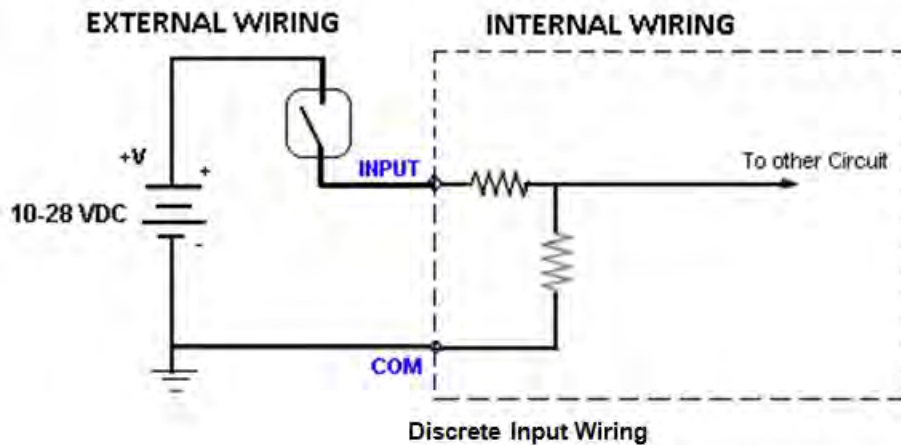


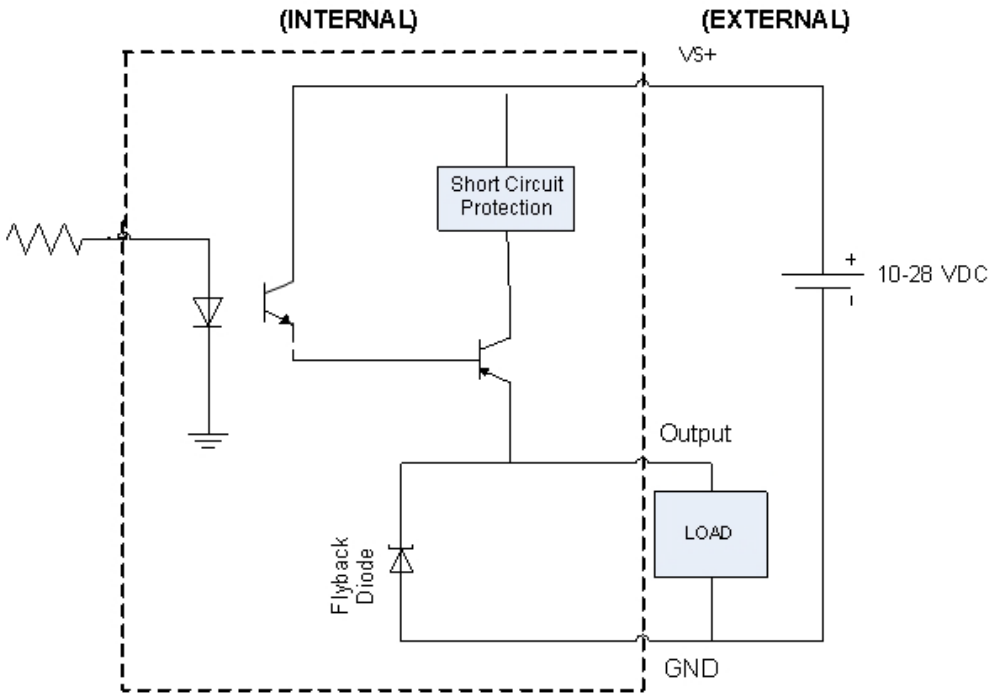
TBC-1 Pinout Information	
Pin No.	Pin Function
1	DC Input (1)
2	DC Input (2)
3	DC Input (3)
4	DC Input (4)
5	DC Input (5)
6	DC Input (6)
7	DC Input (7)
8	DC Input (8)
9	COM
TBC-2 Pinout Information	
Pin No.	Pin Function
1	DC Input (9)
2	DC Input (10)
3	DC Input (11)
4	DC Input (12)
5	DC Input (13)
6	DC Input (14)
7	DC Input (15)
8	DC Input (16)
9	COM
TBC-3 Pinout Information	
Pin No.	Pin Function
1	DC Input (17)
2	DC Input (18)
3	DC Input (19)
4	DC Input (20)
5	DC Input (21)
6	DC Input (22)
7	DC Input (23)
8	DC Input (24)
9	COM

Digital I/O Specifications

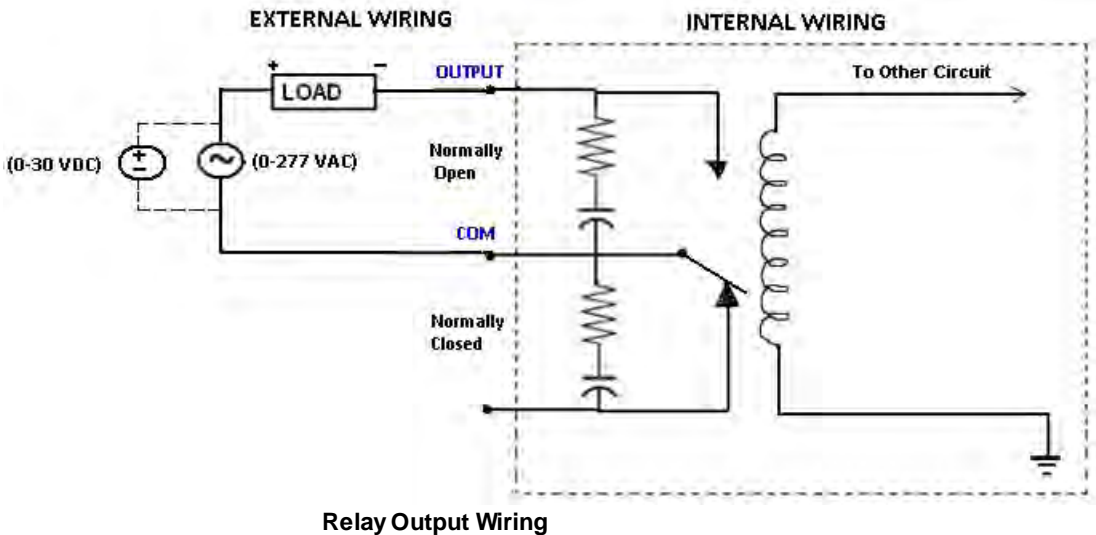
Discrete Input Specifications	
Number of Inputs	24
Input Voltage Range	10-28 VDC
Input Current	1.92 mA @ 12 VDC 4.0 mA @ 24VDC
Maximum Input Current	4.3 mA @ 26 VDC
Input Impedance	11.5k @ 12-26 VDC
ON Voltage Level	>12 VDC
OFF Voltage Level	<2 VDC
Min. ON Current	2mA
Min. OFF Current	0.2 mA
OFF-ON Response	2- 4 ms. Typical 3 ms
ON to OFF Response	2- 4 ms. Typical 3 ms
Status Indicators	Red LED for each input
Commons	2 points
Fuse	No Fuse
Wires	1 of 14 AWG, 2 of 18 AWG 4 of 22 AWG



Discrete Output Specifications	
Number of Outputs	8
Peak voltage	50 VDC
Maximum Steady state Output Current	0.5A per Output 1.0 A max per module @ 50°C
Maximum Leakage Current	100µA @ 50 VDC @ 50°C
ON Voltage Drop	2 VDC @ 0.5A
Maximum Inrush Current	0.8A for 10ms
Status Indicators	Red LED for each output
Short Circuit Protection	1 Amp per module, turns off outputs upon short-circuit detection
Base power required (3.3V)	40mA, all outputs on
Wires	1 of 14 AWG, 2 of 18 AWG 4 of 22 AWG



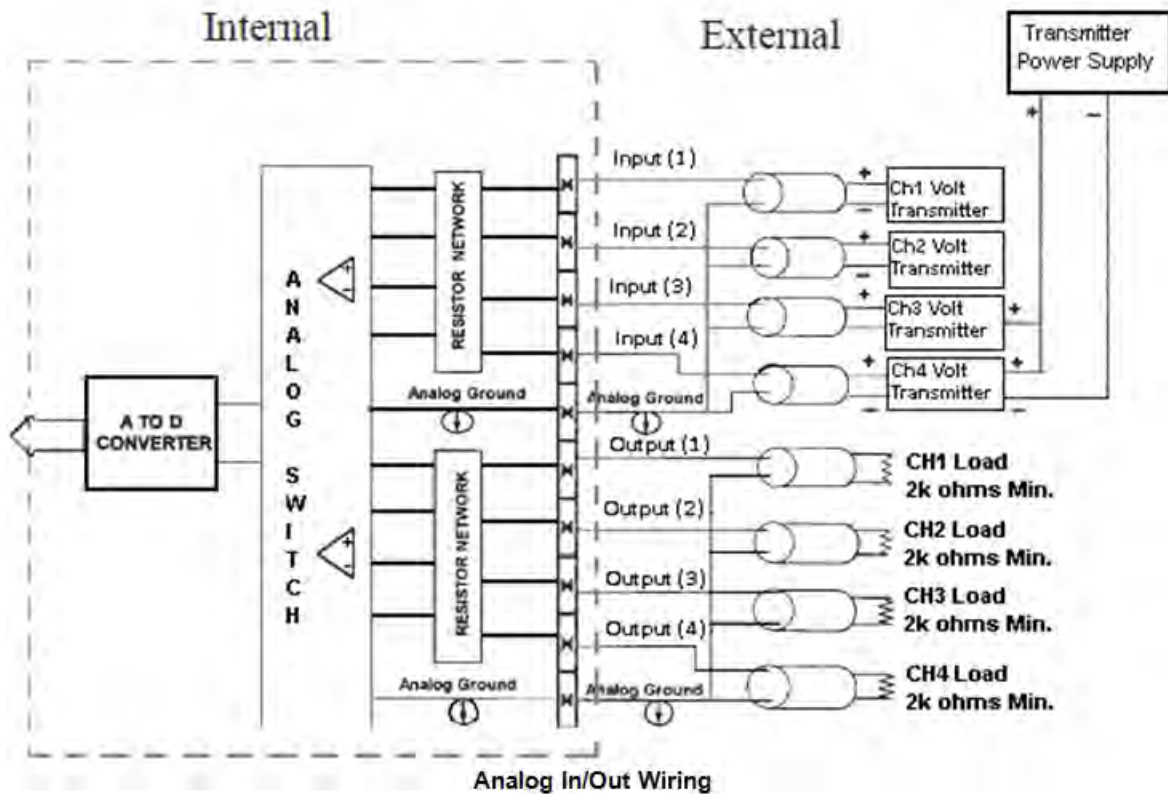
Relay Output Specifications	
Number of Outputs	8
Max Switching Voltage	277 VAC or 30 VDC
Max Switching Power	2770 VA or 300 W
Rated Switching Current	10A
Contact Resistance	100mΩ (at 1A 6VDC)
Insulation Resistance	100MΩ Min. at 500VDC
Dielectric Strength	5000VAC at 50/60Hz for one minute between Coil & Contacts
	1000VAC at 50/60Hz for one minute between Contacts
Operate Time	Max 10ms
Release Time	Max 5ms
Status Indicators	Red LEDs



