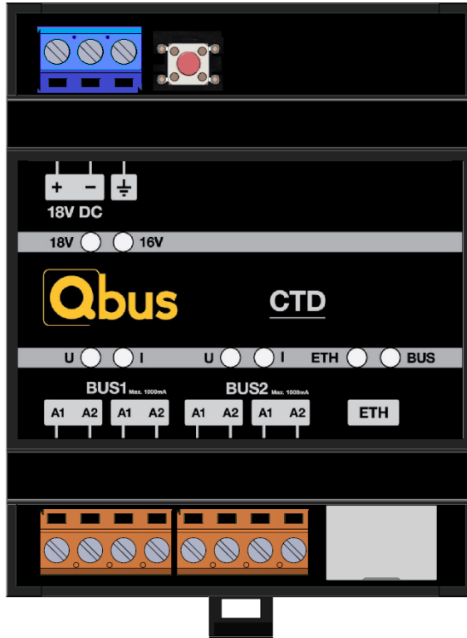


# Controller CTD10/CTD40/CTDmax



1 CTD Controller

## 1. Product description

The Qbus Controller works well as an addition to a Qbus Stand-Alone (SA) system, but is equally suited to installations with bus cables only. This controller is compatible with all previous generations of Qbus modules.

A single controller generally suffices for homes and SME applications. For more extensive projects, multiple controllers can be linked and visualised using a network. For installations that require linking over the Internet, one way to do this is through actions in Qbus Cloud or UbieCloud. Local links between controllers can be achieved by adding Ubiebox or UbiePRO to a local network.

EQOmmmand visualisation software for Windows enables the visualisation and controlling of multiple installations over a local network or the Internet. This requires the CTD to be used for the activation.

The CTD also comes equipped with EQOweb, a limited integrated control table. EQOweb is turned off by default, but can be activated using System Manager III.

EQOweb can subsequently be reached at the following mDNS address: [http://qbus\\_controller-020050.local](http://qbus_controller-020050.local) (replace 020050 with CTD number), or using the CTD's local IP address.

Configuring an installation with a CTD is accomplished using free System Manager III software and can be done over a local network, over the Internet with correctly configured network devices or using a Ubiebox with Installer Dashboard.

The controller supplies all the connected modules with the necessary power and data by means of a 2-wire bus. The CTD's firmware updates automatically. This does not affect the operation of the bus. Use System Manager III to manage this functionality.

When connecting modules, the polarity is not relevant. The term "Qbus module" describes any Qbus bus node, or rather, any Qbus part with a BUS connection. This means smart switches and

sensors are also referred to as Qbus modules.

**BEWARE!** The CTD's two buses have their own internal power supplies and must not be connected to one another. Similarly, do not connect buses from different CTDs to one another. Using System Manager III, each bus can be turned on or off individually to track down errors or for maintenance work.

Depending on the version, a CTD can be used to connect a certain number of modules. To allow for the use of a CTD in smaller installations, some versions work with fewer Qbus modules.

The following commercially available versions exist:

- CTDmax, suitable for  $\pm 75$  Qbus modules per bus
- CTD40, suitable for a maximum of 40 Qbus modules (expandable!)
- CTD10, suitable for a maximum of 10 Qbus modules (expandable!)

The CTD10 and CTD40 can be expanded using expansion cards. With every additional expansion card, it becomes possible to connect 15 more modules. Furthermore, once you add four expansion cards to the CTD10, or two expansion cards to the CTD40, these controllers are fully equivalent to a CTDmax. Thanks to this system, the CTD can expand along with the installation.

Several variables determine what a CTD will be capable of handling. This includes the number of allowed modules (< CTDmax) and these modules' total power draw, as well as the number of addresses the controller has available. For the CTDmax, how much power it can supply is the most important restriction. As the CTDmax has 1000 mA available for each bus, it is possible to connect 75 Qbus modules per bus on average.

A summary of the peak power consumption for various Qbus modules is presented below. Always check the technical data sheets for the relevant products. Modules' properties may change with time.

