

**PROCESS INDICATOR
mL-PI8 (Rev A)**



CE ENEC

**mL-PI8
Universal Input Process Indicator**

- 4 digits Process Display (High brightness LED)
- Universal Process Input (TC, RTD, mV, V, mA)
- Two relay outputs
- Dual or Multi Point Calibration for DC voltage & DC current Inputs
- Smart Output Module System
- Programmable Alarm Functions
- Process control or re-transmission with 0/4...20 mA Current output
- RS-485 Serial Communication With Modbus RTU Protocol

NOTE
REV A. As of March, 2022: The mL-PI8 Revision A has been upgraded to include the following options as standard features:

- Two Relays (Additional 3A Relay now STD)
- Gasket for NEMA4X Installation
- High Bright LED Display

**SPECIFICATIONS
PROCESS INPUT**

Universal Input: TC, RTD, --- Voltage/Current
Thermocouple (TC): L(DIN 43710) J, K, R, S, T, B, E and N
(IEC584.1)(ITS90), C (ITS90)
Thermoresistance (RTD): PT-100 (IEC751)(ITS90)

--- Input: mV, V, mA
Measurement Range : Please refer to Table-1 for selection of input type and scale

Accuracy: ± 0.25% of full scale for thermocouple, thermoresistance, mV, V and mA input.

Cold Junction Compensation: Automatically ±0.1°C/1°C

Line Compensation: Maximum 10 Ohm

Sensor break protection: Upscale

Sampling Cycle: 3 samples per second

Input Filter: 0.0 to 900.0 seconds

OUTPUT

Standard Relay Output: Form C Relay 5A@250V (on resistive load)

Secondary Relay Output: Form A Relay (3A@250V on resistive load)

Analog Output :

- 0/4...20 mA --- Current Output Module

POWER SUPPLY

Power Supply Voltage :

100-240V ~ 50/60 Hz (-%15;+%10) -6VA

DISPLAY

Process Display :

20.3 mm Red 4 digit LED Display

LED Indicators : °C / °F / V, OP1/2/3 (Output Status) LED.

ENVIRONMENTAL RATINGS and PHYSICAL SPECIFICATIONS

Operating Temperature: 0...50°C

Humidity: 0-90%RH (non condensing)

Protection Class: IP65 at front, IP20 at rear

Mounting: Type-1 Enclosure Mounting

Installation: Fixed installation Category II

Over Voltage Category: II

Pollution Degree: II, office or workplace, none conductive pollution

Weight:
260 gr.

Dimensions: (96 x 48mm, Depth:86.5 mm)

Panel Cut-Out: (92 x 46mm)

Minimum Distance Between Panel Cut-Out Centers:
X=129mm, Y=65mm



This symbol is used for safety warnings. User must pay attention to these warnings.

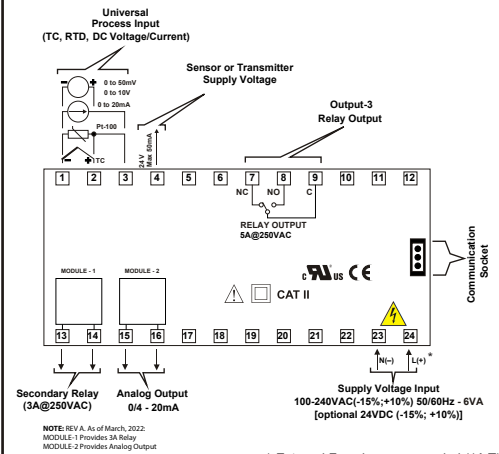


This symbol is used to determine the dangerous situations as a result of an electric shock. User must pay attention to these warnings definitely.

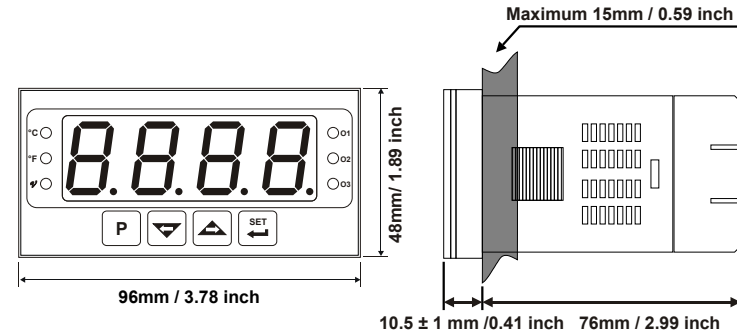


This symbol is used to determine the important notes about functions and usage of the device

