Algas-SDI™

...Innovative liquid vaporizing and gas mixing solutions

ISO 9001 Certified

Blendaire

Remote Control Panel

Operations & Maintenance Manual

1140 NW 46 Street, Seattle, Washington, USA 98107
Tel: 206-789-5410 Fax: 206-789-5414 Web: www.algas-sdi.com

ECLIPSE Innovative Thermal Solutions

WARNING

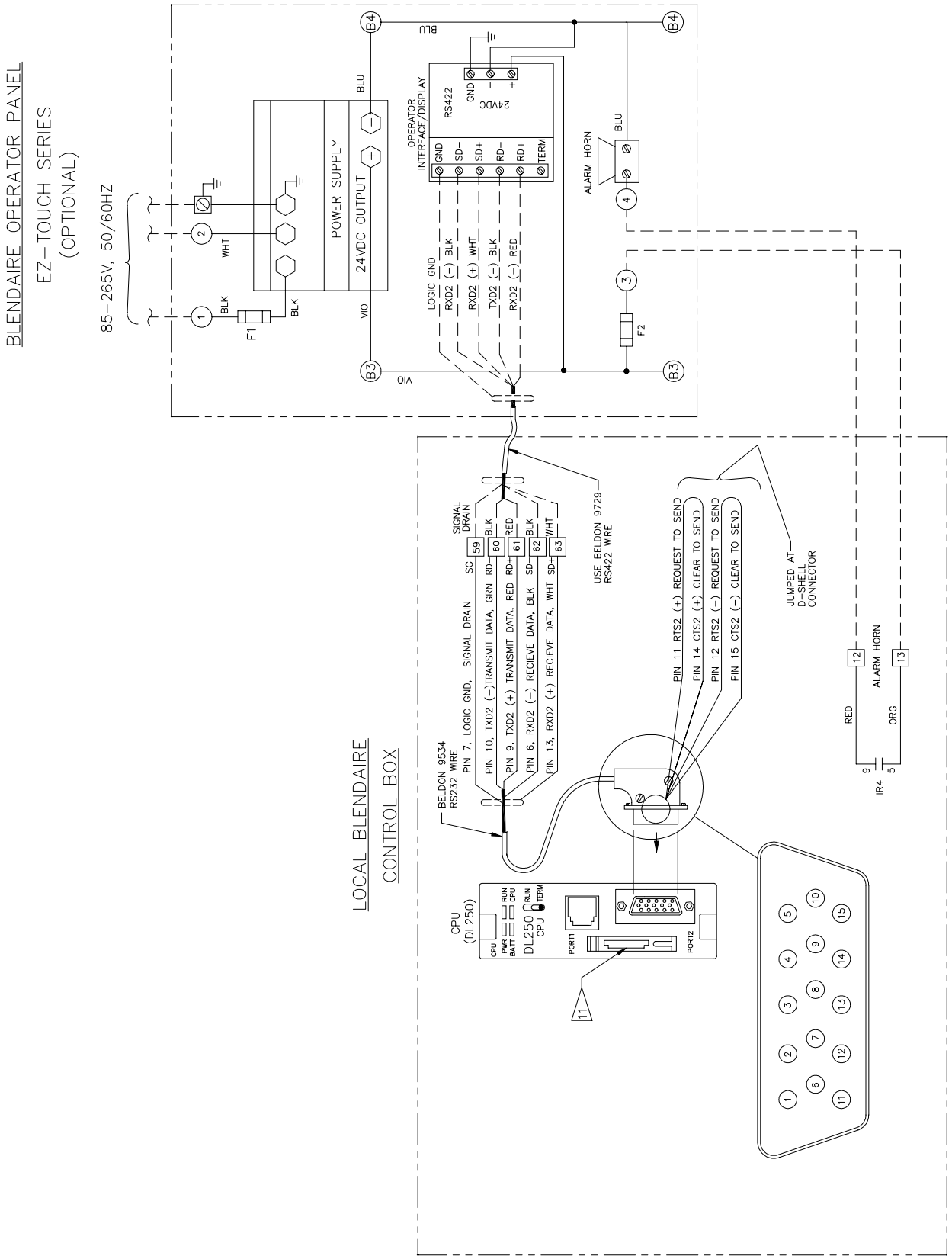
Read the OPERATION MANUAL before operating this equipment.

- **NOTE: Algas-SDI reserves the right to use alternate manufacturers' components as vendor delivery applicability dictates. Vendors have supplied literature contained in the Operation Manual. Please check to be sure supplied data matches your configuration. Contact Algas-SDI if any questions exist.**
- **This equipment uses LPG-a flammable fuel, or NH3-a toxic gas, (depending on the model), handled under pressure. Inherent hazards exist and a thorough understanding of the equipment is required to allow safe operation and maintenance.**
- **Allow only a TRAINED and FULLY QUALIFIED PERSON to service this equipment.**
- **Any time a component must be replaced, use the same type, model, etc. DO NOT SUBSTITUTE! The consequence from such actions are unpredictable and may lead to dire consequences. When components are replaced with components not approved for use in our FM/CSA listed equipment, the FM/CSA listing becomes void for that unit.**

Blendaire Remote Control Panel Spare Parts

Replacement Parts		
Components	**Description**	**Qty.**
50034	Fuse 1/2 AMP SLO-BLO 250V	1
50280	Fuse 3 AMP SLO-BLO 250V	1
52449	24 VDC Power Supply, 85 - 265 VAC, 1.2 AMPS	1
52478	15 PIN Female Connector to Terminal Strip	1
52480	Programmed Color Touch Panel, 20 - 30VDC, 15W	1
52689	Blendaire HMI / Remote Color Touch Panel Manual	1
60806	Corrosion Inhibitor tape	2

Blendaire Remote Control Panel Wiring Diagram



Warranty Registration

To Register your new equipment: Visit Algas-SDI's web site at: algas-sdi.com, then click on the "Tech Support" button. Select online Registration or print out the Acrobat Warranty Registration.

OR

Fill out the Warranty Registration information on the last page of this manual. Then make a photocopy and mail to the address shown at the bottom.

Warranty and Copyright

WARRANTY

Algas-SDI International, LLC (ASDI) warrants that the equipment is free of defects in materials and workmanship under normal use and service. ASDI agrees to repair or replace, at our option, without charge f.o.b. factory, any part which has proven defective to the satisfaction of Algas-SDI International, LLC within one (1) year from the date of the original installation or within 18 months from the date of shipment, whichever is earlier. Equipment, which in the opinion of ASDI, has been damaged by improper installation or operation, or has been abused or tampered with in any way, will not be accepted for return under warranty.

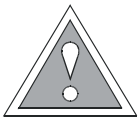
Algas-SDI International, LLC will not accept back charges for work performed by others upon or in conjunction with ASDI equipment, unless prior authorization is given by means of an Algas-SDI International, LLC purchase order. Algas-SDI International, LLC will not be liable by reason of shutdown, non-operation or increased expense of operation of other equipment, or any other loss or damage of any nature, whether direct or consequential, arising from any cause whatsoever.

Algas-SDI International, LLC makes NO other warranty of any kind, whatsoever expressed or implied; and all warranties of merchantability and fitness for a particular purpose are hereby disclaimed by Algas-SDI International, LLC and excluded from these terms of sale. No person has any authority to bind Algas-SDI International, LLC to any representation or warranty other than this warranty.

COPYRIGHT

Symbols and Conventions

Special symbols are used to denote hazardous or important information. You should familiarize yourself with their meaning and take special notice of the indicated information.
Please read the following explanations thoroughly.



GENERAL WARNING OR CAUTION

Indicates hazards or unsafe practices, which can result in damage to the equipment or cause personal injury. Use care and follow the instructions given.

FLAMMABLE GAS HAZARD

Indicates a potential hazard, which can result in severe personal injury or death. Use extreme care and follow the instructions given.

ELECTRICAL DISCONNECT REQUIRED

Indicates a potentially dangerous situation, which can result in severe personal injury or death or damage to equipment. Use great care and follow the instruction given.

ASDI CONTACT NUMBERS

If you have questions, need help with your equipment, or want information on other products, contact Algas-SDI at:

Telephone: 206.789.5410

Facsimile: 206.789.5414

Email: sales@algas-sdi.com

Internet: http://www.algas-sdi.com

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Warranty Registration - Refer to the nameplate on the unit to fill out the product registration. Then Photo copies and mail to address shown. Or register on line by visiting Algas-SDI web site under "Tech Support".

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Remote Control Panel (RCP) 1

GENERAL DESCRIPTION

This document will outline the operator screens and procedures of the Blendaire Remote Control panel (RCP) manufactured by Algas-SDI International.

The RCP is a touch sensitive screen that provides a convenient way for operators to enter data. Touching the appropriate buttons or cells, change the display screens or allows set point entry by displaying a keypad. The items mentioned below are general and will be found on many of the screens. Below is a description of functionality for those items.

Pressing the **NEXT** button advances an operator to the next display screen within a group. In most cases there is additional information that the operators can access.

Pressing the **BACK** button returns the operator to the **PREVIOUS** or **MAIN** screen.

When an alarm occurs, a banner at the bottom of the screen displays the alarm description. The alarm banner appears on all screens to alert the operator to faults no matter which screen is being viewed.

Touch cells with a green background can be touched to enter set points or time delays. Items that have a red background are display items only.

When a value cell is touched to enter a new set point, a keypad appears so the value can be entered. Minimum and maximum allowable values are displayed. Operators must enter values within the range or an error message appears forcing the operator to reenter the value.

Standard colors used on the display are as follows:

Orange = Mixed Gas

Yellow = Air

Blue = Vapor

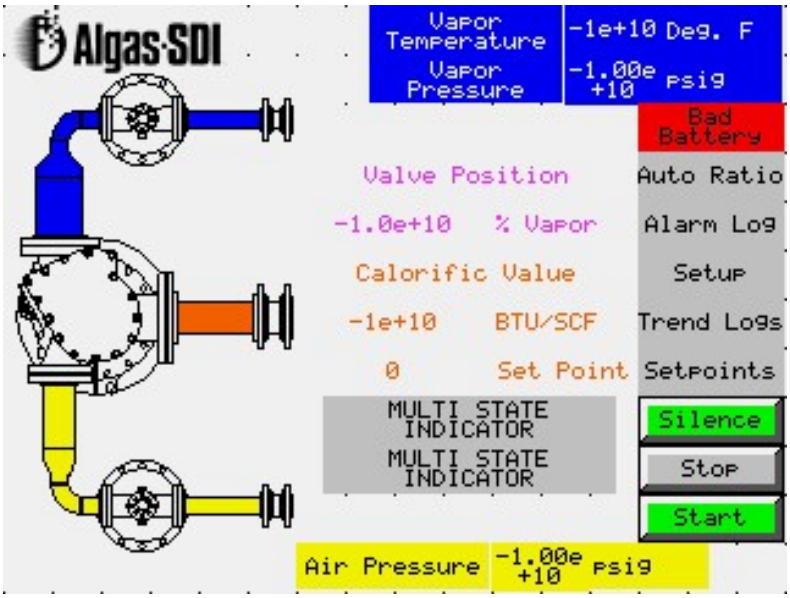
Violet = Valve

Green = Changeable values

Red = Display only values

Screen Descriptions

MAIN SCREEN



The Main screen displays machine status, used to select other displays and operates the basic machine functions.

When the **START** button is pressed, the machine clears all alarms and enters a start mode by energizing the Load Solenoid on the machine. The top Multi State Indicator will flash **STARTING**. If the Blender is equipped with an outlet solenoid, it will open or energize after an appropriate time delay. If no alarms are present the top Multi State Indicator will read **RUNNING** until an alarm occurs or an operator turns off the machine.

The second Multi State Indicator is only visible when Auto Ratio Adjust (ARA) is enabled and will display the ARA Mode.

When the **STOP** button is pressed, all solenoids are turned off, the machine stops, and **STOPPED** is displayed

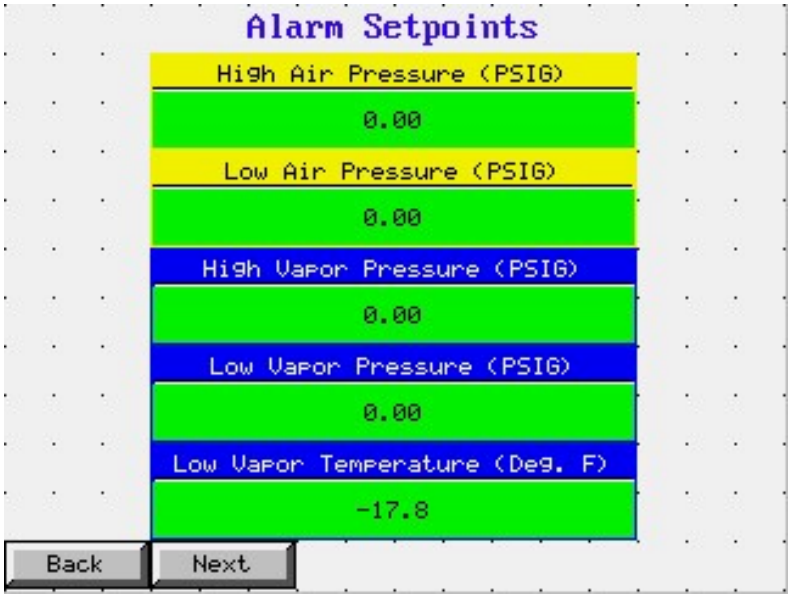
The pushing the **SILENCE** button will silence the alarm horn.

The **SETPTS** button opens the Set Points screen.

The **Bad Battery** button becomes visible if the backup battery for the HMI or PLC is going bad. Pressing this button will take you to the **Panel Control** screen to see the status of these two batteries.

Set Points Display

ALARM SET POINTS

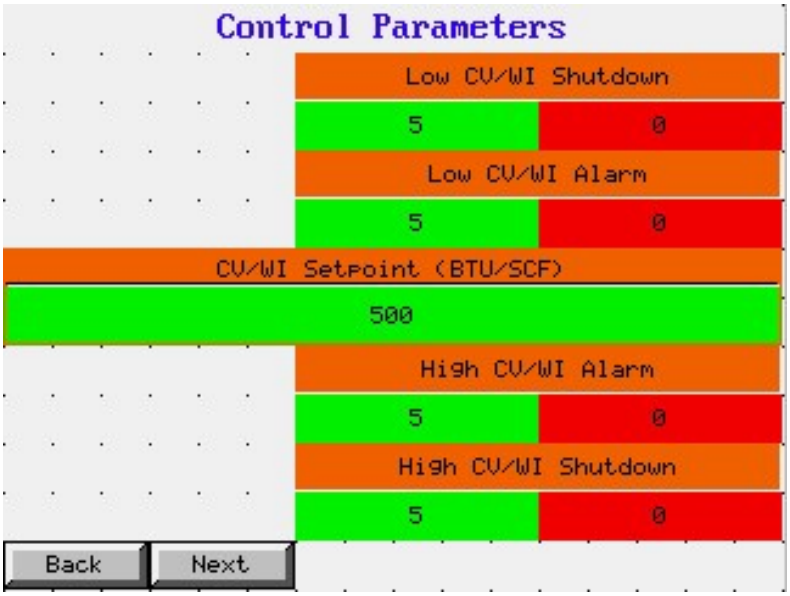


The operators can set alarm set points by touching the appropriate touch cell. The machine will alarm and shut down using the parameters the operators enter.

NOTE

See manufactures Data Sheet for Default Parameters.

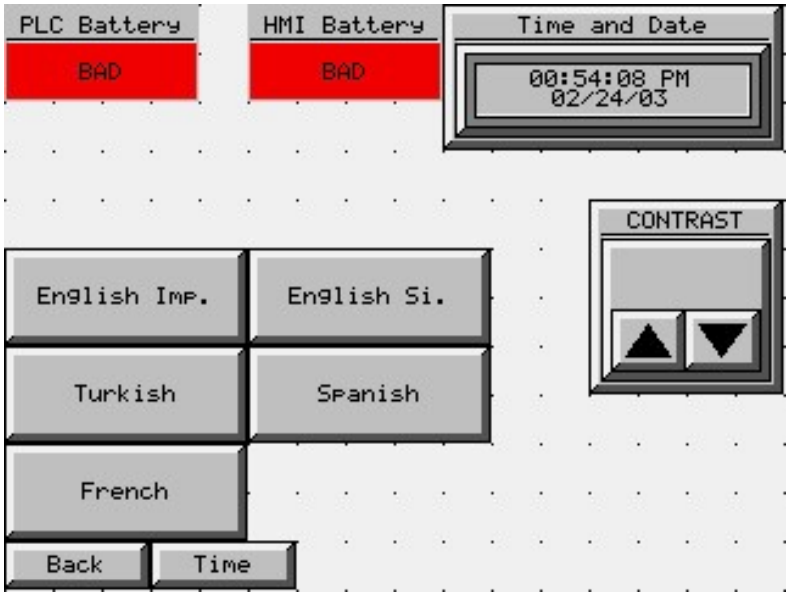
CONTROL PARAMETERS



The control parameters are used to fail the machine when calorific value (CV) of the gas being manufactured is to high or low. The **CV HIGH** and **LOW WARNING** parameters will warn the operator that corrective action is necessary and will not shutdown the machine. The **CV HIGH** and **LOW SHUTDOWN** parameters are used to shutdown the machine if CV is beyond acceptable levels.

The **CV ALARM** and **SHUTDOWN** parameters are calculated based on the values entered into the Bias set points located to the left of the alarm set point display. This prevents operators from entering values that are unacceptable for machine operations.

PANEL CONTROLS



PLC and HMI Battery display the status of these two backup batteries. The display will turn red and the word BAD will appear to indicate a faulty battery. The battery should be replaced at this time.

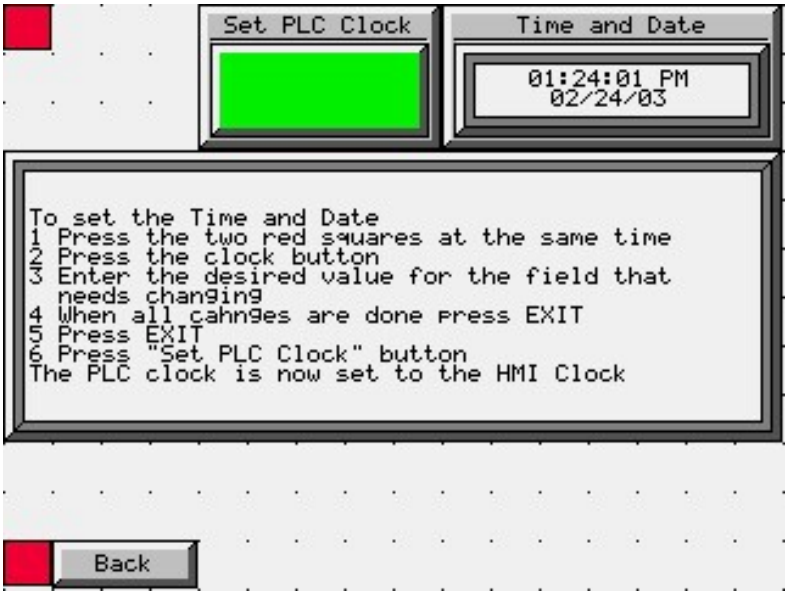
Screen contrast is adjusted by touching up and down arrows until the optimum contrast is achieved.

The RCP language can be changed from this screen. Press one of the different language buttons to change the displayed language.

Note:

If the language is switched from English Si. or to English Imp. The displayed values will not be correct.

TIME



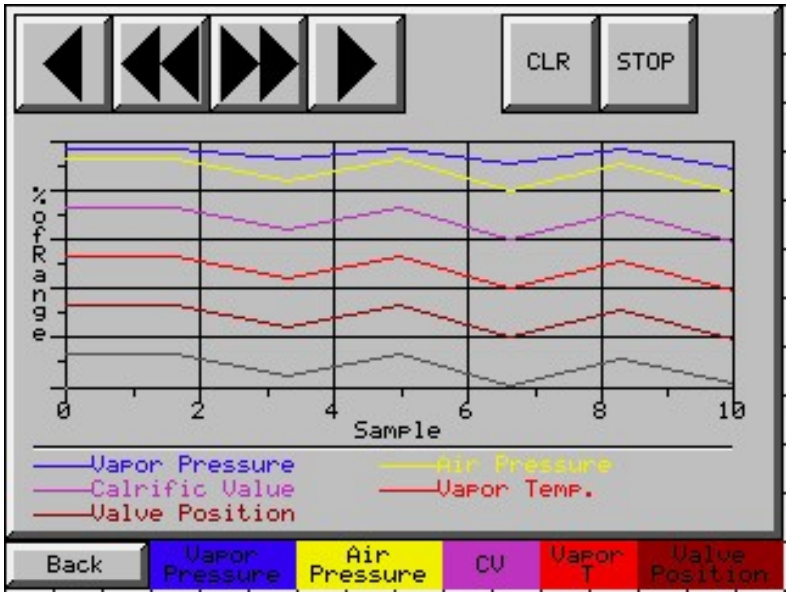
When the **TIME** button is touched the time set up screen appears. The date and time can be changed from this screen.

To set the Time and Date

1 Press the two red squares at the same time
2 Press the clock button
3 Enter the desired value for the field that needs changing
4 When all changes are done press EXIT
5 Press EXIT
6 Press "Set PLC Clock" button

The PLC clock is now set to the HMI Clock

TREND LOG DISPLAYS

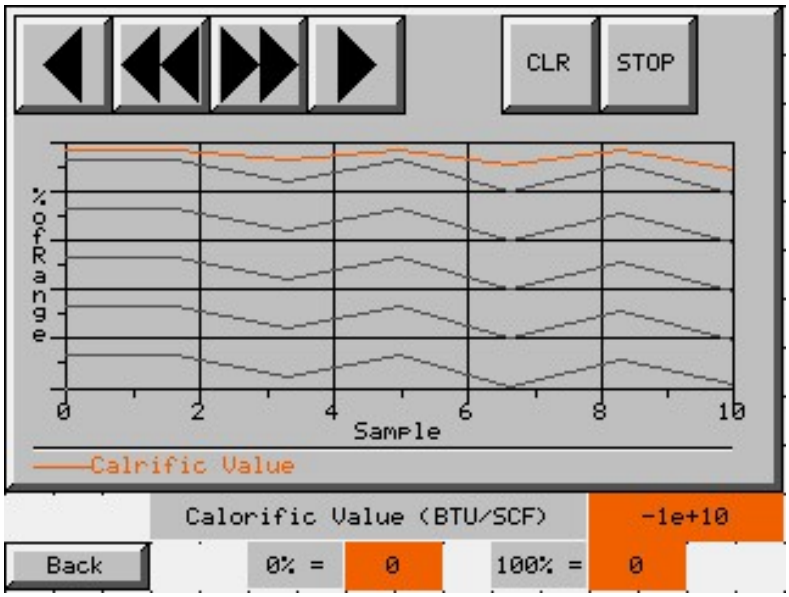


Trend graph displays are provided for each of the pressure, temperature, CV, and valve position values. The graph represents the percentage of the sensor scale. The buttons along the bottom of the screen selects each sensors trend screen. The **BACK** button returns to the Main screen or the All trend screen.

The double arrows will take the trend log to the beginning (sample 0) or the end (current sample up to 999). The single arrows move the display half of the screen at a time. The sample timer determines the time interval between samples.

The trend graphs run only when the blender is in operation.

The individual trend graphs show the graph, actual value, as well as the low and high scale values (0% and 100%). (Calorific Value Trend shown)

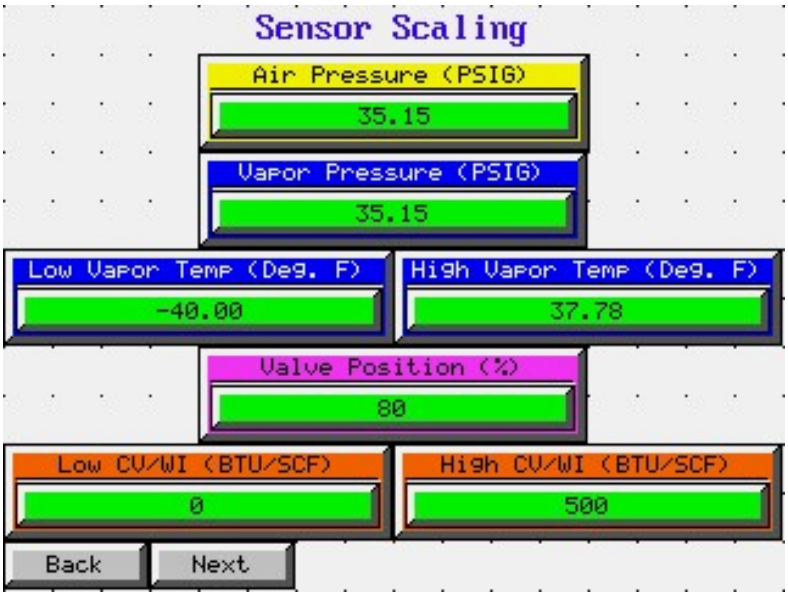


SET UP (OEM Level)

The parameters on the **SETUP** displays are protected by a password. Only qualified factory representatives are allowed to change the values of these parameters. Any unauthorized settings will void the warranty.

