QTERM®-A12 TERMINAL
HARDWARE MANUAL

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FCC Compliance Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Additionally, the QTERM-A12 may contain the following FCC module-certified components depending on product configuration: QOQWT12 or Q72WLC300GRS.

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CHAPTER 1

INTRODUCTION

The QTERM®-A12 is a rugged graphic human-machine interface terminal for use in a wide range of commercial and industrial applications. It has been designed with a robust set of industrial-grade features and options.

- Windows® Embedded CE 6.0 operating system
- Support for application development with industry standard tools such as Microsoft® Visual Studio 2005 or 2008
- Marvell® PXA300 processor (ARMV5TE) with Intel XScale™ technology running at 624 MHz
- 4 Gbytes non-volatile storage (with support for larger capacities)
- 128 Mbytes of DDR SDRAM
- Two USB 2.0 full speed host ports with built-in support for standard USB keyboards, mice and memory devices
- 10/100Base-T wired Ethernet
- Two serial ports: one EIA-232/422/485 (software configurable) and one EIA-232 serial port
- Bright 307 mm (12.1") TFT color SVGA (800 x 600) display with 450 nit LED backlight
- Analog-resistive 5-wire touch screen for rugged applications
- Built-in speaker (behind panel)
- Terminal strip for power input (alternate power input on COM1 DB9)
- 10 to 32 VDC input voltage range
- Built-in protection from power transients and spikes, reverse voltage and overvoltage
- Optional Power-over-Ethernet (PoE) interface
- Wide operating temperature of -30 to 70 °C, storage temperature of -40 to 85 °C
- Tough industrial grade polymer housing

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CHAPTER 2

SAFETY SUMMARY

The QTERM-A12 terminal is certified to operate at Temperature Code T6 in a Class I, Division 2, Group A, B, C and D hazardous environment. The terminal must be installed and operated as described in this document to meet this certification.

All safety related regulations, local codes and instructions that appear in this manual or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not use the QTERM-A12 to directly command motors, valves or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the controller.

CAUTION

For Class I, Division 2 installations:
The USB ports are for operational maintenance only. Do not leave USB devices permanently connected unless the area is known to be non-hazardous.

CAUTION

For Class I, Division 2 installations:
Do not connect or separate any connection (power, Ethernet, USB, Com 1 or Com 2) unless area is known to be non-hazardous.

CAUTION

EXPLOSION HAZARD
Substitution of components may impair suitability for Class I, Division 2.

CAUTION: Risk of danger.
Read complete instructions prior to installation and operation of the terminal.

CAUTION: Risk of electric shock.

Notes

CHAPTER 3

APPLYING POWER

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

Power is supplied to the QTERM-A12 terminal via the COM1 serial port connector or the 3-pin power terminal strip for input power, return and chassis ground. The QTERM-A12 may also be equipped with an optional Power-over-Ethernet (PoE) interface. When powered by the 3-pin power terminal strip or the COM1 serial port, the QTERM-A12 has a 10- to 32-volt DC input range and can be powered directly from a 12- or 24-volt DC power supply (the current will vary depending on the input voltage; see table below).

Power Consumption			
Terminal	**12 VDC**	**24 VDC**	**PoE (48 VDC)**
Standby[1]	1.3 W	1.6 W	3.0 W
Typical[2]	8.5 W	9.1 W	10.5 W
Estimated Maximum[3]	12.1 W	13.1 W	14.2 W

1. Standby power consumption is measured when the display has been powered down and the operating system has entered system idle mode.
2. Typical power consumption is measured when the display is at full brightness and a polygon drawing application is running.
3. Estimated maximum power consumption is measured with serial, USB and Ethernet communications active. In addition, several applications are running including video with full volume and two USB mass storage loads are being powered.

3.1 Connecting to Earth Ground

NOTE ☞ *The chassis ground connection of the QTERM-A12 is electrically connected to the exposed conductive parts of the QTERM-A12 for safety purposes. The chassis ground connection MUST be connected to an external protective earthing system.*

The QTERM-A12 has a chassis ground terminal and a chassis ground connection on the 3-pin power terminal strip on the back of the terminal. (See Figure 6 on page 24 and Figure 15 on page 29 for the location of the chassis ground terminal and the 3-pin power terminal strip.) The terminal should be connected to earth ground (protective earth). The chassis ground is not connected to signal common of the terminal. Maintaining isolation between earth ground and signal common is not required to operate the terminal; however, other equipment connected to the terminal may require isolation between signal common and earth ground. To maintain iso-

lation between signal common and earth ground, care must be taken when connections are made to the terminal. For example, a power supply with isolation between its signal common and earth ground must be used. Also, plugging in a serial cable or a USB cable may connect signal common and earth ground.

The serial cable shield or the USB shield may be connected to earth ground at the host. The serial cable or the USB shield, in turn, may also be connected to signal common.

3.2 Primary Serial Port Connector for Power Input

WARNING

Although the terminal includes protection circuitry to prevent power supply contention, power should not be connected to the 3-pin terminal strip or the RJ45 PoE interface while power is applied to the DB9 connector.

Power can be supplied to the terminal through pin 9 and ground return through pin 5 of the COM1 serial port connector.

3.3 Terminal Strip for Power Input

WARNING

Although the terminal includes protection circuitry to prevent power supply contention, power should not be connected to the DB9 connector or the RJ45 PoE interface while power is applied to the 3-pin terminal strip.

