

M3 & M4 SERIES CONTROLLER CALIBRATION

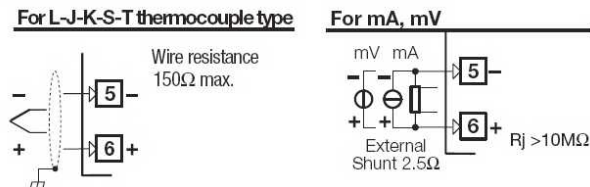
Introduction

Instrument calibration is based on a series of sequential steps, and although it is quite simple to perform, not completing each step as outlined in this procedure will result in calibration errors. Each step below performs the calibration of a particular input or output. Recalibration can be carried out whenever necessary by using accurate reference instruments with a high degree of stability. For best recalibration results, it is highly recommended that the instrument remain powered and at stable environmental conditions for a minimum of one hour.

Analog Input

Wiring Connection

Connect to the main input terminals as shown in the following diagram.

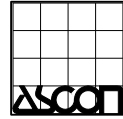


Entering the Calibration Mode

Starting from the "rel." parameter (see page 21 in the instruction manual), press both the "v" and "∧" keys until "PASS" (password) appears in the lower display. Enter the instrument password (factory default is 33) in the upper display and the instrument now enters the calibration mode.

Analog Input Calibration

"CAL.1" corresponds to the mV and thermocouple input while "CAL.2" corresponds to an RTD input. In CAL.1 or CAL.2 mode, the instrument is ready to receive new calibration values for the corresponding input type. Input the calibration value from the table below and wait for the display value to stabilize. At this time, the controller's display will show a number which represents the difference between the present measure and the calibration value being input. Press the "v" or "∧" keys to enter chosen input calibration value. Wait to verify the calibration error and correct if the display shows ± 1 digit. If the value is not stable, repeat the calibration by pressing the "v" or "∧" keys again...repeat as necessary until the display shows ± 1 digit. Once satisfied with the new calibration values, use caution not to modify the displayed values or calibration will be corrupted. When the analog input calibration appears correct, press the "↵" key to exit and proceed.



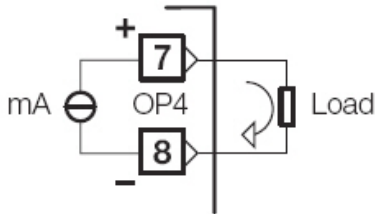
| Step | Function | Action |
|-------|-----------------------|---|
| CAL.1 | MV and TC calibration | Apply 50.000mV to the input – set with ∨ or ∧ keys |
| CAL.2 | RTD calibration | Apply 313.594 Ω to the input – set with ∨ or ∧ keys |

Analog Input Table

Analog Output

Wiring Connection

Connected to the analog output terminals as shown below



Analog Output Calibration

The following “**CAL.3**” and “**CAL.4**” steps are present when the analog output option is ordered. “**CAL.3**” corresponds to the current output low range and “**CAL.4**” corresponds to the current output high range. The calibration values must be measured using a high quality meter. For “**CAL.3**”, measure the mA low value and enter this value in the controller using the “∨” or “∧” keys. For “**CAL.4**”, measure the high mA value and enter this value in the controller using the “∨” or “∧” keys. When entering the “**CAL.4**” value, do not consider the tens number (e.g. measured value 18.124 mA must be entered as 8.124 mA). After “**CAL.4**”, press the ↵ key to come back to the Normal Operation.

| Step | Function | Action |
|-------|--------------------------------------|--|
| CAL.3 | Analog output low range calibration | Measure OP4mA output, enter the corresponding value |
| CAL.4 | Analog output high range calibration | Measure OP4 mA output, enter the corresponding value |

Analog Output Calibration Table