Contents

QUICKPANEL FAMILY

Product Identification

Below is a list of currently available *QUICKPANEL* family models and option modules.

QUICKPANEL jr.	Display Type
QPJ-2D100-L2P	5" Monochrome LCD
QPJ-2D100-S2P	5" STN Color LCD
QPK-3D200-L2P	6" Monochrome LCD (Replaces QPK-2D100-L2P)
QPK-3D200-S2P	6" STN Color LCD (Replaces QPK-2D100-S2P)
QPK-3D200-C2P	6" TFT Color LCD
QPM-2D100-L2P	6" Monochrome LCD (Mini)
QPM-3D200-B2P	6" Monochrome Blue-LCD Mini, 24VDC
QPGCxDE0000	7.4” TFT Color, Ethernet, CF-Card, 24 VDC
QPKSxDNxxxx	6” STN QP4 Color ,CF-Card,24 VDC
QPKCxDExxxx	6” TFT QP4 Color, Ethernet, CF-Card, 24 VDC
QUICKPANEL	Display Type
QPI-31200-E2P	9" Monochrome EL,120VAC (Replaces QPI-21100-E2P)
QPI-31200-S2P	10.5" STN Color LCD,120VAC (Replaces QPI-21100-S2P)
QPI-31200-C2P	10.5" TFT Color,120VAC (Replaces QPI-21100-C2P)
QPI-2D100-L2P	10.5" Monochrome LCD, 24VDC
QPI-3D200-E2P	9" Monochrome EL, 24VDC (Replaces QPI-2D100-E2P)
QPI-3D200-S2P	10.5" Color STN, 24VDC (Replaces QPI-2D100-S2P)
QPI-3D200-C2P	10.5" TFT Color, 24VDC (Replaces QPI-2D100-C2P)
QPL-21100-C2P	12.1 TFT Color, 120VAC
QPL-2D200-C2P	12.1 TFT Color, 24VDC
QPICxDE0000	10.5” TFT, Color, Ethernet, CF-Card, 24 VDC
QPICxAE0000	10.5” TFT, Color, Ethernet, CF-Card, 110 VAC
QPLCxDE0000	12.1” TFT, Color, Ethernet, CF-Card, 24 VDC
QPLCxAE0000	12.1” TFT, Color, Ethernet, CF-Card, 110 VAC

Note 1: QPI-3xxxx Series supports 64 Colors, 2Mbyte application memory, twice the brightness of QPI-2xxxx series, and 100MHz processor.

Optional Module	Adapter Modules (contat factory for availability)
QPI-PSL-201[2]	Adapter module for QPI-xxx-xxx Communication Module
QPJ-PSM-201[3]	Adapter module for QPJ-xxx-xxx Communication Module

[2] Required when QPI-xxx-xxx module used with QPICxxE00 or QPLCxxE00

[3] Required when QPJ-xxx-xxx module used with QPGCxxE00

Option Module	Protocol Selection
QPI-ABR-201	*QUICKPANEL* A-B 1771Remote I/O
QPI-ABD-201	*QUICKPANEL* A-B Data Highway Plus
QPI-COS-201	*QUICKPANEL* CANopen
QPI-DVN-202	*QUICKPANEL* Device Net Slave
QPI-GEG-201	*QUICKPANEL* General Electric Genius I/O
QPI-IBS-201	*QUICKPANEL* Interbus S Slave
QPI-MBP-201	*QUICKPANEL* Modicon Modbus Plus
QPI-PBS-202	*QUICKPANEL* Profibus DP Slave
QPJ-ABR-201	*QUICKPANEL jr.* A-B 1771Remote I/O
QPJ-ABD-201	*QUICKPANEL jr.* A-B Data Highway Plus
QPJ-GEG-201	*QUICKPANEL jr.* General Electric Genius I/O
QPJ-MBP-201	*QUICKPANEL jr.* Modicon Modbus Plus
QPJ-PBS-201	*QUICKPANEL jr.* Profibus Module
QPJ-IBS-201	*QUICKPANEL jr.* Interbus-S Module
QPJ-COS-201	*QUICKPANEL jr.* CANopen Module
QPJ-DVN-202	*QUICKPANEL jr.* DeviceNet Module

NOTE The product label contains the model number and serial number. Option modules for the *QUICKPANEL* will have a separate product label.

Installation Hints

NOTE Mounting brackets are packed inside the carton.

CAUTION

In order to protect the unit, to provide accessibility in operation, and to improve ventilation, please ensure that there is adequate space around the unit. The recommended clearance is 4" from other structures.

Ensure that this unit is located as far away as possible from electromagnetic circuits, circuit breakers, and other equipment that causes arcing.

This unit is held in place by metal clamps. The panel thickness should be .062" (1.6mm) to .3937" (10mm).

Forced air cooling is required if this unit is to be used in a surrounding temperature which is greater than 50°C.

Route all signal lines in a separate duct, away from power circuits. Use shielded cable and tie the shield to the Frame Ground contact point.

This unit must be installed vertically for natural air cooling. Please ensure that heat from other equipment does not add heat to this unit.

Do not hit the touch panel with a hard or heavy object, or press the touch panel with too much force.

Do not use paint thinner or organic solvents to clean the unit or display.

QP-Ethernet Series

General Specifications

ELECTRICAL:

QPIxxAE0000/QPLxxAE0000

Input Voltage	AC 100V
Rated Voltage	AC85V to AC132V
Power Consumption	50VA or less
Allowable Voltage Drop	20ms or less
Voltage Endurance	AC1500V 20mA for 1 minute (between charging and FG terminals)
Insulation Resistance	10MΩ or higher at DC500V (between charging and FG terminals)

QPGxxDE0000/QPIxxDE0000/QPLxxDE0000

	QP2400-TC41-24V	QP 2500-TC41-24V	QP2600-TC41-24V
Input Voltage	DC 24V		
Rated Voltage	DC19.2V to DC28.8V		
Power Consumption	28W or less	50W or less	50W or less
Allowable Voltage Drop	10ms or less		
In-rush Current	30A or less		
Voltage Endurance	AC1000V 20mA for 1 minute (between charging and FG terminals)		
Insulation Resistance	10MΩ or higher at DC500V (between charging and FG terminals)		

ENVIRONMENTAL:

Ambient Operating Temperature	0°C to +50°C *1
Storage Temperature	-20°C to +60°C
Ambient Humidity	10%RH to 90%RH (Non condensing, dry bulb temperature: 39°C or less)
Atmosheric Endurance (GP Operation Altitude)	800hPa to 1114hPa (2000 meters or lower)
Dust	0.1mg/m^3 or less (non-conductive levels)
Atmosphere	Free of corrosive gasses
Vibration Resistance	IEC61131-2 compliant When vibration is NOT continuous 10Hz to 57Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2 When vibration is continuous 10Hz to 57Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2 X, Y, Z directions for 10 times (80min.)
Noise Immunity (via noise simulator)	Noise Voltage: 1500Vp-p Pulse Duration: 1μs Rise Time: 1ns

STRUCTURAL:

QPGxxDE0000/QPIxxDE0000/QPLxxDE0000

	QPGxxDE0000	QPIxxDE0000	QPLxxDE0000
Grounding	100Ω or less, or your country's applicable standard		
Ratings *2 (For front panel of installed unit)	Equivalent to IP65f (JEM 1030) NEMA#250 Type4X/12	Equivalent to IP65f (JEM 1030) NEMA#250 Type4X/12	
Weight	2.5 kg (5.5lb) or less	3.5kg (7.7lb) or less	
Cooling Method	Natural air circulation		
External Dimensions	W215mm [8.46in] x H170mm [6.69in] x D60mm [2.36in]	W317mm [12.48in] x H243mm [9.57in] x D58mm [2.28in]	

1. *When using 12.1" unit in an environment where the temparature becomes or exceeds 40C for an extended period of time, the screen contrast level may decrease from its original level of brightness.*

2. *The front face of the QP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the specification. Even though, the QP unit's level of resistance is equivalent to these standards, oils that should have no effect on the QP can possibly harm the unit. This can occur in areas where either vaporized oils are present or where low viscosity cutting oils are allowed to adhere to the unit of long periods of time. If the QP's front face protection sheet becomes peeled off, these conditions can lead to the ingress of oil into the QP and separate protection measures are suggested. Also if non-approved oils are present, it may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the QP be sure to confirm the type of conditions that will be present in the QP's operating environment. If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed. To maintain the original protection level, you need to replace the installation gasket regularly.*

Functional Specifications

		QPGxxDE0000	QPIxxDE0000	QPLxxDE0000
Type		TFT type color LCD		
Colors		256, No blink/64 colors, 3-speed blink *1		
Resolution		640 x 480pixels		800 x 600pixels
Effective Display Area		W149.8mm [5.90in.] x H112.3mm [4.42in.]	W211.2mm [8.34in.] x H158.4mm [6.24in.]	W246mm [9.69in.] x H184.5mm [7.26in.]
Attributes		Blinking, Reverse Video		
Language Fonts		ASCII: (Code page 850) Alphanumeric (incl. Eur. characters) Chinese: (GB2321-80 codes) simplified Chinese fonts Japanese: ANK 158, Kanji : 6962 (JIS Standards 1 & 2) Korean: (KSC5601 - 1992 codes) Hangul fonts Taiwanese: (Big 5 codes) traditional Chinese fonts		
Text	8x8 dots	80 Char. x 60 rows		100 Char. x 75 rows
	8x16 dots	80 Char. x 30 rows		100 Char. x 37 rows
	16x16 dots	40 Char. x 30 rows		50 Char. x 37 rows
	32x32 dots	20 Char. x 15 rows		25 Char. x 18 rows
Font Sizes		Both height and width can be expanded 1, 2, 4, or 8 times.		
Touch Panel		32 x 24 keys/ screen (1 or 2 point touch)		40 x 30 keys/ screen (1 or 2 point touch)
Display Sizes *2		8X8 dot font, 8X16 dot font, 16X16 dot font and 32X32 dot font		
Backlight		CFL (Service life: 50,000 hrs. at 25°C and 24hr. operation)		
Brightness Control		4 levels of adjustment available via touch panel.		

SETUP SCREEN

Memory

Application	**4MB FLASH EPROM (Approx 1280 screens at 3.2 KB/screen)**
Data Backup	**256KB SRAM (Uses lithium battery) *1**

A lithium battery's lifetime is:

10 years when the battery's ambient temparature is under 40°C

4.1 years when the battery's ambient temparature is under 50°C

1.5 years when the battery's ambient temparature is under 60°C

When used for backup:

Approximately 60 days with a fully charged battery

Approximately 6 days with a half charged battery

Clock

	QPGxxDE0000	QPIxxDE0000	QPLxxDE0000
Clock Accuracy	± 65 seconds/ month (at room temperature)		

The QP's internal clock has a slight error. At normal operating temparatures and conditions, with the QP operating from its lithium battery, the degree of error is 65 seconds per month. Varioations in operating conditions and battery life can cause this error to vary from –380 to +95 seconds per month. For systems where this degree of error will be a problem, the user should be sure to monitor this error and make adjustments when required.

The QP-Ethernet series units are equipped with a variety of new and useful features such as on-board Ethernet and Compact Flash card. The following explanation describes these:

Interfaces

Serial Interface	Asynchronous Transmission: RS232C/RS422 Data Length: 7 or 8 bits Stop Bit: 1 or 2 bits Parity: None, Odd or Even Data Transmission Speed: 2400 to 115.2kbps *2
Expansion Serial Interface	Asynchronous Transmission: RS232C Data Length: 7 or 8 bits Stop Bit: 1 or 2 bits Parity: None, Odd or Even Data Transmission Speed: 2400 to 115.2kbps *3
Ethernet Interface	IEEE802.3, 10BASE-T
Tool Connector	Asynchronous TTL level nonprocedural command I/F <During screen file development> Used for transferring data to and from the GP application software and the Used for data transfer with the 2-Port feature. <During Operation> Used for a variety of devices, including a bar-code reader.
CF Card Interface	1 slot
CF Card Expansion Interface	CF Card Front Maintenance Unit Connector Only QPIxxDE0000 and QPLxxDE0000
Printer Interface	Compatible with NEC PC-PR201/PL , EPSON ESC/P24-J84(C), HP Laser Jet PCL 4 command compatible printers *1
AUX Input/Output	Remote Reset Input 1 point Input Voltage DC24V +10% Input Current 4mA (TYP) Min. Input Pulse Width 2ms Operating Voltage (When ON) Min. DC21.1V (When OFF) Max. DC3V Isolation Method Photocoupler Isolation Output - 3 Points RUN Output - 1 point System Alarm Output - 1 point External Buzzer Output - 1 point Rated Voltage DC24V Max. Rated Current 50mA/point Wire Gauge: AWG28 to AWG16
Sound Output	External Speaker Connection (Terminal Block) Monaural 1CH Speaker Output 70mW (Rated Load: 8W, Frequency: 1kHz) Sound Line Out Output 2.7Vp-p (Rated Load:10kW)

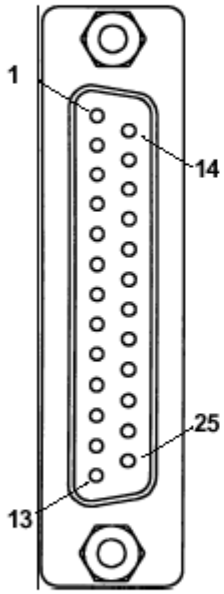
Note:

1. Printers with only Windows drivers cannot be used. However, certain types of printers with both Windows and DOS drivers can be used. For details contact your local QP distributor.
2. The maximum communication speed observed between PLC(host) and Quick Panel is 38.4, 57.6 and 115.2 Kbps.
3. The maximum communication speed between PC and Quick Panel observed was only 38.4 Kbps.

Interface Specifications

This interface can be either RS232C or RS422. Connects QP to Host (PLC).

Serial Interfaces

Pin Assignments	Pin #	Signal Name	Condition
(D-Sub 25pin female) SIO  	1	FG	Frame ground
	2	SD	Send data (RS-232C)
	3	RD	Receive data (RS-232C)
	4	RS	Request send (RS-232C)
	5	CS	Clear send (RS-232C)
	6	DR	Data Set Ready (RS-232C)
	7	SG	Signal ground
	8	CD	Carrier detect (RS-232C)
	9	TRMX	Termination (RS-422)
	10	RDA	Receive data A (RS-422)
	11	SDA	Send data A (RS-422)
	12	NC	No connection (Reserved)
	13	NC	No connection (Reserved)
	14	VCC	5V±5% output 0.25A
	15	SDB	Send data B (RS-422)
	16	RDB	Receive data B (RS-422)
	17	RI	Ring Indicate (RS-232C)
	18	CSB	Clear send B (RS-422)
	19	ERB	Enable receive B (RS-422)
	20	ER	Enable receive (RS-232C)
	21	CSA	Clear send A (RS-422)
	22	ERA	Enable receive A (RS-422)
	23	NC	No connection (Reserved)
	24	NC	No connection (Reserved)
	25	NC	No connection (Reserved)

Recommended Connector:

Dsub25pin plug XM2A-2501**<Made by OMRAN>**

Recommended Cover:

Dsub25pin cover XM2S-2511 **<Made by OMRAN>**

Jack Screws:

XM2Z-0071 **<Made by OMRAN>**

Note: Use rough metric type jack screws M2.6x0.45 p threads used to secure the cable's set screws.

Recommended Cable:

CO-MA-VV SB5PX 28AWG <Made by Hitachi Cable Ltd>

When creating your own cable, follow the instructions listed below.

<With RS-422>

The following pairs of pin #'s must be connected to each other.

#18 (CSB) ←> #19 (ERB)

#21 (CSA) ←> #22 (ERA)

- When connecting the RS-422 cable and #9 (TRMX) and #10 (RDA) points, a termination resistance of 100Ω is added between RDA and RDB.
- When making a cable for Memory link system be sure to use a 4-wire type.

<With RS-232C>

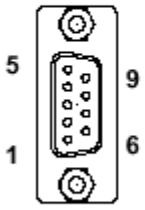
- Do not use the following pins: 9 (TRMX), 10 (RDA), 11 (SDA), 15 (SDB), 16 (RDB), 18 (CSB), 19 (ERB), 21 (CSA), 22 (ERA).
- The #1 FG terminal should only be connected if it is required by the device being connected to.

Important

- This unit's serial port is not isolated, therefore it is important that you connect the SG (Signal Ground) terminals. If this is not done, the RS422 circuit may be damaged.
- Pin 14 (VCC) DC5V output is not protected. To prevent damage or unit malfunction, be sure to use only the designated level of current.

Expansion Serial Interface – Not Supported (contact factory)

This interface is used for RS-232C data transfer.

Pin Assignments	Pin No.	Signal Name	Signal Direction	Condition
(D-Sub 9pin male) 	1	CD	Input	Carrier detect (RS-232C)
	2	RD	Input	Receive data (RS-232C)
	3	SD	Input	Send data (RS-232C)
	4	ER	Output	Enable receive (RS-232C)
	5	SG	———	Signal Ground
	6	DR	Input	Data Set Ready (RS-232C)
	7	RS	Output	Request Send (RS-232C)
	8	CS	Input	Clear send (RS-232C)
	9	RI/VCC	Input/Output	Ring Indicate (RS-232C) +5V±5% 0.25A

Recommended Connector:

Dsub25pin socket XM2D-0901 **<Made by OMRAN>**

Recommended Cover:

Dsub9pin cover XM2S-0913 **<Made by OMRAN>**

Jack Screws:

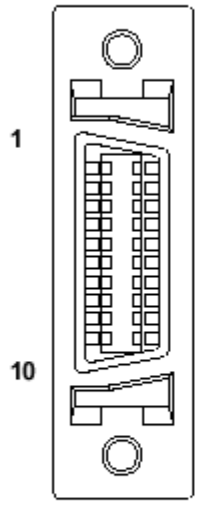
XM2Z-0073 **<Made by OMRAN>**

Note: Use inch-type screws (#4-40UNC) as set screws.

Important: Since pin #9 (RI/VCC) is unprotected, be sure to keep the output current in the rated range.

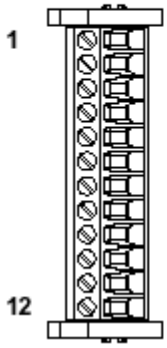
Printer Interface

When connecting a printer, use GE Fanuc's printer cable (HMI-CAB-C93).

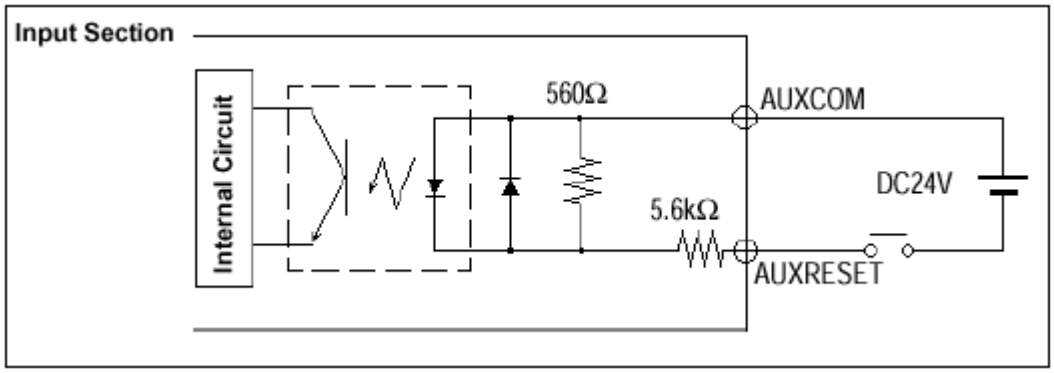
Pin Assignments	Pin #	Signal Name	Condition
	1	GND	Ground
	2	RESERVE	Reserved
	3	PDB5	Data Signal
	4	PDB4	Data Signal
	5	PDB3	Data Signal
	6	GND	Ground
	7	SLCT	Select Status (Input)
	8	PDB0	Data Signal
	9	$\overline{\text{PSTB}}$	Strobe Signal (Output)
	10	BUSY	Busy Signal (Input)
	11	PDB7	Data Signal
	12	PDB6	Data Signal
	13	GND	Ground
	14	$\overline{\text{ERROR}}$	Printer Error (Input)
	15	GND	Ground
	16	PDB2	Data Signal
	17	PDB1	Data Signal
	18	PE	Paper Runout
	19	$\overline{\text{INIT}}$	Initialization Signal (Output)
	20	GND	Ground

AUX I/O and Sound Output – Not Supported (contact factory)

This interface is used for external reset, alarm output, buzzer output.

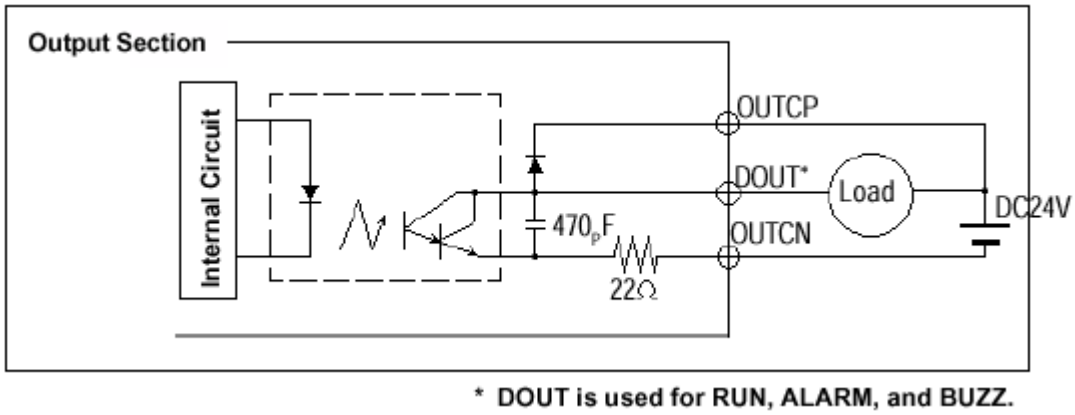
Pin Assingments	Pin #	Signal Name	Condition
	1	AUXCOM	External Reset Common
	2	AUXRESET	External Reset Input
	3	RUN	ONLINE Operation
	4	ALARM	System Alarm Output
	5	OUTCP	DC24V
	6	BUZZ	External Buzzer Output
	7	RESERVE	Reserved
	8	OUTCN	0V
	9	RESERVE	Reserved
	10	SP OUT	Speaker Output
	11	GND	Ground
	12	LINE OUT	Sound Lineout Output

Input Circuit



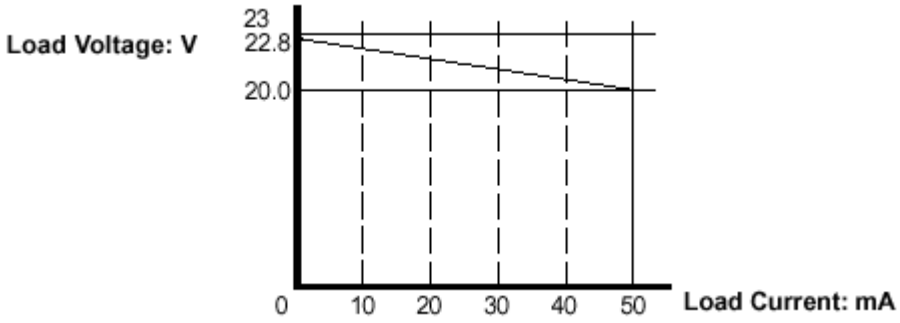
Input Voltage	DC24V +/- 10%	
Input Current	4mA/DC24V (TYP)	
Min Input Pulse Width	2ms	
Operating Voltage	ON Voltage Min	DC21.2V
	OFF Voltage Max	DC3V
Termination Type	Photo-Coupler Isolation	

Output Circuit

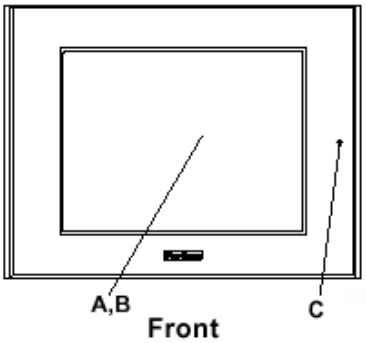


Max Load Current	50mA/Point
Rated Load Voltage	DC24V (TYP)

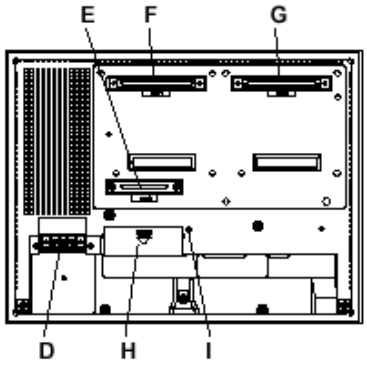
The following chart illustrates the relationship between the Load Voltage and the Load Current.



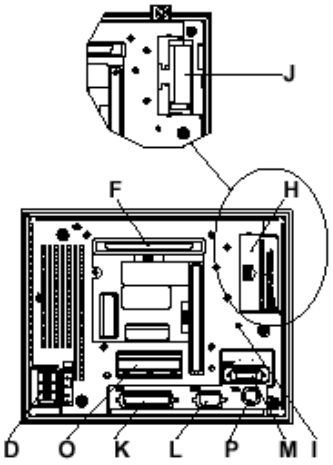
Part Names and Functions



Front
(all units)



Rear
QPIxxDE0000 and QPLxxDE0000



QPGxxDE0000

A: Display Panel

The QP monitor screen displays the screen setup and corresponding host (PLC) data. (All units)

B: Touch Panel

Performs any screen change operations and sends data to the PLC.

C: Status LED

This LED reflects the QP's condition.

OFF – No power input

Green – Normal operation

Orange – Backlight is burned out

D: Power Input Terminal Block

Connects the power cord

E: CF Card Expansion Interface *1

Used for connecting the CF Card Front maintenance unit

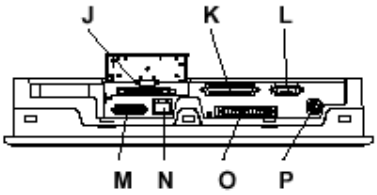
(Not supported , contact factroy)

F: Expansion Unit Interface 1 *1

Connects expansion units with communication features

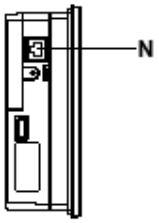
G: Expansion Unit Interface 2

Connects expansion units with display features. (Contact factory for details).



Bottom

QPIxxDE0000 and QPLxxDE0000



Side

QPGxxDE0000

H: CF Card Cover

Open this cover to see the CF Card Slot. When accessing the CF Card, this cover must be closed.

I: CF Card Access LED

If the CF Card Cover is closed when the CF Card is inserted, the LED lamp turns ON. The LED lamp will remain turned ON even if the CF Card Cover is opebned while the QP accesses the CF Card.

J: CF Card Slot

Insert the CF Card in this slot.

K: Serial Interface

Used for the RD-232C and RS-422 Cables. Is connected to the Host (PLC)

L: Expansion Serial Interface – Not supportd (contact factory)

Uses RS-232C Cable

M: Printer Interface

Connect the printer cable here. Recommended cable: GE Fanuc's HMI-CAB-C93

N: Ethernet Interface

Used for Ethernet (10BASE-T). The LED will change (turn ON, blink) according to the QP's status.

Orange – Lights when power is turned ON, blinks during data transfer

Green – Turns ON when linked.

O: Screw Lock Terminal Block -Not Supported (contact factory)

Used for external reset, alarm output, buzzer output, and sound output

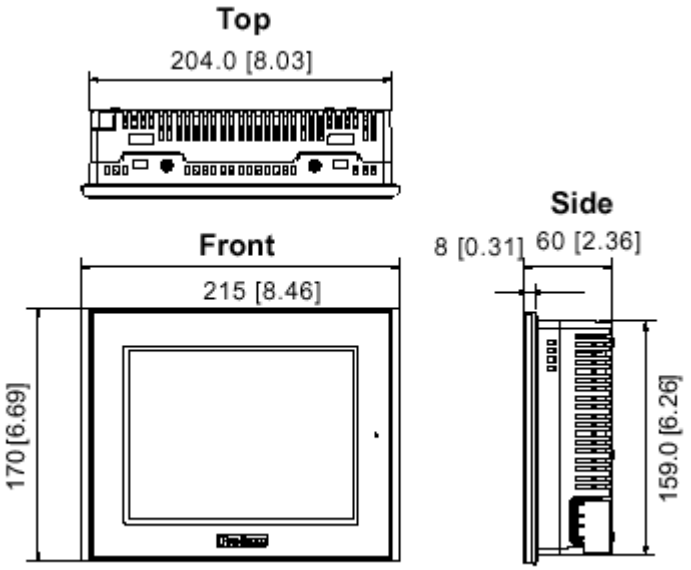
P: Tool Connector

The Data Transfer cable, or Bar Code Reader can be connected here.

Dimensions

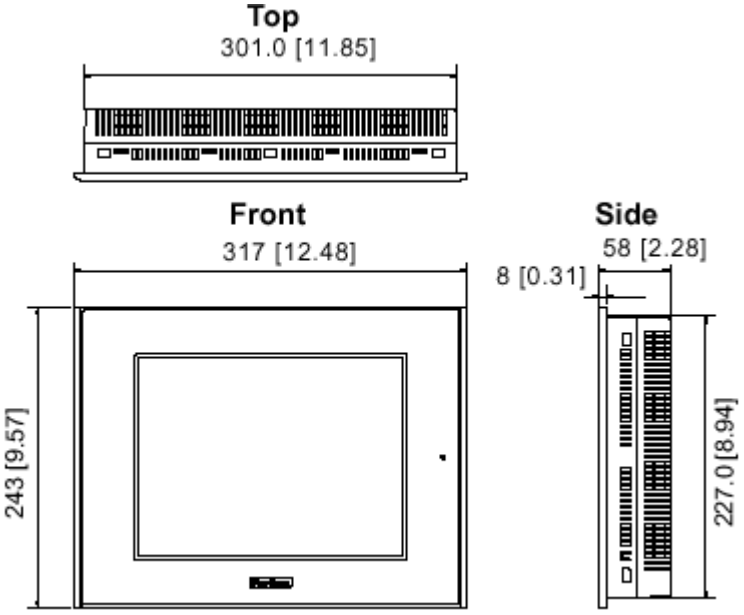
7.4” External Dimensions

Unit: MM (In)



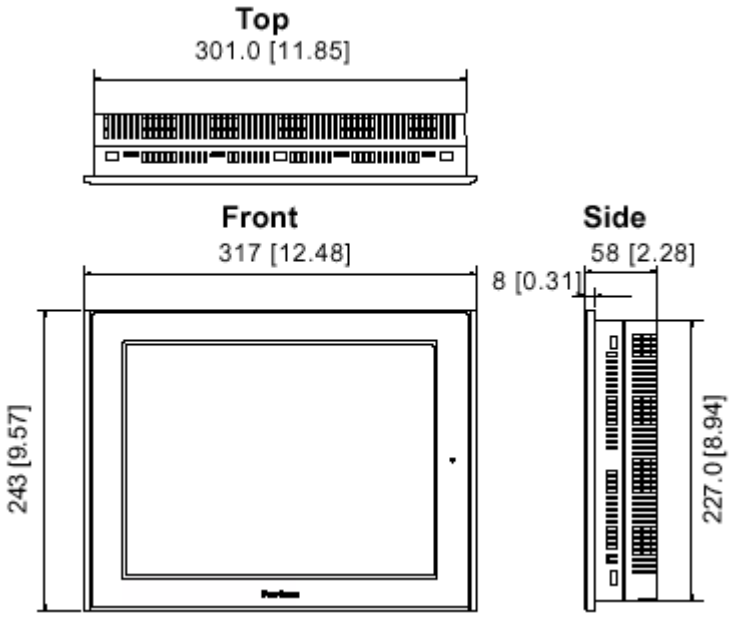
10.5” External Dimensions

Unit: MM (In)



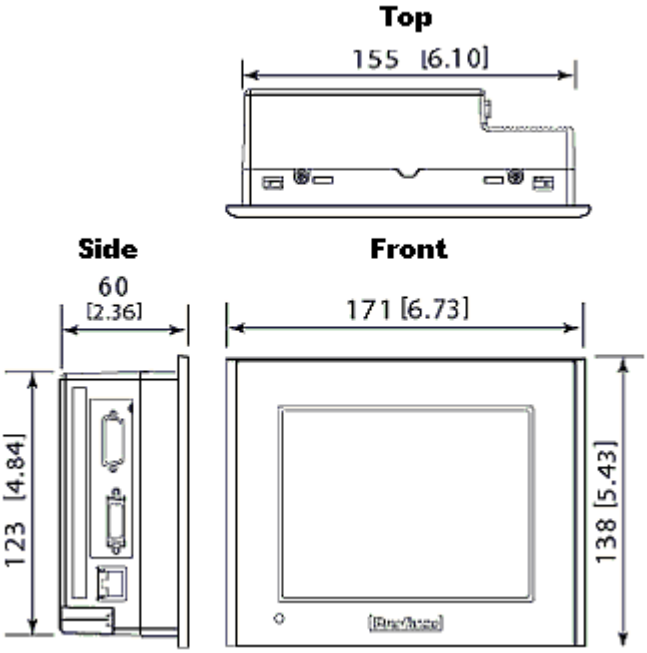
12.1” External Dimensions

Unit: MM (In)



6” QP4 TFT External Dimensions

Unit: MM (In)

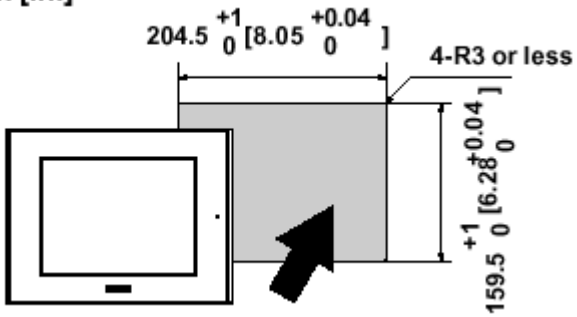


NOTE : 6 inch QP4 STN QPKSxDNxxxx has the same dimensions as 6 inch QP4 TFT.

Panel Cut Dimensions

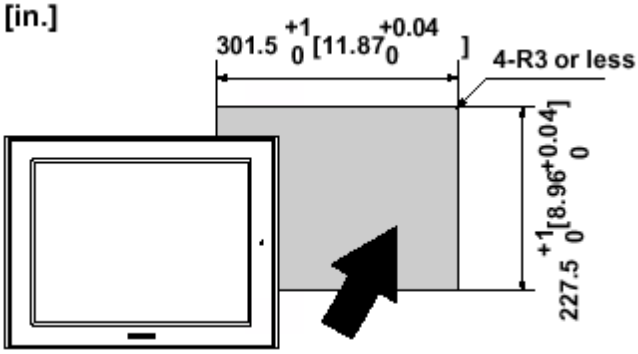
7.4" Unit

Unit: mm [in.]



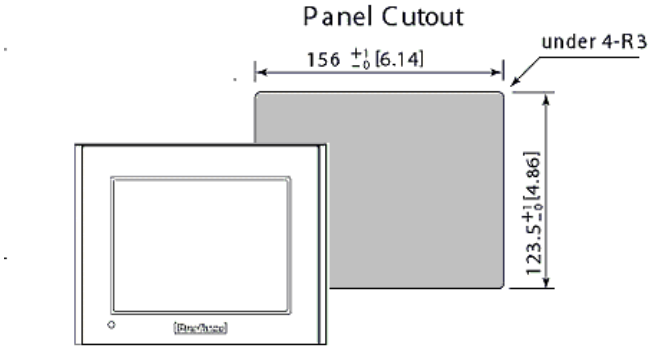
10.5" and 12.1" Units

Unit: mm [in.]

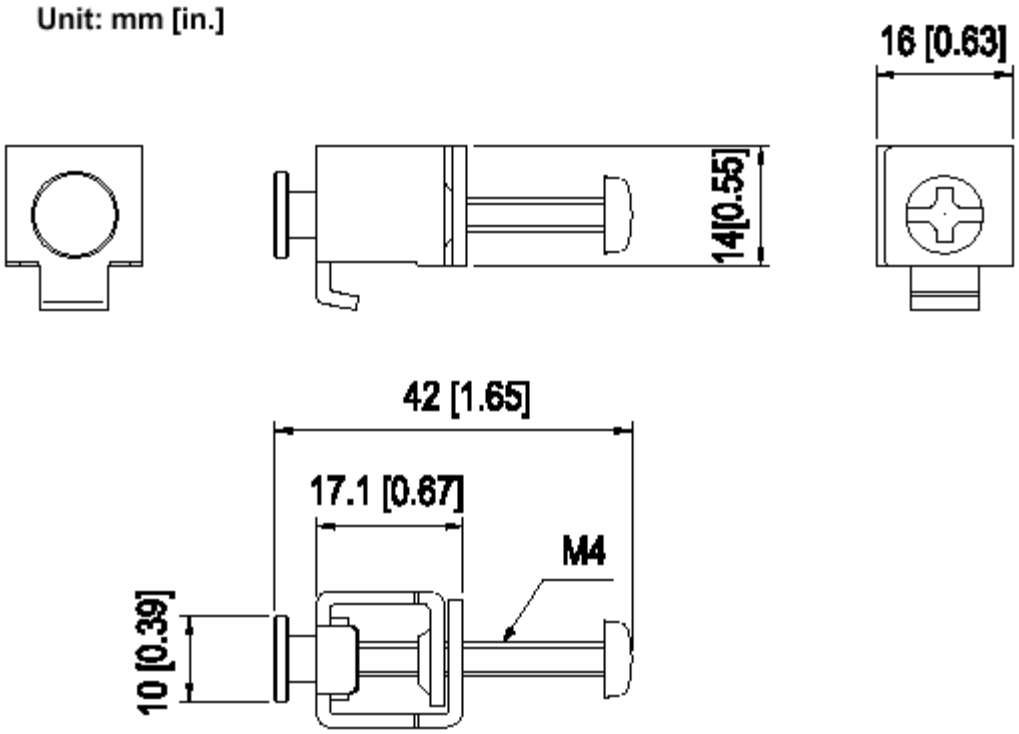


6 " TFT Units

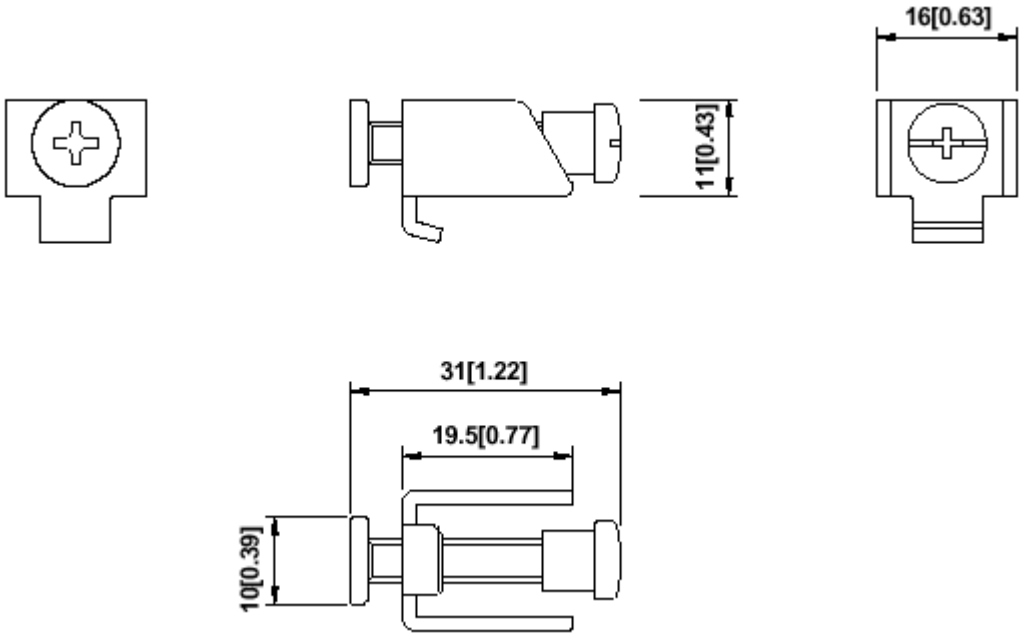
Unit: MM (In)



Installation Fasteners



Normally, the QP unit's packages includes the above installation fasteners, however the QP-Ethernet Seires will use the following fasteners. Both types use the same attachment procedures. The below fasteners should not be used with non QP-Ethernet Series units:



Installation and Wiring

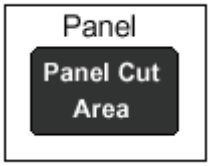
Installation Procedures

CHECK THE INSTALLATION GASKET'S SEATING: It is strongly recommended that you use the installation gasket, since it absorbs vibration in addition to repelling water. Place the QP on a level surface with the display panel facing downward. Check that the QP's installation gasket is seated securely into the gasket's groove, which runs around the perimeter of the panel's frame.

