



LPI610

4–20mA Display (Front Mount)



The LPI610 4–20mA display is ideal for displaying a variety of process variables, and is easy to scale to your required engineering units.

- › Front mount unit takes up virtually no space behind the panel
- › Loop powered display backlight
- › Protection against reverse wiring and accidental 24V supply

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1

SPECIFICATIONS

Input configuration Series connection to 4–20mA DC current loop.

Powered from the input signal Min input 3.5mA, max continuous input 100mA. 3.6V drop plus 40Ω (equivalent to 4.3V at 20mA). Typically load is 220Ω.

Full scale ranges Adjustable to any display span between -99,999 and +999,999. Max resolution (50,000 counts) from any signal input span between 3.5 and 27.5mA.

A/D converter 16 bit Sigma Delta

Accuracy $\pm 0.02\%$ of reading (plus 2 digits)

Temperature range -10 to 60°C (14 to 140°F)

Temperature coefficient Typically 30ppm/°C (plus 0.1 counts/°C for zero offset).

Conversion rate 10 readings per second

Protection Protected against reverse wiring and accidental 24V supply

Case dimensions (H x W x D) 72 x 144 x 25mm (2.83 x 5.67 x 0.98"). Depth dimension includes foam seal.

IP65 rated For dust and water resistance.

Display 17.5mm Liquid Crystal Display. Select up to 4 decimal places

Units Select **KG**, **LB**, **T** or a custom character (i.e. **C**, **F**, **L** etc)

+/- Over-range Display shows **UNDER** or **OVER**

2

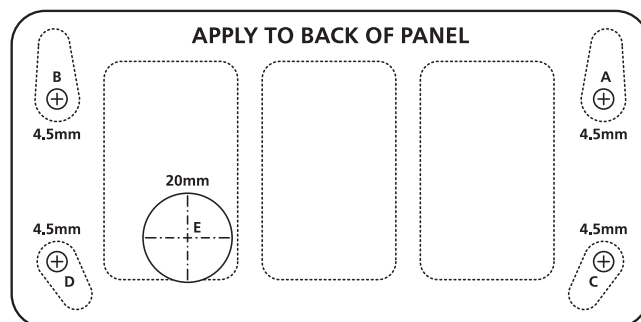
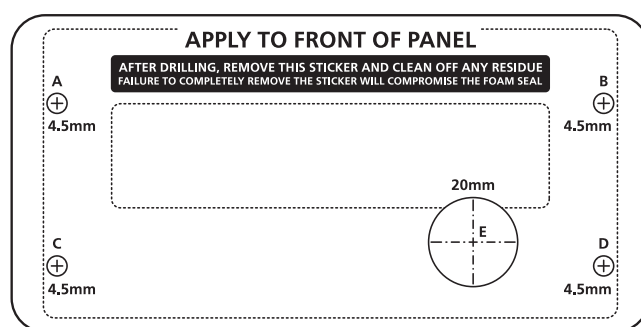
INSTALLATION

2.1 - Mounting

This unit is supplied with two stickers to assist with installation.

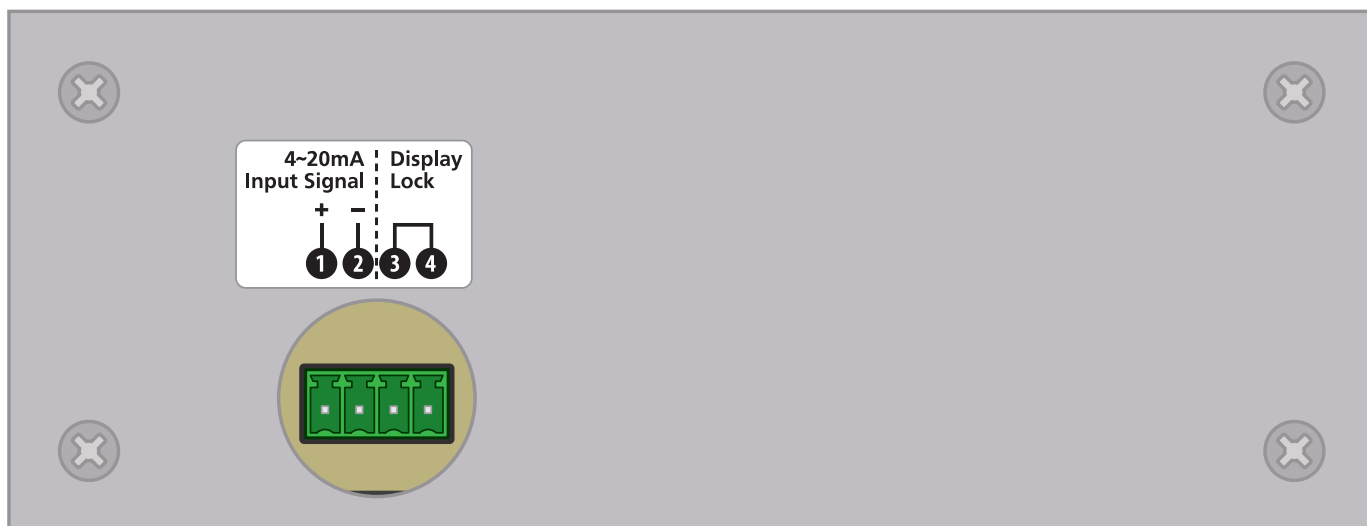
Apply the **FRONT** sticker if you are drilling from the front of the panel, and the **BACK** sticker if you are drilling from the back of the panel.