WARNING

QTERM-A12 power must come from an SELV (Safety Extra Low Voltage) power source and should have a current limit on its output of 5 Amperes. It must provide a minimum of 10 volts DC power and be limited to a maximum of 32 volts DC. Limiting may be inherent to the supply or may be provided by supplementary overcurrent devices. If the QTERM-A12 does not respond or exhibits abnormal behavior on power up, disconnect power and contact Beijer Electronics for technical support.

The 3-pin terminal strip is used to provide input voltage and ground to the terminal. The terminal strip provides a chassis ground connection. The chassis ground pin is isolated from the system ground of the terminal.

3.4 Optional Power-over-Ethernet Interface

WARNING

Although the terminal includes protection circuitry to prevent power supply contention, power should not be connected to the 3-pin terminal strip or the DB9 connector while power is applied to the RJ45 PoE interface.

The QTERM-A12 may be equipped with an optional Power-over-Ethernet (PoE) interface. This interface may be used to power the terminal by connecting a PoE equipped Power Sourcing Equipment (PSE) to the RJ45 connector on the rear of the terminal.

The QTERM-A12 PoE interface is functional with both IEEE 802.3af-2003 and 802.3at-2009 standards. If the terminal is connected to an IEEE 802.3af-2003 compliant network connection the terminal will operate as a Type 1 Class 4 PoE device in a low-power condition not exceeding 13 Watts average power consumption. The terminal will automatically disable both USB ports while operating as a Type 1 Powered Device (PD) to ensure that the total average power consumption remains lower than 13 Watts.

If the QTERM-A12 is connected to an IEEE 802.3at-2009 compliant network connection all included features will be operational. In this mode, the terminal will complete 2-event classification as specified by IEEE 802.3at-2009 and operate as a Type 2 Class 4 PoE Powered Device (PD).

The QTERM-A12 will also operate from a non-compliant (simple Power-over-Ethernet with no classification) PSE source if the source can supply up to 600 mA and maintain between 37.0 and 57.0 volts measured at the RJ45 connector on the terminal.

The QTERM-A12 will accept either Mode A or Mode B power connections as specified by IEEE 802.3at-2009. The following table provides pinout information for both of these modes. The polarity may be reversed in either mode.

NOTE ☞ *The chassis ground connection MUST be connected to an external protective earthing system. See section 3.1, "Connecting to Earth Ground" for more information.*

Port Pin Assignment		
Conductor	**Mode A**	**Mode B**
1	Tx+/V+	Tx+
2	Tx-/V+	Tx-
3	Rx+/V-	Rx+
4		V+
5		V+
6	Rx-/V-	Rx-
7		V-
8		V-

3.5 Powering On the Terminal for the First Time

When you connect power to the QTERM-A12 terminal, the operating system is automatically loaded. The QTERM-A12 takes 10 to 20 seconds to boot. During that time the backlight of the display will come on to indicate that the terminal is booting.

CHAPTER 4

HARDWARE DESCRIPTION AND ARCHITECTURE

4.1 User Interface

Display
The QTERM-A12 features a TFT color SVGA (800 x 600 pixels) LCD display that measures 308 mm (12.1") diagonally. The display backlight has a typical rating of 450 nit.

Touch Screen
A clear analog-resistive touch screen covers the entire display area for user input. The touch screen is a 5-wire architecture offering improved durability and touch endurance. The face of the touch screen has an anti-reflective (AR) coating and a hardness of 3H.

External Peripherals
Two full-speed USB ports are available on the back of the QTERM-A12. These ports can be used to add many other devices, such as a keyboard, mouse or additional mass storage. Adding USB peripherals that are not self-powered will increase the power consumption of the terminal.

CAUTION

For Class I, Division 2 installations:
The USB ports are for operational maintenance only. Do not leave USB devices permanently connected unless the area is known to be non-hazardous.

4.2 Processor

The processor in the QTERM-A12 is the Marvell PXA300 processor (ARMV5TE), incorporating Intel XScale technology running at 624 MHz.

4.3 System and Application Memory

DRAM
The QTERM-A12 includes 128 Mbytes of DDR SDRAM volatile memory with a maximum bandwidth of 520 Mbytes per second.

Flash
The QTERM-A12 uses an internal 4 Gbyte NAND flash device to hold the main Windows CE image and provide non-volatile storage for user applications and data.

4.4 Serial Communications

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The QTERM-A12 has two serial ports, designated COM1 and COM2, that can communicate up to 3.6 MBaud. Refer to section 7.2, “Connector Pinouts” for serial port pinout data.

The COM1 serial port can be configured in software to your choice of EIA-232 with hardware flow control (supporting RX, TX, RTS and CTS), EIA-422 or EIA-485. COM2 is an EIA-232 port with hardware flow control. The serial ports are accessed through female DB9 connectors on the back of the unit.

The QTERM-A12 also has two powered (500 mA per port) full-speed USB host ports that are USB 2.0 compliant. The ports are accessed through USB type A connectors on the back of the unit. The connectors are right-angle facing the bottom of the unit to facilitate mounting in shallow panels.

4.5 Network

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The QTERM-A12 has an internal 10/100Base-T wired Ethernet adapter for network communications. The network interface is accessed through a standard RJ45 socket located on the back of the unit.

