

# QD3040

BACnet Edge Device

The QD3040 BACnet Edge connects the local site BACnet controller network with Ubiquity Cloud.



BACnet® is a registered trademark of ASHRAE.



## Features

---

- **Site gateway to Ubiquity:** enables controller's interoperability with Ubiquity™
- **Enables Ubiquity** to maintain controller programming and scheduling
- **Compatible** with listed BACnet controllers (See ordering section)
- **Two integrated RS-485** serial ports
- **Integrated Ethernet** controller with firewall
- **Integrated configuration** web page
- **Remotely upgradeable** gateway software

## Contents

---

Features.....	2
Material List.....	3
Factory IP Network Address Configuration.....	3
Mounting.....	3
Connections.....	3
RS-485 Controller Network Wiring & Setup.....	4
Gateway Configuration Page.....	6
Commissioning Tools.....	9
Checkout & Troubleshooting.....	10
LED Description.....	10

## Material List

---

- QD3040 Ubiquity Site Gateway
- External Power Supply
- Wall Mounting Bracket

## Factory IP Network Address Configuration

---

The QD3040 is typically ordered pre-programmed to customer specific networks and no additional software configuration is required. This is the preferred purchasing method.

If a QD3040 was purchased without pre-programming it will be shipped with DHCP client enabled. The configuration page is available through a browser for additional configuration of the QD3040 local IP address. Contact your network administrator to determine the local IP address (refer to the MAC address available on the product label).

## Mounting

---

The QD3040 is designed to be hung on a wall using the included mounting bracket and mounting screws. It may also be set on a shelf or table. Do not allow the mounting screws to touch the circuit board inside the enclosure.

When selecting a location to mount the QD3040, be sure to allow space for cable connections. Locate the QD3040 away from excessive dust, heat sources, moisture, or direct sunlight. The ideal environment is a server room. The temperature of the room cannot exceed 77°F (25°C), good ventilation is mandatory.

## Connections

---

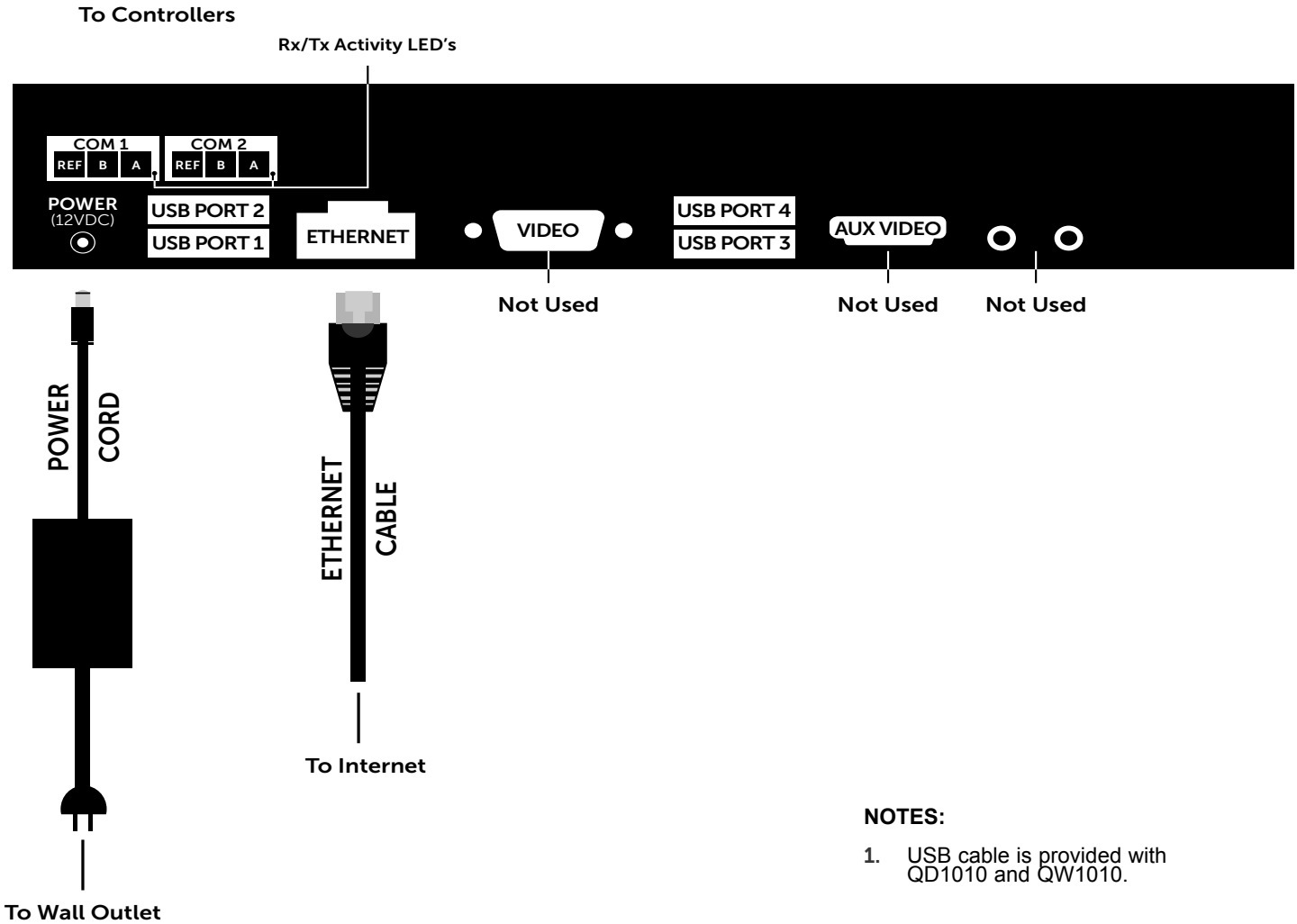
**COM 1-2:** Connect an RS-485 Network (Refer to RS-485 Controller Network Wiring & Setup below)