Analog I/O Specifications

Analog Voltage (In) Specifications	
Input Voltage Range	0-10 VDC
Resolution	12 bit (1- 4096)
Step Response	200 μ s to 95% of FS
Crosstalk	½ count max, -80db
Input Impedance	>20 K Ω
Absolute Max ratings	\pm 15V
Converter Type	successive approximation
Linearity error (end to end)	\pm 2 count
Input stability	\pm 2 count
Gain error	\pm 2 count
Offset Calibration error	\pm 5 counts
Max Inaccuracy	\pm 0.2% at 25°C \pm 0.4% at 0-60°C
Accuracy vs. Temperature	\pm 50 ppm/°C typical

Analog Voltage (Out) Specifications	
Output Voltage Range	0-10 VDC
Resolution	12 bit (1-4096)
Conversion Setting Time	100 μ s for FS
Crosstalk	½ count max, -80db
Peak Output Voltage	\pm 18 VDC
Gain error	\pm 0.3% of range
Offset error	\pm 0.15% of range
Linearity error (end to end)	\pm 1 count
Output Stability	\pm 2 count
Load Impedance	2k Ω min.
Load Capacitance	0.01 microF max
Accuracy vs. Temperature	\pm 50 ppm/°C typical

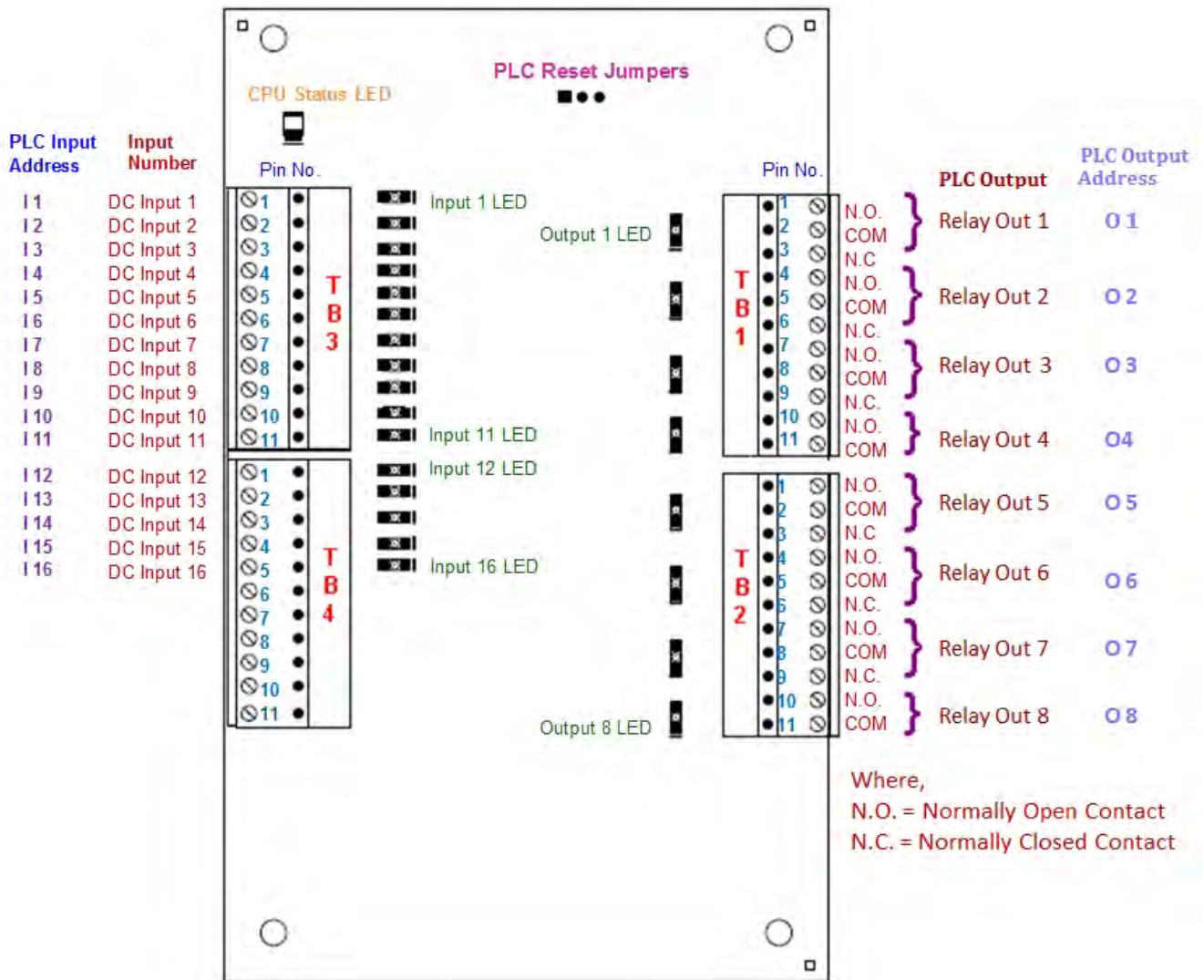


Analog Current (In) Specifications		
Analog Current Input Specs	Number of channels	2 Single Ended
	Input Range	4-20 mA
	Resolution	12 bit (1- 4096)
	Step Response	1ms for 95% FS
	Crosstalk	½ count max, -80db
	Input Impedance	62.5Ω ± 0.1%
	Absolute Max Ratings	-30mA to 30mA
	Converter Type	successive approximation
	Linearity error (end to end)	± 2 counts
	Input stability	± 1 count
	Full-scale calibration error	± 10 counts @ 20mA
	Offset Calibration error	± 5 counts
	Max Inaccuracy	± 0.3% @ 25°C ± 0.6% @ 60°C
	Accuracy vs. Temperature	±50 ppm/°C typical
Recommended Fuse	.032 Amp, series 217 fast acting	

Analog Current (Out) Specifications		
Analog Current Output Specs	Number of channels	2 Single Ended
	Output Range	4-20 mA
	Output Type	Current Sourcing
	Resolution	12 bit (1-4096)
	Conversion Setting Time	100 μs for FS
	Max Loop Voltage	6 VDC
	Load/loop	0-300Ω
	Linearity error (end to end)	± 2 counts
	Full-scale Calibration Error	± 12 counts
	Offset Calibration Error	± 6 counts
	Max. Full-scale Inaccuracy (all errors included)	± 0.3%

Touch I/O with Nano

Terminal Layout



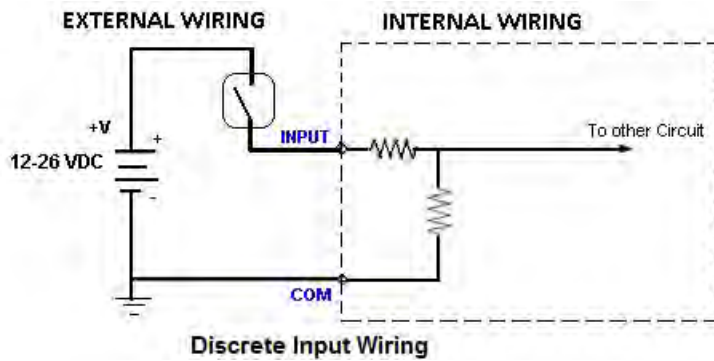
Terminal Pinouts

TB3 Pinout Information	
Pin No.	Pin Function
1	DC Input(1)
2	DC Input(2)
3	DC Input(3)
4	DC Input(4)
5	DC Input(5)
6	DC Input(6)
7	DC Input(7)
8	DC Input(8)
9	DC Input(9)
10	DC Input(10)
11	DC Input(11)
TB4 Pinout Information	
Pin No.	Pin Function
1	DC Input(12)
2	DC Input(13)
3	DC Input(14)
4	DC Input(15)
5	DC Input(16)
6	DC Input COM
7	DC Input COM
8	--
9	--
10	--
11	--

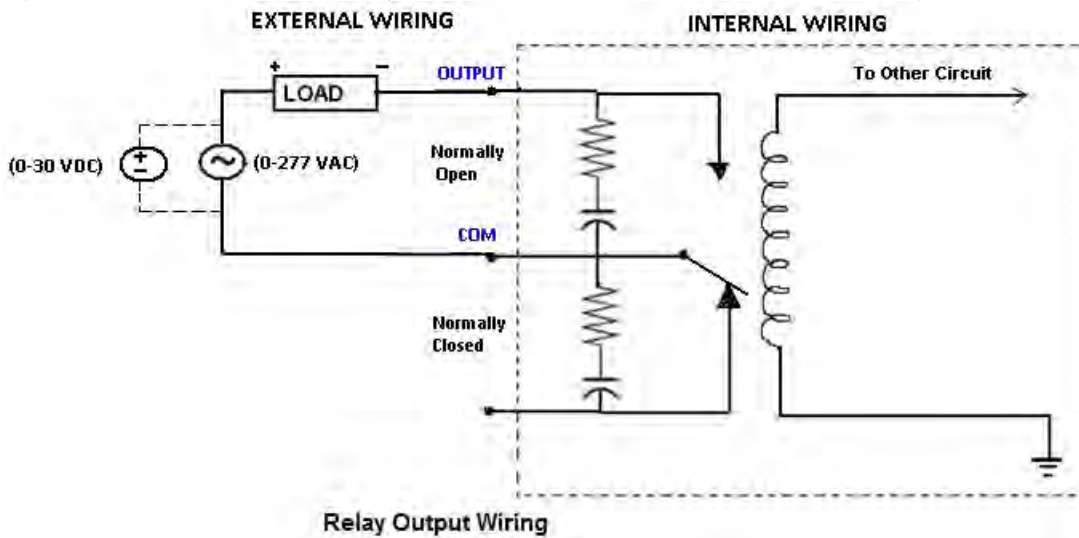
TB1 Pinout Information	
Pin No.	Pin Function
1	Output (1)_Normally open
2	Output (1)_COM
3	Output (1)_Normally closed
4	Output (2)_Normally open
5	Output (2)_COM
6	Output (2)_Normally closed
7	Output (3)_Normally open
8	Output (3)_COM
9	Output (3)_Normally closed
10	Output (4)_Normally open
11	Output (4)_COM
TB2 Pinout Information	
Pin No.	Pin Function
1	Output (5)_Normally open
2	Output (5)_COM
3	Output (5)_Normally closed
4	Output (6)_Normally open
5	Output (6)_COM
6	Output (6)_Normally closed
7	Output (7)_Normally open
8	Output (7)_COM
9	Output (7)_Normally closed
10	Output (8)_Normally open
11	Output (8)_COM

I/O Specifications

Digital Input Specifications	
Number of Inputs	16
Input Voltage Range	12-26 VDC
Input Current	1.92 mA @ 12 VDC 4.0 mA @ 24VDC
Maximum Input Current	4.3 mA @ 26 VDC
Input Impedance	11.5k @ 12-26 VDC
ON Voltage Level	>12 VDC
OFF Voltage Level	<2 VDC
Min. ON Current	2mA
Min. OFF Current	0.2 mA
OFF-ON Response	2-4 ms. Typical 3 ms
ON to OFF Response	2-4 ms. Typical 3 ms
Status Indicators	Red LED for each input
Commons	2 points
Fuse	No Fuse
Wires	1 of 14 AWG, 2 of 18 AWG 4 of 22 AWG