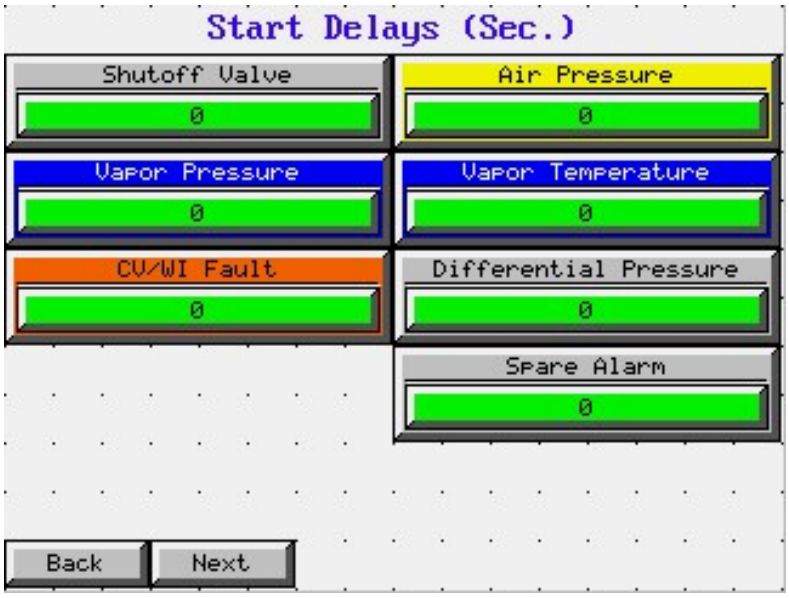
To enter the password protected area, select the setup button. Enter “1015” on the keypad.

SENSOR SCALING



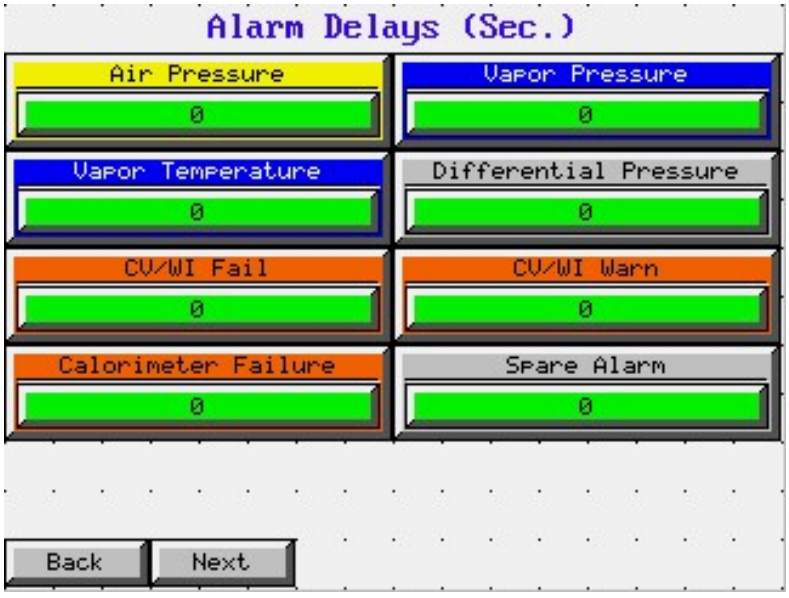
SENSOR SCALING parameters adjust the high and/or low sensor range. The minimum value for air and vapor pressure, and valve position is assumed to be zero. **Low Vapor Temperature** sets the minimum value for the vapor temperature transmitter and the **High Vapor Temperature** sets the maximum value. **Low CV** sets the minimum value for the CV range and **High CV** sets the high range value.

START DELAYS



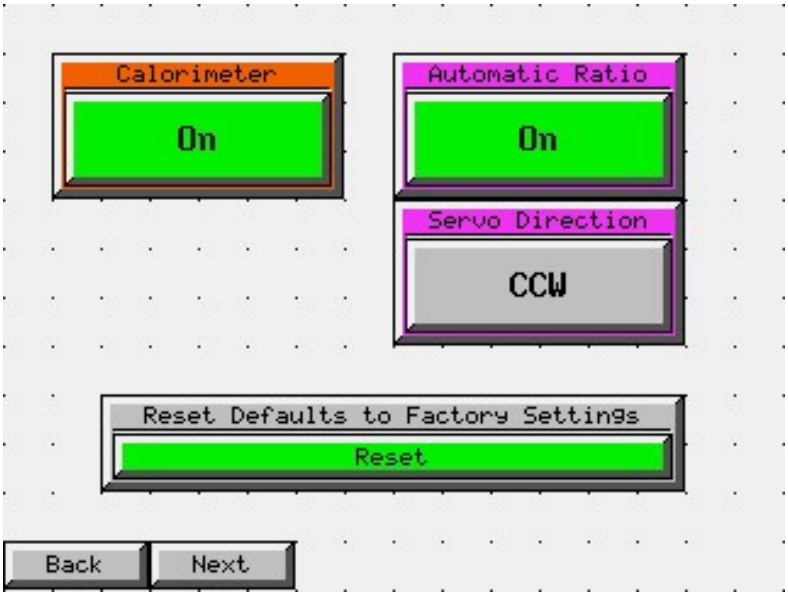
START DELAYS lock out the alarm functions when the start button is pressed for the entered period of time in seconds. This time allows the machine to stabilize the air and vapor pressures and start without generating an alarm.

ALARM DELAYS



Each alarm has an individual delay timer. This timer must be satisfied in order for the alarm to occur. The time value is in addition to any start timer that may be in effect.

BLENDER OPTIONS



Toggle buttons are used to enable or disable optional features for the Blendaire from the factory. To enable the option, touch the object to toggle **ON** or **OFF**. The toggle button will change to indicate the status of the switch.

When a calorimeter is being used the factory will turn on the **Calorimeter** parameter. While this parameter is set to **ON**, the **CALRIMETER FAIL** alarm is active and will shutdown the machine when this alarm occurs.

Values for CV are displayed on the **MAIN** screen when **CALRIMETER** is selected.

When the **Automatic Ratio** feature of the Mixer is turned on, a button labeled ARA will appear on the main screen. This screen will allow the operator to adjust the control PI parameters.

If **Automatic Ratio** is on the **Servo Direction** button appears. This setting will change the direction of the valve. Servo direction is based on which side of the mixer is piped for LPG Vapor and the valve used.

Note:

See manufactures Data Sheet for the proper setting.

The **Reset Defaults to Factory Settings** button will reset all of the values except the trend timers to the factory settings.

Note:

If you have changed any of the settings they will needed to be noted and reset after the Reset Defaults button is pressed to ensure proper operation.

TREND TIMERS

These will trigger the trend logs to take a sample of the corresponding data at the given interval. Each trend log has a separate timer with a range of 2 to 999 seconds.

The trend timers only run while the blender is in operation (Running).

ALARM LOG DISPLAY

The **ALARM LOG** displays alarms that have occurred and shows when they were cleared. If an active alarm is present, its status on the log screen will be shown as "**ON**".

The up and down arrow keys are used to scroll through the active alarm list.

The button at the top center of the alarm log is used to return to the top of the alarm list.

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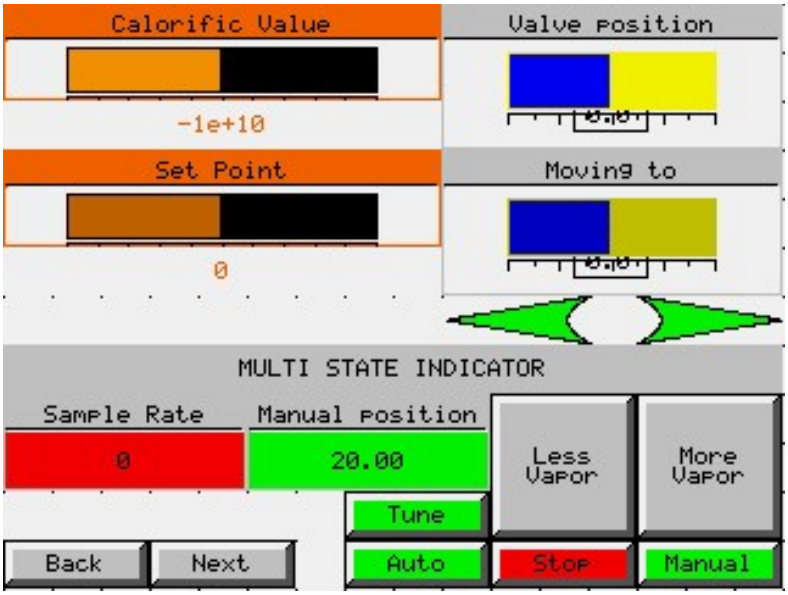
PID Screen Item Descriptions



CALORIFIC VALUE is a display of the current calorific value. The display consists of a bar graph and number value. The bar graph is on the same scale as the set point bar graph for a visual comparison of the two. It is useful when setting up the PI loop for automatic controls. This display will also help operators check the accuracy of the PI adjustments being made automatically.

SET POINT is a display of the current user set point entered into the system. The bar graph has the same scale as the **CALORIFIC VALUE** bar graph to give a visual indication of the CV level compared to the set point. The PI controls will maintain CV levels specified by this set point when in Auto mode.

Note:

The Calorific Value and Set Point bar graphs are to the same scale as the sensor input. The digital display shows the actual value of the sensor.

VALVE POSITION is a readout of the current valve position. The display consists of a bar graph and number value. The bar graph is color coded to show the mix ratio (blue for vapor and Yellow for air). The number value displays the percent of vapor in the mix. This is a useful parameter when setting up the PI controls.

MOVING TO is a readout of the position the valve is moving to. The display consists of a bar graph and number value. The bar graph is color coded to show the mix ratio (blue for vapor and Yellow for air). The number value displays the percent of vapor in the mix

The two arrows below the valve displays indicate increasing (right arrow) or decreasing (left arrow) vapor percent when the valve motor is moving

The Multi State Indicator displays the Mode the PI is currently in.

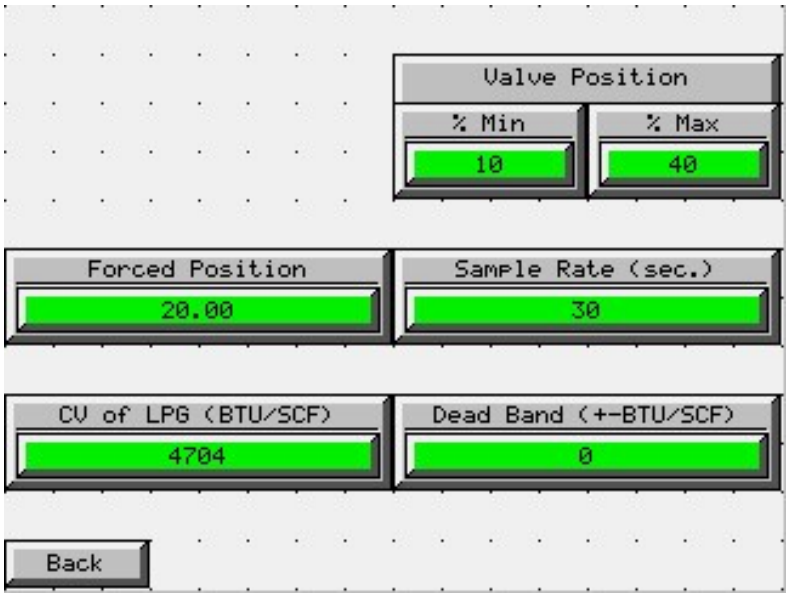
SAMPLE RATE is the time the mixer waits for the gas reading to stabilize before a new movement calculation is made. The display will count down to the sample time.

MANUAL POSITION is a set point used to position the valve based on user input. When the manual button is pressed the Manual position is set to the current valve position to prevent the valve from moving unexpectedly.

NOTE:

Not all screen items will be displayed at all times. The controls and displays will appear when they are needed or available for use.

PI Set points



VALVE POSITION sets the min and max valve positions in the program. These are the first set of stops to prevent damage to the valve and/or motor from over rotation.

FORCED POSITION is a set point, used to position the valve in a suitable position when CV is not being maintained automatically. This value must be set up after initial startup when a known good gas mix is being made automatically. The valve position for forced control must be entered in order to produce a good CV reading under abnormal operating conditions of the system.

SAMPLE RATE is the LPG transit time to the heat indicator plus the heat indicator process time. This is set automatically when the auto tune feature is used,

The **C.V. OF LPG** is an estimate of the LPG Feed Stocks Calorific Value. This value is used to anticipate the valve position based on mixed gas CV changes.

DEADBAND is an area around the set point in which the valve will not respond to CV changes while in Auto mode.

Functionality Description

MANUAL MODE

The **MANUAL** button on the ARA screen is used to operate the valve manually. The manual button can be pressed at any time, the machine does not have to be running. When the manual button is pressed the operation mode text will change to PI in manual and will set the manual position set point to the current valve position. This mode can be used for startup or maintenance functions. Pressing the **STOP** button will stop the Auto ratio and the valve motor.

AUTOMATIC MODE

When the ARA is in the automatic mode, the ARA function will monitor the gas quality after the sample rate has elapsed. After the sample is analyzed, the ARA calculation will determine where the valve needs to be placed in order to produce the specified mix established using the set point parameter entered by the operators.

FORCED CONTROL

When the machine is running and the mixed gas being produced is not within tolerance levels, **FORCED CONTROL MODE** is enabled. This event will place the valve in a position where a known good mix will be produced. The forced position set point is used to determine where the valve needs to be placed under abnormal operating conditions. The **OPERATION MODE** will change to forced control when the forced control function is enabled. If the mix continues to degrade the machine will shutdown on a CV shutdown alarm.

AUTO TUNE

WARNING

The ARA function should be Auto Tuned at least once prior to Automatic Operations unless the delay time from ratio change to registering that change is known.

After initial startup, the plant must be in operation. Start the mixer in the manual mode and stabilize the calorific value. Press the **TUNE** button to start the auto tune sequence.

At the beginning of the auto tune sequence, the valve will move Seven percent in a positive direction and stop. This will invoke a change in the calorific value. If calorific value drops, the direction set point for ARA will change after auto tuning. This will ensure proper orientation when auto tuning is complete.

A timer is used to time the amount of time between movement of the valve and the time calorific value changes by three percent. This time value is entered into the sample rate set point. The sample rate can be changed by the operators to compensate for outside forces on the PI function during auto tuning.

NORMAL OPERATIONS

During initial startup, all set points must be entered and adjusted for accuracy. The forced control set point is the most critical of all PI set points. Select **MANUAL** mode and set the valve so the correct gas mix is being produced. Set the Forced mode to this setting. Next press the **TUNE** button.

The valve will move 7 percent and save the mixed gas response time, which is saved in the sample rate set point. When auto tuning is done, the system will return the valve to the starting point and automatically resume operations in the **AUTO** mode.

When the PI loop is in the auto mode, the PI calculation will determine where the new valve position should be to produce the gas mix that is required by the mixed gas set point.

APPENDIX A

Component Information

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EZTouch Panel Hardware User Manual

Revision 3

Manual Part Number EZ-TOUCH-M

WARNING!

Programmable control devices such as EZTouch Panels must not be used as stand-alone protection in any application. Unless proper safeguards are used, unwanted start-ups could result in equipment damage or personal injury. The operator must be made aware of this hazard and appropriate precautions must be taken.

In addition, consideration must be given to the use of an emergency stop function that is independent of the programmable controller.

The diagrams and examples in this user manual are included for illustrative purposes only. The manufacturer cannot assume responsibility or liability for actual use based on the diagrams and examples.

CAUTION

Do not press the EZTouch Panel touchscreen with any sharp objects. This practice may damage the unit beyond repair.

Trademarks

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MAN-EZTCH-HDW, Rev 3, 02/03

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Manual Revisions

Manual Part Number: EZ-TOUCH-M
Manual Title: EZTouch Panel Hardware User Manual, Revision 3

The following table provides you with update information. If you call technical support with a question about this manual, please be aware of the revision number.

Revision	Date	Effective Pages	Description of Changes
Original Release	11/2000	Cover Warning/Copyright i–iv 1–40 Appendix Index	Original Release of Manual
Maintenance Release 1	04/2001	Warning/Copyright, pp. 4, 6, 7, 9, 21, 22, 32, 39 Appendix, pages 45-46	Miscellaneous clerical changes. Cable wiring diagram added.
Revision 1	3/2002	All	6" Slim Bezel Models added. AB DH+ option card added. EZEthernet option card added. Siemens PLC Cable added. EZTouch Panel RS-422A wiring connections added. Mounting options for 8- and 10-inch models changed.
Revision 2	9/2002	Pages i-iv, 2, 3, 5, 6, 8-13, 15, 16, 18, 20, 21, 23-25, 28, 31, 37, 40-46 Index	8-, 10-, and 15-inch Slim Bezel Models added. Touchscreen chemical compatibility table added (for Slim Bezel models)
Revision 3	02/2003	Pages i-vi, 1, 2, 6, 8, 10, 13, 15, 23-26, 29, 30, 32-39, 43, A-8, A10, A-11, Index	Modicon Modbus Plus, Generic Devicenet I/O, Generic Ethernet/IP, Generic Profibus-DP option card information added. Added wiring diagram for Omron PLC. Added RS-485A wiring diagram for DirectLogic PLCs.

EU Information

The EZTouch Panel is manufactured in compliance with European Union (EU) Directives and carries the CE mark. The EZTouch Panel has been tested under CE Test Standard #EN55011, and is listed under UL File #E209355. The following information is provided to comply with EU documentation requirements.

Please NOTE: Products with CE marks perform their required functions safely and adhere to relevant standards as specified by EU directives provided they are used according to their intended purpose and that the instructions in this manual are adhered to. The protection provided by the equipment may be impaired if this equipment is not used in accordance with this manual. Only replacement parts supplied by Automationdirect.com or its agents should be used.

Technical Support

Consult EZTouch Programming Software Help or you may find answers to your questions in the operator interface section of our web site @ www.Automationdirect.com. If you still need assistance, please call our technical support at 1-770-844-4200 or FAX us at 1-770-886-3199.

SELV Circuits

All electrical circuits connected to the communications port receptacle are rated as Safety Extra Low Voltage (SELV).

Environmental Specifications

Operating Temperature

6" Monochrome/6" Color	0 to 45 °C
8" Color	0 to 40 °C
10" Color	0 to 50 °C
15" Color	0 to 45 °C

Storage Temperature

6" Mono	–20 to +60 °C
6" Color	–25 to +60 °C
8" Color	–20 to +60 °C
10" Color	–25 to +60 °C
15" Color	–25 to +60 °C

Operating Humidity ..... 10–95% R.H., noncondensing
Air Composition ..... No corrosive gases permitted

Preventative Maintenance and Cleaning

No preventative maintenance is required. The EZTouch Panel touchscreen should be cleaned as needed with warm, soapy water. See Chapter 5, *Maintenance*, for a list of compatible/incompatible chemicals and compounds.

Manual Organization

The table, below provides an overall description of the topics covered within this manual.

Chapters		
1	**Getting Started**	Provides Manual Organization, and lists what you need to get started, hardware and software. Discusses how to get help with questions or problems you might encounter through Onscreen Help and Technical Support.
2	**Models, Features, and Accessories**	Provides you with a table listing the various models, their part numbers and special features. Lists the important features of all EZTouch Panels. Lists the PLCs supported by the panels, by brand, model and protocol. Lists the replacement and optional equipment available, including memory cards, PLC cables and programming cable.
3	**Specifications**	Specifications for each model provide detailed information. Included are display size, brightness and pixels; CPU type; service power requirements; operating and storage temperatures; available memory; serial communications specs; dimensions, weight, etc.
4	**Installation**	Shows the mounting and cutout dimensions for the panel models. Tells you how to connect the unit to power supply, programming computer, printer, and a PLC. Special option card connector instructions are also provided.Shows the setup screens displayed after initial powerup of the panel. Describes each setup screen and how to use it to set up your panel.
5	**Maintenance**	Provides instructions on battery replacement, gasket replacement, memory upgrade (FLASH and RAM), Fuse Reset, and fluorescent backlight replacement. Discusses precautions and cleaning necessary to ensure longevity of the panel.
6	**Troubleshooting**	Aids in diagnosing problems you might encounter when installing or operating your EZTouch Panel. Provides steps to take to isolate and correct problems.
A	**Appendix A**	PLC Cable Wiring Diagrams are provided.

Introduction

There are *two manuals* that you will need to use the EZTouch Panel — this manual, the EZTouch Panel Hardware User Manual, and the *EZTouch Panel Programming Software User Manual* (included with P/N EZ-TOUCHEDIT, EZ-Touch Programming Software). Don't worry — you won't be bouncing back and forth between them — and we'll always let you know exactly where the information is that you will need for the next step.

These manuals will take you through the steps necessary to get your EZTouch Panel up and running in the shortest possible time. Although your familiarity with programmable graphic operator interface devices will determine how quickly you move through the steps — it's as easy as 1 — 2 — 3. The flow chart below will show you where you need to go, and — how to get there from here!

Easy as 1 - 2 - 3

1

Install Software

2

Install Hardware

3

Design Screens

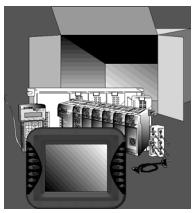
EZTouch Programming Software is a user-friendly Windows-based program that allows you to design screens for the EZTouch Panel series of operator interfaces. To install EZTouch Panel Programming Software, run the install program from the CD and follow the onscreen prompts. For more information, please refer to the *EZTouch Programming Software Manual.*

You can start designing your screen off-line immediately after installing EZTouch Programming Software — you don't need to have the hardware installed!

This manual will provide you with the instructions you need to install the EZ-Touch Panel. Included are mounting diagrams for both **Stud Mounting** (page 16) and **DIN Clip Mounting** (page 27). Connections and wiring requirements are provided beginning on page 29. Option Card connector information is provided beginning on page 32. Panel **Setup** instructions begin on page 41. For Maintenance information, see Chapter 5 (page 45) and for Troubleshooting, refer to Chapter 6 (page 55).

You may design your screen on-line or off-line (without connection to an EZ-Touch Panel). When designing screens with EZTouch Programming Software, you will program objects on the EZTouch Panel providing a graphical interface designed to interchange and display data from a PLC by merely viewing or touching the screen — all unique to your particular application. For instructions on how to design screens, refer to the *EZTouch Panel Programming Software User Manual*.

What you need to get started:



Hardware

- EZTouch Panel (6" Monochrome, 6" Color, 8" Color, or 10" Color, including 6", 8", and 10" Slim Bezel Models, 15" Slim Bezel Model, and Option Card models)
- 24 Volt Power Supply (FA-24PS recommended)
  (1.5 Amp Slo-Blo input power fuse is recommended)
- RS-232C Programming Cable (P/N EZTOUCH-PGMCBL)
- RS-232C PLC Interface Cable (see page 10 for part numbers)
- PC requirements:
  - — IBM or compatible PC (486 or better) with a mouse and separate serial port
  - — VGA display with at least 800 x 600 resolution (1024 x 768 recommended)
  - — Standard Windows 98/NT4.0/ME/2000® Requirements
  - — CD ROM Drive

Software

- EZTouch Programming Software (P/N EZ-TOUCHEDIT)

Need HELP?

Help is never more than a mouse click or a key press away!

Onscreen HELP

One of the most important features of the EZTouch Programming Software is the availability of context sensitive onscreen help. To access the Help windows, simply press the F1 function key while on the topic where you need help. For example, if you need help while working with screens, hit the F1 function key while in that area and a popup window will be displayed. Also, most dialog boxes contain a Help button, you may click on it to get help, too!

Fly-Over HELP

When the mouse cursor comes to rest over any tool bar or object button for a short while, a small window will appear containing a brief description of the function of that particular button. The window will disappear as soon as the cursor has been moved off the button.

PLC HELP

If you need help with the PLC to EZTouch Panel Interface, consult the EZ-Touch Panel Programming Software Help. Each PLC Driver has a Help Topic that lists the error messages and provides an explanation for each. Also provided are PLC to EZTouch Panel wiring diagrams.