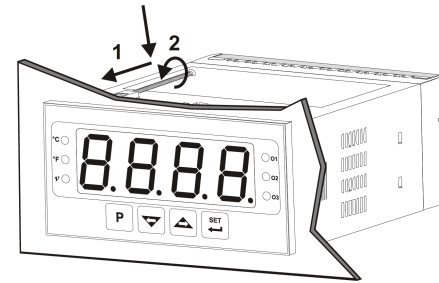
Electrical Wirings



Dimensions



PANEL MOUNTING

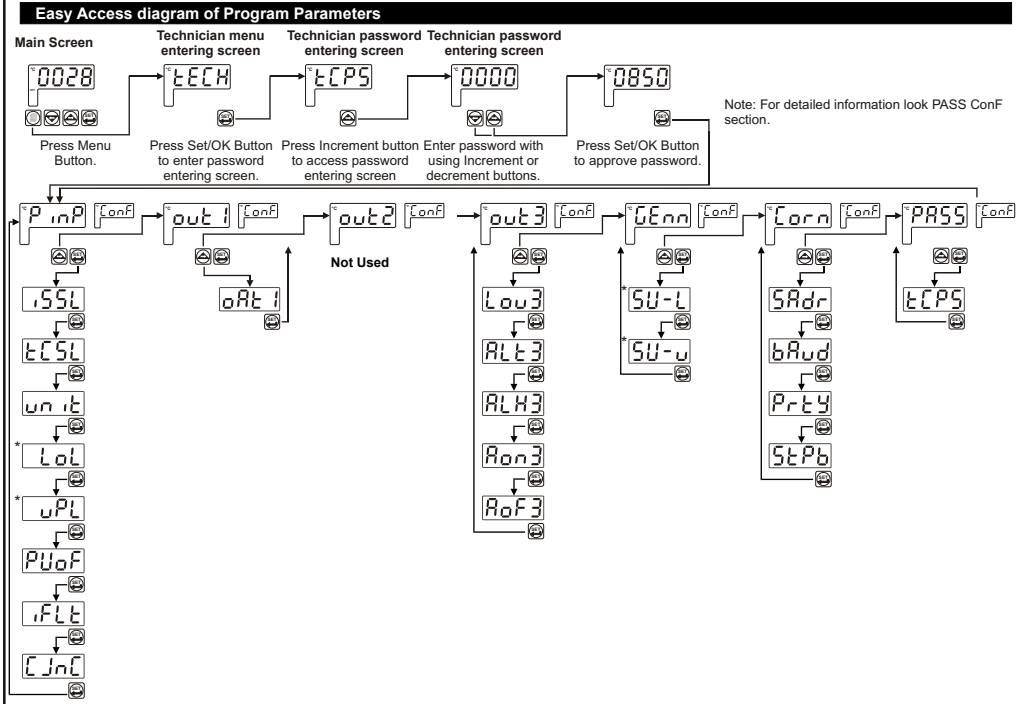
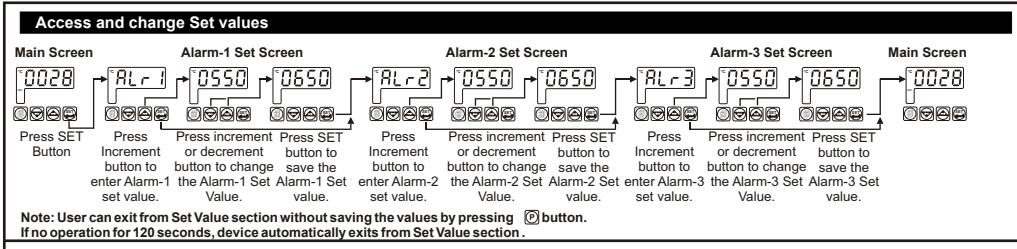


This unit is designed for panel mounting.

1. Insert the unit into the panel cut-out from the front side. Insert the mounting clamps into the holes located on top and bottom sides of the case.
2. Tighten the screws until the unit is completely immobile in the panel.



When mounting the unit only use the mounting clamps that are provided. Be sure the unit does not fall while performing the mounting process.



