rev 1.06 / 2014 02 10

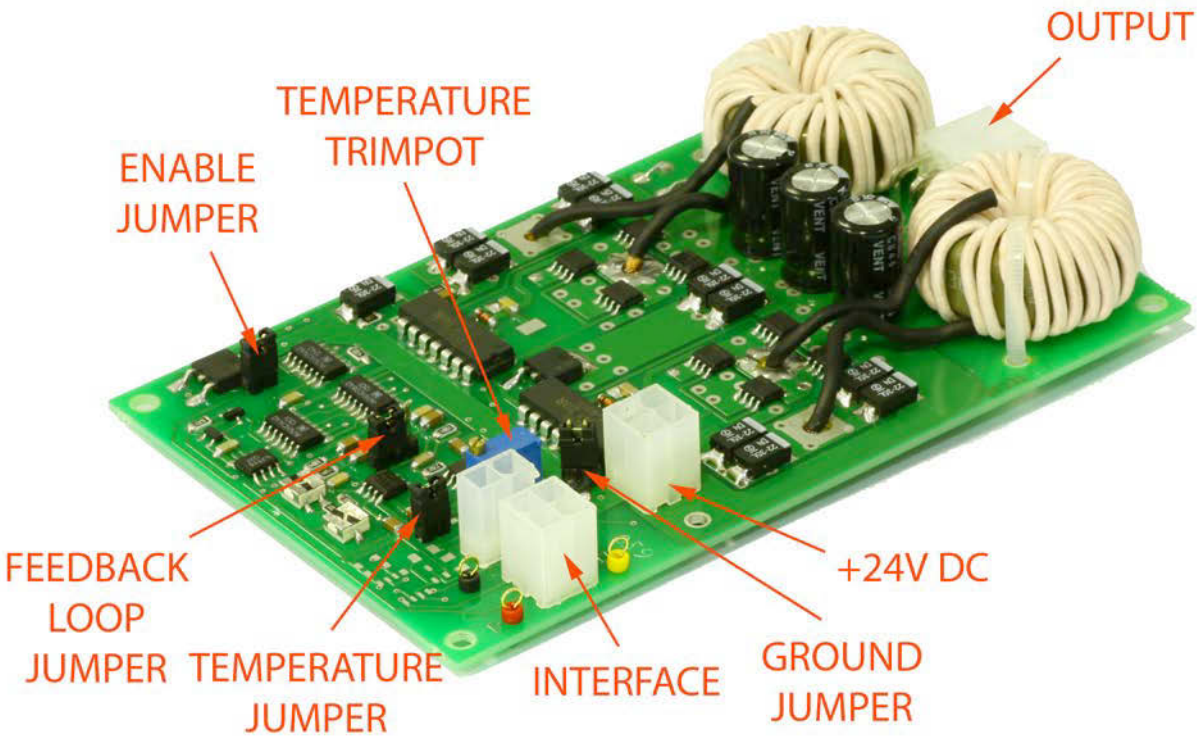
TEC temperature controller

User manual

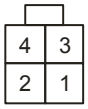
Overview / description

TEC module is designed for regulating the temperature of the objects and the stabilizing its temperature at the certain level. The target temperature is set with an analog input voltage. Voltage output is provided to monitor temperature of the object.

Connectors / signals

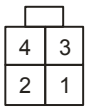


+24VDC



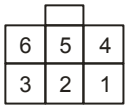
PIN (color)	DESIGNATION	DESCRIPTION
1, 2 (red)	**+24VDC**	+24VDC; power supply positive
3, 4 (black)	**RETURN**	+24VDC; power supply return

INTERFACE



PIN (color)	DESIGNATION	DESCRIPTION
1 (violet)	**TPROGRAM**	Temperature program voltage (sets the desired load temperature; 0-4V corresponds to 10-40ºC; see also Calibration table section)
2 (white)	**TMONITOR**	Temperature monitor (measures the real load temperature; 0-4V corresponds to 10-40ºC; see also Calibration table section)
3 (green)	**ENABLE**	Turns TEC on (+5VDC applied to this pin enables the output; 0V or unconnected pin lead to no actions)
4 (black)	**RETURN**	Return of all INTERFACE signals

OUTPUT



PIN (color)	DESIGNATION	DESCRIPTION
1,2 (red)	**TEC +**	Peltier positive
3,4 (blue)	**NTC**	NTC termistor connections
5,6 (black)	**TEC –**	Peltier negative

ENABLE JUMPER – in the case of stand-alone operations can be used instead of ENABLE signal of INTERFACE connector;
please do not use ENABLE JUMPER and ENABLE signal at the same time

TEMPERATURE JUMPER – if this jumper is set on TEMPERATURE TRIMPOT can be used instead of TPROGRAM signal of INTERFACE connector;
please do not use TEMPERATURE JUMPER and TPROGRAM signal at the same time

TEMPERATURE TRIMPOT – sets output temperature in the case of stand-alone operations (i.e. when TEMPERATURE JUMPER is set on);
clockwise rotation increases temperature set point

TESTPOINTS:
red – temperature set point voltage
blue – ground (return)
yellow – temperature monitor voltage

GROUND JUMPER – if INTERFACE return and +24V DC return are connected at customer's side (for example inside the control board controlling the customer's device) GROUND JUMPER should be removed. Contrary if INTERFACE return and +24V DC return aren't connected at customer's side GROUND JUMPER should be installed. In the case of stand-alone operations GROUND JUMPER should be installed too.

FEEDBACK LOOP JUMPER switches the sensivity and speed of the reaction of the feedback loop. By default the jumper is installed on pins #1 and #2. If because of any reasons TEC cannot reach equilibrium temperature and comes to oscillation regime FEEDBACK LOOP JUMPER should installed on pins #2 and #3 to make feedback loop less sensitive and slower.
Do not remove FEEDBACK LOOP JUMPER. It should be installed either on pins #1-2 or on pins #2-3.

Specifications

ELECTRICAL

Input voltage	+24VDC
Output voltage	–20..+20 V
Output current	up to 10A
Output power	up to 150W
Feedback loop	10kOhm NTC termistor
Output temperature range	10..40 ºC (other on request)
Temperature accuracy	0.1 ºC
Cooling	forced air cooling is needed at >7A operations

MECHANICAL

Dimensions	130x80x30mm
Weigth	300g

Calibration table

This table is valid only if the module is used with 10kOhm NTC supplied

Temperature, ºC	Resistance, kOhm	Voltage, V
10.0	19.9	0.075
20.0	12.5	0.975
25.0	10.0	1.55
30.0	8.06	2.21
40.0	5.33	3.83