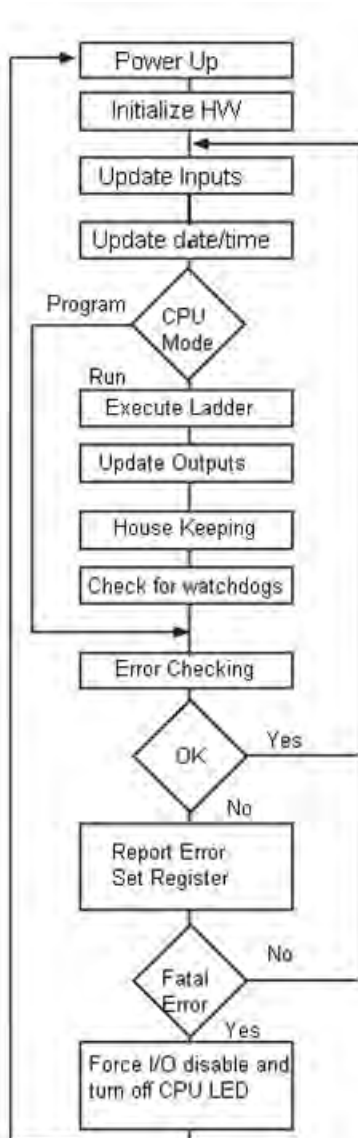


Relay Output Specifications	
Number of Outputs	8
Max Switching Voltage	277 VAC or 30 VDC
Max Switching Power	2770 VA or 300 W
Rated Switching Current	10A
Contact Resistance	100mΩ (at 1A 6VDC)
Insulation Resistance	100MΩ Min. at 500VDC
Dielectric Strength	1500VAC between Coil & Contact, for 60sec
	750VAC between Contacts for 60sec
Operate Time	Max 10ms
Release Time	Max 5ms
Status Indicators	Red LEDs



Programming the Touch I/O

PLC Operation Sequence



A good understanding of the EZTouch I/O Flex CPU operating sequence will help you achieve the proper control for your equipment or process. The flow chart on the left shows how the CPU controls all aspects of system operation.

Power-up Initialization

On power-up, the CPU initializes the internal electronic hardware. It also checks if all the memories are intact and the system bus is operational. It sets up all the communication registers. If all registers are go, the CPU begins its cyclic scan activity as described below.

Read Inputs

The CPU reads the status of all inputs, and stores them in an image table. **Image Table** is EZTouch I/O Flex internal storage location where it stores all the values of inputs/outputs for ONE scan while it is executing ladder logic. The CPU uses this image table data when it solves the application logic program.

Execute Logic Time

This segment is also called Ladder Scan. The CPU evaluates and executes each instruction in the logic program during the ladder scan cycle. The rungs of a ladder program are made with instructions that define the relationship between system inputs and outputs. The CPU starts scanning the first rung of the ladder program, solving the instructions from left to right. It continues, rung by rung, until it solves the last rung in the Main logic. At this point, a new image table for the outputs is updated.

Write Outputs

After the CPU has solved the entire logic program, it updates the output image table. The contents of this output image table are written to the corresponding output points.

Immediate Inputs/Outputs

There is a possibility that an input changes after the CPU has read the inputs. If you have an application that cannot wait until the CPU returns for the next input scan, you can use **Immediate Instructions**. These instructions do not use the status of the input from the image table to solve the application program. The Immediate Instructions immediately read the input status directly from I/O modules and update the image table with appropriate status of input module read. Similarly, Immediate

Output instructions do not wait for the CPU to complete the ladder scan. Immediate outputs are directly written to the image table and Outputs are updated accordingly.

Subroutines

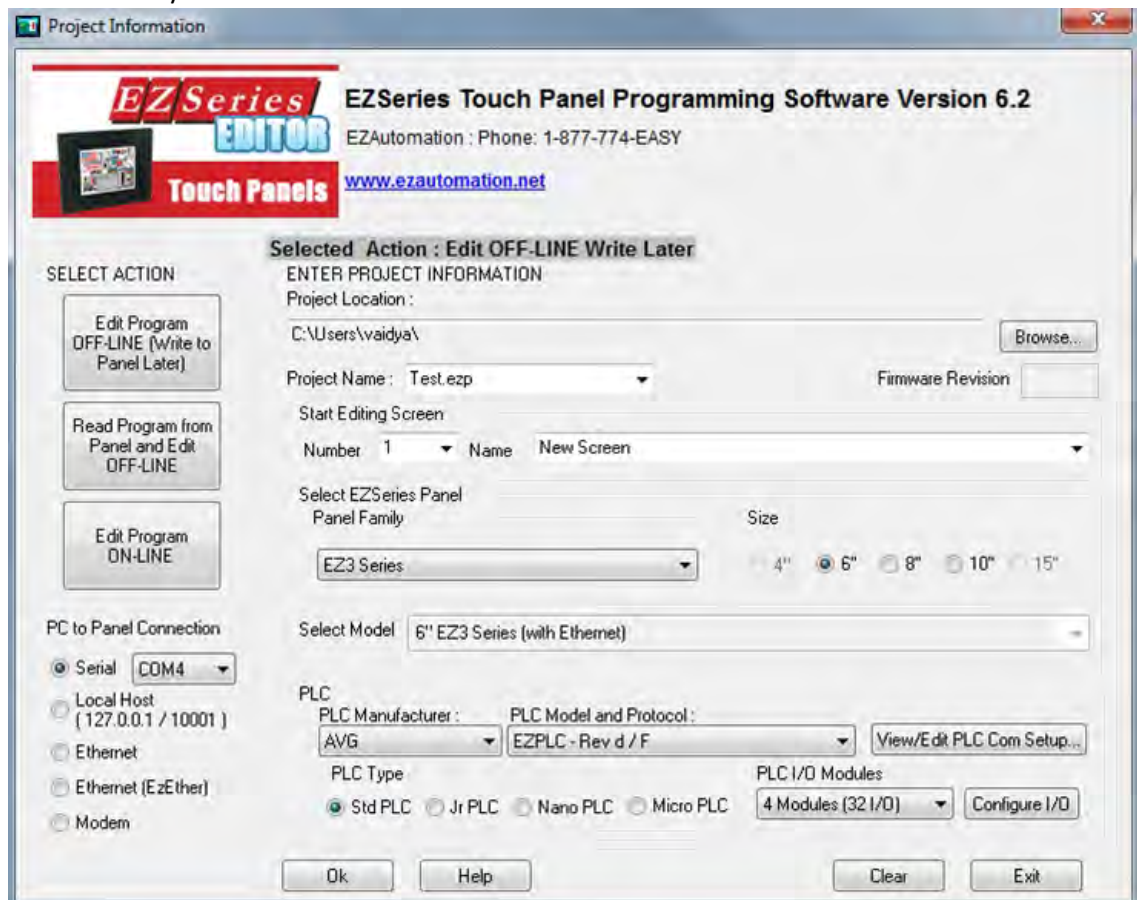
The CPU executes subroutines when called for in the ladder program. These subroutines are useful in performing the same logic operation time and time again just upon one call so you do not have to repeat the rung logic over and over again.

Create a Project

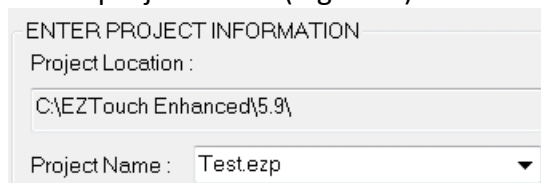
This section outlines the basics of creating a project using the EZSeries Editor software. Further programming information for the EZTouch I/O Flex is located in the Software Manual.

Launch your Programming Software and select how you would like the program to connect to the EZTouch I/O Flex. For this scenario, you can select 'Edit Program OFF-LINE.' This will enable you to create a program without having the EZTouch I/O Flex unit connected.

NOTE: EZ Series Editor must be version 6.2 or later to communicate with the EZTouch I/O Flex Unit firmware must be k.5.80 or later.



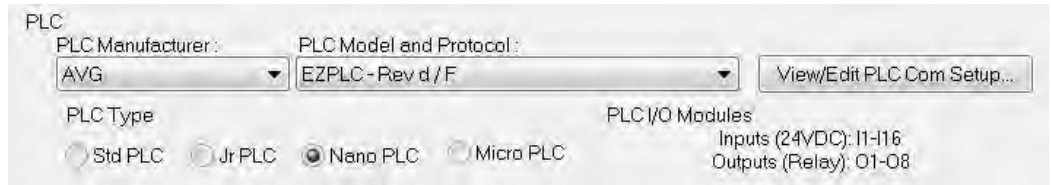
1. Enter a project name (e.g. Test). Click OK.



2. Under Panel Family, select EZ3 Series. Then select the size appropriate for your purchased unit (6", 8" or 10").

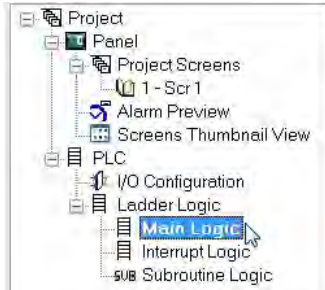


3. Under PLC, select EZPLC as PLC Model and then select purchased PLC type (Std, Micro or Nano).

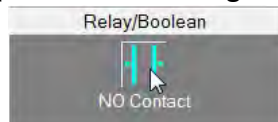


- Click OK to launch the editing software program. The Main Project Window will then appear. The steps below outline how to create a sample panel program or PLC project.

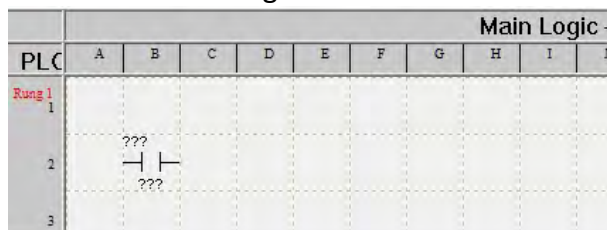
Create PLC Program: On the left side, click on "Main Logic" under the Project Tree to start creating a sample PLC Ladder Logic program as outlined below.



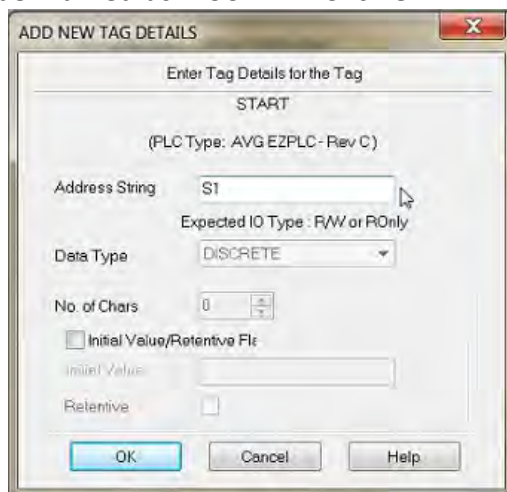
- Select the "Relay/Boolean" type instruction set in the instruction toolbar (located on the right side of the programming screen). Click on "NO Contact."



- Click on the main ladder logic programming window to place the instruction as shown in the image below.