Peak power consumption per module:

- BTicino, Niko and Lithoss SWCs: 10 mA
- Sumum and Tastu SWCs: 20 mA
- REL08, REL04SA, DIM0xSA: 10 mA
- CVD04SA: 20 mA without external power supply, 5 mA with external power supply
- QDI01, QDM01, SER485/xxx: 30 mA
- ViZiR, Tastu Display: 30 mA
- Decentralised input modules on bus: 10 mA
- CO2 detector: 50 mA
- For Qbus modules manufactured between 1999 and 2009, peak power is 15 mA on average
- Touchscreen TSC5.8: 150 mA without external power supply  
10 mA with external power supply

In addition to the restrictions regarding the power and number of modules supplied via the bus, a CTD cannot control more than 388 sub-addresses. Generally speaking, Qbus allows for sub-addresses to be assigned to both input and output modules. The System Manager III software refers to sub-addresses as "Outputs". Depending on the output mode or input module, one or more sub-addresses will be used. For example:

- 1 relay-controlled light = 1 sub-address
- 1 dimmer-controlled light = 2 sub-addresses
- 1 roller blind (up & down) = 2 sub-addresses
- 1 thermostat = 4 sub-addresses

Additionally, the CTD can process 92 scenes and 100 timers. Each timer can be used for up to 15 outputs within a weekly schedule. The controller is provided with integrated binary On/Off

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logic, analogue logical functions (time, x, /, +, -, <, >, =), online controls, simulations, etc. by default.

The CTD is equipped with an Ethernet port, allowing the controller to be connected directly to a computer or network. With the addition of a Ubiebox, it becomes possible to add more features, for Google Assist, Alexa, Philips Hue, Sonos or Bose SoundTouch, for example. Refer to Ubiebox for more information. There is also a binding available on OpenHAB. Qbus's support for this binding is limited to its free provision on the OpenHAB platform. Qbus accepts no liability whatsoever for any negative consequences resulting from the use of this binding.

The CTD is supplied with a 32 GB microSD card. This SD card is the Qbus installation's most important storage device. It is used to store system configurations and record all system events. The SD card can be used to store up to 10 different system configurations. Writing or reading data to or from the SD card may only be done by the CTD. Data on the SD card cannot be read by any software other than Qbus's own.

Using System Manager III, it is possible to read zipped program files and all the events stored on the SD card. The EQOmmmand software, Qbus Cloud and UbieCloud also use this data to synchronise all visualisations and to create charts.

## 2. Safety rules

Read the entire manual before installing and activating the module.

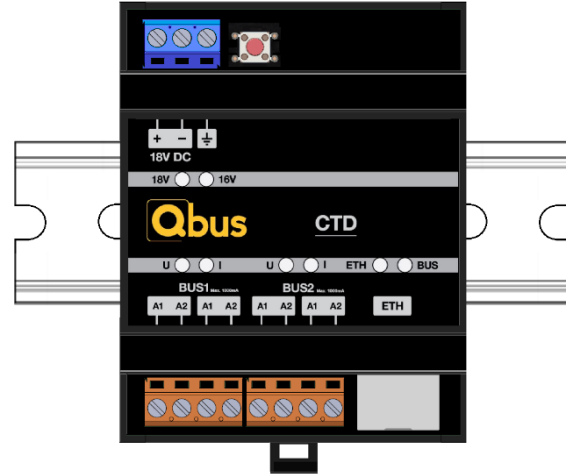
### NOTE

- The CTD must be installed, started and maintained by a qualified electrician in accordance with applicable national legislation.
- This module is only suitable for EN50022 DIN rail installations. The module must be installed in a fireproof, closed distribution cabinet with ventilation grilles.
- The power must be switched off before working on the CTD.
- Never connect external voltages (e.g. 230 VAC) to the CTD or Qbus bus directly! This will cause irreparable damage to the CTD or connected Qbus modules.
- The CTD may not be opened. The warranty will expire once the controller is opened!

## 3. Installation and cabling

**Placement:** Click the controller and power supply onto a DIN EN50022 DIN rail.

Install the CTD in a dry, lightly heated space, making sure to keep sufficient distance between the controller and sources of interference such as contactors, adapters and power supplies. Ensure adequate ventilation in the distribution cabinet.



### 2 CTD installation

The necessary power must be supplied by a stabilised 18 VDC/3 A power supply (e.g. CTD PWS/DIN included with CTD as standard).

In the event of a power failure, the integrated non-volatile storage retains all data for at least ten years.