Important: Before installing the QP into a cabinet or panel, check that the installation gasket is securely attached to the unit. A gasket which has been used for a long period of time may have scratches or dirt on it, and could have lost much of its dust and drip resistance. Be sure to change the gasket periodically, or when scratches or dirt become visible.

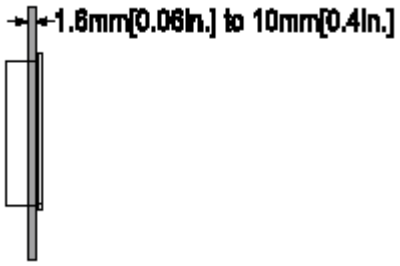
Creating a Panel Cut

Create the correct sized opening required to install the QP, using the installation dimensions given. The installation gasket, installation brackets and attachment screws are all required when installing the QP.

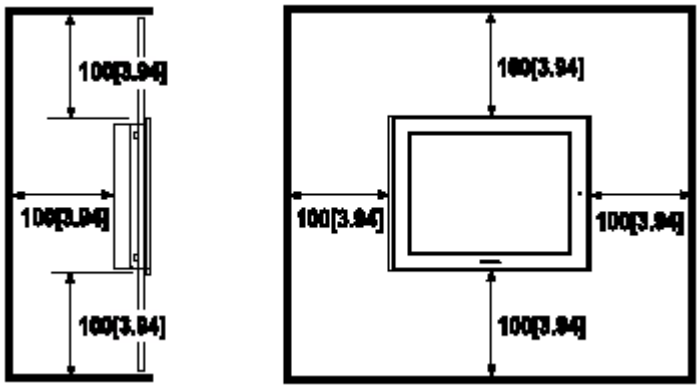


Note: Check that the installation panel or cabinet's surface is flat, in good condition and has no jagged edges. Also, if desired, metal reinforcing strips can be attached to the inside of the panel, near the Panel Cut, to increase the panel size.

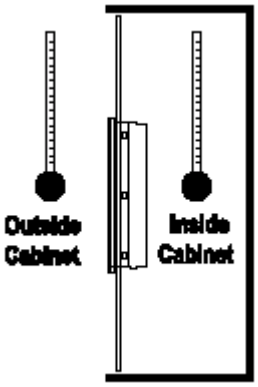
The panel thickness should be from 1.6mm (0.06in) to 10mm(0.4in). Decide the panel's thickness based on the level of panel strength required.



For easier maintenance, operation, and improved ventillation, be sure to install the QP at least 100mm (3.94 in) away from adjacent structures and other equipment.

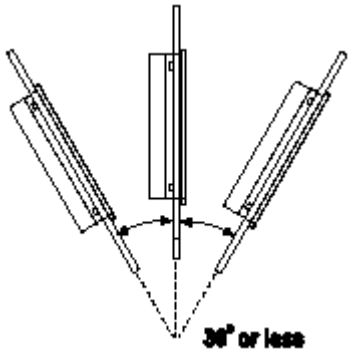


Be sure that the ambient operation temparature and the ambient humidity are within their designated ranges. (When installing the QP in a cabinet or enclosure, the term “ambient operation temparature” indicates the cabinet or enclosure’s internal temparature.



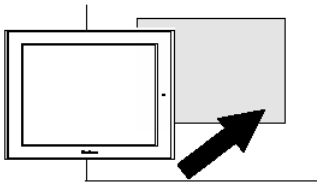
Be sure that the heat from surrounding equipment does not cause the QP to exceed its standard operating temparature.

When installing the QP in a slanted panel, the panel face should not incline more than 30º.

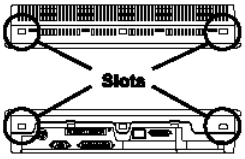


When installing the QP in a slanted panel, and the panel face inclines more than 30º, the ambient temparature must not exceed 40ºC. You may not need to use forced air cooling (fan, A/C) to ensure the ambient operating temparature is 40ºC or below. When installing the QP vertically, position the unit so that the Power Input Terminal Block is also vertical.

Installing the QP

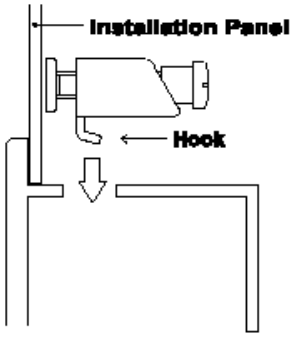


1) Insert the QP into the panel cut out

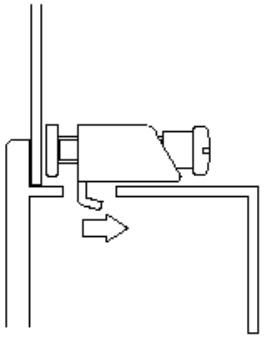


2) Insert the installation fasteners ito the QP's insertion slots, at the top and bottom of the unit (total 4 slots)

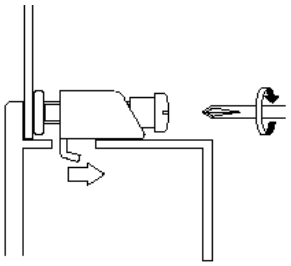
The minimum number of fasteners required to install a QP unit is four (4), however, up to 10 fasteners can be used on a 10.5" or 12.1" unit.



3) Insert each of the fastener shown below. Be sure to pull the fastener back until it is flush with the rear of the attachment hole.



4) Use a Philips screw driver to tighten each fastener screw and secure the QP in place.



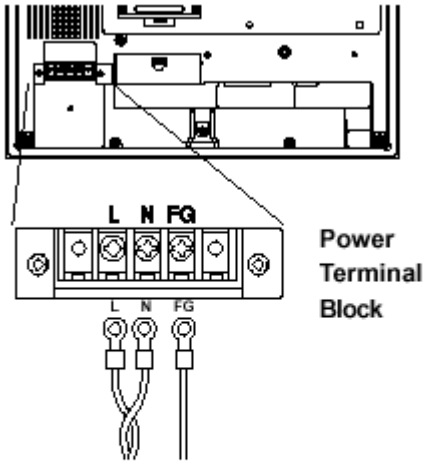
Wiring Cautions

Connecting the Power Cord

When the FG terminal is connected, be sure the wire is grounded. Not grounding the QP unit will result in excessive noise. Use your country's applicable standard for grounding. To prevent the Ring terminals from causing a short when the terminal block attachment screws are loosened, be sure to use sleeve-type Ring terminals.

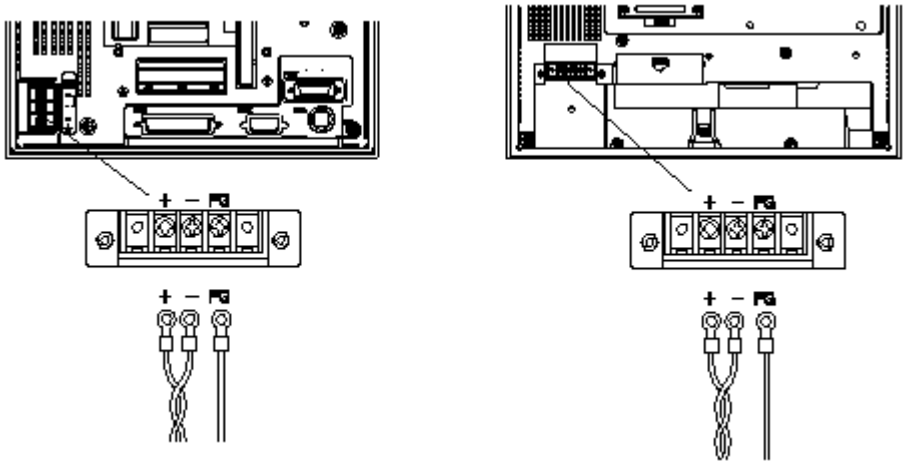
Connecting the Power Supply Terminals

QPIxxAE0000 or QPLxxAE0000



L	AC Input Live Line
N	AC Input Neutral Line
FG	Grounding Terminal connected to the GP chassis.

QPGxxDE0000 (24VDC) **QPIxxDE0000 or QPLxxDE0000 (24VDC)**

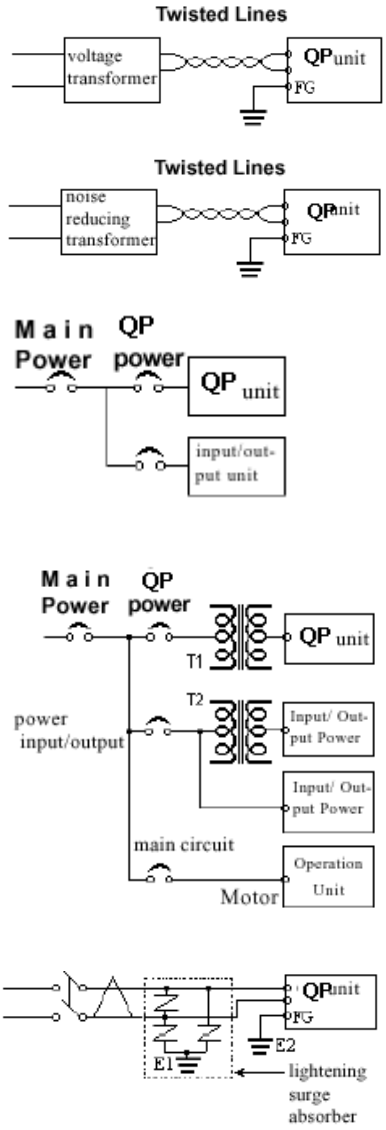


+	Positive electrode
-	Negative electrode
FG	Grounding Terminal connected to the GP chassis.

1) Be sure to that the QP's power cord is not plugged in to the power supply
2) Remove the Terminal Strip's clear plastic cover
3) Remove the screws from the three (3) middle terminals, position the Ring Terminals as shown above and reattach the screws. (Check each wire to make sure the connections are correct).
4) Reattach the Terminal Strip's clear plastic cover.

Important: A torque of only 0.5 to 0.6 N*m is required to tighten an attachment screw.

Connecting the Power Supply



If the supplied voltage exceeds the QP unit's range, connect a voltage transformer

For between the line and ground, select a power supply that is low in noise. If there is an excess amount of noise, connect a noise reducing transformer.

Use Voltage and Noise Reducing transformers with capacities exceeding 100VA.

When supplying power to the QP unit, please separate the input/output and operation unit lines.

To increase the noise resistance quality of the power cable, simply twist each power wire before attaching the Ring Terminal.

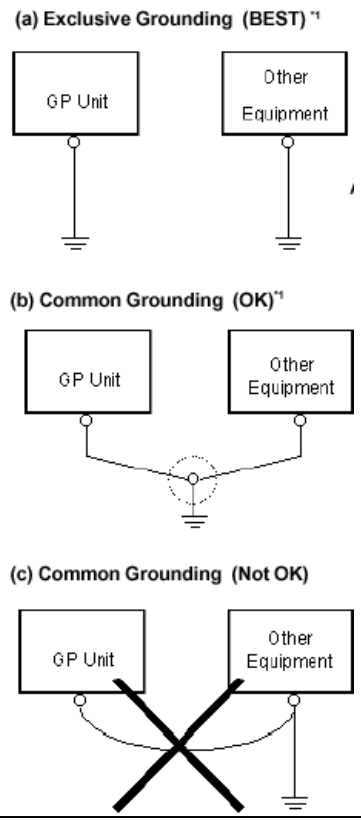
The power supply cable must not be bundled or positioned close to main circuit lines (high voltage, high current), or input/output signal lines.

Connect a lightening surge absorber to deal with power surges.

To avoid excess noise, make the power cable as short as possible.

Be sure to ground the surge absorber (E1) separately from the QP unit (E2). Select a surge absorber that has a maximum circuit voltage greater than that of the peak voltage of the power supply.

Grounding



Connect the FG terminal found at the back of the QP to an exclusive ground.

Check that the grounding resistance is less than 100Ω.

The grounding wire should have a cross sectional area greater than 2mm². Create the connection point as close to the QP unit as possible, and make the wire as short, as possible. When using a long grounding wire, replace the thin wire with a thicker wire, and place it in a duct.

If exclusive grounding is not possible, use a common connection point.

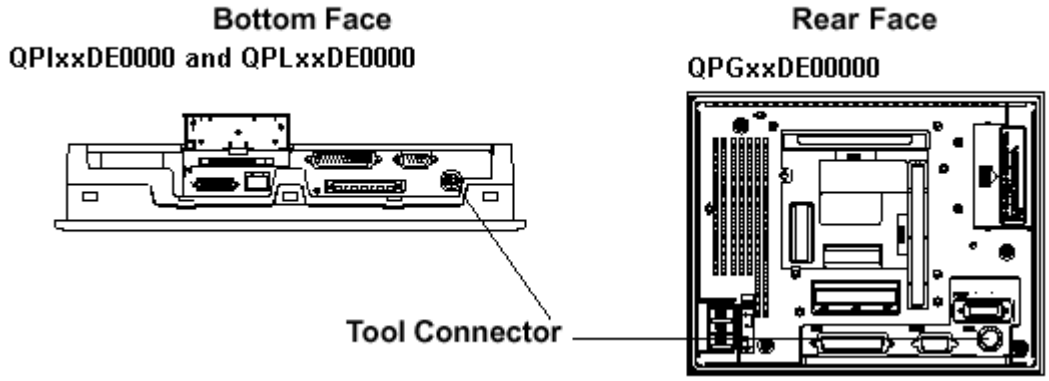
If the equipment does not function properly when grounded, disconnect the ground wire from the FG terminal.

I/O Signal Line Placement

- Input and output signal lines must be separated from the power control cables for operating circuits.
- If this is not possible, use a shielded cable and connect the shield to the QP's frame.

Tool Connector

The QP's Data Transfer Cable, Memory Loader, or the Bar Code Reader can be attached to the QP unit's Tool Connector.

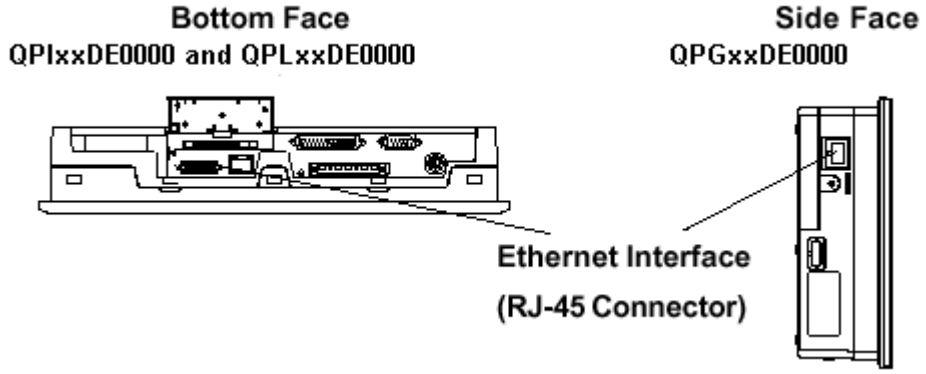


When the Bar Code Reader uses a separate power supply:

- Turn the Bar Code Reader ON before turning the QP ON.
- Turn the QP OFF before turning the Bar Code Reader OFF.

Ethernet Cable Connector

Use the following drawing to locate your QP unit's Ethernet connector. The QP Ethernet interface is IEEE802.3 compliant, and transmits data at 10 Mbps.



ETHERNET

The QP-Ethernet series comes with an Ethernet 10BASE-T connector as standard equipment. In addition to sending screen data to the QP, it can also communicate to PLC (please see the Supported TCP/IP protocols in the QucikDesigner Software).

Ethernet Data Transfer

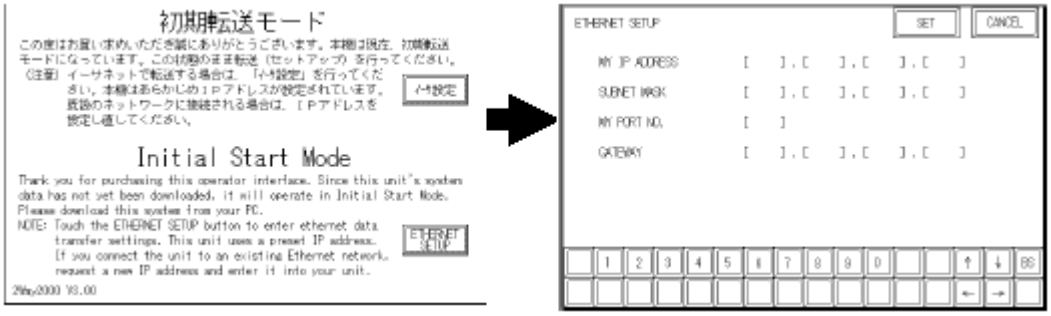
The QP-Ethernet is equipped with the Ethernet Interface, which allows you to set up the QP via an Ethernet network, as well as transfer QP screen data. When using the Ethernet communication protocol, you must specify the port number for the protocol as +10 or higher than the value specified. Otherwise, the setup or screen data transfer via Ethernet is disabled.

After you connect the Ethernet cable to the QP's Ethernet I/F, the QP will appear on the Ethernet network.

Transferring data to a completely new QP:

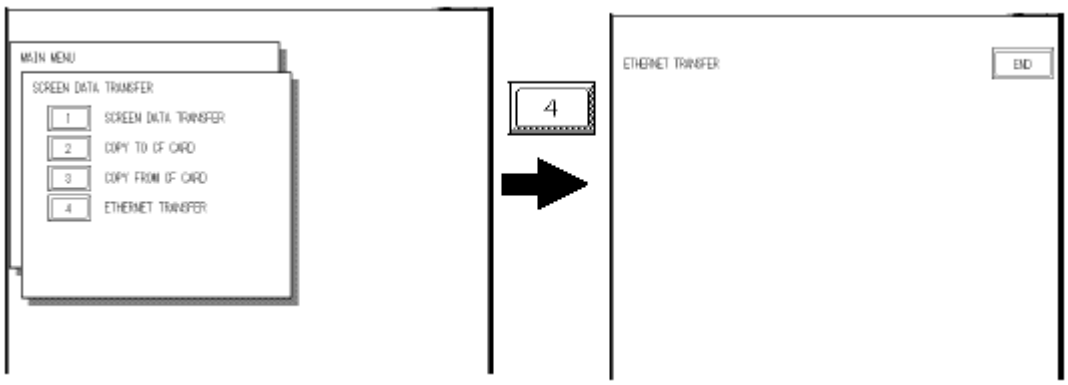
Setting up the IP address manually and sending data to a QP: Touch the "Ethernet setup" button on the QP-Ethernet Initial Start mode screen.

Use this method if the QP has been previously set up and data transferred to it:



Using a previously set up IP address to send data: When the settings in the Ethernet Setup screen are not specified and data is sent, the QP unit's factory-set IP address settings are used. If you choose the factory-set IP address be sure to designate the PC's IP address from 10.255.255.001 to 10.255.255.254 and the subnet mask as 255.0.0.0. Use the QuickDesigner V3.6 or higher for Windows software to transfer the data.

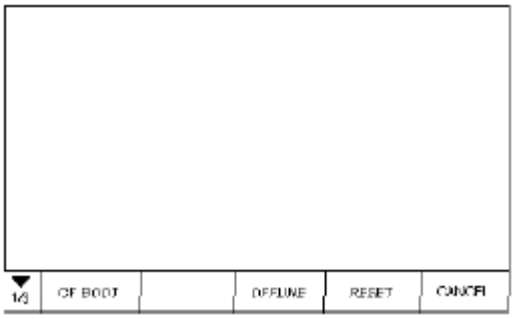
When transferring data using the QP setup is completed: When you transfer screen creation software data from your PC to the QP while the QP is in the RUN mode, the screen will change automatically to "Ethernet Mode". If it does not, you will need to manually change the QP screen to Ethernet mode via the following screen:



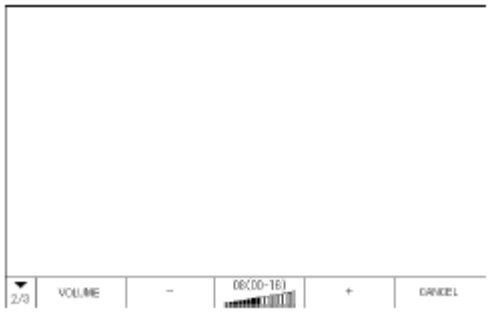
Checking the IP address: Use the following procedure to check the IP address assigned to the QP and some consideration/precautions.

(1) Display the menu bar.

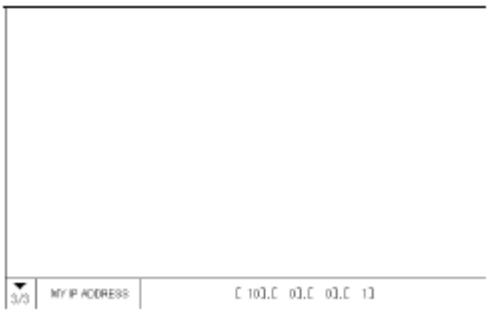
(2) Click on the left-side 1/3 cell of the menu bar to display the next menu.



(3) Next, click on the 2/3 cell to display menu.



(4) The IP address assigned to the QP will appear in the menu bar.

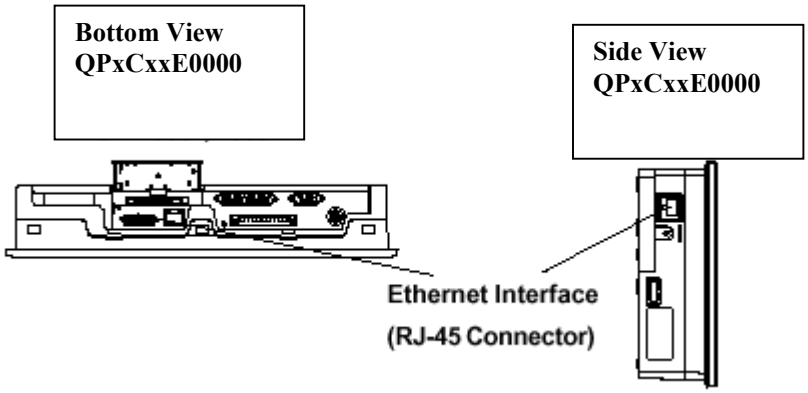


NOTE: IP address will not be reflected unless QP was reset or power cord was reconnected. After changing "Ethernet Setup" settings, the QP must then be reset or powercord must then be re-connected.

Ethernet Cable Connector

The QP Ethernet interface is IEEE802.3 compliant and trasmits data at 10 Mbps. It is strongly recommended that your Ethernet network is installed by a trained engineer.

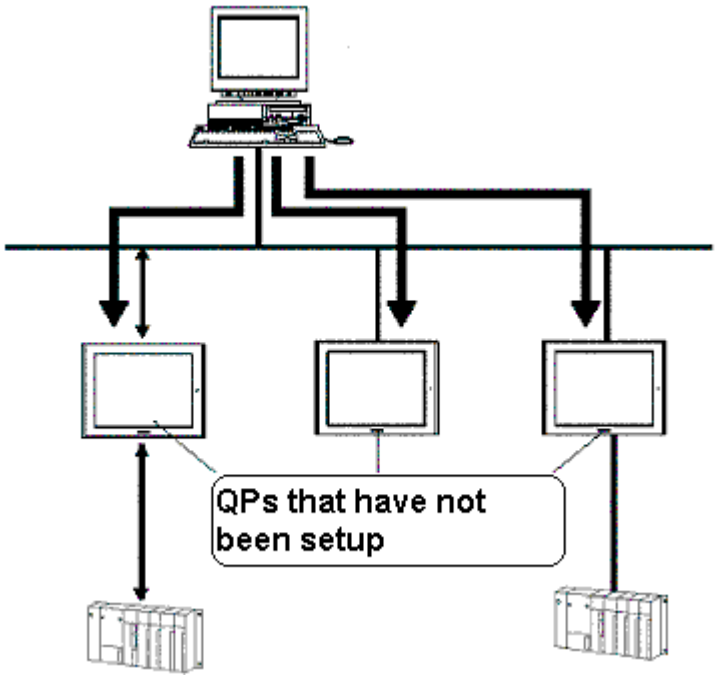
Note: HMI-CAB-ETH (6 ft. Ethernet Patch cable) sold seperately.



Ethernet Connectivity

The QP-Ethernet can be connected to a LAN or an Ethernet compatible PLC. The QP-Ethernet allows you to set up a QP and to also perform screen data transfer.

Note: Refer to QuickDesigner Software for TCP/IP Protocol support and detail functionality.



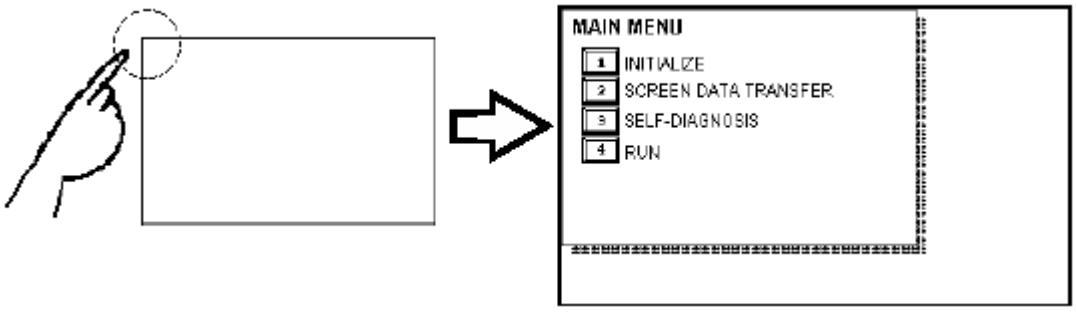
OFFLINE Mode

OFFLINE Mode provides access to the Initialize, Self-Diagnosis, and other features built into the QP-Ethernet. You can use any of these features, however, you will need to change the QP-Ethernet to OFFLINE Mode.

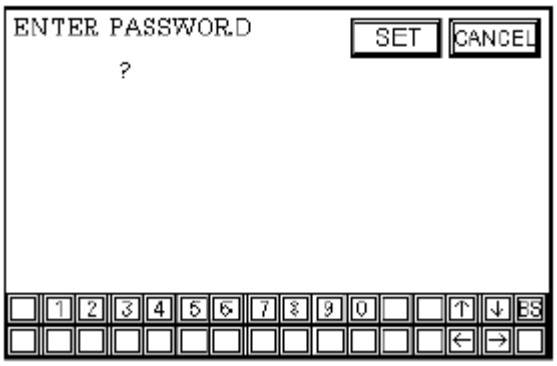
OFFLINE Mode is unavailable in a completely new QP-Ethernet until the necessary QP-Ethernet system data has been transferred from your PC's screen editor software. To do this, be sure the QP-Ethernet's power cord is plugged in and when you transfer screen data from PC to the QP-Ethernet, your QP-Ethernet's system data will be automatically sent.

Entering OFFLINE Mode: To INITIALIZE your QP-Ethernet or perform SELF-DIAGNOSIS, you must first switch the QP-Ethernet to OFFLINE Mode. There are 2 ways to enter OFFLINE Mode. First is immediately after plugging in the QP-Ethernet's power cord, and second by using the Forced Reset feature.

After plugging in to the power cord: Touch the upper left-hand corner of the QP-Ethernet screen within 10 seconds of plugging in the QP-Ethernet's power cord and the QP-Ethernet will change to OFFLINE Mode.



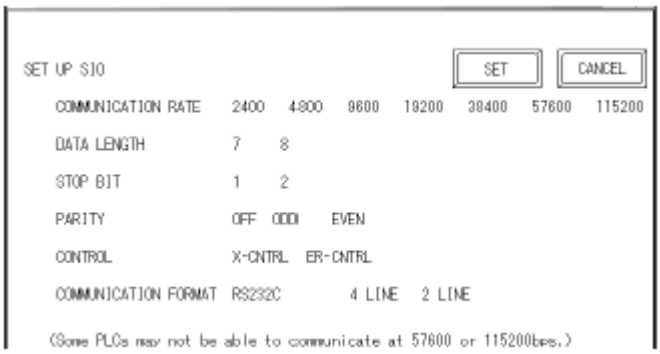
From the Menu Bar: From the QP-Ethernet's Menu Bar, touch the OFFLINE Square and the OFFLINE Mode Main Menu will appear. If a password has been entered in the INITIALIZE/SETUP SYSTEM area, before entering the OFFLINE Mode, the following screen appears. Here, enter the password, then touch *Set* to enter OFFLINE Mode.



Setup SIO

This section describes the communication setup with the Host (PLC) and the setup for any peripheral equipment. The SETUP I/O menu includes the SETUP SIO, SETUP PRINTER, SETUP TOUCH PANEL and COMMUNICATION SETUP and SOUND SETTINGS Menu.

SETUP SIO: This menu runs the settings related to PLC Communication. Be sure to match the settings listed below with the SIO setup on the Host (PLC). The settings will vary depending on the PLC type.



COMMUNICATION RATE

The COMMUNICATION RATE (baud rate) is the data communication speed, measured in bits per second (bps) between the GP and PLC. Match the COMMUNICATION RATE values in both the PLC and GP. Depending on the rate selected, certain PLCs may not be able to be used.

Data Length/Stop Bit: For data communication, the DATA LENGTH must be set up as 7-bit or 8-bit data, and set up also the STOP BIT as either a 1-bit or 2-bit value.

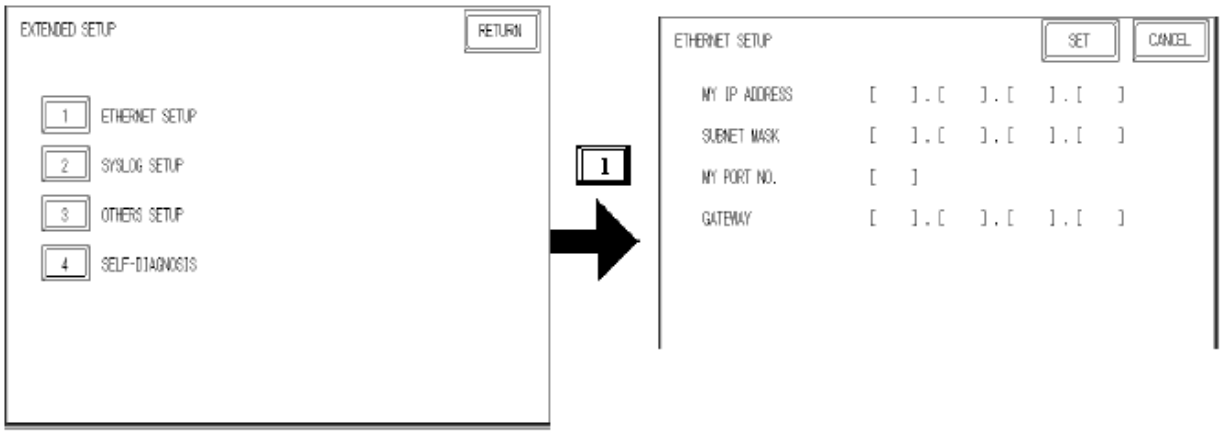
Parity: Set up whether no parity check or odd or even number parity check will take place during communication.

CONTROL: CONTROL prevents the overflow of data sent and received. Select either XON/XOFF control ER (DTR) control.

COMMUNICATION FORMAT: Select one of the following options for the communication format – RS232C, RS422 (4 line) or RS422 (2 line).

ETHERNET SETUP

This menu is for Ethernet Settings. This information is used as setting data during QP-Ethernet setup or screen transfer, or, if the pro-server software is used, for the 2-Way Driver.



Enter the "ETHERNET SETUP" settings after receiving information from your network's system administrator. Be sure to enter a unique IP address, not one used to other GLCs or by the Host.

MY IP ADDRESS

Sets up the GLCs IP address. The IP address is 32 bits and designated in four 8-bit units entered in decimal. To use Ethernet networking click on [INITIAL SETTINGS], [PLC SETUP], [PLC SETUP] and [EXTENDED SETUP].

SUBNET MASK

Sets the subnet mask. If you are not using a subnet mask, designate "0". To use Ethernet networking click on [INITIAL SETTINGS], [PLC SETUP], [PLC SETUP] and [EXTENDED SETUP].

MY PORT NO

Sets the 2-Way Driver Port No. using a value from 1024 to 65535. Starting from the value entered here, a total of 10 consecutive ports can be used. The default setting is [8000]. To use Ethernet networking click on [INITIAL SETTINGS], [PLC SETUP], [PLC SETUP] and [EXTENDED SETUP] and select the corresponding Ethernet protocol Port No.

GATEWAY

Sets up the gateway's IP address. Only a single gateway can be set up. If you are not using a gateway, enter "0".

COMPACT FLASH CARD

CF Memory Loader Tool

The QP-Ethernet Series allows you to use the CF Mmeory Loader Tool in the CF Card to set up the QP, transfer screen data, and upload the QP internal data to its internal CF Card.

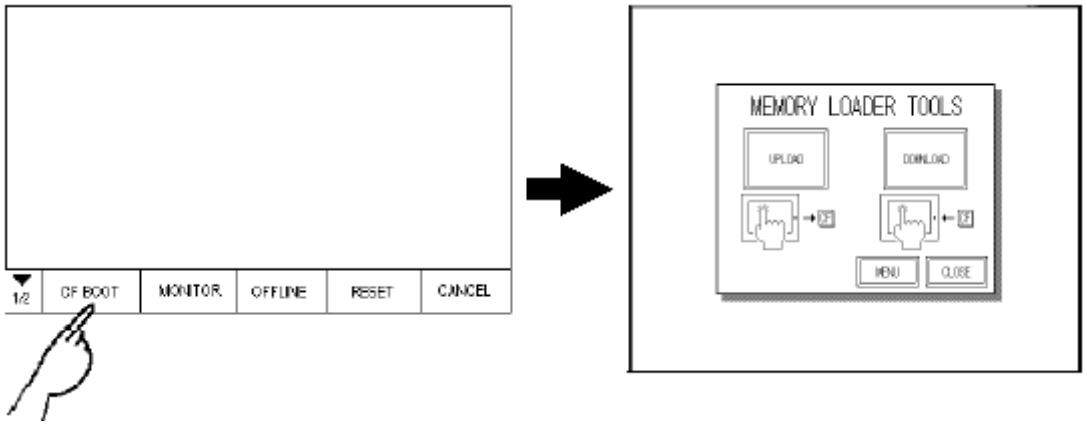
You need to transfer the CF Memory Loader Tool to the CF Card prior to using the CF Memory Loader Tool.

The CF Memory Loader Tool and Backup Data require at least 8MB of CF Card memory. Industry standard CF Card can be used.

Starting the CF Memory Loader Tool: There are two methods for starting this program via the CF Card.

1. Menu Bar: Using the QP's [CF BOOT] menu

Insert the CF Card with CF Memory Loader Tool saved into the QP and touch the menu screen's [CF BOOT] selection. The QP will be reset, and after it restarts, the CF Card's "CF Memory Loader Tool" will start.



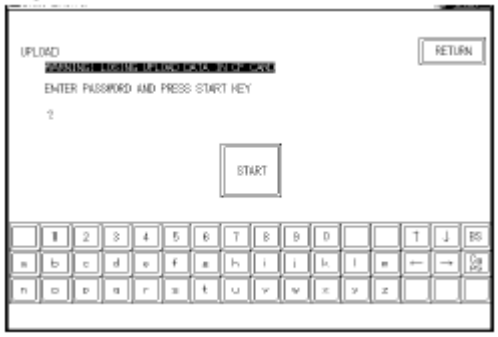
The QP-Ethernet series unit is equipped with Compact Flash slot which can be used to setup the QP or send screen data by saving backup data (i.e all necessary data for QP operation) in the CF Card using using the QP's CF Memory Loader Tool feature. The following features are available with a QP-Ethernet series unit:

Data Upload and Download

Upload Project (from QP-Ethernet to CF Card)

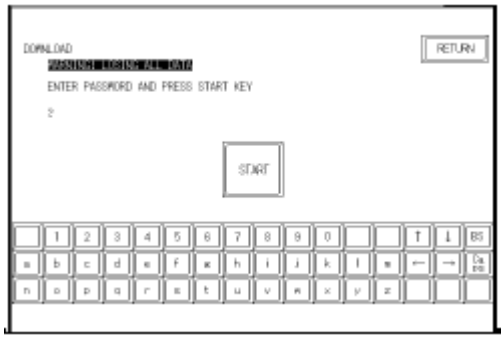
This feature is for saving all QP-Ethernet internal data (i.e. system program, communication protocol, expansion program, screen data and Backup SRAM data in the CF Card as backup data). To start data upload, enter the password you have designated in the QP-Ethernet screen creation software's "Transfer" screen, and then touch the "START" key. If you have not designated a password, simply touch the "START" key.

When upload is performed, the CF Card's current Backup Data will be completely overwritten.



Download Project (from CF Card to QP-Ethernet)

This feature is used for writing CF Card backup data to the QP-Ethernet's internal SRAM memory. To start data download, enter the password you have designated in the QP-Ethernet screen creation software's "Transfer" screen, and touch the "START" key. If you have not designated a password, simply touch the "START" key. When download is performed, the QP-Ethernet's internal memory data (i.e. system program, communication protocol, expansion program, screen data and backup SRAM data) will be completely overwritten.



Backup Data Using PC

Back up screen data to CF Card using the Compact Flash with Personal Computer – via use of CF Card utility in the QuickDesigner Software (CF card and necessary accessories sold seperately). PC slot is required on a Personal Computer. Refer to QuickDesinger software "HELP" for details.

This interface allows you to use the CF Card instead of Optional Memory Loader II to store QP setup and screen data, and then transfer it to QP.

CF Card Installation and Removal

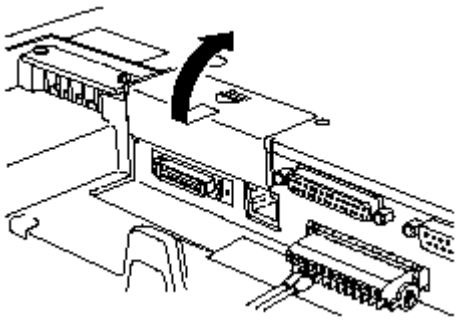
When using the QP unit and a CF Card, follow the precautions below:

- Prior to inserting or removing a CF Card, be sure to turn the QP Unit's CF Card ACCESS switch OFF and to confirm that the ACCESS lamp is not lit. If you do not, CF Card internal data may be damaged or lost.
- While a CF Card is being accessed, NEVER turn OFF or reset the QP, or insert or remove the CF Card, Prior to performing these operations, create and use a special QP application screen that will prevent access to the CF Card.
- Prior to inserting a CF Card, familiarize yourself with the CF Card's front and rear face orientation, as well as the CF Card connector's position. If the CF Card is not correctly positioned the CF Card's internal data and the QP unit may be damaged or broken.
- SanDisk CF Card or other manufacturer's card can be used.
- Once QP data is lost, it cannot be recovered. Since accidental data loss can occur at any time, be sure to back up all QP screen and CF Card data regularly.

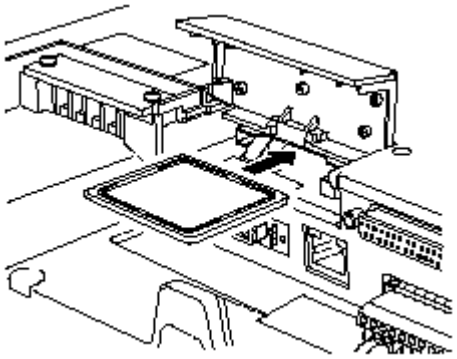
Inserting CF Card

Use the following steps to insert a CF Card in QP. The procedure is the same for all QP-Ethernet series.

