USB to RS-485 Communications Converter

QD1010b

Contents

Introduction 3
Material List 3
Mounting 3
Connecting the QD1010b to a Network 3
RS-485 Network Wiring 4
Placing the QD1010b on a Network 4
Testing Communications 5
Troubleshooting 5

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Introduction

Congratulations on choosing the TCS QD1010b USB to RS-485 Converter! This manual includes all the information you will need to properly use your QD1010b.

The QD1010b is a compact USB to RS-485 communications converter which enables TCS controllers to communicate with a PC running TCS Insight software via the included USB-A to USB-B cable. The PC provides the power for the unit.

Use Insight to program your entire network connected to either the RJ12 jack, the RS-485 port, or both. The QD1010b allows you to connect up to 64 devices on one network. (For networks larger than 64 controllers, use additional QD1010b converters.)

NOTE: Instructions for the operation of TCS Insight software are beyond the scope of this manual.

If you have any questions regarding your QD1010b or the operation of TCS Insight software, contact TCS Technical Support at 800.288.9383, ext. 2. Hours of operation are Monday – Friday, 7:00 am –7:00 pm (CST).

Material List

- QD1010b USB to RS-485 Converter
- RJ12 three-foot long, six-conductor connector cord (phone cord)
- USB-A to USB-B six-foot cable
- Two 120Ω terminating resistors for RS-485 network
- Two termination jumpers

Mounting

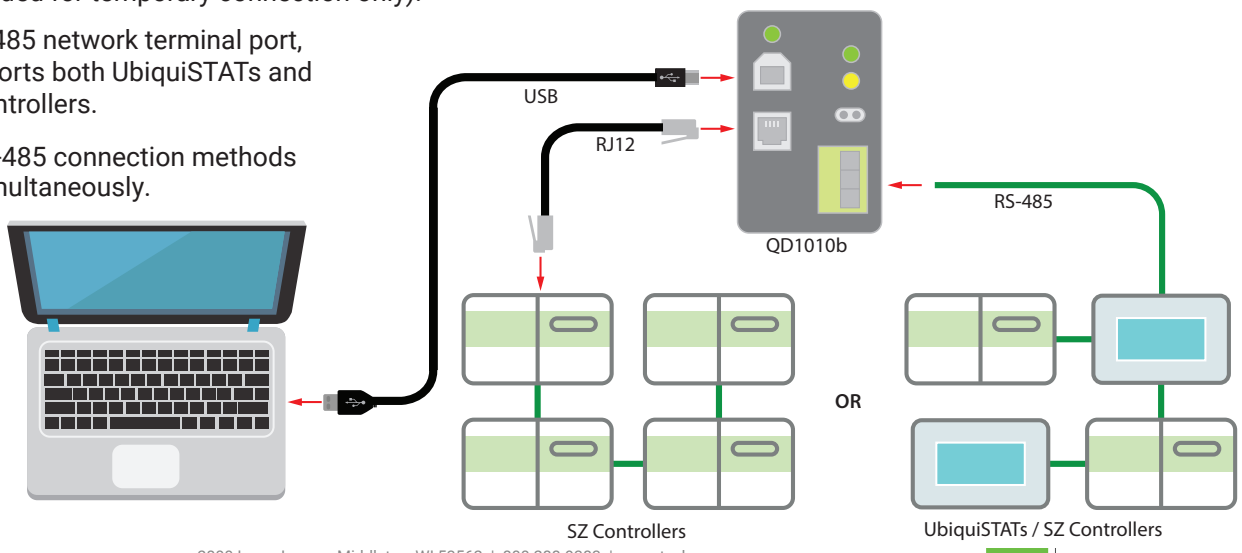
The QD1010b can be used as a temporary or permanent connection to an RS-485 network for programming purposes. If desired, it can be hung on a wall via the mounting screw holes. When selecting a location to permanently mount the QD1010b, be sure to allow space for cable connections. Locate the QD1010b away from excessive dust, heat sources, moisture or direct sunlight. The ideal environment is a server room. The temperature of the room should not exceed 77°F (25°C); proper ventilation is mandatory.