4.6 Speaker

The QTERM-A12 includes an internally mounted speaker, providing the ability to play a variety of audio, including audible feedback, warnings, messages and media clips. The QTERM-A12 is also designed with software programmable volume control.

NOTE ☞ *The QTERM-A12 speaker is intentionally over-driven at full volume, and certain media files may sound distorted during playback. Some find that this gives better results after the unit has been mounted into a panel. Volume should be adjusted to give optimal results for the media files used in your application.*

4.7 Power Supply

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The QTERM-A12 has a 10- to 32-volt DC input range and can be powered directly from a 12- or 24-volt DC power supply. The terminal includes circuitry to protect against normal variations such as transients and spikes (EN55024 compliant), as well as reverse voltage and overvoltage protection.

Power is applied through a 3-terminal strip with removable plug located on the back of the unit. The 3-terminal strip has a power connection, ground and chassis ground (isolated from the system). Alternatively, power may be applied through pin 9 of the COM1 DB9. In this case, pin 5 is the power ground return.

If equipped with optional Power-over-Ethernet (PoE) the QTERM-A12 will operate from power supplied over an Ethernet cable. For details about the PoE interface, refer to section 3.4, “Optional Power-over-Ethernet Interface”.

4.8 Housing

The QTERM-A12 housing is made of industrial grade polymer that is designed to withstand everyday use in industrial environments.

Refer to Chapter 5, “Installation” for instructions on installing the unit in a panel.

Notes

CHAPTER 5

INSTALLATION

A QTERM-A12 terminal uses a rugged chemical resistant polymer housing and mounting components. When properly installed in a NEMA-4X rated panel, the QTERM-A12 meets all NEMA-4X specifications including hose-down, icing and salt spray.

A QTERM-A12 terminal can be installed in either a landscape or portrait orientation. In addition, the terminal can be installed with or without a front bezel. The model with factory-installed front bezel is referred to as the standard version and the model without a front bezel is referred to as the modular version.

The standard version of the QTERM-A12 has a factory-installed front bezel. This bezel has molded-in studs that are used in combination with a terminal ring to mount the terminal to the panel.

The modular version of the QTERM-A12 does NOT have a factory-installed front bezel. The modular version of the terminal is ideal for installations that require a custom front bezel or no bezel at all. The modular version requires that the mounting studs be integral with the panel that the terminal will be mounted in.

Take the following steps to install the terminal:

- Decide whether to mount the terminal in portrait or landscape orientation. “Portrait” means that the longest dimension is vertical; “landscape” means that the longest dimension is horizontal.
- Cut a hole in the panel or drywall. See section 5.1, “Cutting Out for Panel Mount” for specifications.
- Install the QTERM-A12 terminal in the panel. See section 5.2, “Installing the Terminal” for instructions.
- Connect cables to the terminal. Verify that the thumb screws are tight or the locks snapped into place for each cable used.
- Apply DC power to the QTERM-A12 terminal. See Chapter 3, “Applying Power” for information.

5.1 Cutting Out for Panel Mount

5.1.1 Standard Version Cutout

The standard version cutout is to be used with QTERM-A12 models that have a factory-installed front bezel.

The standard QTERM-A12 terminal can be mounted in panels from 0.8 to 10 mm thick. No screw holes need to be drilled to install the terminal in the panel. Make a rectangular hole in the panel using the following dimensions.

Landscape		Portrait	
Horizontal:	302.5 ± 1 mm	Horizontal:	254.0 ± 1 mm
Vertical:	254.0 ± 1 mm	Vertical:	302.5 ± 1 mm

NOTE ☞ *See the "QTERM-A12 Cutout and Mounting Guide" insert that was included in the box with the QTERM-A12 for installation instructions. Printed on the back of the insert is a cutout template that can be used to trace the cutout area onto the housing panel.*

Figure 1 is a diagram of the landscape cutout. After the cutout is complete deburr any rough edges prior to mounting the terminal.

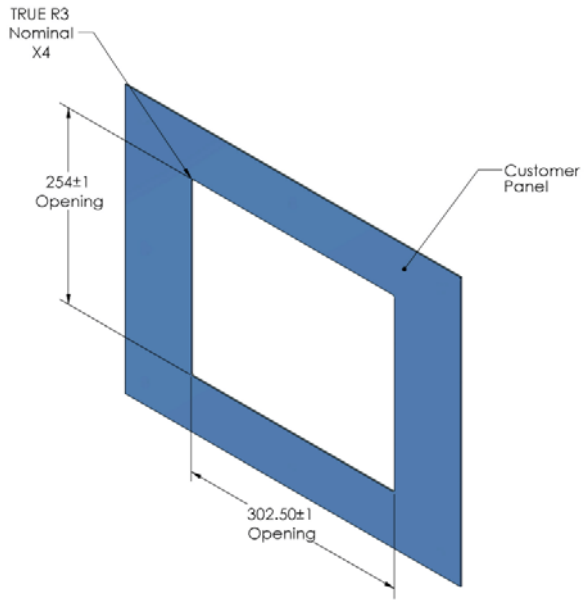

Figure 1
QTERM-A12 Landscape Cutout (units: mm)

5.1.2 Modular Version Cutout

The modular version cutout is to be used with QTERM-A12 models that DO NOT have factory-installed front bezels.