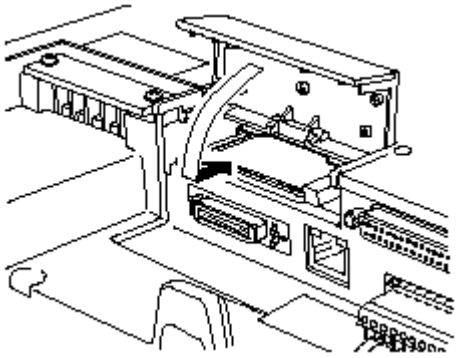
(1) Slide the CF Card Cover in the direction shown here, then upwards to open the cover



(2) Insert the CF Card in the CF Card Slot, until the ejector button is pushed forward



(3) Close the cover



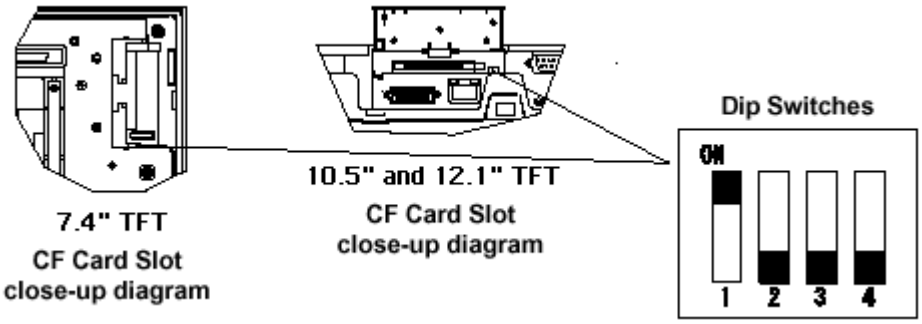
(4) Confirm that the CF Card Access LED turns ON.

Removing CF Card

Simply reverse the steps shown in the previous “Inserting Cf Card” explanation. Prior to removing the CF Card, confirm that the CF Card Access LED is turned to OFF.

Dip Switches - Forced Start via Dip Switches (Contact Factory)

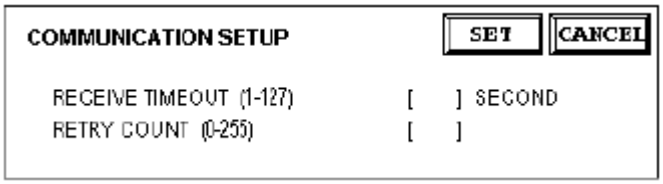
You can also use QPEthernet Dip Switches on the rear of the Panel, next to the CF Card Slot. If you trun of DIP Siwtch No.1(raise it) and then connect it to the QP Ethernet's power cord, the "CF Memory Loader Tool" will automatically start.



Note: When you finish using the CF Memory Loader Tool, turn OFF the Dip Switch.

Communication Setup

QP Ethernet Series Panel can use existing module with new Adapter. The following explains the use of the Retry command to deal with errors, including those that occur during QP-Ethernet and PLC Communication.



RECEIVE TIMEOUT (1 to 127)

Sets the value used for the Data reception timeout (PLC ←>QP-Ethernet).

If the cable is not connected, data communication will Timeout after one second, regardless of this setting's value. The default is "10" seconds. An error message may appear on your personal computer if:

- You transfer screens from your PC to the QP-Ethernet after a PLC communication error has occurred and the error is not yet cleared.
- Your QP-Ethernet's RECEIVE TIMEOUT value is set to 30 seconds or more.

RETRY COUNT (0 to 255)

Designates how many times the QP-Ethernet tries to send data to the PLC when a PLC communication error occurs. An error message will appear on the QP-Ethernet after the QP-Ethernet tries to send data to the PLC the number of times set by this option. The default is “2”.

COMMUNICATION

Refer to Page 33 of this document for Serial and Parellel Communicaton details.

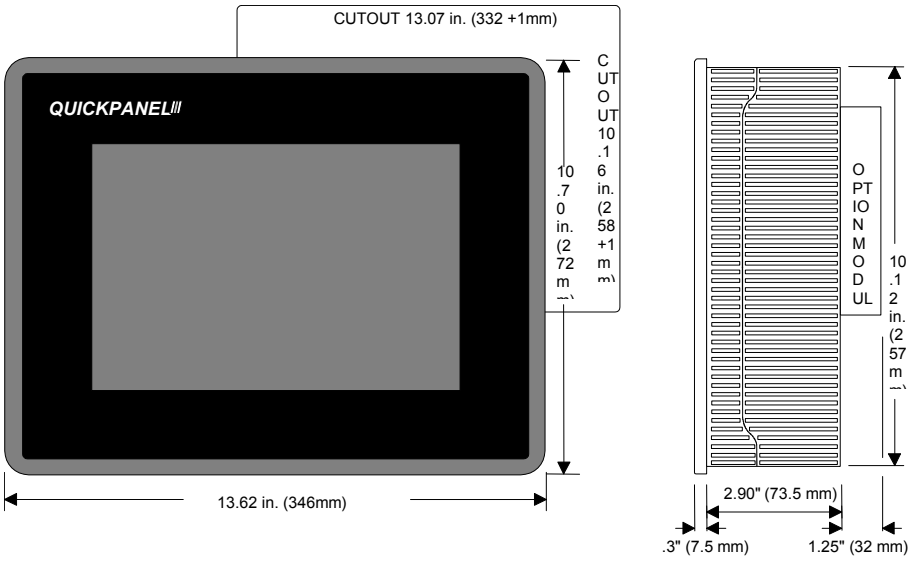
12.1” QUICKPANEL COLOR

Dimensions for 12.1”QUICKPANEL Color Display

The dimensions shown below are for the following displays:

QPL-21100-C2P

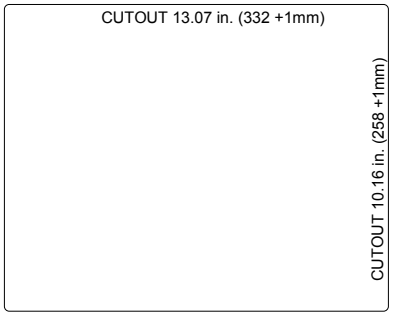
The following drawing illustrates the overall dimensions of the 12.1” QUICKPANEL Color display.



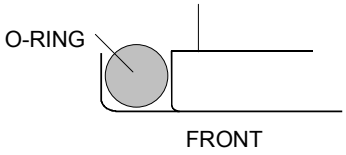
Panel Installation for 12.1”*QUICKPANEL* Color Units

To install the color unit, cut a hole in your panel as shown in the dimension drawing. Install the gasket to the edge of the display. Insert the display in the panel and install the four clamps in the display body. Tighten the clamps to compress the gasket and secure the unit to the panel.

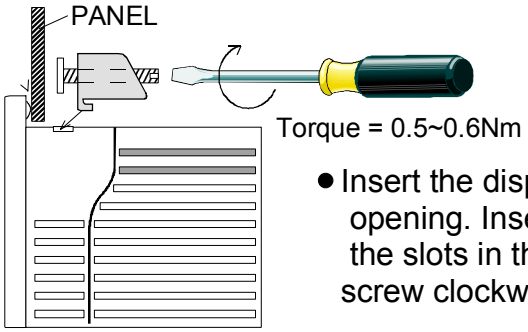
The panel cutout for the 12.1” QUICKPANEL Color display is shown below. Panel thickness is 1.6mm ~ 10mm.



The O-ring gasket is secured to the display body by pressing it into the slot provided. The following drawing shows how the gasket is secured to the display. The replacement gasket part number is HMI-ORG-205.



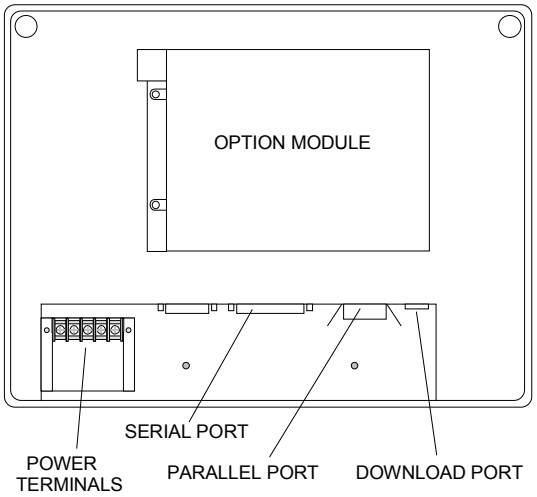
Insert the display through the panel opening and install the panel clamps. The panel clamps are inserted into the openings in the top and bottom of the panel body. The clamp screw is turned clockwise to tighten the display to the panel.



- Insert the display through the panel opening. Insert the panel clamps into the slots in the display body. Turn screw clockwise to tighten.

Rear View of the 12.1" Color Unit

The download port is used to download files from your computer to the target display. The port is also used for printing only alarm messages.

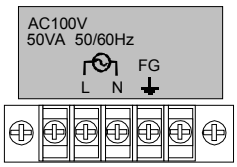


Installing AC Power to the 12.1" Color Display

This section describes installing power to the following displays:

QPL-21100-C2P

Remove the protective cover on the AC terminal strip. Remove approximately 1/4" of insulation from the supply wires and insert them under the terminal clamps. Tighten the clamp screws to secure the wires. Replace the protective cover on the AC terminal strip.



Powerup Sequence for the 12.1" Color Display

The powerup sequence is a series of operations initiated by the internal electronic circuits when power becomes stable. Stable power is indicated by an LED on the front panel.

The information displayed after power becomes stable depends on several variables. Factory units display a message indicating a device executable must be downloaded. Units that may have been setup by a distributor might indicate a PLC protocol has been loaded. Follow the procedures in the QUICKDESIGNER user manual for downloading application and device executable files.

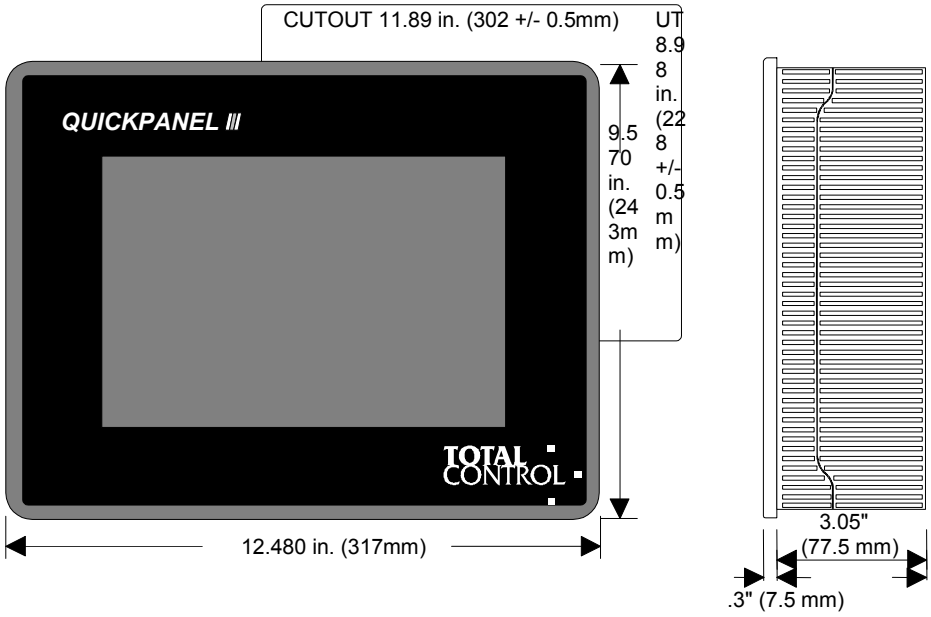
10.5” QUICKPANEL COLOR/LCD

Dimensions for 10.5”*QUICKPANEL* Color/LCD Displays

The dimensions shown below are for the following displays:

QPI-2xxxx-Sxx, QPI-2xxxx-Cxx, QPI-2xxxx-Lxx
QPI-3xxxx-Sxx, QPI-3xxxx-Cxx

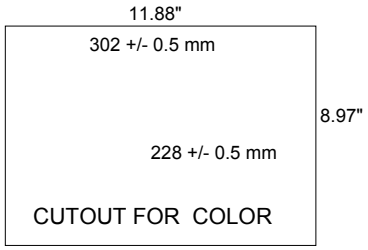
The following drawing illustrates the overall dimensions of the QUICKPANEL 10.5” Color/LCD display.



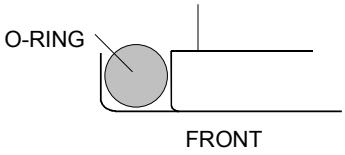
Panel Installation for 10.5"*QUICKPANEL* Color/LCD Units

To install the color/LCD unit, cut a hole in your panel as shown in the dimension drawing. Install the gasket to the edge of the display. Insert the display in the panel and install the four clamps in the display body. Tighten the clamps to compress the gasket and secure the unit to the panel.

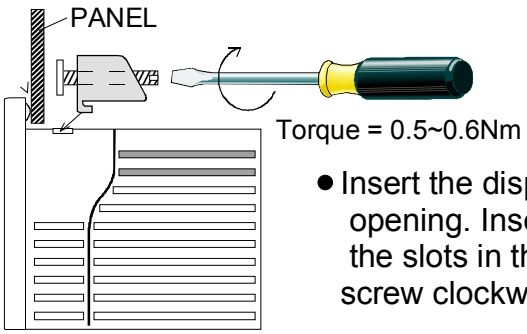
The panel cutout for the QUICKPANEL Color/LCD display is shown below. Panel thickness is 1.6mm ~ 10mm.



The O-ring gasket is secured to the display body by pressing it into the slot provided. The following drawing shows how the gasket is secured to the display.



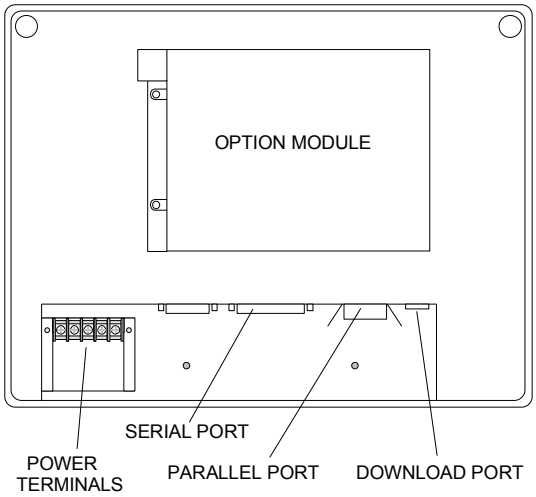
Insert the display through the panel opening and install the panel clamps. The panel clamps are inserted into the openings in the top and bottom of the panel body. The clamp screw is turned clockwise to tighten the display to the panel.



- Insert the display through the panel opening. Insert the panel clamps into the slots in the display body. Turn screw clockwise to tighten.

Rear View of the 10.5” Color/LCD Unit

The download port is used to download files from your computer to the target display. The port is also used for printing only alarm messages.

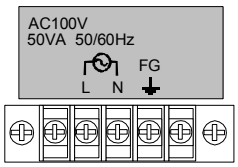


Installing AC Power to the 10.5” Color Display

This section describes installing power to the following displays:

QPI-21100-S2P and QPI-21100-C2P

Remove the protective cover on the AC terminal strip. Remove approximately 1/4" of insulation from the supply wires and insert them under the terminal clamps. Tighten the clamp screws to secure the wires. Replace the protective cover on the AC terminal strip.

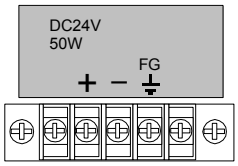


Installing DC Power to the 10.5” LCD Display

This section describes installing power to the following displays:

QPI-2D100-L2P

Remove the protective cover on the DC terminal strip. Remove approximately 1/4" of insulation from the supply wires and insert them under the terminal clamps. Tighten the clamp screws to secure the wires. Replace the protective cover on the DC terminal strip.



Powerup Sequence for the 10.5” Color/LCD Display

The powerup sequence is a series of operations initiated by the internal electronic circuits when power becomes stable. Stable power is indicated by an LED on the front panel.

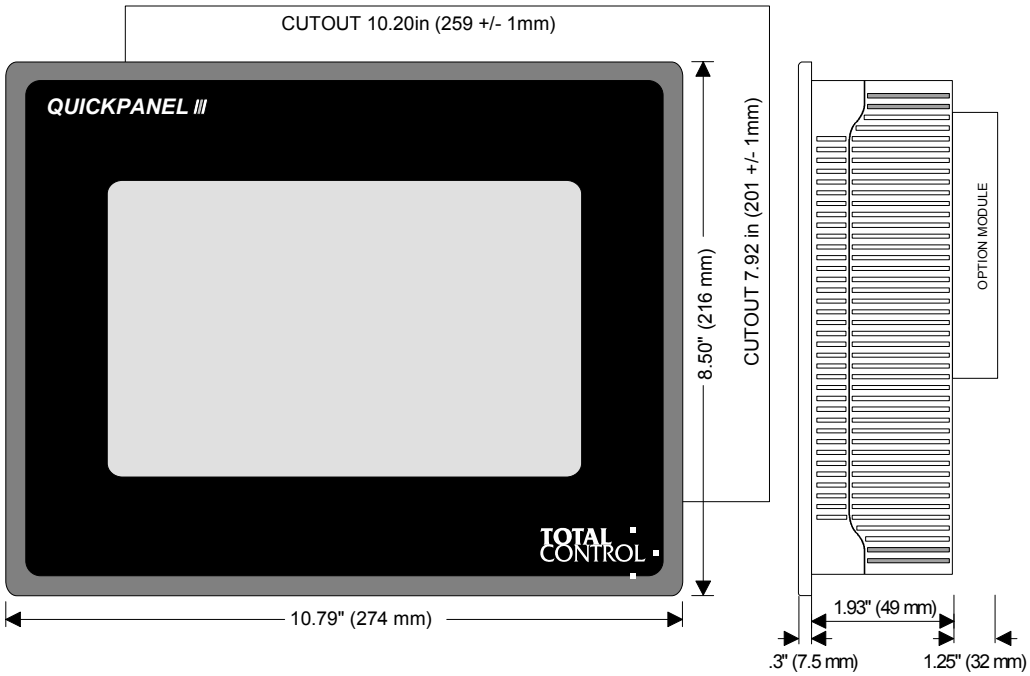
The information displayed after power becomes stable depends on several variables. Factory units display a message indicating a device executable must be downloaded. Units that may have been setup by a distributor might indicate a PLC protocol has been loaded. Follow the procedures in the QUICKDESIGNER user manual for downloading application and device executable files.

QUICKPANEL EL

Dimensions for the 9” EL Display

The dimensions shown below are for the following displays: QPI-21100-E2P, QPI-2D100-E2P

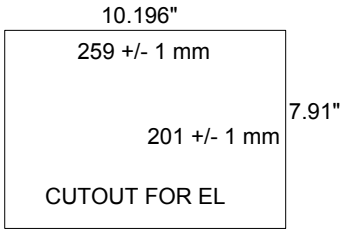
The following drawing illustrates the overall dimensions of the 9” QUICKPANEL Electroluminescent (EL) display.



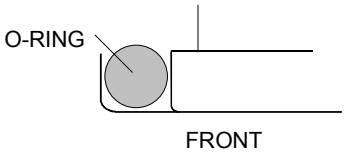
Panel Installation for 9” EL Units

To install the EL unit, cut a hole in your panel as shown in the dimension drawing. Install the O-ring gasket in the slot around the edge of the display. Insert the display in the panel and install four clamps to the display body. Tighten the clamps to compress the gasket and secure the unit to the panel.

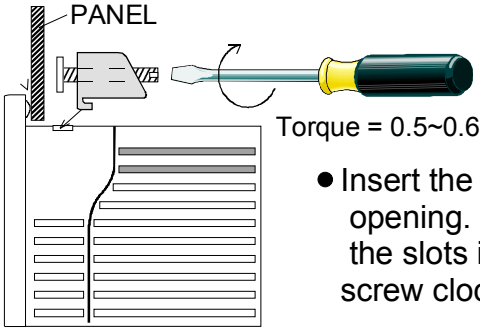
The panel cutout for the QUICKPANEL EL display is shown below.



The O-ring gasket is secured to the display body by pressing it into the slot provided. The following drawing shows how the gasket is secured to the display.



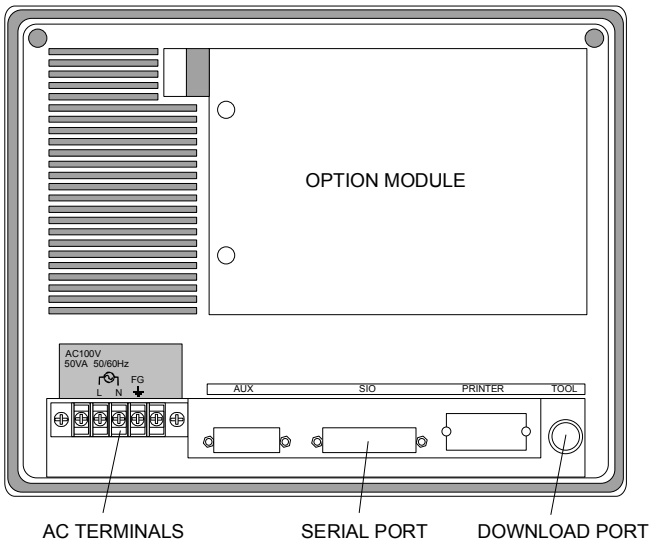
Insert the display through the panel opening and install the panel clamps. The clamp screws are turned clockwise to tighten the display to the panel. The fastening torque necessary for waterproofing is 0.5 ~ 0.6Nm.



- Insert the display through the panel opening. Insert the panel clamps into the slots in the display body. Turn screw clockwise to tighten.

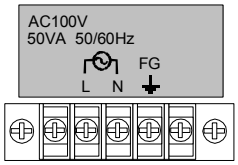
Rear View of the 9” EL Unit

The download port is used to download files from your computer to the target display. The port is also used for printing only alarm messages.



Installing AC Power for the 9” EL Display

Remove the protective cover on the AC terminal strip. Remove approximately 1/4" of insulation from the supply wires and insert them under the terminal clamps. Tighten the clamp screws to secure the wires. Replace the protective cover on the AC terminal strip.



Powerup Sequence for the 9” EL Display

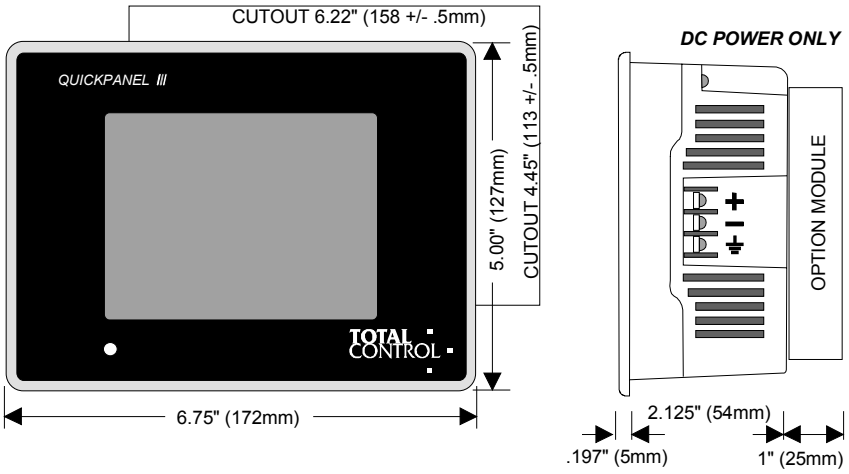
The powerup sequence is a series of operations initiated by the internal electronic circuits when power becomes stable. Stable power is indicated by an LED on the front panel.

The information displayed after power becomes stable depends on several variables. Factory units display a message indicating a device executable must be downloaded. Units that may have been setup by a distributor might indicate a PLC protocol has been loaded. Follow the procedures in the QUICKDESIGNER user manual for downloading application and device executable files.

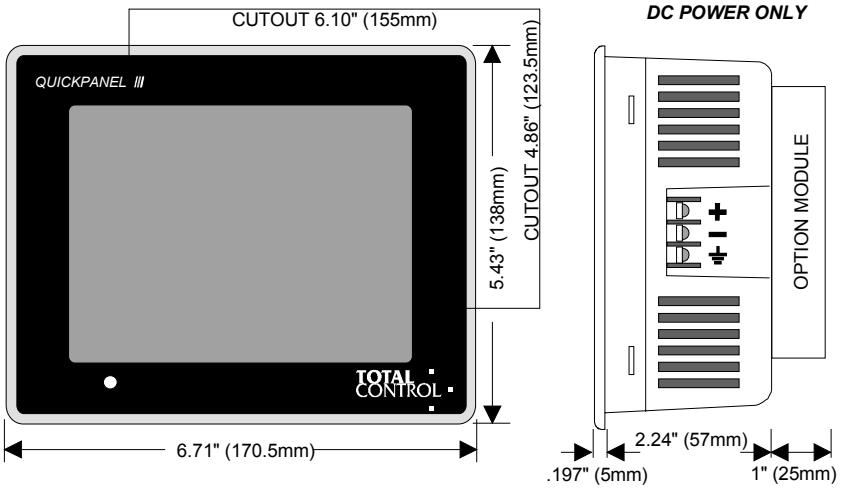
Dimensions

The following drawings show the overall dimensions of the 5" and 6" QUICKPANEL jr. displays.

QuickPanel jr. 5" Display (QPJ-2xxxx-Lxx, QPJ-2xxxx-Sxx)



QuickPanel jr. 6" Display (QPK-xxxxx-Lxx, QPK-xxxxx-Sxx, QPK-xxxxx-Cxx)



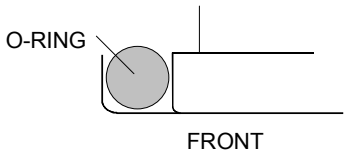
NOTE : 6 inch QP4 STN QPKSxDNxxxx has the same dimensions as 6 inch QP4 TFT. Please refer to 6 inch QP4 TFT Pg 23.

Panel Installation

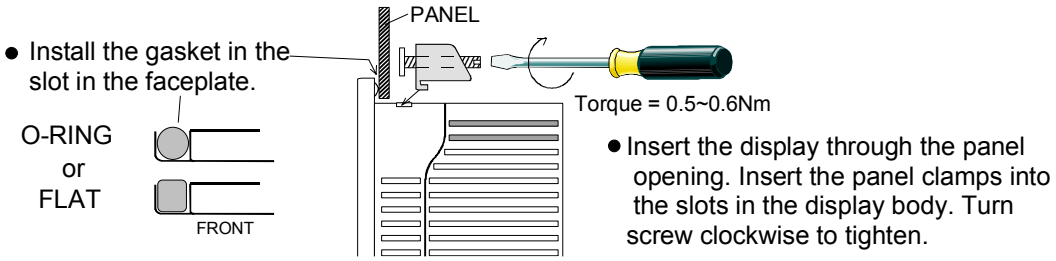
The QUICKPANEL jr. display is secured to the panel with pressure clamps on the top and bottom of the display.

Make the panel cutout as shown in the drawing.

The O-ring gasket is secured to the display body by pressing it into the slot provided. The following drawing shows how the gasket is secured to the display.



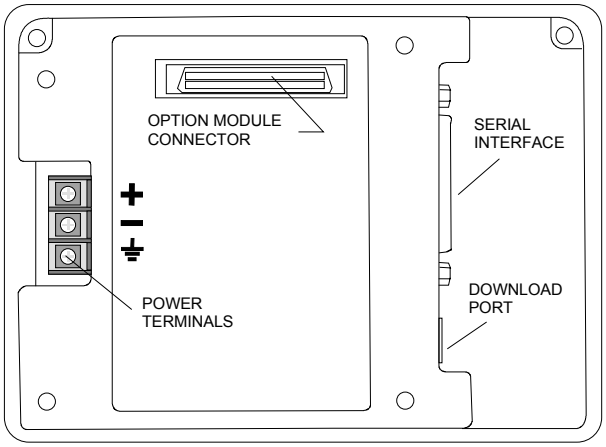
Insert the display through the panel opening and install the panel clamps. The clamp screws are turned clockwise to tighten the display to the panel. The fastening torque necessary for waterproofing is 0.5 ~ 0.6Nm.



Rear View

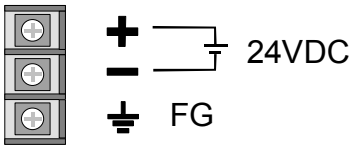
The following drawing shows a rear view of the QUICKPANEL jr. Please note the model and serial number printed on the product label.

- The terminal strip provides quick power and ground connections to the unit. Observe the polarity for the +24VDC supply lines.
- The serial interface port connects the *QUICKPANEL jr.* to your PLC.
- The download port connects the *QUICKPANEL jr.* to your computer for downloading application files.
- The product label contains the model number and serial number of the unit.



Installing 24VDC Power

Remove approximately 1/4" of insulation from the supply wire and insert it under the terminal clamp. Tighten the terminal clamp screw to secure the wire. Add a frame ground wire to the terminal marked FG. Replace the cover.



NOTE Power source must be able to deliver 12 Watts (500 ma @ 24V) for Monochrome units and 15 Watts (625 ma @ 24V) for Color units.

Powerup Sequence

The powerup sequence is a series of operations initiated by the internal electronic circuits when power becomes stable. Stable power is indicated by an LED on the front panel.

When the power is applied, the internal circuit waits for power to stabilize then start a powerup sequence. New units do not have any projects loaded into them and may display a startup message.

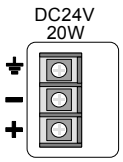
To operate the unit, you must download a PLC protocol and one or more panels contained in a project file. To download a file, see the QUICKCOURIER section of the user manual.

If you received a demo unit from a dealer or distributor, it may already have a project installed. If the protocol does not match your PLC protocol, you MUST download a new display device executable file containing the correct PLC protocol. To download a new protocol, see the QUICKCOURIER section of the user manual.

The 6" TFT has an LED that turns green when power is applied. When the backlight CCFL tube eventually fails, the power indicator on the front of the unit turns orange and the touch screen is disabled.

QuickPanel Mini

DC Power (QPM-xDxxx-xxx)

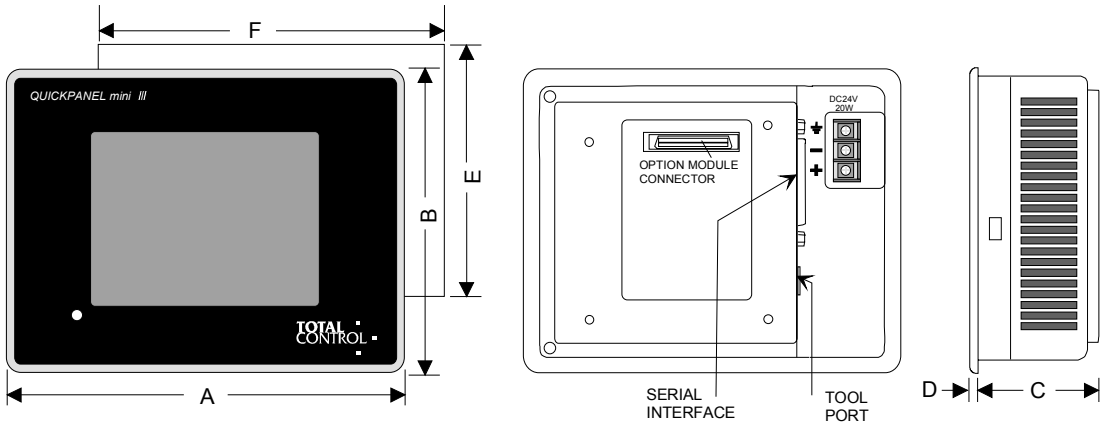


MAKE SURE THE POWER IS OFF

- Remove the protective cover on the DC terminal strip. Remove 1/4" of insulation from the supply wires and insert them under the terminal clamps. Tighten the clamp screws to secure the wires. Replace the protective cover.

Stable power is indicated by an LED on the front panel.

***QUICKPANEL* mini Dimensions**



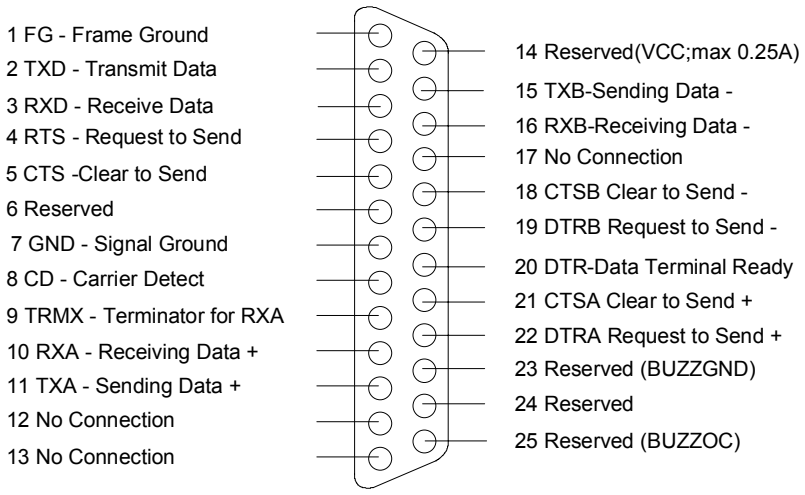
Model	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F
QPM-2xxxx-L2P	8.267" (210mm)	6.299" (160mm)	2.28" (58mm)	.197" (5mm)	5.59" (142mm)	7.56" (192mm)
QPM-3xxxx-B2P	8-15" (207mm)	6-18" (1.57mm)	2.28" (58mm)	0-24" (6mm)	5.57" (141.5mm)	7.54" (191.5mm)

Communications

Serial Interface Port

The serial interface port connects the QUICKPANEL to your PLC. Refer to the cable section to determine the correct cable to use with your PLC. Factory cables are cut to approximately 12', which is suitable for most applications. Some cables are available in longer lengths on special order from Total Control Products, Inc. or you can fabricate your own. Use the cable diagrams found in the cable section for correct wiring. Remember that RS232 cables are reliable up to approximately 50'. The serial interface pin assignments are shown in the following drawing.

*NOTE: Some cables, such as the HMI-CAB-C84, are designed for use on proprietary networks. These cable assemblies contain active network interface circuits. Because these cables are licensed from other manufacturers, there are no cable diagrams or circuit drawings.



Serial Interface Port Specs

Transmission: Asynchronous RS232C/RS422
Data Length: 7 or 8 data bits
Stop Bit: 1 or 2
Parity: None, Odd or Even
Data Transmission Speed: 300 to 38.4Kbps. (Depends on the Protocol)

Parallel Printer Port

Conforms to Centronix standards, HP LaserJet PCL4 compatible, NEC PR201 series, EPSON ESC/P 24-Pin (High Quality) or equivalent can be connected. See the HMI-CAB-C99 (For all QuickPanel models except for QP-Ethernet Panels) cable diagram.

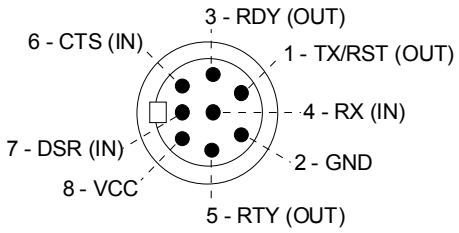
Note: Contact Factory for QP-Ethernet Printer Cable availability

Download Port

This port has several names, depending on how it is used. To simplify the reference, the port is generally called the download port. This port is used to download application files from a computer to the QUICKPANEL or print alarm messages to a printer. For download applications, use the HMI-CAB-C49 cable. For serial printer functions, use the HMI-CAB-C150 cable.

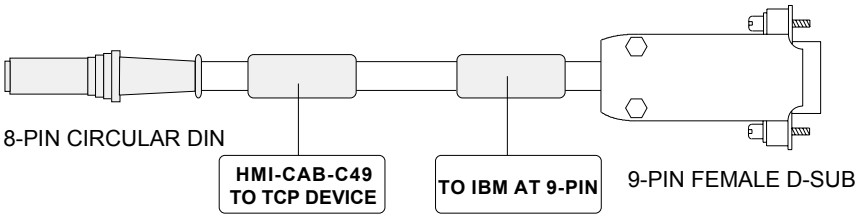
The download files are created by QUICKDESIGNER software running in Windows on your computer. The download port uses TTL signal levels and requires conversion to RS232, RS485 or other communication standard. The HMI-CAB-C49 cable is used to convert the TTL signals to RS232. The download port connector is an 8-pin mini-DIN style. The port pin configuration and pin assignments are shown in the following drawing.

Data Transmission Speed: 2400 to 38.4Kbps. (QPI-3 to 115.2Kbps)

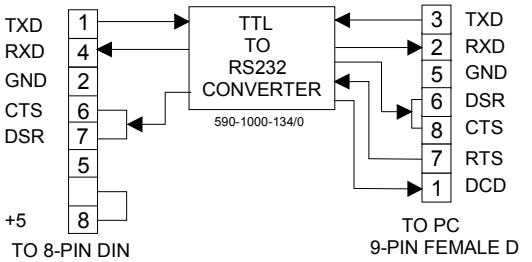


Download Cable, HMI-CAB-C49

The primary use of the HMI-CAB-C49 cable is to download QUICKDESIGNER files from your computer to a QUICKPANEL display. This cable contains a TTL to RS232 converter and should not be modified.



HMI-CAB-C49



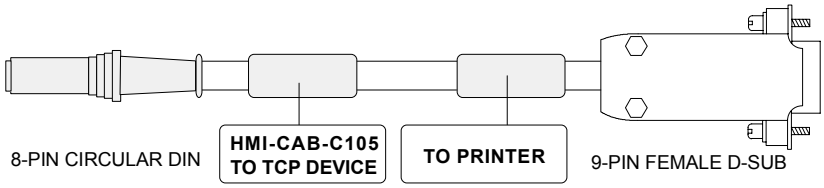
PROPRIETARY INFORMATION

THIS INFORMATION IS PROVIDED AS A CONVENIENCE TO OUR CUSTOMERS. YOU ARE NOT AUTHORIZED TO CONSTRUCT THIS CABLE. UNAUTHORIZED CABLES ARE NOT SUPPORTED BY TOTAL CONTROL.

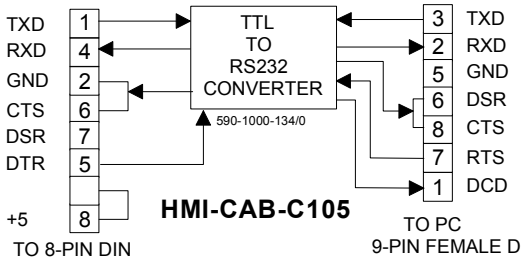
Printer Cable, HMI-CAB-C105

The primary use of the HMI-CAB-C105 cable is to print alarm messages from your QUICKPANEL display. This cable contains a TTL to RS232 converter and should not be modified.

Do NOT attempt to connect a serial printer directly to the download port because the download port signals are TTL. Most serial printers require RS232. Use the HMI-CAB-105 cable to connect a serial printer to the download port.



HMI-CAB-C105

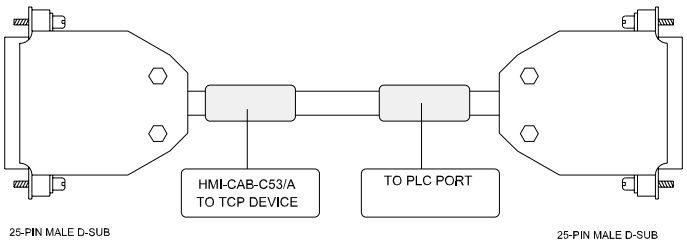


PROPRIETARY INFORMATION

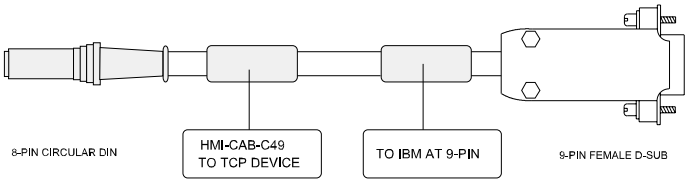
THIS INFORMATION IS PROVIDED AS A CONVENIENCE TO OUR CUSTOMERS. YOU ARE NOT AUTHORIZED TO CONSTRUCT THIS CABLE. UNAUTHORIZED CABLES ARE NOT SUPPORTED BY TOTAL CONTROL.

Cables

A typical cable assembly is shown in the following drawing. A label is placed on each end of the cable to indicate which device should be connected to that end. One of the labels will also indicate the cable part number so you can quickly verify you are using the right cable for your application.



HMI-CAB-C53/A



HMI-CAB-C49

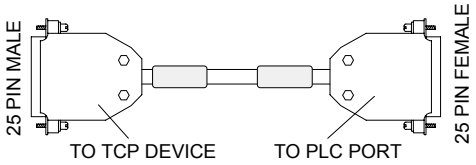
NOTE Not all cables are shown in the cable drawings section. Cables that contain circuit boards are not shown because they cannot be fabricated in the field. The cable drawings are provided for those users that wish to fabricate their own cable assemblies

Cable Drawings

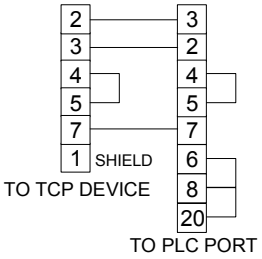
This section includes a drawing of the cable and the wiring diagram. Not all cables are included in this section. Some cable assemblies have a circuit board in the connector housing to provide for specific voltage levels and protocols. Those cable assemblies that have a circuit board are NOT included.