**Power:** Attach the included power supply to the back unit and insert the power plug into a 120 VAC socket. Upon connection the unit may power up automatically. If it does not, press the power button.

**Ethernet:** Connect an Ethernet cable to the specific port on the specified switch on the LAN (this information is determined by your local network administrator or IT department). If a cellular modem is used, connect the Ethernet cable to the Ethernet port on the Cellular Modem.

Remaining connections are unused and should not be plugged in.

## QD3040 Connections Diagram

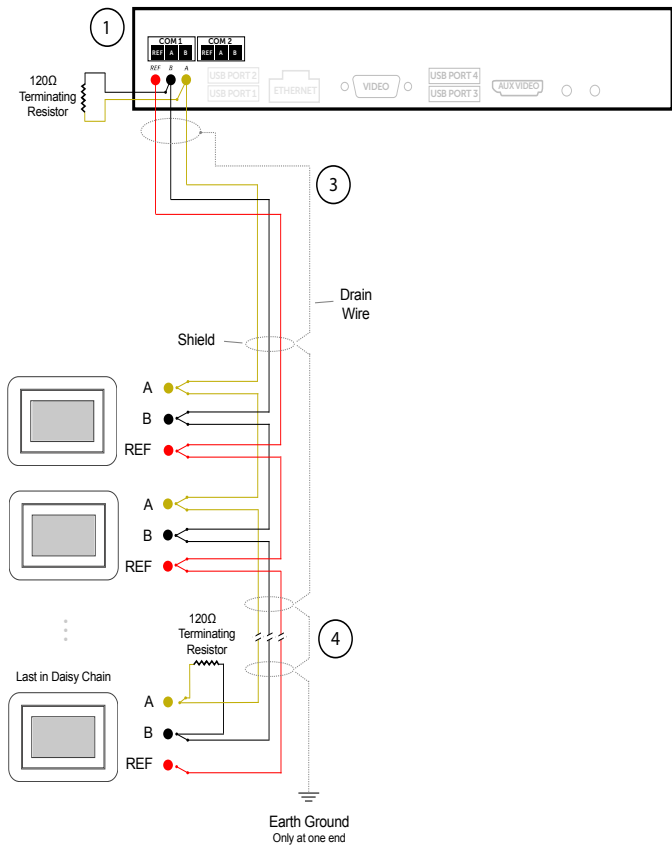


## RS-485 Controller Network Wiring & Setup

**NOTE:** In the middle of the network, all network wiring shields should be twisted together and taped off to prevent accidental grounding. More than one ground on the network wiring can result in communication failure.