The modular version of the QTERM-A12 terminal can be mounted in panels with any thickness. In addition to making a cutout in the panel, the panel must be fitted with mounting studs. Make a rectangular hole in the panel using the following dimensions.

Landscape		Portrait	
Horizontal:	248.0 ± 1 mm	Horizontal:	187.0 ± 1 mm
Vertical:	187.0 ± 1 mm	Vertical:	248.0 ± 1 mm

NOTE ☞ *See the "QTERM-A12 Cutout and Mounting Guide" insert that was included in the box with the QTERM-A12 for installation instructions. Printed on the back of the insert is a cutout template that can be used to trace the cutout area onto the housing panel.*

Figure 2 is a diagram of the landscape cutout for the modular terminal. After the cutout is complete deburr any rough edges prior to mounting the terminal.

Install the recommended studs at the locations shown in Figure 2. The studs must be able to withstand a torque of 67.8 N cm (6 lbs in).

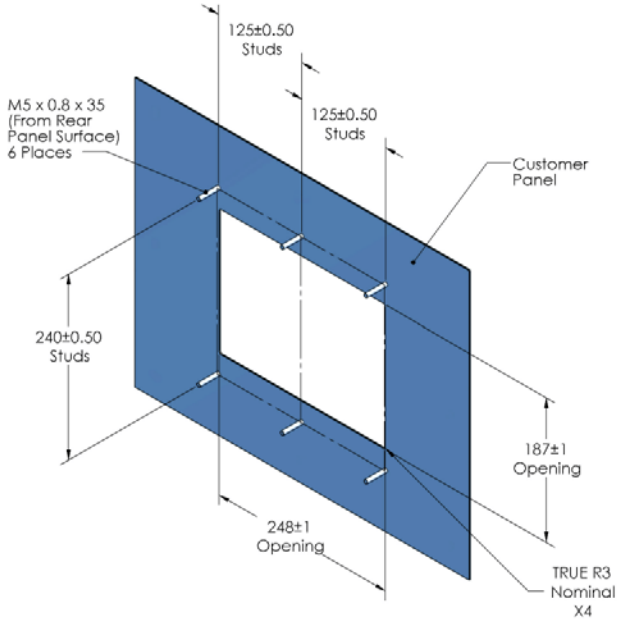

Figure 2
Modular QTERM-A12 Landscape Cutout (units: mm)

5.2 Installing the Terminal

WARNING

When mounting the QTERM-A12 terminal within a final enclosure, make sure you provide adequate ventilation: a minimum of 51 mm (2.0 inches) around the back, sides and bottom and 77 mm (3.0 inches) clearance above the top of the QTERM-A12 terminal.

CAUTION

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

CAUTION

EXPLOSION HAZARD
Substitution of components may impair suitability for Class I, Division 2.

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

NOTE ☞ *Use of an anti-static strap is recommended when performing installation and maintenance.*

5.2.1 Standard Version Installation

The standard version installation steps are to be used with QTERM-A12 models that have a factory-installed front bezel.

Take the following steps to install the standard terminal.

1. Verify that the panel surface around the cutout is clean and free of rough edges. A gasket built into the terminal seals against the panel surface. Dirt or imperfections on the panel may prevent a proper seal.

2. Place the terminal into the panel cutout and verify that the terminal is oriented correctly. The printed labels on the back panel may indicate the orientation. If not, you can determine which side should be at the top by the position of the serial port(s) on the back panel as follows:

   - Landscape
     When looking at the front of the unit, the back panel serial port(s) should be facing down.

- Portrait
  When looking at the front of the unit, the back panel serial port(s) should be facing left. Refer to Figure 3 for an example of a landscape installation.

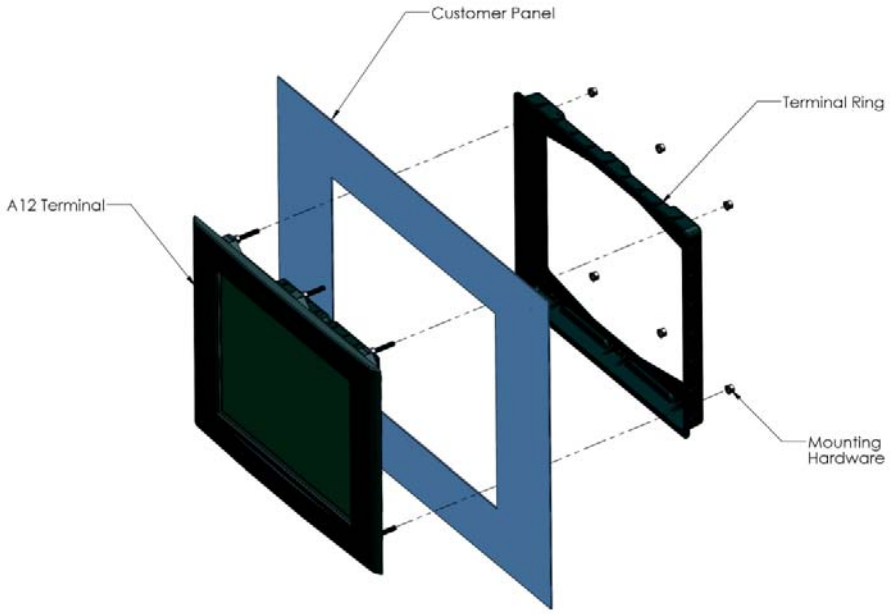

Figure 3
QTERM-A12 Mounting

3. On the back of the panel, align the terminal mounting ring holes with the mounting studs, and place the mounting ring against the back of the panel. Refer to Figure 3 for the location of the mounting studs.

