



D4-LM2 / P49-LM2 / P49-LM2-P

0 – 20 mA / 4 – 20 mA loop monitor

including optional 24V DC loop power supply (P49-LM2-P ONLY)

Version 10.7

Operating instructions

and

Guarantee Certificate

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Description:

The input signal may be displayed as any value from –999 to 9999. The display can be set to increase or decrease as the input rises. This allows the display to indicate the real world value at the input to the transducer. The decimal point may be set to any position. An on-board 24V DC power supply (limited to 23mA) is included to power the loop (P49-LM2-P ONLY). The input offset and span may be adjusted for calibration purposes. Other features include adjustable start-up and reaction delays, latch facility and the ability to swap the relay's functionality. All settings may be locked to avoid changes from being made by unauthorised personnel.

Operation:

The relays remain energised while the input signal is between the upper and lower set points. Once de-energised, the signal must change in the opposite direction by the hysteresis amount before the relay will re-energise. Shorting the latch pins, forces the relay to remain de-energised after a fault condition (until the short is removed). The relay action may be swapped to energise when the setpoint is reached. The signal received is converted and displayed as 'real world' values. (eg 0-100 °C, not 4 -20mA). By setting the span to a negative value, the display will indicate lower values as the input rises.

Menu functionality:

All adjustments are made via the three front mounted buttons. Press the "MENU" button repeatedly until the desired setting is reached, press "SELECT" to display the current value of the selected setting. The "+" and "-" buttons are used to change the value. "ENTER" will return the device to the menu. The "BACK" button will exit the menu.

Adjustable parameters:

- Upper limit for relay 1 "Hi 1" (default: disabled)
When the input rises above this value, the relay changes state until the signal drops by the hysteresis amount (see "HYS.1" setting)
- Lower limit for relay 1 "Lo 1" (default: disabled)
When the input drops below this value, the relay changes state until the signal rises by the hysteresis amount (see "HYS.1" setting)
- Hysteresis value for relay 1 "HYS.1" (default: 5)
Once the set-point is reached, (and the relay changed state), the input signal must change by this value before the relay will return to its original state.
- Start-up delay for relay 1 "St d 1" (default: 0 Sec)
After power-up, monitoring is delayed for this period of time. (to allow the signal to stabilize).
- Reaction delay for relay 1 "rEd.1" (default: 0 Sec)
A fault condition must occur for longer than this period before the relay changes state. (To allow fault conditions for short periods of time)
- Relay 1 function "rEF.1" (default: De-energise)
Set relay function when setpoint is reached "dE.En"=de-energise, "EnEr"= energise.
- Upper limit for relay 2 "Hi 2" (default: disabled)
- Lower limit for relay 2 "Lo 2" (default: disabled)
- Hysteresis value for relay 2 "HYS.2" (default: 5)
- Start-up delay for relay 2 "St d2" (default: 0 Sec)
- Reaction delay for relay 2 "rE d2" (default: 0 Sec)
- Relay 2 function "rEF.2" (default: De-energise)
- Fault indication "indi" (default: on)
During fault conditions the display indicates whether the value is above or below the set point values ("r1.Hi", "r1.Lo", "r2.Hi", "r2.Lo"). If a fault condition exists, but the relay is being held energised by the start-up or reaction delay timers, "-r1-" or "-r2-" is displayed. Changing this setting to "off", disables these messages. Note: This setting does not affect the "Er.Hi" and "Er.Lo" messages. (see notes)
- Display Offset "OFSt" (default value:0)
This value is displayed when the minimum signal is measured. (eg.4mA).
- Display Span "SPAN" (default value:100)
This value plus the "OFSt" value is displayed when the maximum signal is measured (20mA). Eg. If the input signal is 4-20mA, "OFSt" = 100, and "SPAN"=100. The display will indicate 100 when 4mA is applied, and 200 (100+100=200) when 20mA is applied.
- Decimal pointer "dEci" (default value:0)
Use this setting to adjust the decimal point to the desired position.(0.000 / 0.00 / 0.0 / 0)
- Calibrate / Set input Offset "CAL.O" (default value: 4.00 mA)
This is the minimum input signal received. If a signal converter with an output of 4 – 20mA is used, change this value to "4.00" mA. This value may need to be adjusted in case the converter's offset has changed. (needs calibration)
- Calibrate / Set input Span "CAL.S" (default value:16.00mA)
This is the difference between the minimum and maximum input signals. If the converter output is 4-20 mA, change this value to "16.00" mA. This value may need to be adjusted in case the converter's span has changed. (needs calibration)
Note: The controller cannot accept signals greater than 20.6 mA, and will not allow values greater than this to be entered. I.e. the total of "CAL.O" plus "CAL.S" values cannot exceed 20.6. It may be necessary to reduce one of these values in order to increase the other.
- Reset "RES"
By selecting this setting, the device is reset to the factory defaults

