ECM-UTM4D

Universal Thermostat Module

Quick Reference Guide (version 1.50)

OVERVIEW

The Highcross ECM-UTM4D thermostat, due to ability to work with different types of analog sensors, can be used in many applications. It has 3 power relays and 4 analog inputs, 3 of which have their own thermostats. Also the device has 3 pairs of discrete inputs to control the output channels manually.

All relay outputs are normally open and are disconnected when the power is off.

Although the device is applicable as a standalone thermostat, it delivers greatly enhanced functionality as part of a complete automation system. Also can be used as a universal 4-channel measurement module.

The control, data exchange and configuration are all handled via TCP/IP protocol.

The module is designed to be installed on a 35 mm DIN rail.

SPECIFICATIONS

Number of thermostats	3	Consumption current	250 mA at +12 VDC
Number of relays	3	Operating temperature	-20°C … +45°C (-5°F … +115°F)
Relay rating	8 A, 250 VAC	Operating humidity	5 … 80% RH non-condensing
Number of analog inputs for temperature sensors	4	Enclosure	6M DIN rail box, UL94-V0 flame retardant PC
Analog input types	Resistance input 0-10 V, 1-10 V, 4-20 mA, 0-20 mA	Dimensions	90 x 106 x 58 mm (3.54" x 4.17" x 2.28")
Supported temperature sensors types	NTC 1.8 kOhm, NTC 10 kOhm, NTC 12 kOhm, NTC 15 kOhm, NTC 20 kOhm	Weight	235 g (0.518 lbs)
Number of digital inputs	6 (3 pairs)	Supported data exchange protocols	NetString ModBus TCP ModBus RTU over TCP
Supply voltage (power terminals and PoE)	+12 … 48 VDC		

DEVICE CONTROL COMPONENTS

FACE PANEL COMPONENTS	
outputs 1…3	Indicators of relay state and automatic mode
inputs 1…3	Indicators of digital inputs
status	Indicates power status and connection to controllers
link/act	Ethernet link and activity indicator
reset	Multifunctional button (reboot, reset, bootloader)
TERMINAL PANELS	
relays 1…3	Relay outputs
sensors 1…4	Terminals to connect sensors
LAN	Ethernet network and PoE power connector
PWR	Power supply terminals (+12…48 VDC)
inputs 1…3	Digital inputs for direct control of relays
GND	Ground contact of digital inputs Electrically connected to **PWR "–"** contact
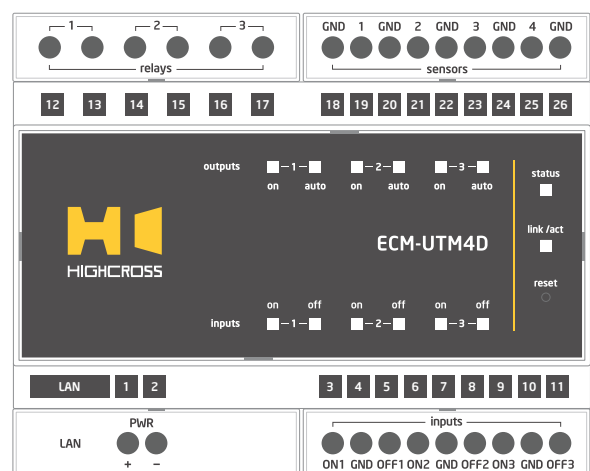
LED "status" indicates the power connection and connection status with controllers	
Off	No power connected
Blink (1 Hz)	No connection with external controllers
Fast blink (4 Hz)	The device is in bootloader mode
On	Connected to external controllers

LED "link" indicates Ethernet network link and activity	
Off	No connection to Ethernet network
Blink	Connected to Ethernet network Receiving Ethernet data packets
On	Connected to Ethernet network No network activity

LEDs "outputs 1…3 on" indicate status of relay outputs	
Off	Relay if open
On	Relay is closed

LEDs "outputs 1…3 auto" indicate automatic mode of built-in thermostat	
Off	The automatic mode is off
On	The output is controlled by thermostat

Multifunctional button "reset"

To reboot the device push the button for 1 second

To reset the device to factory defaults push and hold the button for 5 seconds.

IP–address will be set to 10.0.1.101, subnet mask - to 255.255.255.0. All other settings will be set to default values

For firmware update, power off the device, push and hold the button and power the device on. Release the button after the LED "**status**" will start to blink fast.

The network settings of the device started in bootloader mode are: IP–address – **10.0.1.101**, subnet mask – **255.255.255.0**

The **PWR "+"** and **"–"** terminals are designed to power the device +12…48 VDC if connected Ethernet switch has no PoE support.

The **relays 1…3** (pairs of K1A-K1B, …, K3A-K3B) are normally-open. They can be controlled either by built-in thermostats or by external controllers.

The terminals "**sensors 1…4**" are made to connect analog sensors. While **Sensors 1…3** can be used by built-in thermostats and external controllers, the additional **Sensor 4** can be used by external controllers only (e.g. for outside temperature).

Terminals of digital **inputs 1A … 3B** are made for foreground external control of relay outputs. E.g. window contact to switch off heating if windows are opened.

SETUP AND CONFIGURATION

The configuration of the module is handled via web-interface.

To start working with the device:

- Connect the device to the Ethernet switch. If the switch has no PoE support, connect the power +12…48 VDC to the **PWR** terminal

- Ensure that your computer can connect to the network address 10.0.1.101 or set the TCP/IP settings of active network adaptor to: IP address – **10.0.1.100**, subnet mask – **255.255.255.0**

- Enter **10.0.1.101** in address bar of your web-browser

- Enter: login – **root**, password – **root**

- Configure the device settings

The web-interface contains the next web-pages:

Home	Displays the hardware revision and the firmware version
Settings	Network settings, type of data exchange protocol, analog input settings, thermostat settings, external control settings
Control	Current temperatures and values of analog inputs, thermostat setpoints, state of digital inputs. Interface to adjust thermostat setpoints and performance modes
Status	Displays current TCP/IP connections and device uptime info

For further information refer to www.highcross.com