

INTECH Micro

2100-M-T REV.1.1

16 Channel
Programmable
Thermocouple (T/C) Multiplexer.

Addendum to 2100-M Installation Guide. To be used in conjunction with 2100-M Rev.1.1 installation Guide.

Features.

- 16 Channel T/C Multiplexer.
- Clock/Reset Channel Selection, or Binary Channel Selection.
- High Accuracy 0.1%.
- Compact DIN Rail Mount Enclosure.
- Easy to Install.
- Low Cost Expansion for PLCs.
- Solid State Switches for Reliability.



2100 models include:

- 2100-4S : RS422 to RS485 Converter.
- 2100-A16 :16AI, 4DI, 2 Relay Out, 2 AO.
- 2100-A4 :4AI, 4DI, 4 Relay Out, 2 AO.
- 2100-A4e :4AI, 4DI, 8 Relay Out, 2 AO.
- 2100-AO :8 AO, 8 AI, 12 DI, 2 Relay Out.
- 2100-D :12DI, 12 Relay Out.
- 2100-IS :Isolated RS232 to RS422/485.
- 2100-M :16AI Multiplexer.
- 2100-ME :Memory Expansion for 2100-A.
- 2100-NET :Isolated Ethernet to RS232/422/485.
- 2100-NS :Non-Isolated RS232 to RS422/485.
- 2100-R :16 Relay Expansion for 2100-A.
- 2100-RL2 :2 Relay Expansion for 2100-A.

2100-M-T Specifications.

NOTE: Mineral Insulated Thermocouples (T/C) With Isolated Junction Recommended.

Inputs	16 Differential T/C Inputs. Types B, E, J, K, N, R, S, T. Minimum Range = 200C.
Differential Voltage	Maximum of 10Vpeak Between Any T/Cs. ie Maximum of 10Vdc, 7Vac or 10Vpeak Sum of any Vac and Vdc.
Connection	The 2100-M-T works in conjunction with the LPI-T, or PI-T programmable T/C isolation transmitter. The 2100-M-T operates as a T/C multiplexer only. The output of the 2100-M-T is wired directly into the LPI-T, or PI-T, which is mounted adjacently. Refer to the LPI-T, or PI-T data sheets for further specifications.
Dimensions	L=195, W=120, H=70mm and allow for External Transmitter dimensions.
-LPI-T and PI-T. (Brief)	Isolating T/C Transmitter.
T/C Types	J, K, N, R, T. Minimum Range = 200C.
Cold Junction Comp.	0~60C for PI-T; 0~70C for LPI-T.
CJC Drift	<0.03C/C Typical.
Sensor Fail	Upscale Drive. (Downscale Selectable.)
T/C Lead Resistance	100Ω Maximum.
Input Resistance	1MΩ Minimum.
Linearisation	<±0.25% for type J & K T/Cs. <±0.5% for all Other Types.
-Isolation Test Voltages:	1.6kVdc for PI-T; 2kVac/dc for LPI-T; Input to Output for 60sec.
-Operating Temperature	0~60C for PI-T; 0~70C for LPI-T.

Note 1. Contact INTECH INSTRUMENTS for more detailed programming information.

Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independant fail-safe back-up system must always be implemented.

2100-M-T Input Programming.

The only input programming required for the 2100-M-T is channel selection programming.

S4-4: Set to '0' for binary channel selection. Set to '1' for clock/reset channel selection.