PýnPConF: Process Input Type and Relevant Parameters

tSSL Process Input Type

- 0000 TC input type selection
- 0001 RTD input type selection
- 0002 ---Voltage / Current input type selection.

tCSL TC Input Selection

This parameter is active if TC input type is selected.

- 0000 L (-100°C;850°C) or (-148°F;1562°F)
- 0001 L (-100.0°C;850.0°C) or (-148.0°F;999.9°F)
- 0002 J (-200°C;900°C) or (-328°F;1652°F)
- 0003 J (-199.9°C;900.0°C) or (-199.9°F;999.9°F)
- 0004 K (-200°C;1300°C) or (-328°F;2372°F)
- 0005 K (-199.9°C;999.9°C) or (-199.9°F;999.9°F)
- 0006 R (0°C;1700°C) or (32°F;3092°F)
- 0007 R (0.0°C;999.9°C) or (32.0°F;999.9°F)
- 0008 S (0°C;1700°C) or (32°F;3092°F)
- 0009 S (0.0°C;999.9°C) or (32.0°F;999.9°F)
- 0010 T (-200°C;400°C) or (-328°F;752°F)
- 0011 T (-199.9°C;400.0°C) or (-199.9°F;752.0°F)

- 0012 B (44°C;1800°C) or (111°F;3272°F)
- 0013 B (44.0°C;999.9°C) or (111.0°F ; 999.9°F)
- 0014 E (-150°C;700°C) or (-238°F;1292°F)
- 0015 E (-150.0°C;700.0°C) or (-199.9°F;999.9°F)
- 0016 N (-200°C;1300°C) or (-328°F;2372°F)
- 0017 N (-199.9°C;999.9°C) or (-199.9°F;999.9°F)
- 0018 C (0°C;2300°C) or (32°F;3261°F)
- 0019 C (0.0°C;999.9°C) or (32.0°F;999.9°F)

rtdS RTD Input Selection

This parameter is active if RTD input is selected.

- 0000 PT-100 (-200°C ; 650°C) or (-328°F ; 1202°F)
- 0001 PT-100 (-199.9°C ; 650.0°C) or (-199.9°F ; 999.9°F)

uASL ---voltage / Current Input Selection

This parameter is active if ---Voltage / Current is selected.

- 0000 0...50mV --- (-1999 ; 9999)
- 0001 0...5V --- (-1999 ; 9999)
- 0002 0...10V --- (-1999 ; 9999)
- 0003 0...20mA --- (-1999 ; 9999)
- 0004 4...20mA --- (-1999 ; 9999)

dPnt Display Point Position

This parameter is active if ---Voltage/Current input is selected.

- 0000 No point
- 0001 Between first and second digits "0.0"
- 0002 Between second and third digits "0.00"
- 0003 Between third and fourth digits "0.000"

tARL Display Value Adjustment Type

This parameter is active if ---Voltage/Current input is selected.

- 0000 Fixed dual point display adjustment. Display adjustment low point value is fixed to -1999, display adjustment high point value is fixed to 9999.
- 0001 User can do dual point display adjustment with tPoL and tPoH.
- 0002 User can do defined 16 display adjustment points.

tPoL Low Point Display adjustment (-1999, 9999)Unit

This parameter is active if ---Voltage/Current input is selected.

tPoH High Point Display adjustment (-1999, 9999)Unit

This parameter is active if ---Voltage/Current input is selected.

Pa00 Display adjustment points (-1999, 9999)Unit

This parameter is active if ---Voltage/Current input is selected. In multi point display adjustment operation, defined scale is divided into 16 adjustment points.

For example: **uASL** is 0000 (0-50 mV---).

tCoEF Coefficient value (1.000, 9.999)

Process value is multiplied with this value. This parameter is active if ---Voltage/Current input is selected.

unit Unit selection

- °C Unit is °C
- °F Unit is °F
- V Unit is Voltage. This selection is active if ---Voltage/Current input is selected
- No unit. This selection is active if ---Voltage / current input is selected

LoL Operating Scale Minimum Value (Scale Low Point, Scale High Point)Unit

Used for Proportional band calculation and display blink.

uPL Operating Scale Maximum Value (Scale Low Point, Scale High Point)Unit

Used for Proportional band calculation and display blink.

PUoF Display offset for process value (Scale -10%, Scale +10%)Unit

This parameter value is added to the process value.