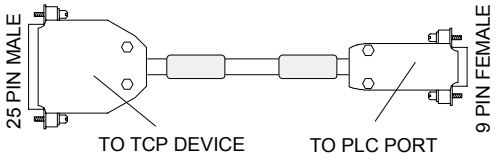
The following cable assemblies contain a circuit board and are NOT included in the cable drawings:

HMI-CAB-C49
HMI-CAB-C76
HMI-CAB-C104 (SIEMENS 3964R)

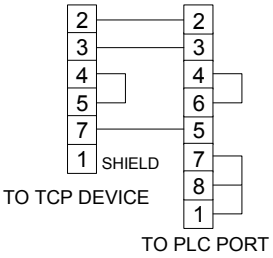


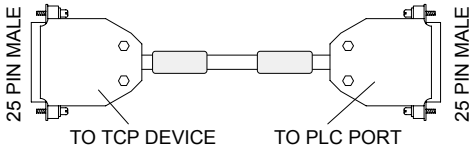
HMI-CAB-C51



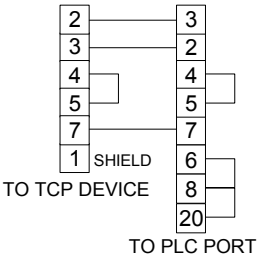


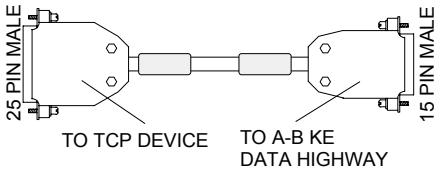
HMI-CAB-C52



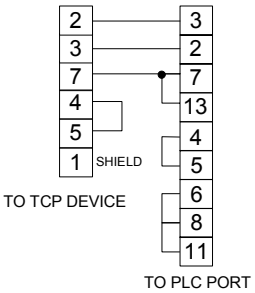


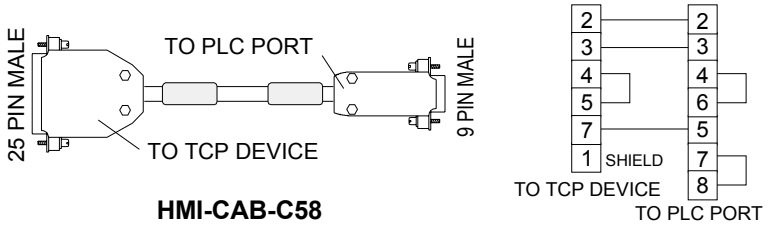
HMI-CAB-C53/A



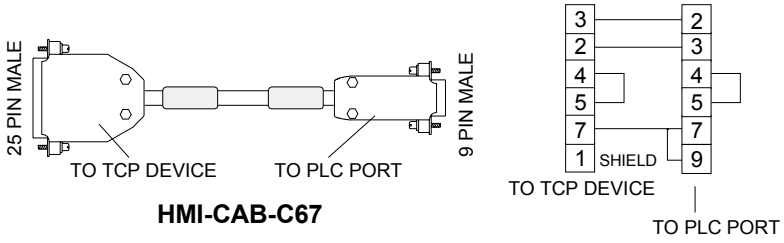


HMI-CAB-C55

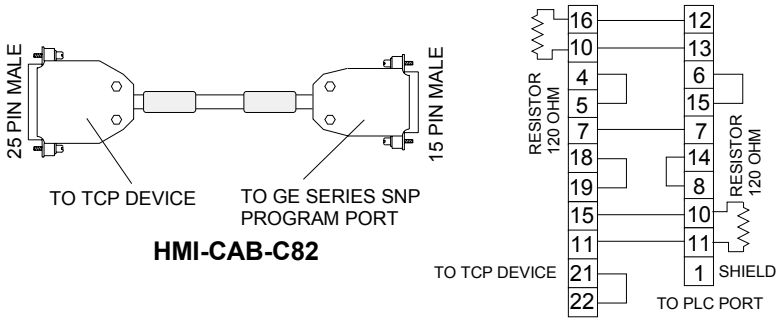




HMI-CAB-C58

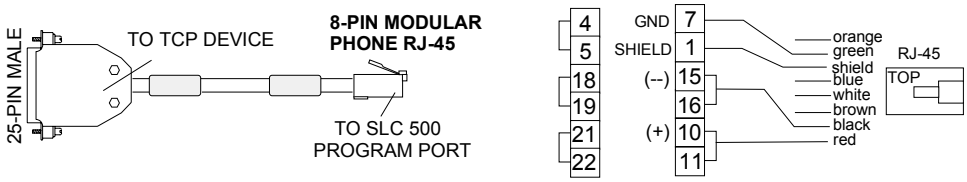


HMI-CAB-C67



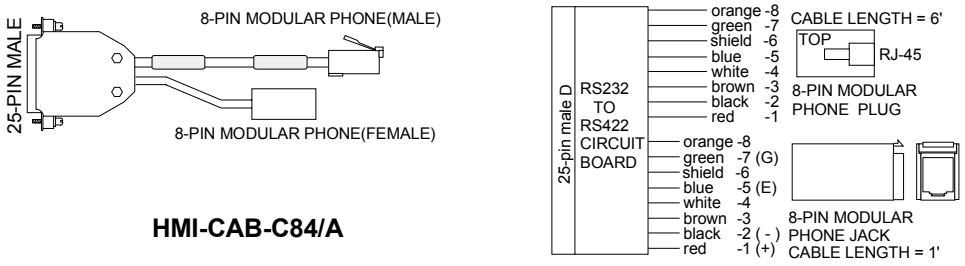
HMI-CAB-C82

NOTE: The HMI-CAB-C83/A Cable drawing is proprietary information and is provided for reference ONLY. You are not authorized to construct this cable.

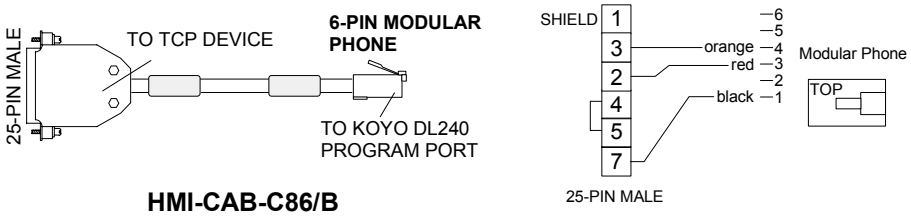


HMI-CAB-C83/A

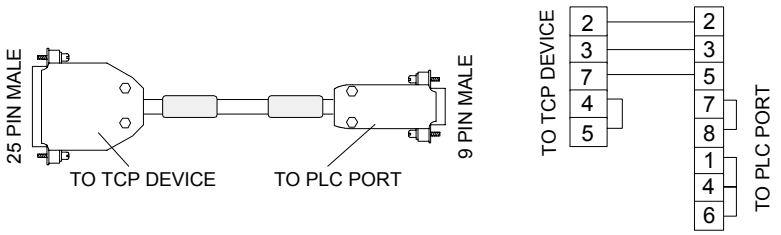
NOTE: The HMI-CAB-C84/A Cable drawing is proprietary information and is provided for reference ONLY. The RS232 to RS422 circuit board is contained in the 25-pin D-shell. The circuit also provides network control. The cable is licensed from Allen-Bradley and cannot be modified.



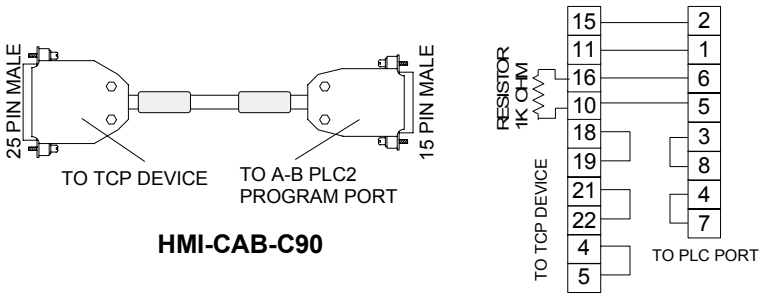
HMI-CAB-C84/A



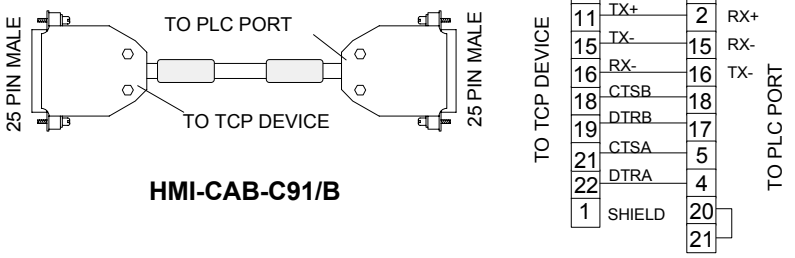
HMI-CAB-C86/B



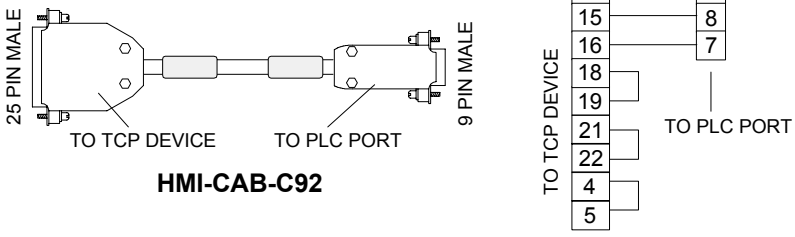
HMI-CAB-C88



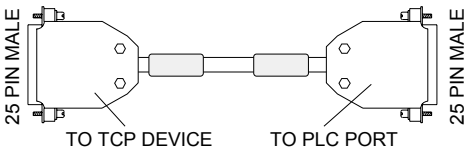
HMI-CAB-C90



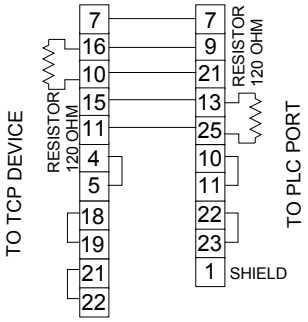
HMI-CAB-C91/B

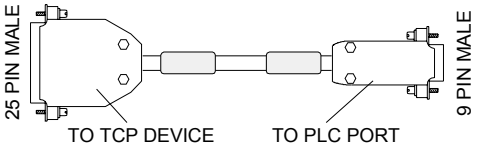


HMI-CAB-C92

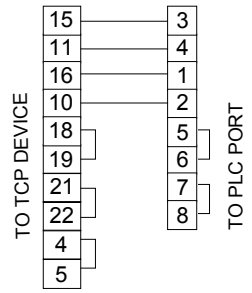


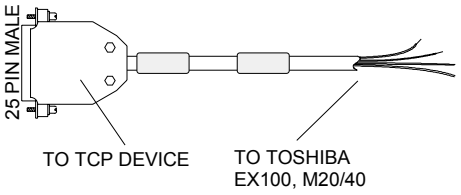
HMI-CAB-C93



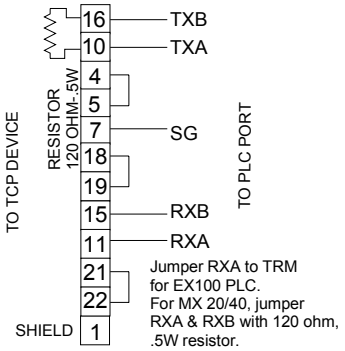


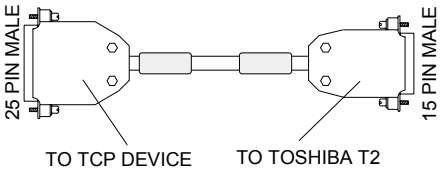
HMI-CAB-C94



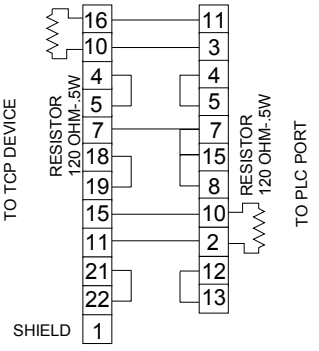


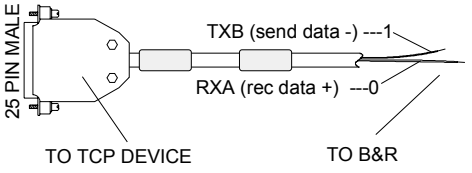
HMI-CAB-C96



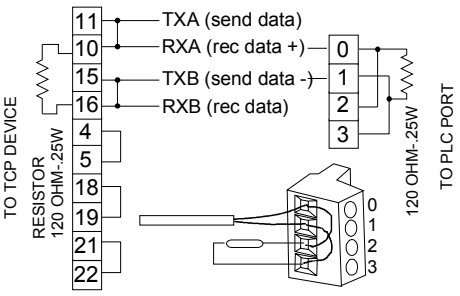


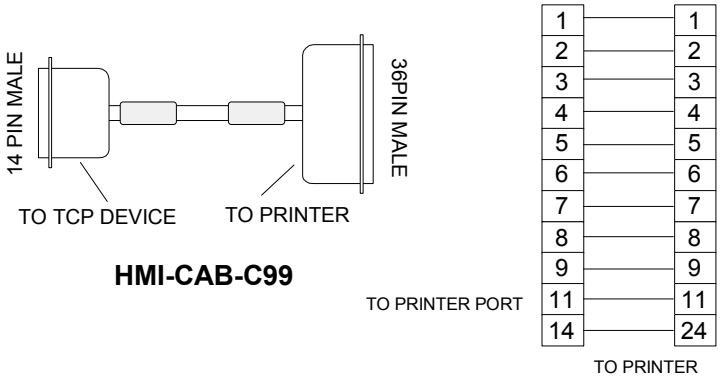
HMI-CAB-C97



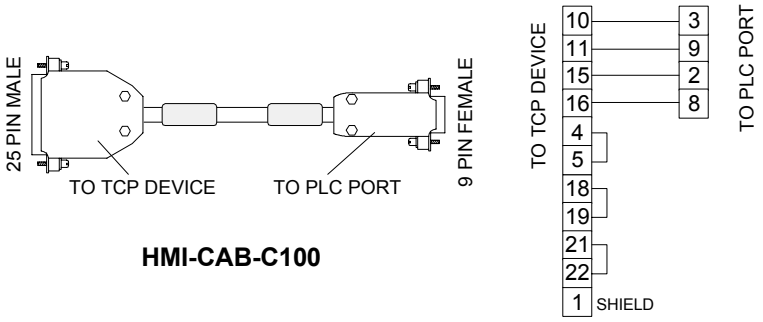


HMI-CAB-C98

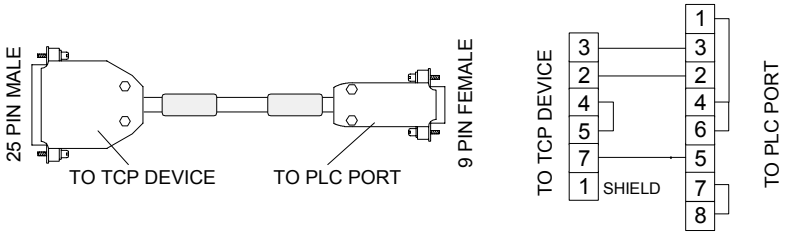




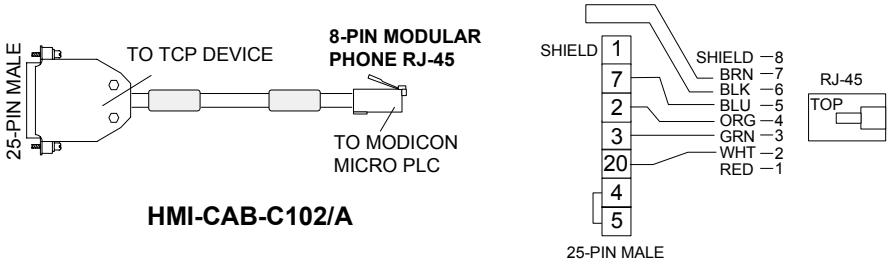
HMI-CAB-C99



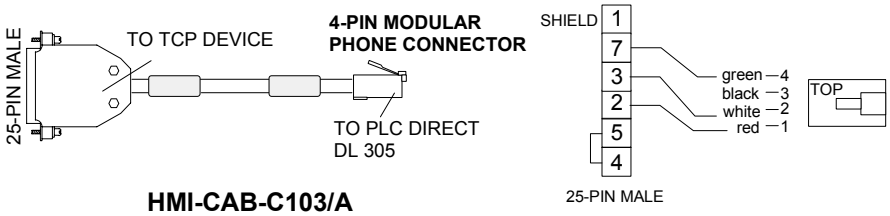
HMI-CAB-C100



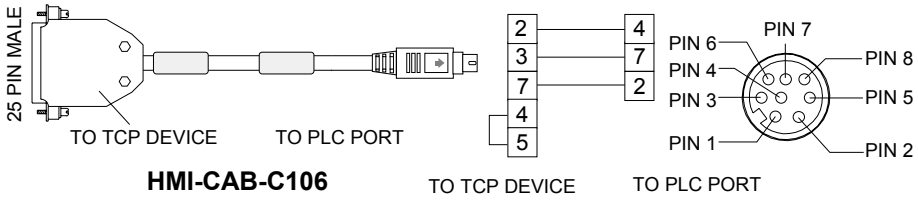
HMI-CAB-C101



HMI-CAB-C102/A

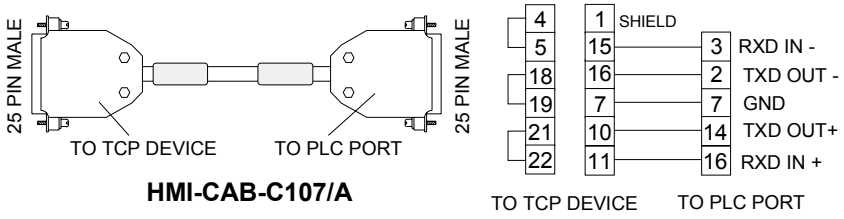


HMI-CAB-C103/A

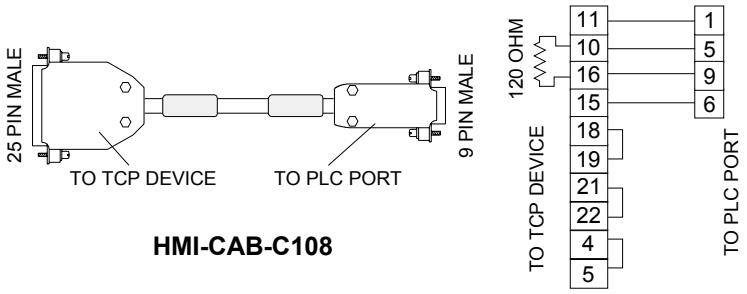


HMI-CAB-C106

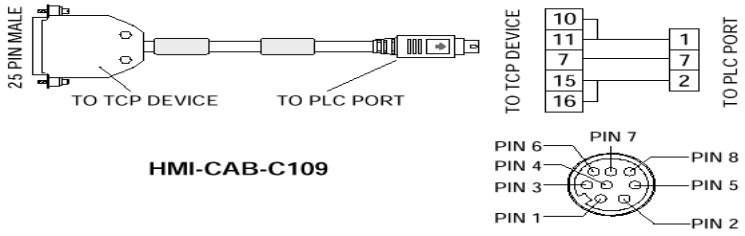
NOTE: The 8-pin DIN connector requires precise pin alignment before pressing the connector into the housing on the MicroLogix 1000. This is a TIGHT fit and requires some force.



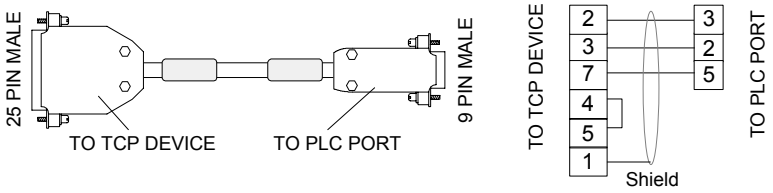
HMI-CAB-C107/A



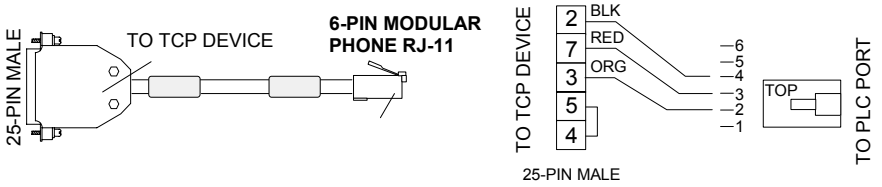
HMI-CAB-C108



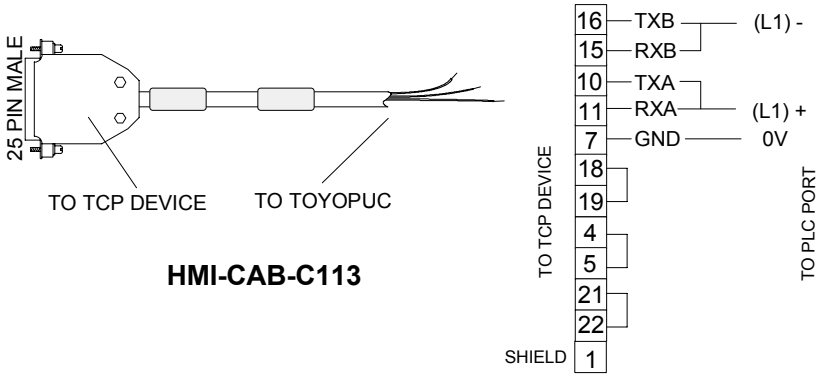
HMI-CAB-C109



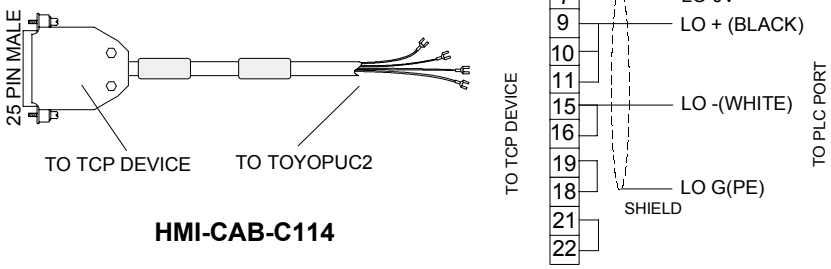
HMI-CAB-C111



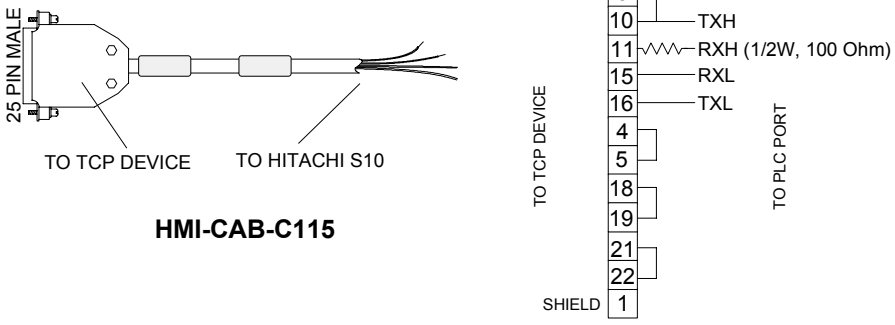
HMI-CAB-C112



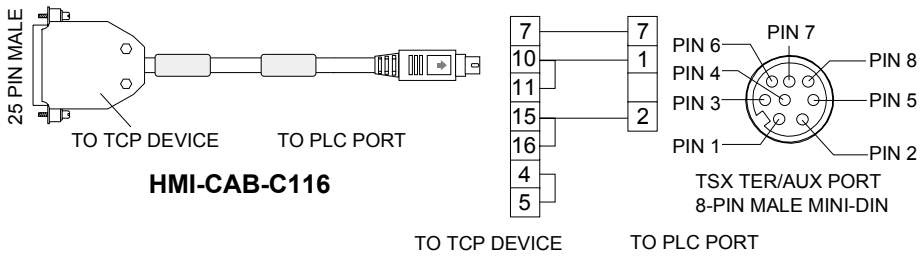
HMI-CAB-C113



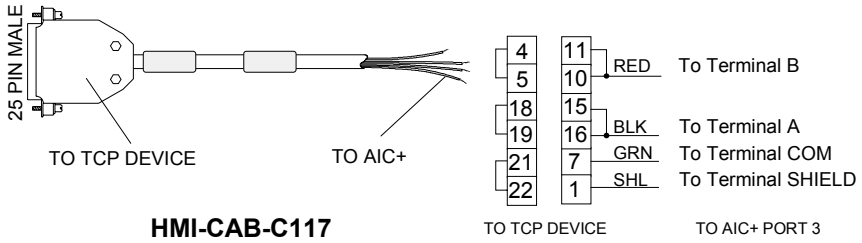
HMI-CAB-C114



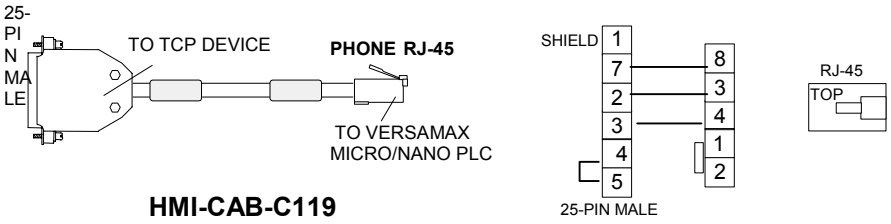
HMI-CAB-C115



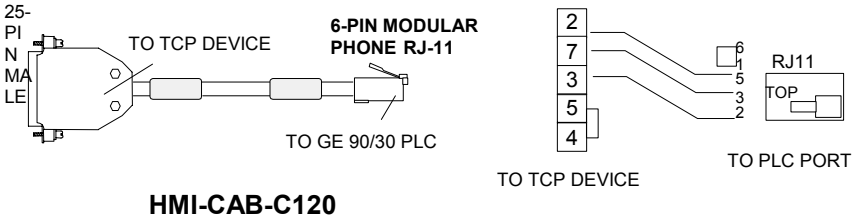
HMI-CAB-C116



HMI-CAB-C117



HMI-CAB-C119



HMI-CAB-C120

Cable Chart

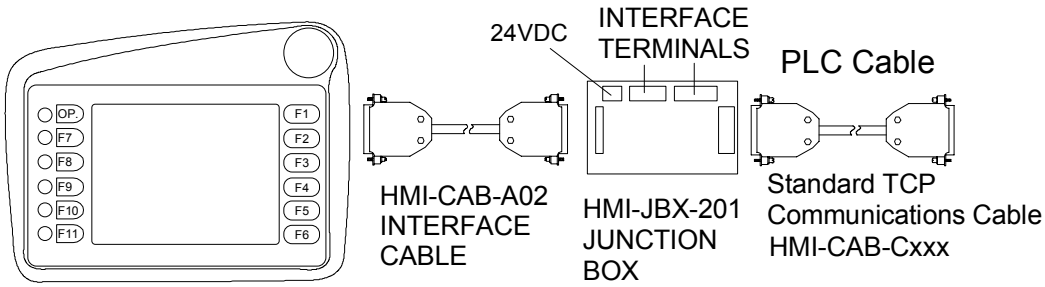
PLC Manufacturer.	PLC Type	Description	Catalog Number
Allen-Bradley		DH-485 Program port, one SLC to one QuickPanel, no simultaneous program port.	HMI-CAB-C83
	SLC500, SLC5/01, SLC5/02, SLC5/03	DH-485 program port, one SLC to one QuickPanel, with simultaneous program port, 6 foot max.	HMI-CAB-C84
		DH-485 link via 1447 AIC module, multiple QuickPanels to multiple SLC's, 6 foot max.	HMI-CAB-C84
	SLC5/03, SLC5/04, ContorlLogix	Channel 0, 9 pin RS-232	HMI-CAB-C52
	PLC5	Channel 0, 25 pin RS-232	HMI-CAB-C53
		DF1 RS-422	HMI-CAB-C107
		KF2 module, 25 pin RS-232	HMI-CAB-C51
		KE module	HMI-CAB-C55
	PLC2	Program Port, 15 pin RS-422	HMI-CAB-C90
	MicroLogix	DF1 Protocol	HIM-CAB-C106
	AIC+ Advanced Interface Cnvtr	DH485 Port 3	HMI-CAB-C117
Aromat	Aromat FP1 (MEWNET)	9 pin Male RS-232	HMI-CAB-C111
B & R	Mininet	2-plated wires RS-422	HMI-CAB-C98
General Electric	90/30, 90/70	Program Port, 15 pin RS422	HMI-CAB-C82
SNP protocol	CMM Module	25 pin RS-232	HMI-CAB-C53
		25 pin RS-422	HMI-CAB-C93
	90/30 CPU351/352/363	RJ11, RS-232	HMI-CAB-C120
	VersaMax Micro/Nano	RJ45, RS-232	HMI-CAB-C119
	VersaMax CPU001/002/005	9 pin Male RS-232	HMI-CAB-C111
Hitachi	Hitachi S Serial Protocol	4 plated wires RS-422	HMI-CAB-C115
IDEC	Micro-1, FA via link adapter	25 pin RS-232	HMI-CAB-C53
	Micro-3	8 pin Mini Din	HMI-CAB-C109-C
Keyence	Keyence KV-L2, KV-10R	RJ11 RS-232 Program Port	HMI-CAB-112
	Keyence KV-L2	25 pin RS-232, Port 1	HMI-CAB-C53
Koyo	see PLC Direct	see PLC Direct	
Micrologix		8 pin DIN	HMI-CAB-C106
Mitsubishi	Series A1S	9 pin RS-232, for A1SJ71C24-R2	HMI-CAB-C88
	Series A	25 pin RS-232	HMI-CAB-C53
	FX	25 pin RS-422	HMI-CAB-C91
	FX0	25 pin RS-422 via an adapter	HMI-CAB-C91
Modicon	984 A, B, X	25 pin RS-232	HMI-CAB-C53
	984 Slot and compact	9 pin RS-232	HMI-CAB-C58
	984 micro	RJ45 headset connector RS-232	HMI-CAB-C102
Omron	C200H	25 pin RS-232	HMI-CAB-C53
	C200H	9 pin RS-422	HMI-CAB-C108
	C20H, CQM1,	9 pin RS-232	HMI-CAB-C67

PLC Direct	DL430, 440 Port 2, D4-DCM	25 pin RS-232	HMI-CAB-C53
	DL330, 330P with use of D3-232-DCU, DL350 Port 2, DL450 Port A	25 pin RS-232	HMI-CAB-C53
	DL340	4-pin Modular Phone RS-232	HMI-CAB-C103
	DL250 Port 1	6-pin Modular Phone RS-232	HMI-CAB-C86
	DL350 Port 1, DL240 Port 2	6-pin Modular Phone RS-232	HMI-CAB-C86
Reliance	Automate program port, R-net gateway	25 pin RS-232	HMI-CAB-C53
Siemens	S5 family program port	15 pin current loop	HMI-CAB-C76
	3964R 928B TTY Sub Module	25 pin Male Current Loop	HMI-CAB-C104
	3964R 928B RS232 Sub Module	25 pin RS-232	HMI-CAB-C53
	S7-200	9 pin male	HMI-CAB-C110
Simatic TI	305 with use a RS-232 DCU	25 pin RS-232	HMI-CAB-C53
	405	25 pin RS-232	HMI-CAB-C53
	500 series, 25 pin prog. port	25 pin RS-232	HMI-CAB-C53
	500 series, 9 pin prog. port	9 pin female RS-232	HMI-CAB-C101
	500 series, 9 pin RS-422	9 pin male RS-422	HMI-CAB-C92
	TI545-1102, prog. port	9 pin female RS-422	HMI-CAB-C100
Square D	Symax model 100 and greater	9 pin male RS-422	HMI-CAB-C94
	Symax model 50 via link adptr	25 pin RS-232	HMI-CAB-C53
Toshiba	T2	15 pin male RS422	HMI-CAB-C97
	MX, EX	4 plated wires RS-422	HMI-CAB-C96
Toyopuc	Toyopuc PC1	3 plated wires RS-422 Half Duplex	HMI-CAB-C113
	Toyopuc PC2F	4 spade lug RS-422 Half Duplex	HMI-CAB-C114
Uni-Telway	TSX37 Series	8 pin male mini-DIN	HMI-CAB-116

Hand Held QuickPanel

The Hand Held QuickPanel combines a 6" Passive STN LCD Color or Monochrome LCD flat panel display with a resistive touch panel, 11 programmable function keys, and a Push Lock switch into a compact package. The unit is housed in an ultra thin body with a wrist strap for a firm grip and hold. An operator keypad on the front (OP) or a switch under the hand grip will enable the touch screen and keypads. The unit is compatible with Quick Designer Advanced Software, providing support for over 25 PLC drivers.

The Hand Held QuickPanel connects to a Junction Box through the HMI-CAB-A02 Interface Cable. The Junction Box, HMI-JBX-201, has terminal blocks for 24VDC, Push Lock switch contacts, a buzzer, and other control signals. Standard PLC cables connect to the Junction Box 25 pin female connector for easy connection to your PLC.



Installation

Before starting the installation process, make sure you have the following parts.

QPH-2D100-L2P 6”Monochrome LCD Hand Held QuickPanel
or
QPH-2D100-S2P 6”Color STN LCD Hand Held QuickPanel

HMI-CAB-A02 Cable

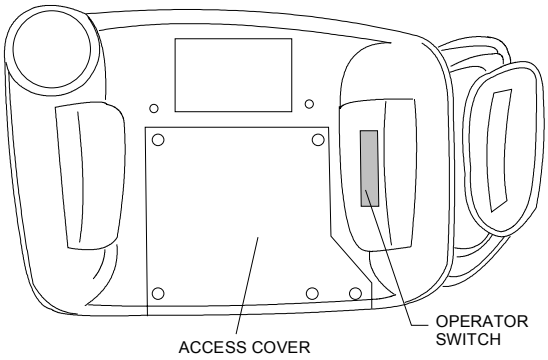
HMI-JBX-201 Junction Box

510-1000-004 24VDC 1.3A Power Supply (or equivalent)

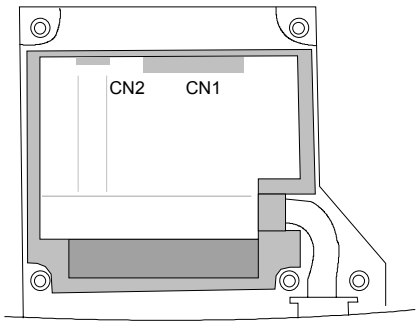
Interface Cable

The Interface Cable connects the Hand Held QuickPanel to the Junction Box. All of the interface signals, power, and control signals are contained in the interface cable.

Remove the access cover from the back of the display.



Locate the connector marked CN1. The connector marked CN2 is the download port.



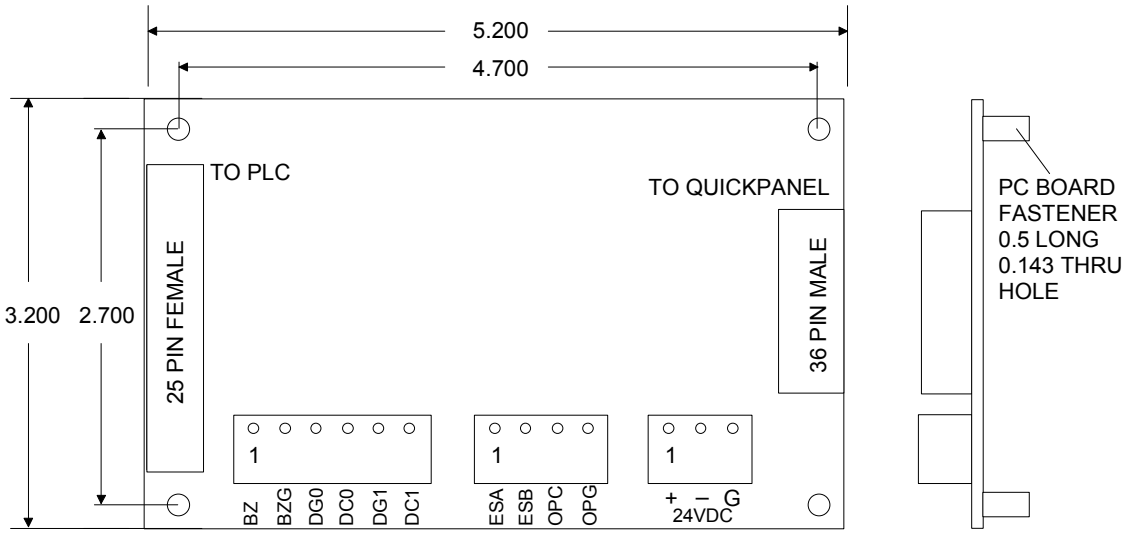
Connect one end of the HMI-CAB-A02 cable to the CN1connector. Route the cable under the gasket and along the molded cable channel. Replace the access cover. The other end of the cable will be connected to the 36 pin connector on the HMI-JBX-201 Junction Box.

*You can leave the cover off temporarily if you intend to use the CN2 download port for loading an application. Keep the access cover in place to provide cable strain relief.

Junction Box

The junction box provides a signal connection system between the Hand Held QuickPanel and the PLC. It provides mating connectors for the cable from the Hand Held QuickPanel and a 25 pin female connector for all standard Total Control PLC cables. The Junction Box also has terminal connections for control signals and power input for the Hand Held QuickPanel. Connect the HMI-CAB-A02 Cable to the 36 pin connector on the HMI-JBX-201 Junction Box.

The Junction Box is mounted to a panel using 0.5" standoff fasteners. The Junction Box dimensions and terminal locations are shown in the following drawing.



24 VDC Power

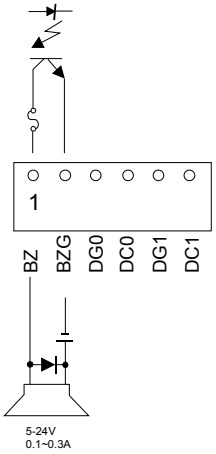
Use the 510-1000-004 24VDC 1.3A Power Supply or equivalent. Connect the leads to the screw terminals on the Junction Box. Power is supplied to the Hand Held QuickPanel through the HMI-CAB-A02 Interface Cable.

PLC Cable

Connect a standard Total Control PLC interface cable to the 25 pin female connector on the Junction Box. These cables can be identified by their HMI-CAB-xxxx part number printed on the cable. The cable ends are marked to indicate which end goes to the PLC and which goes to the QuickPanel.

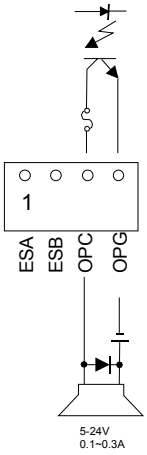
Beeper Connection

The screen beeper can be tied to an external beeper or other sound device. Remember that the beeper is enabled or disabled by the setting in the Touch Screen dialog box. When the beeper is enabled, touching the screen will activate the external signal. This is an open collector output. See the sample beeper connection in the next drawing.



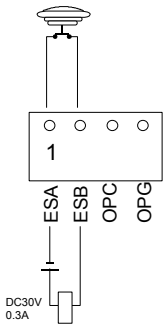
Operator Button Connection

Pressing the OP button on the front of the display or pressing the operator switch under the hand grip will activate the Operator signal. This is an open collector output. See the sample operator button connection in the next drawing.



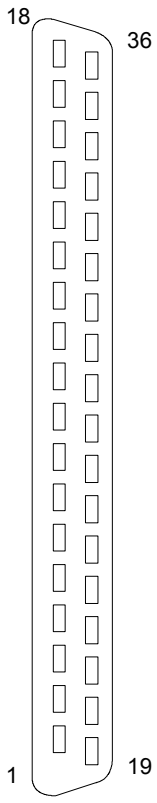
Emergency Button

The emergency button is a normally closed contact switch located on the front of the unit. Pressing the button will lock it in the open contact position. Rotate the switch knob to reset it to the normal position. The contact terminals and sample wiring are shown below.



Custom Cables

The following drawing shows the cable connector and pin assignments for the Hand Held Quick Panel. Use this cable drawing when you need to create custom cable sets.