**Power supply:** A two-pole automatic fuse with a maximum of 16 A must be connected to the CTD PWS/DIN on the side with the 230 VAC power supply module. However, automatic protection from 2 A is sufficient. Maintain at least 5 mm of free space all around the CTD PWS/DIN to ensure sufficient ventilation.

Cross-section of conductors: minimum of 1.5 mm<sup>2</sup> for 16 A. Remove approximately 6 mm of insulation from the conductors and screw them into the L-N connectors.

Now connect the CTD PWS/DIN's 18 V side to the CTD's power terminals. Remove approximately 6 mm of insulation from the conductors and screw them into the (+) and (-) terminals for the 18 VDC power supply (CTD PWS/DIN).

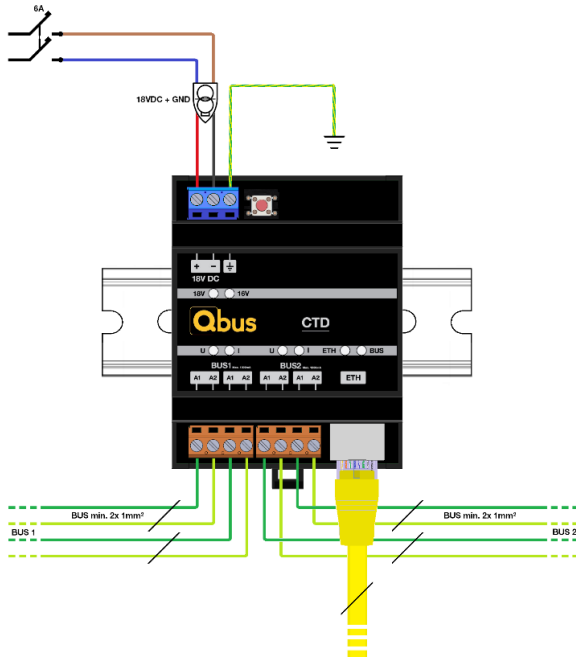
**Pay attention to the polarity!** If connected incorrectly, the CTD will not work. Connect the CTD PWS/DIN's (+) terminal to the CTD's (+) terminal and the CTD PWS/DIN's (-) terminal to the CTD's (-) terminal.

Remove approximately 7 mm of insulation from the conductors and screw them into the CTD's (+) and (-) terminals.

**Connect the CTD's earthing terminal to the general earthing system!** If the installation isn't earthed, it is not compliant!  
**NOTE: UNPLUG THE POWER SUPPLY BEFORE WORKING ON COMPONENTS.**

**BUS connections:** The CTD has two independent buses. **Never** connect BUS1 and BUS2 to one another! Remove approximately 7 mm of insulation from the conductors and screw them into the CTD's BUS connectors. Both fixed and flexible wires of at least 1 mm<sup>2</sup> can be used. For flexible wire, add end sleeves and use the appropriate tools to crimp the sleeves to the wire ends. Each BUS connection has four screw terminals. Inside the controller, there are bridges across the A1 & A1 and A2 & A2 terminals for each bus. Do not connect BUS1 and BUS2 to one another!

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3 Connection diagram for CTD controller

**Qbus bus cabling:**  
 Any shielded cable with conductors of at least 2 x 1 mm<sup>2</sup> can be used as a bus cable. Use green shielded EIB cable for this, combining two conductors at a time to achieve a cross-section of at least 2 x 1 mm<sup>2</sup>. The shielding of the bus cable must be connected to the building's general earthing system at one end, and only at one end.

The cable between the CTD and a Qbus module may be 200 m long at most, depending on the topology selected. The following bus topologies are possible:

- Closed loop: up to 400 m. A cable departs from the CTD, with the loop's return cable connecting to the same BUS on the same CTD.
- It is possible to connect multiple closed loops to the same CTD bus terminals in parallel.
- A closed loop can also have branches, as long as branch cables do not exceed 30 m in length and the total length of cable from the CTD to the Qbus module is 200 m or less.
- Star: A cable departs from the CTD to the modules, with no return cable. When using this topology, the maximum distance between the CTD and a Qbus module is 100 m. The star cable's end point should always be the final Qbus module.