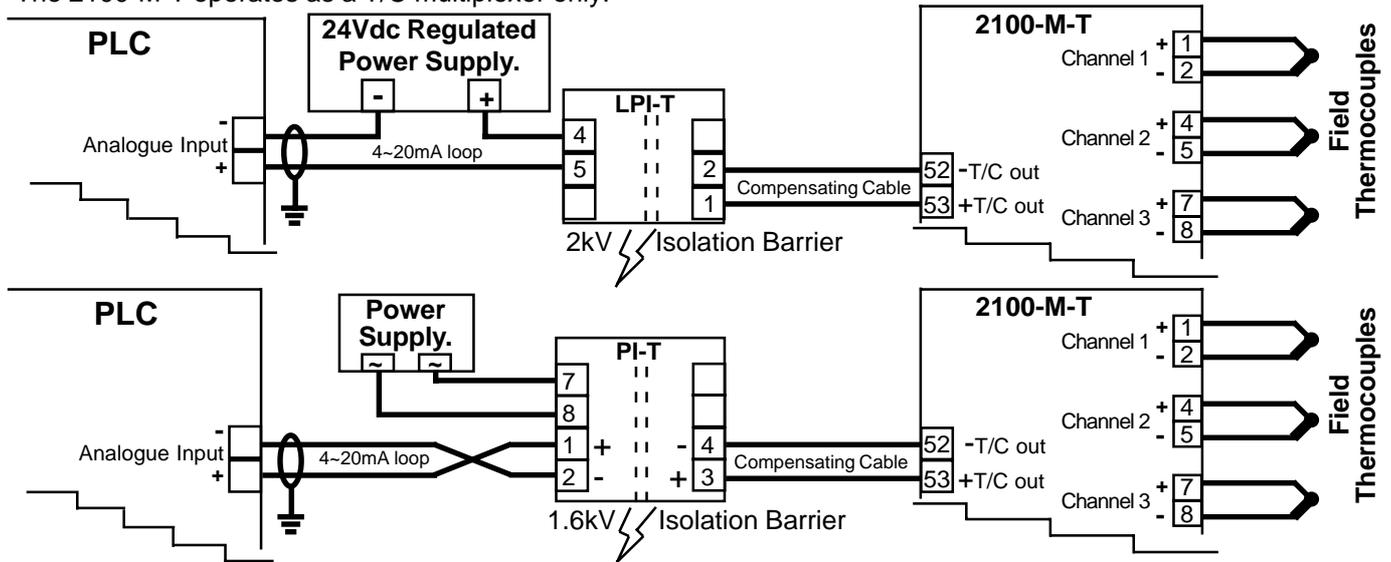


CAUTION: Dangerous voltages may be present. The 2100-M-T has no user serviceable parts.
Protective enclosure only to be opened by qualified personnel.
Remove ALL power sources before removing protective cover.



2100-M-T Connection Diagram for Thermocouple Inputs With a Thermocouple Isolator on the Output.

The 2100-M-T works in conjunction with the LPI-T or PI-T programmable thermocouple (T/C) isolating transmitter. The 2100-M-T operates as a T/C multiplexer only.



Important: The '+' and '-' of any unused inputs must be shorted together.

Note: For accurate cold junction compensation the LPI-T or PI-T must be mounted as close as possible to the 2100-M-T.

- Note 1. Maximum permissible voltage between any T/C inputs is 10Vpeak.
 Note 2. It is recommended that the T/Cs be mineral insulated, isolated junction, and isolated from each other and earth.
 Note 3. For accurate T/C measurement, especially low temp:
 *The cover must be fitted.
 *Avoid drafts and temperature differences across terminals.
 *Once installation is complete, close the cabinet and allow to reach equilibrium. This may take several hours.
 *Place all the T/Cs into a calibrated thermal bath at the temperature of interest and errors zeroed out in software.
 Note 4. All T/Cs are referenced to the cold junction compensation temperature sensor, on the external T/C transmitter.
 Note 5. All cables must be screened, and the screens earthed at one end only.
 Note 6. There are no adjustments in the 2100-M-T.

2100-M-T Wiring and Installation.

THE 2100-R IS TO BE INSTALLED AND SERVICED BY SERVICE PERSONNEL ONLY. NO OPERATOR / USER SERVICEABLE PARTS.

All power and signals must be de-energised before connecting any wiring, or altering any Jumpers or Dip Switches.

Cautions Using Differential Inputs.

All T/C inputs differential. Exceeding 10V peak between any 2 inputs, or any single input causes errors on ALL channels. Where ground loops, excessive noise or excessive voltage is present between any two inputs, or on any single input, suitable isolating transmitters are required, otherwise errors in signal readings will occur on ALL channels.

2100-M-T THERMOCOUPLES (T/Cs).

- (1) Avoid locating the T/Cs where they will be in a direct flame.
- (2) Never insert a porcelain or refractory tube suddenly in a hot area. Pre-heat gradually while installing.
- (3) Locate it where the average temperature will be measured. It should be representative of the mass. If necessary use several T/Cs to obtain the average temperature.
- (4) Immerse the T/Cs far enough so that the measuring junction is entirely in the temperature to be measured: nine to ten times the diameter of the protection tube is recommended. Heat that is conducted away from the junction causing an error in reading.
- (5) If the T/Cs are mounted horizontally and the temperature is above the softening point of the tube, a support should be provided to prevent the tube sagging. Otherwise install the tube vertically.
- (6) Keep the junction head and cold junction in the approximation of the ambient temperature. Especially in the Noble Metal Class.

2100-M-T EXTENSION WIRE.

- (1) Use the correct T/C extension or compensation cable. i.e. T/C type, insulation type, correct colour coding.
- (2) It is recommended to install extension or compensation cable in a grounded conduit by themselves, or use overall screened cable with the screen earthed at one end only. Never run electrical wires in the same conduit.
- (3) All wires that must be spliced should be soldered, or a proper T/C termination block used.
- (4) Lightning arrestors should be used if there is a chance from this source.

Note: Due to the limits of error in a standard T/C probe, and standard extension wire and compensating wire, an error can occur. For example in a type K T/C installation an error of 2.2C or 0.75% FSO (whichever is greater) can occur. To check the variable being measured use a calibration standard T/C at the same immersion depth.

2100-M-T Maintenance.

- (1) Repeat (4) of commissioning. Do it regularly - at least once a month.
- (3) Replace defective protection tubes - even if they look good they may not be air or gas tight.
- (4) Check extension and compensating cable circuits.
- (5) Do not use the same chromel-alumel (Type K) T/C below 540C if it was used above 860C.

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