Connecting the QD1010b to a Network

Connect the QD1010b to a PC via the included USB-A to USB-B cable. Connect the QD1010b to a controller network via the following methods:

1. Via the RJ12 phone jack (cord included with the QD1010b). The cord plugs directly into SZ-style controllers (recommended for temporary connection only).
2. Via the RS-485 network terminal port, which supports both UbiquiSTATs and SZ-style controllers.

NOTE: Both RS-485 connection methods can be used simultaneously.



RS-485 Network Wiring

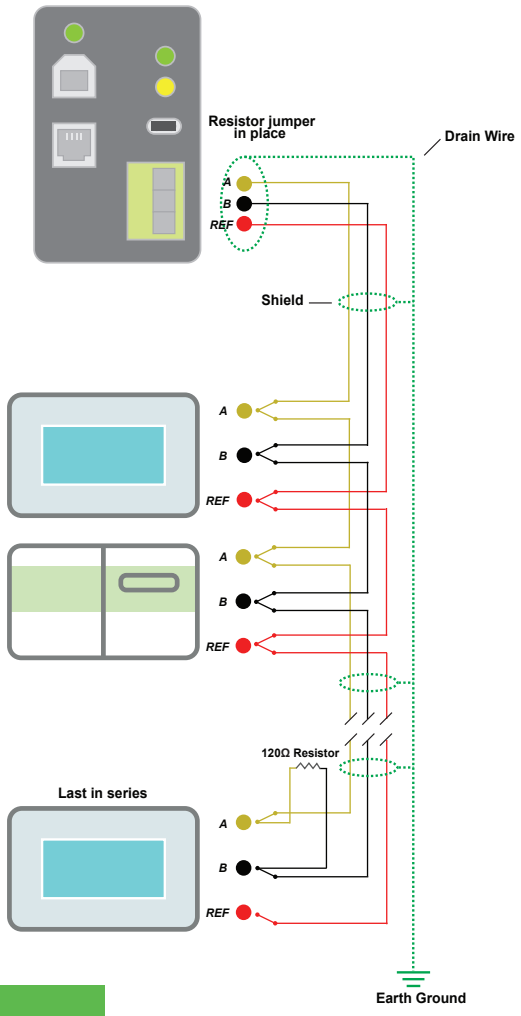
- Use 22 AWG, twisted shielded three-conductor cable for network wiring.
- Up to 64 controllers can be connected on one network (maximum 4000 ft. of wire). For larger networks, use additional QD1010bs.
- Network wiring should start at one controller and go to the next, until reaching the final controller. Use care to ensure all connections are identical (A wires to A wires, B wires to B wires, REF wires to REF wires).
- Each controller on the network must have a unique address, and operate at the same baud rate.
- Place one of the included 120Ω resistors across the A and B wires of the last controller in the network.
- All network drain-wire shielding should be twisted together and taped to prevent accidental grounding, as more than one ground path can cause communication failure.
- Connect one end of network drain-wire shielding to reliable earth ground.

NOTE: Do not use more than two terminating resistors on a network.

