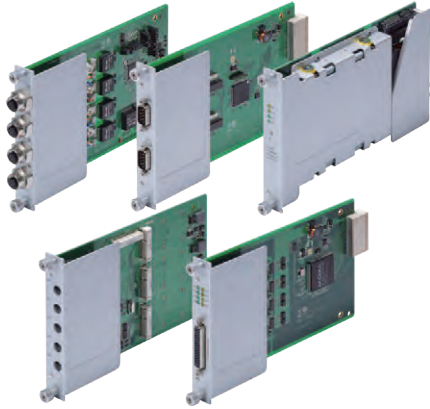


TC-6000 Series Expansion Modules

Peripheral modules for the TC-6000 series



- > TC-SATA-T: 2.5-inch mass storage module with temperature management
- > TC-PoE04-M12: 4-port PoE Gigabit Ethernet switch module with M12 connector
- > TC-DK10-T/TC-DK20-T: 4-socket mini PCIe card carrier module
- > TC-SP04-DB44-T: 4-port software-selectable DB44-F RS-232/422/485 serial module
- > TC-CP02-DB-T: 2-port optically isolated CAN module
- > TC-SW04-M12-8P-T: 2-port Gigabit Ethernet switch port module with M12 connector
- > TC-SW04-M12-4P-T: 2-port Megabit Ethernet switch port module with M12 connector



Introduction

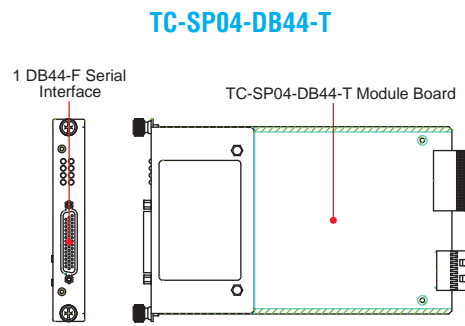
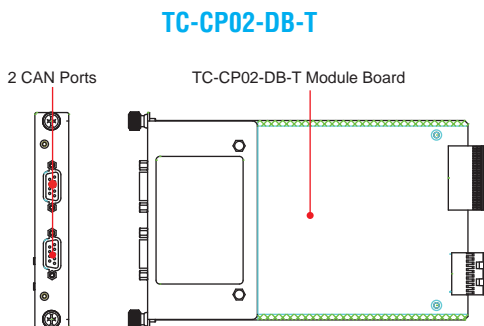
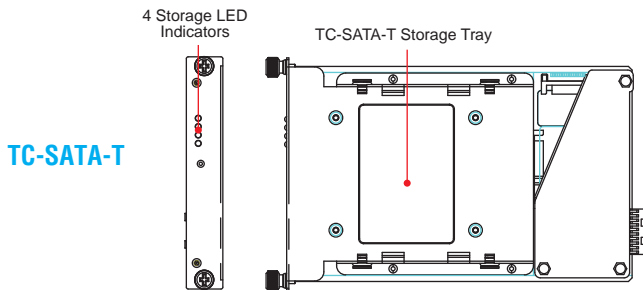
TC-6000 series expansion modules provide expansion modules for adding peripheral interfaces to the TC-6000 series line of railway computers.

These modules include a 2.5 inch mass storage module with customizable temperature management features; four-port (with PoE) and four-port (without PoE) Gigabit or Megabit Ethernet switch modules, both with M12 connectors; a mini PCIe card carrier module with four sockets; a serial module supporting four software-selectable RS-232/422/485 interfaces over a single DB44-F connector (cable

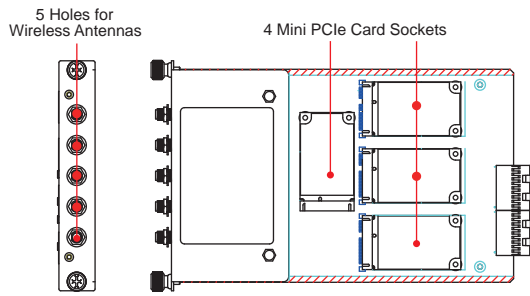
adapter); and an optically isolated CAN module with two ports. These modules let system integrators and administrators easily add additional storage capacity, Ethernet ports and/or bandwidth, as well as serial, PCIe, and CAN interfaces to the TC-6000 series of train computers.

All of the TC-6000 modules are compliant with the essential sections of the EN 50155 Class TX standard, maintaining the TC-6000 series goal of offering a highly dependable computing platform suitable for a wide variety of on-board railway applications.

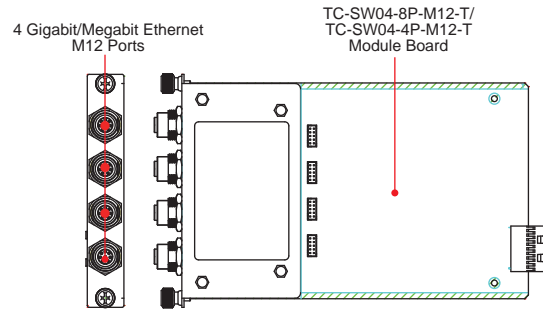
Appearance



TC-DK10-T/TC-DK20-T



TC-SW04-M12-8P-T/TC-SW04-M12-4P-T



TC-SATA-T Storage Module

SATA Interface

Description: Hot swappable, with 2 connectors for 2.5 inch drives, built-in vibration protection, onboard accelerometer, and temperature sensor

LEDs: 4 total: 1 for drive activity, 1 for heater activity, and 2 user-configurable

Physical Characteristics

Weight: 200 g

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Environmental Limits

Operating Temperature: Wide Temp. Models: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Note: The TC-SATA-T storage module can be inserted into slot 1, slot 2, or slot 3. However, slot 3 does not feature the intelligent heating solution.

