Multi-Channel Thermal Limit Monitor: Ideal for Multi-Zone Applications

The Watlow® TLM series is a compact, cost-effective solution for multi-channel, redundant temperature monitoring. Each TLM has eight channels to continuously monitor thermocouples, RTDs, or thermal switches, making it ideal for multi-zone applications. Choose an individual temperature limit for each channel from the standard list or consult the factory for other limits.

The TLM is equipped with flexible interlocks, which are designed to interface with redundant controls. The alarms latch and require operator intervention to clear for process and equipment protection. Semiconductor capital equipment OEMs will find these features ideal for meeting SEMI S2 safety guidelines.

The TLM is compact and easy to install on a panel or a DIN-rail. No cutout is required, reducing installation and fabrication costs. Troubleshooting is simplified through a self-test diagnostics input, which simulates the alarm state. The TLM-8 is FM approved as a temperature limit switch, bears the CE mark (LVD and EMC Directives) and is UL® and C-UL® listed.

Typical Applications

- Any process requiring multi-channel redundant temperature monitoring
- Semiconductor capital equipment requiring SEMI S2
- Electronics packaging equipment
- Plastic injection molding and extrusion equipment

Features and Benefits

Multi-channel monitoring
- Eight channels in one package make the TLM ideal for multi-zone applications

Multiple sensor types
- TLM accepts six thermocouple types, RTDs and thermal switches (one sensor type per TLM unit)

Seletable alarm limits
- TLM-8 can be ordered with a different temperature limit on each channel

Compact, easy-to-install, sub-panel mounting
- Reduces installation time

Flexible interlocks
- Interfaces with redundant controls; ideal for SEMI S2 applications

Self-test diagnostics
- Simplifies troubleshooting

Latching alarms
- Protects process and equipment

CE, UL®, C-UL® and Factory Mutual (FM) Approvals
- Global acceptance for safety and EMC compliance

Specifications

Analog Inputs
- Number of sensor inputs: 8

Sensor Inputs (Trip Point Ranges)
- RTD 100Ω, platinum, 2-wire (DIN Curve: -100 to 850°C)
- Thermal switch
- Type E T/C (100 to 801°C)
- Type J T/C (100 to 754°C)
- Type K T/C (100 to 1205°C)
- Type R T/C (500 to 1720°C)
- Type S T/C (500 to 1711°C)
- Type T T/C (100 to 384°C)

Accuracy
- Part numbers starting with "TLME": ±5 percent of trip point
- Part numbers starting with "TLMC": see table below

TLMC Accuracy Specification

Sensor(s)	Trip Point Accuracy Ambient: 15 to 35°C	Trip Point Accuracy Ambient: 0 to 60°C
J, K, E, T, RTD	±0.5% of trip point ±2°C	±0.5% of trip point ±4°C
S, R	±0.5% of trip point ±3°C	±0.5% of trip point ±5°C

Repeatability
- Better than 5°C or accuracy for trip point, whichever is less

Digital Inputs
- Alarm acknowledge digital input: 5-30VDC, optically isolated
- Alarm simulation digital input: 5-30VDC, optically isolated

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ISO 9001
Registered Company
Winona, Minnesota USA

Specifications (Con't)

Electromechanical Alarm Relays

- Contact arrangement: open in power off condition
- Contact action: latch open in alarm condition
- Maximum contact rating: 1A @ 30VDC

Indicator Lights

- 8 individual red alarm status indicator lights
- 1 green supply power indicator light

Dimensions

- 9.30 in. (236 mm) x 3.61 in. (92 mm) x 1.87 in. (48 mm) depth; add 0.75 in. (20 mm) to depth for DIN-rail mount

Power Requirements

- 12-24VDC, 3.2 watts, class 2 power supply

Environmental

- Temperature: 0 to 60°C (operating); -20 to 100°C (storage)
- Relative humidity: 0-95 percent, non-condensing

Agency Approvals/Compliance

- UL®, C-UL® listed (File No. E185611)
  Process Control Equipment UL® 61010
  Process Control Equipment C22.2 #61010-1
- FM
  Temperature Limit Switches-Non Indicating Class 3545
  Temperature Supervisory Switch Class 3545
- CE
  Low Voltage Directive (LVD) 2006-95-EC
  Electromagnetic Compatibility Directive (EMC) 2004/108/EC