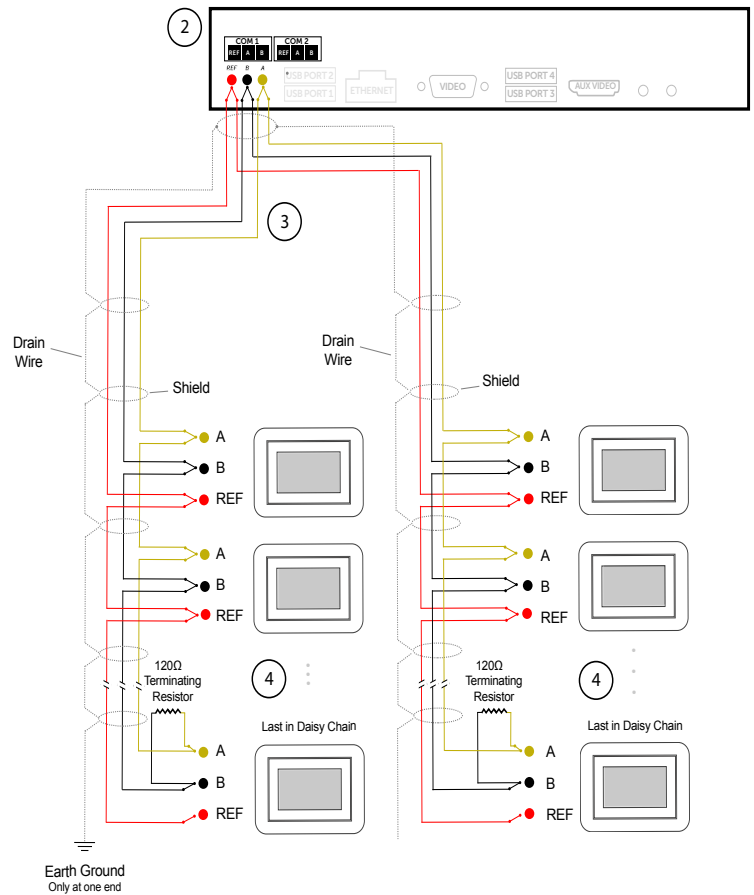
**NOTE:** A maximum of 2 terminating resistors can be used. See Figure below.

# WIRING



1 QD3040 at end of the network.

2 QD3040 in the middle of the network.



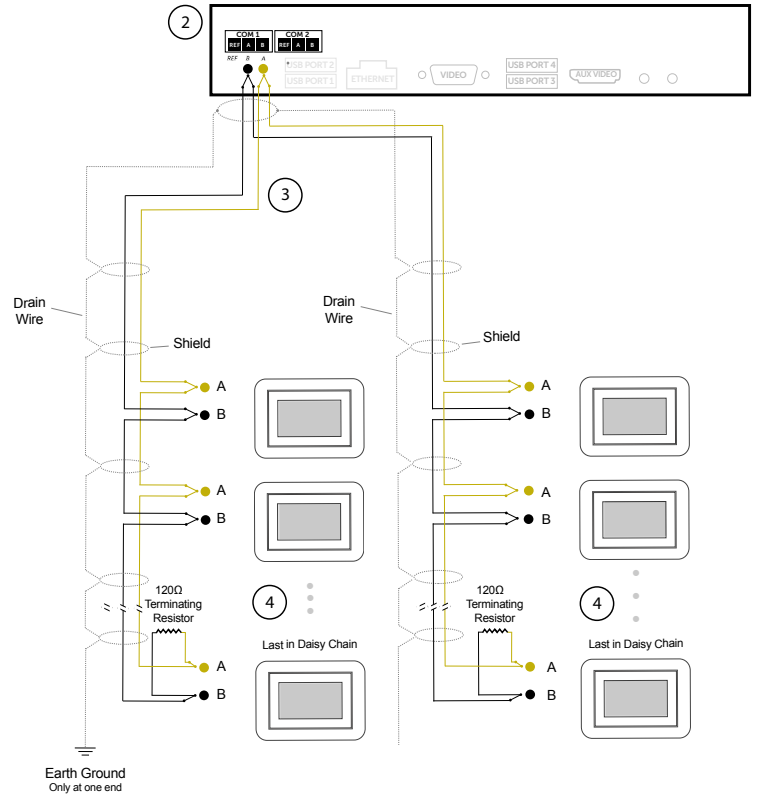
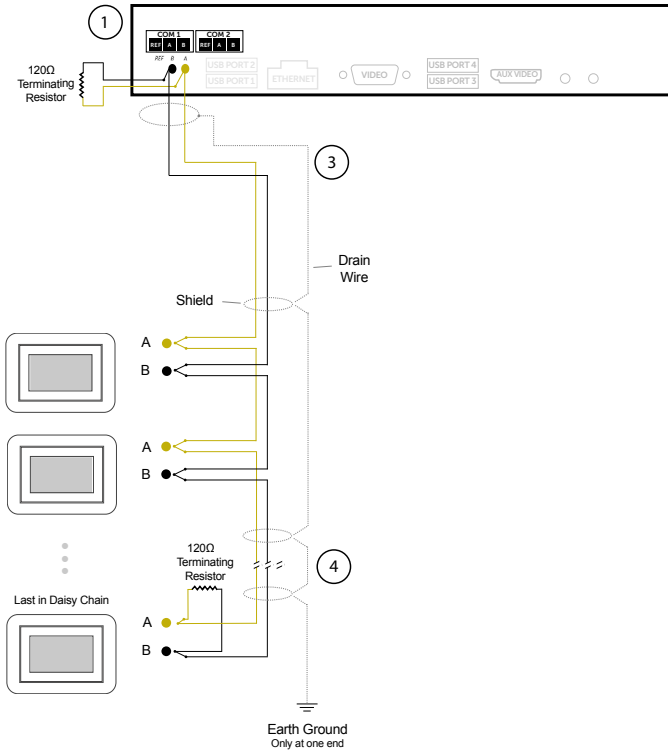
3 Shielded, twisted 3-conductor communications wiring with one end earth grounded. (120 Ω balancing resistors provided.)