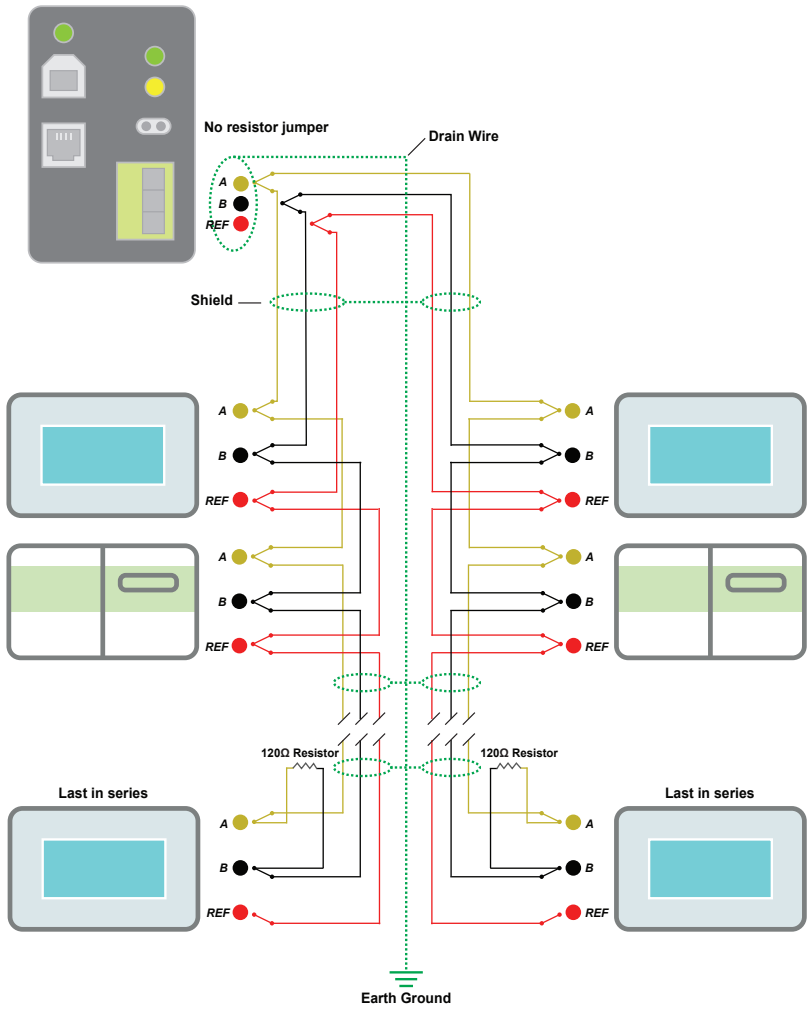
Placing the QD1010b in a Network

If you are placing the QD1010b at one end of a network, you can use its built-in 120Ω resistor by inserting one of the included termination jumpers across the termination points on the face of the unit. If you are placing the QD1010b in the middle of the network, or if you are using an external (also referred to as a "balancing") resistor, do **not** insert a termination jumper across the termination points on the face of the QD1010b.

QD1010b at one end of a network



QD1010b in the middle of a network



Testing Communications

After completing the network wiring and connecting a PC running TCS Insight software to the QD1010b, use the software to check to ensure all controllers are communicating. Both the RS-485 and USB indicator LEDs will alternate rapid flashes to confirm active communication.

Using Insight software, verify all controllers on the network are showing up. If a controller is not showing up, verify that the RS-485 wiring connections are correct (A-wires to A-wires, B-wires to B-wires, REF-wires to REF-wires.

Troubleshooting

This section discusses the most common issues users encounter when using their QD1010b communications converter. Before contacting TCS Technical support, try the remedies shown here.

If, after reviewing this troubleshooting chart, you are still experiencing issues with your QD1010b or the network, contact TCS Technical Support at 800.288.9383, ext. 2. Our Technical Support Department hours are Monday – Friday, 7:00 a.m. – 7:00 p.m. (CST).

Issue	Probable Cause(s)	Solution
Power indicator LED does not light up.	Unit is not receiving power from the PC.	• Verify that the USB cable is plugged into an active USB port on the PC. • Verify both plugs on the USB cable are properly seated.
RS-485 or USB indicator LEDs do not light up.	• Unit is not receiving power from the PC. • Insight software is not installed or running.	• Verify that the USB cable is plugged into an active USB port on the PC. • Verify both plugs on the USB cable are properly seated. • Verify that Insight is installed and running.
USB Indicator LED is on, and RS-485 Indicator LED does not light up.	Mismatched baud rates in the network.	• Verify all controllers are using the same baud rate.
RS-485 and USB indicator LEDs are flashing simultaneously.	• Network communication error. • Interference from a nearby power source.	• Check network wiring connections. • Ensure network wiring is at least five ft. away from fluorescent lights, motors, etc. • Verify all controllers have a unique address.
RS-485 indicator LED is on steadily (no flashing).	Network wiring issue.	• Ensure that the A, B, and REF wires are not switched or shorted. • Use a volt meter to check the following: ◦ Ensure that there is no stray AC voltage across the A, B, and REF wires. ◦ Ensure that A to B voltage is between 1VDC and 4VDC. ◦ Ensure that A to REF voltage is between 0VDC and 1VDC. ◦ Ensure that B to REF voltage is between 2VDC and 5VDC. ◦ Ensure that there is no AC or DC voltage across A to Shield Wire or B to Shield Wire.