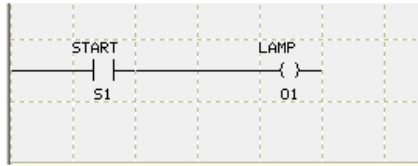


- Then double-click on the icon and enter the tag name as "Start." Click OK.
- A new dialog box will appear asking for the PLC address (memory location). Enter "S1" in the field to the right of "Address String." The Data Type should be marked as DISCRETE. Click OK.



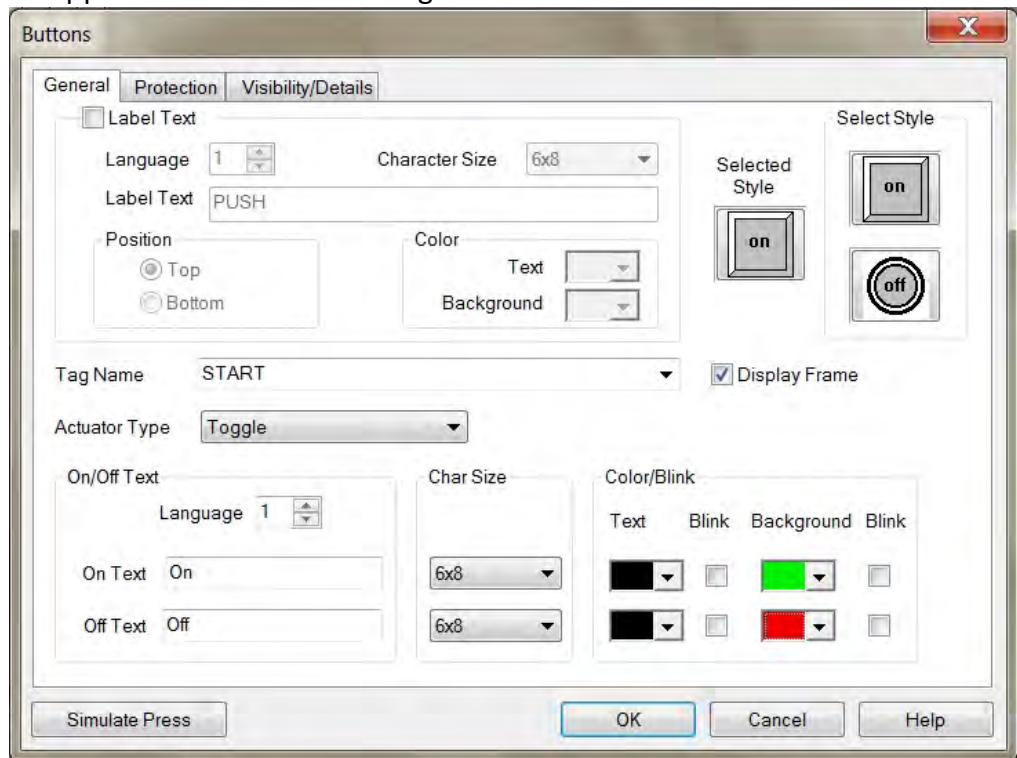
- Similarly, click on "NO Coil" under the Relay/Boolean instructions and place the instruction in the ladder logic programming window. Double-click the icon to select the tag name as "Lamp."

6. Once again, a dialog box will appear. Enter "O1" as the address string. Click OK.
7. Click on **Instructions > Line** to wire "NO Contact" and "NO Coil."
Your screen should look like this when finished:

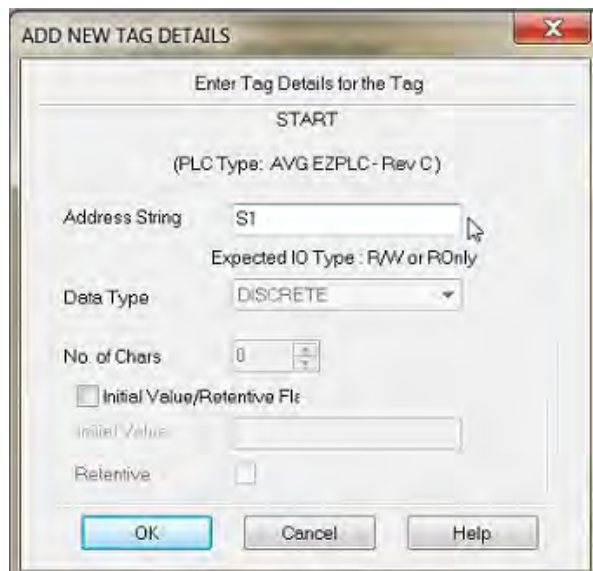


Create a Panel Program: Click on "Panel" and "Scr 1" to create the Panel display screen as explained in the sample below.

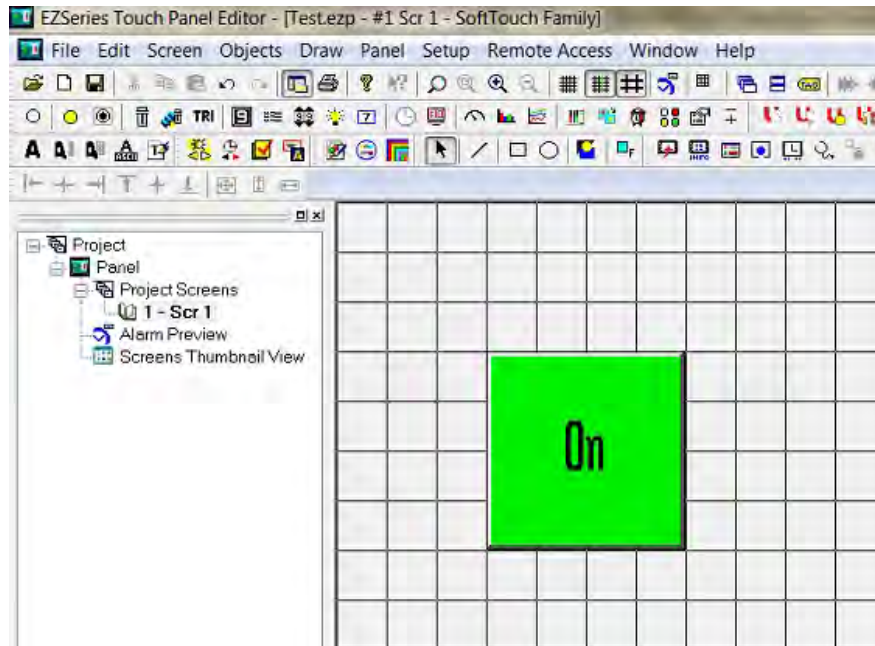
1. In the Main Menu, click on **Objects > Buttons > Buttons**. The screen below will appear. Enter **START** for Tag Name. Click OK.



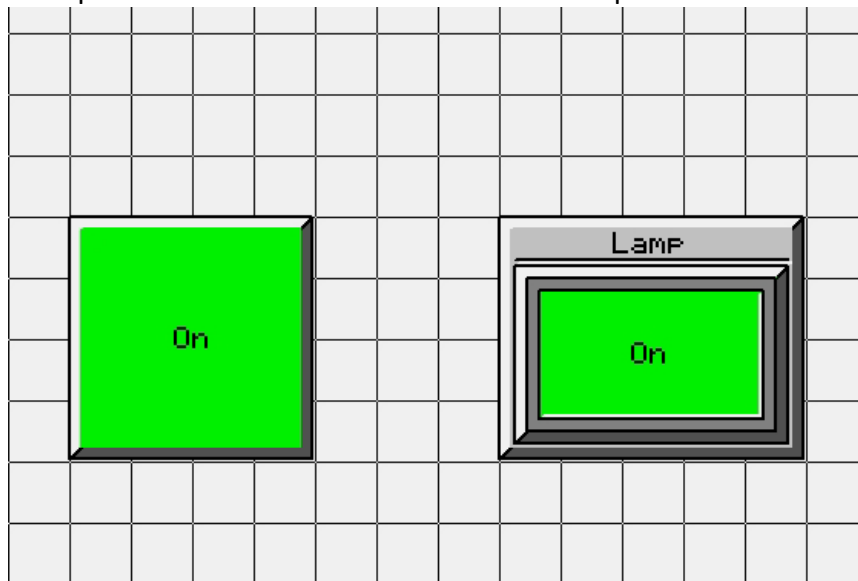
2. A dialog box might appear requesting the memory location. Enter "S1" in the field to the right of "Address String." The Data Type should be marked as DISCRETE. Click OK.



3. Click anywhere on the screen to place the Button object. Double click the icon to open its object dialog box if you need to adjust the object's appearance or attributes. Clicking "Simulates Press" will allow you to toggle between On and Off states.



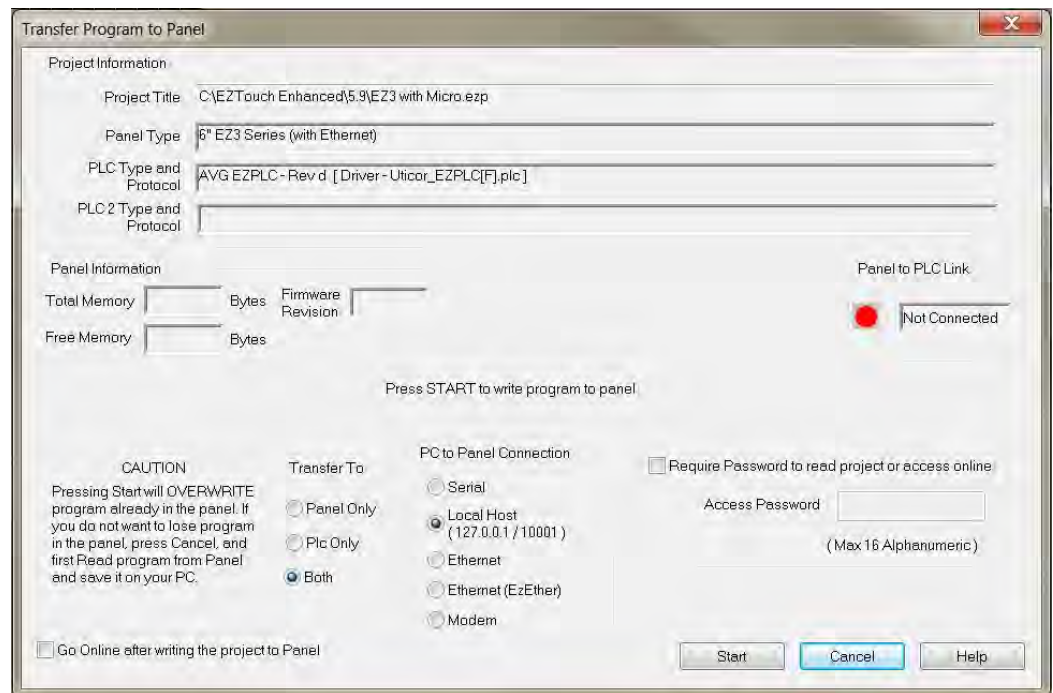
4. Similarly, you can create an Indicator Light Object by selecting **Objects > Data Display > Indicator Light**. Enter **Lamp** for Tag Name. Click OK. Place the object on the panel. Your screen should look like the picture below.