After drilling, remove the installation sticker and clean off any sticky residue. **Failure to remove the front sticker may compromise the foam seal.**



2.2 - Wiring

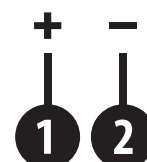
Included with your LPI610 is a wiring sticker, which should be applied to the back panel as shown, after the unit has been mounted.



2.3 - 4~20mA input signal

The LPI610 is powered from the 4~20mA loop input signal and connects to Pins 1 & 2, as shown.

**4~20mA
Input Signal**

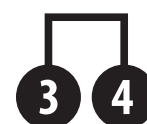


2.4 - Display lock

The display lock pins (Pins 3 & 4) can be shorted out to lock all buttons on the front panel (except for the **BACKLIGHT** button). This prevents tampering after the unit has initially been configured.

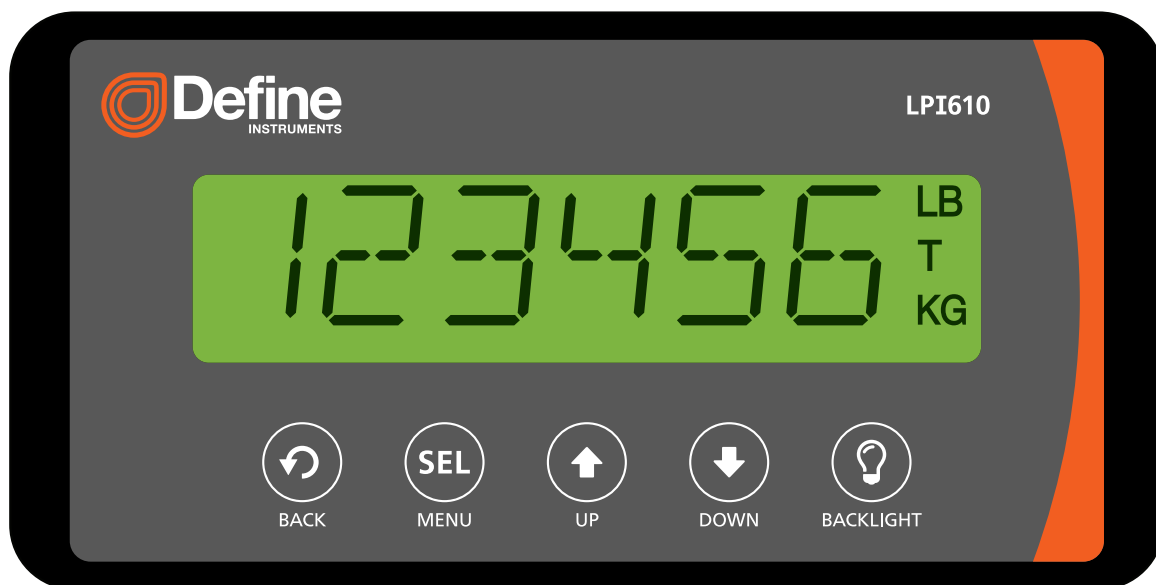
You can also connect a switch between Pins 3 & 4 to enable toggling of this feature.