1	RS	RS232C
2	CS	RS232C
3	CD	RS232C
4	VCC	5V 0.1A
5	TRMX	RS422
6	RDA	RS422
7	SDA	RS422
8	CSA	RS422
9	ERA	RS422
10	DOUT1C	DOUT1
11	DOUT0C	DOUT0
12	OP.C	OP. (Operator Switch)
13	BUZZ OUT	
14	EMG A	A (E-Stop)
15	NC	
16	+24v	
17	+24V	
18	+24V	
19	SD	RS232C
20	RD	RS232C
21	ER	RS232C
22	SG	
23	NC	
24	RDB	RS422
25	SDB	RS422
26	CSB	RS422
27	ERB	RS422
28	DOUT1GND	DOUT1
29	DOUT0GND	DOUT0
30	OP.GND	OP. (Operator Switch)
31	BUZZ GND	
32	EMG B	B (E-Stop)
33	NC	
34	0V	0V
35	0V	0V
36	0V	0V

Connector: HONDA PCR-E36FS 36 PIN

Shell:HONDA PCS-E36LA

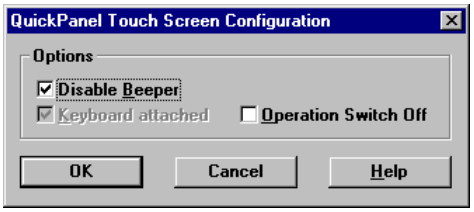
Cable: MHOTRONICS FURUKAWA OAW(C)-SB-18P

Project Setup

Setup begins with selecting the QuickPanel HandHeld in the Project Setup menu under Display Device. The new selections will be shown as:

QUICKPANEL 6” HandHeld Color
QUICKPANEL 6” HandHeld Monochrome

Selecting a Hand Held unit will cause some changes in various dialog boxes. Below is the Touch Screen Configuration dialog box. Note the *Keyboard attached* selection is permanently checked and grayed out.



Note the addition of a new checkbox labeled *Operation Switch Off*. The Hand Held is equipped with an OP (operation) keypad on the front of the unit, and a finger switch (sometimes known as dead man switch) located on the back under the left hand grip. Pressing either switch will enable the touch screen. Checking the *Operation Switch Off* will disable the switch function and the touch screen will always be enabled.

Function Keypads

A 6” QuickPanel can be used with the optional keypad assembly to enhance the operation of the QuickPanel. You must check the *Keyboard attached* checkbox in the Touch Screen Configuration dialog box to enable the Advanced button in several operator dialog boxes. The Advanced button allows simulating operators and assigning keypads to screen operators. The Hand Held unit also has keypads (called Function keys) around the display, but when you select it as the display device, the *Keyboard attached* checkbox is permanently checked.

The Function keys are used in place of the touch screen or along with the touch screen. For example, instead of touching the QuickPanel screen to activate a Push Button, you can press a Function key. You can also assign a Function key to simulate a push button, selector switch, goto panel button, numeric data entry, print screen button or word button. Simulating operators saves screen space.

The following panel operators (ones with a bezel) can be assigned to Function keys:

Push Button
Illuminated Push Button
Numeric Data Entry (with external numeric keypad)

Selector Switch
Word Button
Goto Panel Button
Print Screen
Alarms

The addition of Function keys to the standard touch screen allows several options. For example, a Push Button can:

- work normally without using a Function key.
- be assigned to a Function key.
- work normally and with a Function key.
- be simulated by a Function key but not appear on the touch screen.

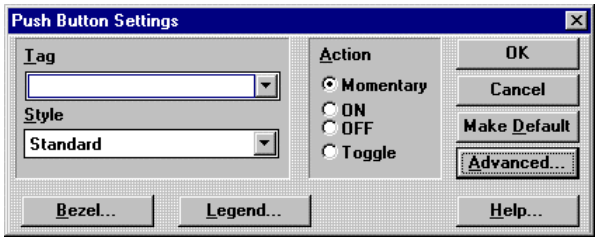
Keypad Layout

The diagram below shows the physical layout of the keypads. The keypads are marked F1 through F11. The keypad marked OP is the Operator keypad, which works the same as the switch under the hand grip.

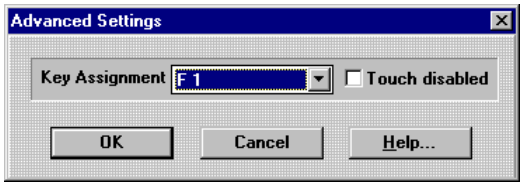
Error! Objects cannot be created from editing field codes.

Assigning Keypads

You can assign a keypad to a button by clicking the Advanced button in the settings dialog. Clicking the Advanced button displays the Advanced Settings dialog box.



In the following example, a button was assigned to Function key F1. Once a button is given a Key Assignment, the Touch disabled checkbox becomes active. A button object can be connected to the touch screen and a Function key simultaneously. If you click the Touch disabled checkbox, the touch screen will be disabled for the button and the button will only work with the assigned Function key. A list of all Function key assignments can be displayed by going to the Tools menu and selecting Keypad Assignments.

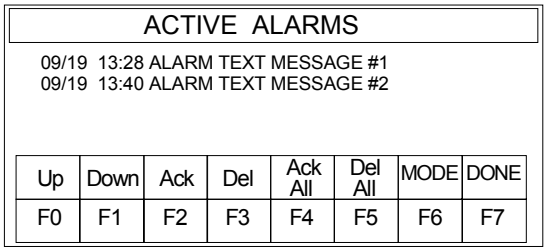


The Illuminated Push Button, Selector Switch, Goto Panel Button and the Word Button work the same way.

Function Keys and Alarms

When an alarm is triggered, the alarm message appears on the panel in an alarm window. The operator touches the window area to activate the alarm management page. If you assign a Function key to an Alarm window, the alarm management page will have an additional row showing Function key assignments.

The alarm management page function keys (Up, Down, Ack, etc.) will now have permanent Function key assignments. Up is F1, Del is F3 and so on. The touch screen and the Function keys work in parallel. If the touch screen is disabled, only the Function keys will operate the alarm page functions.



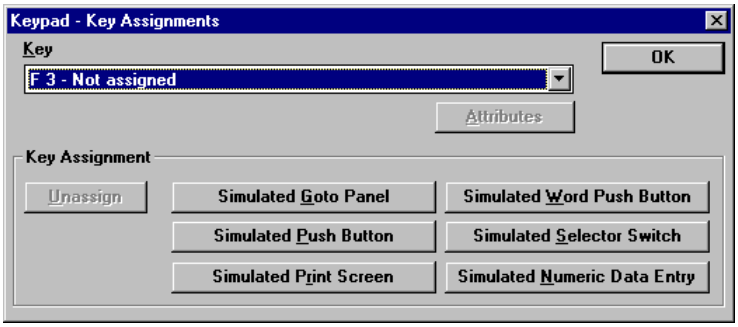
Simulating Panel Objects with Function Keys

You can assign a Function key to simulate a panel object, even though there is no panel object visible on the screen. You can assign one of the Function keys to simulate the following panel operators:

Push Button
Goto Panel Button
Print Screen Button
Word Button
Selector Switch
Numeric Data Entry

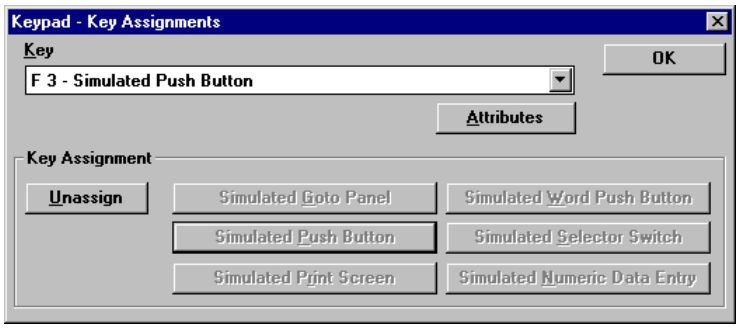
To create a simulated panel object, go to the TOOLS menu and select Keypad Assignments.

The keypad key assignment dialog box appears.



The first operation is to select which Function key will be assigned to the simulated panel operator. Click the down arrow in the Key list box then click an unassigned Function key.

Next, select one of the operators to simulate by clicking a button in the Key Assignment area. When you click one of the simulate keys, the rest of the buttons will be grayed out. In the following example, Function key F3 has been assigned to a Simulated Push Button.



Click the Attributes button to open the settings dialog for the selected item. In this example, clicking the Attributes button will open the Push Button settings dialog. Enter the tag information and click the OK button.

Now when you press the F3 Function key, a Push Button operation is simulated.

Viewing Keypad Assignments

To view the keypad assignments, go to the View menu and click the Object Key Display. The keypad tag display is similar to the object tag display.

The keypad tag is displayed in the bottom left corner of the operator and provides a quick visual check to see which panel operators have Function keys assigned.

Video QuickPanel

The Video display QuickPanel is a special member of the QuickPanel family. Real time video display can be added to control panels for another view into your control process.

The Video QuickPanel is a standard 10.5” TFT Active Color display with a resistive touch screen.

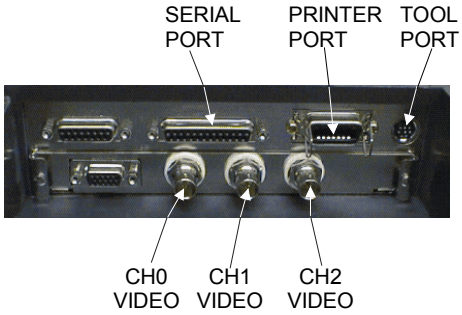
The video display can be selected to cover all panel objects, to display in objects of selected color, or have selected colors appear through the video.

Installation

The installation of the 10.5” display is the same as other 10.5” Color displays, except for the addition of the video input signals. In the Setup dialog box, select the QuickPanel 10.5" Color Video. This selection automatically adds the video icon to the tools menu.

Video Inputs

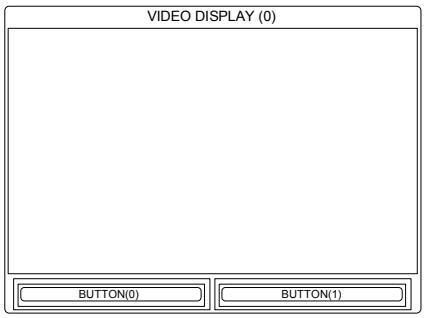
The Video QuickPanel has the standard serial, printer and tool ports. It also has three NTSC BNC video inputs. The following drawing shows the location of the ports and input connectors.



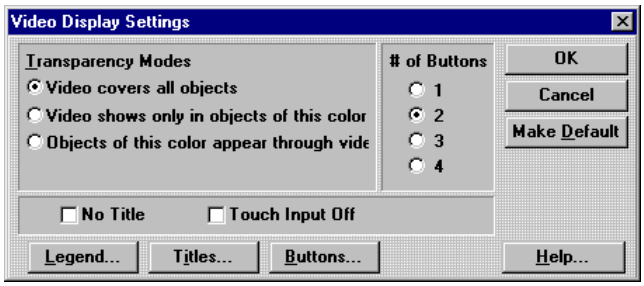
The video source must be NTSC. The video output from a camcorder or VCR is usually an RCA phono plug type connector. An easy way to connect these video sources is by adding an RF adapter to the Video QuickPanel. A typical phono plug to BNC connector can be found at a local Radio Shack under the part number 278-254. Also, many computer stores sell BNC cables for use in networks. These cables can be used to connect video signals that require BNC style connectors.

Video Display

To add a video operator to a panel, select the video icon  from the floating tools menu. Move the cursor to the panel area where the video will appear and click the mouse. The video will be displayed in a 300W x 200H area, along with operator buttons and legend data. A sample video display with two buttons is shown below.



The following Video Display Settings dialog is displayed.

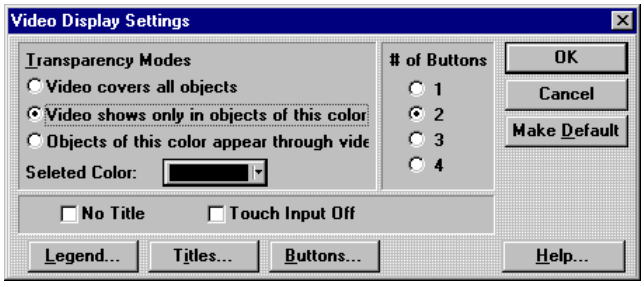


Transparency Modes

Three modes are available for displaying the video. The options allow for a wide range of display options and panel design functionality.

In the *Video covers all objects mode*, the video appears over all objects. You can hide a button behind the display.

When you select *Objects of this color appear through video* or *Video shows only in objects of this color* mode, the Video Display Settings dialog changes to show a color selection option.



In the *Video shows only in objects of this color* mode, the video will be seen only when an object of the selected color is in front of the video display (the object must be placed in the foreground). For example, if you create a push button with a red legend plate and the

selected color is red, then the video will only be shown on the legend plate. The video will not appear on parts of the push button that have a different color.

In the *Objects of this color appear through video* mode, any object of the selected color will appear on the video display. For example, if you create a push button with a green bezel, and the selected color is green, then the bezel part of the button will be seen on the video display.

NOTE: In order for objects to work with transparency, they must be placed in the foreground, or in front of the video display.

Number of Buttons

Select the number of buttons that will appear in the video display legend. The buttons are located below the video display and will size as the legend plate is sized. The video display will always remain 300x200 pixels. The buttons select different video sources. Each button has its own legend plate with title.

No Title

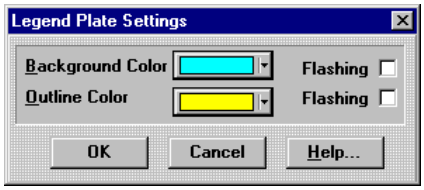
Click on the *No Title* checkbox to remove the title from the legend plate.

Touch Input Off

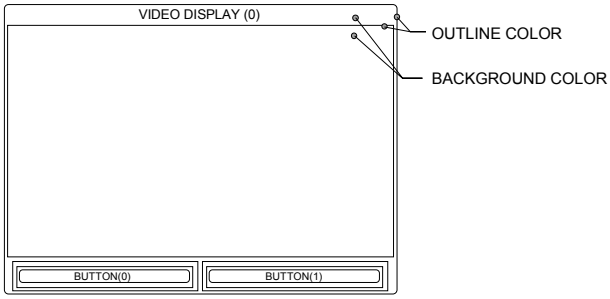
Click on *Touch Input Off* to turn off the touch screen in front of the video display. This does not effect objects around the video display window.

Legend Plate Settings

You can change the background and outline colors of the video display legend. Click the *Legend* button to display the following dialog box.

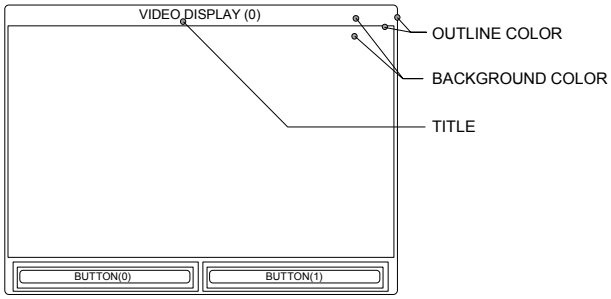


The background and outline sections are shown in the next drawing.



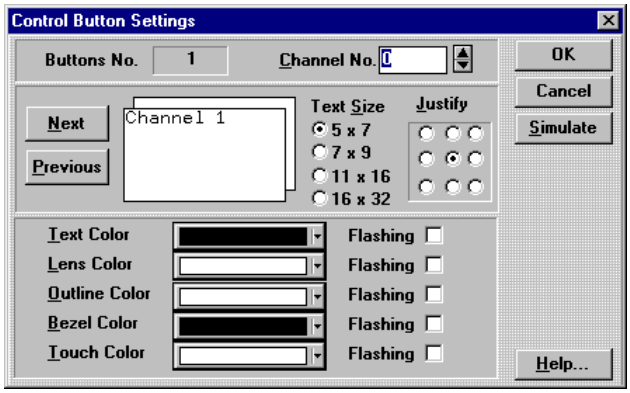
Titles

Click the *Titles* button to display the Title Settings dialog box. The number of buttons selected will determine the number of legend plates. In the next drawing, two buttons have been selected. Pressing button 0 will display legend plate 0, and button 1 will display legend plate 1. You can customize the title for each legend plate.



Buttons

Click *Buttons* to display the Control Button Settings dialog. This dialog is used to setup the buttons that appear below the video display. The buttons select which video source channel is being displayed. You can customize the buttons for your application.



The *Buttons No.* information box displays the assigned button number. The *Channel No.* list box selects the video source for the assigned button. Each button can select from CH0, CH1, or CH2. Although the spin controls allow selection of CH3, it is not used in this product.

Color Adjustments

Adjust the contrast, brightness, and color balance by going into setup mode. Setup mode can be entered in the power up condition or during the RUN condition.

Power up the unit and press and hold the upper corners of the display. The unit will enter the setup mode with the MAIN MENU displayed. Press button 1, INITIALIZE, then button 1, SYSTEM ENVIRONMENT SETUP. Select button 6, VIDEO DISPLAY ADJUSTMENT. Select the INPUT CHANNEL at the bottom of the screen by pressing one of the channel numbers. The video will appear on the left side of the screen. Set the brightness, contrast, and color or simply press the default button. When done, press the SET button to exit the adjustment setup. Press MAIN MENU, then press RUN. The unit will now go into normal RUN mode.

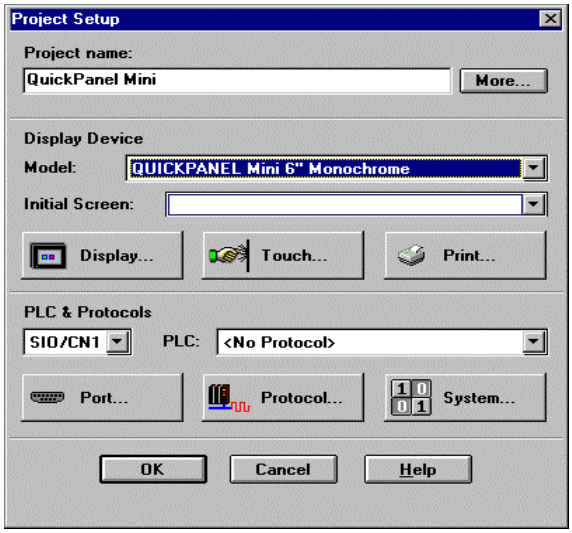
While the unit is in RUN mode, press the bottom corners and the upper right corner at the same time. This is often called the three finger reset. Press the OFFLINE button on the bottom of the screen. The unit will enter the setup mode with the MAIN MENU displayed. Press button 1, INITIALIZE, then button 1, SYSTEM ENVIRONMENT SETUP. Select button 6, VIDEO DISPLAY ADJUSTMENT. Select the INPUT CHANNEL at the bottom of the screen by pressing one of the channel numbers. The video will appear on the left side of the screen. Set the brightness, contrast, and color or simply press the default button. When done, press the SET button to exit the adjustment setup. Press MAIN MENU, then press RUN. The unit will now go into normal RUN mode.

DO NOT CHANGE ANY OTHER SETTINGS IN THE SETUP MODE.

QuickPanel Mini

The QuickPanel Mini is a 6” LCD monochrome touchscreen product. The QuickPanel Mini provides limited panel functionality with full PLC communications capabilities.

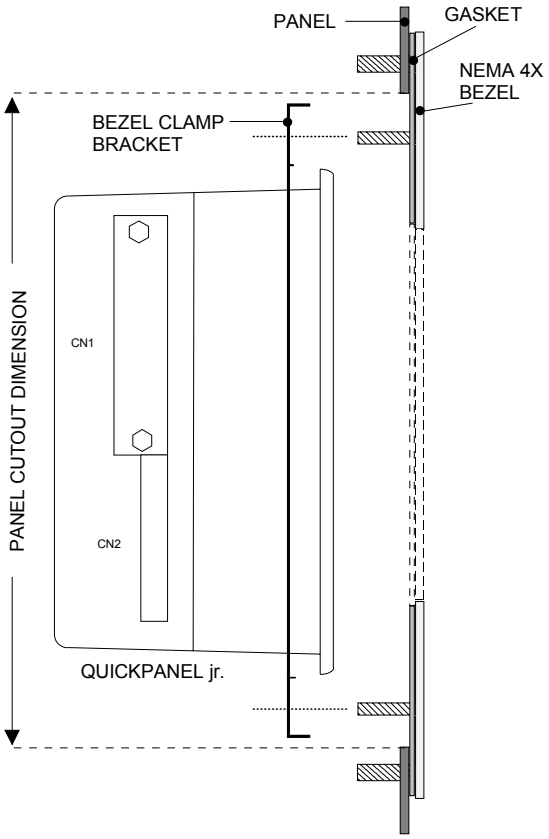
To select the QuickPanel Mini as the target display device, choose **Setup** and select **QuickPanel Mini 6” Monochrome** as the Model.



NEMA 4X Bezels

Bezel Assembly Overview

The following diagram shows the basic elements of a bezel assembly. The basic assembly is the same for all displays. The display is clamped to the stainless steel bezel by means of a clamp bracket. A full size gasket seals the display to the bezel. The bezel is secured to the panel by 10-32 x .50 threaded studs and nuts. The gasket also seals the bezel assembly to the panel.

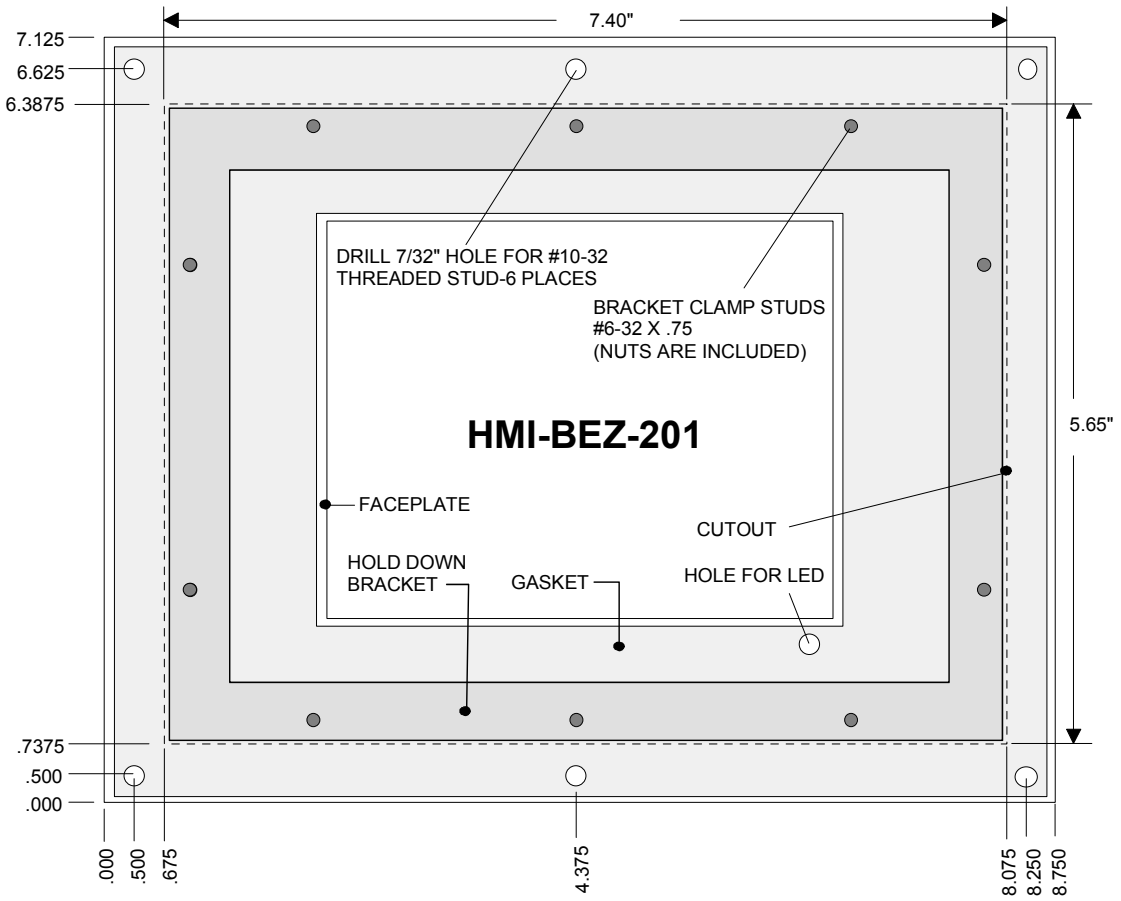


Panel Cutout

Use the following dimension drawings to layout and cut the opening in your panel. The dashed line in the drawing is the panel cutout. Mark and drill the 7/32" holes for securing the bezel to the panel. Note that the hold down bracket fits inside the cutout.

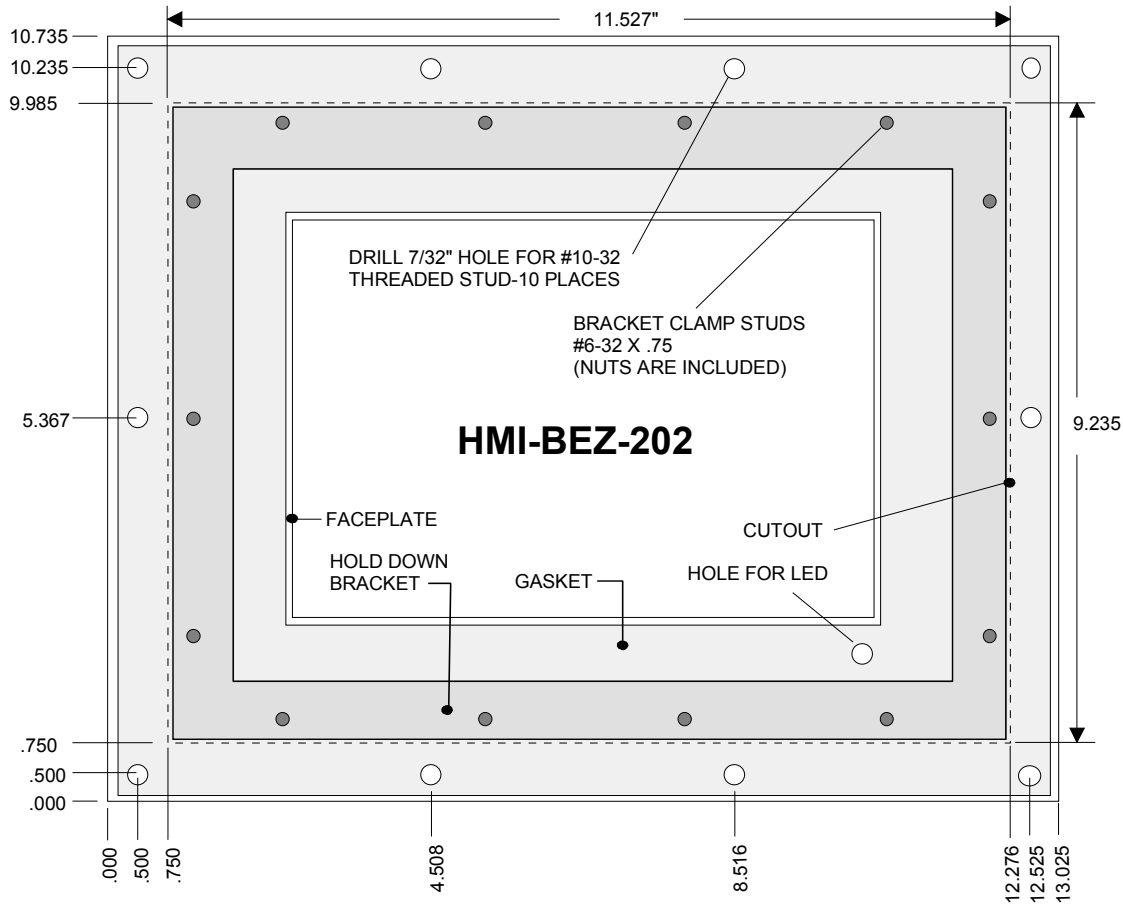
HMI-BEZ-201: Bezel for 5" Displays

Use the following bezel drawing *ONLY* for the following displays: QPJ-2xxxx-xxx


7.40"
7.125
6.625
6.3875
5.65"
DRILL 7/32" HOLE FOR #10-32
THREADED STUD-6 PLACES
BRACKET CLAMP STUDS
#6-32 X .75
(NUTS ARE INCLUDED)
HMI-BEZ-201
FACEPLATE
CUTOUT
HOLD DOWN
BRACKET
GASKET
HOLE FOR LED
.7375
.500
.000
.000
.500
.675
4.375
8.075
8.250
8.750

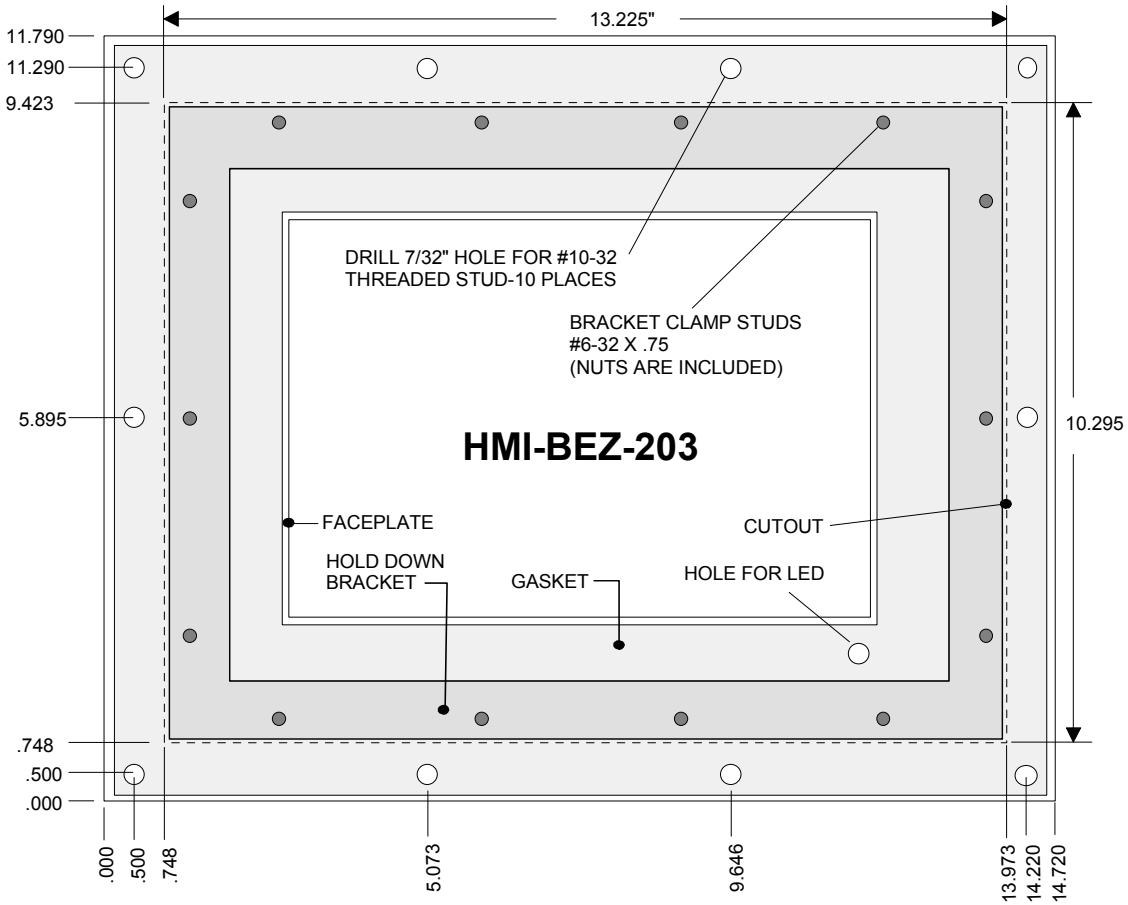
HMI-BEZ-202: Bezel for 9" Monochrome EL

Use the following bezel drawing *ONLY* for the following display:
QPI-xxxxx-Exx



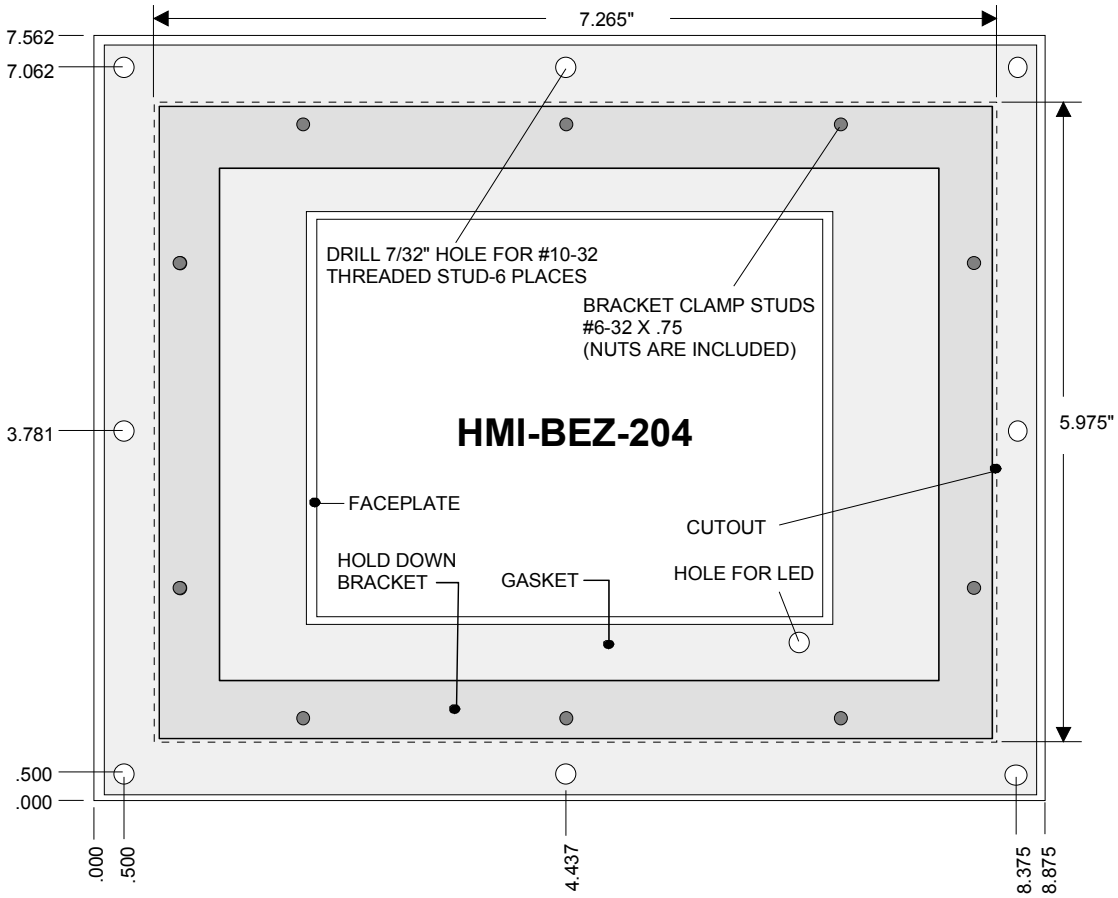
HMI-BEZ-203: Bezel for 10.5" Color Displays

Use the following bezel drawing *ONLY* for the following displays:
QPI-xxxxx-Sxx
QPI-xxxxx-Cxx



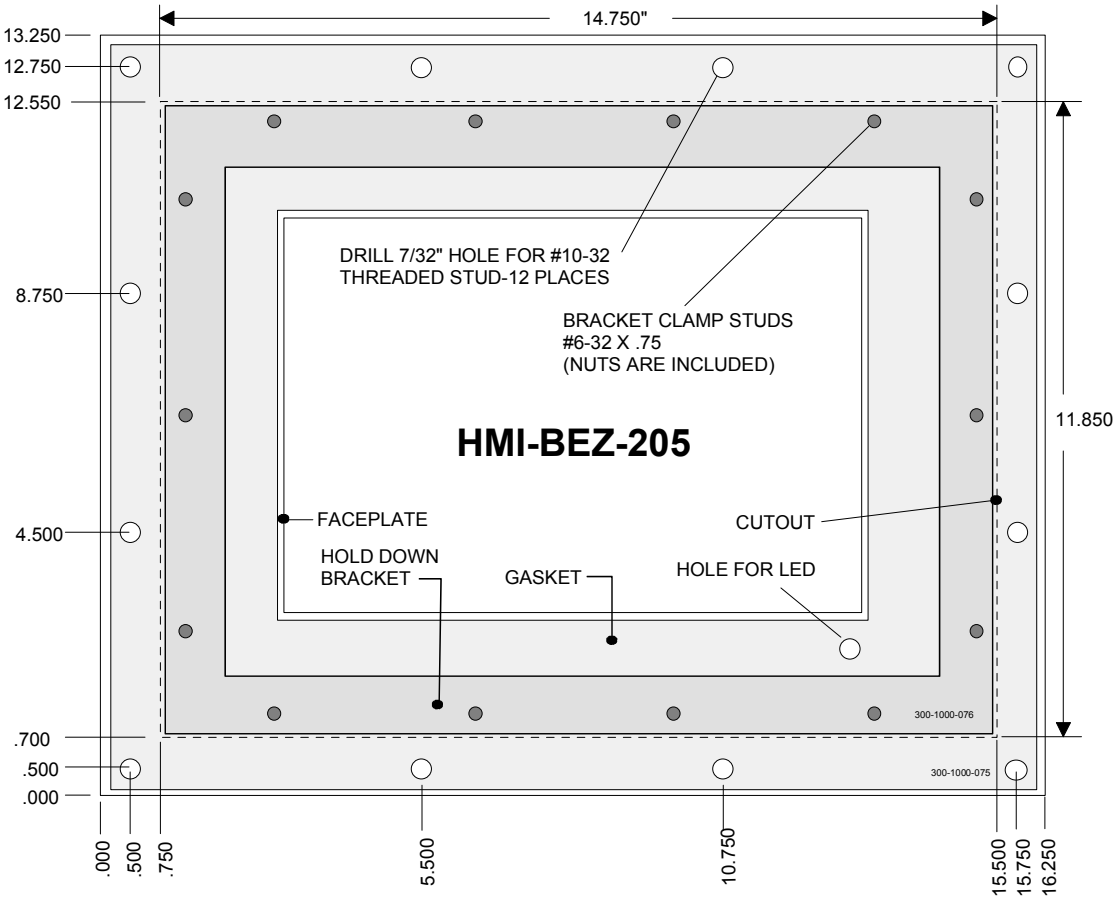
HMI-BEZ-204: Bezel for 6" Displays

Use the following bezel drawing *ONLY* for the following displays:
QPK-xxxxx-xxx



HMI-BEZ-205: Bezel for 12.1” Displays

Use the following bezel drawing *ONLY* for the following displays:
QPL-21100-C2P



Assembly Procedure

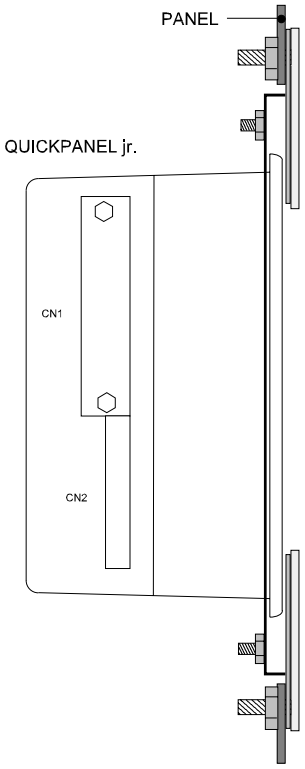
Place the bezel face down on a non-abrasive surface. Place the display against the gasket and make sure the LED on the faceplate aligns with the hole in the gasket and bezel.

Make sure the LED on the display aligns with the hole in the bezel.

Place the clamp bracket over the display and install the nuts on the studs. Finger tighten the nuts. Check the alignment of the LED hole then tighten the nuts.