TC-PoE04-M12 Switch Module (Available on Request)

Ethernet Interface

Switch Ports: 4 Ethernet M12 ports: auto-sensing 10/100/1000 Mbps, PoE

Standards: IEEE 802.3af/at for Power-over-Ethernet

PSE: Power Source Equipment

Power Consumption: 15.4 W per port (up to 4 ports, needs 150 W power module)

Protection: 1.5 kV magnetic isolation protection

LEDs: 2 on each port, 1 for 100M links, 1 for 1000M links

Physical Characteristics

Weight: 220 g

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Environmental Limits

Operating Temperature:

- Standard models: -25 to 55°C (-13 to 131°F) (EN 50155 Class T1)

- Wide temp. models: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

TC-DK10-T/TC-DK20-T mini PCIe Module (Available on Request)

Mini PCIe Card

Interface: 4 sockets, total

- Socket 1 on both TC-DK10-T and TC-DK20-T: USB 2.0 / PCIe V1.0

- Sockets 2, 3, and 4 on the TC-DK10-T: USB 2.0

- Sockets 2, 3, and 4 on the TC-DK20-T: USB 2.0 / PCIe V1.0

SIM Card Socket: Reserved for cellular applications

Physical Characteristics

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Weight: 125 g

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Model	TC-DK10-T				TC-DK20-T			
	Socket 1	Socket 2	Socket 3	Socket 4	Socket 1	Socket 2	Socket 3	Socket 4
Interface								
PCIe V1.0 (one lane)	✓	-	-	-	✓	✓	✓	✓
USB .20	✓	✓	✓	✓	✓	✓	✓	✓

TC-SP04-DB44-T Serial Module (Available on Request)

Serial Port Interface

Serial Standards:

RS-232/422/485, software-selectable

Connector Type:

1 DB44 connector serving all 4 interfaces; special cable required

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

Baudrate: 50 bps to 921.6 Kbps (non-standard baudrates supported; see user's manual for details)

Physical Characteristics

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Weight: 180 g

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

TC-CP02-DB-T CAN Module (Available on Request)

CAN Interface

Interface:

2 optically isolated CAN 2.0 A/B ports

Signal: CAN-H, CAN-L

Isolation:

2 kV

Speed: 1 Mbps

Connector Type: DB9 male

Physical Characteristics

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Weight: 180 g

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

TC-SW04-M12-8P-T/TC-SW04-M12-4P-T Switch Module (Available on Request)

Ethernet Interface

Standard:

4 Ethernet M12 switch ports: auto-sensing 10/100/1000 Mbps

Protection: 1.5 kV magnetic isolation protection

Connector Type: 8-pin M12 A-coded / 4-pin M12 D-coded

Physical Characteristics

Dimensions: 186 x 118 x 20 mm (7.32 x 4.65 x 0.79 in)

Weight: 180 g

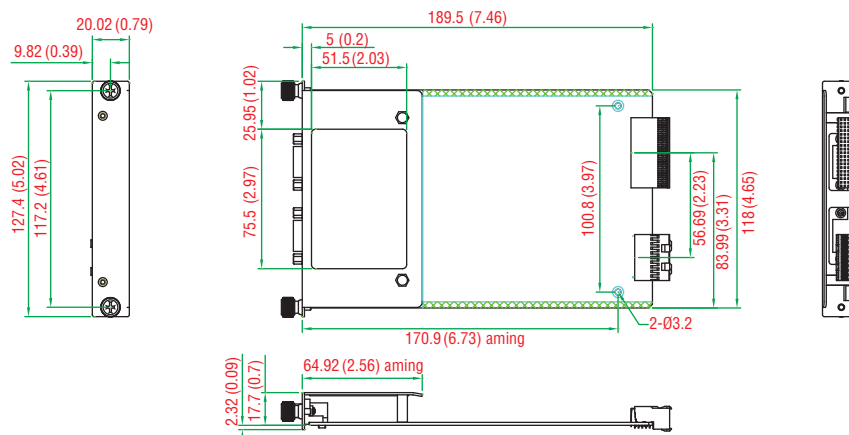
Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F) (EN 50155 Class TX)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Dimensions



Ordering Information

Available Models

TC-SATA-T: 2-connector SATA bus for 2.5-inch mass storage drives, with temperature and vibration protections

TC-PoE04-M12: 4-port PoE Gigabit Ethernet switch with M12 connector

TC-DK10-T: 4-socket mini PCIe bus

TC-DK20-T: 4-socket mini PCIe bus

TC-SP04-DB44-T: 4 RS-232/422/485 serial interfaces over a single DB44 connector; cable sold separately

TC-CP02-DB-T: 2 optically isolated CAN interfaces

TC-SW04-M12-8P-T: 4-port Gigabit Ethernet switch with M12 connectors

TC-SW04-M12-4P-T: 4-port Megabit Ethernet switch with M12 connectors

Package Checklist

- TC-6000 series expansion module