Technical Data

TowiTek differential temperature control module

Dimensions:	50 x 51 x 22 mm
Stromversorgung:	9-12V~(AC) or 12-15V= (DC) @ 60mA max.
Rating for relay contact:	250VAC / 5A
Allowed environment temp.:	0°C .... 40°C (no condensing water)
Sensor specification:	2 x NTC 5kOhm @ 25°C $B_{25/85}$ = 3500
Limit range for Sensor 1 min.	0...100°C
Limit range for t1-t2	0...20°C

Disposal after end of using life for this product

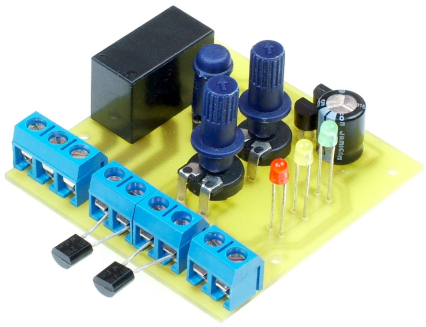
Electronic devices of all kinds must not be disposed thru regular household waste disposal but should be turned in to a collection point for proper recycling. Please check with your local requirements.

Limited Warranty

This product was designed and manufactured with great care and comes with a warranty against material or manufacturing defects at time of purchase. This warranty is valid for 24 months starting with the day of purchase and can be claimed with original sales receipt. The warraty of TowiTek is limited to cost free repairing or replacement of the defective unit. Expenses and risk of transportation; compensation for installation and de-installation and all other expenses which may be related to the repair or exchange of this product are not refunded by TowiTek. The liability for consequential damages resulting from the use of this product – no matter of which exact kind – is generally ruled out.

TowiTek differential temperature control module

Nr. 19 12 53



User Guide

www.conrad.com

Thank you for purchasing this product of TowiTek! This user guide contains many important instructions on safe and proper use of this product. The purpose of this user guide is to make sure you always will get best performance andan reliable operation of your new product.

PLEASE FULLY READ THIS USER GUIDE!

The handling of products operating with electric current requires you to follow the rules from VDE such as VDE 0100, VDE0550/0551, VDE 0700, VDE 0711 and VDE 0860 or other local rules in your country.

- TowiTek modules are not designed and authorized for use in life support or life saving applications! Do not use the product for applications in which a temporary or permanent failure or malfunction could cause damage to persons or propery.
- If the module is used to switch currents greater 24V it is necessary to have the installation done with no voltage applied and performed by a trained professional authorized for such work. The module may only be used in such application if it was installed in a safe to touch enclosure.
- The module must only be used in dry and clean environment. The use near water, heavy dirt and/or high humidity is dangerous and not permitted.
- The product must not be used in conjunction with any type of flammable liquid or gas or other environment with risk of spark triggered explosions.
- Never exceed the limits or ratings listed in the 'Technical Data' section at the end of this user guide.
- If the module is used in schools or educational facilities or similar institutions the operation must be supervised by trained and authorized staff.
- The product itself and all parts thereof (including packing material) are not suitable toys for childern! (choking hazard, risk of electric shock, ...)

Intended of use for this product

The TowiTek differential temperature control module can be used for many regulating applications for heating systems. Typical use for this product is controlling circulation pump in various kinds of heating systems, including solar heating systems.

Features of the differential temperature control module

- Connection of two temperature sensors (included with the product)
- Two conditional rules for activating the output:
  Condition #1: minimum temperature on Sensor 1 must be above specified Limit (0...100°C)
  Condition #2: temperature on Sensor 1 must exceed temperature on Sensor 2 by at least specified Limit (0..20°C)
- Manual mode for controlling the output without need to change limits
- Easy adjustment of limits using rotary knobs
- Digital signal processing with microcontroller using analog/digital conversion for measuring signal inputs.

Operational instructions

Manual control of the relay output

button 'Manual Override'	LED activity	function
press about 0.5 sec.	yellow on / red on	override ON
again press about 0.5 sec.	yellow on / red off	override OFF
again press about 0.5 sec.	yellow off or blinking	normal mode

The manual override mode can be recognized by the yellow LED being permanently lit and the red LED shoing the state of the output.

Normal operation mode

In normal operation mode two conditions are continuosly checked:

– does the temperature on sensor 1 exceed the preset limit

– does the difference of the temperatures on both sensors exceed the preset limit (sensor 1 needs to be warmer than sensor 2)

If both conditions are met, the relay output is activated

Temperature limit on Sensor 1

The upper dial is used to set a temperature limit from 0...100°C for minimum temperature on Sensor 1. In normal mode it can be seen thru LED status if the condition is met or not

mimimum temperature on Sensor 1	**yellow LED activity**
temperature does not exceed limit	led blinking
temperature does exceed limit	led off

Temperature difference between Sensor 1 / 2

The lower dial is used to set a minimum limit for the temperature difference between both sensors in 0...20° range. In normal operation mode the LED status will show if the condition is met or not

temperature difference T1-T2	**red LED activity**
difference smaller than preset limit	red LED blinking
difference is greater than preset limit	red LED off, yellow blinking OR red LED on, yellow LED off, relay active

For use of this module with the modular casing a special knob to fit on the switch plunger is included with this product.

The modular casing grants the touch safe enclosure which is required if the module is to be used with mains current.

The modular casing comes with mounting clips to attach the case on standardized DIN-mounting rails with 30 mm width.

The connection to the sensors can be extended as needed but the maximum cable length should not exceed 15 meters for reliable operation.

The input terminals for the temperature sensors must not be connected with any other voltage source!

Deactivation of condition checking

For both conditions to be checked it is possible to deactivate the limit checking by setting the dial all the way to the left (0°C position).

In this case the limit is not set ot 0°C but this condition considered true without checking the sensor readings

If both knobs are set to the left limit, both conditions are considered true without reading the sensors and the relay will be activated

Assembly and mounting instructions

Assembly of the rotary knobs on the module

To to install the rotary knobs on the module with correct orientation of the arrows it is recommended to first turn both potentiometers all the way to the left firstly, removing the knobs again and re-insert with arrow pointing at 'zero' position as shown on the printed front panel.

The differential temperature control module is designed to fit perfectly into the TowiTek modular casing available with order number 19 12 92.
A printed and cut to shape front panel to fit on the case is supplied with this product.

Picture with optional modular case order code 19 12 92

EU-Declaration of conformity

The company

TowiTek GmbH
Helenenstr. 21a
81825 München

declairs in solely own responsibility that the product

Differential temperatur control module 19 12 53

complies to the standards

EN 55022 (EMV emission)
EN 61000-6-1 (EMV tolerance)

The above named company keeps records with confirm the compliance to the standards

Tobias Wieler Munich, 11th of May 2007