Technical Support

Although most questions can be answered with EZTouch HELP or the manuals, if you are still having difficulty with a particular aspect of installation or screen design, technical support is available at **1-770-844-4200 or FAX us at 1-770-886-3199. Visit our website at *www.Automationdirect.com.***

PLEASE NOTE: Chapter 6, Troubleshooting, at the end of this manual should be able to help you with most problems you might encounter.

Models

The EZTouch Panel is an intelligent, programmable, flat panel display. It has been designed to interchange and display graphical data from a PLC by merely viewing or touching the screen.

The EZTouch Panel is available in a variety of models to suit your application. Refer to the table below for a list of part numbers, descriptions and options for all 6-inch Models (including Option Board Models and Slim Bezel Models.) See next page for 8-, 10-, and 15-inch Models.

6-inch EZTouch Panel Models

Part Number	Description	User Memory	Field Expandable User RAM?	Nonvolatile Flash Backup Card Option for Program Backup?	PLC Drivers Supported? *
EZ-S6M-R	6" Monochrome Touch Panel	256K	No	No	See Note #1
EZ-S6M-RS	6" Monochrome Touch Panel with Slim Bezel	256K	No	No	See Note #1
EZ-S6M-F	6" Monochrome Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S6M-FH	6" DH+ Mono Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-S6M-FS	6" Monochrome Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S6M-FSH	6" DH+ Mono Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-S6C-K	6" Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	See Note #2
EZ-S6C-KS	6" Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	See Note #2
EZ-S6C-F	6" Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S6C-FH	6" DH+ Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-S6C-FS	6" Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S6C-FSH	6" DH+ Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O

** List of PLC Drivers supported is provided on page 8 of this manual.*
Note #1: Supports all drivers in list, but NO OPTION BOARDS.
Note #2: Only supports Automationdirect.com (DirectLogic) Serial Drivers.

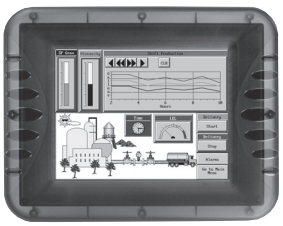
8-inch, 10-inch, and 15-inch EZTouch Panel Models

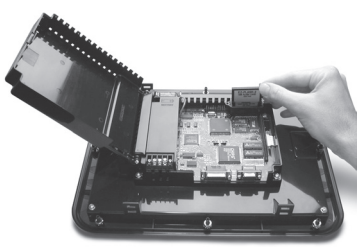
In the table below are the 8-, 10-, and 15-inch EZTouch Panel models including the Slim Bezel Models and Models with the A-B Data Highway Plus (and Remote I/O), DeviceNet I/O, Ethernet/IP, Modicon ModBus Plus, or Profibus-DP Network interface module (option card) installed. If using an option board connector, you cannot use the PLC port at the same time to connect to another type PLC. The panel supports only one PLC driver at a time.

Part Number	Description	User Memory	Field Expandable User RAM?	Nonvolatile Flash Backup Card Option for Program Backup?	PLC Drivers Supported? *
EZ-S8C-F	8" Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S8C-FS	8" Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-S8C-FH	8" DH+ Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-S8C-FSH	8" DH+ Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-T10C-F	10.4" Color Touch Panel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-T10C-FH	10.4" DH+ Color Touch Panel	512L	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-T10C-FS	10.4" Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus EZ Ethernet
EZ-T10C-FSH	10.4" DH+ Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-T10C-FSD	10.4" DeviceNet I/O Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus DeviceNet I/O
EZ-T10C-FSE	10.4" Ethernet/IP Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Ethernet/IP
EZ-T10C-FSM	10.4" Modbus Plus Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Modbus Plus
EZ-T10C-FSP	10.4" Profibus-DP Color Touch Panel with Slim Bezel	512K	Yes — to 1 or 1.5 MEG	Yes	All, plus Profibus-DP
EZ-T15C-FS	15" Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus EZ Ethernet
EZ-T15C-FSH	15" DH+ Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus Allen-Bradley DH+ and Remote I/O
EZ-T15C-FSD	15" DeviceNet I/O Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus DeviceNet I/O
EZ-T15C-FSE	15" Ethernet/IP Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus Ethernet/IP
EZ-T15C-FSM	15" Modbus Plus Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus Modbus Plus
EZ-T15C-FSP	15" Profibus-DP Color Touch Panel with Slim Bezel	1024K	Yes — to 1.5 or 2 MEG	Yes	All, plus Profibus-DP

** List of PLC Drivers supported is provided on page 8 of this manual.*

Features

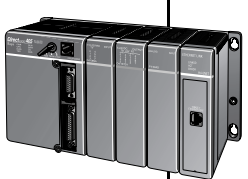




- Pre-built panel components for easy screen design
- Special parts, such as: Toggle Switch, Slide Switch, Selector Switch, Throw Switch, Thumbwheel Object, Meters, PID Faceplates, and Analog/Digital Clock
- Flash based design for easy firmware upgrade
- Field expandable user RAM (not all models)
- Nonvolatile flash card option for user program backup (not all models)
- Color models support 128-color palette for components and bitmaps
- 16 shades of gray on monochrome models
- Multiple languages (up to 9)
- Two communications ports — Computer (RS-232C) and PLC (RS-232C, RS-422A, or RS-485A)
- Up to 999 screens
- Built-in clock and calendar or reference the PLC clock
- Built-in soft keypad for numeric and alphanumeric entry
- Password Protection for every touch object
- Passwords for up to 8 user groups
- 16 level undo and redo
- Import bitmaps
- Serial Printer support
- 40-character tag names allows you to use meaningful names for PLC memory locations instead of cryptic PLC addresses

PLCs Supported by the EZTouch Panels

PLC Brand	Model		Protocols Supported
Allen-Bradley	Micrologix 1000/1200/1500, SLC500, 5/01,/02,/03		DH485/AIC/AIC+
	Micrologix 1000/1200/1500		DF1 Half Duplex; DF1 Full Duplex
	SLC5/03, 5/04, and 5/05		DF1 Half Duplex; DF1 Full Duplex
	PLC5		DF1
	SLC5/04, PLC5		DH+ (Option Card)
	PLC2, 3 and 5		Remote I/O (w/ DH+ Plus Option Card)
DeviceNet	DeviceNet I/O		DeviceNet I/O (Option Card)
Ethernet	Ethernet/IP		Ethernet/IP (Option Card)
General Electric	90/30 and 90/70 Versamax		SNPX SNP
Mitsubishi	FX Series (all)		FX, Direct
Modicon	984 CPU, Quantum 113 CPU AEG Modicon Micro Series 110 CPU: 311-xx, 411-xx, 512-xx, 612-xx		Modbus RTU
	984 Series, Quantum Series		Modbus Plus (Option Card)
Omron	C200, C500		Host Link
Profibus	Profibus-DP		Profibus-DP (Option Card)
DirectLogic	DL05, DL06		K-Sequence; DirectNet; ModBus (Koyo addressing)
	DL105		K-Sequence
	DL205	D2-230	K-Sequence
		D2-240	K-Sequence; DirectNet
		D2-250/D2-250-1/260	K-Sequence; DirectNet; ModBus (Koyo addressing)
		D2-240/250 w/DCM	DirectNet
	DL305	D3-330/330P	DirectNet
		D3-340	DirectNet
		D3-350	K-Sequence; DirectNet; ModBus (Koyo addressing)
		D3-350 w/DCM	DirectNet
	DL405	D4-430	K-Sequence; DirectNet
		D4-440	K-Sequence; DirectNet
		D4-450	K-Sequence; DirectNet; ModBus (Koyo addressing)
		All with DCM	DirectNet
Siemens	Siemens S7 MPI Adaptor 300, 400		3964R
Other	H2- WinPLC [Entivity (Think & Do) V5.2 or later, check for version compatibility]		Entivity (Think & Do) Modbus RTU (serial port)
	H2/H4 EBC, T1H-EBC		K-Sequence (serial port) (call for availability)
	WinPLC, H2-EBC, T1H-EBC with Panel Ethernet Card option		Ethernet (option card EZ-ETHERNET)



Replacement and Optional Equipment

There are replacement parts and other optional equipment available to customize or upgrade the EZTouch Panel to fit your application. The table, below, provides you with a list of this equipment. Instructions, if necessary, on how to install this equipment to upgrade your unit are also provided. (For instructions to mount the 6-inch EZTouch Panel with DIN clips, see pages 27 and 28.)

To order from this list, phone Automationdirect.com at 1-800-663-0405.

Item	Part Number
EZTouch Panel Programming Software	EZ-TOUCHEDIT
512K RAM Card	EZ-RAM-1
1 MEG RAM Card	EZ-RAM-2
512K Flash Option (Flash backup card)	EZ-FLASH-1
1 MEG Flash Option (Flash backup card)	EZ-FLASH-2
2 MEG Flash Option (Flash backup card)	EZ-FLASH-3
EZTouch Replacement Battery	EZ-BAT
EZTouch Optional DIN Mounting Clips (package of 6)	EZ-BRK-1
Mounting Studs (package of 8)	EZ-TOUCH-STUDS
Standard Replacement Gasket (6" Model)	EZ-TOUCH6-GSK
Standard Replacement Gasket (8" Model)	EZ-TOUCH8-GSK
Standard Replacement Gasket (10" Model)	EZ-TOUCH10-GSK
Slim Replacement Gasket (6" Model) FDA Compliant	EZ-6SLIMF-GSK
Slim Replacement Gasket (8" Model) FDA Compliant	EZ-8SLIMF-GSK
Slim Replacement Gasket (10" Model) FDA Compliant	EZ-10SLIMF-GSK
Slim Replacement Gasket (15" Model) FDA Compliant	EZ-15SLIMF-GSK
EZTouch Panel Ethernet Card	EZ-ETHERNET
EZTouch Panel Hardware User Manual	EZ-TOUCH-M
EZ Ethernet Option Card Manual	EZ-ETHERNET-M

PLC Cable Part Numbers — 3m (9.8 ft.)

Part Number	Cable Description
EZ-2CBL	***Direct*** Logic PLC RJ12 port, DL05, DL105, DL205, DL350 & DL450 (RS-232C)
EZ-2CBL-1	***Direct*** Logic (VGA Style) 15-pin port, DL250 (RS-232C)
EZ-3CBL	***Direct*** Logic PLC RJ11 port, DL340 (RS-232C)
EZ-4CBL-1	***Direct*** Logic PLC 15-Pin Dsub port, DL405 (RS-232C)
EZ-4CBL-2	***Direct*** Logic PLC 25-Pin Dsub port, DL405, DL350, DL305 DCU, and all DCM's (RS-232C)
EZ-90-30-CBL	GE 90/30 and 90/70 15-pin Dsub port (RS-422A)
EZ-DH458-CBL	AB SLC DH-485 port (RS-232C)
EZ-SLC-232-CBL	AB SLC 5/03/04/05 DF1 port (RS-232C)
EZPLC5-232-CBL	AB PLC5 DF1 port (RS-232C)
EZ-MLOGIX-CBL	AB MicroLogix 1000, 1200 & 1500 (RS-232C)
EZ-MITSU-CBL	Mitsubishi FX Series 25-pin port (RS-422A)
EZ-MITSU-CBL-1	Mitsubishi FX Series 8-pin (RS-422A)
EZ-OMRON-CBL	Omron C200, C500 (RS-232C)
EZ-S7MPI-CBL	Siemens 7 MPI Adapter (RS-232C)

Programming Cable Part Number — 2m (6.56 ft.)

EZTOUCH-PGMCBL	RS-232 Programming Cable

Hardware Specifications

Specifications for all 6-inch EZTouch Panel Models (including Slim Bezel and A-B DH+ Option Card Models) are provided in the table below. * An “H” at the end of a part number indicates an A-B DH+ option card has been installed. An “S” indicates a Slim Bezel Model.

EZTouch Panel Specifications — all 6-inch Models

Specification	EZTouch Panel 6-inch Models			
	6" Mono EZ-S6M-R, EZ-S6M-F, and *EZ-S6M-FH	**6" Mono Slim EZ-S6M-RS, EZ-S6M-FS, and *EZ-S6M-FSH**	**6" Color EZ-S6C-K, EZ-S6C-F, and *EZ-S6C-FH**	**6" Color Slim EZ-S6C-KS, EZ-S6C-FS, and *EZ-S6C-FSH**
Display Type	5.7" STN (16 Shades of Gray)		5.7" STN (128-Color Palette)	
Display Size (Viewing Area)	4.72" x 3.5" (119.4 x 88.9 mm)		4.65" x 3.5" (118.1 x 88.9 mm)	
Screen Pixels	320 x 240			
Display Brightness	140 nits		180 nits	
Touch Screen	48 resistive touch cells (8 x 6)	**EZ-S6M-RS**: 48 resistive touch cells (8 x 6) **EZ-S6M-FS/FSH:** 192 resistive touch cells (16 x 12)	48 resistive touch cells (8 x 6)	192 resistive touch cells (16 x 12)
CPU Type	Motorola Coldfire 32 bit CPU (40 MHZ)			
Service Power	24 VDC (20–30 VDC operating range)			
Power Consumption	13 Watts @ 24VDC		15 Watts @ 24VDC	
Enclosure	NEMA 4, 4X (indoor)			
Agency Approvals	UL, CUL, CE			
Operating Temperature	0 to 45 °C (32 to 113 °F)			
Storage Temperature	–20 to +60 °C (–4 to +140 °F)		–25 to +60 °C (–13 to+140 °F)	
Humidity	10–95% R.H., noncondensing			
Electrical Noise Interference	NEMA ICS 2-230 showering arc ANSI C37.90a-1974 SWC Level C Chattering Relay Test			
Withstand Voltage	1000 VDC (1 minute), between power supply input terminal and protective ground (FG)			
Insulation Resistance	Over 20 M-ohm, between power supply input and terminal and protective ground (FG)			
Vibration	5 to 55 Hz 2G for 2 hours in the X, Y, and Z axes			
Shock	10G for under 12 ms in the X, Y, and Z axes			
User Memory	**EZ-S6M-R, EZ-S6M-RS:** 256K system RAM Memory (only) **All other models:** 512K System RAM Memory, 512K Option RAM Card for Memory Expansion, 512K Option Flash Card for Memory Backup, 1 Meg Option Flash Card for Memory Backup			
Number of Screens	Up to 999, limited by memory			
Real-time Clock	Built into panel (PLC clock is still accessible, if available)			
Serial Communications	**PLC Port:** RS-232C, RS-422A, RS-485A, 15-pin D-Sub (Female)] **Download/Program Port:** RS-232C, RS-422A, RS-485A, 9-pin D-Sub (Female) **DH+ Port:** (EZ-S6M-FH/FSH, EZ-S6C-FH/FSH Models) DH+ option board 25-pin connector (Female)			
Screen Saver	Yes, backlight off			
External Dimensions	7.30" x 8.94" x 2.94" (185.42 x 226.076 x 74.68 mm)	7.250" x 8.048" x 2.68" (156.078 x 204.407 x 68.07 mm)	7.30" x 8.94" x 2.94" (185.42 x 226.076 x 74.68 mm)	7.250" x 8.048" x 2.68" (156.078 x 204.407 x 68.07 mm)
Weight	1.7 lbs.			

EZTouch Panel Specifications — 8-inch and 10-inch Standard Bezel Models

Specification	EZTouch Panel Models	
	8" Color EZ-S8C-F and EZ-S8C-FH	**10" Color EZ-T10C-F and EZ-T10FH**
Display Type	8.2" STN (128-Color Palette)	10.4" TFT (128-Color Palette)
Display Size (Viewing Area)	6.65" x 5.024" (168.9 x 127.61 mm)	8.31" x 6.22" (211.07 x 158 mm)
Screen Pixels	640 x 480	
Display Brightness	90 nits	200 nits
Touch Screen	192 resistive touch cells (16 x 12)	
CPU Type	Motorola Coldfire 32 bit CPU (40 MHZ)	
Service Power	24 VDC (20–30 VDC operating range)	
Power Consumption	16 Watts @ 24VDC	18 Watts @ 24VDC
Enclosure	NEMA 4, 4X (indoor)	
Agency Approvals	UL, CUL, CE	
Operating Temperature	0 to 40 °C (32 to 104 °F)	0 to 50 °C (32 to 122 °F)
Storage Temperature	–20 to +60 °C (–4 to +140 °F)	–25 to +60 °C (–13 to +140 °F)
Humidity	10–95% R.H., noncondensing	
Electrical Noise Interference	NEMA ICS 2-230 showering arc ANSI C37.90a-1974 SWC Level C Chattering Relay Test	
Withstand Voltage	1000 VDC (1 minute), between power supply input terminal and protective ground (FG)	
Insulation Resistance	Over 20 M-ohm, between power supply input and terminal and protective ground (FG)	
Vibration	5 to 55 Hz 2G for 2 hours in the X, Y, and Z axes	
Shock	10G for under 12 ms in the X, Y, and Z axes	
User Memory	512K System RAM Memory, 512K Option RAM Card for Memory Expansion, 512K Option Flash Card for Memory Backup, 1 Meg Option Flash Card for Memory Backup	
Number of Screens	Up to 999, limited by memory	
Real-time Clock	Built into panel (PLC clock is still accessible, if available)	
Serial Communications	**PLC Port:** RS-232C, RS-422A, RS-485A, 15-pin D-Sub (Female) **Download/Program Port:** RS-232C, RS-422A, RS-485A, 9-pin D-Sub (Female) **DH+ Port:** (EZ-S8C-FH, EZ-T10C-FH Models) DH+ option board 25-pin connector (Female)	
Screen Saver	Yes, backlight off	
External Dimensions	8.76" x 10.915" x 3.093" (222.38 x 277.24 x 78.56 mm)	10.60" x 13.59" x 3.19" (269.22 x 345.186 x 81.03 mm)
Weight	1.6 lbs.	3.8 lbs.

EZTouch Panel Specifications — 8-inch, 10-inch, and 15-inch Slim Bezel Models

Specification	EZTouch Panel Models		
	8" Color EZ-S8C-FS and EZ-S8C-FSH	**10" Color EZ-T10C-FS and EZ-T10-FSH/FSD/FSM/FSE/FSP**	**15" Color EZ-T15C-FS and EZ-T15C-FSH/FSD/FSM/FSE/FSP**
Display Type	8.2" STN (128-Color Palette)	10.4" TFT (128-Color Palette)	15.0" TFT (128-Color Palette)
Display Size (Viewing Area)	6.65" x 5.024" (168.9 x 127.61 mm)	8.31" x 6.22" (211.07 x 158 mm)	12.02" x 9.01" (305.28 x 228.96 mm)
Screen Pixels	640 x 480		
Display Brightness	90 nits	200 nits	250 nits
Touch Screen	192 resistive touch cells (16 x 12)		
CPU Type	Motorola Coldfire 32 bit CPU (40 MHZ)		
Service Power	24 VDC (20–30 VDC operating range)		
Power Consumption	16 Watts @ 24VDC	18 Watts @ 24VDC	33 Watts @ 24VDC
Enclosure	NEMA 4, 4X (indoor)		
Agency Approvals	UL, CUL, CE		
Operating Temperature	0 to 40 °C (32 to 104 °F)	0 to 50 °C (32 to 122 °F)	0 to 45 °C (32 to 113 °F)
Storage Temperature	–20 to +60 °C (–4 to +140 °F)	–25 to +60 °C (–13 to +140 °F)	
Humidity	10–95% R.H., noncondensing		
Electrical Noise Interference	NEMA ICS 2-230 showering arc ANSI C37.90a-1974 SWC Level C Chattering Relay Test		
Withstand Voltage	1000 VDC (1 minute), between power supply input terminal and protective ground (FG)		
Insulation Resistance	Over 20 M-ohm, between power supply input and terminal and protective ground (FG)		
Vibration	5 to 55 Hz 2G for 2 hours in the X, Y, and Z axes		
Shock	10G for under 12 ms in the X, Y, and Z axes		
User Memory	**8" and 10" Models:** 512K System RAM Memory, 512K and 1 MEG Option RAM Card for Memory Expansion; 512K, 1 or 2 MEG Option Flash Card for Memory Backup **15" Model:** 1024K System RAM Memory, 512K and 1 MEG Option RAM Card for Memory Expansion; 1or 2 Meg Option Flash Card for Memory Backup		
Number of Screens	Up to 999, limited by memory		
Real-time Clock	Built into panel (PLC clock is still accessible, if available)		
Serial Communications	**PLC Port:** RS-232C, RS-422A, RS-485A, 15-pin D-Sub (Female) **Download/Program Port:** RS-232C, RS-422A, RS-485A, 9-pin D-Sub (Female) **DH+ Port:** (EZ-S8C-FH, EZ-T10C-FH Models) DH+ option board 25-pin connector (Female)		
Screen Saver	Yes, backlight off		
External Dimensions	8.75" x 10.89" x 2.76" (222.25 x 276.61 x 70.10 mm)	10.59" x 13.58" x 2.86" (268.99 x 344.93 x 72.64 mm)	13.00" x 16.75" x 4.66" (330.2 x 425.45 x 118.36 mm)
Weight	2.9 lbs.	5.0 lbs.	8.9 lbs.

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Installing the EZTouch Panel requires the following three major steps:

Mounting

The EZTouch Panel is a front-panel mount unit. Mounting of the unit requires a panel cutout, and drilling six, eight, or ten holes (depending on the model) for the mounting screws. You may also mount the 6-inch units using the optional DIN clips. Some 6-inch units (Slim Bezel models) can **only** be mounted using DIN clips. The 8-, 10- and 15-inch Slim Bezel Models are **Stud Mount ONLY.** Please see the *Mounting* section beginning on page 16 for mounting diagrams and instructions.

CAUTION: DO NOT use any thread locking compounds to secure the studs to Plastic Bezel Models. Many of these compounds will degrade the plastic housing.

Connections and Wiring

Now that your EZTouch Panel is mounted, you are ready to connect your unit to the power source, PLC, and programming computer or printer. The EZTouch Panel's PLC Port and COM1 Port support RS-232C, RS-422A and RS-485A connections. Note that the EZTouch Panel is a DC powered unit (24 VDC). See the section on *Connections and Wiring*, beginning on page 29 for further information. See the section on Option Card Installation, beginning on page 32 if you have an option card installed in your EZTouch Panel.

Communications Setup

The EZTouch Panel has some adjustable features and panel tests, such as, Contrast, Clock, and Touchpad Test. You will also select whether the COM1 port will be used to connect to a Programming PC or a printer. The unit is shipped with factory default values for some of these features, but they can be adjusted by the user. To change any value, enter the SETUP MODE on powerup and follow the procedures provided in the *Communications Setup* section beginning on page 40.

Mounting

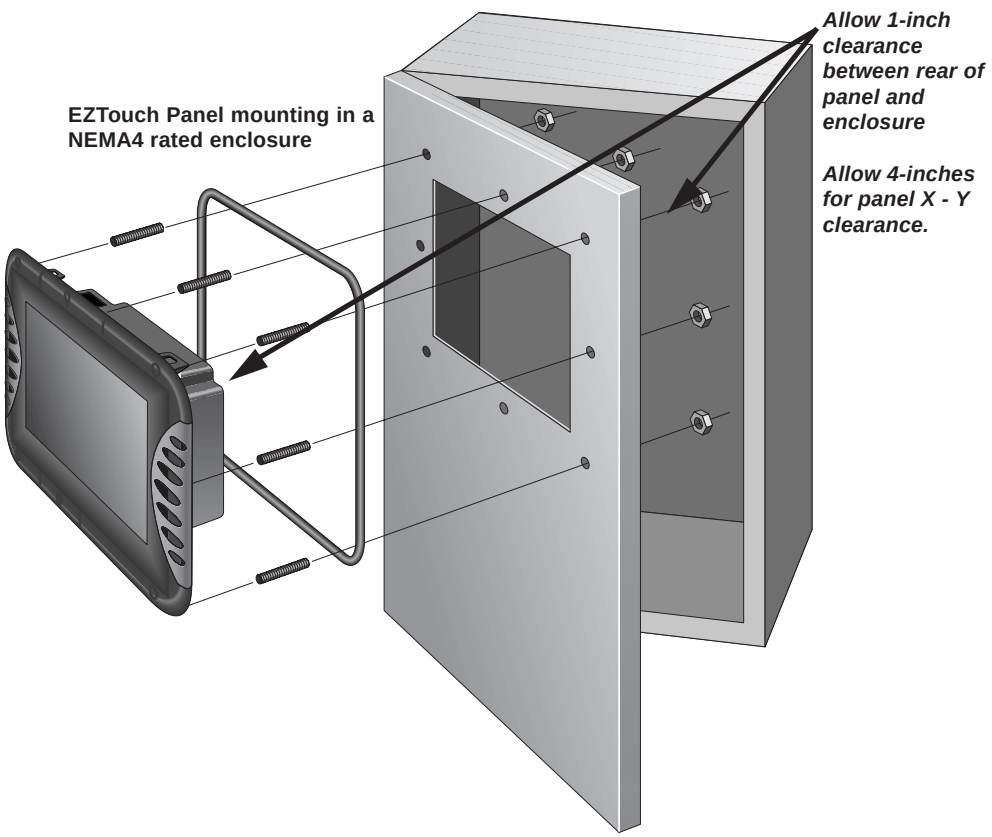
EZTouch is a panel-mount unit. Most 6-inch units (6-inch Slim models are DIN Clip mounted only) can be mounted using one of the following methods: 1. Studs; or 2. DIN Clips. 8-, 10-, and 15-inch units are stud mounted only. The following diagrams show the outline and cutout dimensions necessary to mount the panel using Method 1. Studs. (See pages 27 and 28 for diagrams showing Method 2. DIN Clips.)