**Display
Lock**



3

DISPLAY



3.1 - Buttons

- ⌛ **BACK:** Steps backward in the setup menu, without saving changes.
- SEL **SEL/MENU:** Accesses the main menu from the operational display. Also used to select your settings in the setup menu.
- ⬆ **UP:** Scrolls through options or increases values in the setup menu.
- ⬇ **DOWN:** Scrolls through options or decreases values in the setup menu.
- 💡 **BACKLIGHT:** Activates the screen backlight for period of 1-9 sec (as specified in 4.5). Note that the backlight charges off the input signal, and may appear dimmer if used repeatedly or immediately after the instrument has been connected.

3.2 - Display area

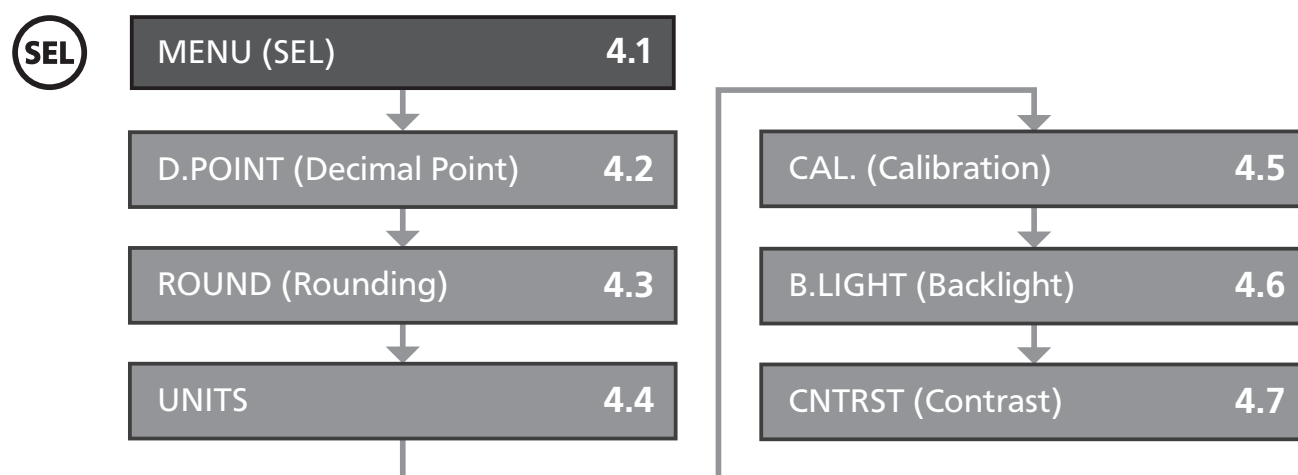
1-6 Used to display your input in normal operating mode. Character 6 may be set up to display units (any letter from **A-Z** - see 4.4 to configure).

LB/T/KG Special units area for common weight units (see 4.4 to enable).

4

SETUP & CALIBRATION

4.1 - Main Menu



- A** From the operational display, press the **SEL/MENU** button.
- B** **D.POINT** will appear on the display. Scroll through the menu items using the and buttons. Press to enter the selected menu, or the button to go back to the operational display.

4.2 - D.POINT (Decimal Point)

- A** Enter the **D.POINT** menu by following the instructions in 4.1.
- B** Your current decimal point position will appear on the display - either: **X.XXXX**, **X.XXX**, **X.XX**, **X.X** or **X**. Use the and buttons to shift the decimal point left or right, and then press to save and return to the operational display.

*Note that adjusting your decimal point position will not scale your calibration. 4 decimal places (X.XXXX) are only available when **CUSTOM UNITS** (see 4.4B) are not used.*

4.3 - ROUND (Rounding)

- A** Enter the **ROUND** menu by following the instructions in 4.1.
- B** The currently selected display rounding will appear. Use the and buttons

to select: **OFF**, **XXXX0**, or **XXX00**, and then press **(SEL)** to save and return to the operational display.

Rounding is quoted in display counts and is not influenced by decimal point position.

4.4 - UNITS

- A** Enter the **UNITS** menu by following the instructions in 4.1.
- B** The currently selected display units will appear. Use the **(↑)** and **(↓)** buttons to select: **OFF**, **K.G.**, **LB.**, **TON.**, or **CUSTOM**, and then press **(SEL)** to save.

- ➔ If you selected **CUSTOM**, continue to 4.4C now.
- ➔ If you selected something else, there is nothing further to configure. After pressing **(SEL)** the display will return to normal operating mode.