Before connecting the Qbus modules and controller, check the following points on the bus:

- Make sure the insulation resistance to the earth is high enough.
- Measure both sides of the closed loop to check for breaks.
- Before and after connecting the modules, check the following points for the bus:
- For a closed loop, check that the polarities of the departing and returning bus cables match.
- Whenever the controller is turned on, this triggers a three-second test procedure. Never turn the power supply on and off in rapid succession. Wait at least five seconds before turning it back off. Frequent, brief

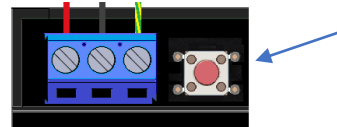
power interruptions may send the CTD into SAFE mode. To exit SAFE mode again, perform the configuration and requested update in System Manager III.

Only connect the CTD to a power supply if a constant supply is assured.

**Indicator LEDs on front of CTD:**Note: Indicator LEDs are for informational purposes only; all ranges below have a ±5% tolerance.

- 18 V indicator LED for power supply voltage: This turns GREEN if the input voltage is between 17.9 V and 18.2 V, ORANGE if the input voltage is >18.2 V and RED if the input voltage is <17.8 V.
- 16 V indicator LED for bus voltage: This turns GREEN if the bus voltage is between 15.9 V and 16.2 V (= OK), ORANGE if the bus voltage is >16.2 V and RED if the bus voltage is <15.8 V.
- U indicator LED for bus voltage: This turns GREEN if the bus voltage is between 12 V and 18 V, ORANGE if the bus voltage is >18 V and RED if the bus voltage is <12 V.
- U indicator LED for bus current: This turns GREEN if the bus current is <900 mA, ORANGE if the bus current is between 900 mA and 950 mA and RED if the bus current is >950 mA.
- ETH LED for Ethernet communication: This turns GREEN if data is being exchanged with the communication interface.
- BUS LED for bus communication: This turns GREEN if data is being sent to the bus and RED if data is being received from the bus.

The CTD has a reset button located next to the blue power terminal. This is only used to restart the network connection or reset IP settings. You will need to enter the new IP details for EQOmmmand afterwards, however.



4 CTD ETH reset

- **Short press (>1sec):** Reset communications. This resets all communication with EQOmmmand, Qbus Cloud, Ubie, OpenHAB and System Manager. As resetting doesn't effect the main processor, bus operation will continue uninterrupted and the LEDs on the front will function normally. **How can you tell if a reset occurred?** 3 seconds after pressing the button briefly, the LEDs for the Ethernet connection should go out momentarily and then light back up. 10 seconds later, the network processor should operate as usual once more.
- **Long press (>5sec):**Reset fixed DHCP settings. The CTD reverts to the standard DHCP settings. Do this in case of subnet changes or to switch from Telenet to Proximus. This will also cause the network processor to restart afterwards.

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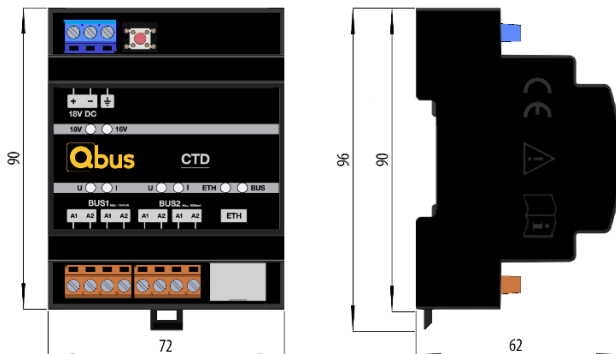
**NOTE!** If you've lost the password or log-in details required to access the CTD using System Manager III, contact Qbus Support during office hours.

## 4 Technical specifications

### General specifications CTD

- Power supply: 18 VDC/3 A SELV (Safety Extra-Low Voltage, with earthing)
- Ambient temperature:
- Operating temperature: 10°C to 50°C
- Storage temperature: -10°C to 60°C
- Maximum humidity: 93%, no condensation
- Max. mounting height: 2,000 metres.
- CE:
- Bus: 18 VDC Safety Extra-Low Voltage
- Non-toxic, in accordance with WEEE/RoHS
- Complies with EN 60730-1:2000-11 +A11 2002

### Dimensions CTD:



### 5 CTD dimensions

#### Physical specifications:

- Housing: plastic, self-extinguishing in accordance with UL94-V0
- Protection grade: IP20, EN60529
- Installation: rapid installation on DIN rail, width 4 modules
- Dimensions (h x w x l): 62 mm x 90 mm x 72 mm
- Weight: approximately 0.25 kg