4. Install nuts and washers (supplied with the terminal) onto each of the six mounting studs. Torque all nuts to 67.8 N cm (6 lbs in) to create a seal between the terminal gasket and the panel. Avoid overtightening the nuts.

5.2.2 Modular Version Installation

The modular version installation steps are to be used with QTERM-A12 models that DO NOT have a factory-installed front bezel.

Take the following steps to install the terminal.

1. Verify that the panel surface around the cutout is clean and free of rough edges. A gasket built into the terminal seals against the panel surface. Dirt or imperfections on the panel may prevent a proper seal.

2. Place the terminal over the panel cutout by aligning the terminal mounting holes with the mounting studs of the panel. Ensure that the orientation is correct. The printed labels on

the back panel may indicate the orientation. If not, you can determine which side should be at the top by the position of the serial port(s) on the back panel as follows:

- Landscape
  When looking at the front of the unit, the back panel serial port(s) should be facing down.
- Portrait
  When looking at the front of the unit, the back panel serial port(s) should be facing left. Refer to Figure 4 for an example of a landscape installation.

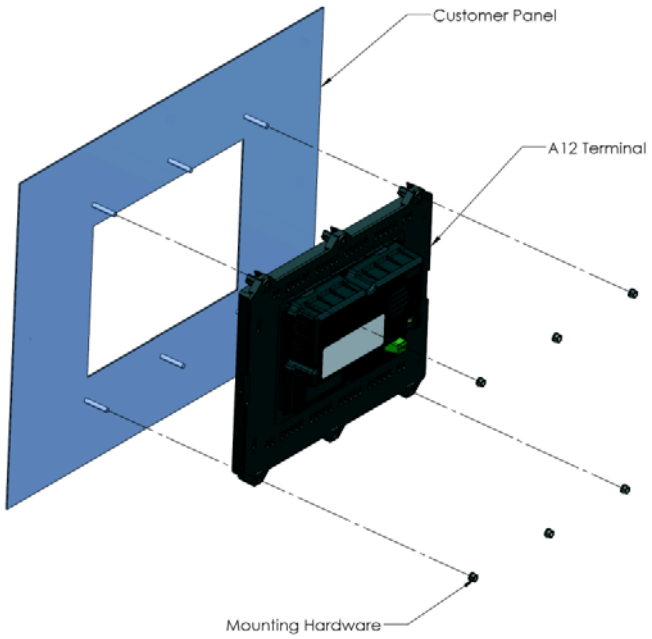

Figure 4
Modular QTERM-A12 Mounting

3. Install nuts and washers onto each of the six mounting studs. Torque all nuts to 67.8 N cm (6 lbs in) to create a seal between the terminal gasket and the panel. Avoid overtightening the nuts.

CHAPTER 6

SPECIFICATIONS

DISPLAY	
Color	TFT color SVGA LCD display 65,536 colors
Size	308 mm (12.1") diagonal 246 mm x 184.5 mm active area
Pixels	800 x 600 (SVGA)
Dot pitch	0.3075 x 0.3075 mm
Lighting	LED
	Brightness is software controllable
Backlight brightness	450 nits typical
Contrast ratio	700:1 (minimum)

TOUCH SCREEN
Analog-resistive operation
5-wire construction
Anti-glare surface treatment with 3H hardness

INTERFACE	
Primary serial port	User-configurable EIA-232, EIA-422 or EIA-485 interface with selectable 485 AC terminations and fail-safe network
Secondary serial port	EIA-232 serial port with hardware or software flow control
Ethernet	10/100Base-T wired Ethernet with optional PoE
USB host	Two USB 2.0 full-speed host ports
Power connector	3-pin, 5.0 mm pitch terminal strip. (Phoenix Contact MSTBVA 2,5/3-G – 1755529)

AUDIO	
Speaker	0.7 W 8 ohm speaker on back of unit

PHYSICAL	
STANDARD VERSION (WITH FACTORY-INSTALLED BEZEL)	
Dimensions	344.4 (W) x 267.0 (H) x 69.1 (D) mm
Mass	2.05 kg
MODULAR VERSION (WITHOUT FACTORY-INSTALLED BEZEL)	
Dimensions	298.9 (W) x 252.6 (H) x 62.8 (D) mm
Mass	1.72 kg

ENVIRONMENTAL	
Sealing	UL50 Type 4X Outdoor (pending), NEMA-4X, IP66 (front panel only)
Temperature	Operating: -30 to 70 °C Storage: -30 to 85 °C
Humidity	5 to 95%, non-condensing
Vibration	10 to 1500 Hz, 4 g RMS
Shock	40 g, 11 ms, common orthogonal axes
Electrical transient and noise	As specified in EN55024
ESD	8 kV contact 15 kV air on all surfaces

POWER	
Input voltage range	10 to 32 VDC
Typical power consumption	8.5 W (~700 mA @ 12 VDC)

OPTIONAL POWER-OVER-ETHERNET (PoE)	
Input voltage range	37 to 57 VDC
Typical power consumption	10.5 W