METHOD 1. Stud Mounting

CAUTION

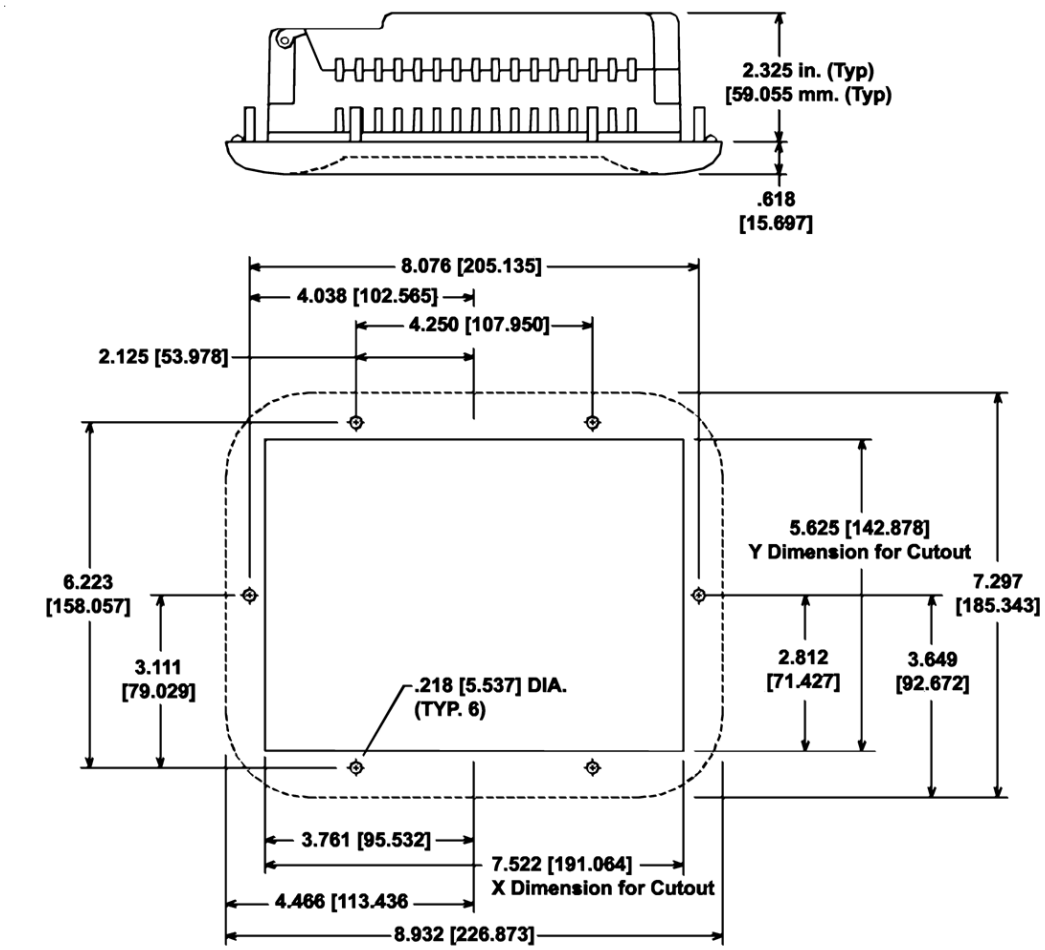
1) DO NOT use any thread locking compounds to secure the studs. Many of these compounds will degrade the plastic housing.

2) Mount on a VERTICAL SURFACE ONLY in order to ensure proper cooling of the panel.



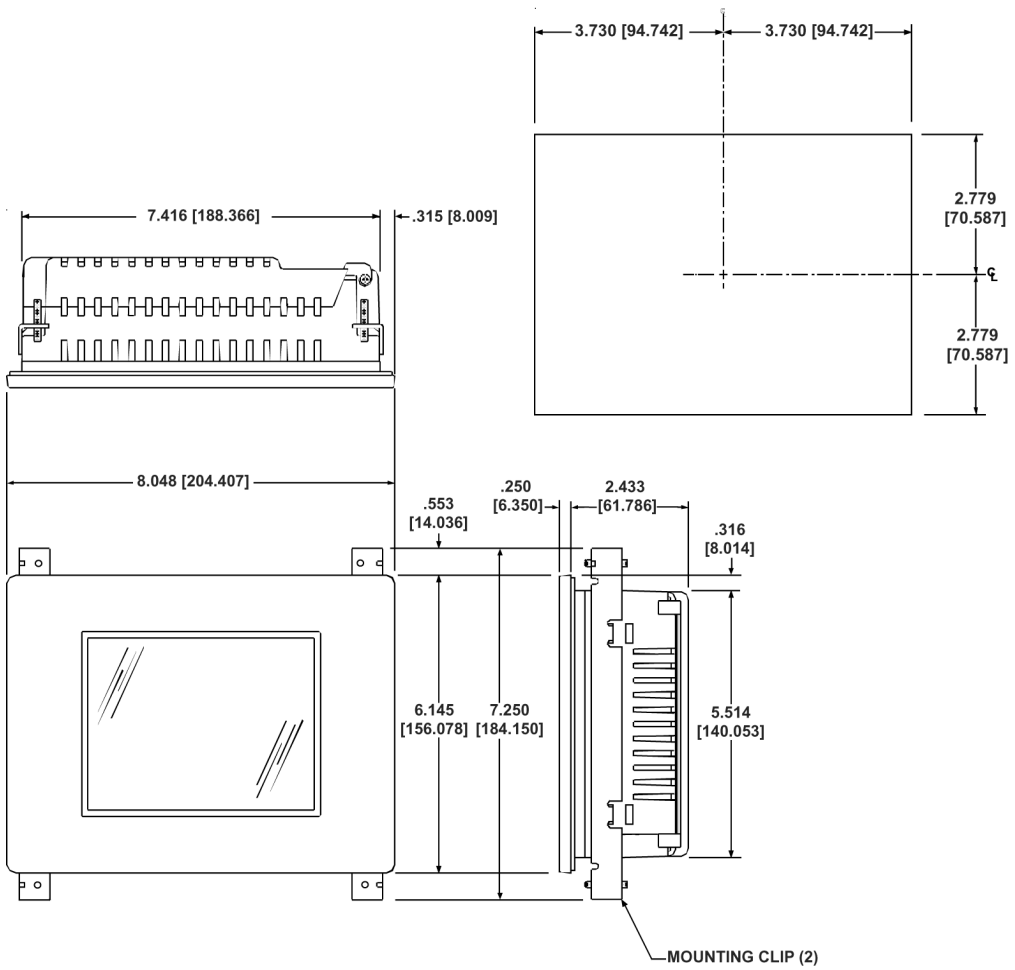
EZ-S6M-R, EZ-S6M-F, EZ-S6M-FH, EZ-S6C-K, EZ-S6C-F, EZ-S6C-FH Outline & Cutout Dimensions

All the necessary mounting hardware is provided with the unit. Use the 6 studs and 6 nuts with captive washers to secure the unit to the mounting surface. Dimensions are provided in inches and millimeters, mm appear in brackets [ ].



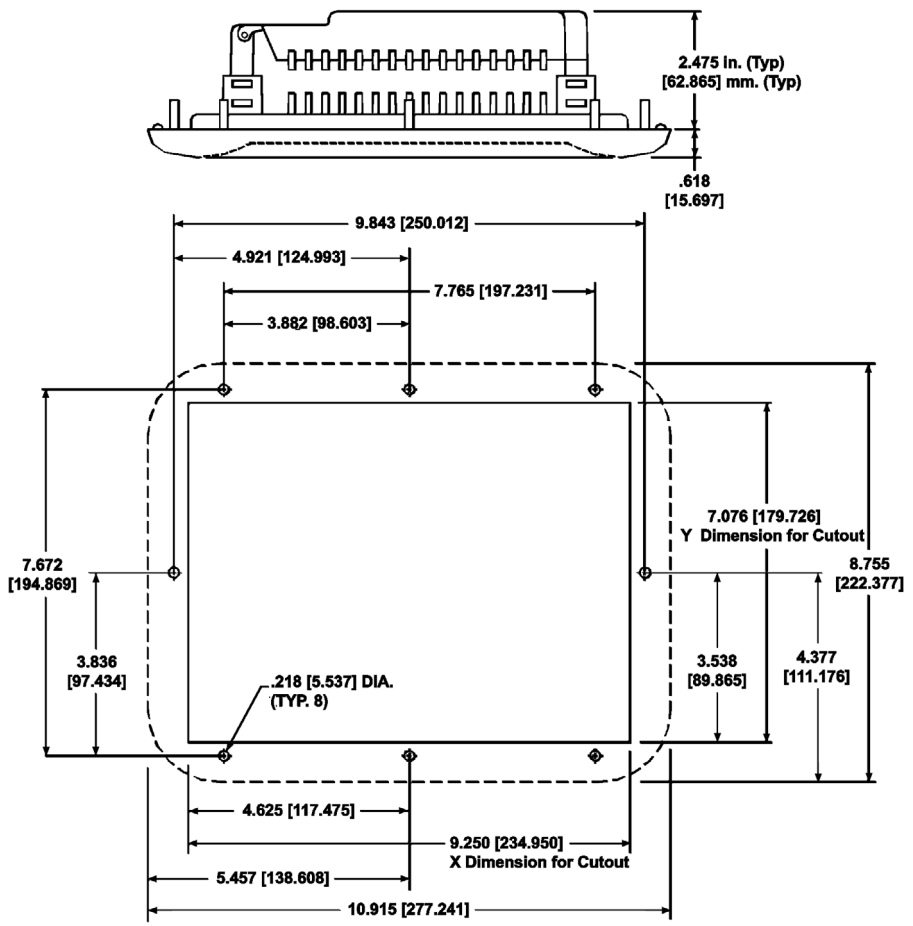
EZ-S6M-RS, EZ-S6M-FS, EZ-S6M-FSH, EZ-S6C-KS, EZ-S6C-FS, EZ-S6C-FSH Outline & Cutout Dimensions

All the necessary mounting hardware is provided with the unit. See page 28 for DIN Clip installation instructions. Dimensions are provided in inches and millimeters, mm appear in brackets [ ].



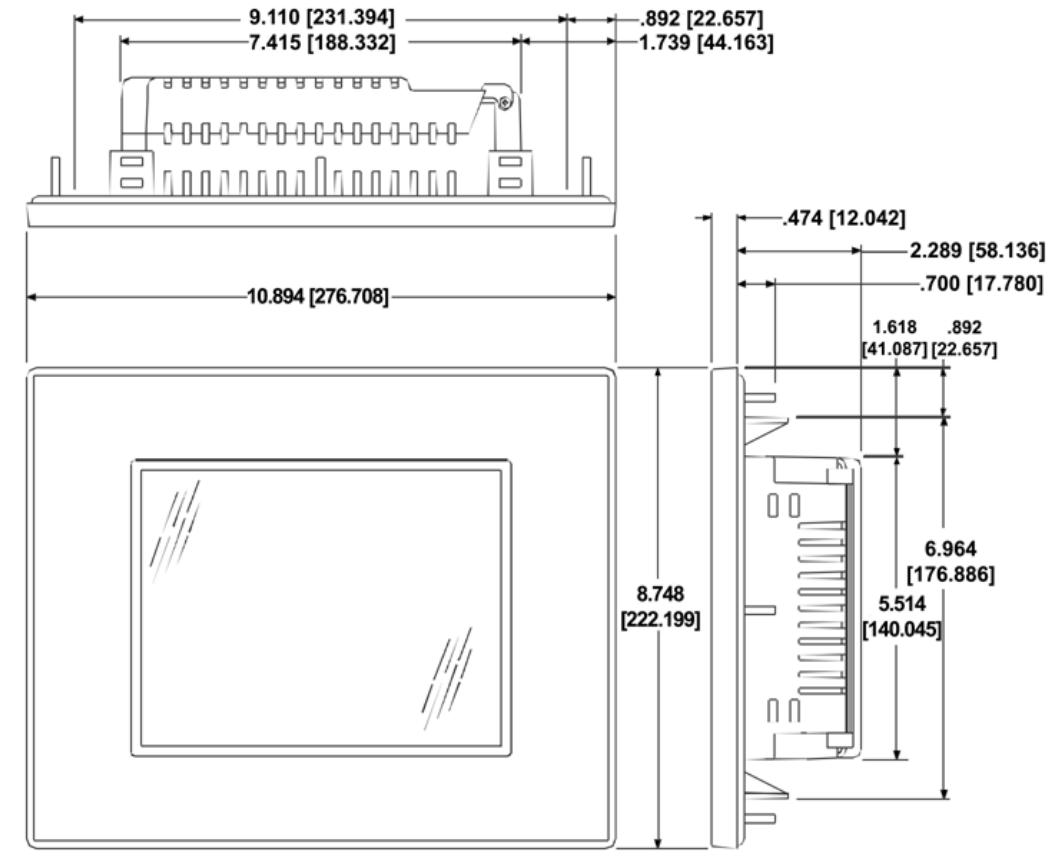
EZ-S8C-F and EZ-S8C-FH Outline & Cutout Dimensions

All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface. Dimensions are provided in inches and millimeters, mm appear in brackets [ ].



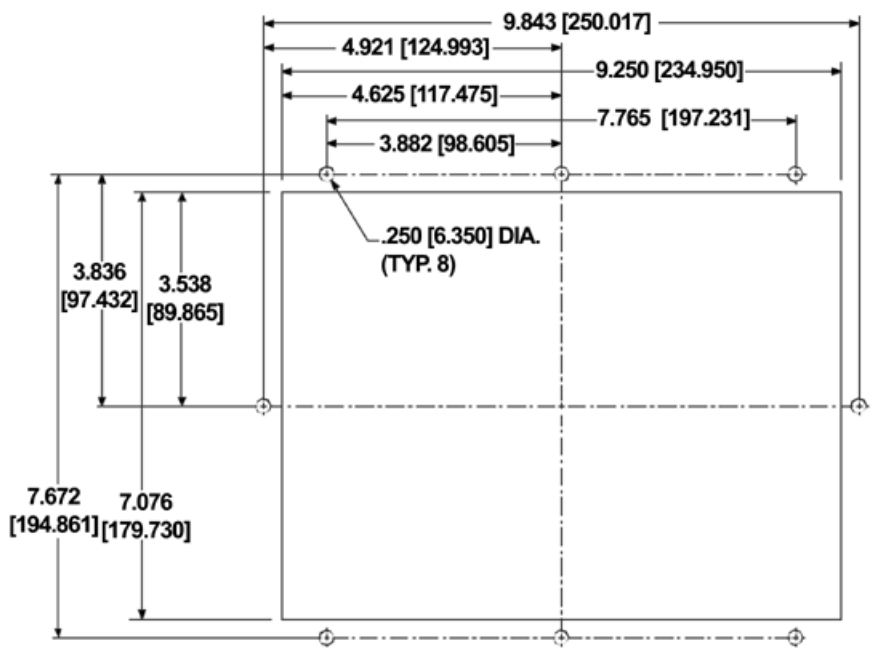
EZ-S8C-FS and EZ-S8C-FSH Outline Dimensions

The 8-inch Slim Bezel Models are Stud Mount only. All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface. Dimensions are provided in inches and millimeters, mm appear in brackets [ ].



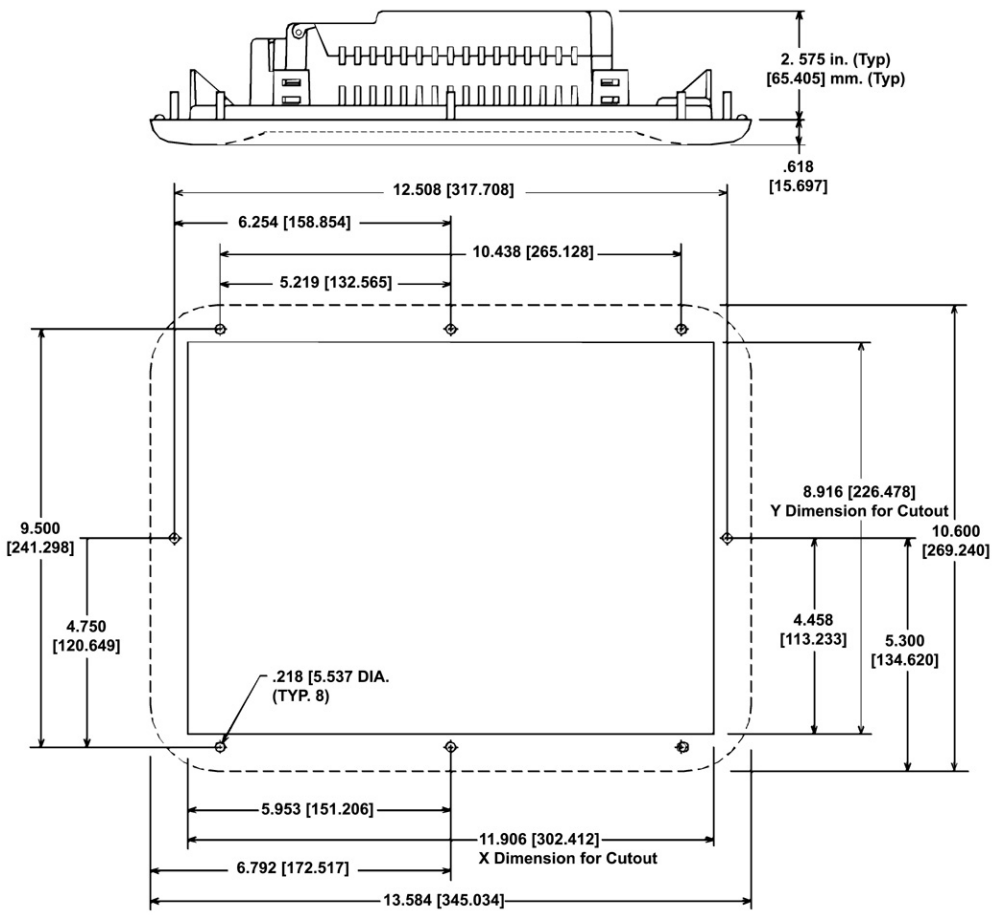
EZ-S8C-FS and EZ-S8C-FSH Cutout Dimensions

The 8-inch Slim Bezel Models are Stud Mount only. All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface. Dimensions are provided in inches and millimeters, mm appear in brackets [ ].



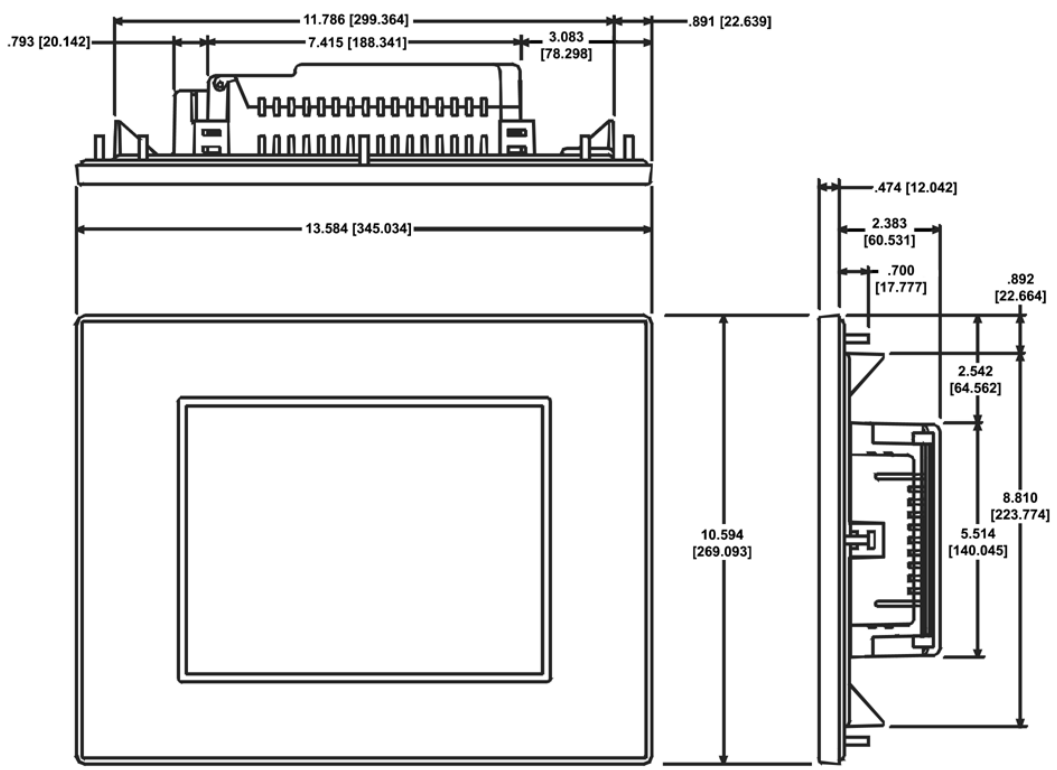
EZ-T10C-F and EZ-T10C-FH Outline & Cutout Dimensions

All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface.



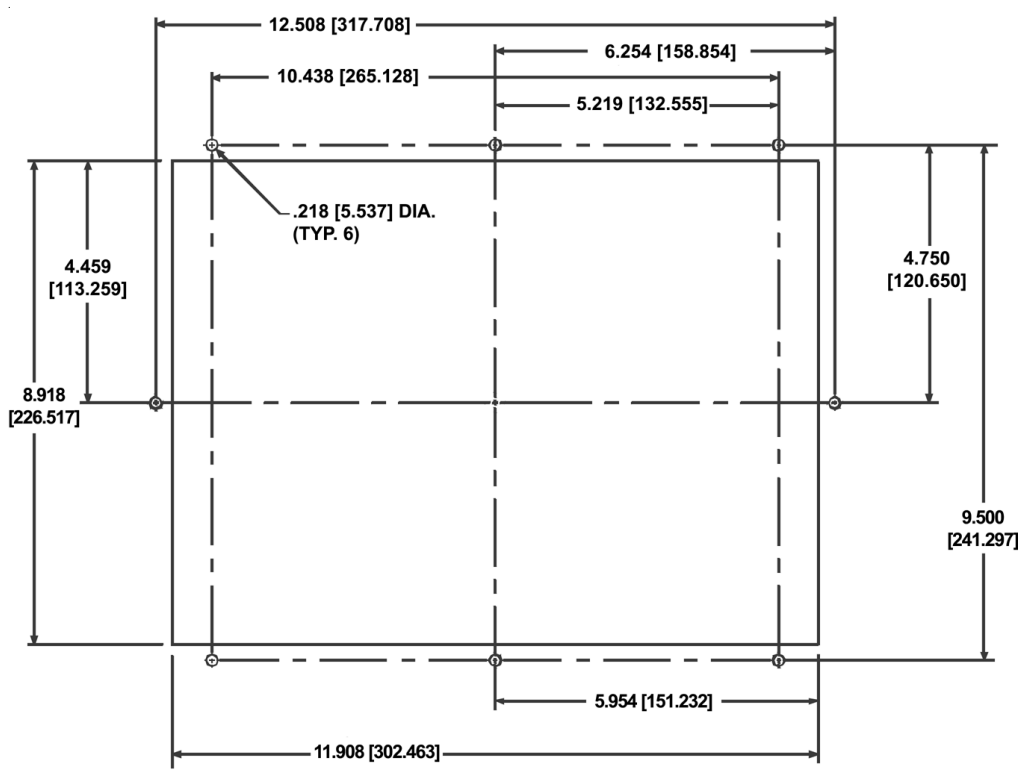
EZ-T10C-FS, EZ-T10C-FSH, EZ-T10C-FSD, EZ-T10C-FSE, EZ-T10C-FSM, and EZ-T10C-FSP Outline Dimensions

The 10-inch Slim Bezel Models are Stud Mount ONLY. All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface.