4 Can use up to the total of 64 controllers. For more controllers, will need to add another QD3040

## NOTES:

1. If using more than 64 controllers, use the second RS-485 port or additional QD1010 adapters.
2. Each controller must use the same baud rate and be assigned a unique address.

# WIRING



- ① QD3040 at end of the network.
- ② QD3040 in the middle of the network.

- ③ Shielded, twisted 3-conductor communications wiring with one end earth grounded. (120 Ω balancing resistors provided.)
- ④ Can use up to the total of 64 controllers. For more controllers, will need to add another QD3040

## NOTES:

1. If using more than 64 controllers, use the second RS-485 port or additional QD1010 adapters.
2. Each controller must use the same baud rate and be assigned a unique address.

## Gateway Configuration Page

Once you have made connection and have logged in you are able to configure the operation of the unit by selecting the proper parameters for your application. **NOTE: If the configuration page cannot be reached, contact TCS Technical Support -- the unit's web interface maybe locked out due to the "remote access mode" option in the security section.** All Ubiquity Cloud Application software and functionality is accessed by logging into the Central Server (www.ubiquitysystems.net) **not** by using this configuration page.

### INSTALLATION INFORMATION

The Site Time is used by the local network and the QD3040 until the Ubiquity central server performs a time synchronization with the site.

**NOTE:** Be sure to set the correct Time zone so that the site will correctly adjust the time during future time synchronizations with the central server.

Once you are finished entering information in this section,click the Update Device Info and Update Time Info buttons, respectively.

### Installation Information

#### BACnet Device Properties

Vendor Name:	TCS	Vendor ID:	496
Model:	QD3040	Serial Number:	0
Application Software Version:	0.12.0	Build Date:	2018/12/07 16:43:00 UTC
BACnet Protocol Version:	1.14	Ethernet MAC:	00224DB72194
Device ID:	<input type="text" value="498122"/>		

[Update Device Info](#)

#### Site Time

Wait up to two minutes for the values to change.

Current Time and Date 2019/01/31 02:19:30 PM

Timezone

[Update Time Info](#)

## APPLICATION INFORMATION

This section contains settings which define how the QD3040 interacts with the controller network, and how it communicates the data to the actual server.

**Application Options:** Secure Sockets Layer (SSL requires port 443 to be open)

### Application Information

**Application Options**

Central Server Location  ex: www.ubiquitysystems.net

Secure Communication  use SSL

**RS485 Network -- Port Configuration**

Port Configuration	Serial Port	Protocol	Baud Rate	Timeout	Retries	MAC	Max Master
Port 1	<input type="text" value="C-PORT1-0"/>	<input type="text" value="BACnet"/>	<input type="text" value="38400"/>	<input type="text" value="11000"/>	<input type="text" value="2"/>	<input type="text" value="5"/>	<input type="text" value="127"/>
Port 2	<input type="text" value="C-PORT2-0"/>	<input type="text" value="BACnet"/>	<input type="text" value="38400"/>	<input type="text" value="1000"/>	<input type="text" value="1"/>	<input type="text" value="5"/>	<input type="text" value="127"/>

**RS-485 Network - Port Configuration:** Here you will configure each of the COM ports for this site. The communication ports are automatically detected once the QD3040 is powered up. Once detected each COM port needs to be configured to ensure proper functioning of the network on each port. Each port can be enabled or disabled from the drop down menu.