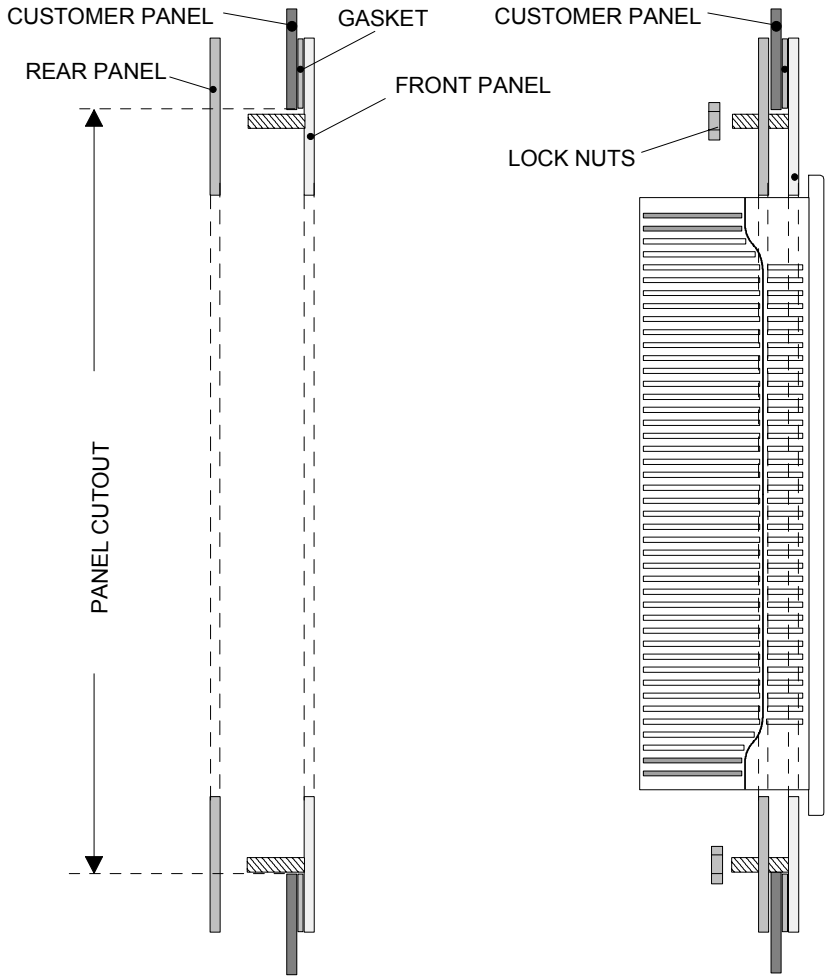
Make sure the clamp bracket is positioned as shown in the drawing.

Insert the bezel assembly into the panel cutout and install the 10-32 nuts.



Color/EL Panel Adapter

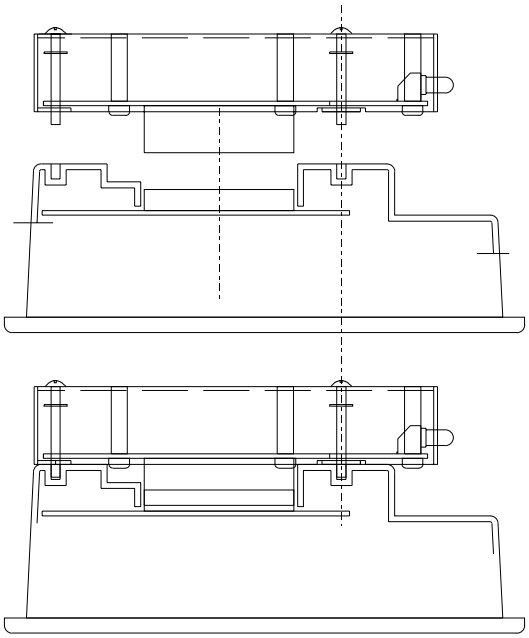
The HMI-ADP-001 Panel Adapter allows using an EL Unit in the Color Unit panel cutout. The front adapter plate slips into the panel cutout made for a color unit. The rear adapter plate is then bolted to the front adapter plate. The hole in the adapter plates will exactly fit the EL unit.



Communication Options

Installing an Option Module on a *QUICKPANEL jr.*

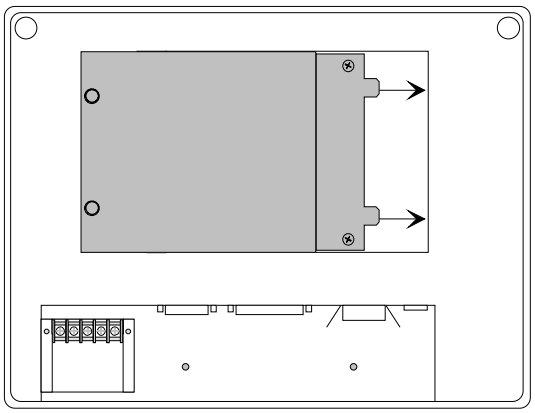
Modules are installed by aligning the option module connector on the option module to the connector on the display and pressing the two units together firmly. The option module is secured by four screws.



NOTE Make sure you connect the ground wire from the module to the ground connection on the power terminal.

Installing an Option Module on a *QUICKPANEL*

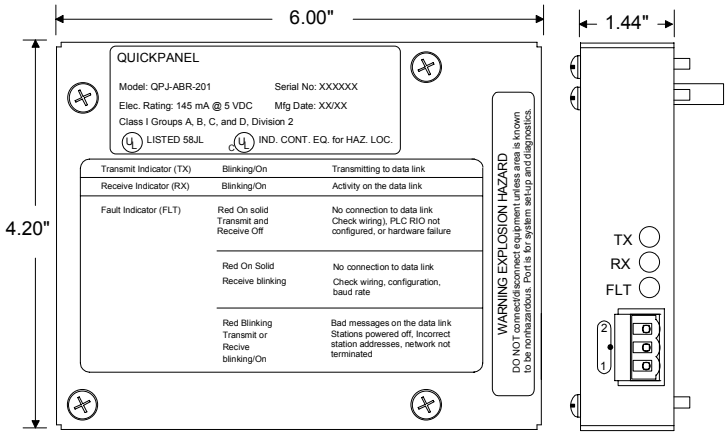
Remove the option module cover plate. Insert the option module tabs into the mating slots in the display chassis. Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten the screws.



A-B Remote I/O Module

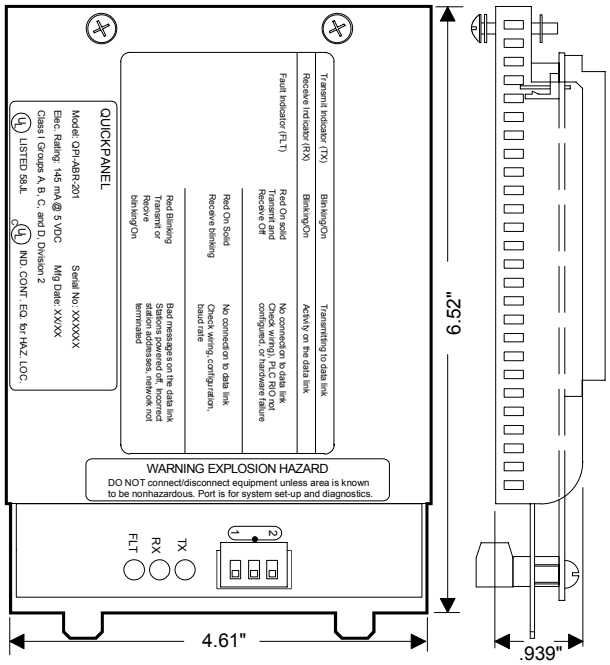
A-B Remote I/O Module for the *QUICKPANEL jr.*

The Remote I/O interface module for the QUICKPANEL jr. is shown below.



A-B Remote I/O Module for the *QUICKPANEL*

The Remote I/O interface module is shown below.

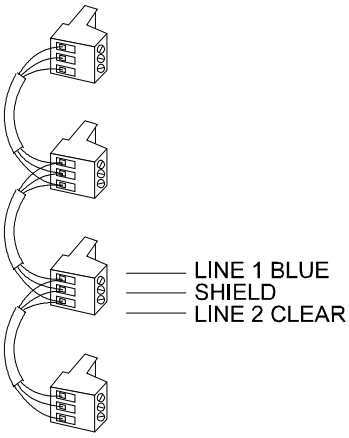


A-B Remote I/O Operation

The Remote I/O module is supplied with a screw-terminal connector block. The terminal block is a standard Remote I/O wiring connector.

The RIO network must be connected in daisy chain fashion. This is done by connecting devices in a serial manner from one device to the

next. This method requires that you never attach more than two cables to any one device. Special connectors are required to connect each device.



There are no restrictions governing the spacing between each device, as long as the maximum cable distance is not exceeded. The maximum cable distance is dependent on the Baud Rate of the network.

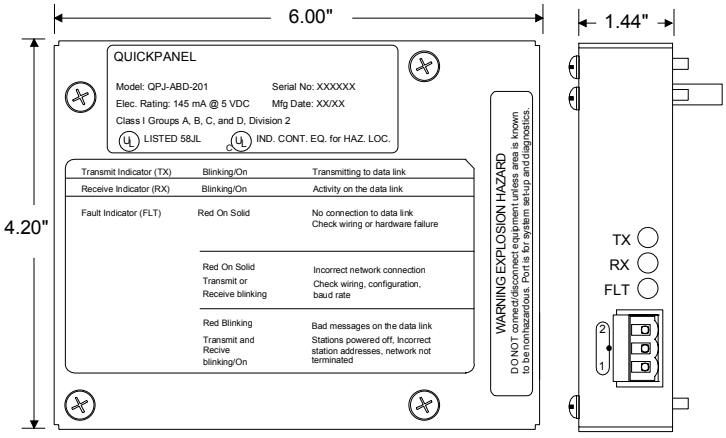
57.6KBaud	3050 meters (10,000 ft.)	150 ohm
115.2KBaud	1525 meters (5000 ft.)	150 ohm
230.4KBaud	750 meters (2500 ft.)	82 ohm

Remote I/O wiring requires termination at each end of the cable between the BLUE Line 1 and CLEAR Line 2 wires. The shield wire must be connected to chassis ground only at the scanner end of the RIO network. Refer to Allen-Bradley documentation for details.

A-B Data Highway Plus Module

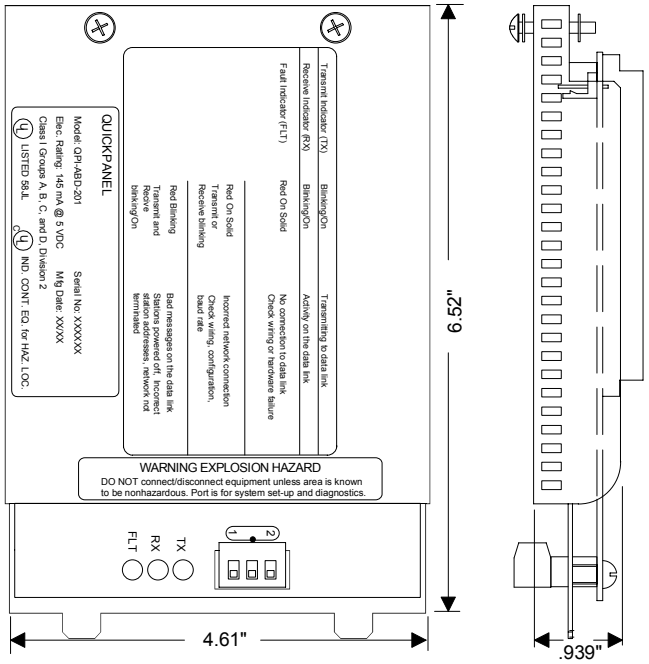
A-B Data Highway Plus Module for the *QUICKPANEL jr.*

The A-B Data Highway Plus Module is shown below.



A-B Data Highway Plus Module for the *QUICKPANEL*

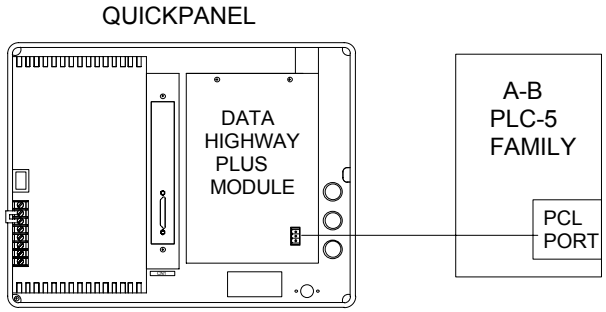
The A-B Data Highway Plus Module is shown below.



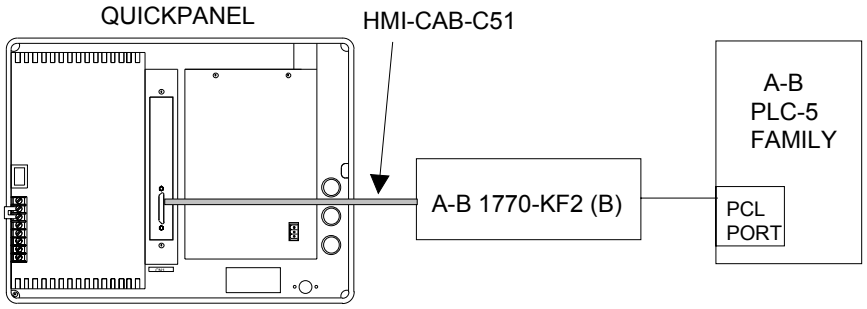
A-B Data Highway Plus Module Operation

The QUICKPANEL can communicate on the Data Highway Plus Local Area Network (LAN) through a serial port connection to an external Data Highway Plus Module or through a Data Highway Plus Module attached to the QUICKPANEL.

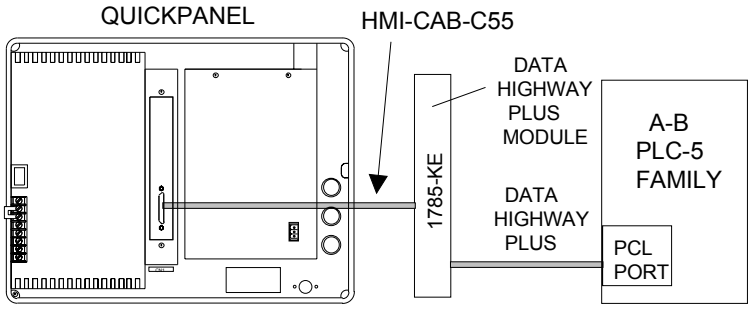
The following drawing illustrates a Data Highway Plus connection between a QUICKPANEL equipped with an optional Data Highway Plus Module and a PLC-5.



The following drawing illustrates a Data Highway Plus connection between a QUICKPANEL, a 1770-KF2/B and a PLC-5. The QUICKPANEL utilizes a serial connection to an A-B 1770-KF2 Interface Module. Some models of the PLC-5, such as the PLC-5/30, have a DF1 port that can be used for direct connection to the QUICKPANEL. Use an HMI-CAB-C51 cable to connect the QUICKPANEL to the 1770-KF2 Module.



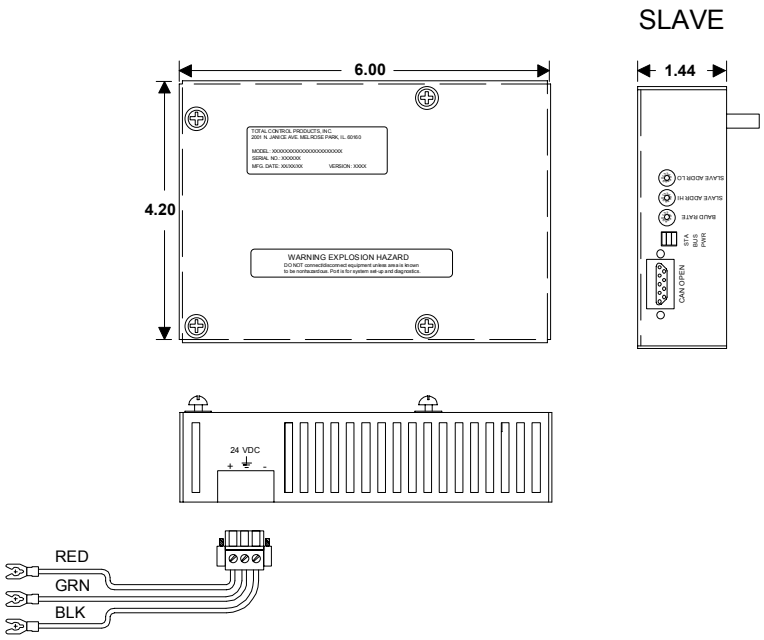
The following drawing illustrates a connection between a QUICKPANEL, a 1785-KE Module and a Data Highway Plus link. Use an HMI-CAB-C55 cable to connect the QUICKPANEL to the 1785-KE Module.



CANopen Module

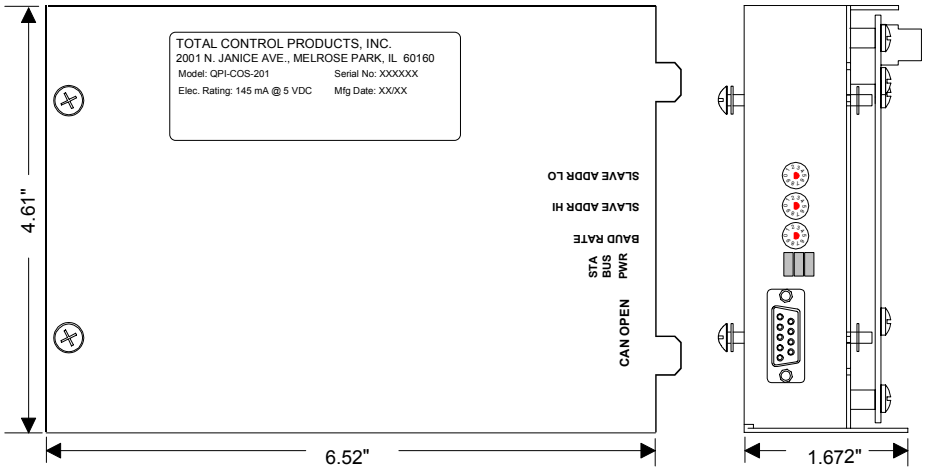
CANopen Module on a *QUICKPANEL jr.*

Attach the power wires to the terminal block on the display. Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten the screws. The option module is shown below.



CANopen Module on a *QUICKPANEL*

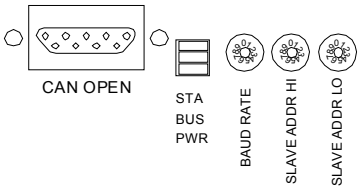
The CANopen Module is shown below. The address and baud rate switches are located on the edge of the module. The legends for the connector and the switches are printed on the top of the module.



Module Configuration

The module can be configured by selecting the address and baudrate in the Protocol setup for Quick Designer. When the project is downloaded to the QuickPanel the module and the QuickPanel both become configured.

The module also supports Node Address and Baudrate setting via the rotary switches on the module.



Address

The address setting is selected by two rotary switches marked Address High and Address Low

Node Address	Address High	Address Low
0	0	0
1	0	1
2	0	2
….		
61	6	1
62	6	2
63	6	3

Baud Rate

The Baud rate is selectable from 10 Kbps to 1 Mbps by the rotary switch marked Baud Rate.

Baud Rate	Rotary Switch
N/A	0
10K	1
20K	2
50K	3
125K	4
250K	5
500K	6
800K	7
1M	8
N/A	9

LEDs

There are three LEDs on the module to indicate module status. See the drawing below for the location of the LEDs. The three LEDs are:

STATUS fault	Red/Green	Red flashing: Recoverable
		Red solid: Critical module fault
		Green flashing: On-line but not connected
		Green solid: On-line, link okay, connected
BUS	Red	OFF: Address DIP switch is

valid

	ON: DIP switch not valid	
POWER	Green	ON = Power On
	OFF = Power OFF	

Connector Diagram

9-pin D-sub	Signal	Description
1	--	reserved
2	CAN_L	CAN_L bus line (low)
3	CAN_GND	CAN ground
4	--	reserved
5	CAN_SHLD	CAN shield (optional)
6	GND	Optional ground
7	CAN_H	CAN_H bus line (high)
8	--	reserved
9	CAN_V+	Optional CAN external

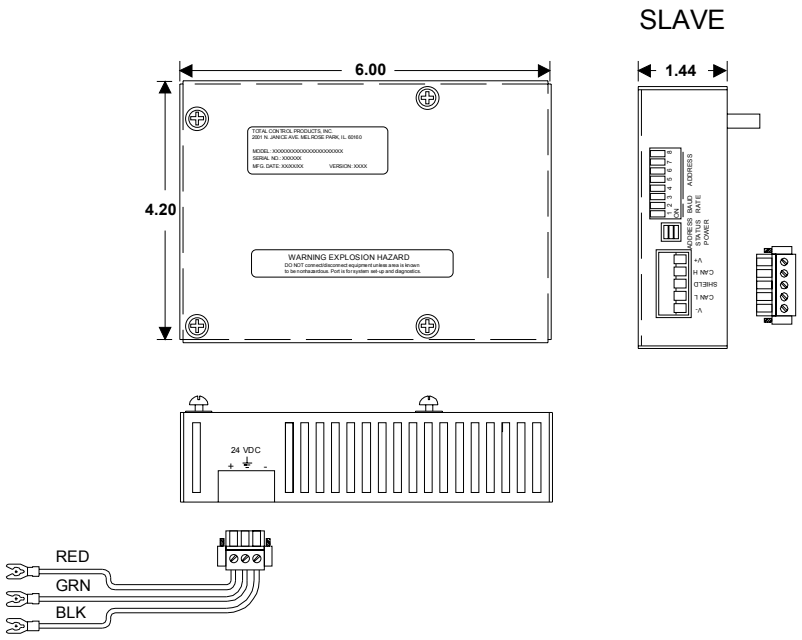
power supply.

If this is the last unit on the network, the network must be terminated with a 124 Ohm resistor between Pins 2 and 7.

DeviceNet Module

DeviceNet Module for the *QUICKPANEL jr.*

Attach the power wires to the terminal block on the display. Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten the screws. The option module is shown below.



DeviceNet Module Configuration

The module can be configured by selecting the address and baudrate in the Protocol setup for Quick Designer. When the project is downloaded to the QuickPanel the module and the QuickPanel are both configured. To use this feature, set all the DIP switches to the ON position.

The module also supports node address and Baudrate setting via the DIP switch on the module. The address setting on the DIP switch is binary coded with LSB to the right. See the DIP switch drawing in this section.

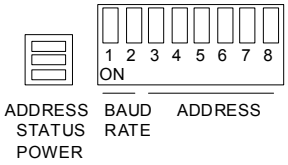
Address	Set DIP 3-8
0	000000
1	000001
2	000010
61	111101
62	111110
63	111111

There are three different baudrates for DeviceNet; 125k, 250k, 500kbits/s. Choose one of them by setting the DIP switch before configuring. When the DIP switch is in the ON position it is a logical "1". See the DIP switch drawing in this section. Set the switches to the ON position for software configuration.

Baudrate bit/s	Set DIP 1-2
125k	00
250k	01
500k	10
Reserved	11

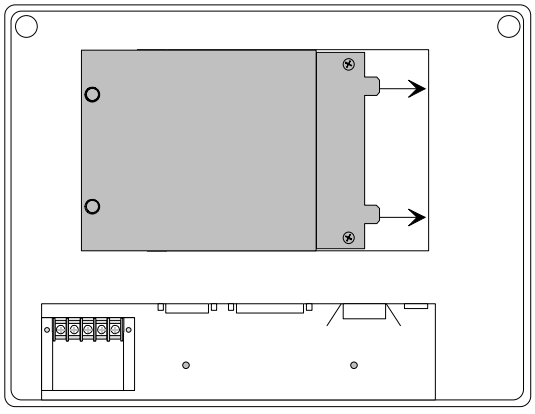
There are three LEDs on the module to indicate module status. See the drawing below for the location of the LEDs. The three LEDs are:

ADDRESS	Red	OFF: Address DIP switch is valid ON: DIP swtich not valid
STATUS	Red/Green	Red flashing: Recoverable fault Red solid: Critical module fault Green flashing: On-line but not connected Green solid: On-line, link okay, connected
POWER	Green	ON = Power On OFF = Power OFF



DeviceNet Module for the *QUICKPANEL*

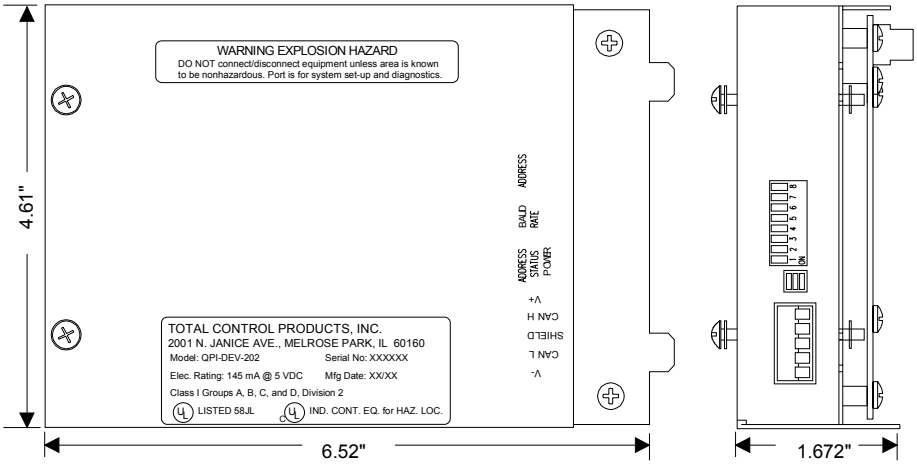
Remove the option module cover plate. Insert the option module tabs into the mating slots in the display chassis. Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten the screws.



DeviceNet Module Options

The DeviceNet Module is shown below. The address and baud rate DIP switches are located on the edge of the module. The legends for

the connector and the DIP switches are printed on the top of the module.



The module can be configured by selecting the address and baudrate in the Protocol setup for Quick Designer. When the project is downloaded to the QuickPanel the module and the QuickPanel are both configured. To use this feature, set all the DIP switches to the ON position.

The module also supports node address and Baudrate setting via the DIP switch on the module. The address setting on the DIP switch is binary coded with LSB to the right. See the DIP switch drawing in this section.

Address	Set DIP 3-8
0	000000
1	000001
2	000010
61	111101
62	111110
63	111111

There are three different baudrates for DeviceNet; 125k, 250k, 500kbits/s. Choose one of them by setting the DIP switch before configuring. When the DIP switch is in the ON position it is a logical "1". See the DIP switch drawing in this section. Set the switches to the ON position for software configuration.

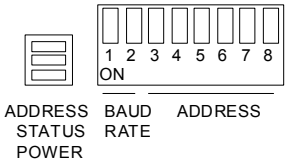
Baudrate bit/s	Set DIP 1-2
125k	00
250k	01
500k	10
Reserved	11

There are three LEDs on the module to indicate module status. See the drawing below for the location of the LEDs. The three LEDs are:

ADDRESS	Red	OFF: Address DIP switch is valid ON: DIP swtich not valid
STATUS	Red/Green	Red flashing: Recoverable fault Red solid: Critical module fault Green flashing: On-line but not connected Green solid: On-line, link okay,

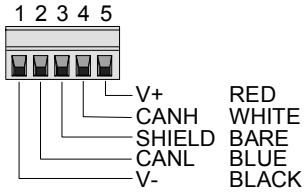
connected

POWER	Green	ON = Power On OFF = Power OFF



Fieldbus Connector

The CAN connector is a standard 5-Pin removable connector that conforms to the standard DeviceNet pinout. The connector and wire connections are shown below.



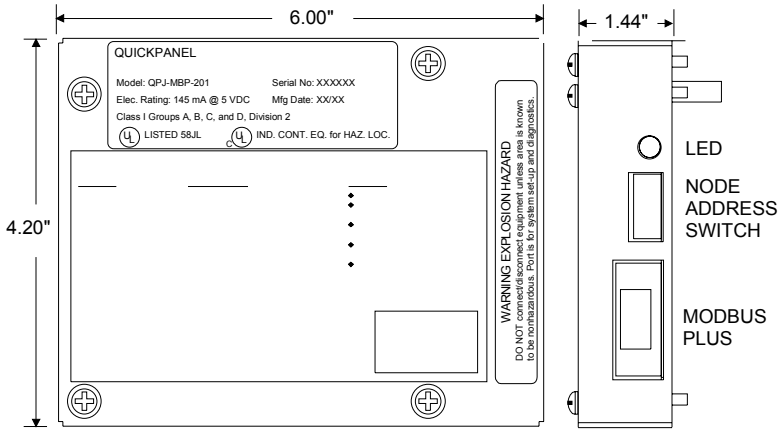
EDS File

The DeviceNet specification defines an *Electronic Data Sheet* (EDS) which is a simple file format that allows product-specific information to be made available by vendors for all other vendors. This makes possible user-friendly configuration tools that can be easily updated without having to constantly revise the configuration software tool. The EDS file is sent on diskette with each DeviceNet module. The diskette part number is 510-1000-054.

Modbus Plus Adapter Module

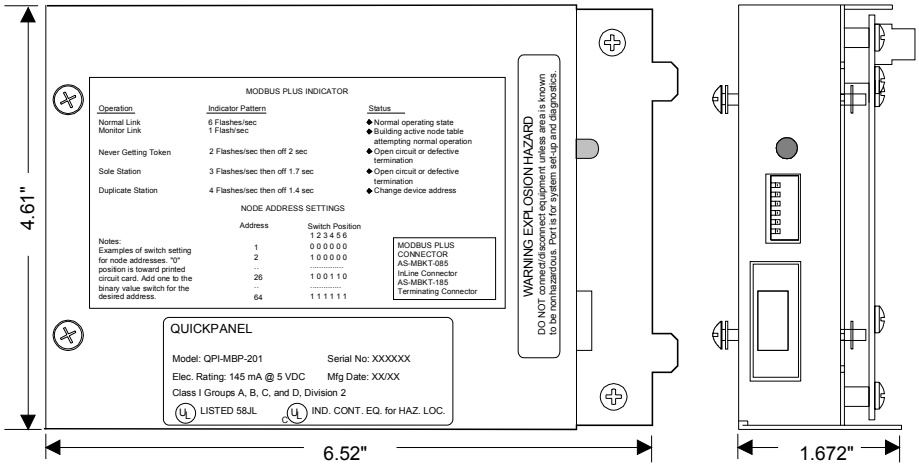
Modbus Plus Adapter Module (*QUICKPANEL jr.)*

The following drawing illustrates the Modbus Plus Adapter for a QUICKPANEL jr. display.



Modbus Plus Adapter Module (*QUICKPANEL*)

The following drawing illustrates the Modbus Plus Adapter for a QUICKPANEL display.



Modbus Plus Operation

Modbus Plus is a local area network system designed for industrial control applications. A network is a group of nodes on a signal path that is accessed by the passing of a token. A token is a group of bits that is passed in sequence from one device to another on a single network, to grant access for sending messages. While holding the token, a node initiates message transactions with other nodes. Each message contains routing fields that define its source and destination. A node is any device that is physically connected to the Modbus Plus cable. Up to 32 devices can connect directly to the network cable over a length of 1500 feet. Each node is identified by a unique address assigned by the user.

The network bus consists of twisted-pair shielded cable run in a direct path between successive nodes. The minimum cable length between any pair of nodes must be at least 10 feet. The maximum cable length between two nodes is the same as the maximum section length of 1500 feet. The node at each end of a section uses a terminating connector, which provides resistive termination to prevent signal reflections on the network bus. Terminating connectors have a molded shell that is light gray in color. The other nodes use an inline connector which is dark gray.

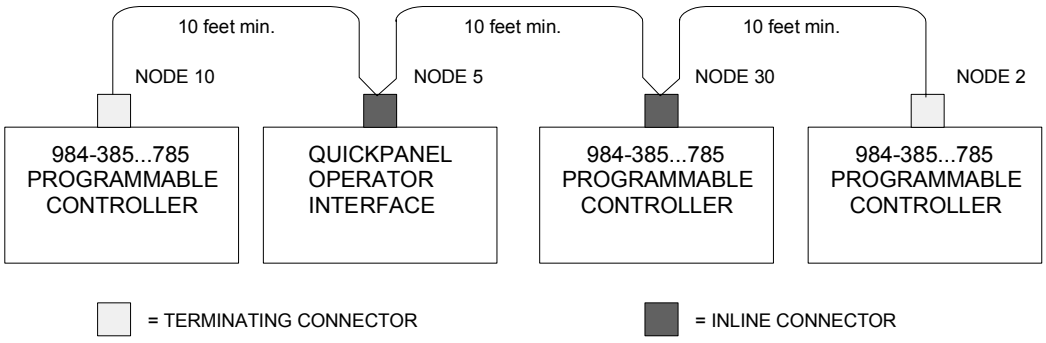
Network cables are NOT supplied by Total Control Products, Inc. Order the following cables from your Modbus Plus distributor.

Inline Connector, AS-MBKT-085

Terminating Connector, AS-MBKT-185.

Modbus Plus Network

Each node has an LED indicator that flashes patterns to show its status on the network. A simple network consists of two or more nodes connected to a single section.



Diagnostic LED

The LED is controlled by the on-board processor and displays node status by flashing repetitive patterns.

Six flashes per second.	This node is working normally. Receiving and passing the token. All nodes should be flashing this pattern.
Flash every 1 sec.	Monitor Link Operation. This node is in the MONITOR_OFFLINE state, where it must monitor the link for 5 seconds, and it is not allowed to transmit any packets out onto the link.
2 flashes, off 2 secs.	Never Getting Token. This node is permanently in the MAC_IDLE. This node hears other nodes on the link pass the token to themselves, but the token is never passed to this node. This node may have a bad transmitter.
3 flashes, off 1.7 secs.	Sole Station. This node is not hearing any other nodes so it is periodically claiming and winning the token, and then finds there is no other node to pass it to. This node may have a bad receiver.
4 flashes, off 1.4 secs.	Duplicate Station. This node has heard a valid packet that was duplicate-node-address sent from another node on the link that is using the same link address as this node. This node is now in the DUPLICATE_OFFLINE state where it will remain passively monitoring the link, until the duplicate node is not heard from for 5 seconds.

Station Address Switches

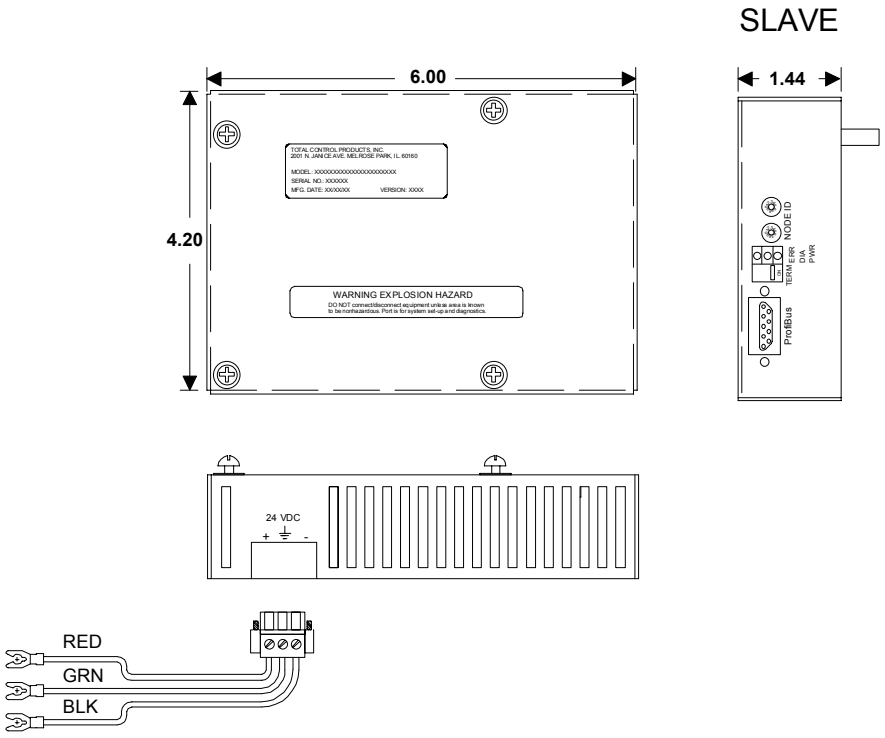
	Station Address / Switch Position					
	1	2	3	4	5	6
1	0	0	0	0	0	0
2	1	0	0	0	0	0
26	1	0	0	1	1	0
32	1	1	1	1	1	0
64	1	1	1	1	1	1

Note: add one to switch setting for desired address. Switch down = ON = 0.

Profibus Module

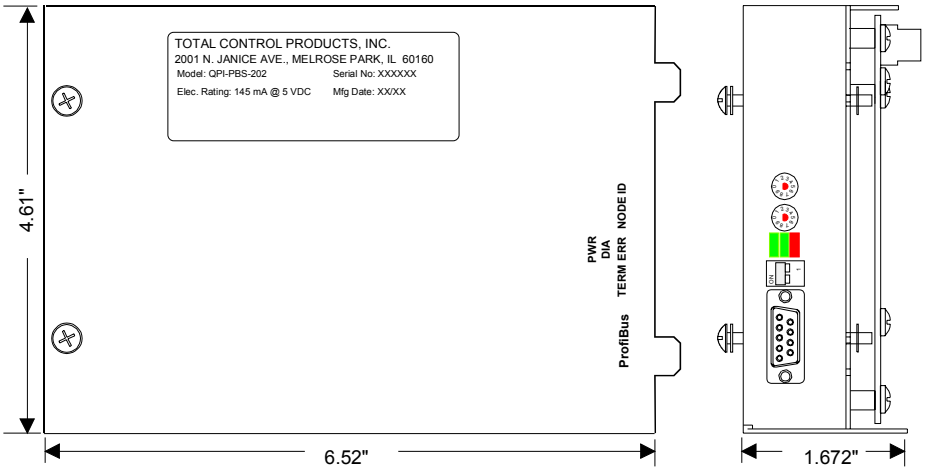
Profibus Module for the *QUICKPANEL jr.*

Align the option module connector with the mating connector on the display. Attach the power wires to the terminal block on the display. Press the module firmly into the display chassis and tighten the screws. Plug the power connector into the module. The option module is shown below.



Profibus Module for the *QUICKPANEL*

The Profibus module is shown below. The module contains a terminator switch marked TERM. Move the switch to the ON position to enable the terminator resistors. Use the two rotary switches to set the NODE ID address.



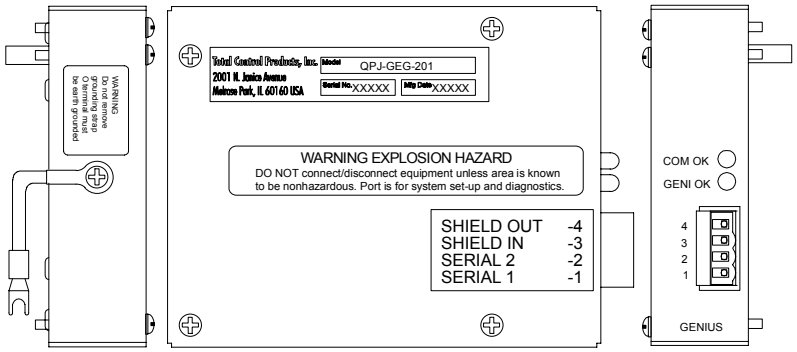
The three LEDs indicate power status (PWR), diagnostics (DIA), and error condition (ERR).

ERR	OFF= Normal Operation ON=Bus is OFF or has an error
DIA	Not used
POWER	ON=Power On OFF=Power OFF
NODE ID	The rotary switch on the left is the x10 digit and the switch on the right is the x1 digit. Therefore, is the left switch is set to 5 and the right switch is set to 3, then the address is 53.

GE Genius Adapter Module

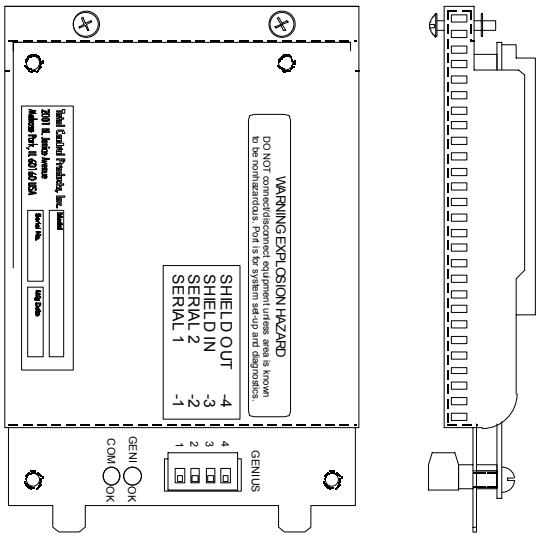
GE Genius Adapter Module (*QUICKPANEL jr.)*

The following drawing illustrates the GE Genius Adapter for a QUICKPANEL jr. display.