FLt Filter Time (0.0, 900.0)Second

Defines filter time for display value.

tJnC Cold Junction Compensation

This parameter is active if process input is selected TC input.

- YES Cold junction compensation is active.
- no Cold junction compensation is not active.

Scale: The difference, between high point and low point of the process input type. Example: If tCSL = 2 (low point is -200, high point is 900), then scale is 1100. If input type is Voltage/Current, then the scale is difference between tPoH and tPoL parameters.

out1 ConF: MODULE-1 Relay Output parameters

LoL

- 0000 Alarm output
- 0001 Sensor break alarm output
- 0002 Output is active when the process value is out of the band which is defined with minimum value of operating scale **LoL** and maximum value of operating scale **uPL**

ALt1 Alarm-1 Type

MODULE-1 alarm type. This parameter is active, if the Logic-1 output function is Alarm output.

- 0000 Process high alarm
- 0001 Process low alarm

ALH1 Alarm-1 hysteresis value (0% of scale, 50% of scale)Unit

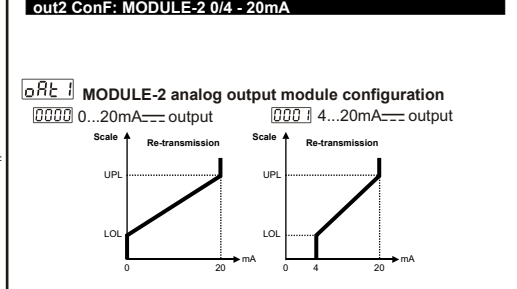
This parameter is active, if the Logic-1 output function is Alarm output.

Ron1 Alarm-1 On delay time (0, 9999)Second

This parameter is active, if the Logic-1 output function is Alarm output.

ROF1 Alarm-1 Off Delay Time (0, 9998)Second

When the value is greater than 9998, **tECH** is seen on the screen. It means alarm latching output option is selected. This parameter is active if logic-1 output function of Alarm-1 Output is alarm output.



* NOTES

- tPoL** is analog input zero process variable
- tPoH** is analog input full scale process variable
- LoL** is analog output zero process variable and below which the blinking warning display **uuuu** appears
- uPL** is analog output full scale process variable and above which the blinking warning display **nnnn** appears
- SU-L** defines the operators minimum permitted setpoint value for the process variable
- SU-u** defines the operators maximum permitted setpoint value for the process variable

out3 ConF: 5A Relay Output

LOU Output-3 Logic output function

- 0000 Alarm output
- 0001 Sensor break alarm output
- 0002 Output is active when the process value is out of the band which is defined with minimum value of operating scale [Lo] and maximum value of operating scale [uP]

AL3 Alarm-3 Type

- 0000 Process high alarm
- 0001 Process low alarm

ALH Alarm-3 hysteresis value (0% of scale, 50% of scale)Unit

This parameter is active, if the Logic-3 output function is Alarm output.

AO3 Alarm-3 On delay time (0, 9999)Second

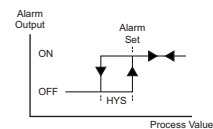
This parameter is active, if the Logic-3 output function is Alarm output.

AO3 Alarm-3 Off Delay Time (0, 9998)Second

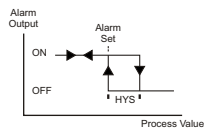
When the value is greater than 9998, [LCH] is seen on the screen. It means alarm latching output is selected. This parameter is active if logic-3 output function of Alarm-3 Output is alarm output.

Alarm Types

Process High Alarm



Process Low Alarm



Gen ConF: General Parameters

[SU-L] Alarm Set value Low limit ([Lo], [SU-u])Unit

[SU-u] Alarm Set value High limit ([SU-L], [uP])Unit

Com ConF: Serial Communication Configuration Parameters

[SAdr] Communication Accessing Address (1,247)

Communication accessing address of device.
Communication accessing address can be adjusted from 1 to 247.

[BRu] Communication Baud Rate

- 0000 1200 Baud Rate.
- 0001 2400 Baud Rate .
- 0002 4800 Baud Rate
- 0003 9600 Baud Rate
- 0004 19200 Baud Rate

[Prt] Parity Selection for Communication

- 0000 No parity.
- 0001 Odd parity.
- 0002 Even parity.