You must also select the proper protocol being used on each port. The current protocol selections from the drop down menu are BACnet. You must also select the communication baud rate for each port. This setting must be the same as all of the controllers on that port. You can also adjust the Time-Out Period for each port. BACnet recommends 600ms for wired networks. Reties are what you expect, number of tries before considering the device not communicating.

MAC: is the local bus line address just like you set in a stat. This is due to BACnet having a multi-master system as opposed to the TCS bus being 1: master and multiple slaves.

Max Master: Refers to upper limit of addresses that the unit will communicate with.

Example if you have Max Master set to 10 and you set you device address to 11 the unit will not communicate with that device.

## NETWORK INFORMATION

This section contains settings which control how the QD3040 connects out through the LAN or WAN to the Internet. All of these settings are determined by your local network administrator or IT department. The correct settings, network permissions, and port openings (WAN Outbound, ports 80 and/or 443) need to be verified with them prior to installation and connecting to the local network.

**Communications Options:** The QD3040 supports both static IP and Dynamic Host Configuration Protocol (DHCP) IP address allocations. Enter the Central Server Location, typically www.ubiquitysystems.net by clicking the "Set Ubiquity Domain Name" button. Select whether to enable or disable special options. Enter host name if needed (typically left blank).



# GATEWAY CONFIGURATION PAGE

### Network Information

#### Network Options

IP Address Allocation:  Use DHCP

HostName:

#### IPV4 Network

IP Address:  /  DNS1:

Gateway:  DNS2:

Subnet:

#### Proxy

Use Proxy

Enable NTLM Authentication  Enable

Proxy Server:  Proxy Port:

Proxy Username:  Proxy Password:

[Update Communication Info](#)

**Network:** Select the desired IP allocation (DHCP or static IP addressing) to be used. When using static IP, it is necessary to enter the IP Address, Gateway, Subnet, DNS1 and DNS2 settings. The IP settings will need to be established by the LAN/WAN network administrator prior to installation. When utilizing DHCP addressing, the IP address settings are automatically assigned when communication is established.

**Proxy:** If a proxy is required, check Use Proxy check box and enter all the related details in the fields that appear. Once you are finished entering information in this section, click the Update Commissioning Info button.

## SECURITY INFORMATION

This section contains settings which control the security of the device within the QD3040 and whether or not it can be accessed through the web interface. **Call TCS Technical Support for access to the QD3040 if it is online with Ubiquity Cloud to "unlock" it.**

Once you are finished entering information in this section, click the Update Security Info button.

Here is where you change the default login credentials used to access the Configuration Page. It is recommend to change these login credentials.

### Security Information

#### Application Security

Select Remote Access Mode:

Web Interface Username:  Strong Password Example: Qv33n#tt

Web Interface Password:  Retype Password:

[Update Security Info](#)

[Commissioning Tools](#)

## Commissioning Tools

A separate page which contains various commissioning tools can be accessed by clicking the "Commissioning Tools" button at the bottom of the Setup page. This page gives you access to additional information about the connection status of the QD3040 and the controller network connected to it.

### UBIQUITY CONNECTION STATUS

This section displays the status of the connection between the QD3040 and the central server. You have 3 options for the message that will appear here:

- 1) Error - No Route to Host -- means the unit does not currently have an Ethernet connection.
- 2) Connected -- means the unit is able to communicate to the Ubiquity central server BUT is not being matched up with a specific Site, typically this indicates that the site is not initialized on the central server side yet, please contact TCS Basys Controls to assign or initialize the QD3040 to a site
- 3) Established -- means the unit is communicating with the Ubiquity central server AND is ready to go. All Ubiquity functions (monitoring, programming, alarming, etc.) should be available through the user interface at this point.

Clicking the green button with the arrow on it on the right side of the Ubiquity Connection Status title bar will refresh the connection status.