CPU	
ARM Architecture V5TE Marvell PXA300 with Intel XScale technology	
Speed	624 MHz
Cache	32 kbytes instruction cache, 32 kbytes data cache

MEMORY	
DDR SDRAM	128 Mbytes standard, 16 bit wide bus, 130 Mhz => 520 Mbytes/s transfer rate
Non-volatile storage	4 Gbytes standard

SOFTWARE	
Operating system	Microsoft Windows Embedded CE version 6.0 R3 Professional

CERTIFICATION
FCC Part 15, Class A
CE Certification EN-55022, EN-55024 and EN-60950
UL Listed by Und. Lab. Inc. To U.S. and Canadian safety standards, UL508 (pending)
Class I, Division 2, Group A, B, C and D hazardous locations, Temperature Code T6 (pending)
RoHS
UL50 Type 4X Outdoor (pending), NEMA-4X, IP66 (front panel only)

Notes

CHAPTER 7
MECHANICAL

7.1 Layout and Dimensions

7.1.1 Standard Version

The standard version of the QTERM-A12 is equipped with a factory-installed front bezel. The front bezel has molded-in studs that are used together with a terminal ring to mount the terminal to a panel.

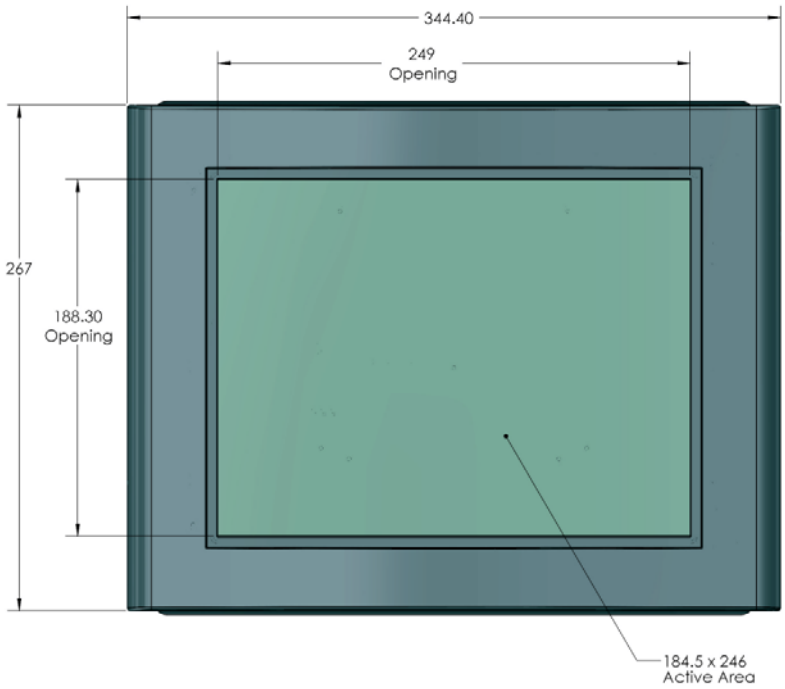

Figure 5
QTERM-A12 Front View (units: mm)

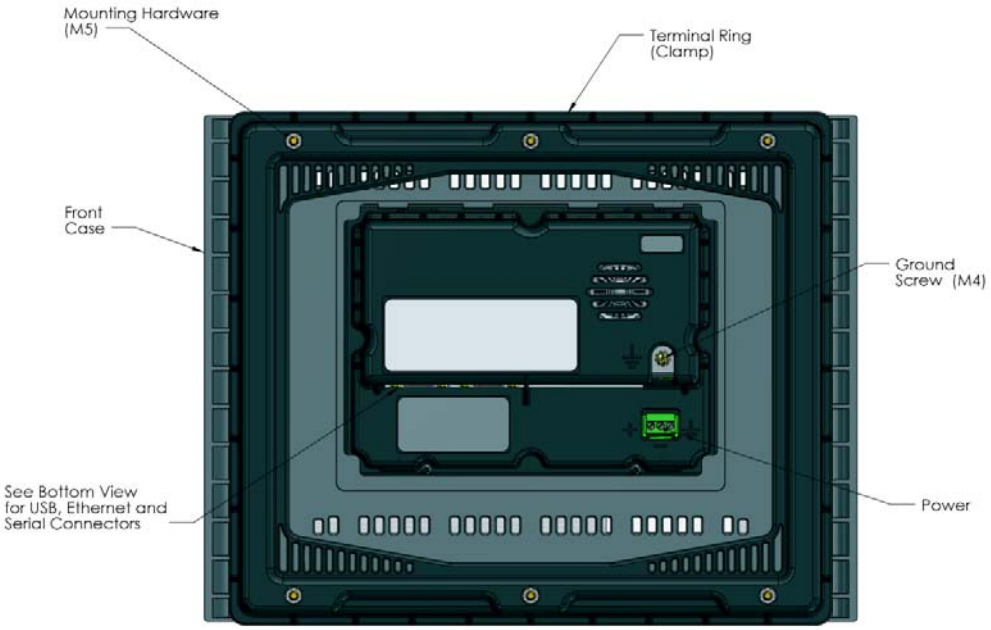

Figure 6
QTERM-A12 Back View (units: mm)