Example: Set the device to convert a 4 to 20mA signal to -1.00 to +1.00.

If all of the following settings are NOT available, exit the menu and activate the advanced menu.

Press "MENU" until "OFSt" is displayed. Press "SELECT" to display the current offset. Use the "+" and "-" buttons to change the value to "-100". Press "ENTER". "SPAn" is displayed. Press "SELECT" and change the value to "200". Press "ENTER". "dECI" is displayed. Press "SELECT" and change the value until "0.00" is displayed. Press "ENTER". "CAL.O" is displayed. Press "SELECT" and change the value to "4.00". Press "ENTER". "CAL.S" is displayed. Press "SELECT" and change the value to "16.00". Press "ENTER". Press "BACK" to exit the menu.

With a signal of 4mA, the device will now display "-1.00", at 12mA, the display will show "0.00", and at 20mA the display will indicate "1.00".

To display values from 0 to 1.000, change the offset and span settings to 0 and 1000, and set the decimal pointer the left most position.

Now set the device to de-energise relay 1 if the display indicates a value greater than 0.75, and smaller than 0.25.

Press "MENU" to display "Hi 1". Press "SELECT" and change the value to "0.75". Press "ENTER". "Lo 1" is displayed. Press "SELECT" and change the value to "0.25". Press "ENTER". Press "BACK" to exit the menu.

Menu Configuration

When not in the menu, press and hold "+" and "-". After 3 seconds the display will toggle through the **available** options:

"loc" = available parameters may be viewed, but not changed.

"u.loc" = available parameters may be changed.

"rEdu" = remove advanced parameters from menu.

"Full" = all parameters are available.

"CodE:" = Enter a code between 1 & 9999.

To set an option, release the buttons while the option is being displayed. To enter a code, release the buttons while "CodE" is displayed, then use "+" & "-" to enter a value. To skip code entry, press "Enter" while "CodE" is displayed.

Once the code is entered, the first four options are not available until the correct code is re-entered. To clear the code (in case it is forgotten), hold the "+" & "-" buttons while the device powers up.

Notes:

- Whenever the input signal is above or below the "CAL.O" or "CAL.S" values by more than 3%. The display indicates "Er.Hi" or "ER.Lo".
- Certain settings are reset to default when the device is re-configured. Re-check all settings to ensure they are correct before commissioning. (use the advanced menu)

Specifications:

Display offset:	-999 to 9999
Display span:	-1999 to 9999
Display resolution:	0.01 to 1.000 (adjustable)
Input offset:	0 to 20.6 mA
Input span:	0 to 20.6 mA (offset + span maximum = 20.6 mA)
24VDC supply current limit (P49-LM2-P)	23mA
Measurement resolution:	20 uA
Accuracy	±0.3% @ 25°C (% of full scale)
Input voltage:	±15% of rated input

12 Month guarantee:

Our product is guaranteed for a 12 (twelve) month period from date of purchase. This guarantee is valid for defects arising from failure during specified conditions. This guarantee does not cover damage due to abuse, tampering or improper installation. Our company does not accept liability for any consequential damage or loss arising from product malfunction. Should this product prove to be defective, kindly return for inspection or repair. For further information contact your nearest distributor.

Relay specifications:

Contact rating:	10A @ 250V AC
Mechanical life:	30 million operations
Electrical life:	250 000 operations (at maximum load)

