of 32 LED addresses. Note that in Residential mode the F16e may control a maximum of 64 LED's, 32 for Local (Residential) alarm and 32 for Global alarms.

5.0 LDU Addressing

5.1 Analogue Addressable Panels

- Addresses 1 to 8 provide fully addressable boards, polled for input control information. These outputs pulse, and should be used for LED's.
- Address 9 is similar to addresses 1-8, except the inputs are not monitored. Can be used for additional LDU's attached via TPIC.
- Address 10 is identical to address 9 except the outputs do not pulse. Can be used for relay outputs.
- Addresses 11-15 are similar to addresses 1-5, except the outputs do not pulse. Can be used with monitored inputs and steady outputs (relays).
- Any number of attached LDU's may be used, with the total number of devices on the MIMIC port limited to 32.

5.2 Conventional Panels

- Addresses 1 to 3 are used for individually addressable boards, which are polled for input control information.
- The panel must also be configured for the precise number of polled LDU's; otherwise, the panel reports a fault condition.

6.0 Fault Latches

Six fault conditions are detected and latched by the LDU; Door Interlock, LED Chain Fault, External Defect Input, RS485 Communication Fault, ROM CRC error and Watchdog Reset. The faults are latched and encoded by the 'Poll/Fault Latch LED' when a fault is present. The latched states are reset by cycling the power to the mimic; OFF then ON.

- 1st flash long Door Interlock input open
- 2nd flash long LED Chain Fault
- 3rd flash long External Defect Input open
- 4th flash long RS485 Data Communication Fault
- 5th flash long Onboard ROM CRC error
- 6th flash long Watchdog Reset



Note:

The RS485 fault indicated is between the device indicating the Defect and the panel. An RS485 Defect beyond a specific LDU will indicate a Defect on devices beyond that fault, but not on LDUs closer to the panel. All LDUs may be reported in Defect by the panel, however the status of the LDUs may be useful to assist diagnosing the location of a fault.

7.0 Display Relay Boards

Display Relay Boards may be inserted anywhere in the chain of LED Display boards and *Relay Display Boards*, provided only version 2 or greater boards of both types are used



Note:

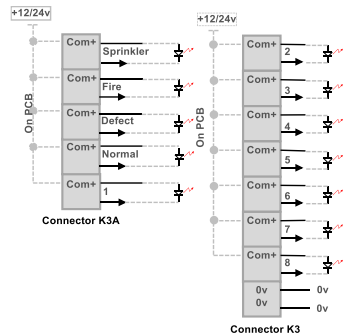
If version 1 LED or Relay boards are used, the version 2 LED or Relay boards must be placed at the end of the PCB chain.

8.0 LED Outputs (K3 and K3a)

Each of the LED's of the *12-Way* and *8-Way LDUs* have drive capability for ancillary purposes. Each LED can sink 20mA to 0V via a diode and a 1k2Ω resistor located on the board (refer the diagram). The LED's flash when active at a rate of 400ms ON, 400ms OFF.

Note:

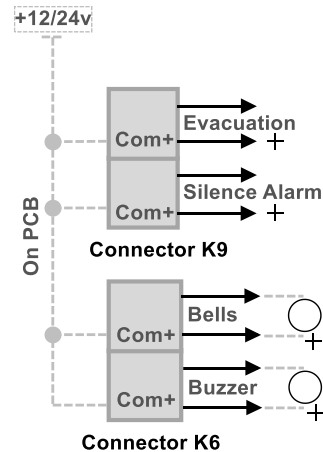
The LEDs also flash when the LDU is being tested via the panel LED test function but at a different flash rate.



9.0 Output Functions (K6 and K9)

Four outputs are provided on the *12-Way LDU* that follow the state of the corresponding panel signals:

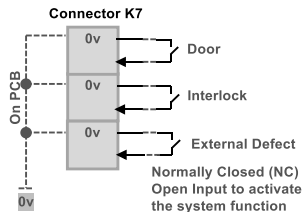
- Buzzer** Activates (to 0V) when the panel internal Buzzer is ON. It may be silenced by signaling Acknowledge on K5 (refer to Input Functions).
- Bells** Activates when one or both of the panel Bell Relays are ON.
- Evacuation** Activates when any 'Evacuation' input is ON.
- Silence Alarms** Activates when any 'Silence Alarms' input on the system is ON.



10.0 Auxiliary Functions (K7)

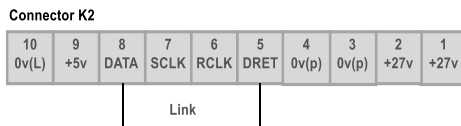
The input state of the function is sent to the fire panel if the LDU has an address 1 to 8. The active state occurs when the input is disconnected from the adjacent common:

Door	Sent to the fire panel to indicate that the door switch (if connected) is open.
Door Interlock	If the door interlock input is active, a door interlock signal is sent to the panel.
External Defect	Sent to the panel in the event of a fault from an external device.



11.0 Display Terminator (K2)

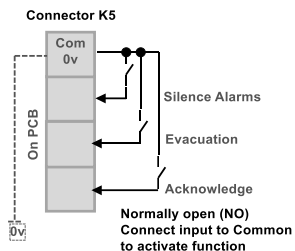
A display terminator is required on the last device in the chain. This gives a return monitor signal by connecting pins 3 and 6 of the display bus.



12.0 Input Functions (K5)

The input state of the function is sent to the fire panel if the LDU has an address 1 to 8. The active state occurs when the input function is connected to the Common (pin1):

Silence Alarms	Sent to the fire panel to silence BCO) the system alarms.
Evacuation	Sent to the panel to activate the system alarms.
Acknowledge	Sent to the panel to indicate a request to silence the buzzer



13.0 Installation

The LED Displays Boards are designed to be installed in Pertronic fire panels or Pertronic Mimic cabinets to create local or remote index displays. The display boards are supplied complete with mounting standoffs for fitting into the panels. In these instances, the light pipes protrude through the 5mm holes in the display (no bezels). Any unused LEDs can be covered with individual blanking plugs.

Product Codes:

NZ Product Code	Description
PDB12	12-Way Light Pipe LED Display Board
PDB8	8-Way Light Pipe LED Display Board
F100ZDRLY	8-Way Relay Extender Board
48 WOC-IF	48-Way Open Collector Board