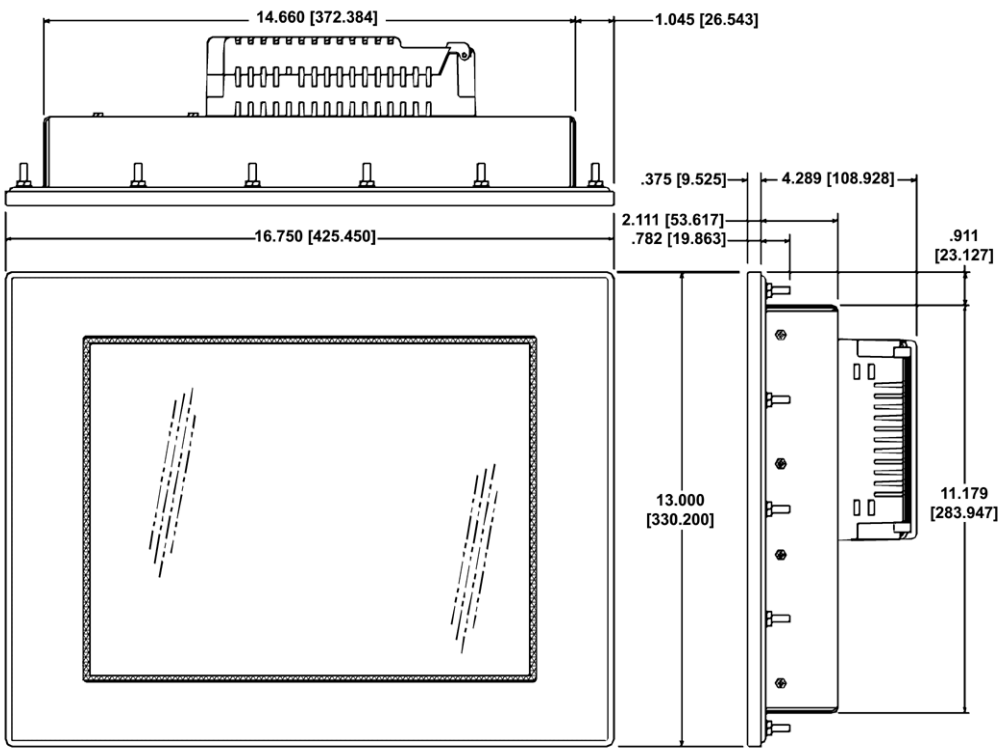
EZ-T10C-FS, EZ-T10C-FSH, EZ-T10C-FSD, EZ-T10C-FSE, EZ-T10C-FSM, and EZ-T10C-FSP Cutout Dimensions

The 10-inch Slim Bezel Models are Stud Mount ONLY. All the necessary mounting hardware is provided with the unit. Use the 8 studs and 8 nuts with captive washers to secure the unit to the mounting surface.



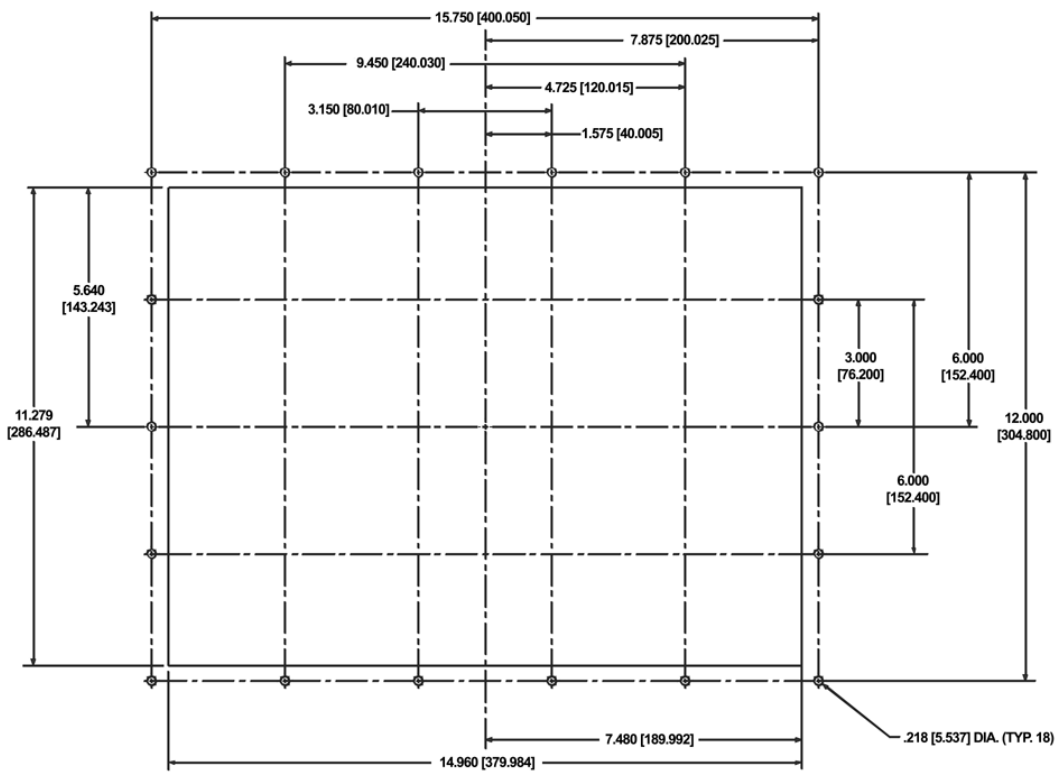
EZ-T15C-FS, EZ-T15C-FSH, EZ-T15C-FSD, EZ-T15C-FSE, EZ-T15C-FSM, and EZ-T15C-FSP Outline Dimensions

The 15-inch Slim Bezel Models are Stud Mount ONLY. All the necessary mounting hardware is provided with the unit. Use the 18 studs and 18 nuts with captive washers to secure the unit to the mounting surface.



EZ-T15C-FS, EZ-T15C-FSH, EZ-T15C-FSD, EZ-T15C-FSE, EZ-T15C-FSM, and EZ-T15C-FSP Cutout Dimensions

The 15-inch Slim Bezel Models are Stud Mount ONLY. All the necessary mounting hardware is provided with the unit. Use the 18 studs and 18 nuts with captive washers to secure the unit to the mounting surface.



METHOD 2. DIN Clips

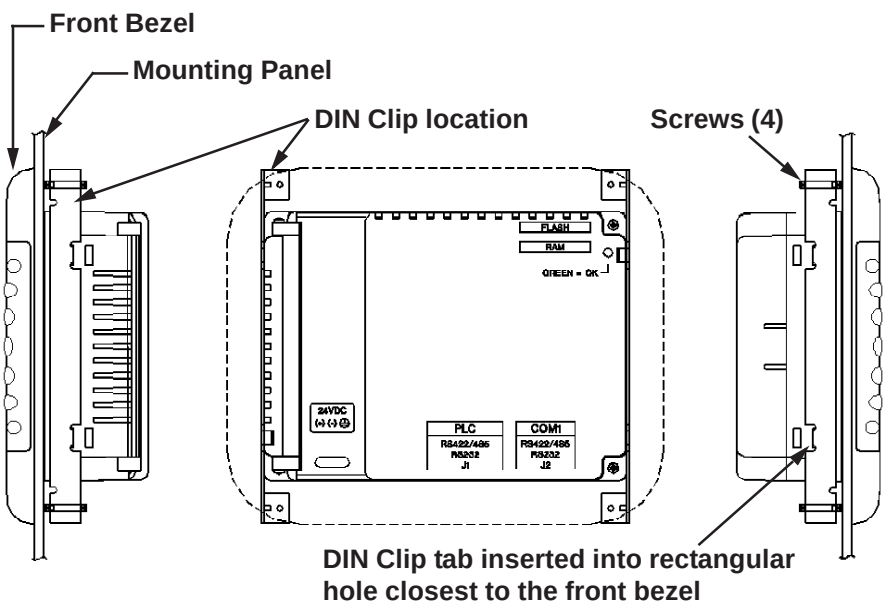
The 6-inch Slim Bezel models must be mounted using DIN Clips. It is optional for the other 6-inch models. DIN Clips are metal brackets (P/N EZ-BRK-1, package of 2 brackets and 4 screws) that attach to the panel and secure the front panel to a mounting surface with 4 screws. Use the diagram and instructions below to mount the EZTouch Panel using DIN Clips.

1. There are 4 rectangular holes in each side (two at the top and two at the bottom) of the chassis as shown in the following figure. Choose the holes that allow the appropriate space for your mounting panel thickness.

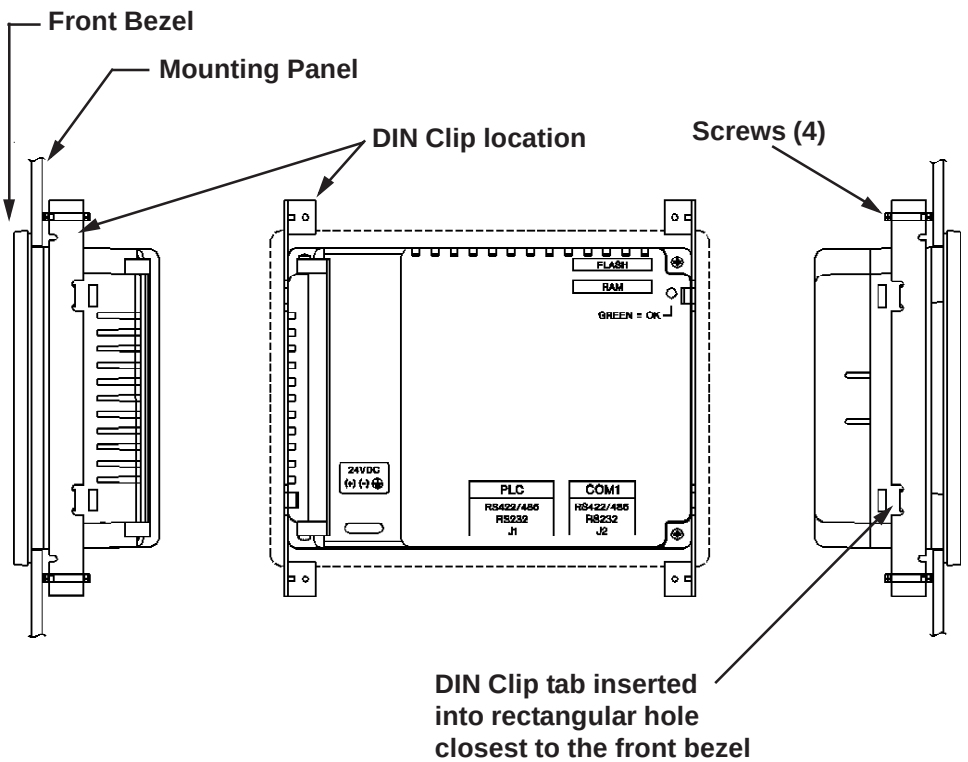
2. On each DIN Clip there are two metal tabs (bent inward) that fit into these holes. Insert the two clip tabs into two holes (top and bottom) and secure the panel by alternately tightening the DIN Clip screws (4) until the back edge of the EZTouch Panel front bezel is flush with the mounting panel.

CAUTION: Tighten DIN Clips to a maximum of 1.5 inch-pounds to provide a proper seal. Automationdirect.com assumes no responsibility for "liquids" damage to the unit or other equipment within the enclosure because of improper installation.

EZ-S6M-R, EZ-S6M-F, EZ-S6M-FH, EZ-S6C-K, EZ-S6C-F, EZ-S6C-FH DIN Clip Slot Location



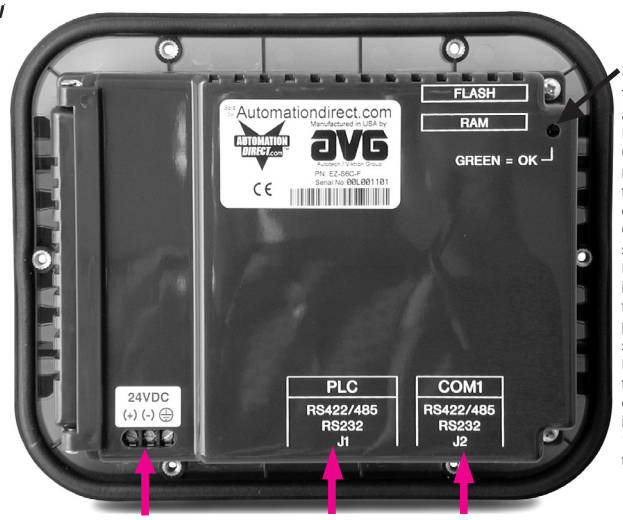
Slim Bezel Models EZ-S6M-RS, EZ-S6M-FS, EZ-S6M-FSH, EZ-S6C-FS, EZ-S6C-KS, EZ-S6C-FSH DIN Clip Slot Location



Connections and Wiring

Wiring Diagram

Back View



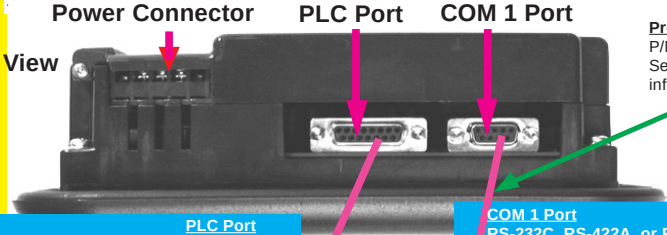
Status LED

The Status LED provides an indication of unit status. It will illuminate as RED or GREEN. If the LED does not light, this indicates that there is NO POWER to unit or the power supply failed. Check or replace power supply. If the LED turns RED and stays RED, it indicates a "unit failure." If this happens, return the panel to the factory for service. If the LED flashes RED and turns GREEN that indicates normal operation. For more information, see the *Troubleshooting* section of this manual.

Power Terminals
Connect (+) on the unit to the (+) lead of your power source; (-) on the unit is connected to the (-) lead, and chassis GND (on the unit) is connected to the chassis ground of the cabinet. See page 30 for more information on power connector.

Power Connector **PLC Port** **COM 1 Port**

Bottom View



Programming PC Cable
P/N EZTOUCH-PGMCBL
See page 31 for more information.

PLC Port
RS-232C, RS-422A or RS-485A Female 15-pin D-Sub Connector. Most PLCs connect to 15-pin D-Sub with cable specific to the PLC type (see table, page 30, for cable part numbers.) Special interface boards with PLC connector are available for PLCs requiring a special connector. For special Option Card Connector information, see pages 32 through 39.

COM 1 Port
RS-232C, RS-422A, or RS-485A Female 9-pin D-Sub Connector for connection to programming computer. When not in use for programming, it may be used for connection to a serial printer. See page 31.

PLC Cable
See page 32 for more information.

Power Terminal

It is recommended you use a regulated power source isolated from relays, valves, etc.

Power Connector (P4, Phoenix 3-pin Header, 0.2 cntr)

Pin #	Connection	
1	+V	24VDC (20–30 VDC)
2	–V	
3	Chassis Ground	

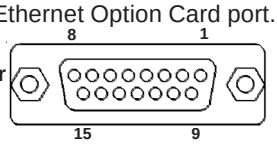
PLC Port

The table, below left, provides the pinout for the panel PLC connector. The table,below right, provides the PLC Cable Part Number that is specific to your PLC. Cable wiring diagrams for each PLC are provided in Appendix A. Special interface boards with PLC connector are available for PLCs requiring a special connector. For EZTouch Panels with A-B DH+ option cards installed, see tables on pages 5 and 6 in Chapter 2. See page 33 for EZEthernet Option Card port.

PLC Cable Part Numbers

Part Number	Cable Description
EZ-2CBL	***Direct*** Logic PLC RJ12 port, DL05, DL105, DL205, DL350 & DL450 (RS-232C)
EZ-2CBL-1	***Direct*** Logic (VGA Style) 15-pin port, DL250 (RS-232C)
EZ-3CBL	***Direct*** Logic PLC RJ11 port, DL340 (RS-232C)
EZ-4CBL-1	***Direct*** Logic PLC 15-Pin Dsub port, DL405 (RS-232C)
EZ-4CBL-2	***Direct*** Logic PLC 25-Pin Dsub port, DL405, DL350, DL305 DCU, and all DCM's (RS-232C)
EZ-90-30-CBL	GE 90/30 and 90/70 15-pin Dsub port (RS-422A)
EZ-SLC-232-CBL	AB SLC 5/03/04/05 DF1 port (RS-232C)
EZPLC5-232-CBL	AB PLC5 DF1 port (RS-232C)
EZ-DH485-CBL	AB SLC DH485 port (RS-485A)
EZ-MLOGIX-CBL	AB MicroLogix 1000, 1200 & 1500 (RS-232C)
EZ-MITSU-CBL	Mitsubishi FX Series 25-pin port (RS-422A)
EZ-MITSU-CBL-1	Mitsubishi FX Series 25-pin MINI-DIN (RS-422A)
EZ-OMRON-CBL	Omron C200, C500 (RS-232C)
EZ-S7MPI-CBL	Siemens 7 MPI Adapter (RS-232C)

PLC Connector Pinout

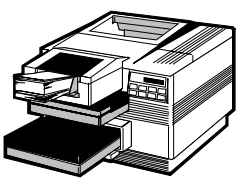


Pin Number	Connection
1	Chassis GND
2	PLC TXD (RS-232C)
3	PLC RXD (RS-232C)
4	+5V (100Ω)
5	Logic GND
6	LE
7	PLC CTS (RS-232C)
8	PLC RTS (RS-232C)
9	RXD+ (RS-422A)
10	RXD- (RS-422A)
11	TXD+ (RS-422A)
12	TXD- (RS-422A)
13	Terminating Resistor (connect to pin 9)
14	NC
15	NC

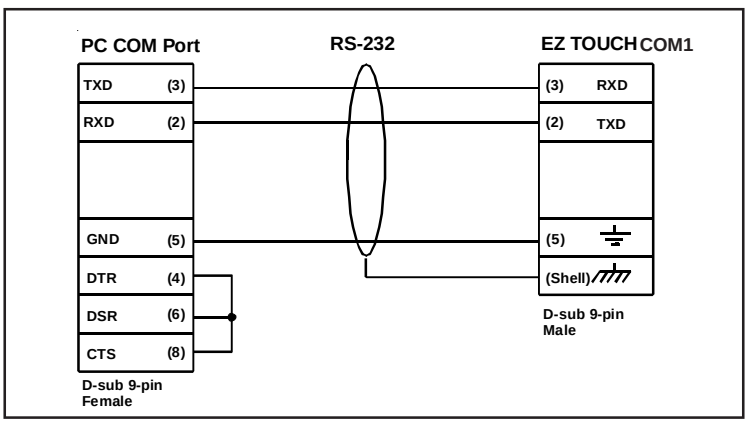
COM1 Port

The COM1 Port is used to connect a programming computer or a printer to the EZTouch Panel. *The panel only needs to be connected to a PC when you are programming the unit.* You will use the EZTouch Panel Programming Software to design the touch panel screens. A wiring diagram for the EZTouch Panel RS-232C Programming Cable is shown below. The table shows EZTouch's pinout for RS-232C and RS-422A connections.

Connect a Programming PC or Printer



RS-232C EZTouch Panel Programming Cable (P/N EZTOUCH-PGMCBL)



COM1 Connector		
Pin #	**RS-232C Connection**	**RS-422A Connection**
1	***DO NOT USE*** *TXD– (RS-422/485)*	TXD– (RS-422/485)
2	TXD (RS-232C)	***DO NOT USE*** *TXD (RS-232C)*
3	RXD (RS-232C)	***DO NOT USE*** *RXD (RS-232C)*
4	***DO NOT USE*** *RXD– (RS-422/485)*	RXD– (RS-422/485)
5	Logic GND	Logic GND
6	***DO NOT USE*** *TXD+ (RS-422/485)*	TXD+ (RS-422/485)
7	***DO NOT USE*** *CTS (NOT USED)*	***DO NOT USE*** *CTS (NOT USED)*
8	***DO NOT USE*** *RTS (NOT USED)*	***DO NOT USE*** *RTS (NOT USED)*
9	***DO NOT USE*** *RXD+ (RS-422/485)*	RXD+ (RS-422/485)

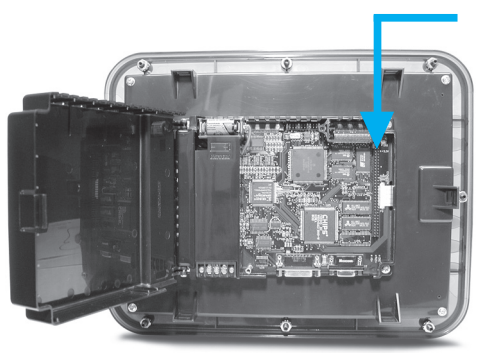
Option Card Installation

The EZTouch Panel Models EZ-S6M-FH, EZ-S6M-FSH, EZ-S6C-FH, EZ-S6C-FSH, EZ-S8C-FH, EZ-S8C-FSH, EZ-T10C-FH, EZ-T10C-FSH, and EZ-T15C-FSH have the Allen-Bradley Data HIghway Plus/Remote I/O Option Card installed. (Allen-Bradley option cards are designated by an “H” at the end of the part number.

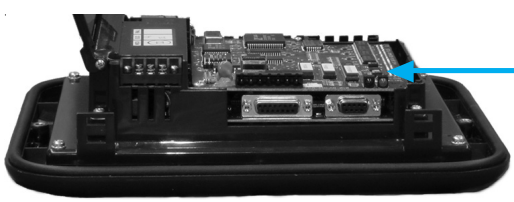
Also, EZ Ethernet Models (P/N EZ-ETHERNET) and EZTouch Panel Models EZ-T10C-FSD, EZ-T10C-FSE, EZ-T10C-FSM, EZ-T10C-FSP, EZ-T15C-FSD, EZ-T15C-FSE, EZ-T15C-FSM, and EZ-T15C-FSP, have an option card installed. Those with a “D” at the end of the part number have a generic DeviceNet I/O card installed, with an “E” have a generic Ethernet I/O card installed, those with a “M” have a Modicon Modbus Plus card installed, and those with a “P” have a generic Profibus-DP option card installed. A connector, unique to each option, is attached to these option boards and is accessible from the bottom of the unit.

The option card has been installed to the backplane connector shown below. (The connector on the bottom right side of the card installs into the backplane connector.) The card is secured with two screws.

A section of the plastic back cover has been removed to allow access to option card connectors that extend over the edge of the board. See the following pages for more information on each board.

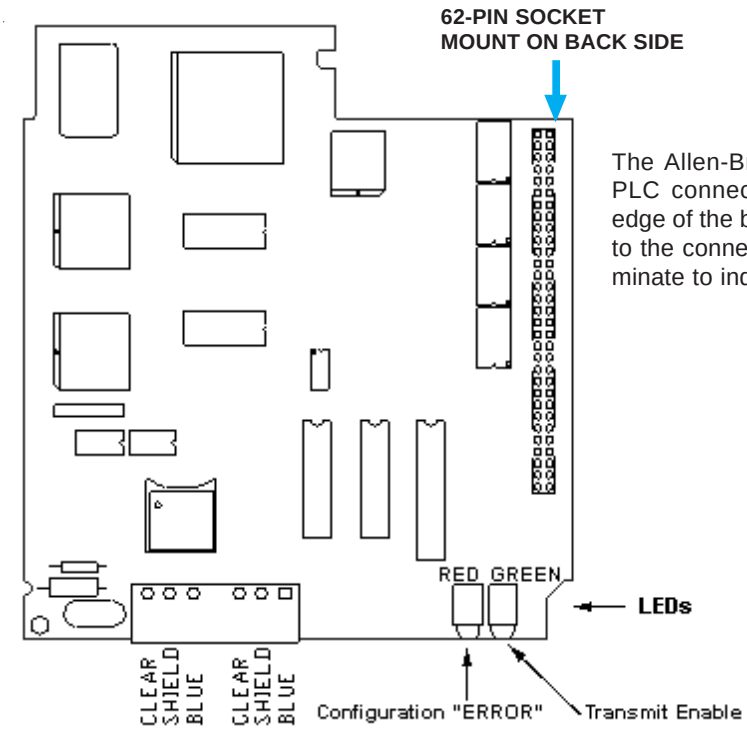


DH+ Option Card is installed into the Backplane connector shown here



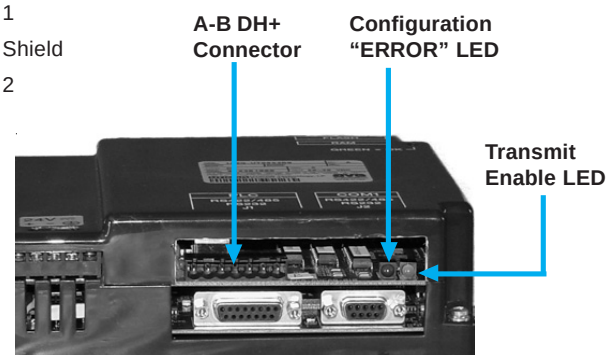
Panel open, showing installed Option Card (Allen-Bradley DH+ is shown)

Allen-Bradley Data Highway Plus Option Card



The Allen-Bradley Data Highway Plus PLC connector that extends over the edge of the board is shown below. Next to the connector are two LEDs that illuminate to indicate status.

