ECM-DTS16D

Digital Temperature Sensor Module

Quick Reference Guide (revision 1.40 for H/W Rev.B)

OVERVIEW

The digital temperature sensor module ECM-DTS16D is designed to receive temperature data from digital temperature sensors.

1-Wire Bus is used for sensors connection. The device supports "parasite power" of the sensors as well as powering from V$_{DD}$ terminals.

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

The device can be used with up to 8 digital sensors with single-ended connection when they are connected directly to channel.

Up to 16 temperature sensors can be connected when they are combined to a bus which is connected to channel #1.

The detection of sensor's addresses and assigning them to channels is performed via web-interface.

SPECIFICATIONS

Sensors connection topology	Single-ended connection, Bus connection
Number of sensors	8 – Single-ended connection 16 – Bus connection
Supported digital temperature sensors	DS18B20, DS18B20U, DS-18B20Z and analogs
Temperature measuring range	-55° C to 125° C -67° F to 257° F
Temperature measuring resolution	0.1° C / 0.2° F
Absolute temperature measuring accuracy	±0.5°C over the range of -10°C to +85°C
Polling interval	1¼ seconds – Single-ended con. 2 seconds – Bus connection
Supply voltage range	12–24 VDC via power terminals 48 VDC via PoE port

Consumption current	120 mA @ 12 VDC
Operating temperature	-20° C to 45° C -5° F to 115° F
Operating humidity	5 to 80% RH non-condensing
Dimensions (HWD)	90 mm x 88 mm x 58 mm 3.54" x 3.46" x 2.28"
Weight	175 g 0.38 lbs
Supported data exchange protocols	NetString ModBus TCP ModBus RTU over TCP

DEVICE CONTROL COMPONENTS

FACE PANEL COMPONENTS	
1-16	Indicators of temperature sensor state
status	Indicates power status and connection to controllers
link/act	Ethernet link and activity indicator
reset	Multifunctional button (reboot, reset, bootloader)
TERMINAL PANELS	
LAN	Ethernet network and PoE power connector
1-8	Channels terminals for sensors connection: **DQ** – The sensor data input/output signal **V$_{DD}$** – The sensor power contact (not used in 1-Wire bus connection) **GND** – Ground contact of sensor, electrically connected to **PWR "-"** contact
PWR	Power supply terminals (12–24 VDC)
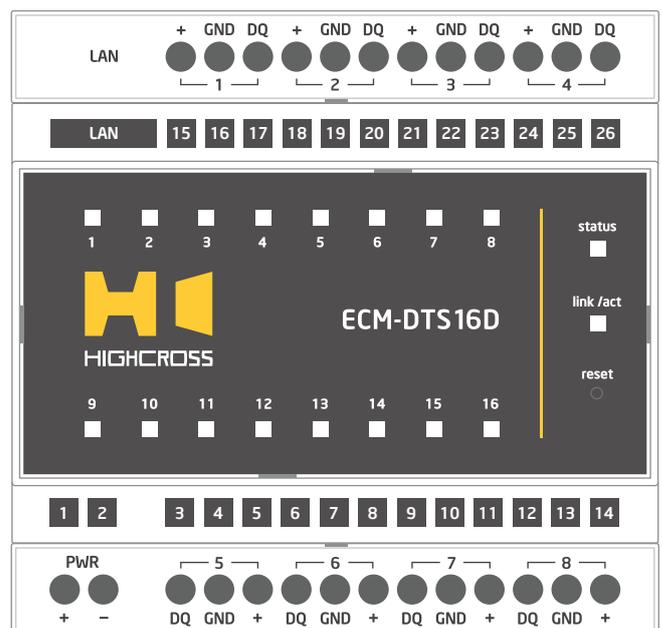
LED "status" indicates the power connection and connection status with controllers	
Off	No power connected
Blink (1 Hz)	No connection with external controllers
Fast blink (4 Hz)	The device is in bootloader mode
On	Connected to external controllers

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 "1–16" display status of temperature sensors	
Off	Channel is not configured
Blink	No connection with the sensor
On	Connected to the sensor

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 **DQ, GND** and **V$_{DD}$** (optional) of channels 1–8 are designed to connect digital temperature sensors.

In **single-ended connection** mode, only one sensor can be connected to terminals **DQ, GND** and **V$_{DD}$** off each channel.

In **bus connection** mode, terminals **DQ, GND** and **V$_{DD}$** (optional) of channel #1 are used to connect of all sensors.

For sensors connection diagrams refer to the Instruction manual.

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, sensors connection mode
Sensors	Displays sensor's temperatures and errors statistics. Configuration of channels (addresses of sensors in bus connection mode, and enabling/disabling of channels in single-ended connection mode). Detection of addresses of connected sensors
Status	Displays current TCP/IP connections and device uptime info

For further information refer to www.highcross.pro