[StP] Stop Bit Selection for Communication

- 0000 1 stop bit
- 0001 2 stop bit

PASS ConF: Password Parameter

[LPS] T Passwords(0, 9999)

It is used for accessing to the technician parameters. If it is [0000] no password protection while entering to the technician Parameters.

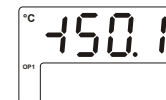
If it is different from "0" and user wants to access to the technician parameters:

- 1- If user does not enter [LPS] password correctly :It turns to operation screen without accessing to parameters. : When [LPS] in top display [0000] and in bottom display are seen, if user presses SET button without entering [LPS] Password (For observing the parameters): Operator can see operator menus and parameters but operator can not change the parameters

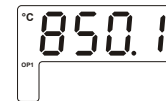
mL-PI8 Process Indicator Error Messages



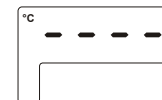
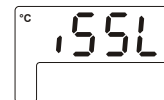
- 1 - Sensor failure in analog inputs. Sensor connection is wrong or there is no sensor connection.



- 2- If top display blinks : If analog input value is less than minimum value of operating scale [Lo], top display starts to blink.



- 3- If top display blinks : If analog input value is greater than maximum value of operating scale [uP], top display starts to blink.



- 4- If technician password is different from "0" and user accesses to the parameter by Set button without entering the technician password and wants to change a parameter, the warning message is shown on the display as shown on the right. Device does not allow to do any changes without entering the password correctly.

Installation



Before beginning installation of this product, please read the instruction manual and warnings below carefully.

In package ,

- One piece unit
- Two pieces mounting clamp
- One piece instruction manual

A visual inspection of this product for possible damage occurred during shipment is recommended before installation. It is your responsibility to ensure that qualified mechanical and electrical technicians install this product.

If there is danger of serious accident resulting from a failure or defect in this unit, power off the system and separate the electrical connection of the device from the system.

The unit is normally supplied without a power switch or a fuse. Use power switch and fuse as required.

Be sure to use the rated power supply voltage to protect the unit against damage and to prevent failure.

Keep the power off until all of the wiring is completed so that electric shock and trouble with the unit can be prevented.

Never attempt to disassemble, modify or repair this unit. Tampering with the unit may result in malfunction, electric shock or fire.

Do not use the unit in combustible or explosive gaseous atmospheres. During the equipment is putted in hole on the metal panel while mechanical installation some metal burrs can cause injury on hands, you must be careful.

Montage of the product on a system must be done with it's mounting clamp. Do not do the montage of the device with inappropriate mounting clamp. Be sure that device will not fall while doing the montage.

It is your responsibility if this equipment is used in a manner not specified in this instruction manual.

It is your responsibility if this equipment is used in a manner not specified in this instruction manual.

Warranty

Kessler-Ellis Products warrants that the equipment delivered is free from defects in material and workmanship. This warranty is provided for a period of two years. The warranty period starts from the delivery date. This warranty is in force if duty and responsibilities which are determined in warranty document and instruction manual performs by the customer completely.

Maintenance

Repairs should only be performed by trained and specialized personnel. Cut power to the device before accessing internal parts. Do not clean the case with hydrocarbon-based solvents (Petrol, Trichlorethylene etc.). Use of these solvents can reduce the mechanical reliability of the device. Use a cloth dampened in ethyl alcohol or water to clean the external plastic case.

Other Informations

Company Information:

Kessler-Ellis Products
10 Industrial Way East
Eatontown, NJ 07724

Phone: 800-631-2165 or 732-649-7100

Fax: 732-649-7099

Email: info@kep.com

Web: www.kep.com

Ordering Information

Model Number	Description
mL-PI8 (Rev-A)	Process Indicator 1/8 DIN Case Universal Input. Selectable: TC, RTD, mV, VDC, or mA 100 to 240VAC (-15%; +10%) 50/60Hz 2 Relay Outputs 1- (5A @ 250VAC with Resistive Load) (Form C) 1- (3A @ 250VAC with Resistive Load) (Form A) RS-485 Serial Communication with Modbus RTU Protocol Analog Output 0/4 - 20mA Gasket to provide NEMA4X seal
Options (add to end of model number)	
24VDC	24VDC (-15%; +10%) Power Input
Accessories	
mL-cable-485	RS485 Serial Cable