***OFF**: No units will be displayed. **K.G./LB./TON.**: Units will be displayed in the units area at the right edge of the screen, after the six display digits. **CUSTOM**: Units will be displayed in the sixth display digit - your usable display counts will be reduced to five.*

- C** Your currently selected custom unit will appear in the sixth position on the display. Use the **(↑)** and **(↓)** buttons to select a letter from **A-Z**, and then press **(SEL)** to save and return to the operational display.

4.5 - CAL. (Calibration)

- A** Enter the **CAL.** menu by following the instructions in 4.1.
- B** The currently selected calibration method will appear on the display. Use the **(↑)** and **(↓)** buttons to select a calibration method: **KEY IN**, **2POINT**, or **RESET**, and then press **(SEL)** to continue.

- ➔ If you selected **KEY IN**, continue to 4.5C now.
- ➔ If you selected **2POINT**, skip to 4.5E now.
- ➔ If you selected **RESET**, there is nothing further to configure. The LPI610 will restore the factory calibration and return to normal operating mode.

***KEY IN** scales the display using high and low display values, and relies on the factory set calibration. **2POINT** calibrates the unit using live input signals. A calibrator or other external signal source is required for this procedure. **RESET** will restore the factory settings.*

Press and hold the  or  button to adjust the display in 10s, 100s, 1000s etc. Press the  and  buttons at the same time to restore the default value. Pressing the  button at any stage before calibration has completed will exit the calibration menu without saving any of your calibration values.

Key in calibration

- C 4 MA** will appear on the display and toggle with the default display value for 4mA input (default **0**). Use the  and  buttons to adjust the 4mA display value as desired, and then press  to continue.
- D 20 MA** will appear on the display and toggle with the default display value for 20mA input (default **10,000**). Use the  and  buttons to adjust the 20mA display value as desired. Then press  to save the key in calibration values and return to the operational display.

2 point calibration

- E POINT1** will appear on the display and toggle with the default display value for the first calibration point (default **0**). Apply the Point 1 input signal to the instrument. Use the  and  buttons to adjust the display value as required, and then press  to continue.
- F POINT2** will appear on the display and toggle with the default display value for the second calibration point (default **10,000**). Apply the Point 2 input signal to the instrument. Use the  and  buttons to adjust the display value as required, and then press  to calibrate the instrument.
 - ➔ If calibration was successful, the display will return to operating mode.
 - ➔ If **ERROR** appears on the display, then the calibration has not been saved. The most common cause of a calibration error is an insufficient change in input signal between the 2 points. Press  to exit to the operational display, or the  button to go back to the calibration menu.

See Appendix A for more information on this error.

4.6 - B.LIGHT (Backlight)

- A** Enter the **B.LIGHT** menu by following the instructions in 4.1.
- B** The currently selected backlight time will appear. This is the amount of time that the backlight will remain on for after the  button is pressed. Use the  and  buttons to adjust the time from **1-9 SEC**, and then press  to save and return to the operational display.

Note that the backlight charges off the input signal and is not intended to be used for extended periods of time. It may appear dimmer if used repeatedly, or if used immediately after the instrument has been connected.

4.7 - CNTRST (Contrast)

- A** Enter the **CNTRST** menu by following the instructions in 4.1.
- B** The currently selected screen contrast will appear on the display. Use the  and  buttons to adjust the contrast between **CNT. 1** and **CNT. 6**, and then press  to save and return to the operational display.

A**APPENDIX A - ERRORS**

ERROR - This error appears during **2POINT** calibration (see 4.5E-F), and occurs when there is insufficient change in input signal between the 2 points, or when the range specified by the controller exceeds the instrument's internal limitations. To correct this error, please check your input signal and connections, and try calibrating again. Your display range may have a maximum gain of 100 (i.e. a 2mA change on the input must not exceed 200,000 change in display counts).

ER.FLSH - A flash error normally occurs when there is an unexpected loss of power to the instrument during setup. If this error occurs, all settings will be restored to their factory defaults. To clear the error message, press the **(SEL)** button. Your previous setup cannot be recovered - please configure the instrument again.

ER. ADC - If this error occurs, then there is a problem with the instrument's onboard A/D converter. Pressing the **(SEL)** button on the front panel will clear the error message temporarily, however the display may stop responding to changes in input signal. If you get this error, try powering the unit off and then on again. If the fault persists, contact Define Instruments for support.

ER.FCAL - If a factory calibration error occurs, then the instrument's factory calibration has been lost. Pressing the **(SEL)** button on the front panel will clear the error message temporarily. Please contact Define Instruments for support.

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