EZTouch Panel Remote I/O Option Card	A-B PLC Data Highway Plus Connector
1 Blue	1
Shield	Shield
2 Clear	2

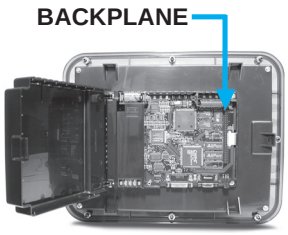


EZ Ethernet Option Card

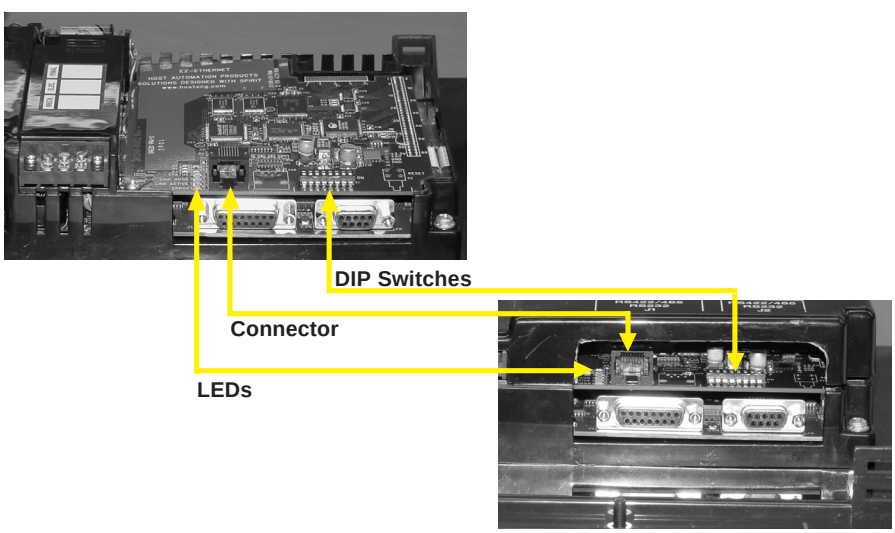
The EZ Ethernet Option Card (P/N EZ-ETHERNET) comes with two different type screws. Remove the screws from the packaging and set aside.

DO NOT FORCE THE CARD CONNECTOR into the backplane — to do so may bend or break the pins and permanently damage the card. First, ensure that the pins are aligned properly, and then press firmly into place.

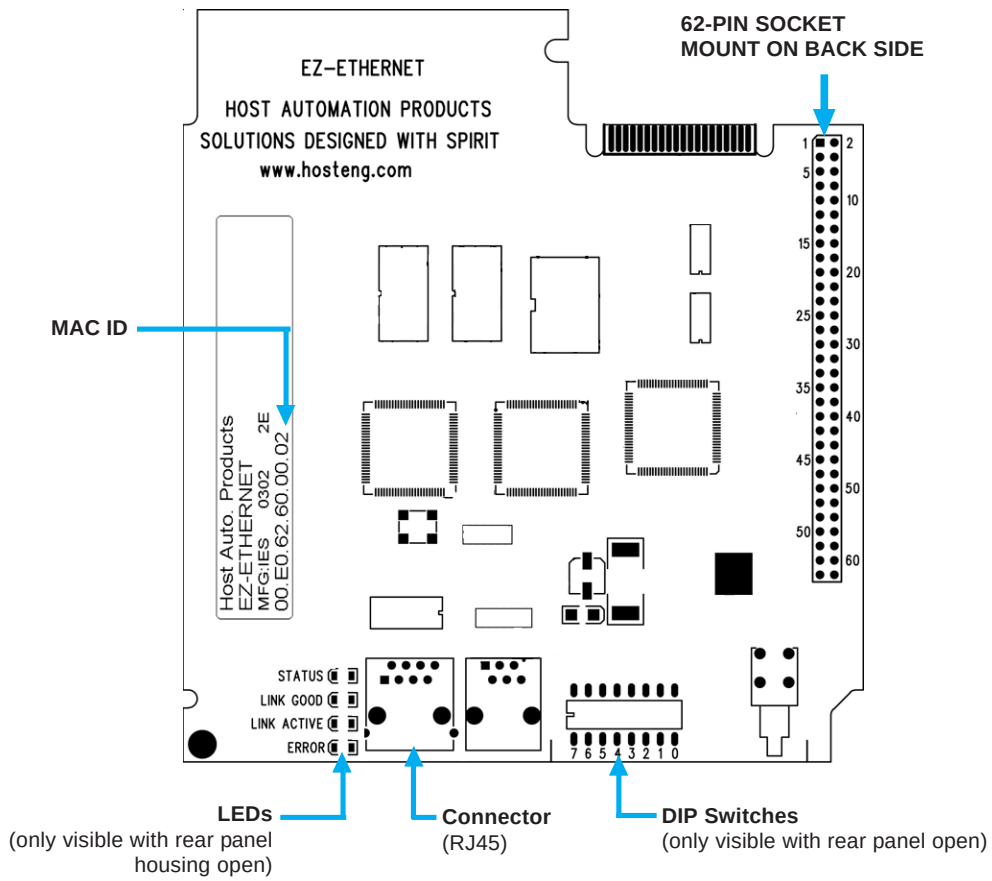
a. Connect EZTouch Panel to a computer and, following instructions in EZTouch Panel Software Help Topics or User Manual, upload the user program from the Panel to the computer. Save the user program to disk.



b. Disconnect panel power source.
c. Open back cover (shown open in figure to the right) to install the card.
d. The connector on the bottom right side of the card installs into the backplane connector.
e. Secure the card into place by installing the two screws.
f. The bottom of the plastic back cover has a section that must be removed to allow access to the EZ Ethernet connector that extends over the edge of the board. To remove this plastic section, look for the perforation and snap it out along the performation with a pair of pliers.
g. Close rear cover and press so that it snaps into place.
h. Reconnect power source, connect to PC, run EZTouch Programming Software and follow instructions to download the user program previously saved to disk.
i. Consult the EZ Ethernet Option Card Manual (P/N EZ-ETHERNET-M) for programming instructions.



EZ Ethernet Option Card Outline Drawing
For more information about the card, connector, LEDs and Switches, see the EZ Ethernet Option Card Manual (P/N EZ-ETHERNET-M)

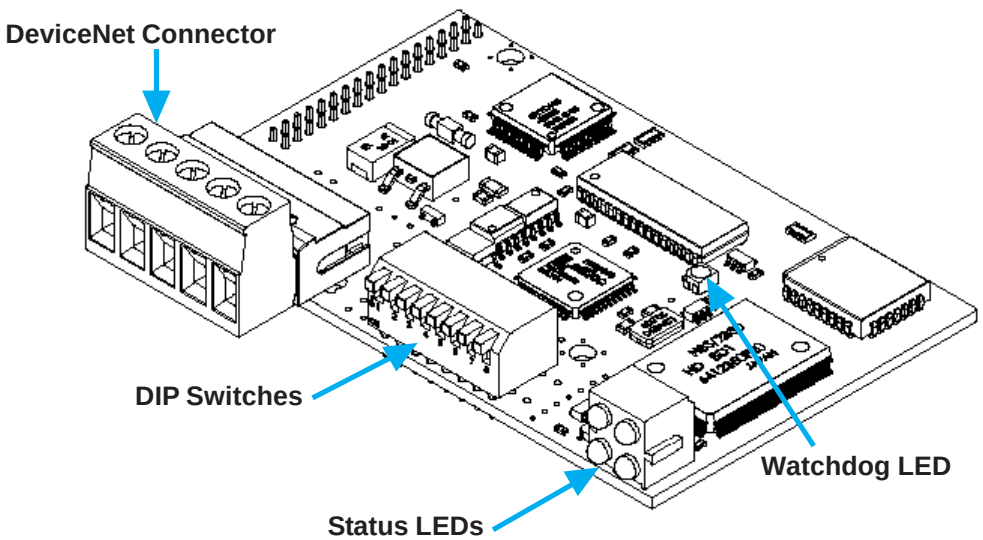


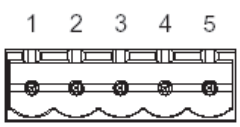
For information about LEDs, DIP Switches, Connections and programming, refer to the EZ Ethernet Option Card Manual, P/N EZ-ETHERNET-M.

Generic DeviceNet I/O Option Card

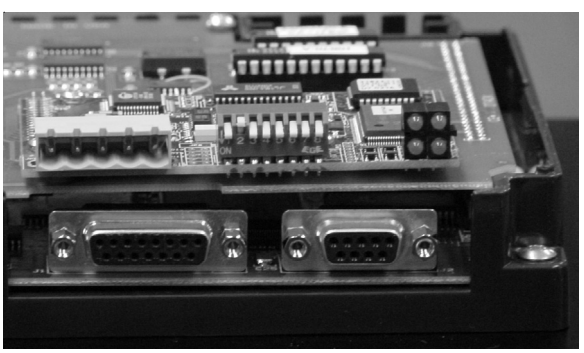
The EZTouch Panel Models EZ-T10C-FSD, and EZ-T15C-FSD have the DeviceNet I/O Option Card installed. A special connector is attached to these option boards and is accessible from the bottom of the unit.

The bottom of the plastic back cover has a section that has been removed to allow access to the DeviceNet connector that extends over the edge of the board. Next to the connector are DIP Switches and then four LEDs that illuminate to indicate status. The Watchdog LED is only visible when you open the back cover.





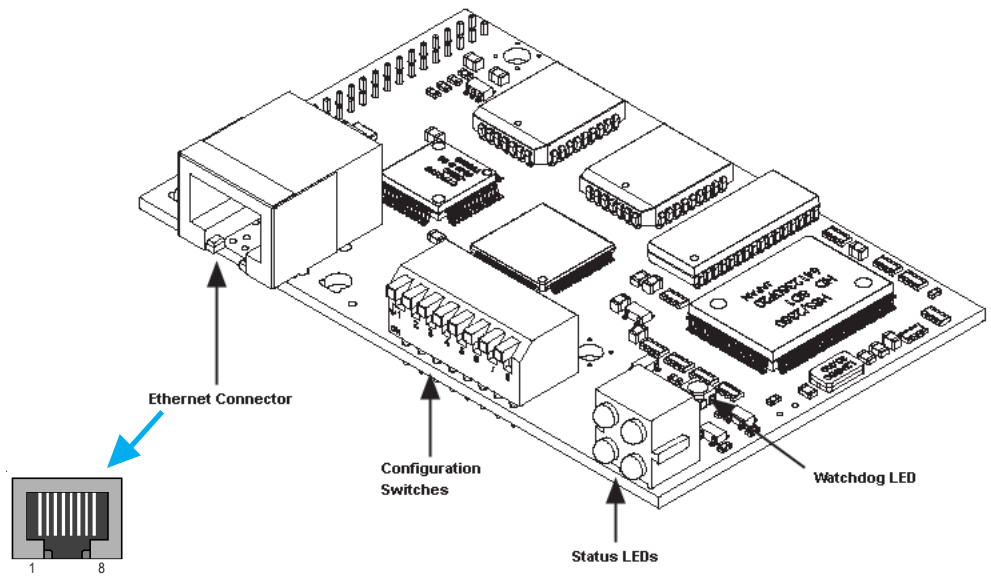
Connector Pin	Signal	Description
1	V-	Negative supply voltage
2	CAN_L	CAN_L bus line
3	SHIELD	Cable shield
4	CAN_H	CAN_H bus line
5	V+	Positive supply voltage



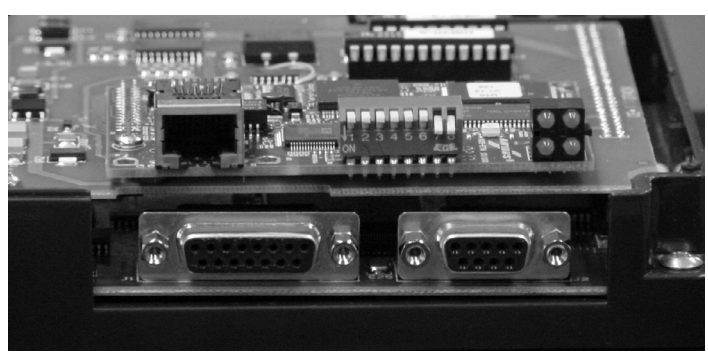
Generic Ethernet/IP Option Card

EZTouch Panel Models EZ-T10C-FSE, and EZ-T15C-FSE have the Ethernet/IP Option Card installed. A special connector is attached to these option boards and is accessible from the bottom of the unit.

The bottom of the plastic back cover has a section that has been removed to allow access to the Ethernet /IPconnector that extends over the edge of the board. Next to the connector are DIP Switches used for configuration, and four LEDs that illuminate to indicate status. The Watchdog LED is only visible when you open the back cover. The module uses twisted-pair cables, and no external termination is required.



RJ45 (Standard)	
Pin	**Signal**
1	TD+
2	TD-
3	RD+
4	Termination
5	Termination
6	RD-
7	Termination
8	Termination

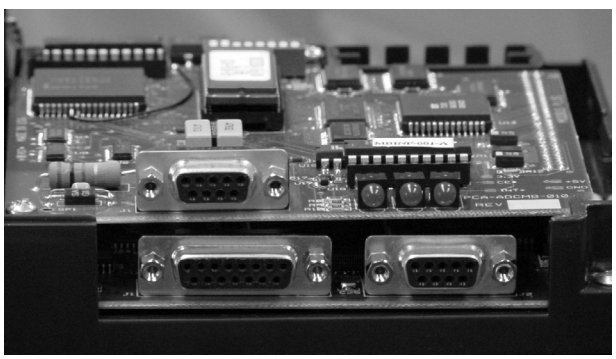


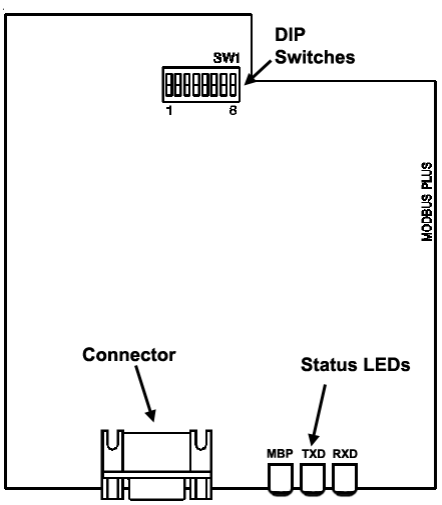
Modicon Modbus Plus Option Card

The EZTouch Panel Models EZ-T10C-FSM, and EZ-T15C-FSM have the Modbus Plus Option Card installed. A special connector is attached to these option boards and is accessible from the bottom of the unit.

The bottom of the plastic back cover has a section that has been removed to allow access to the Modbus connector (9-pin Female D-SUB) that extends over the edge of the board. Two types of connectors are available from Modicon for connecting devices to the network. Each inline drop requires a line connector, Modicon part number AS-MBKT-085. This part number contains one connector. The drops at the two ends of the cable, each require a terminating connector, Modicon part number AS-MBKT-185. This contains two connectors.

The Modbus Plus node address can be set using the first six positions of the DIP switches located at the top of the option board as shown in the diagram below. When the board is seated in the panel, setting the DIP Switch in the UP position is the ON position. There are three Status LEDs on the Modbus Plus option card: MBP, TXD, and RXD. The TXD and RXD LEDs indicate the board is transmitting or receiving data. The MPB LED (leftmost LED) indicates Modbus Plus status.

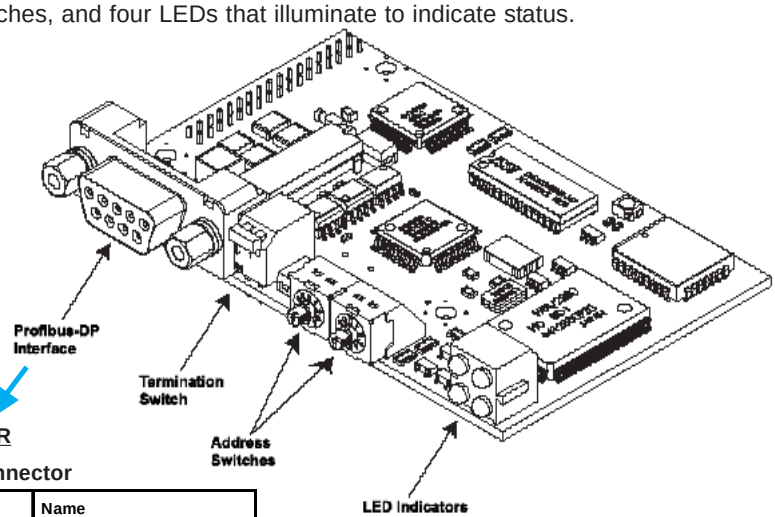




Generic Profibus-DP Option Card

The EZTouch Panel Models EZ-T10C-FSP, and EZ-T15C-FSP have the Profibus-DP Option Card installed. A special connector is attached to these option boards and is accessible from the bottom of the unit.

The bottom of the plastic back cover has a section that has been removed to allow access to the Profibus-DP connector that extends over the edge of the board. Next to the connector are a Termination Switch, Rotary Address Switches, and four LEDs that illuminate to indicate status.

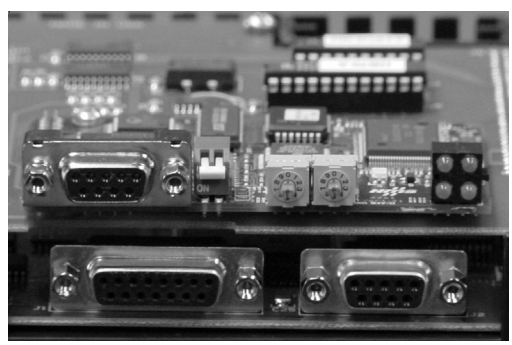


FIELDBUS CONNECTOR

9-pin female D-SUB connector

D-SUB	Screw Terminal	Name
Housing	Shield	Connected to PE
1	Not connected	-
2	Not connected	-
3	B-Line	Positive RxD/TxD according to RS-485 specification
4	RTS	Request to Send*
5	GND BUS	Isolated GND from RS-485 side*
6	+5 V BUS	Isolated +5 V from RS-485 side
7	Not connected	-
8	A-Line	Negative RxD/TxD according to RS-485 specification
9	Not connected	-

* +5V BUS and GND BUS are used for bus termination. Some devices, like optical transceivers (RS-485 to fiber optics) might require external power supply from these points. RTS is used in some equipment to determine the direction of transmission. In normal applications only A-Line, B-Line, and Shield are used.



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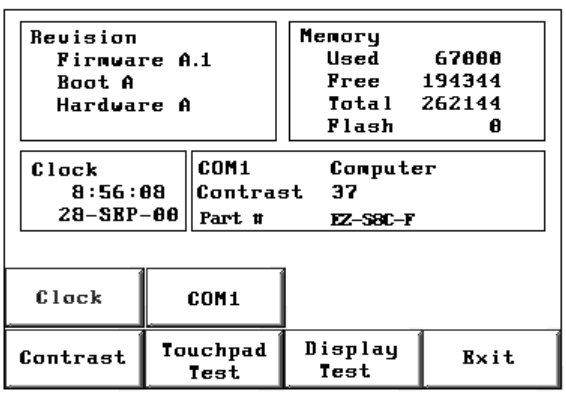
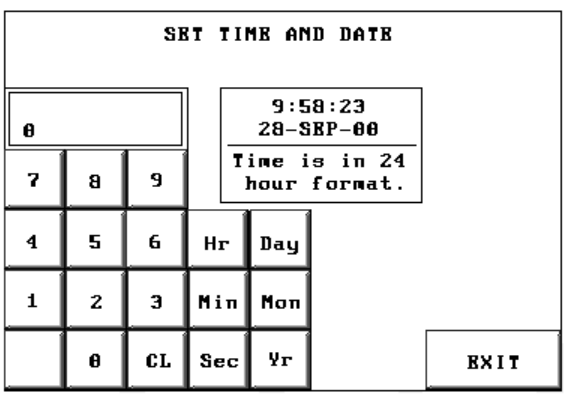
Communications Setup

After the EZTouch Panel is powered up, you may enter the Setup Mode by simultaneously pressing the extreme upper left and lower left touch cells on the panel screen. The following screen is displayed. Information is displayed in the upper left hand corner about the current revision of the Firmware, Hardware, and Boot program. Also shown is RAM memory — Used, Free and Total, and Flash memory. Below that is displayed the time and date, whether the COM1 port is connected to a computer or a printer, and the current Contrast setting. There are six buttons at the bottom of the screen. They are labeled **Clock, COM1, Contrast, Touchpad Test, Display Test and Exit.**



Main Setup Screen

Clock

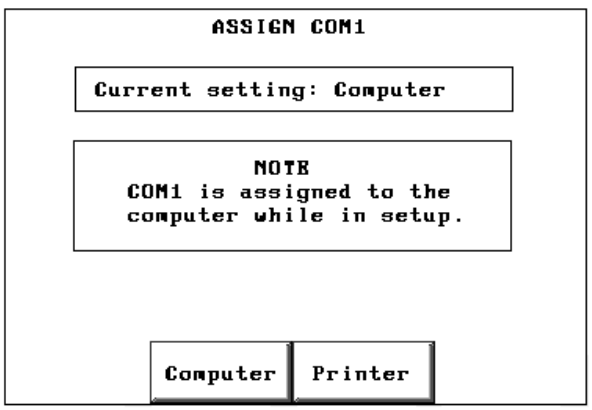


Clock Setup Screen SET TIME AND DATE

When you press the **Clock** button, the screen shown above will appear.

Enter the current time and date. Press the keypad button of the number you want to enter. It will show in the display window. If correct, press **Hr**, **Min, Sec, or Day**, **Mon**, **Yr** corresponding to the time or date position you are setting. If not correct, press **CL** to clear the window. For the month, enter the number of the month and the three letter abbreviation for the month will be displayed (e.g., 7 = July = JUL).

COM1



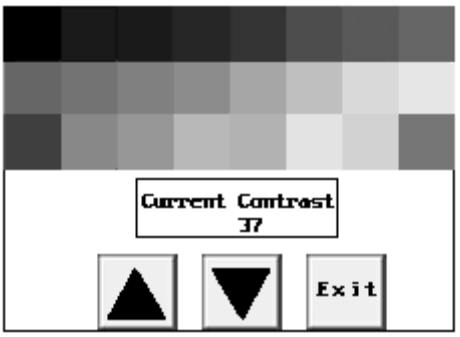
COM1 Port Setup Screen ASSIGN COM1

The COM1 button is used to assign the COM1 port for use with an external device. When you press the COM 1 button, the screen shown above will appear. Press the **Computer** button if the port will be connected to the programming computer. Press the **Printer** button if the port will be connected to a printer.

Please Note: If you are in Setup Mode, it doesn't matter what the COM1 setting is (Printer or Computer), you CAN STILL TRANSFER A PROGRAM from EZTouch Programming Software to the panel. The COM1 setting to Printer is OVERRIDEN while in Setup Mode. When you exit Setup Mode, however, the Printer assignment to COM1 becomes effective—you WILL NOT have a connection established between the computer and the panel and WILL NOT be able to transfer a program. You must return to Setup Mode and REMAIN in Setup Mode while transferring, OR change the COM1 assignment on the ASSIGN COM1 screen, shown above, to Computer, exit Setup Mode, and THEN you can transfer the program to the panel.

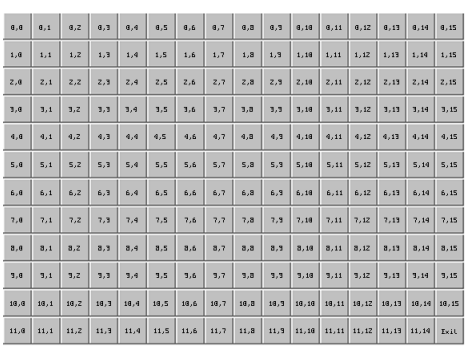
To enter Setup Mode from the user program, press on the extreme upper and extreme lower touch cell on the EZTouch Panel touchscreen. On the first Setup Mode Screen, press the COM1 button. From the ASSIGN COM1 screen (shown above), press Computer. You are automatically taken back to the first setup screen. Press the Exit button to return to the user program.