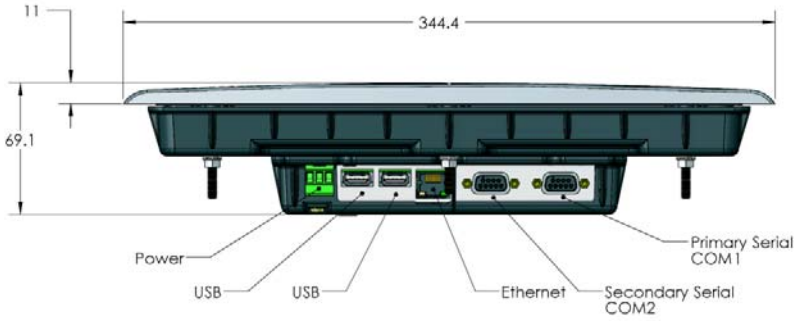

Figure 7
QTERM-A12 Bottom View (units: mm)

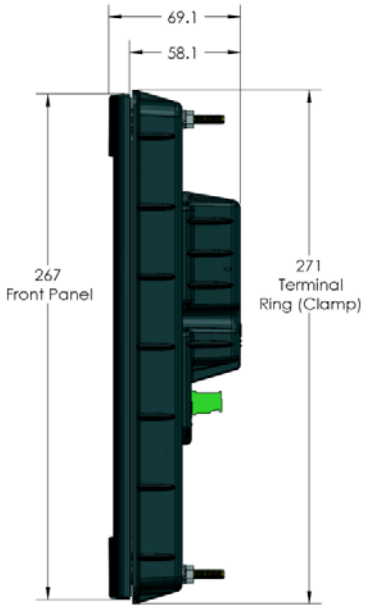

Figure 8
QTERM-A12 Side View (units: mm)

7.1.2 Modular Version

The modular version of the QTERM-A12 does NOT have a front bezel. Mounting studs must be integral to the panel where the QTERM-A12 will be mounted. The modular version allows installers to use their own custom bezel or to use the panel as the bezel.

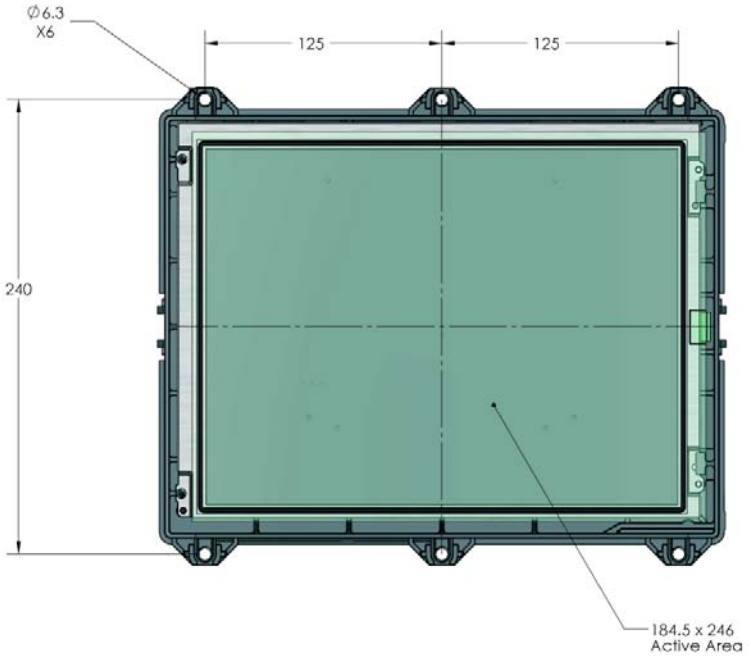

Figure 9
Modular QTERM-A12 Front View (units: mm)

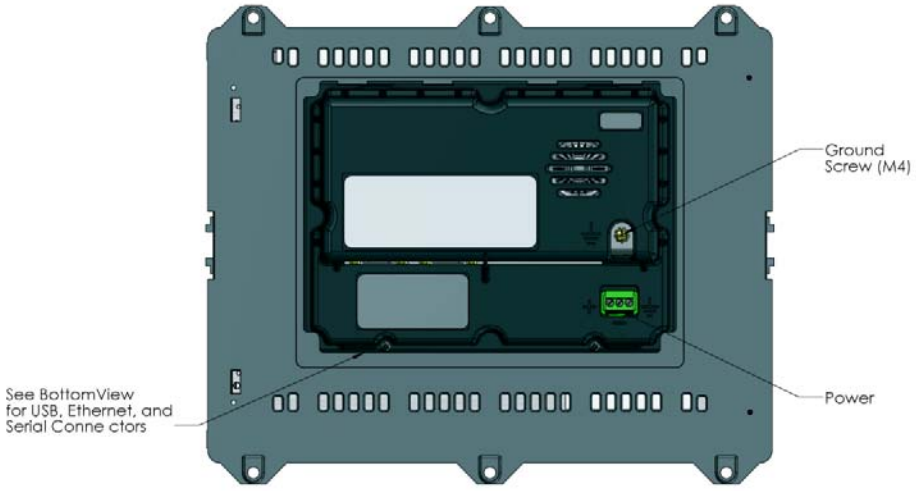

Figure 10
Modular QTERM-A12 Back View (units: mm)