The screenshot shows the 'Commissioning Tools' interface. At the top, there is a 'Ubiquity Connection Status' section with a green refresh button. Below it, a yellow banner displays 'CONNECTED' with a green refresh button. The date and time '2019/02/07 21:10:21 UTC' are shown. The 'Controller View' section contains a table with columns: Port, Device ID, RS485 Addr, Model, Firmware, Vendor Name, Comm Status, Protocol, Protocol Version, and Last Communication. Below the table are 'System Commands' buttons: 'Reboot Unit', 'Restart Application', and 'Check For Update'. At the bottom, there is a 'Gateway Configuration' button.

Port	Device ID	RS485 Addr	Model	Firmware	Vendor Name	Comm Status	Protocol	Protocol Version	Last Communication
0	0	-1	QD3040	0.12.0	TCS	1	BACNET	1.14	2019/02/13 19:21:20 UTC
1	496012	12	US4010	1.01.1_rc2	TCS Basys Controls	1	BACNET	1.14	2019/02/13 19:21:21 UTC
1	496020	10	US4020	1.00.2	TCS Basys Controls	1	BACNET	1.14	2019/02/13 19:20:47 UTC
1	496044	4	US4040	1.01.0	TCS Basys Controls	1	BACNET	1.14	2019/02/13 19:21:44 UTC
1	496054	14	US4050	1.00.2	TCS Basys Controls	1	BACNET	1.14	2019/02/13 19:20:48 UTC

## CONTROLLER VIEW

This section allows you to see what controllers have been found by the QD3040 and view each controller's Port, Device ID, RS485 Addr, Model, Firmware, Vendor Name, Comm Status, Protocol, Protocol Version and Last Communication. This information allows the installer to verify that each controller has been found by the QD3040 and is communicating with the local network.

Clicking the green button with the arrow on it on the right side of the Controller View title bar will refresh each controller's status.

## SYSTEM COMMANDS

In this section you are able to set a couple of system flags for the QD3040 itself. "Reboot Unit" triggers the QD3040 to reboot. "Check for Update" contacts the Ubiquity Central Server for any updates relevant to its particular model number and software version. Once the update has been downloaded, it is automatically applied, and the unit may reboot. Restart Application button triggers the QD3040 to restart.

NOTE: The "Check for Update" command requires that the QD3040 have Internet access to retrieve the update patch.

# Checkout & Troubleshooting

---

## CHECKOUT

1. Be sure to check and verify all wiring before powering the QD3040.
2. Apply power. The Power LED will turn on.
3. If the QD3040 has not been pre-programmed, it can be programmed at this time.
4. The unit is now ready for operation.

## TROUBLESHOOTING

### Power LED does not light up

Be sure that the power supply module, included with the QD3040, is plugged in to an outlet that has power. This is a 12V, 7A, tip positive power supply.

### No Communications with Controllers on the network

Make sure the baud rate selection for the QD3040 is set to match the baud rate of all the controllers on each port network. All devices on the network must have a unique address, including the QD3040 with by default is 1. Max Master should also be checked, if it is lower than the default setting of 128. Network wiring should also be checked.

# LED Description

---

Three LEDs on the QD2040 allow the occupant to view the current operating status of the QD3040.

## POWER

This LED will be on when the QD3040 is properly powered.

## LAN

Two LEDs are built into the RJ-45 LAN connector.

- Link LED (Green)
- Data Rate LED (Green/Yellow)

The LEDs indicate when the board is powered up and the LAN subsystem is operating. If Link Green is off then LAN link is not established. If on, LAN link is established. If blinking LAN activity is occurring.

If Data Rate Green/Yellow is Off, 10 Mbps/s data rate is selected. Green means the 100 Mbps/s data rate is selected. If yellow, 1000 Mbps/s data rate is selected. One light should blink intermittently and the other should remain on all the time. The blinking light represents communications. The other solid light indicates a proper Ethernet connection.

## **RS-485 PORTS (COM 1&2)**

Each port has the proper biasing resistors as specified by the BACnet standard. Each port is also optically isolated, which cleans up the signal and also protects the unit from taking stray voltage off the RS-485 Lines.

A set of LEDs allow the occupant to view operational status of the serial communication integrated board. Each port has two LED's to the right of the terminals:

GREEN – indicates transmitting (Tx)

YELLOW – indicates Receiving (Rx)

Additionally, a single red LED indicating the serial ports are operational, is located inside the enclosure behind the terminals.