Transfer a Project

After a project is complete, the next step is to transfer the project to the EZTouch I/O FlexC unit. When editing projects online, programming information is automatically sent to the unit once the project is saved. When editing in an off-line mode, the project information will need to be transferred. To transfer the project through the serial connection or Ethernet port, follow the steps outlined below:

From the Project drop down menu, select **File > Transfer to Panel**. A dialog box similar to the one below will appear.



Transferring via USB programming cable:

1. Please connect your USB programming cable to the panel and your computer prior to launching the EZ Series Editor Software.
2. Under *Transfer To*, select *Both* in order to transfer both the created Panel program and the PLC ladder logic project.
3. Select *Serial (COM xx)* as method of transfer under PC to Panel Connection. And then click *Start*.

Transferring via Ethernet:

1. Select Ethernet as PC to Panel Connection.
Note: Click the *Specify IP/Port* button in order to make adjustments to the IP Address or Port.
2. Under *Transfer To*, select *Both* in order to transfer the created Panel program and the PLC ladder logic project.
3. Then click *Start*.

When finished, a Transfer Completed message will be displayed. Click OK to continue and the project is now transferred.

CPU Memory

Memory Types

A PLC system handles many numbers representing different types of information regarding processes/machine parameters. These processes/machine parameters may be anything from status of the input or output devices, timers/counters, or other data values. Before you start programming the EZTouch I/O Flex, it would be helpful if you took a moment to familiarize yourself with how the system represents and stores the various types of data. Each PLC manufacturer has their own conventions for this process in their PLCs.

The [Mapping Conventions](#) section outlines the specific memory types used in the EZTouch I/O Flex in greater detail. The memory types can be used to store a variety of information and can be used within various RLL instructions. See a description of each of the memory types below:

- [Discrete Memory Type](#)
A discrete memory type is one bit that can be either a 1 or a 0 (On or Off). Discrete memory area is used for inputs, outputs, control relays, and timer/counter bits.
- [Word Memory Type](#)
A word memory type is a 16-bit location that is normally used to store and manipulate numeric or ASCII data. A word memory location is also called a Register.

The following table displays all the Register/Discrete types supported by the EZTouch I/O Flex along with their address range, syntax, etc.

EZTouch I/O Flex Memory Map					
SYNTAX: TAAA T - TYPE AAAA - Address of Memory Type in Decimal					
MEMORY TYPE	ADDRESS RANGE	I/O TYPE	VALUE TYPE	SYNTAX EXAMPLES	DISCRETES / REGISTERS RETAINED ON POWER CYCLE
I- Discrete Inputs	1-128	READ_ONLY	DISCRETE	I5	NONE
O- Discrete Outputs	1-128	READ_WRITE	DISCRETE	O6	O1- O128
S- Discrete Internals	1-1024	READ_WRITE	DISCRETE	S4	S1- S1024
IR- Input Register	1-64	READ_ONLY	WORD	IR3	NONE
OR- Output Register	1-64	READ_WRITE	WORD	OR2	OR1 - OR64
R- Register Internals	1-8192	READ_WRITE	WORD	R100	R1 – R8192
SR- System Registers	1-64	READ_WRITE	WORD	SR1	SR1 –SR64
SD- System Discrettes	1-64	READ_WRITE	DISCRETE	SD10	SD1 –SD64
XR- Index Registers	1-4	READ_WRITE	WORD	XR10	NONE
#R – Value Registers	1-4	READ_WRITE	WORD	#R6	#R1 - #R4
Note: Does not Support Access to a Bit of Word (E.g.: R100/ 0, R100/5...etc)					

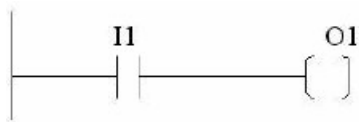
Please Note: Since the PLC Editor is a common programming platform for all the models offered by the AVG PLC family, it may allow you to include 128 Inputs (I), 128 Output (O), 64 input Registers (IR) and 64 Output Registers (OR) in the main logic. However, the TouchPLC Micro only physically supports 24 discrete inputs and 16 discrete outputs; hence it is recommended that you only use I1-I24 and O1-O16 while programming the Micro. Similarly, the TouchPLC Nano only physically supports 16 inputs and 8 outputs; hence it is recommended that you only use I1-I16 and O1-O8 while programming the Nano. The remaining O bits may be used as "Scratch bits." Similarly, only IR1-IR4 and OR1-OR4 should be used to address the I/O Registers, while the rest of the Output Registers may be used as "Scratch Registers." Although there are 64 System Registers (SR) and 64 System Discretes (SD) available in the programming software, many of them are preassigned a function.

Mapping Conventions

Discrete Inputs/Outputs

Discrete Inputs

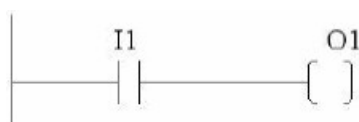
Discrete Inputs are denoted using an "I" pre-fix (e.g. I1, I4, etc.). The maximum number of physical Inputs available in an EZTouch I/O Flex with Micro is 24. Hence, you may only use I1 – I24 in your main logic. Maximum number of physical Inputs available in an EZTouch I/O Flex with Nano is 16. Hence, you may only use I1 – I16 in your main logic. Discrete inputs are Read only type.



Note: All the discrete type EZ Inputs are mapped to Discrete Input bits. In the example above, the output bit O1 will be turned on when input I1 allows power through the rung.

Discrete Outputs

Discrete Outputs are denoted using an "O" pre-fix (e.g. O1, O4, etc.). The maximum number of programmable Outputs available is 1 through 128. Although the number of discrete physical outputs available in an EZTouch I/O Flex Micro is 16 and in an EZTouch I/O Flex Nano is 8, the remaining "O" registers can be used as 'Scratchbits' in the main logic. Discrete Outputs are Read-Write type.



Note: All the discrete type EZ Outputs are mapped to Discrete Outputs bits.

Word Inputs/Outputs

Input Register (Word)

Input Registers are denoted using an "IR" pre-fix (e.g. IR1, IR4, etc.). These are 16-bit

Word data types (registers). The maximum number of Input Registers available is 1 through 64. The EZTouch I/O with Micro only requires registers IR1-IR4. You can only Read from an IR register.

Note: All the EZ Analog Inputs (if available) are mapped to Input Registers.

Output Register (Word)

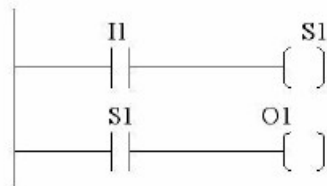
Output Registers are denoted using an "OR" pre-fix (e.g. OR1, OR4, etc.). These are 16-bit Word data types. The maximum number of Output Registers available is 1 through 64. The EZTouch I/O Flex with Micro uses OR1-OR4 to connect to physical Analog Outputs. OR are Read-Write type of Word registers.

Note: All the EZ Analog Outputs (if available) are mapped to Output Registers.

Internals

Discrete Internals (Discrete)

Discrete Internals are denoted using "S" pre-fix (e.g. S1, S4, etc.). There are 1024 Discrete Internals available in the EZ TouchPLC. Internals are Read-write type and are used as "Scratchbits". Discrete internal bits are mainly used to control the user logic program. They do not represent a real physical device, like a switch, output coil, etc. They are only internal to the CPU. You cannot program discrete internals as discrete inputs or discrete outputs for the physical inputs or outputs.



Note: In this example, memory location S1 will be powered when input I1 turns on; you can then use a discrete internal as an input in another rung.

Register Internals (Word)

Internal Registers are denoted using an "R" pre-fix (e.g. R1, R4, etc.). These are 16-bit Word data types (registers). There are 8192 Internal Registers available in the EZ TouchPLC. "R" are Read-Write type of data registers.

System

System Discretets (Discrete)

System Discretets are denoted using an "SD" prefix (e.g. SD1, SD4, etc.). SDs are discrete memory locations with pre-assigned functionality. There are many different types of System Discretets. They are used to help in logic program development, provide system operating status info and more.

Note: Many System Discretets are preassigned a function.

System Registers (Word)

System Registers are denoted using an "SR" prefix (e.g. SR1, SR4, etc.). These are 16-bit Word data types (registers). System registers are Read-Write type data points.

Note: Many System Registers are preassigned a function.

Index and Value Registers (Word)

The Index Register data type is represented by an “XR” prefix (e.g. XR1, XR2 etc.). There are 4 XR memory locations available in EZTouch I/O Flex. “XR” is a Read-Write data type and it is mainly used to point to the correct address of “R” registers. The pointed-to “R” registers data value is stored in “#R” registers.

Value Register data type is represented by a “#R” prefix (e.g. #R1, #R2 etc.). There are 4 #R memory locations available in EZTouch I/O Flex. “#R” is a Read-Write data type and it is mainly used to read/write value of “R” registers as pointed out by “XR” registers.

Both XR and #R registers are used in conjunction with each other and provide a convenient way of addressing R registers.

Example:

Let's assume data values: R59=9874, R8000=32

If XR1=59

Then #R1=9874 (the actual data value of R59)

If XR2=8000

Then #R2=32 (the actual data value of R8000)

XR contains the address of the operand (or specifies a register that contains the effective address), #R is used to read or write the actual operand. Indirect addressing is often combined with pre- or post-increment (or decrement) addressing. This allows the address of the operand to be increased or decreased by the specified number either before or after using it. Proper usage of XR variables often saves a lot of programming.

Additional Features

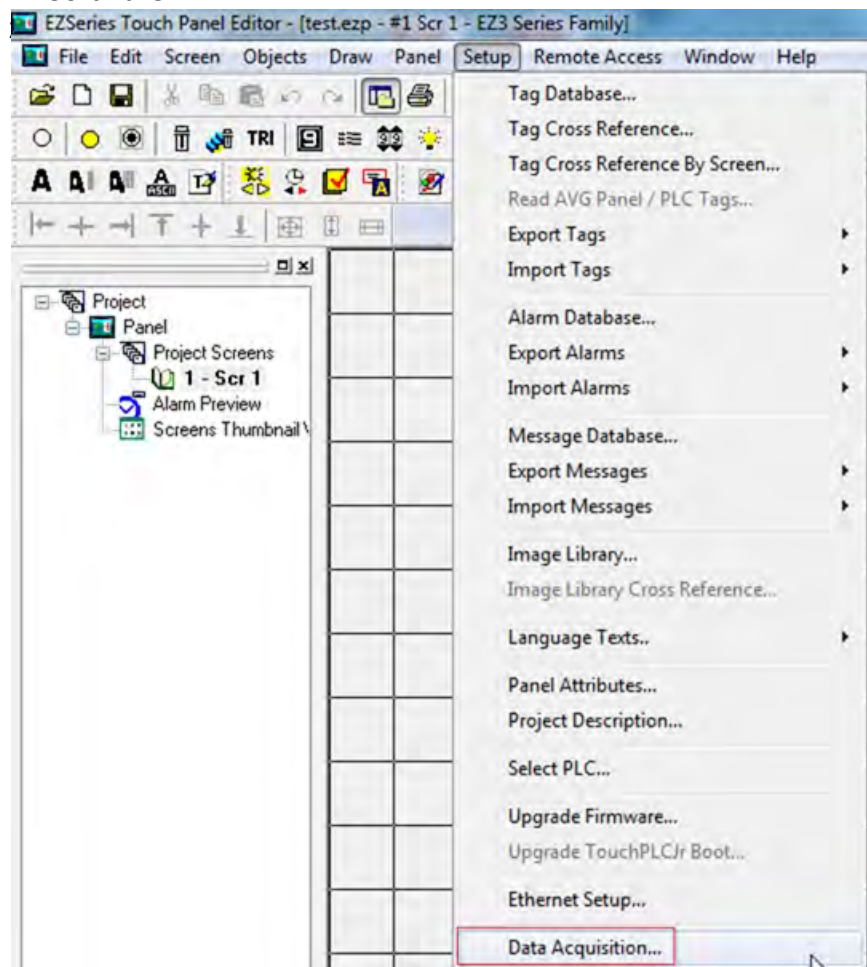
Data Logging Overview

The EZTouch I/O Flex offers a flexible Data Acquisition capability. You can acquire and save the data for one or more tags defined in the panel. The acquired data along with a time stamp is saved in CSV file format in the USB stick or the MicroSD card, depending on how the schedule is set.