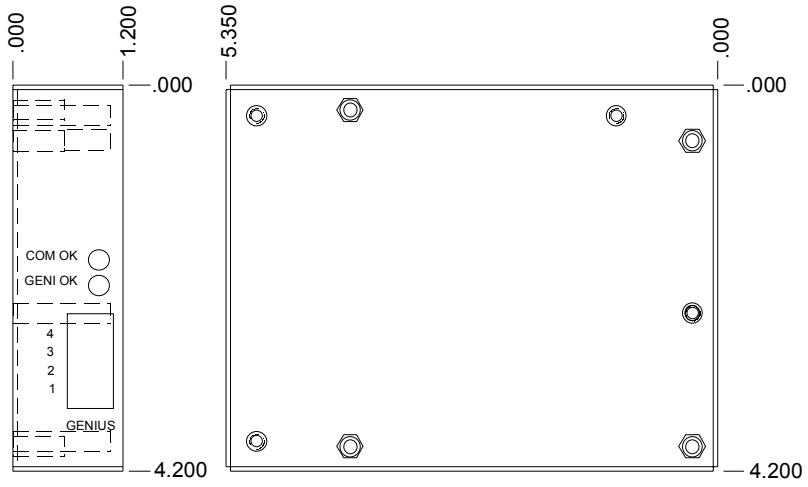
GE Genius Adapter Module (QUICKPANEL)

The following drawing illustrates the GE Genius Adapter for a QUICKPANEL display.

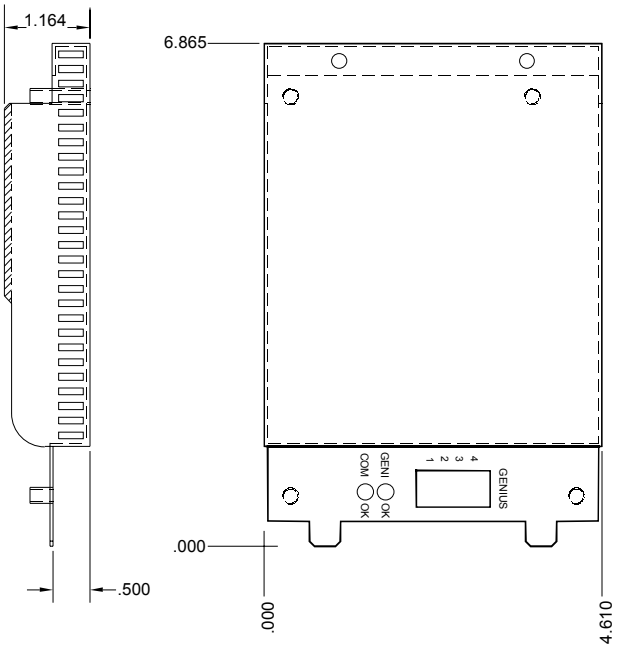


GE Genius Module Dimensions

For QUICKPANEL jr.

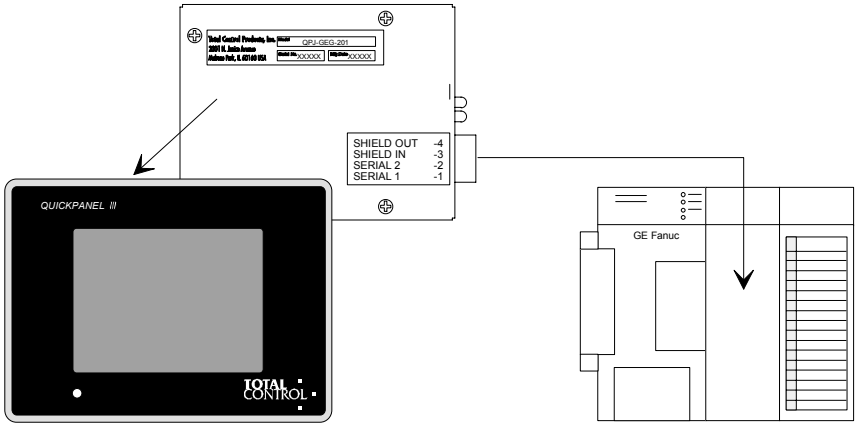


For QUICKPANEL



Cable Connection

Connect the devices as described below.



QUICKPANEL jr. GE Fanuc Series 90-30

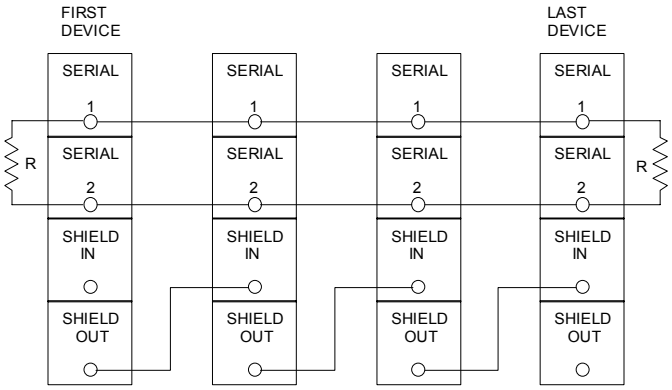
CAUTION

The bus shield wires are not insulated; do not permit them to touch other wires or terminals. Spaghetti tubing should be used to cover these wires.

Connect Serial 1 terminals of adjacent devices and the Serial 2 terminals of adjacent devices.

Connect Shield In to the Shield Out terminal of the previous device. (For the first device on the bus, Shield In is not connected.)

Connect Shield Out to the Shield In terminal of the next device. (For the last device on the bus, Shield Out is not connected.)



For more information about the operation of the GE GENIUS module, see the Communications User manual.

Interbus-S Module

I/O Network Operations

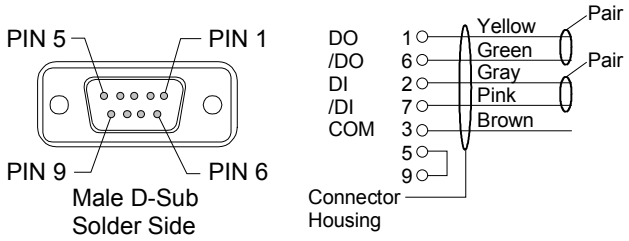
Network for I/O devices on an INTERBUS-S network are automatically determined by their physical position in the network. This eliminates the need for manually setting device addresses. The INTERBUS-S controller board performs an identification cycle (ID) to determine the addresses. After the ID cycle is completed, the host control verifies the network configuration. Once verified, the network is ready for operation.

The INTERBUS-S controller board connects to many types of PLC or computer-based host controllers. The controller board performs all network functions independent of the host controller. Advanced features of the INTERBUS-S controller board include peer-to-peer communications, event processing, and logical addressing.

Connectors

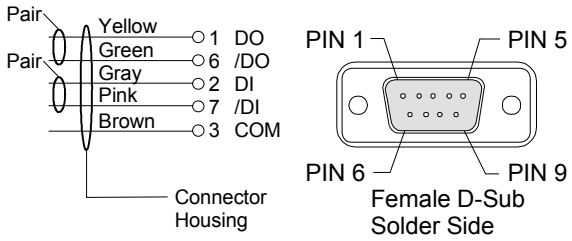
Cable assemblies, cable and connectors can be obtained from several manufacturers. To avoid intermittent communications on the network, always connect DO and /DO via the same twisted pair. Likewise, always connect DI and /DI via the same twisted pair. In addition, always connect both ends of the cable shielding to their prespective connector housings or shield connection. A connection of 24 volts to data lines will permanently damage the module.

Remote Out



REMOTE OUT

Remote In



REMOTE IN

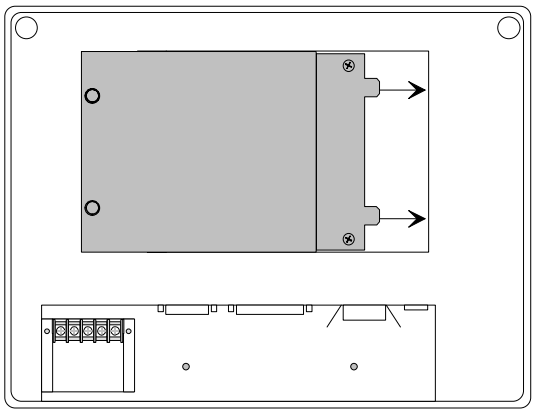
PLC Comm Errors

In the event of a communication problem, error messages are displayed on a status line at the bottom of the display.

Error Displayed Definition
PLC COMM ERROR (02:FF:A0) Error initializing Anybus module
PLC COMM ERROR (02:FF:01) Incorrect Anybus module ID
PLC COMM ERROR (02:FF:02) Anybus module watchdog time-out (module lockup)
PLC COMM ERROR (02:FF:03) Network Error - Network not connected

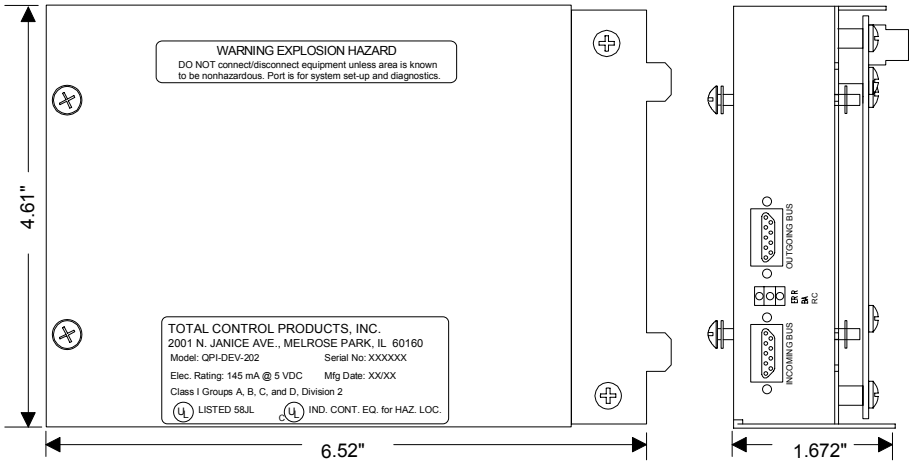
Installing a Interbus-S Module on a QUICKPANEL

Remove the option module cover plate. Insert the option module tabs into the mating slots in the display chassis. Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten the screws.



Interbus-S Module Options

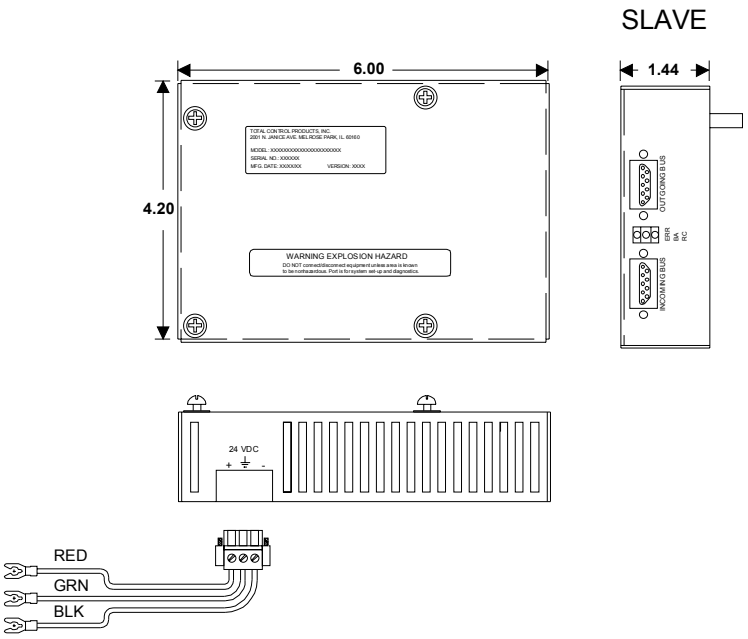
The Interbus-S module is shown below.



Installing a Interbus-S Module on a QUICKPANEL jr.

Align the option module connector with the mating connector on the display. Press the module firmly into the display chassis and tighten

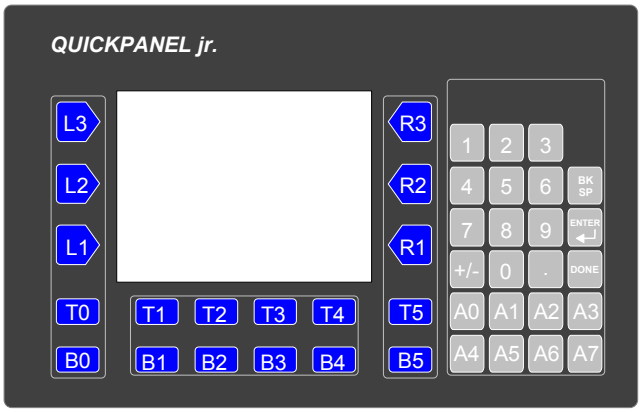
the screws. Attach the power wires to the terminal block on the display. The option module is shown below.



Keypad Option

This section covers the installation steps for the HMI-KPN-201. The installation steps are essentially the same for the HMI-KPN-301 and HMI-KPN-302.

The keypad option adds 41 external keypads to extend the functionality of the QuickPanel. There are programmable keypads around the touchscreen and a data entry panel. Instead of touching the QuickPanel screen to activate a Push Button, you can press an external keypad. You can also assign an external keypad to simulate a push button, selector switch, goto panel button, numeric data entry, print button or word button. Simulating operators saves screen space. The following picture shows the HMI-KPN-201 keypad for use with 5" and 6" displays.



The optional keypad for QuickPanel displays is available in several versions:

HMI-KPN-201	5" and 6" Displays (except QuickPanel Mini) (QPJxxxxxx2P, QPKxxxxxx2P)
HMI-KPN-301	9" displays (QPIxxxxE2P)
HMI-KPN-302	10.5" displays (QPIxxxxxx2P)
HMI-KPN-401 (New)	7.4" displays (QPGxxxE0000)
HMI-KPN-402 (New)	10.5" displays (QPIxxxxE0000)

Features:

- 26 Programmable Keypads
- Numeric Keypad (Reserved Keys)
- Removable Legends
- Keypads can simulate panel operators
- Keypads can be assigned to screen operators

The following panel operators can be assigned to external keypads:

Push Button
Illuminated Push Button
Numeric Data Entry (with external numeric keypad)
Selector Switch
Word Button
Goto Panel Button
Print Button
Alarms

When you add the external keypad to the standard touch screen, the panel operators can be made to operate in several modes. For example, a Push Button can:

- work normally without using an external keypad.
- be assigned to an external keypad.
- work normally and with an external keypad.
- be simulated by a keypad but not appear on the touch screen.

The keypad designations are PERMANENTLY assigned, but the physical legends can be changed to suit your application. That is, L3 will always be in the same physical location, but the legend for L3 can be changed.

The keypads are divided into Reserved keys and Programmable keys. All of the keypads around the display area are designated Programmable keys. The keypads A0 thru A7 are programmable but are primarily used with Alarms. The numeric keypads, including the blank keys above the numeric keypads cannot be assigned and are designated as Reserved.

Keypad models HMI-KPN-301 (for 9" QuickPanels) and HMI-KPN-302, (for 10.5" QuickPanels) must be configured with QuickDesigner version 3.4 and higher. Keypad models HMI-KPN-401 (for 7.4" Ethernet QuickPanel) and HMI-KPN-402 (for the 10.5" Ethernet QuickPanel) must be configured with QuickDesinger verison 3.60.

When using the HMI-KPN-301 or HMI-KPN-302 keypad with any 'Series 2 and 3 Panels i.e. QPI-xxxx-xxx), QuickDesigner version 3.4 requires a software update (if Series 3 Panels are used) downloaded from the Total Control Products web site at www.total-control.com. This update will not be required for QuickDesigner versions higher than version 3.4.

HMI-KPN-401 is a new key pad that is deviced for 7.4" (QPGxxxE0000) display and HMI-KPN-402 is for 10.5" (QPIxxxxE0000) display.

HMI-KPN-401 part reference number is GHMI-KPN-401

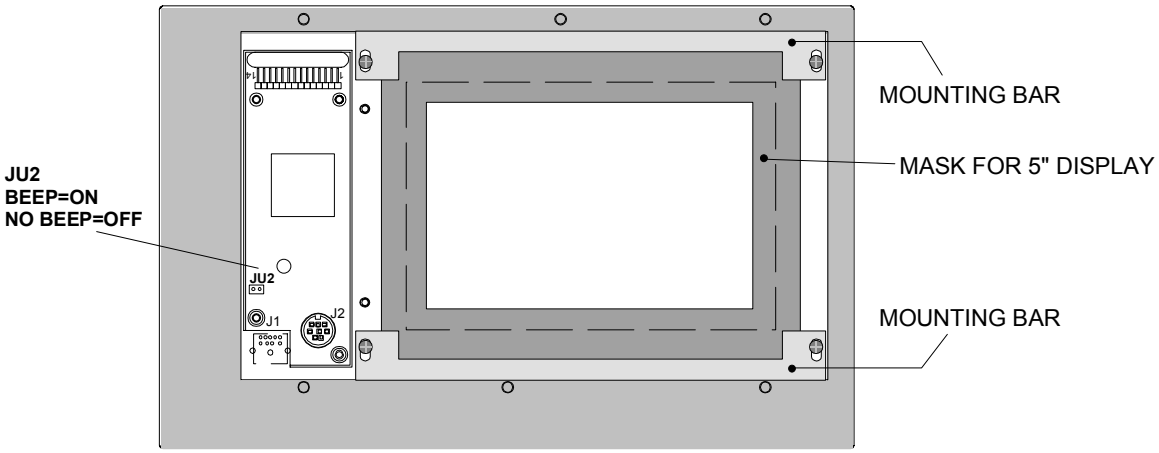
HMI-KPN-402 part reference number is GHMI-KPN-402

Keypad Installation

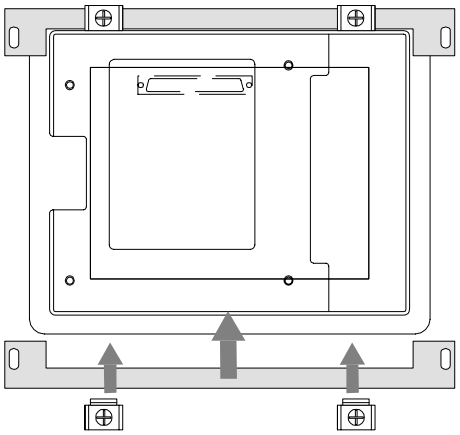
A rear view of the keypad assembly is shown below. The keypad encoder cover is shown removed. JU2 jumper is used to

enable/disable the keypad beeper. The factory installs the jumper to enable the beeper.

The mask is designed to allow for differences in screen sizes between the 5” display and the 6” display. The mask is left in place for 5” displays and removed for 6” displays. To remove the mask, simply lift an edge and break the mask off at the perforation line. Remove the two mounting bars and screws.



Use the panel clamps supplied with the QuickPanel to attach the mounting bars to the top and bottom of the QuickPanel. Make sure the mounting bars fit snug against the QuickPanel case. Finger tighten the panel clamps.

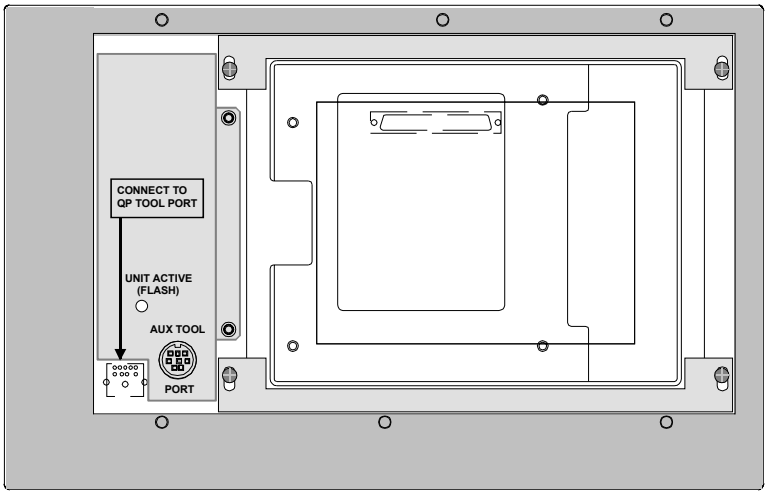


The overlay on the keypad assembly will cover the touch screen so the touch screen and the back of the overlay must be cleaned before assembly.

If you are installing a 6” display, make sure the mask is removed so that the entire screen is visible.

Insert the QuickPanel with mounting bars onto the back of the keypad assembly. Make sure the top of the display is located at the top of the keypad assembly. Install the mounting bar screws. Finger tighten the screws.

Verify the QuickPanel is centered in the keypad assembly. Tighten the panel clamp screws first, then tighten the mounting bar screws.

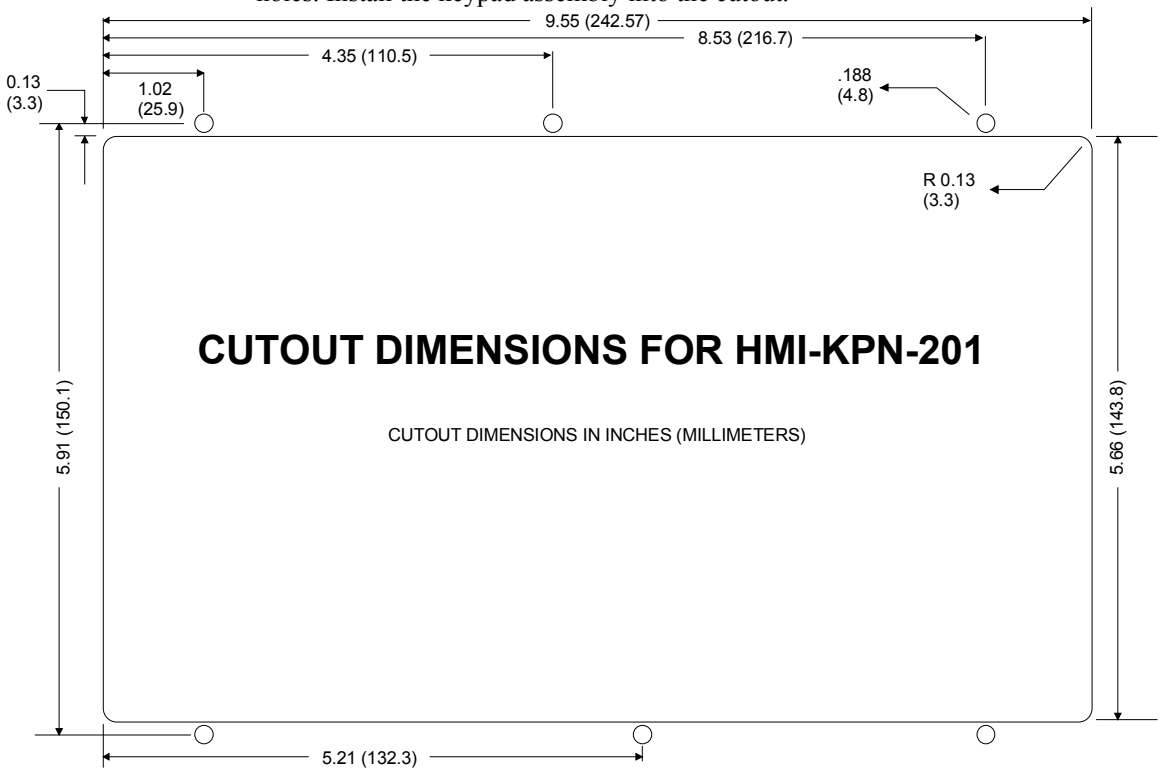


CAUTION

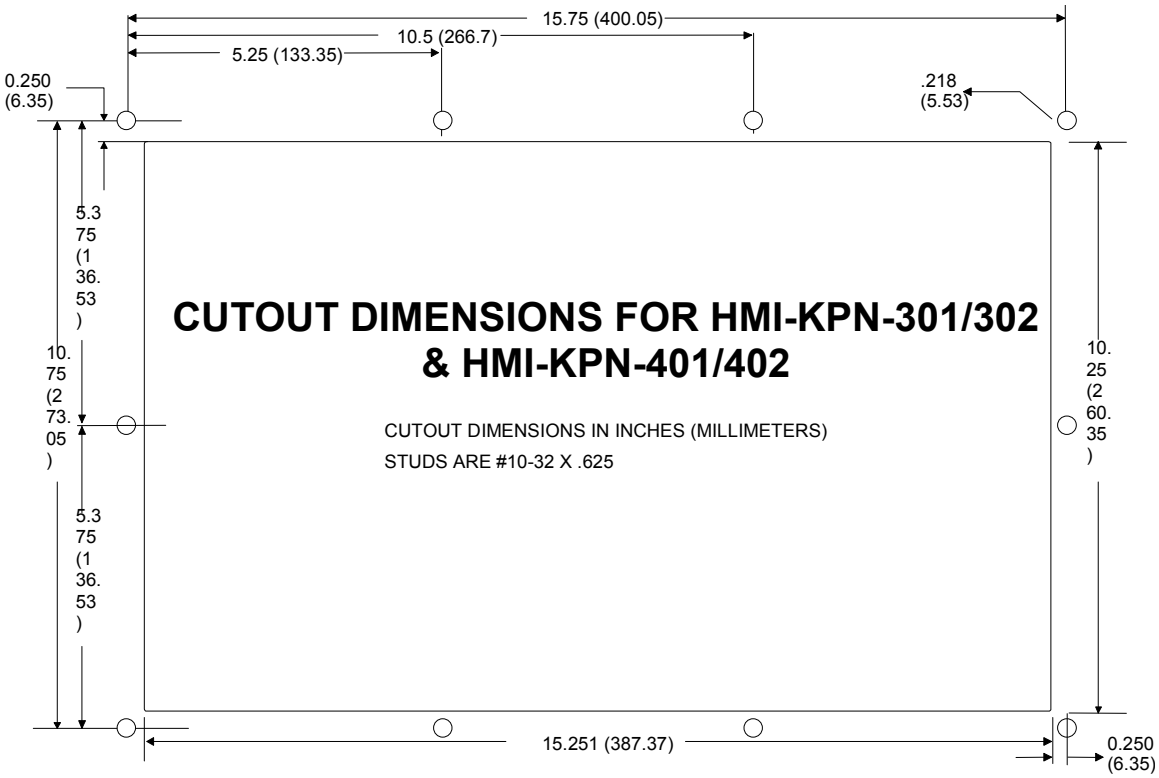
You MUST use the panel clamps to secure the QuickPanel to the mounting bars. Failure to use the clamps will cause premature failure of the overlay and the keypads.

Keypad Cutout Dimensions

Use the cutout pattern to layout and cut the panel opening and screw holes. Install the keypad assembly into the cutout.



PANEL CUTOUT FOR HMI-KPN-201 (5" and 6" displays)

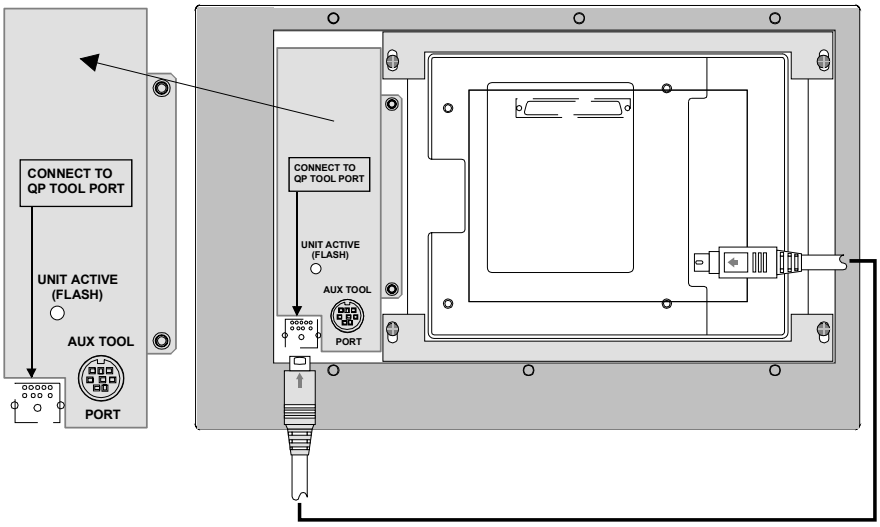


PANEL CUTOUT FOR HMI-KPN-301 and HMI-KPN-302, 401, 402
(9", 7.4" and 10.5" displays)

Keypad Cable Connections

A short cable is used to connect the keypad encoder to the QuickPanel. One end of the cable is 9-pin and the other is 8-pin. The 9-pin connector is inserted into the down-facing jack labeled (CONNECT TO QP TOOL PORT), while the 8-pin connector is inserted into the QuickPanel tool port. The 8-pin connector on the keypad encoder labeled (AUX TOOL PORT) is used to connect a download cable or printer.

Install the short cable between the keypad encoder and the QuickPanel tool port as shown below.

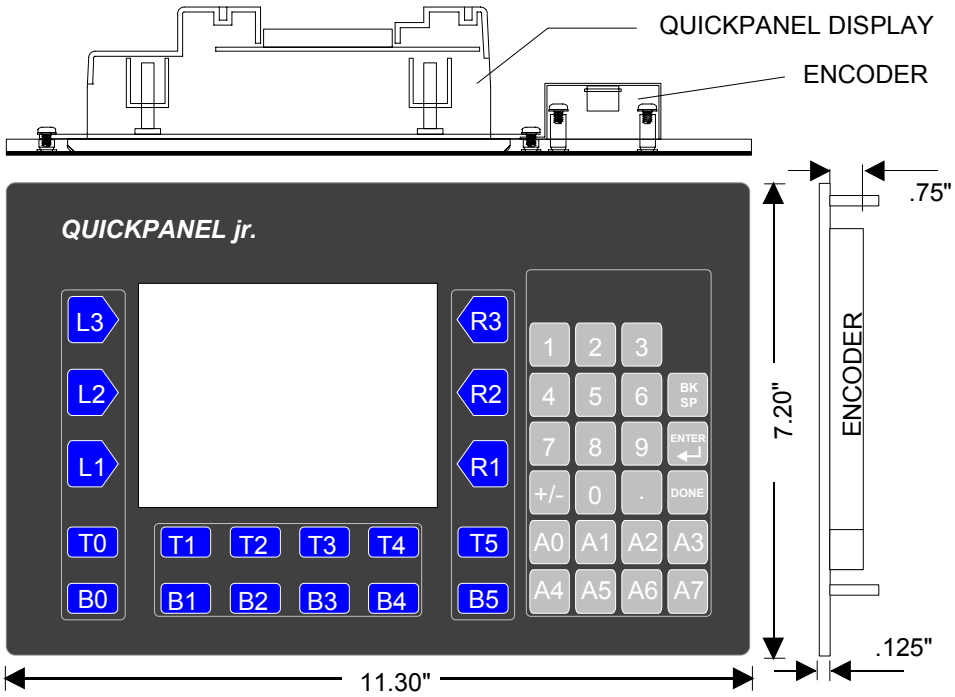


Attach the +24VDC leads to the display. Apply power and verify the LED (UNIT ACTIVE) on the keyboard encoder is blinking.

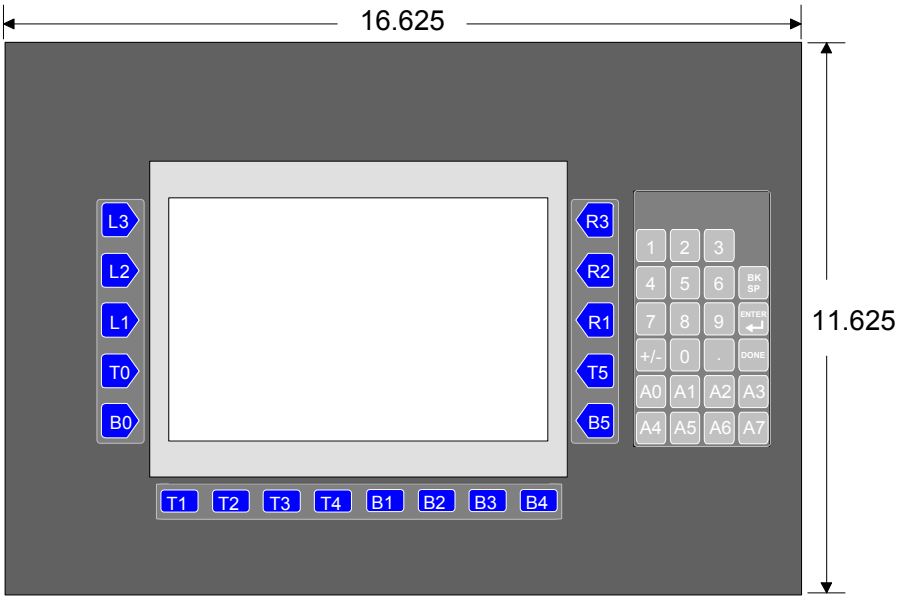
To download a file to the QuickPanel, connect the download cable to the AUX TOOL PORT on the keypad encoder. Do not press any keypads while downloading files. You can also disconnect the short cable from the QuickPanel tool port and connect the download cable to the tool port. This method ensures no interruptions to the download operation.

See the Quick Designer Panel Editor user manual for instructions on assigning keypads to touch screen operators.

Dimensions



DIMENSIONS FOR HMI-KPN-201 (5" and 6" displays)



DIMENSIONS FOR HMI-KPN-301/302/401/402 (9", 7.4" and 10.5" displays)

Maintenance Procedures

Mean Time Between Failures (MTBF)

The Mean Time Between Failures (MTBF) for the QuickPanel family of operator interfaces is calculated to be in excess of 75,000 hours, and the experienced-based MTBF is over 100,000 hours.

Model Numbers:
QPM-xxxxx-xxx
QPJ-xD100-x2P
QPK-xxxxx-xxx
QPH-2D100-x2P
QPI-xxxxx-xxx
QPL-2xx00-C2P

QPxxxxE0000

Replacing the Backlight Lamp

The backlight is a small florescent tube mounted near the top of the display screen. The part numbers for the backlight tubes are:

10.5" Color STN (QPI-2xxxx-Sxx or TFT QPI-2xxxx-Cxx)	HMI-CCT-201
5" Color or Monochrome (QPJ-2xxxx-xxx)	HMI-CCT-202
6" Color or Monochrome (QPK-2xxxx-xxx)	HMI-CCT-203
12.1” Color (QPL-21100-C2P)	HMI-CCT-205
10.5" Color STN (QPI-3xxxx-Sxx)	HMI-CCT-301
10.5" Color TFT (QPI-3xxxx-Cxx)	HMI-CCT-302
6” Color STN or Monochrome (QPK-3xxxx-xxx)	HMI-CCT-303

The 6" TFT backlight is not field replaceable, however, it is rated at more than 50,000 hours. When the CCFL tube eventually fails, the power indicator on the front of the unit turns orange and the touch screen is disabled. The field replaceable backlight on the other 5" and 6" models is rated for 20,000 hours.

Quick Panel BackLight Lamp in QP-Ethernet series panels.

For QP-Ethernet series panels this backlight is replacable. QuickDesigner software has built in support to detect this failure and warn the operator.

Status LED:

Color	Indication
OFF	No power input
GREEN	Normal operation
ORANGE	Backlight is burned out

Use Touch Panel after Backlight Burnout:

This option designates whether touch operation is disabled or not when the backlight burns out. If this selection is set to [OFF] touch operation will be disabled when the backlight burns out, which prevents the QuickPanel (QP) from sending input signals to the PLC.

When the backlight burns out, the Status LED's orange light turns ON, and the System Data Area's 'Status" bit 10 * 1 will turn on.

If the [System Reset] option is set to [ON], only "System Reset" can still be performed by touch operation in case of backlight burnout.

If the backlight burns out when the QuickPanel is OFFLINE, touc panel operation is enabled, regardless of these settings.

Normally the QuickPanel unit detects a backlight burnout by monitoring the backlight's current flow, however, the QuickPanel may fail to detect this condition, depending on the type of backlight problem.

NOTE: When the QP's backlight burns out, it is automatically detected. The QP's Status LED will alert you that the backlight is burned out so that you can disable QP Touch Panel operation and prevent a possible QP operation mistake.

Replacing the Backlight

When the unit's backlight burns out, the unit's status LED will turn orange. If the OFFLINE menu's "USE TOUCH PANEL AFTER BACKLIGHT BURNSOUT" feature is set to "NO", the GP's Touch panel is disabled.

Set up Touch Panel

QuickPanel Ethernet Series use a CFL, longlife-type backlight. The actual life of the backlight, however, will vary depending on the QP's operating conditions, and replacement may be required. QuickPanel Ethernet Series backlight has a life of 50,000 hours (approx. 5.7 years, at 25°C and 24-hour operation), when the backlight is lit continuously (time required for brightness to fall to half its normal level).

Use the following table to check that you have ordered the correct backlight:

QP Ethernet Series Models	Backlight Model
QPGxxxE0000	HMI-CCT-402
QPIxxxE0000	HMI0CCT-302
QPLxxxE0000	HMI-CCT-405

WARNING:

- To prevent an electric shock be sure the QP's power cord is unplugged from the power outlet prior to replacing the backlight.
- When the power is just been turned OFF, the unit and backlight are still very hot. Be sure to use gloves to prevent burns.
- The backlight is very fragile. Do not touch the glass tube directly or try to remove its power cord. If the glass tube breaks you may be injured.

CAUTION

Use caution when opening this unit. Make sure the power has been turned OFF.

Allow the unit to cool before removing the backlight lamp.

High voltages are present when the power is ON.

1. Place the unit face down on a surface that will not scratch the front face. Use a small screwdriver to unfasten the two screws at the upper rear sides of the unit.
2. Slowly pivot the rear panel open. It will support itself in the nearly vertical position.
3. Disconnect the lamp connector. Remove the clamp screw from the left side of the lamp and remove the lamp. The lamp is press fit and may require some small force to remove it.
4. Insert the new lamp and reconnect the connector.
5. Replace the rear cover and tighten the screws. Be careful not to get any wiring caught between the front of the unit and the back cover.

Replacing the Touch Screen Overlay

The touch screen is made of a tough, flexible material that can withstand many chemicals and hard use. After repeated use, the overlay may get scratched or damaged. It can be replaced by simply peeling off the old overlay and carefully installing a new one. Contact the factory for part numbers and prices.

1. Locate the starter hole in the lower left corner.
2. Peel up the corner of the overlay using a small pick.
3. Carefully peel the overlay from the unit.
4. Remove the backing material from the new overlay.
5. Align the overlay, making sure the LED hole is placed over the LED.
6. Press the overlay in place.

Touch Screen Covers

The touch screen is made of a tough, flexible material that can withstand many chemicals and hard use. After repeated use, the overlay may get scratched or damaged. You can protect the touch screen from abnormal use by adding a thin film over the touch screen. When the film is worn out, simply peel it off and add a new one. Contact your local distributor for Catalog number for appropriate QuickPanel model.

Agency Approvals

The chart below shows the family of ***QUICKPANEL*** product types, agency approvals and enclosure description.