Ordering Information

Part Number

①②③④	⑤ Sensor Type	⑥ Alarm Relays	⑦ Mounting	⑧ Channel 1	⑨ Channel 2	⑩ Channel 3	⑪ Channel 4	⑫ Channel 5	⑬ Channel 6	⑭ Channel 7	⑮ Channel 8
TLME											

⑤ Sensor Type	
0 =	RTD or thermostatic switch
1 =	Type E T/C
2 =	Type J T/C
3 =	Type K T/C
4 =	Type R T/C
5 =	Type S T/C
6 =	Type T T/C

⑥ Alarm Relays	
0 =	Global relays only
1 =	Global alarm relays and 8 channel alarm relays

⑦ Mounting	
0 =	Panel
1 =	DIN-rail

⑧⑨⑩⑪⑫⑬⑭⑮ Trip Points
Based on your sensor choice, use the Trip Point Chart below and choose the desired alarm temperature for each channel.

Trip Point Chart

Temperature RTD	Trip Point
Unused Input	A
103°C (217°F)	B
121°C (250°F)	C
151°C (304°F)	D
215°C (419°F)	E
324°C (615°F)	F
404°C (759°F)	G
478°C (892°F)	H
584°C (1083°F)	I
708°C (1306°F)	J
824°C (1515°F)	K
Thermostatic switch	K

Type E T/C	
Unused Input	A
101°C (214°F)	B
202°C (396°F)	C
302°C (576°F)	D
403°C (756°F)	E
502°C (936°F)	F
600°C (1112°F)	G
702°C (1296°F)	H
801°C (1474°F)	I

Type J T/C	
Unused Input	A
100°C (212°F)	B
152°C (307°F)	C
202°C (396°F)	D
251°C (484°F)	E
302°C (576°F)	F
350°C (662°F)	G

Type J T/C (continued)	
402°C (756°F)	H
450°C (842°F)	I
502°C (936°F)	J
554°C (1027°F)	K
600°C (1112°F)	L
653°C (1207°F)	M
704°C (1299°F)	N
754°C (1389°F)	O

Type K T/C	
Unused Input	A
100°C (212°F)	B
150°C (302°F)	C
200°C (392°F)	D
252°C (486°F)	E
303°C (577°F)	F
353°C (667°F)	G
401°C (754°F)	H
455°C (851°F)	I
504°C (939°F)	J
603°C (1117°F)	L
651°C (1204°F)	M
701°C (1294°F)	N
753°C (1387°F)	O
807°C (1485°F)	P
851°C (1564°F)	Q
907°C (1665°F)	R
952°C (1746°F)	S
998°C (1828°F)	T
1057°C (1935°F)	U
1101°C (2014°F)	V
1157°C (2115°F)	W
1205°C (2201°F)	X

Type R T/C	
Unused Input	A
501°C (934°F)	B
602°C (1116°F)	C
708°C (1306°F)	D
800°C (1472°F)	E
903°C (1657°F)	F
999°C (1830°F)	G
1100°C (2012°F)	H
1206°C (2203°F)	I
1306°C (2383°F)	J
1410°C (2570°F)	K
1497°C (2727°F)	L
1593°C (2899°F)	M
1720°C (3128°F)	N

Type S T/C	
Unused Input	A
506°C (943°F)	B
601°C (1114°F)	C
700°C (1292°F)	D
902°C (1656°F)	F
1005°C (1841°F)	G
1110°C (2030°F)	H
1210°C (2210°F)	I
1313°C (2395°F)	J
1404°C (2559°F)	K
1500°C (2732°F)	L
1600°C (2912°F)	M
1711°C (3112°F)	N

Type T T/C	
Unused Input	A
100°C (212°F)	B
202°C (396°F)	C
291°C (556°F)	D
384°C (723°F)	E

Please Note: Trip point values and specifications have changed from earlier TLM-8 versions. Please contact the factory if ordering replacement units for models not beginning with TLME.

Note: For other trip points and higher trip point accuracy, consult your supplier regarding the TLMC.

Replacement Parts	
Z100-21500-000	Terminal block kit

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To be automatically connected to the nearest North American Technical Sales Office:

1-800-WATLOW2 • www.watlow.com

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