ECM-UTM4D

Universal Thermostat Module

Quick Reference Guide (revision 1.70 for H/W Rev.B)

OVERVIEW

The Highcross ECM-UTM4D is an electronic universal 3-channel thermostat module designed to control of heating or cooling systems.

The module has three built-in thermostats, three power relays, four analog inputs for temperature sensors, three pairs of digital inputs for priority dry-contact control from window-contact or etc.

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

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

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

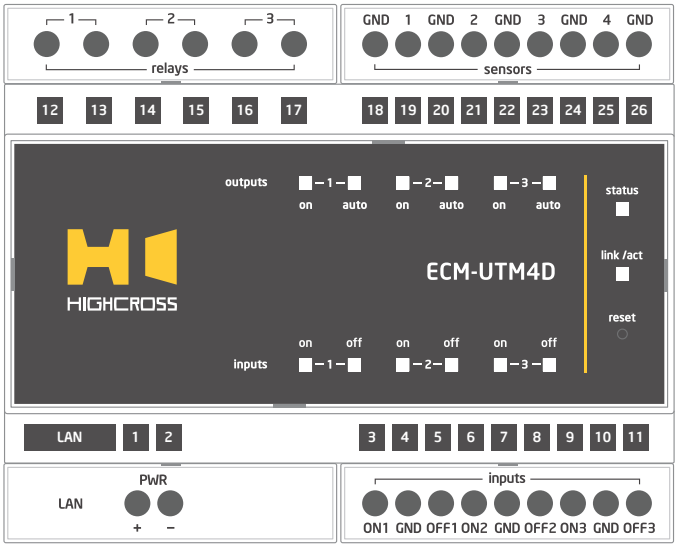
SPECIFICATIONS

Number of thermostats	3
Number of relays	3
Maximum switching rating	8 A @ 250 VAC
Number of analog inputs for temperature sensors	4
Analog input types	Resistance input 0-10 V, 1-10 V, 4-20 mA, 0-20 mA
Supported temperature sensors types	NTC 1.8 kOhm, NTC 10 kOhm, NTC 12 kOhm, NTC 15 kOhm, NTC 20 kOhm
Number of digital inputs of direct relay control	3 pairs
Supply voltage range	12-24 VDC via power terminals 48 VDC via PoE port

Consumption current	250 mA @ 12 VDC
Operating temperature	-20° C to 45° C -5° F to 115° F
Operating humidity	5 to 80% RH non-condensing
Enclosure	6M DIN rail box, UL94-V0 flame retardant PC
Dimensions (HWD)	90 mm x 106 mm x 58 mm 3.54" x 4.17" x 2.28"
Weight	235 g 0.52 lbs
Supported data exchange protocols	NetString ModBus TCP ModBus RTU over TCP

DEVICE CONTROL COMPONENTS

FACE PANEL COMPONENTS	
outputs 1-3	Indicators of relay state and auto mode
inputs 1-3	Indicators of digital inputs of direct relay control
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	Terminals of thermostat's relay contacts
sensors 1-4	Terminals of analog inputs
LAN	Ethernet network and PoE power connector
PWR	Power supply terminals (12-24 VDC)
inputs ON1-OFF3	Terminals of digital inputs of direct relay control
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**" display status of relay outputs	
Off	Relay is open
On	Relay is close

LEDs "**outputs 1-3 auto**" display that built-in thermostat control of relay output	
Off	Output is not controlled by internal setpoint
On	Output is controlled by built-in 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 12–24 VDC if connected Ethernet switch has no PoE support.

Terminals of **relays 1-3** (pairs of K1A-K1B to K3A-K3B) are contacts of normally-open relays. Relays can be controlled either by built-in thermostats or by external controllers.

Terminals of **sensors 1-4** are designed to connect supported analog sensors. **Sensors 1-3** can be used by built-in thermostats 1-3 as well as by external controllers. **Sensor 4** can be used by external controllers only.

Terminals of digital inputs **OFF1, ON1** to **OFF3, ON3** are designed to priority dry-contact external control of relay outputs. For example, window-contact to force off heating while window is 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 12-24 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	Displays current temperatures and measured values of analog inputs, thermostat's setpoints, state of priority inputs. Interface for modifying of thermostat's setpoint and modes
Status	Displays current TCP/IP connections and device uptime info