Schedules determine the way data will be collected. For example, data can be collected every 10 seconds, or simply at a specific time such as 9 AM, or when a certain event takes place. The user can define one or more schedules as long as each schedule is unique. (For example, there cannot be two schedules that each collect data every 30 seconds.) User can also associate a name (up to 8 characters) with each schedule. Each schedule can be used to collect data for up to 32 tags.

Adding a Schedule

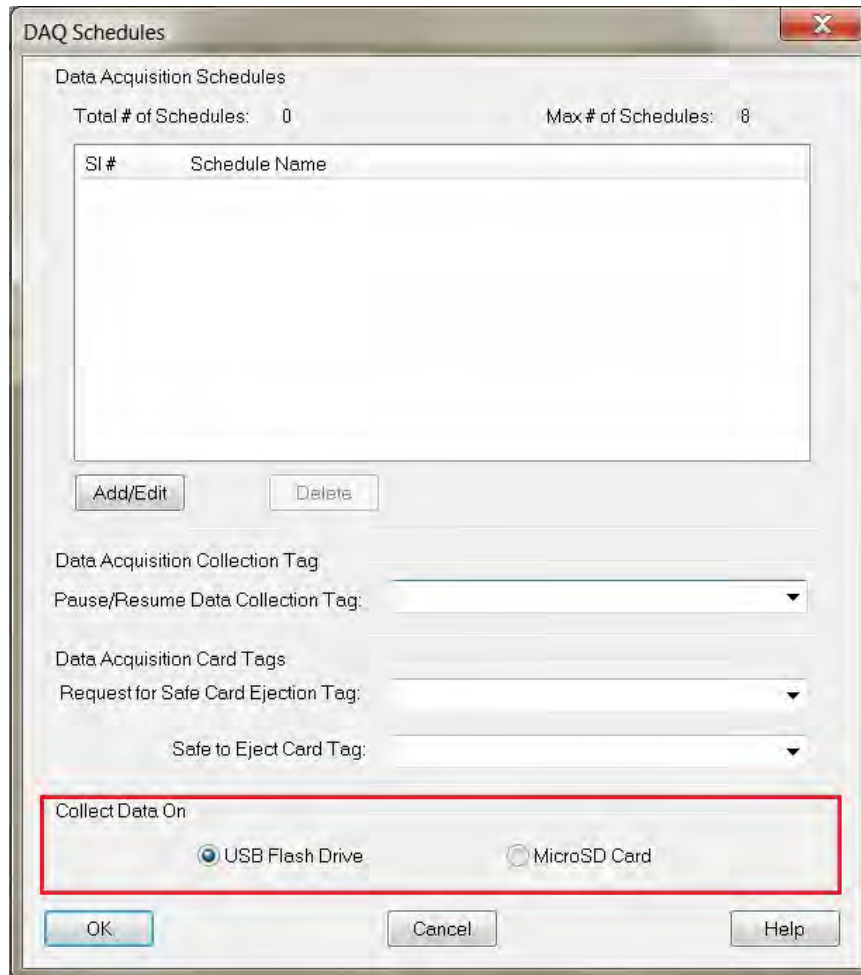
1. Open your project file for the EZTouch I/O Flex using the EZ Series Software.



le dialog.

3. The Data Acquisition dialog box will appear. This dialog box allows you to add the new schedules and edit/delete the existing ones.

Please note: User must select either USB or Micro SD as a data-logging option (shown below).



- Click on Add/Edit button to display the "Add DAQ Schedule Details."

Add/Edit

- The "Add DAQ Schedule Details" box will appear allowing you to create a new schedule for the panel. Schedule names can be either tag based or a constant (user defined name).

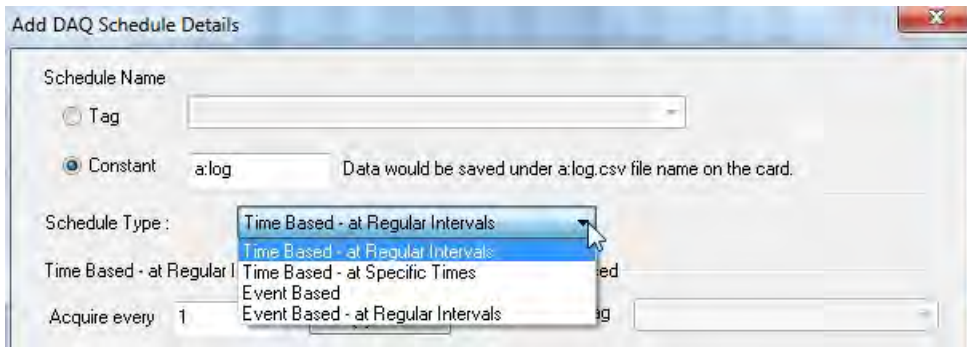
Note: Tag based file names can be changed on the panel itself at any point.

- Select a Schedule Type. (Details on schedule types provided below.)
- Under "Select Tags for Data Acquisition," the selection displays all the tags defined in the panel with their corresponding tag addresses. To select a tag for data acquisition, click on it and then press the >> button. To deselect the tag for data acquisition, select it again and press the << button. Maximum tags per schedule is 32.

Note: Tags can also be selected or deselected by double-clicking on them.

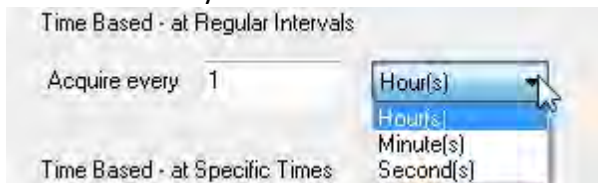
- Click "Add" when finished and then click "Close" to return to the main DAQ Schedules dialog box.
- The added schedules will now be listed. Schedules are saved along with the user project.

Types of Schedules



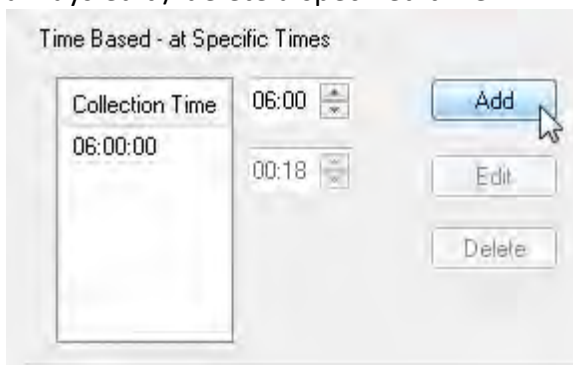
1. Time based – at regular Intervals

Allows you to store the tag value at regular time intervals, anywhere from every 1 second to every 1000 hours.



2. Time based – at Specific Times

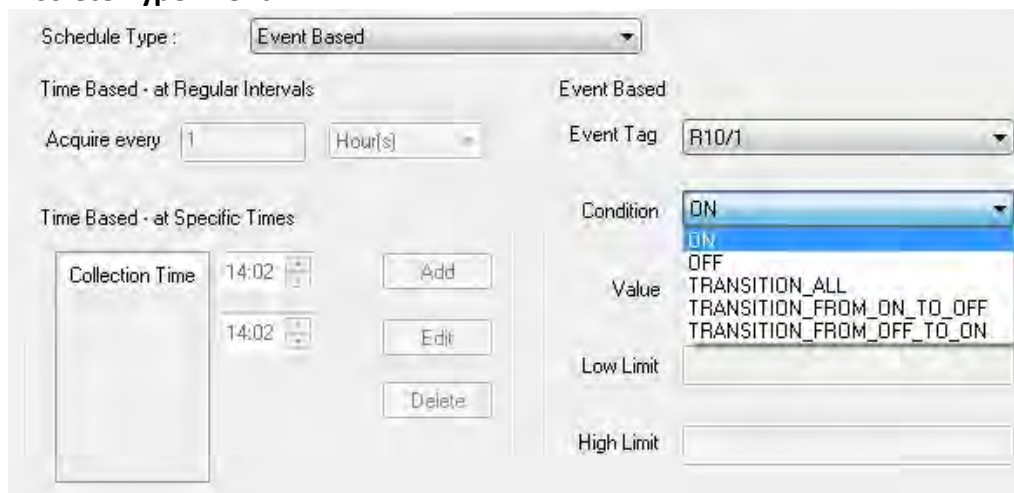
Allows you to store the value of a group of tags up to 10 specific times. You may always edit / delete a specified time.



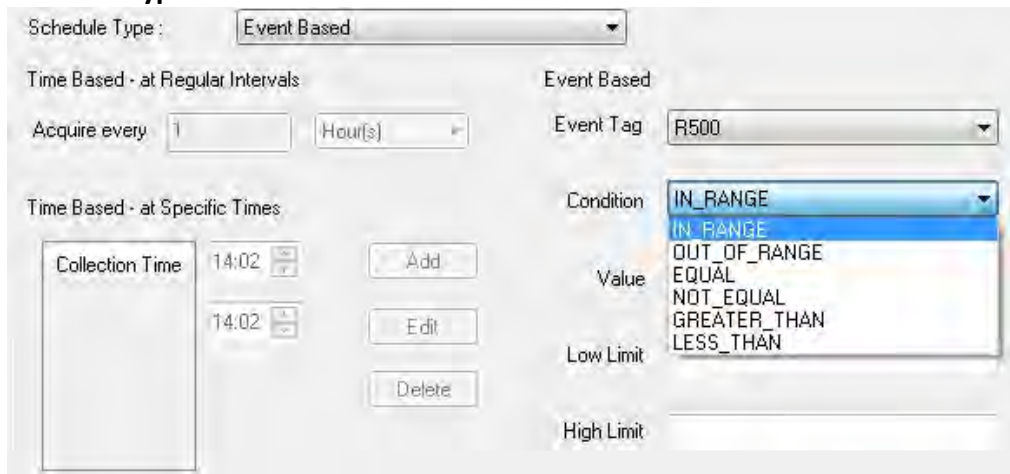
3. Event Based:

Allows you to create an event and store the values of a group of tags on the occurrence of the same. Based on the data type of the event tag, schedule can be either Discrete Event Type or Numeric Event Type.