Style	Model #	Catalog Number	Agency Approval	Enclosure
5”Mono	0680028-03	QPJ-2D100-L2P	UL/CUL (1)	UL 4X/12
		QPJ-2D101-L2P	CE	
		GP270-LG31-24VP	UL/CUL	IP65
		GP270-LG21-24VP	CE	
5” STN Color	0680028-04	QPJ-2D100-S2P	UL/CUL (1)	UL 4X/12
		QPJ-2D101-S2P	CE	
		GP270-SC31-24VP	UL/CUL	IP65
		GP270-SC21-24VP	CE	
6” Monochrome	0880014-01	QPK-2D100-L2P	UL (File # E177256)	UL 4X/12
		QPK-2D100-L2P	CE	IP65
	0880014-01	GP370-LG31-24V	UL (File # E177256)	UL 4X/12
		GP370-LG21-24V	CE	IP 65
	2880011-02	QPK-3D200-L2P	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
	2880011-02	GP377-LG41-24V	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
6” STN Color	0880014-02	QPK-2D100-S2P	UL (File # E177256)	UL 4X/12
		QPK-2D101-L2P	CE	IP65
	0880014-02	GP370-SC31-24V	UL (File # E177256)	UL 4X/12
		GP370-SC21-24V	CE	IP65
	2880011-01	QPK-3D200-S2P	UL, cUL, CE (UL File #182139)	UL 4X/12, IP65
	2880011-01	GP377-SC41-24V	UL, cUL, CE (UL File #182139)	UL 4X/12, IP65
6” Monochrome	0880042-01	QPM-2D100-L2P	RUL, cUL, CE (UL File # 171486)	RUL 4X/12, IP65
	0880042-01	GP37W-LG11-24V	RUL, cUL, CE (UL File # 171486)	RUL 4X/12, IP65
6” Monochrome Blue LCD (Mini)	2880052-01	QPM-3D200-B2P	UL, cUL, CE (UL File # 177793)	UL 4X/12, IP65
	2880052-01	GP37W2-BG41-24V	UL, cUL, CE (UL File # 177793)	UL 4X/12, IP65
6” TFT	2880037	QPK-3D200-C2P	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
	2880037	GP377R-TC41-24V	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
7.4” TFT Color	2880061	QPGCxxExxxx (GP2400-TC41-24V)	UL/cUL, CE (UL File # 182139)	UL 4X/12, IP65
9“ EL		QP1-31200-E2P		4X/12, IP65
		GP477-EG11		4X/12, IP65
	2780027-01	QP1-3D200-E2P	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
	2780027-01	GP477R-EG41-24V	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
10.5” Monochrome	088001-01	QP1-2D100-L2P	UL, cUL, CE (UL File # 177256)	UL 4X/12, IP65
		GP570-LG21-24VP	UL, cUL, CE (UL File # 177256)	UL 4X/12, IP65
10.5” STN Color	0680035-04	QP1-2D100-S2P	UL, cUL, CE (UL File # 177256)	UL 4X/12
	0680035-04	GP570-SC31-24V	UL, cUL, CE (UL File # 177256)	UL 4X/12
		QP1-31200-S2P		
		GP577R-SC11		
		QP1-2D101-S2P	CE	IP65
		GP570-SC21-24VP	CE	IP65
10.5” TFT Color		QP1-31200-C2P		
		GP577R-TC11		
	2780027-02	QP1-3D200-C2P	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65
	2780027-02	GP577R-TC41-24V	UL, cUL, CE (UL File # 182139)	UL 4X/12, IP65

105” TFT Color	2880061	QPICxxExxxx (GP2500-TC41-24V)	UL/cUL, CE (UL File # 182139)	UL 4X/12, IP65
12” TFT Color		QPL-21100-C2P		4X/12 Self Certified
		GP675-TC11		
	2780025-01	QPL-2D200-C2P	CE & RUL/CUL (UL File# E171486)	RUL 4X/12, IP65
	2780025-01	GP675-TC41-24VP	CE & RUL/CUL (UL File# E171486)	RUL 4X/12, IP65
12.1” TFT Color	2880061	QPLCxxExxxx (GP2600-TC41-24V)	UL/cUL, CE (UL File # 182139)	UL 4X/12, IP65
Hand-held Mono	0980011-01	QPH-2D100-L2P	UL/CUL	1
		GPH70-LG41-24VP	UL/CUL	
Hand-held STN Color	0980011-02	QPH-2D100-S2P	UL/CUL	1
		GPH70-SC41-24VP	UL/CUL	
AB DH+ Modules		QPx-ABD-201	CE & UL/CUL (UL File# 177256)	1
AB RIO Modules		QPx-ABR-201	CE & UL/CUL (UL File# 177256)	1
GE Genius Modules		QPx-GEG-201	UL/CUL (UL File# 177256)	1
Modicon Modbus+		QPx-MBP-201	UL/CUL (UL File# 177256)	1
Profibus		QPx-PBS-201/202	Investigating approvals; CE for QPI-PBS-202	1
CANopen		QPx-COS-201	Investigating approvals	
DeviceNet		QPx-DVN-202	Investigating approvals	1
Interbus-S		QPx-IBS-201	Investigating approvals	1

UL/CUL 1604 CL 1, DV 2 (File #E177256 and File # E182139)

UL/CUL 1950 Listing - refers to Electrical Safety of information equipment (Files #E177793)

UL/CUL 1604 Listing - refers to Electrical Equipment that meets the Underwriter Laboratory’s 1604 requirements for Class 1, Group A, B, C, and D, Division II installations and are clearly marked with a label stating “Listed Industrial Control Equipment For Hazardous Locations”. UL 1604 supersedes UL1950.

QUICKPANELs will have both UL and CUL listing. CUL listed products have been tested with standards that meet the Standard Council of Canada requirements. Both Underwriters Laboratories (UL) and CSA have been accredited by the Standard Council of Canada. Therefore CUL listing is equivalent to the CSA marking.

Class 1 Division II Group A, B, C, D environment refers to a location in which flammable gas may be present. During normal operation these gases are not present. If an accident occurs allowing gas leakage, products listed for Class 1 Division 2 operation can continue to operate without danger of igniting the flammable gas while the situation that created the leak is repaired. These products are clearly marked for operation in this type of environment. The table below shows the Group letter and defines the type of gas that is in each group.

Group	**Material**
A	Acetylene
B	Hydrogen
C	Ethylene, Methyl Ether, Acetaldehyde
D	Acetone, Gasoline, Methanol, Propane

CE - The European Union has created standards for key product sectors to eliminate differing national requirements. The CE mark (an abbreviation for the "Conformite European" allows products to flow freely across those countries of the European Union.

These Quick Panels meet EN50082-2:1995, EN55022 Class A (1994), EN55011/A2 (1996) and EN55011 Class A (1998) requirements CE mark is needed on goods including, control equipment entering a majority of the European Countries. As of January 1, 1996 all control equipment needed to conform to the EMC directive 89/336/EEC and amended 92/31/EEC, 93/68/EEC that included EN 50082-2:1995 and EN55022 Class A (1994), EN 55011/A2 (1996) and EN55011 Class A (1998) requirements.

Specifications

	6" STN Color **QPK-3D200-S2P**
Voltage	24 VDC 50/60Hz
Power consumption	20W or less (TYP 13W)
Power failure immunity	20 ms max.
Withstand Voltage	1500 VAC (10ma max., 1 min)
Insulation	Above 20Mohm at DC500V (between charging and FG terminals)
Noise immunity	Noise voltage: 1000Vp-p; Pulse length: 1µs; Arise Time: 1ns
Ratings	Equivalent to IP65f (Limited to front face of GP installed in panel)
Operating temperature	0 to 40°C
Storage temperature	-20°C to 60°C
Operating humidity	20 to 85%RH (non-condensing)
Vibration	10 to 25 Hz (X, Y, Z directions 30 minutes each 19.6m/s^2)
Dimensions	171mm(W)×138mm(H)×57mm(D) (GP unit only)
Weight	Less than 0.95kg (GP unit only)
Cooling	Natural Air circulation
Installation	Front Mount
Display type	Passive STN COLOR
Pixel resolution	640 W x480 H
Colors	64 (RGB – 4 Levels)
Viewing area	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)
Touch panel type	Resistive
Touch panel resolution	32 W x 24 H
Printer port	No
Memory	1 Mb
Alarms Supported	768 (3 256-alarm files)

	6" LCD Monochrome **QPK-3D200-L2P**
Voltage	DC 20.4V to DC 27.6V 50/60Hz
Power consumption	20W or less (TYP 13W)
Power failure immunity	20 ms max.
Withstand Voltage charging and FG	AC 1000V-10mA 1 minute (between terminals)
Insulation	Above 20Mohm at DC500V (between charging and FG terminals)
Noise immunity	Noise voltage: 1000Vp-p; Pulse length: 1µs; Arise Time: 1ns
Ratings	Equivalent to IP65f (Limited to front face of GP installed in panel

Operating temperature	0 to 40°C
Storage temperature	-20°C to 60°C
Operating humidity	20 to 85%RH (non-condensing)
Vibration	10 to 25 Hz (X, Y, Z directions 30 minutes each 19.6m/s^2) Dimensions
	171mm(W)×138mm(H)×57mm(D) (GP unit only)
Weight	Less than 0.95kg (GP unit only)
Cooling	Natural Air circulation
Installation	Front Mount
Display type	Monochrome LCD
Pixel resolution	640 W x480 H
Colors	Black and White
Viewing area	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)
Touch panel type	Resistive
Touch panel resolution	32 W x 24 H
Printer port	No
Memory	1 Mb
Alarms Supported	768 (3 256-alarm files)

6" Mini Blue LCD

QPM-3D200-B2P

Voltage	DC 20.4V to DC 27.6V 50/60Hz
Power consumption	Under 20W (TYP 10W)
Power failure immunity	20 ms max.
Withstand Voltage	1000VAC at 10 mA for 1 minute (between live wire and grounding terminals)
Insulation	Above 100M ohm at 500VDC (between live wire and grounding terminals)
Noise immunity	Noise voltage: 1000Vp-p; Pulse length: 1µs; Arise Time: 1ns
Ratings	Equivalent to IP65f (Limited to front face of GP installed in panel)
Operating temperature	0 °C to 50 °C
Storage temperature	-20°C to 60°C
Operating humidity	20 to 85%RH (non-condensing)
Vibration	10 to 25 Hz (X, Y, Z directions 30 minutes each 19.6m/s^2) Dimensions
	W207mm[8.15in] x H157mm[6.18in]x D58mm[2.28in]
Weight	Under 1.1kg [2.4 lb] (GP unit only)
Cooling	Natural Air circulation
Installation	Front Mount
Display type	Monochrome – Blue LCD
Pixel resolution	640 W x480 H
Colors	Blue and White
Viewing area	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)

Touch panel type	Resistive
Touch panel resolution	32 W x 24 H
Printer port	No
Memory	1Mb
Alarms Supported	768 (3 256-alarm files)

	7.4" TFT Color **QPGCxxxxxxx**
Voltage	DC24V
Power consumption	28W or less
Power failure immunity	10 ms or less
Withstand Voltage	AC1000V (20m A, 1 min)
Insulation	Above 10Mohm at DC500V (between charging and FG terminals)
Noise immunity 1µs; Arise Time	Noise voltage: 1500Vp-p; Pulse length: 1ns
Ratings	Equivalent to IP65f
Operating temperature	0 to 50°C
Storage temperature	-20°C to 60°C
Operating humidity	10 to 90%RH (non-condensing dry bulb temperature 39°C or less)
Vibration	(When vibration is not continuous) 10 Hz to 25 Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2
	(When vibration is continuous) (X, Y, Z directions were 10 times i.e 80 minutes) 10 Hz to 57 Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2
Dimensions	215mm(W) [8.46 inch]×170mm(H) [6.69 inch]×60mm(D) [2.36 inch]
Weight	2.5kg [5.5lb] or less
Cooling Installation Display type	Natural Air circulation Front Mount 256 COLOR
Pixel resolution	640 W x480 H
Colors	256, no blink/64 colors/3-speed blink (support in Q2.2002)
Viewing area [4.42"] H	149.8mm W [5.90 inch0x 112.3mm
Touch panel type	Resistive

Touch panel resolution	32 W x 24 H
Printer port	Yes
Memory	4 MB
Alarms Supported	768 (3 256-alarm files)

12.1" Color TFT
QPL-21100-C2P

Voltage	85 to 132 VAC 50/60Hz
Power consumption	50 VA max.
Power failure immunity	20 ms max.
Withstand Voltage	1500 VAC (10ma max., 1 min)
Insulation	10 MΩ @ 500 VDC
Noise immunity	1200 V(p-p) 1 μs pulse
Ratings	Suitable for IP65F, NEMA #250, Type 4X/12 (Self Certified)
Operating temperature	0 to 40°C
Storage temperature	-10 to 60°C
Operating humidity	30 to 85% RH non-condensing
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	10.70"H x 13.62"W x 3.19"D 272mmH, 346mmW, 81mmD
Weight	8.4 lbs. (3.8 kg) (+ option module)
Cooling	Natural convection
Installation	Front Mount
Display type	QPL-21100-C2P TFT COLOR
Pixel resolution	800 W x 600 H
Colors	64 (RGB – 4 Levels)
Viewing area	9.69" W x 7.26" H (246mm x 184.5mm)
Touch panel type	Resistive
Touch panel resolution	40 W x 30 H
Printer port	Yes (Serial/Parallel)
Memory	2 Mb
Alarms Supported	768 (3 256-alarm files)

QPL-2D200-C2P

Voltage	20.4-27.6 VDC	GP675-TC41-24VP

	9" EL QPI-21100-E2P QPI-31200-E2P	10.5" Color STN/TFT QPI-21100-S2P/C2P QPI-31200-S2P/C2P
Voltage	85 to 132 VAC 50/60Hz	85 to 132 VAC 50/60Hz
Power consumption	50 VA max.	50 VA max.
Power failure immunity	20 ms max.	20 ms max.
Withstand Voltage	1500 VAC (20ma max., 1 min)	1500 VAC (20ma max., 1 min)
Insulation	10 MΩ @ 500 VDC	10 MΩ @ 500 VDC
Noise immunity	1200 V(p-p) 1 µs pulse	1200 V(p-p) 1 µs pulse
Ratings	Suitable for IP65F, NEMA #250, Type 4X/12 (Self Certified)	Suitable for IP65F, NEMA #250, Type 4X/12 (Self Certified)
Operating temperature	0 to 50°C	0 to 45°C
Storage temperature	-10 to 60°C	-10 to 60°C
Operating humidity	20 to 85% RH non-condensing	30 to 85% RH non-condensing
Storage humidity	5 to 85% RH non-condensing	5 to 85% RH non-condensing
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	8.50"H x 10.79"W x 1.93"D 216mmH, 274mmW, 56.5mmD	9.57"H x 12.48"W x 3.05"D 243mmH, 317mmW, 85mmD
Weight	4.4 lbs. (2 kg) (+ option module)	6.6 lbs. (3 kg) (+ option module)
Cooling	Natural convection	Natural convection
Installation	Front Mount	Front Mount
Display type	Electroluminescent	QPIXXXXXS2P = STN QPIXXXXXC2P = TFT
Pixel resolution	640 W x 400 H	640 W x 480 H
Colors	Amber + flash (amber)	8 solid + 8 flash
Viewing area	7.68" W x 4.8" H, 9" diag. (192mm x 120mm)	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)
Touch panel type	Resistive	Resistive
Touch panel resolution	32 W x 20 H	32 W x 24 H
Printer port	Yes (Serial/Parallel)	Yes (Serial/Parallel)
Memory	1Mb (QPI-2), 2Mb (QPI-3)	1Mb (QPI-2), 2Mb (QPI-3)
Alarms Supported	768 (3 256-alarm files)	768 (3 256-alarm files)

	QPI-2D100-E2P QPI-3D200-E2P	QPI-2D100-S2P/C2P QPI-3D200-S2P/C2P
Voltage	20.4-27.6 VDC	20.4-27.6 VDC
Power Consumption	50 Watts max.	50 Watts max.
Ratings	NEMA Type 4X/12, IP65	NEMA Type 4X/12, IP65

GP470-EG21-24VPG	GP570-SC21-24VP	GP570-TC21-24VP
Voltage	20.4-27.6 VDC	20.4-27.6 VDC
Power Consumption	50 Watts max.	50 Watts max.
Ratings	NEMA Type 4X/12, IP65	NEMA Type 4X/12, IP65
Approvals	CE Marked. EN50082-2:1995 EN55022 Class A (94)	CE Marked. EN50082-2:1995 EN55022 Class A (94)

	10.5" Monochrome LCD **QPI-2D100-L2P, QPI-2D200-L2P**
Voltage	20.4-27.6 VDC
Power consumption	50 Watts max.
Power failure immunity	20 ms max.
Withstand Voltage	1500 VAC (20ma max., 1 min)
Insulation	10 MΩ @ 500 VDC
Noise immunity	1200 V(p-p) 1 µs pulse
Ratings	Suitable for IP65F, NEMA #250, Type 4X/12
Operating temperature	0 to 45°C
Storage temperature	-10 to 60°C
Operating humidity	30 to 85% RH non-condensing
Storage humidity	5 to 85% RH non-condensing
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	9.57"H x 12.48"W x 3.05"D 243mmH, 317mmW, 85mmD
Weight	6.6 lbs. (3 kg) (+ option module)
Cooling	Natural convection
Installation	Front Mount
Display type	LCD Monochrome
Pixel resolution	640 W x 480 H
Colors	White/Black + Flash
Viewing area	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)
Touch panel type	Resistive
Touch panel resolution	32 W x 24 H
Printer port	Yes (Serial/Parallel)
Memory	1 Mb
Alarms Supported	768 (3 256-alarm files)

	6" Color TFT QPK-3D200-C2P
Voltage	20.4-27.6 VDC
Power consumption	20 Watts or less (Typ: 13W)
Power failure immunity	2 ms or less
Withstand Voltage	1000 VAC (10ma max., 1 min)
Insulation	10 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 µs pulse
Ratings	Suitable for IP65F
Operating temperature	0 to 40°C
Storage temperature	-10 to 60°C
Operating humidity	20 to 85% RH non-condensing
Storage humidity	5 to 85% RH non-condensing
Operating Atmosphere	Must be free of corrosive gasses
Grounding	100 Ohm or lees grounding resistance
Dust	Under 0.1 mg/m3 (Non-conductive levels)
Dimensions	6.71" (W) x 5.43" (H) x 2.24" (D) 170. 5mm (W) x 138mm (H) x 57mm (D)
Weight	2.08 lbs. (950g or less) (Main unit only)
Cooling	Natural convection
Installation	Front Mount
Display type	TFT Color LCD
Pixel resolution	320 x 240 pixels
Colors	64 colors (RGB-4 levels)
Brightness	4 levels (via touch panel)
Backlight when continuously lit)	CCFL (lifespan = more thant 50,000 hours,
Viewing area	4.53" (W) x 3.40" (H) 115.2mm (W) x 86.4mm (H)
Touch panel type	Resistive
Touch panel resolution	16 W x 12 H
Printer port	Yes (Serial)
Memory	2 Mb
Alarms Supported	768 (3 256-alarm files)

	6" LCD Monochrome QPK-2D100-L2P	6" STN Color QPK-2D100-S2P
Voltage	20.4-27.6 VDC	20.4-27.6 VDC
Power consumption	12 Watts max.	15 Watts max.
Power failure immunity	20 ms max.	20 ms max.
Withstand Voltage	1500 VAC (10ma max., 1 min)	1500 VAC (10ma max., 1 min)
Insulation	10 MΩ @ 500 VDC	10 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 µs pulse	1000 V(p-p) 1 µs pulse
NEMA rating	4X/12	4X/12
Operating temperature	0 to 50°C	0 to 45°C
Storage temperature	-20 to 60°C	-20 to 60°C
Operating humidity condensing	20 to 85% RH non-condensing	20 to 85% RH non-
Storage humidity condensing	5 to 85% RH non-condensing	5 to 85% RH non-
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	5.43"H x 6.71"W x 2.24"D 138mmH, 170.5mmW, 57mmD	5.43"H x 6.71"W x 2.24”D) 138mmH, 170.5mmW, 57mmD
Weight	1.54 lbs. (<700g)	1.54 lbs. (<700g)
Cooling	Natural convection	Natural convection
Installation	Front Mount	Front Mount
Display type	LCD	Passive STN LCD
Pixel resolution	240 H x 320 W	240 H x 320 W
Colors	White/Black + flash	8 solid + 8 flash
Viewing area	4.53" (W) x 3.40" (H) 115.2mm (W) x 86.4mm (H)	4.53" (W) x 3.40" (H) 115.2mm (W) x 86.4mm (H)
Touch panel type	Resistive	Resistive
Touch panel resolution	15 W x 11 H	15 W x 11 H
Printer Port	Yes (Serial)	Yes (Serial)
Memory	1 Mb	1 Mb
Alarms supported	512 (2 256-alarm files)	512 (2 256-alarm files)

6" Mini Monochrome	**QPM-2D100-L2P**
Voltage	20.4-27.6 VDC
Power consumption	12 Watts max.
Ratings	NEMA 12/4 self-certified, CE and UL
1950 Approved	
Operating temperature	0 to 50°C
Storage temperature	-20 to 60°C
Operating humidity	30 to 85% RH non-condensing
Storage humidity	5 to 85% RH non-condensing
Dimensions	6.299"H x 8.267"W x 2.28"D 160mmH, 210mmW, 58mmD
Weight	1.65 lbs. (<700g)
Cooling	Natural convection
Installation	Front Mount
Display type	LCD
Pixel resolution	240 H x 320 W
Colors	White/Black + flash
Viewing area	5" W x 4" H, 6" diagonal
Touch panel type	Resistive
Touch panel resolution	15 W x 11 H
Printer Port	Yes (Serial)
Memory	256K
Alarms Supported	512 (2 256-alarm files)

	5" LCD Monochrome QPJ-2D100-L2P	5" STN Color QPJ-2D100-S2P
Voltage	20.4-27.6 VDC	20.4-27.6 VDC
Power consumption	12 Watts max.	15 Watts max.
Power failure immunity	20 ms max.	20 ms max.
Withstand Voltage 1 min)	1500 VAC (10ma max., 1 min)	1500 VAC (10ma max.,
Insulation	10 MΩ @ 500 VDC	10 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 µs pulse	1000 V(p-p) 1 µs pulse
NEMA rating	4X/12	4X/12
Operating temperature	0 to 50°C	0 to 45°C
Storage temperature	-20 to 60°C	-20 to 60°C
Operating humidity condensing	20 to 85% RH non-condensing	20 to 85% RH non-
Storage humidity condensing	5 to 85% RH non-condensing	5 to 85% RH non-
Vibration of	10 to 25 Hz 2G on each of	10 to 25 Hz 2G on each
	X, Y, Z 30 min.	X, Y, Z 30 min.
Dimensions 2.125"D	5.00"H x 6.75"W x 2.125"D	5.00"H x 6.75"W x
	127mmH, 172mmW, 54mmD	127mmH, 172mmW,
54mmD		
Weight	1.54 lbs. (<700g)	1.54 lbs. (<700g)
Cooling	Natural convection	Natural convection
Installation	Front Mount	Front Mount
Display type	LCD	Passive STN LCD
Pixel resolution	240 H x 320 W	240 H x 320 W
Colors	White/Black + flash	8 solid + 8 flash
Viewing area diagonal	4" W x 3" H, 5" diagonal	4" W x 3" H, 5"
Touch panel type	Resistive	Resistive
Touch panel resolution	15 W x 11 H	15 W x 11 H
Printer Port	Yes (Serial)	Yes (Serial)
Memory	256K	256K
Alarms Supported	512 (2 256-alarm files)	512 (2 256-alarm files)

	GP270-LG21-24VP GP270-SC21-24VP	
Voltage	20.4-27.6 VDC	20.4-27.6 VDC
Power Consumption	12 Watts max.	12 Watts max.
Ratings	NEMA Type 4X/12, IP65	NEMA Type 4X/12, IP65
Approvals	CE Marked. EN50082-2:1995 EN55022 Class A (94)	CE Marked. EN50082-2:1995 EN55022 Class A (94)

QPH Specifications
QPH-xxxxx-xxx

Voltage	20.4-27.6 VDC, 12W max (typ 10W)
Power consumption	15 Watts max.
Power failure immunity	20 ms max.
Withstand Voltage	1500 VAC (10ma max., 1 min)
Insulation	10 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 μs pulse
NEMA rating	4X/12
Operating temperature	0 to 40°C
Storage temperature	-20 to 60°C
Operating humidity	20 to 85% RH non-condensing
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	6.81"H x 9.33"W x 2.68"D 173mmH, 237mmW, 68mmD
Weight	1.9 lbs. (870g)
Cooling	Natural convection
Rating	IP63, NEMA1
Installation	Front Mount
Display type	Passive STN LCD Color
Pixel resolution	240 H x 320 W
Colors	8 solid + 8 flash
Viewing area	5" W x 4" H, 6.4" diagonal
Touch panel type	Analog Resistive
Touch panel resolution	115 W x 86 H
Printer Port	Yes (Serial)
Alarms Supported	512 (2 256-alarm files)

QPV Specifications

QPV-2100-C2P

Voltage	85 to 132 VAC 50/60Hz
Power consumption	50 VA max.
Power failure immunity	20 ms max.
Withstand Voltage	1500 VAC (20ma max., 1 min)
Insulation	10 MΩ @ 500 VDC
Noise immunity	1200 V(p-p) 1 μs pulse
Ratings	Suitable for IP65F, NEMA #250, Type 4X/12 (Self Certified)
Operating temperature	0 to 45°C
Storage temperature	-10 to 60°C
Operating humidity	30 to 85% RH non-condensing
Vibration	10 to 25 Hz 2G on each of X, Y, Z 30 min.
Dimensions	9.57"H x 12.48"W x 3.05"D 243mmH, 317mmW, 85mmD
Weight	6.6 lbs. (3 kg) (+ option module)
Cooling	Natural convection
Installation	Front Mount
Display type	10.5" Color TFT
Pixel resolution	640 W x 480 H
Colors	8 solid + 8 flash
Viewing area	8.48" W x 6.32" H, 10.5" diag. (212mm x 158mm)
Touch panel type	Analog Resistive
Touch panel resolution	32 W x 24 H
Printer port	Yes (Serial/Parallel)
Memory	1Mb
Video Inputs	3 NTSC BNC

10.5" TFT Color

QPICxxxxxxx

Voltage	DC24V
Power consumption	50W or less
Power failure immunity	
Withstand Voltage	AC1000V (20m A, 1 min)
Insulation	Above 10Mohm at DC500V (between charging and FG terminals)
Noise immunity	Noise voltage: 1500Vp-p; Pulse length: 1μs; Arise Time: 1ns
Ratings	Equivalent to IP65f
Operating temperature	0 to 50°C
Storage temperature	-20°C to 60°C
Operating humidity	10 to 90%RH (non-condensing dry bulb temperature 39°C or less)

Vibration	(When vibration is not continuous) 10 Hz to 25 Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2
	(When vibration is continuous) (X, Y, Z directions were 10 times i.e 80 minutes) 10 Hz to 57 Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2
Dimensions	317mm(W) [12.48 inch]×243mm(H) [9.57 inch]×58mm(D) [2.28 inch]
Weight	3.5kg [7.7lb] or less
Cooling	Natural Air circulation
Installation	Front Mount
Display type	256 COLOR
Pixel resolution	640 W x480 H
Colors	256, no blink/64 colors/3-speed blink
	(Support in Q2.2002)
Viewing area [6.34"] H	211.2mm W [8.34 inch] x 158.4mm
Touch panel type	Resistive
Touch panel resolution	32 W x 24 H
Printer port	Yes
Memory	4MB
Alarms Supported	768 (3 256-alarm files)

	12.1" TFT Color
	QPLCxxxxxxx
Voltage	DC24V
Power consumption	50W or less
Power failure immunity	
Withstand Voltage	AC1000V (20m A, 1 min)
Insulation	Above 10Mohm at DC500V (between charging and FG terminals)
Noise immunity	Noise voltage: 1500Vp-p; Pulse length: 1µs; Arise Time: 1ns
Ratings	Equivalent to IP65f
Operating temperature	0 to 50°C
Storage temperature	-20°C to 60°C
Operating humidity	10 to 90%RH (non-condensing dry bulb temperature 39°C or less)

Vibration	(When vibration is not continuous) 10 Hz to 25 Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2
	(When vibration is continuous) (X, Y, Z directions were 10 times i.e 80 minutes) 10 Hz to 57 Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2
Dimensions	317mm(W) [12.48 inch]×243mm(H) [9.57 inch]×58mm(D) [2.28 inch]
Weight	3.5kg [7.7lb] or less
Cooling	Natural Air circulation
Installation	Front Mount
Display type	256 COLOR
Pixel resolution	800W x 600H
Colors	256, no blink/64 colors/3-speed blink
	(Support in Q2.2002)
Viewing area H	246mm W [9.69 inch] x 184.5mm [7.26"]
Touch panel type	Resistive
Touch panel resolution	40 W x 30 H
Printer port	Yes
Memory	4MB
Alarms Supported	768 (3 256-alarm files)

	6 " STN QP4 **QPKSxDNxxxx**
Voltage	DC 19.2 V to DC 28.8 V
Power consumption	22 Watts max.
Power failure immunity	10 ms max.
Withstand Voltage	1000 VAC (20ma max., 1 min)
Insulation	20 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 μs pulse
NEMA rating	#250 TYPE 4x/12*2
Operating temperature	0 to 50°C
Storage temperature	-20 to 60°C
Ambient humidity	10%RH to 90% RH (non-condensing)
Vibration	IEC61131-2 compliant When vibration is NOT continuous: 10Hz to 57Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2 When vibration is continuous: 10Hz to 57Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2 X,Y,Z dirctions for 10 times (80min.)
External Dimensions	W171mm[6.73in.] x 138mm[5.43in.] x D60mm[2.36in.]
Panel Cut Dimensions	156(+1 / -0)mm [6.14in.] x 123.5(+1 / -0)mm [4.86in.] (Panel thickness: 1.6mm[0.06in.] to 5mm[0.2in.])
Weight	1.2kg (2.6lb) or less
Cooling	Natural air circulation
Installation	Front Mount
Display type	STN Color LCD
Pixel resolution	320 x 240 pixels
Colors	64 colors
Viewing area (mm)	115.2(W) x 86.4 (H)
Printer Port	Yes (Serial)
Memory	1MB FLASH EPROM - Approx. 320 screens at 3.2KB/screen

	6 " TFT QP4 **QPKCxDExxxx**
Voltage	DC 19.2 V to DC 28.8 V
Power consumption	22 Watts max.
Power failure immunity	10 ms max.
Withstand Voltage	1000 VAC (20ma max., 1 min)
Insulation	20 MΩ @ 500 VDC
Noise immunity	1000 V(p-p) 1 µs pulse
NEMA rating	#250 TYPE 4x/12*2
Operating temperature	0 to 50°C
Storage temperature	-20 to 60°C
Ambient humidity	10%RH to 90% RH (non-condensing)
Vibration	IEC61131-2 compliant When vibration is NOT continuous: 10Hz to 57Hz 0.075mm, 57Hz to 150Hz 9.8m/s^2 When vibration is continuous: 10Hz to 57Hz 0.035mm, 57Hz to 150Hz 4.9m/s^2 X,Y,Z dirctions for 10 times (80min.)
External Dimensions	W171mm[6.73in.] x 138mm[5.43in.] x D60mm[2.36in.]
Panel Cut Dimensions	156(+1 / -0)mm [6.14in.] x 123.5(+1 / -0)mm [4.86in.] (Panel thickness: 1.6mm[0.06in.] to 5mm[0.2in.])
Weight	1.2kg (2.6lb) or less
Cooling	Natural air circulation
Installation	Front Mount
Display type	STN Color LCD
Pixel resolution	320 x 240 pixels
Colors	256
Viewing area (mm)	115.2(W) x 86.4 (H)
Printer Port	Compatible with NEC PC-PR201/PL, Epson ESC/P24-84", HP Laser Jet PCL 4 command printer*4
Memory	2MB FLASH EPROM - Approx. 640 screens at 3.2KB/screen
NetWork Interface	Ethernet (IEEE802.3, 10Base-T)

Exposed Material Chemical Resistance Chart

The following charts list the materials used in the construction of TCP products and rates their resistance or susceptibility to chemicals commonly encountered in industry. The information contained in the charts is based upon data supplied by the manufacturers of the various materials and is believed to be accurate. The temperature, concentration or combination with other chemicals can affect the way a particular chemical reacts with a given material. Thus, the charts contained herein should only be used as a general guide and not as an unqualified authority. All of the material resistance's or susceptibilities listed assume normal equipment operating temperatures. Additionally, one must be aware that if a protective coating on a particular material is damaged, the substrate may be adversely affected by an otherwise non-reactive chemical.

An Acceptable Resistance rating means that the chemical may remain in contact with the exposed material indefinitely with no appreciable degradation of the exposed material.

A Marginal Resistance rating means that the chemical will not cause any appreciable degradation of the exposed material on an intermittent basis or that only minor degradation will occur that will not impair the performance of the material.

An Unacceptable Resistance rating means that the chemical will degrade the performance of the exposed material to such a degree that the material no longer performs as designed.

A Not Tested rating simply means that the exposed material has not been tested for resistance to a particular chemical.

QUICK PANEL, QUICK PANEL JR.

304 STAINLESS STEEL - 4X only
GASKET QPJ
POLYESTER OVERLAY
QP PLASTIC HOUSING
RTV SEALING COMPOUND
GASKET B41NES
GASKET HMI
QP 4X MEMBRANE - 4X only
QP TOUCH SCREEN

KEY: A = Acceptable Resistance M = Moderate Resistance U = Unacceptable Resistance T = Not Tested	304 STAINLESS STEEL	SILICONE RUBBER	GASKET B41NES	GASKET HMI	GASKET QPJ	KEYPADS	LEXAN LENS	O-RINGS	POLANE PAINT	POLYESTER COATED PARTS	POLYESTER OVERLAYS	RTV SEALING COMPOUND	QP, ST 4X MEMBRANE	QP, ST PLASTIC HOUSING	QP, ST TOUCH SCREEN
1,1,1 trichlorethane	A	U	T	U	U	T	T	T	T	T	T	T	U	T	T
acetaldehyde	A	M	T	U	M	A	T	M	T	T	A	T	U	U	T
acid, 10% acetic	T	T	A	U	T	M	A	U	T	A	M	T	T	M	M
acid, 10% hydrochloric	U	T	A	U	A	A	A	U	T	A	A	T	A	A	M
acid, 10% nitric	A	T	A	U	M	M	A	U	T	A	M	T	A	M	M
acid, 10% sulfuric	U	T	A	U	U	T	A	U	T	A	T	T	A	M	M
acid, concentrated acetic	T	T	A	U	M	U	M	U	T	A	U	T	T	T	U
acid, concentrated hydrochloric	U	T	A	U	T	U	M	U	T	A	U	T	A	T	U
acid, concentrated sulfuric	U	T	A	U	U	U	M	U	T	A	U	T	A	T	U
acid, potassium	T	T	A	U	T	T	T	T	T	A	T	T	T	T	T
alcohol, benzyl	A	T	T	M	M	T	A	U	T	A	T	T	T	T	T
aliphatic hydrocarbons	T	T	A	T	T	A	A	T	T	A	A	T	A	T	T
amines	A	M	T	M	M	T	U	U	T	T	T	T	M	T	T
ammonia, 10%	T	A	T	A	T	U	T	U	T	M	U	T	M	T	M
ammonia, concentrated	M	T	T	A	T	U	T	U	T	M	U	T	M	T	U
ammonium hydroxide	A	M	A	A	A	T	T	M	T	T	T	T	A	M	T
aromatic hydrocarbons	T	T	M	U	U	T	U	T	T	T	T	T	U	T	T
benzene	A	T	M	U	U	A	T	U	A	A	A	T	A	U	A
brake fluid	A	M	T	T	T	T	T	A	A	T	T	A	T	U	T
carbon tetrachloride	M	U	T	U	T	T	T	M	A	M	T	T	T	U	T
chloroform	A	T	T	U	U	T	T	U	T	T	T	T	U	U	M
diethyl ether	T	M	T	T	T	A	T	T	T	T	A	T	T	T	T
esters	T	T	T	T	T	T	U	T	T	U	T	T	U	T	T
ethylene chloride	A	U	T	U	U	T	T	U	T	M	T	T	U	U	T
gasoline	A	U	A	U	U	T	U	A	A	A	T	T	U	U	T
halogenated hydrocarbons	T	T	T	T	T	T	U	T	T	A	T	T	T	T	T
jet fuel	A	U	A	U	U	T	U	A	A	A	T	T	M	T	T
kerosene	A	U	A	U	A	T	U	A	A	A	T	T	A	T	T
lacquer thinner	T	T	T	U	A	T	U	U	A	T	T	T	T	T	U
methanol	A	T	T	A	A	A	A	M	A	A	A	T	T	U	T

KEY: A = Acceptable Resistance M = Moderate Resistance U = Unacceptable Resistance T = Not Tested	304 STAINLESS STEEL	SILICONE RUBBER	GASKET B41NES	GASKET HMI	GASKET QPJ	KEYPADS	LEXAN LENS	O-RINGS	POLANE PAINT	POLYESTER COATED PARTS	POLYESTER OVERLAYS	RTV SEALING COMPOUND	QP, ST 4X MEMBRANE	QP, ST PLASTIC HOUSING	QP, ST TOUCH SCREEN
nitric acid ethyl	T	T	A	T	T	T	T	T	T	A	T	T	T	T	M
ozone	T	A	A	T	T	T	T	T	T	T	T	T	T	T	T
perchlorethylene	T	U	T	U	U	T	T	T	T	T	T	T	T	T	T
petrol	A	T	A	T	T	A	T	A	A	A	A	T	U	T	T
phenol	A	T	T	U	U	T	T	U	T	T	T	T	A	U	T
toluene	A	U	T	U	U	A	U	U	T	T	A	T	U	U	A
trichlorethylene	A	U	T	U	U	A	U	U	T	T	A	T	U	T	T
turpentine	A	A	M	U	U	A	U	U	A	T	A	T	U	U	T
xylol	T	T	T	T	T	T	T	T	A	T	T	T	T	T	T
acetone	A	M	T	U	A	A	U	U	A	A	A	T	U	U	A
alcohol, ethyl	A	M	T	A	M	A	A	A	T	A	A	T	A	U	T
alcohol, isopropyl	A	M	T	M	A	A	A	U	T	A	A	T	T	U	T
alkalis	T	U	A	T	T	M	M	T	T	U	M	T	T	M	U
butyl cellosolve	T	T	T	T	T	T	U	T	T	T	T	T	T	T	T
caustic soda, 10%	A	M	A	M	A	U	A	A	T	U	U	T	T	A	U
caustic soda, 40%	A	U	A	T	T	U	M	U	T	U	U	T	T	T	U
chlorinated solvents	T	T	U	T	T	T	T	T	T	M	T	T	U	T	T
coolants	A	A	A	A	T	A	A	A	A	A	A	A	A	T	T
cyclohexane	T	U	T	U	U	A	T	A	T	T	A	T	U	U	T
detergents	A	A	A	M	A	A	A	A	A	A	A	A	M	M	A
ethanol	A	M	T	A	A	A	A	A	A	A	A	T	A	U	A
ethyl acetate	A	M	T	U	M	A	T	U	T	T	A	T	U	U	T
fruit juices	A	A	A	A	T	A	A	A	A	A	A	T	A	A	A
greases	A	T	A	U	T	A	M	A	A	A	A	A	M	M	A
gylcol antifreeze	A	A	A	T	A	A	T	A	A	A	A	A	A	T	T
hexane	A	M	T	M	U	T	T	A	T	T	T	T	T	A	T
methyl chloride	M	U	T	U	U	T	T	U	T	M	T	T	M	U	T
methyl ethyl ketone	A	M	T	U	A	A	U	U	A	M	A	T	U	U	T
methylene chloride	A	T	T	U	U	T	T	U	T	M	T	T	U	T	T
oil, animal	A	A	A	U	A	A	A	A	A	A	A	A	A	M	A

KEY: A = Acceptable Resistance M = Moderate Resistance U = Unacceptable Resistance T = Not Tested	304 STAINLESS STEEL	SILICONE RUBBER	GASKET B41NES	GASKET HMI	GASKET QPJ	KEYPADS	LEXAN LENS	O-RINGS	POLANE PAINT	POLYESTER COATED PARTS	POLYESTER OVERLAYS	RTV SEALING COMPOUND	QP, ST 4X MEMBRANE	QP, ST PLASTIC HOUSING	QP, ST TOUCH SCREEN
oil, cutting	A	A	A	U	T	A	A	A	A	A	A	A	A	U	A
oil, diesel	A	T	A	U	U	A	A	A	A	A	A	A	A	T	A
oil, hydraulic	A	T	A	T	T	A	A	A	A	A	A	A	A	T	A
oil, lube	A	M	A	T	T	A	A	A	A	A	A	A	A	M	A
oil, motor	A	M	A	T	T	A	A	A	A	A	A	A	A	M	A
oil, petroleum	A	M	A	T	T	A	A	A	A	A	A	A	A	M	A
oil, silicone	A	A	A	A	T	A	A	A	A	A	A	A	A	M	A
oil, vegetable	A	A	A	U	U	A	A	A	A	A	A	A	A	M	A
salt spray , 5%	A	A	A	A	A	A	A	A	A	A	A	T	A	A	A
soap solution	A	A	A	A	A	A	A	A	A	A	A	T	A	M	A
water	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
xylene	A	U	T	U	U	A	T	U	T	T	A	T	U	U	T

Product Enclosure Ratings

The following table lists the various TCP operator interface products and their associated enclosure type ratings. Please note that a product listed as 'DESIGNED to enclosure type rating' means that the enclosure was designed to meet the requirements of a specified enclosure rating but never was formally tested by an independent party to certify its rating. A product listed as 'TESTED to enclosure type rating' means that an independent party has certified the enclosure rating. The enclosure ratings for any given product are only valid when correctly mounted in an appropriate control panel.

TYPE 1:

For indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

TYPE 4:

For indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.

TYPE 4X:

For indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. Indoor use only may be stipulated.

TYPE 12:

For indoor use primarily to provide a degree of protection against circulating dust, falling debris, and dripping noncorrosive liquids.

TYPE 13:

For indoor use primarily to provide a degree of protection against dust, spraying of water, oil and noncorrosive liquids.

KEY:

D = DESIGNED to enclosure type rating
T = TESTED to enclosure type rating

	TYPE 1	TYPE 4	TYPE 4X INDOOR ONLY	TYPE 12	TYPE 13
QUICK PANEL	D	D	D note 1	D	D
QUICK PANEL JR.	D	D	D note 1	D	D

Note 1: only when equipped with optional stainless steel bezel and 4X membrane