PM24 Field Calibration Procedure

All input types are factory calibrated. This field calibration should only be accessed by experienced personnel. Before attempting to calibrate, make sure you read through the procedures carefully and have the proper equipment required for each procedure.

The complete calibration is divided into five sections:

- 1. Linear 0-50 millivolts input (type 18)
- 2. Thermocouples sensor input (type 0 to 6)
- 3. RTD-Pt100 sensor input (type 7 and 8)
- 4. Linear 4-20mA input (type 10 to 17 and 19)
- 5. Linear 0-10 Volts input (type 20)

Each section is calibrated individually; the calibration of one section does not interfere with the calibration of another section. The function protection (Prok) needs to be disabled (Prok = D) (see PM24 Operator's Manual).

1. Linear 0-50mV input calibration

Equipment required:

- Precision millivolt source 0-50mV min. range, 0.001mV resolution.
- Regular 20 or 22 gauge copper wire.

Setup and Calibration:

- 1. Connect the AC line voltage to the terminals 7 and 8.
- 2. Connect the millivolt source to the <u>terminal 2 positive</u> and <u>terminal 3 negative</u> on the PM24.
- 3. Apply power to the PM24.
- 4. Select the following parameters in Cycle 3:

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EYPE = 18

dPPo = 0

InLL = - 1999

InHL = 9999

Prot = 0
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- 5. Turn on the millivolt source and allow it to stabilize.
- 6. In cycle 4 select parameter InLE, enter 1.000mV from the millivolt source. Push the

 or key repeatedly on the PM24 until 1760 (± 2 digits) is displayed in this parameter.
- 7. Push the **SET UP** key, select parameter **InHE**, enter 49.000mV from the millivolt source. Push the **□** or **□** key repeatedly on the PM24 until **9760** (± 2 digits) is displayed in this parameter.
- 8. Repeat the steps 6 and 7 one or two times to make sure the correct calibration is performed.
- 9. If the calibration is already finished, and you are not going to another calibration section, the function protection (**Prot**) needs to be enabled (see PM24 Operator's Manual).

2. Thermocouples sensor input calibration

Equipment required:

- Precision millivolt source 0-55mV min. range, 0.001mV resolution.
- Precision glass bulb thermometer, 10-50 °C
- Regular 20 or 22 gauge copper wire.

Setup and Calibration:

- 1. Connect the AC line voltage to the terminals 7 and 8.
- 2. Connect the millivolt source to the <u>terminal 2 positive</u> and <u>terminal 3 negative</u> on the PM24.
- 3. Apply power to the PM24.
- 4. Select the following parameters in Cycle 3:

EYPE = 1 Un 1L = 0 InLL = - 150 InHL = 1370 Prot = 0

- 5. Turn on the millivolt source and allow it to stabilize. Enter 0.000mV from the millivolt source.
- 6. In cycle 4, select the parameter **LJ L = □** using the **□** or **△** key repeatedly on the PM24 until **□** is displayed in this parameter.
- 7. Select parameter InLC, enter 0.000mV from the millivolt source. Push the repeatedly on the PM24 until 0 is displayed in this parameter.
- 9. Repeat the steps 7 and 8 one or two times to make sure the correct calibration is performed.
- 10. Select the parameter **LJ L**. Read the temperature between the terminals 2 and 3 on PM24 using the precision glass bulb thermometer (°C). Write this temperature (ex: 25) using the **□** or **△** key repeatedly on **LJ L** parameter. This final step activates the automatic "cold junction".
- 11. If the calibration is already finished, and you are not going to another calibration section, the function protection (**Prot**) needs to be enabled (see PM24 Operator's Manual).

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3. RTD-Pt100 sensor input calibration

Equipment required:

- 1 Kohm precision decade resistance box with 0.01 ohms resolution.
- Regular 20 or 22 gauge copper wire.

Setup and Calibration:

- 1. Connect the AC line voltage to the terminals 7 and 8.
- 2. Connect the decade resistive box to the <u>terminal 1 & 2</u> and <u>terminal 3</u> on the PM24. Use wire of the same length and type.
- 3. Apply power to the PM24.
- 4. Select the following parameters in Cycle 3:

EYPE = 7 Un IL = 0 InLL = - 199.0 InHL = 530.0 ProE = 0

- 5. In cycle 4 select parameter InLE, enter 100.00 ohms from the decade resistive. Push the or key repeatedly on the PM24 until **Q.O** (± 1 digit) is displayed in this parameter.
- 6. Push the **SET UP** key, select parameter **InHC**, enter 289.27 ohms from the decade resistive box. Push the **□** or **△** key repeatedly on the PM24 until **525.0** (± 1 digit) is displayed in this parameter.
- 7. Repeat the steps 5 and 6 one or two times to make sure the correct calibration is performed.
- 8. If the calibration is already finished, and you are not going to another calibration section, the function protection (**Prat**) needs to be enabled (see PM24 Operator's Manual).

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4. Linear 4-20mA input calibration

Equipment required:

- Precision current source, 0-20mA min. range, 0.001mA resolution.
- Regular 20 or 22 gauge copper wire.

Setup and Calibration:

- 1. Connect the AC line voltage to the terminals 7 and 8.
- 2. Connect the Current source to the terminal 3 negative and terminal 4 positive on the PM24.
- 3. Apply power to the PM24.
- 4. Select the following parameters in Cycle 3:

EYPE = 19 dPPo = 0 InLL = - 1999 InHL = 9999 ProE = 0

- 5. Turn on the current source and allow it to stabilize.
- 6. In cycle 4 select parameter InLC, enter 4.500mA from the current source. Push the
 ▼ or ▲ key repeatedly on the PM24 until 1525 (± 2 digits) is displayed in this parameter.
- 7. Push the **SET UP** key, select parameter **InHE**, enter 19.500mA from the current source. Push the **o**r **k**ey repeatedly on the PM24 until **9625** (± 2 digits) is displayed in this parameter.
- 8. Repeat the steps 6 and 7 one or two times to make sure the correct calibration is performed.
- 9. If the calibration is already finished, and you are not going to another calibration section, the function protection (**Prot**) needs to be enabled (see PM24 Operator's Manual).

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5. Linear 0-10 Volts input calibration

Equipment required:

- Precision Volt source 0-10 Volts min. range, 0.001 Volts resolution.
- Regular 20 or 22 gauge copper wire.

Setup and Calibration:

- 1. Connect the AC line voltage to the terminals 7 and 8.
- 2. Connect the Volts source to the <u>terminal 3 negative</u> and <u>terminal 5</u> positive on the PM24.
- 3. Apply power to the PM24.
- 4. Select the following parameters in Cycle 3:

EYPE = 20 dPPo = 0 InLL = - 1999 InHL = 9999 ProE = 0

- 5. Turn on the Volts source and allow it to stabilize.
- 6. In cycle 4 select parameter InLC, enter 0.500V from the volts source. Push the ▼ or ▲ key repeatedly on the PM24 until IMDD (± 2 digits) is displayed in this parameter.
- 7. Push the **SET UP** key, select parameter **InHL**, enter 9.500V from the volts source. Push the **o**r **k**ey repeatedly on the PM24 until **9400** (± 2 digits) is displayed in this parameter.
- 8. Repeat the steps 6 and 7 one or two times to make sure the correct calibration is performed.
- 9. If the calibration is already finished, and you are not going to another calibration section, the function protection (**Prot**) needs to be enabled (see PM24 Operator's Manual).

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