Discrete Type Event:



Numeric Type event:



4. Event Based - at Regular Intervals:

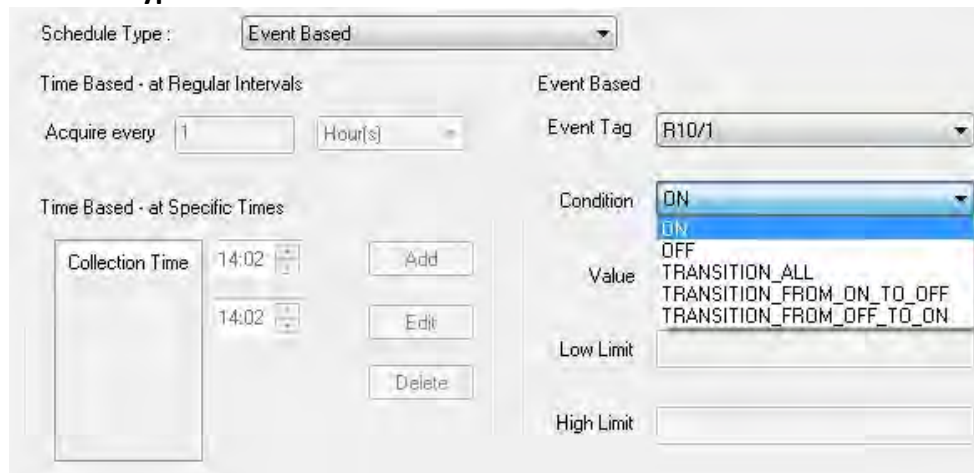
Allows you to create an event and store the values of a group of tags on the occurrence of the same during a set time period. Based on the data type of the event tag, schedule can be either Discrete Event Type or Numeric Event Type.

- a. Set how frequently the data is stored through the Time Based interval, anywhere from every 1 second to every 1000 hours.

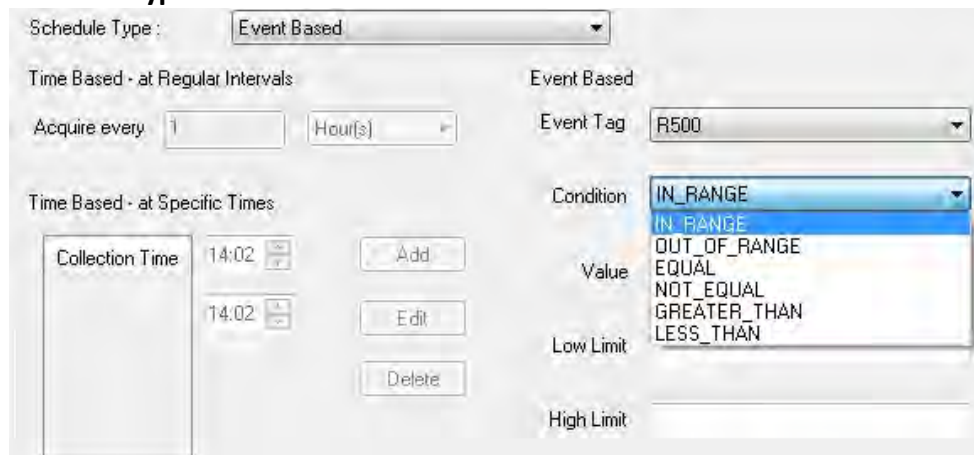


- b. Select either a Discrete Type Event or a Numeric Event Type.

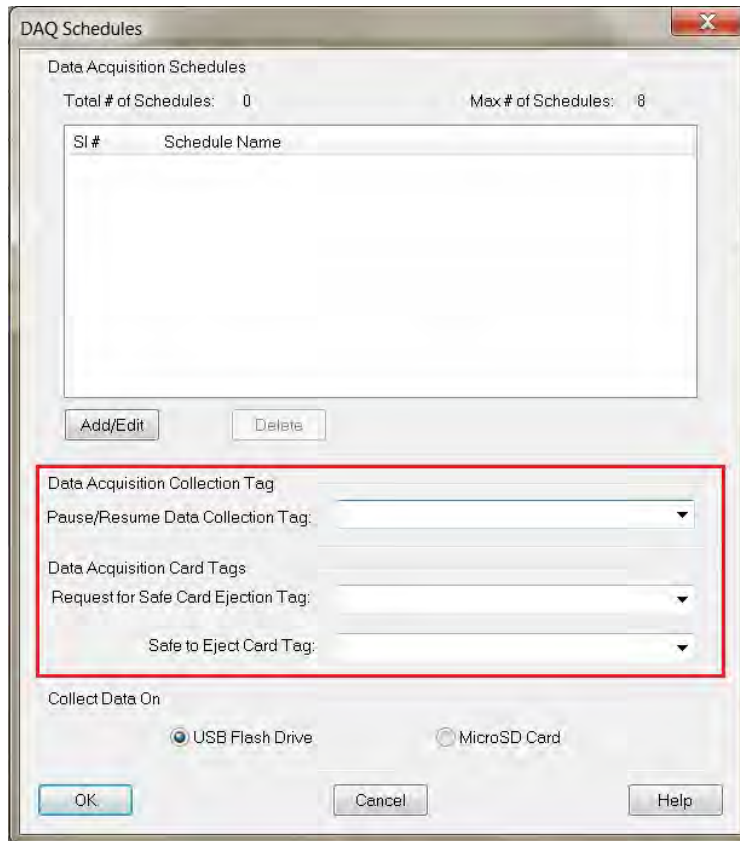
Discrete Type Event:



Numeric Type event:



Pausing Data Acquisition and Ejecting Card



Pause / Resume Data Collection Tag:

This is a discrete tag that can be controlled by user (e.g. through a Push Button) or by PLC to enable or disable data acquisition. When the tag's value is 0, data collection is enabled; and when it is 1, the collection is disabled or paused. Setting the tag to 0 resumes the data collection.

Request for Safe Card Ejection Tag:

This is a discrete tag and can be controlled by user or PLC. The Tag is set by user (say by a Pushbutton) or by PLC to indicate that the user would like to remove the SD card for possibly reading it in a SD card reader. When Panel sees this tag as set, all buffered data is written to the files, and files are closed for safe removal of the card. Another discrete tag, Safe-to-Eject-Card is set to indicate that it is now safe to remove the SD card without fear of file corruption. At the same time, the Request tag is reset by the panel.

Safe to Eject Card Tag:

This is a discrete internal tag. The tag must not be mapped to PLC. The Panel would set this tag when it is safe to remove the card. It is reset whenever it is unsafe to remove the card. **It is highly recommended that you use Request-for-Safe-Card-Ejection and Safe-to-Eject-Card tags for removing the card. If the card is removed without safe indication, the data on the card may get corrupted due to open files.**

Changing logging between USB and Micro SD

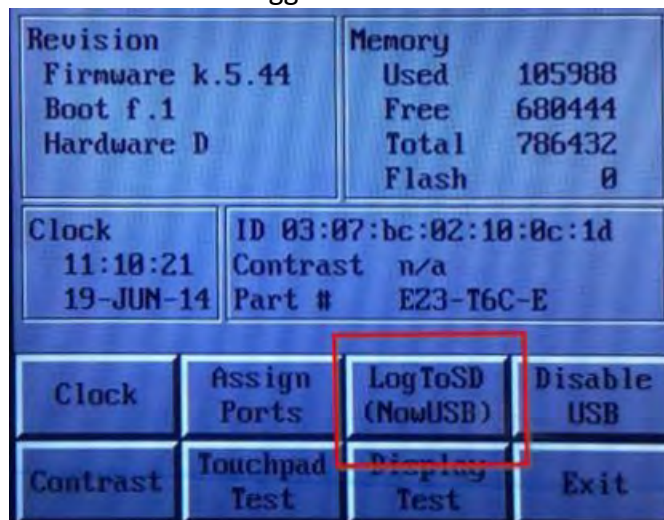
There are two options to change how the data logging information is saved.

Option #1 Using the Programming Software

1. Open your project file for the EZTouch I/O Flex using the EZ Series Touch Panel Software.
2. Then click **Setup > Data Acquisition** to display the DAQ Schedule dialog.
3. Select either USB Flash Drive or MicroSD card.
4. Click OK and then save the project.

Option #2 On the EZTouch I/O Flex

1. Press the upper left corner of the EZTouch I/O Flex screen for a minimum of six seconds to access the Setup Mode.
2. After selecting the appropriate language for the unit, the unit will enter the Setup Mode (shown below). Press the "LogtoSD" button to change how the data is logged.



3. When finished, press Exit to resume normal operations.

Create OEM Packager

The **EZPackager utility** allows an OEM to distribute updates to EZSeries Touch Panel or EZPLC projects easily and quickly. Using the utility, OEMs can package current project and/or firmware into a zip file for distribution to the end user via email or the web. If you click on **File > Create OEM Package**, it will allow you to package the current **EZPanel** or **EZPLC project** and/or the **firmware** into a zip file called a **pack file** for the distribution purposes.

Benefits of the utility include:

- OEMs save costs associated with the distribution of panel updates in the field (sending field service personnel or mailing CDs).
- OEM Projects are protected since end users cannot modify the projects.
- The end user benefits from convenient, fast and easy updates without needing to purchase the EZSeries Touch Panel Editor software.

Creating a Pack File:

1. Use the EZ Series Editor Software to open the project you wish to distribute.
2. Click on **File > Create OEM Package**. A dialog box similar to the one shown below will appear. Select what firmware you wish to include in the zip file. (Use Browse to locate the latest firmware versions if necessary.) Enter any necessary OEM information you wish to include in the fields provided.

3. Use **Browse** to determine the file save location and OEM package name. Then click **OK**.

Opening a Pack File

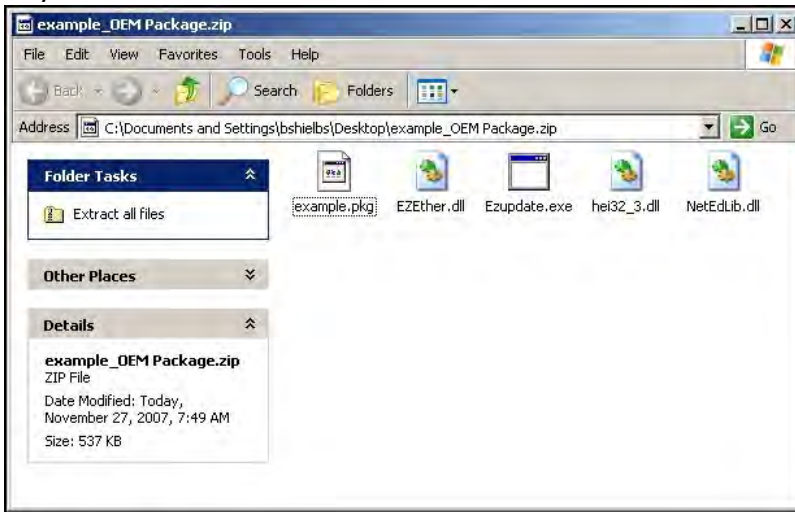
A Pack File contains the following:

1. Updater application (comprising of the .exe and required dlls)
2. Project files (which would show up inside the Project folder when unzipped)
3. Firmware files (which would show up inside the Firmware folder when unzipped)

The end user can take the pack file, unzip it, and then run the EZSeries Touch Panel Updater application to update his/her panel with the selected project(s) and/or firmware.