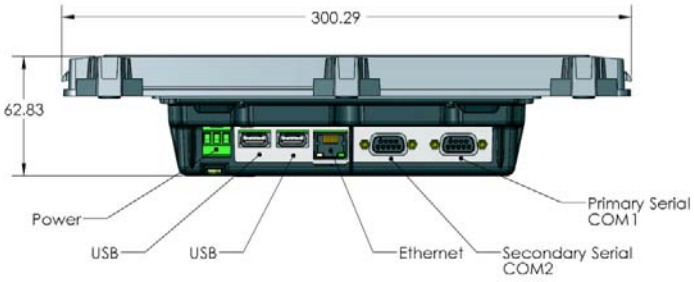

Figure 11
Modular QTERM-A12 Bottom View (units: mm)

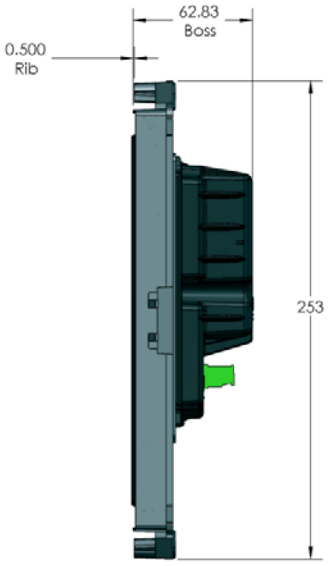

Figure 12
Modular QTERM-A12 Side View (units: mm)

7.2 Connector Pinouts

7.2.1 Primary Serial Port

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The following table shows the pinouts for each type of serial interface on the primary serial port.

Pin	EIA-232	EIA-422	EIA-485
1	—	—	—
2	TX	TX-	RTX-
3	RX	RX+	—
4	—	—	—
5	Ground	Ground	Ground
6	—	—	—
7	CTS (in)	RX-	—
8	RTS (out)	TX+	RTX+
9	Power In	Power In	Power In

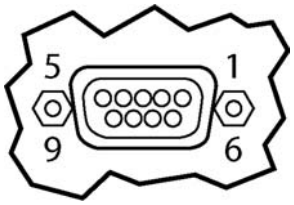

Figure 13
Female DB9 Connector

Power can be supplied to the terminal through pin 9 and ground return through pin 5 of the primary serial port connector.

WARNING

Although the terminal includes protection circuitry to prevent power supply contention, power should not be simultaneously connected to both the 3-pin terminal strip and the primary DB9 connectors.

WARNING

QTERM-A12 power must come from an SELV (Safety Extra Low Voltage) power source and should have a current limit on its output of 5 Amperes. It must provide a minimum of 10 volts DC power and be limited to a maximum of 32 volts DC. Limiting may be inherent to the supply or may be provided by supplementary overcurrent devices. If the QTERM-A12 does not respond or exhibits abnormal behavior on power up, disconnect power and contact Beijer Electronics for technical support.

7.2.2 Secondary Serial Port

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The secondary serial port on the QTERM-A12 is configured as EIA-232 only with hardware or software handshaking. The pins are defined below.

Pinout Table	
1	—
2	TX
3	RX
4	—
5	Ground
6	—
7	CTS (in)
8	RTS (out)
9	—

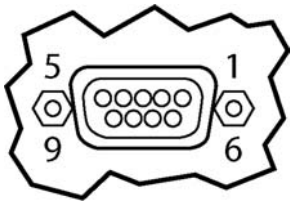

Figure 14
Female DB9 Connector

7.2.3 Terminal Strip for Power Input

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The 3-pin terminal strip is used to provide input voltage and ground to the terminal. The terminal strip provides a chassis ground connection. The chassis ground pin is isolated from the system ground of the terminal.

Pin	Function
1	Power
2	Ground
3	Chassis GND

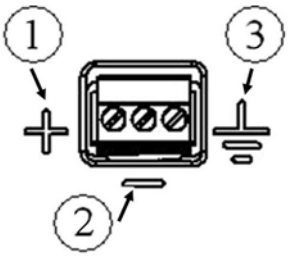

Figure 15
3-Pin Power Connector

7.2.4 Ethernet Port

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The Ethernet port has a standard 10/100Base-T interface with an 8-pin (RJ-45) modular jack connector. The connector orientation and pinout table are shown below. For PoE pinout information please refer to section 3.4, “Optional Power-over-Ethernet Interface”.

Pinout Table	
1	TX+
2	TX-
3	RX+
4	—
5	—
6	RX-
7	—
8	—

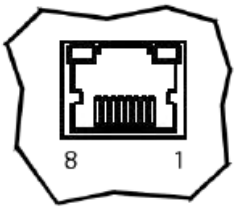

Figure 16
RJ-45 Connector

7.2.5 USB 2.0 Ports

CAUTION

For Class I, Division 2 installations:
The USB ports are for operational maintenance only. Do not leave USB devices permanently connected unless the area is known to be non-hazardous.

CAUTION

For Class I, Division 2 installations:
Do not connect or disconnect cables while power is applied unless the area is known to be non-hazardous.

The QTERM-A12 includes two USB 2.0 full-speed ports. The connector orientation and pinout table are shown below.

Pinout Table	
1	VCC (+5 VDC)
2	Data -
3	Data +
4	Ground

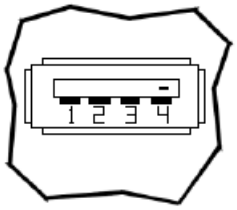

Figure 17
USB Connector

Notes