Contrast



When you press the **Contrast** button, the screen shown above will appear (except that the monochrome units will not have color). From this screen you can adjust the panel screen contrast (except on the 10" TFT Color units). Press **Exit** to return to the previous screen. In the **Current Contrast** window, the current contrast setting is displayed. The 6" Monochrome units will have a contrast range of 87 to 119. The 10" and 15" TFT Color units will not have a contrast adjustment feature. The 8" Color unit will have a contrast range of 21 to 52, and the 6" Color unit's contrast range is 0 to 32. Press the up and down arrow buttons to adjust the screen display contrast. Press **Exit** to return to the setup screen.

Touchpad Test



Model Part Numbers

192 Touch Cells:	48 Touch Cells:
EZ-S6M-FS	EZ-S6M-R
EZ-S6M-FSH	EZ-S6M-F
EZ-S6C-KS	EZ-S6M-FH
EZ-S6C-FS	EZ-S6M-RS
EZ-S6C-FSH	EZ-S6C-K
EZ-S8C-*	EZ-S6C-F
EZ-T10C-*	
EZ-T15C-*	

* (all 8-, 10-, and 15-inch models have 192 Touch Cells)

Shown above is the **Test** screen for the 8" Color screen touch pad. There are 192 touch cells on some of the 6" models (see table, above, right) and on the 8", 10", and 15" panel screens (16 x 12), and 48 (8 x 6) on the other 6" models.

Each touchpad is numbered for reference. Press on each or any square to test that it is active. It will be highlighted after pressing to show that it has been tested. Press the square again to deselect it. Each square should beep when pressed. Press **Exit** in the lower right hand corner to quit.

Display Test

The Display Test button is primarily used for production testing at the factory. Bands of color scroll horizontally and vertically across the screen during this test. It is used to check the pixel quality of the display before shipping the unit.

Exit

Press the Exit button to display the Powerup screen you have selected in your project (selected under Project Attributes.)

Reboot

To reboot the EZTouch Panel from any programmed screen, simultaneously press the extreme upper left and extreme lower left touchpad area on the panel screen.

Shutting Off Power to EZTouch Panel

Removing power from the EZTouch Panel does not normally cause a loss of the user program that is stored in the panel unless the battery voltage is low or the battery has been removed. A low battery can be programmed to a hard-coded system alarm that will display a message on all user-programmed screens.* It is recommended that you back up your user program on multiple PC disks and/or install a flash option card, which will provide a nonvolatile storage of the user program.

The steps to install a Flash option card and to load the user program onto a Flash option card are as follows:

1. Run the EZTouch Programming Software and connect the PC serial port to **COM1** on the panel. Power up the panel.

2. If the user program is not stored on the connected PC, then "Transfer the program from the panel." See the instructions below, *"To save program to computer disk, ..."*

3. Then save the user program to disk by performing the following steps:
   a. Power down panel.
   b. Install Flash option card (see page 50).
   c. Power up panel.
   d. Transfer saved program to the panel.

4. From the Start Screen (**Project Information, Step 1**), under **SELECT ACTION**, click on **Edit Program ON-LINE**. Click **Panel > Flash > RAM to Flash**.

5. The user program will now be stored to both the Flash and RAM memory.

6. Each time the panel is powered with the Flash card installed, the user program will load from the nonvolatile Flash option card to the battery-backed user RAM. ***This is a very useful feature for performing field upgrades or changes to user programs. OEMs can send updated Flash cards to field locations for operators to upgrade their systems without using a PC!***

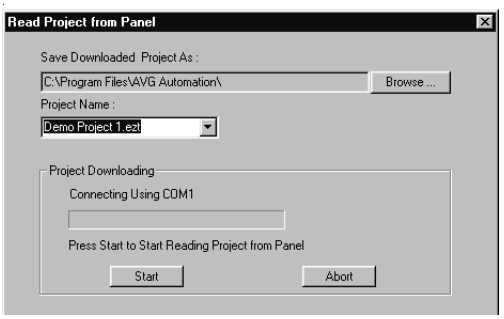
— continued, next page

* A low battery sets a System Attribute that may be programmed to display an alarm. You must program the attribute and alarm for this to happen. See EZTouch Programming Help or Manual, Project Attributes > Panel to PLC > Low Battery.

To save a program to computer disk, perform the following steps:

1. Have programming computer connected to the panel and EZTouch Programming Software running.

2. From the Start Screen (Project Information, Step 1) under **SELECT ACTION**, click on **Read Program from Panel and Edit OFF-LINE**. The screen shown below will appear.

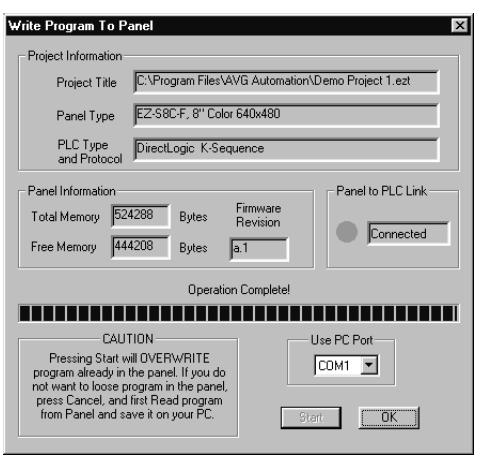


3. Save the project to the computer hard drive or a floppy disk by clicking on the **Browse** Button and navigating to the directory and folder where you want to save the project. Click on the **Start** button.

4. Shut off power and perform maintenance task.

5. Reapply power to panel and with programming software running, click on **Edit Program OFF-LINE** and select the saved project file.

6. Click on **File > Transfer to Panel**. The **Write Program to Panel** screen, shown to the right, will appear. Click on the **Start** button to transfer the program to the EZTouch Panel.

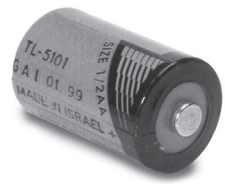


Lithium Battery Replacement

CAUTION

BEFORE REMOVING BATTERY, back up the user program and save in accordance with the instructions on page 45.

Typical battery life is 5 years.



a. Connect EZTouch Panel to a computer and, following instructions on the pages 45 and 46 to **save the user program to disk.**

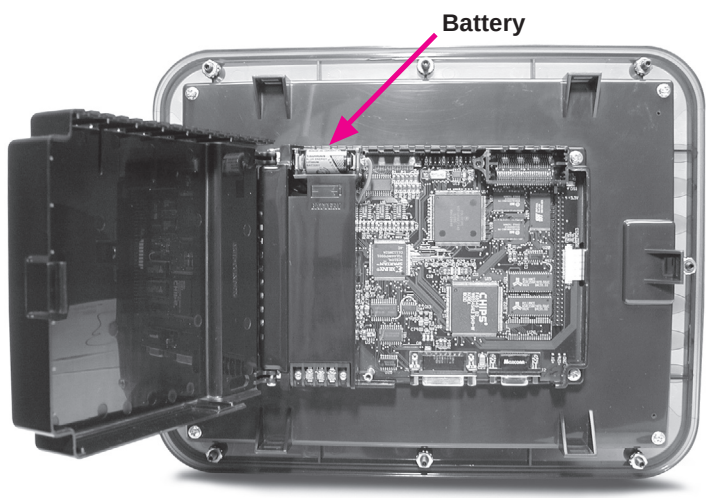
b. Disconnect power source.

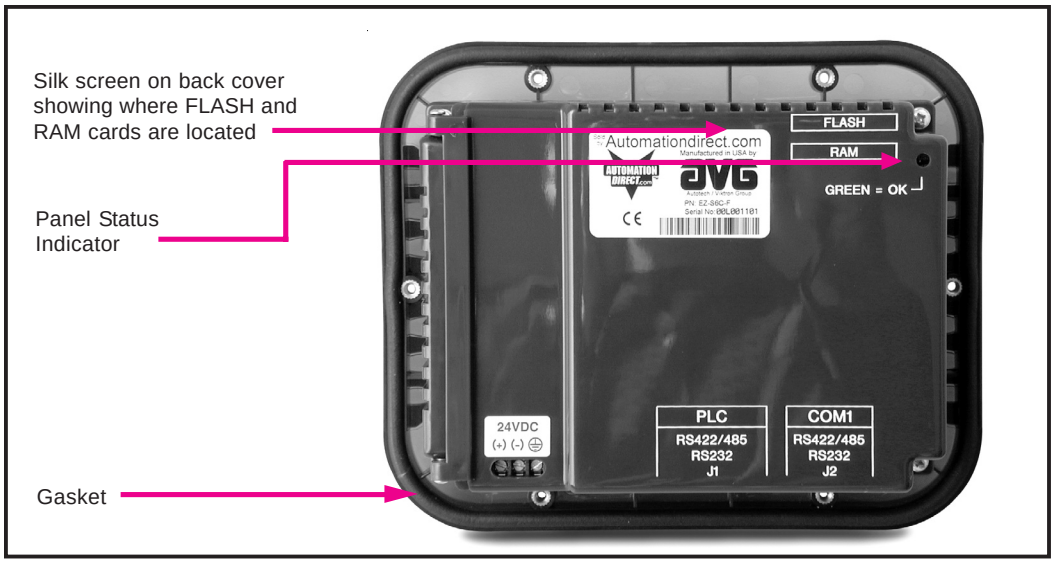
c. Open back cover (shown open in figure below) to access the battery.

d. The battery is located in the upper-left hand corner as shown in the figure below. Remove old battery and replace with a new 1/2 AA, 3.6 V Lithium Battery (Part Number EZ-BAT).

e. Close rear cover and ensure that the door latches.

f. Reconnect power source, connect to PC, run EZTouch Panel Programming Software, and follow instructions to transfer the user program that was previously saved to disk.





Gasket Replacement

The standard gasket may need to be replaced if it becomes damaged or worn. To replace the gasket **(P/N EZ-TOUCH6-GSK, EZ-TOUCH8-GSK, or EZ-TOUCH10-GSK)** perform the following steps:

1. Ensure that all pieces of old gasket have been removed from the gasket slot.
2. Remove the new replacement gasket from its plastic bag and position over the gasket slot.
3. Press the gasket into the slot. Friction between the slot and gasket will hold it into place during installation.

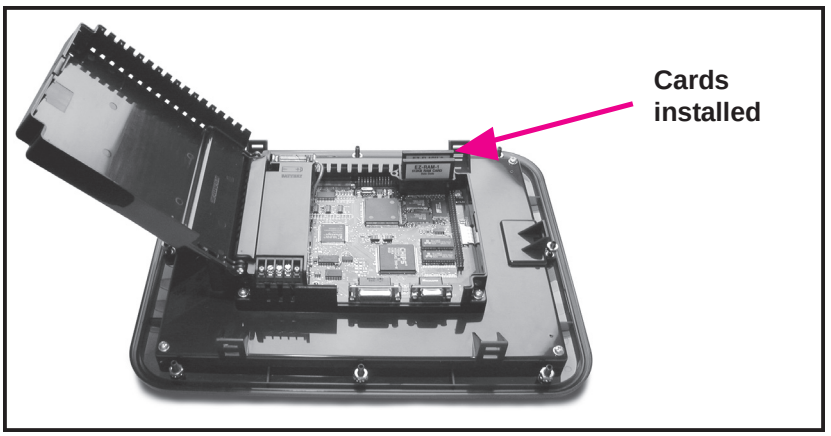
6-, 8-, 10-, and 15- inch Slim Bezel Gasket Replacement (P/N's EZ-6SLIMF-GSK, EZ-8SLIMF-GSK, EZ-10SLIMF-GSK, or EZ-15SLIMF-GSK)
Please note that this gasket is **NOT REUSABLE**. If you remove the panel from its mounting surface for any reason, discard the old gasket and **REPLACE** with a new gasket to remount the panel.

Panel Status Indicator Light

The Status LED provides an indication of unit status. It will illuminate as RED or GREEN. If the LED does not light, this indicates that there is NO POWER to unit or the power supply failed. Check or replace 24 VDC power supply. If ok, send unit back to factory for repair. If the LED turns RED and stays RED, it indicates a "unit failure." If this happens, return the panel to the factory for service. If the LED flashes RED and turns GREEN that indicates normal operation. For more information, see the *Troubleshooting* Chapter of this manual.

CAUTION

DO NOT REMOVE THE RAM OR FLASH CARD WHILE POWER IS APPLIED TO THE PANEL. TO DO SO WILL IRREPARABLY DAMAGE THE CARD. BACK UP YOUR USER PROGRAM AND REMOVE POWER TO THE UNIT BEFORE REMOVING A MEMORY CARD. SEE PROGRAM BACKUP INSTRUCTIONS, PAGE 45.



RAM Upgrade

User RAM memory of all standard units, except the 6" Monochrome Model P/N EZ-S6M-R, can be upgraded. The 6-, 8-, and 10-inch models are 512K standard. If your program requires more than the sandard 512K memory, you can upgrade to 1 MEG of memory from the standard 512K be inserting the optional 512K RAM Card (P/N EZ-RAM-1), or you can upgrade to 1.5 MEG by inserrting the optional 1 MEG RAM Card (P/N EZ-RAM-2). The 15-inch model is 1 MEG standard. You can upgrade to 1.5 MEG by inserting the optional 512K RAM Card, or upgrade to 2 MEG with the optonal 1 MEG RAM Card. To install card, perform the following steps:

Please Note: Your FLASH Program Backup must match or be larger than your RAM memory to ensure all of your program is saved. See next page (48).

1. Back up your user program (see page 45) and **REMOVE POWER TO THE UNIT.**
2. Open back cover to access RAM card slot (upper right hand corner, bottom slot).
3. Simply insert the new card, being careful to seat the card properly into the backplane connector. (Do not force the card, it should connect easily if properly aligned.)
4. Close back cover and reapply power to the panel.
5. Upload saved user program.

1) DO NOT REMOVE THE RAM OR FLASH CARD WHILE POWER IS APPLIED TO THE PANEL. TO DO SO WILL IRREPARABLY DAMAGE THE CARD. BACK UP YOUR USER PROGRAM AND REMOVE POWER TO THE UNIT BEFORE REMOVING A MEMORY CARD. SEE PROGRAM BACKUP INSTRUCTIONS, PAGE 45.

2) USE ONLY AUTOMATIONDIRECT.COM FLASH CARDS IN THE EZTOUCH PANEL. USE OF ANOTHER CARD WILL DAMAGE THE UNIT AND WILL VOID WARRANTY.

FLASH Program Backup

All the EZTouch Panels, except the 6" Monochrome Model P/N EZ-S6M-R, can have Flash Program Backup Cards. This feature allows you to store your user program into nonvolatile memory. The FLASH Card is easily installed in the slot provided in the back of the unit. Depending upon the size of your program, choose from three available memory sizes — 512K (P/N EZ-FLASH-1), 1 MEG (P/N EZ-FLASH-2), and 2 MEG (P/N EZ-FLASH-3). *Note: the user RAM size must match your user Flash size: 512K RAM = 512K Flash, 1 MEG RAM = 1 MEG Flash, 1.5 MEG RAM = 2 MEG Flash (must be larger, use 2 MEG), and 2 MEG RAM = 2 MEG Flash.* With the panel connected to a programming PC and the EZTouch Programming Software running, click on Panel >Flash > RAM to FLASH from the main menu. Once the program is backed up onto the card, you can use it to load the program into different units — no programming computer is necessary. To install either card:

1. Back up your user program and **REMOVE POWER TO THE UNIT.**
2. Open back cover to access FLASH card slot (upper right hand corner, upper slot).
3. Simply insert the new card, being careful to seat the card properly into the backplane connector. (Do not force the card, it should connect easily if properly aligned.)
4. Close back cover and reapply power to the panel.
5. Upload saved user program.
6. In EZTouch Programming Software click on Panel > FLASH > RAM to FLASH.

Fuse Reset

The internal fuse does not require replacement. It is reset by removing power for 5 minutes and then reapplying power to the unit.

Fluorescent Backlight Bulb Replacement

Generally, backlight bulb life far exceeds the manufacturer's expected life. (The manufacturer's expected half-life rates are provided in the table below.)

Using the Screen Saver feature should significantly extend the life of the fluorescent backlight bulb! (Refer to the EZTouch Programming Software Help or Manual. To program the Screen Saver feature, go to EZTouch Programming Software's main menu item **Objects > System Objects > Screen Saver**.)

EZTouch Panel Model	Manufacturer's Expected Bulb Half-Life
6" Monochrome	25,000 hours
6" Color	25,000 hours
8" Color	10,000 hours
10" Color	50,000 hours
15" Color	50,000 hours

Precautions

To ensure the longevity and effectiveness of the EZTouch Panel please take note of the following precautions:

- Do not press sharp objects against the screen.
- Do not strike the panel with hard objects.
- Do not press the screen with excessive force.
- Once the panel is mounted and has power applied, do not place any objects over the ventilation slots. This will result in heat buildup and may damage the unit.

Touchscreen/Chemical Compatibility

Standard Bezel

The **6-, 8-, and 10-inch plastic (standard) bezel models' touchscreen has a polyester surface**. The following list is provided to make you aware of the general compatibility between chemicals that may be present in your work environment and the polyester surface of the touchscreen. Use the chart to determine those chemicals that are safe to use around your EZTouch Panel and those that may harm the touchscreen. The list rates these chemicals as **E—Excellent**, **G—Good**, **F—Fair**, and **N—Not Recommended.** Because the ratings are for ideal conditions at 57°C, consider all factors when evaluating your application.

Chemical	Rating	Chemical	Rating
Acetone	G	Aniline	G
Auto fuel	E	Auto lubricants	E
Auto Hydraulics	E	Bromine (wet)	N
Butyl Cellosolve	E	Butyl Ether	G
Chloroform	G	Clorox	E
Coffee	E	Cupric Sulfate	E
Cyclohexanone	N	Cyclohexanol	E
Downy	E	Diethyl Ether	G
Dioctyl Phthalate	G	Ethyl Acetate	E
Ethanol	E	Ethylene Chloride	G
Fantastic	E	Formula 409	E
Grape Juice	E	Heptane	E
Hexane	E	Hydrogen Peroxide	N
Isopropyl Alcohol	E	Ketchup	E
Lemon Juice	E	MEK	F
Methylene Chloride	N	Mineral Acids (dilute)	E
Mineral Acids (strong)	G	Mr. Clean	E
Mustard	G	Naphtha	G
Phenol	N	Sodium Hydroxide (dilute)	G
Sodium Hydroxide (strong)	F	Sodium Hypochlorite	E
Spray 'N Wash	E	Tea	E
Toluene	E	Tomato Juice	E
Top Job	E	Trichloroacetic acid	F
Triethanolamine	G	Vinegar	E
Wisk	F	Xylene	E
Zinc Chloride	E		

Slim Bezel

The **6-, 8-, 10-, and 15-inch slim bezel models' touchscreen has a polycarbonate surface.** The following list is provided to make you aware of the general compatibility between chemicals that may be present in your work environment and the polyester surface of the touchscreen. Use the chart to determine those chemicals that are safe to use around your EZTouch Panel and those that may harm the touchscreen. The list rates these chemicals as **E—Excellent**, **G—Good**, **F—Fair**, and **N—Not Recommended.** Because the ratings are for ideal conditions at 57°C, consider all factors when evaluating your application.

Chemical	Rating	Chemical	Rating
Acetaldehyde	N	Acetamide	N
Acetic Acid @ 5%	G	Acetic Acid @ 50%	G
Acetone	N	Acetonitrile	N
Acrylonitrile	N	Adipic Acid	E
Alanine	N	Allyl Alcohol	F
Alum. Hydroxide	N	Aluminum Salts	G
Amino Acids	E	Ammonia	N
Ammonium Acetate	E	Ammonium Gloclate	F
Ammonium Hydroxide @ 5%	N	Ammonium Hydroxide @ 30%	N
Ammonium Oxalate	E	Ammonium Salts	G
n-Amyl Acetate	N	Amyl Chloride	N
Aniline	N	Benzaldehyde	N
Benzene	N	Benzoic Acid	G
Benzyl Acetate	G	Benzyl Alcohol	G
Bromine	F	Bromobenzene	N
Bromoform	N	Butadiene	N
n-Butyl Acetate	N	n-Butyl Alcohol	F
sec-Butyl Alcohol	F	tert-Butyl Alcohol	F
Butyric Acid	N	Calcium Hydroxide	N
Calcium Hypochlorite	N	Formaldehyde @ 40%	G
Formic Acid @ 3%	G	Formic Acid @ 50%	G
Formic Acid @ 99%	F	Fuel Oil	G
Gasoline	F	Glacial Acetic Acid	N
Glycerin	E	n-Heptane	G
Hexane	N	Hydrochloric Acid @ 5%	E
Hydrochloric Acid @ 20%	F	Hydrochloric Acid @ 35%	N
Hydrofluoric Acid @ 5%	F	Hydrofluoric Acid @ 48%	N
Hydrogen Peroxide @ 5%	E	Hydrogen Peroxide @ 30%	E
Hydrogen Peroxide @ 90%	E	Isobutyl Alcohol	G
Isopropyl Acetate	N	Isopropyl Alcohol	E
Isopropyl Benzene	N	Kerosene	E
Lactic Acid @ 3%	G	Lactic Acid @ 85%	G
Methoxyethyl Oleate	N	Methyl Alcohol	F
Methyl Ethyl Ketone	N	Methyl Isobutyl Ketone	N
Methyl Propyl Ketone	N	Methylene Chloride	N
Mineral Oil	G	Nitric Acid @ 10%	G
Nitric Acid @ 50%	F	Nitric Acid @ 70%	N
Nitrobenzene	N	n-Octane	F
Orange Oil	F	Ozone	G
Carbazole	N	Carbon Disulfide	N
Carbon Tetrachloride	N	Cedarwood Oil	F
Cellosolve Acetate	N	Chlorine @ 10% in air	G
Chlorine @ 10% moist	F	Chloroacetic Acid	N
p-Chloroacetophenone	N	Chloroform	N
Chromic Acid @ 10%	N	Chromic Acid @ 50%	N
Cinnamon Oil	F	Citric Acid @ 10%	G
Cresol	N	Cyclohexane	G
Decalin	N	o-Dichlorobenzene	N
p-Dichlorobenzene	N	Diethyl Benzene	N
Diethyl ether	N	Diethyl Ketone	N

Chemical	Rating	Chemical	Rating
Diethyl Malonate	N	Diethylene Glycol	F
Diethylene Glycol Ethyl Ether	N	Dimethylformamide	N
Dimethyl Sulfoxide	N	1, 4-Dioxane	F
Dipropylene Glycol	F	Ether	N
Ethyl Acetate	N	Ethyl Alcohol	G
Ethyl Alcohol @ 40%	G	Ethyl Benzene	N
Ethyl Benzoate	N	Ethyl Butyrate	N
Ethyl Chloride Liquid	N	Ethyl Cyanoacetate	N
Ethyl Lactate	N	Ethylene Chloride	N
Ethylene Glycol	F	Ethylene Glycol Methyl Ether	N
Ethylene Oxide	N	Fluorides	E
Fluorine	F	Formaldehyde	G
Perchloric Acid	N	Perchloroethylene	N
Phenol Crystals	N	Phosphoric Acid @ 5%	E
Phosphoric Acid @ 85%	G	Pine Oil	E
Potassium Hydroxide @ 1%	N	Potassium Hydroxide conc.	N
Propane Gas	N	Propylene Glycol	F
Propylene Oxide	F	Resorcinol sat.	F
Resorcinol @ 5%	F	Salicylaldehyde	F
Salicylic Acid Powder	G	Salicylic Acid sat.	G
Salt Solutions Metallic	E	Silver Acetate	G
Silver Nitrate	E	Sodium Acetate sat.	G
Sodium Hydroxide @ 1%	N	Sodium Hydroxide @ 50%+	N
Sodium Hypochlorite @ 15%	F	Stearic Acid Crystals	G
Sulfuric Acid @ 6%	E	Sulfuric Acid @ 20%	G
Sulfuric Acid @ 60%	F	Sulfuric Acid @ 98%	N
Sulfur Dioxide Liquid	G	Sulfur Dioxide dry	G
Sulfur Salts	N	Tartaric Acid	G
Tetrahydrofuran	N	Thionyl Chloride	N
Toluene	N	Tributyl Citrate	N
Trichloroethane	N	Trichloroethylene	N
Triethylene Glycol	G	Tripropylene Glycol	G
Turpentine	N	Undecyl Alcohol	F
Urea	N	Vinylidene Chloride	N
Xylene	N	Zinc Stearate	E

Touchscreen Cleaning

The EZTouch Panel touchscreen has a scratch resistant coating. This adds a slight chemical barrier to the screen, but the coating's primary purpose is to protect the screen from abrasion. The EZTouch Panel touchscreen should be cleaned as needed with warm, soapy water.

Troubleshooting

Problem: Panel won't power up

Action:

1. Connect power to the EZTouch Panel (24 VDC).
2. Apply power while observing the LED in the back of the panel.
   a. LED does not light means: NO POWER to unit or power supply failed. Check power supply or replace.
   b. LED turns RED and stays RED means: Unit failure, return for service.
   c. LED flashes RED and turns GREEN means: normal operation.
      (1) the display does not light after 10 seconds, see Display Blank, below.
      (2) the display lights, normal operation.

See "Connections and Wiring," this manual, for more information.

Problem: Cannot communicate with EZTouch panel from Programming Computer

Action:

1. Check cable, ensure that it is the correct cable and that it is properly connected at both ends.
2. Check panel for power.
3. Check to ensure the correct PC COM port is selected in the EZTouch Programming Software and that it is available in the PC.
4. Check the COM1 setting in Setup Mode on the panel (see page 42, this manual).

See "Connections and Wiring," this manual, for more information.

Problem: Communications with PLC

Action:

1. Check communications cable:
   a. Is it the right cable?
   b. Is it connected?
   c. Is the cable terminated properly?
2. Check PLC settings:
   a. Is PLC system powered?
   b. Is PLC COM Port properly configured?
   c. If there is a RUN switch on PLC, is it in the term/remote mode?

See "Connections and Wiring," this manual, for more information.

Problem: Memory Card
Action:

1. Make sure that the Flash Card is in top slot, and the RAM Card is in the bottom slot.

See "Connections and Wiring," this manual, for more information.

Problem: Display Blank
Action:

1. Display indicates NO SCREEN for 3 seconds after powerup. There is no user program installed into the panel.
2. Display is blank. Push extreme upper left and extreme lower left touch cells on front of panel (top and bottom of column 1 on panel.)
   a. There is no change, display remains blank. Indicates UNIT FAILURE, return for service.
   b. Unit SETUP screen appears, screen is hard to read. Adjust screen contrast control for 6- or 8-inch units (10-inch and 15-inch units have no contrast adjustment).
   c. Unit SETUP screen appears normal. Unit has no user program — install user program.

See "Connections and Wiring," this manual, for more information.

Problem: Display hangs when unit is powered up, "Initializing..." message remains on screen (unit has invalid RAM memory)
Action:

1. Remove power. While pressing extreme upper and lower left touch cells on the panel, reapply power.
2. You will now be in setup mode, press exit to enter run mode. Screen will be blank.
3. Run EZTouch Programming Software. Select Panel > Clear Memory from main menu bar, or upload a new user program to the panel.

Still need Help?

You have two additional sources for more information other than this manual.

Visit our website at www.automationdirect.com
Our web site contains all of this information, any new feature releases, technical support, plus much more ...

Call our **Technical Support Group** at 1-770-844-4200 or FAX us at 1-770-886-3199

If you have any questions that you can't find an answer to, give us a call from Monday through Friday, 9 a.m. to 6 p.m. EST at the number above and we will be glad to assist you.

Warranty Repairs

If your EZTouch Panel is under warranty, **contact Automationdirect.com @ 1-770-844-4200.**

Out of Warranty Repairs

If your EZTouch Panel is out of warranty, **contact AVG's Service Department for an evaluation of repair costs @ 1-563-359-7501**. You can then decide whether it is more economical to proceed with factory repairs or purchase a new panel.

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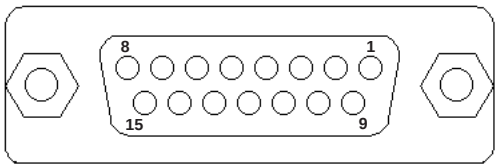
In this Appendix....

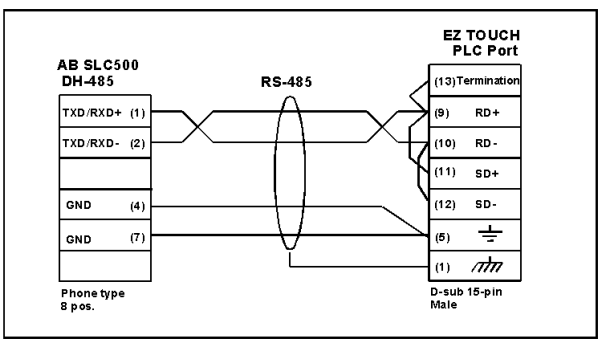
The following diagrams depict the wiring pinouts for the EZTouch Panel to PLC Cables.

EZTouch Panel Female PLC Port (located on bottom of unit)

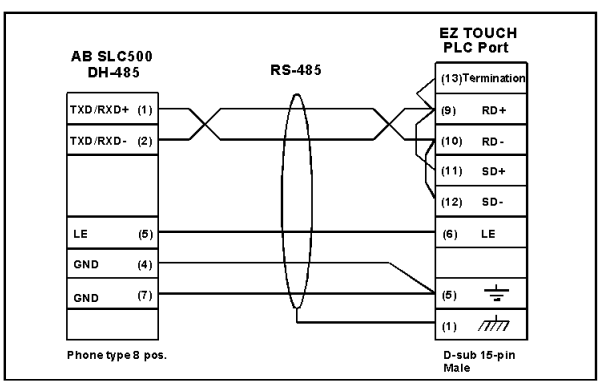


Allen-Bradley SLC500, 5/01, /02, /03 DH-485/AIC, RS-485A (P/N EZ-DH485-CBL)

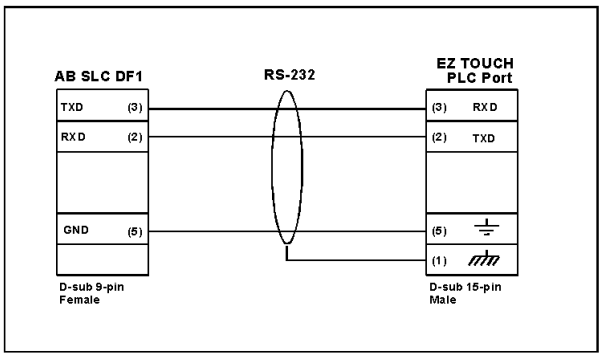
Allen-Bradley SLC500 DH-485/AIC (Point-to-Point)



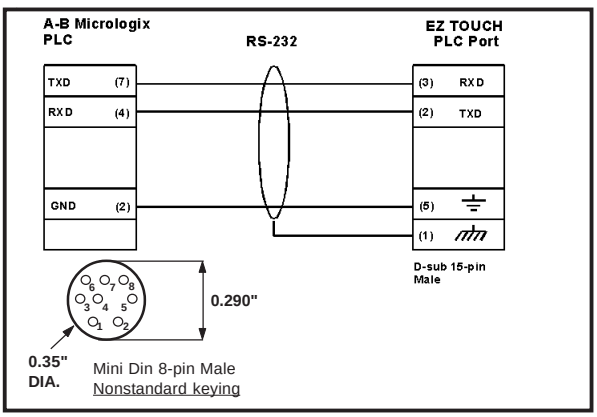
Allen-Bradley SLC500 DH-485/AIC (Multi-drop)



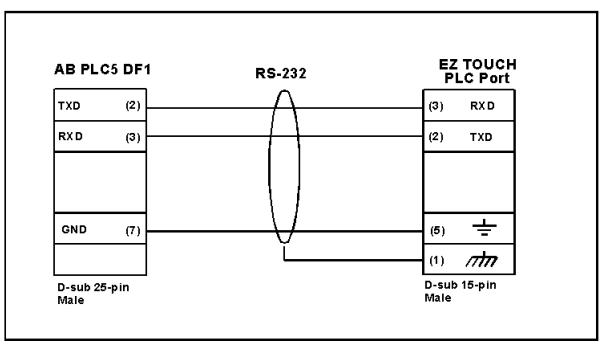
Allen-Bradley SLC DF1, RS-232C (P/N EZ-SLC-232-CBL)



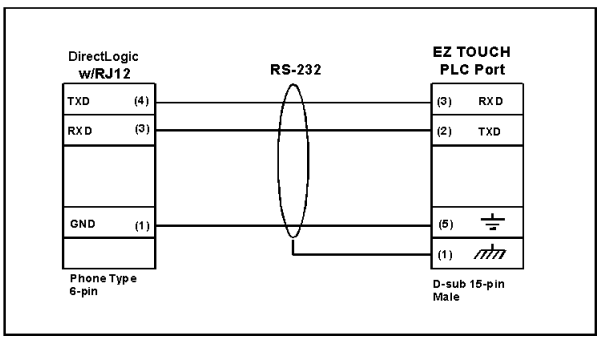
Allen-Bradley Micrologix 1000/1200/1500 RS-232C (P/N EZ-MLOGIX-CBL)



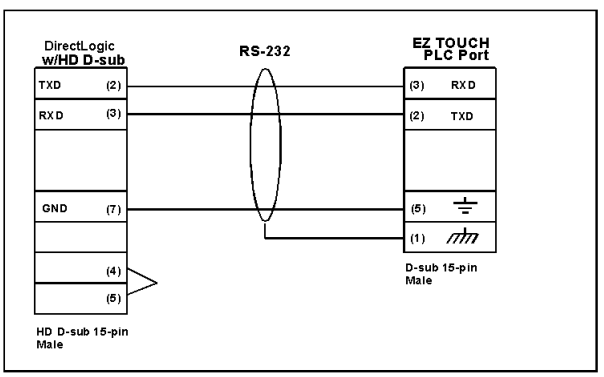
Allen-Bradley PLC5 DF1 RS-232C (P/N EZPLC5-232-CBL)



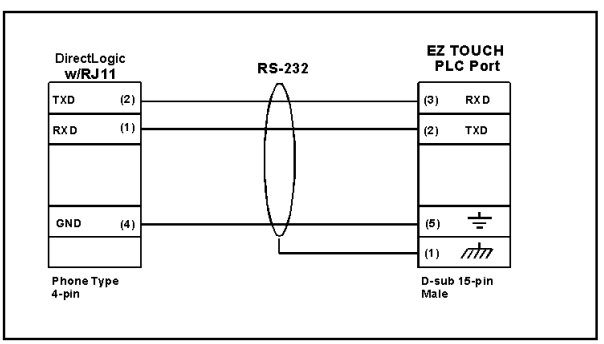
DirectLogic PLC RJ-12, DL05, DL105, DL205, DL350, and DL450, RS-232C (P/N EZ-2CBL)



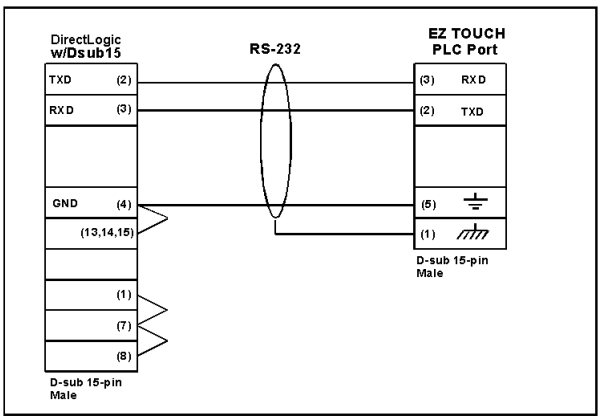
DirectLogic PLC VGA 15-pin, 250, RS-232C (P/N EZ-2CBL-1)



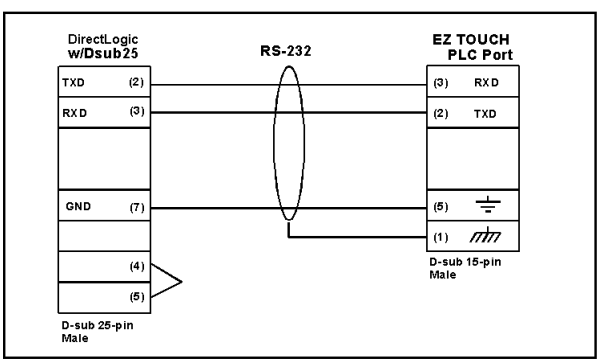
DirectLogic PLC RJ-11, 340, RS-232C (P/N EZ-3CBL)



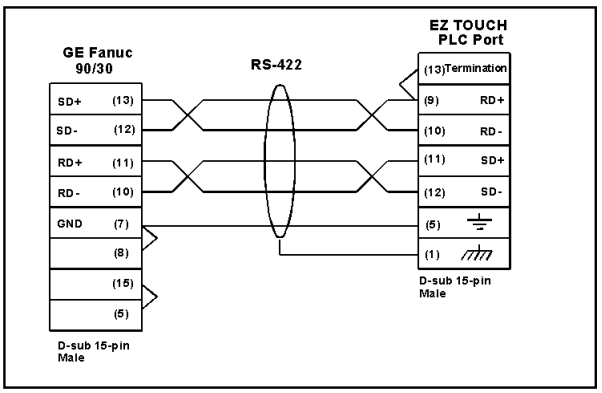
DirectLogic PLC 15-pin D-SUB, DL405, RS-232C (P/N EZ-4CBL-1)



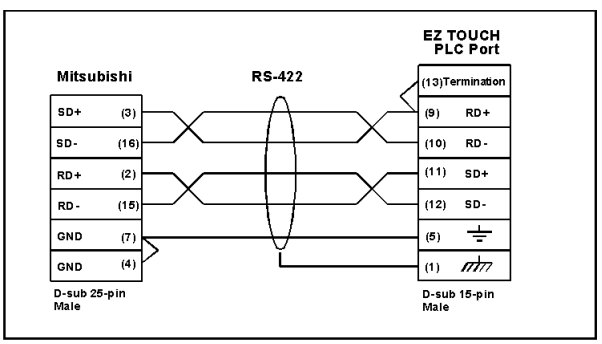
DirectLogic PLC 25-pin D-SUB, DL405, 350, 305 DCU, and all DCMs, RS-232C (P/N EZ-4CBL-2)



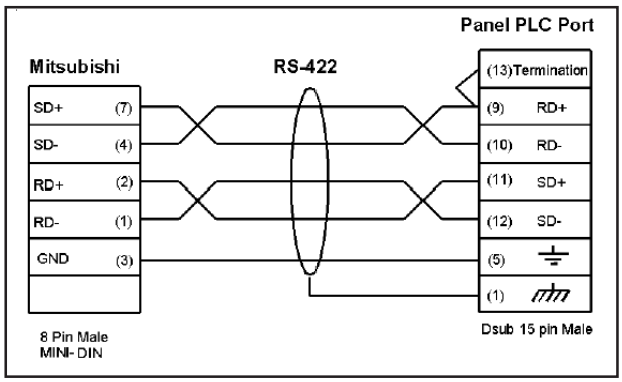
General Electric 90/30 and 90/70 15-pin D-SUB, RS-422A (P/N EZ-90-30-CBL)



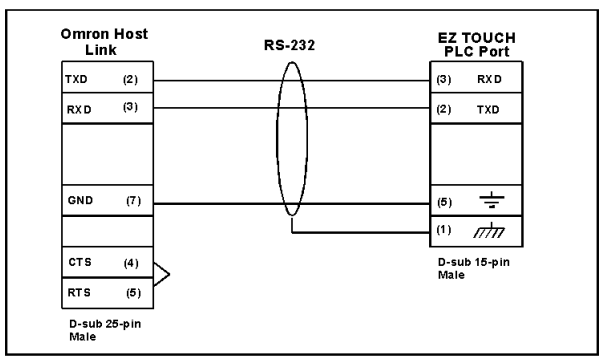
Mitsubishi FX Series 25-pin, RS-422A (P/N EZ-MITSU-CBL)



Mitsubishi FX Series 8-pin MINI-DIN, RS-422A (P/N EZ-MITSU-CBL-1)

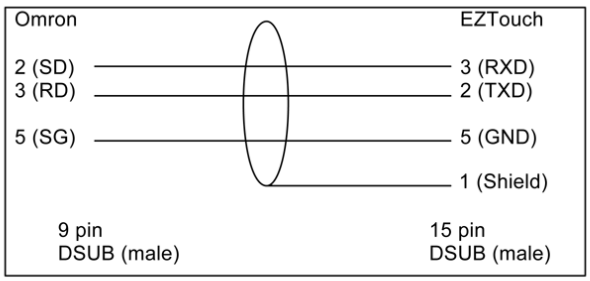


Omron C200, C500, RS-232C (P/N EZ-OMRON-CBL)

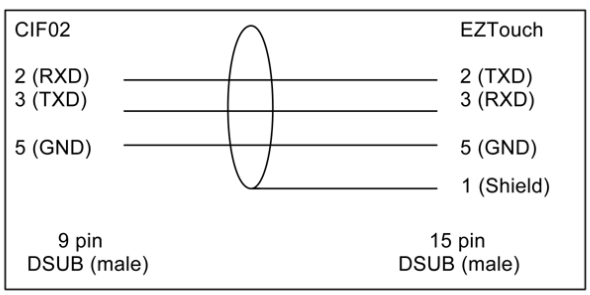


Omron CQM1 amd CPM1

Omron CQM1 & CPM1

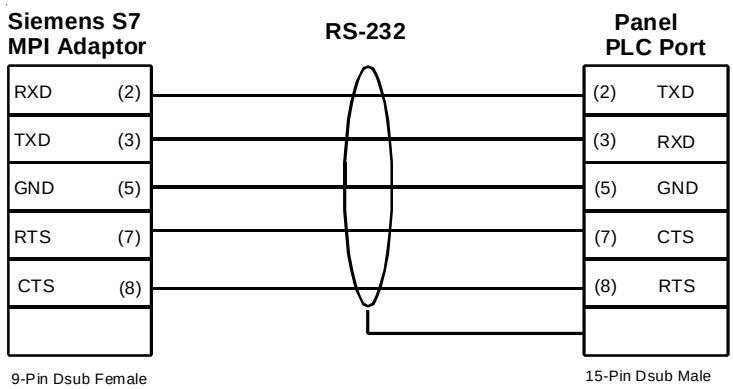


Omron CQM1 using CQM1-CIF02



You can also use the above wiring for the CQM1 & CPM1 to connect to the C200/C200H

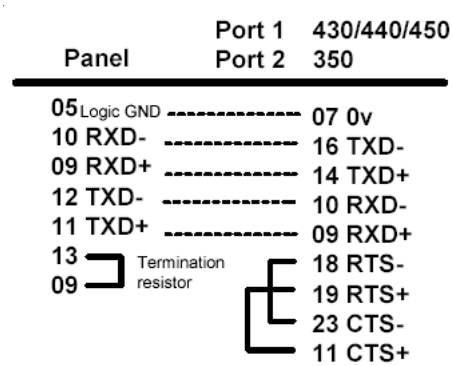
Siemens S7 MPI Adaptor, RS-232C (P/N EZ-S7MPI-CBL)

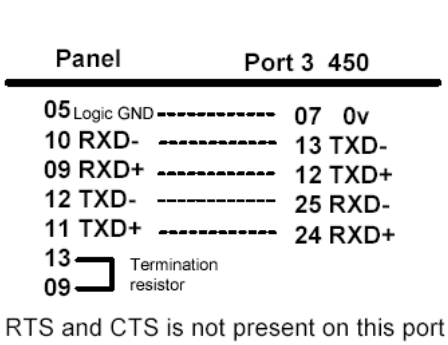


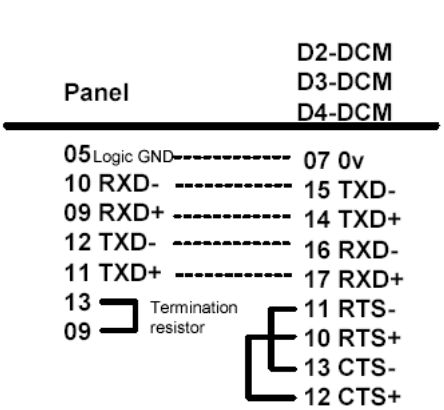
EZTouch RS-422A/RS-485A Wiring Connections for DirectLogic PLCs

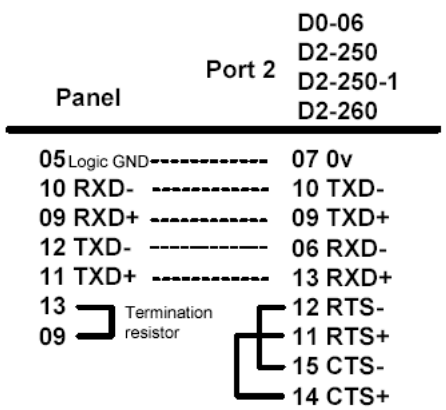
For RS-422A and RS-485A connections, we recommend Belden 9729 cable or equivalent. Please Note: The Termination Resistor is built in to pin 13 of EZTouch Panels. Jumper pin 13 to pin 9 (RXD+) to enable.

RS-422A

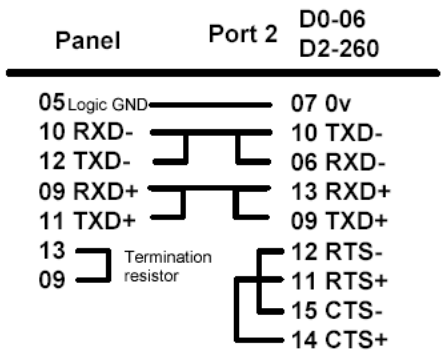




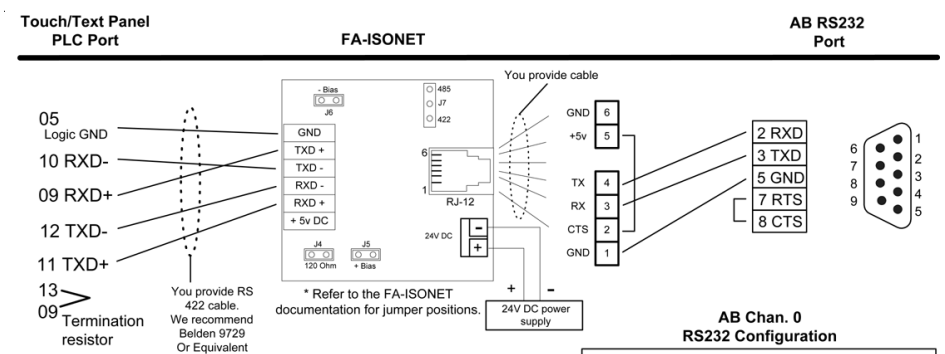




RS-485A



EZTouch RS-422A Wiring Connections for Allen-Bradley SLC 503/504 RS-232 Port



Note: The Termination resistor is built in to the panel.

Note: The Baud rate and Parity must match between the Touch Panel and the PLC.
Depending on distance it may be necessary to increase the Timeout Time on the Touch Screen. This can be done in the software by selecting Setup/Select PLC/ View/Edit attributes.

AB Chan. 0
RS232 Configuration

Driver	DF1 Full Duplex
Baud	9600,19200,38400 etc.
Parity	Even
Control Line	No Handshaking
Error Detection	BCC
Embedded Resp.	Enabled
ACK Time	50
NAK Retries	3
ENQ Retries	3

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Index

Symbols

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Algas-SDI™

ISO 9001 Certified

...Innovative liquid vaporizing and gas mixing solutions

WARRANTY REGISTRATION

Please copy the information from the data sheet supplied with your manual.

Type of Equipment: _____ Serial Number: _____

ASDI Sales Order # _____ Order Date: _____

Purchased By: _____

_____

_____

To help us provide better service to you, please fill out this warranty registration form and return it to us. Keep a copy for your records.

This will register your recent purchase and aide us in tracking the performance of your equipment. Please help us with a small amount of information about your company and about how you are using the equipment. Contact us via phone, fax, or email if you have a question, problem, or concern about your equipment. Please have the type of equipment and serial number available so we can give you accurate information.

End Customer/Company Name: _____

Address: _____ Tel: _____

City: _____ State: _____ Zip: _____ Fax: _____

Name of individual to contact for follow up information: _____

When was the equipment put in service? ____/____/____

Usage - Circle one: Base Load Standby System

Peak Shaving Other please specify: _____

Application - Circle one:	**Agriculture:**	Poultry	Livestock	Grain drying
	Commercial:	Restaurant	Hospital	School
	Industrial:	Construction	Automotive	Glass/ceramics
	Other:	Please specify: _____		

Note: If you have more than one piece of our equipment, fill out one warranty sheet and staple the others to it, well do the rest.

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