To open a pack file, follow the steps below:

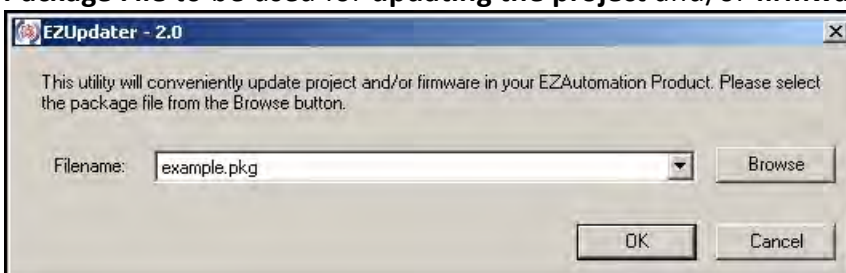
1. Click on the zipped OEM Package file that you have. It contains EzUpdate.exe (Ezupdater MFC application) and example.pkg (PKG File). Extract these file in a folder of your choice.



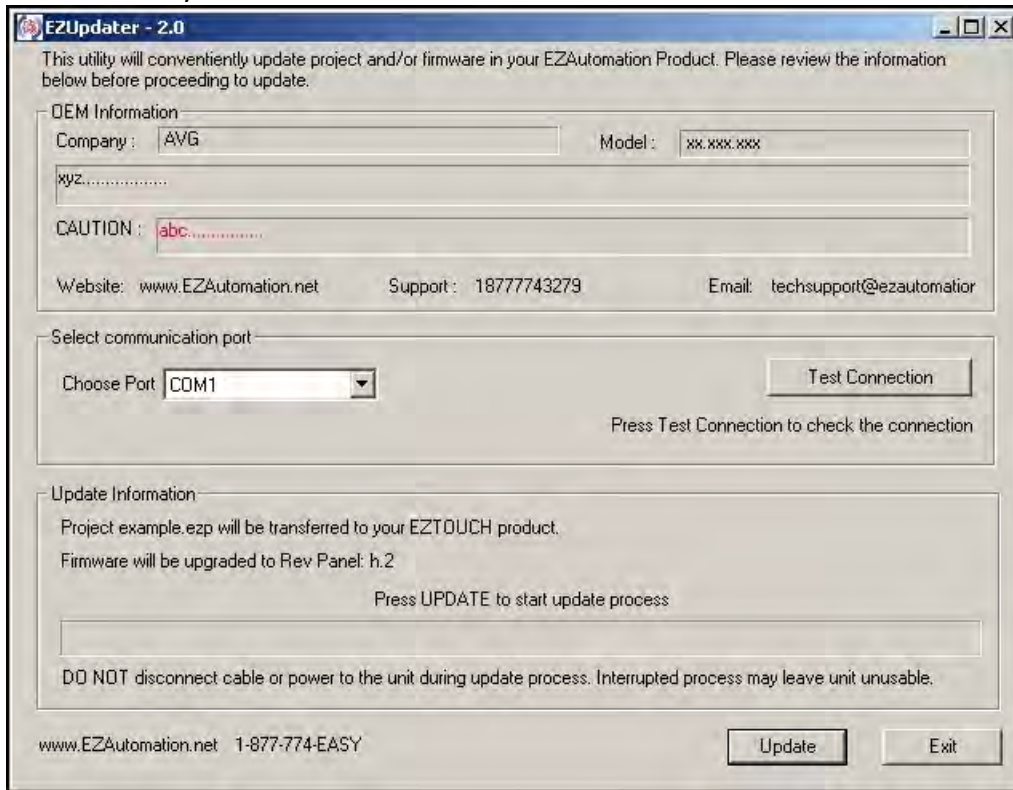
2. In this example, files have been extracted in a folder named as **example_OEM Package**.



3. Click on the **EzUpdate utility** for the following dialog window. Browse and select the **Package File** to be used for **updating the project and/or firmware**. Then click **OK**.



- Once you click on **OK**, EZUpdater window appears on the screen with an option to select the communication port. You may also test the connection, before a final click to Update button. Click on the **Update** button to update the Project and/or the Firmware on your EZSeries TouchPLC.



Create USB Loader

Through the EZ Series Editor Software (version 5.5 and higher) users can program EZ TouchPLCs through a USB Flash drive. This process especially benefits System Integrators and OEMs with upgrading the Panels on-site without having to actually connect to a computer. Since multiple programs can be saved on one USB Flash drive, the user can program different panels with the same USB Flash drive, or quickly change the Panel for different jobs.

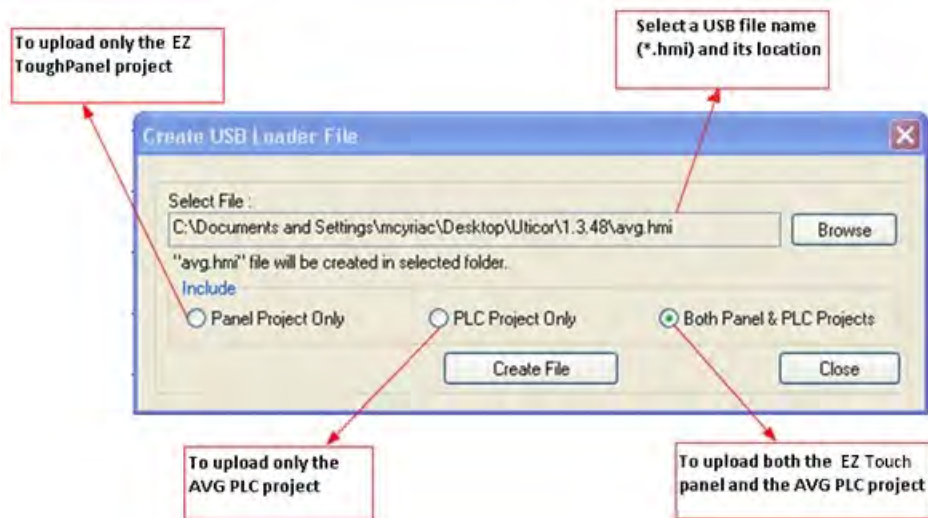
The EZ TouchPLCs can be programmed in following easy steps:

1. Create a USB file (*.hmi) using the EZ Touch Program Loader.
2. Save the file on the USB Flash drive (only in the root directory).
3. Insert the USB stick into the EZ TouchPLC's USB port.
4. The panel brings up a list of projects that are available on the USB Flash drive. Select the necessary project and press OK. (If the panel is not compatible with the project selected, an Error message is displayed.)
5. The project is automatically loaded on the EZTouch I/O Flex.

Creating files for use with USB Flash Drive

In the EZ Series Editor's main programming window, click on menu **File > Create USB Loader** to create user project file for use with the USB flash drive. User can select name. The file is saved with .hmi extension.

The dialog box shown below would appear:



Copy file(s) on USB Drive

Copy file(s) created by the editor on the root directory of a USB flash disk. (Please note files copied in a location other than root directory would not be read by the panel.) All files are saved automatically with .hmi extension. Files without this extension will not be read.

Programming the panel using USB Drive

To program an EZTouch I/O Flex from USB Drive, insert the USB flash directly into the EZ TouchPLC's USB port. The panel would display a list of files available in the root directory (with .hmi extension). An example is shown below:



Select the required project using the Up-Down arrows and press “Accept.” If the panel is **not compatible** with the project selected, an Error message saying “Wrong panel Type” is displayed. The selected project is then automatically loaded into the EZTouch I/O Flex.

Remote Monitoring & Control

With the introduction of new **Remote-Access Card** and **Remote Monitor & Control (RMC) Software** EZSeries TouchPLCs offer a unique set of remote capabilities. A user can remotely log on to a unit and monitor any of the panel screens with live data including the currently displayed screen.

With the right access permissions and authentication, a user can remotely “touch” the objects on the panel, to control a machine/plant effectively. Remote control feature can be invaluable for remote diagnostics, unmanned operations, or supervisory monitoring.

In addition to remote monitoring and control, user may also program the panels remotely over Ethernet, allowing OEMs to remotely upgrade the screen programs within the panels.

For Remote Monitoring and control we need to follow these steps:

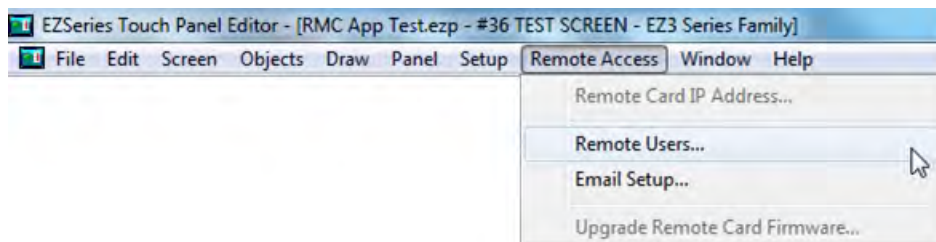
1. Use EZ Touch Panel editor to set up IP address of the panel.
2. Use EZ Touch Panel editor to set up remote users and authentication level.
3. Use RMC (Remote Monitoring & Control) software to connect to the panel remotely.

Setting up Remote Users

The EZ-RMC Software can be used with or without defining authorized users. If you don't define any remote users, then anyone can connect to the panel using EZ-RMC Software. However they can **ONLY VIEW** the panel screen; they would not be able to make any changes to the panel. ***It is highly recommended that you do define authorized users for remote access.***

Remote users can be given View ONLY or Operation (View + Control) permission. View only permission allows user to **ONLY** monitor the panel display remotely, while operation permission allows a user to operate panel remotely.

Select **Remote Access > Remote Users** as shown below to display the following EZ-RMC User Dialog window



Set Remote Users

SI #	UserName	Password	Access
1	avg12345	avg12345	View + Control
2	Operator	aabbcc123	View Only
3	Supervisor	fullcontrol123	View + Control

Here you may add up to 8 remote users by clicking on Add/Edit button. The Log-in name and the password are case sensitive and both must be between 8 to 16 characters in length. Password also must contain at least one letter and one number.

Add/Edit Remote Users

Log-in and password must be between 8 to 16 characters

WARNING!!!!
Be VERY selective and careful in allowing users remote operation access. Users MUST take extreme care during remote operation. It is highly recommended that panel/machine be watched by some one during its remote operation, as remote changes can be dangerous and can cause accident or damage to machine!!!!

Log-in Name: Supervisor

Password: fullcontrol123

Access level:

Allow Remote VIEW ONLY

Allow Remote OPERATION (View + Control)

Do Not Allow Access to Arbitrary Screen

Buttons: Apply Changes, Help, Close

To edit the information of an existing user, please select the appropriate row and click on Add/Edit button. It will bring up the information of the selected user in edit mode.

Access Level

- **ONLY Remote VIEW** - A user can remotely log on to the panel and monitor any of the panel screens with live data including the currently displayed screen.
- **Remote OPERATION** - A user can remotely log on to the panel and monitor any of the panel screens with live data including the currently displayed screen as well as can remotely “touch” the objects on the panel, to effectively operate or control a machine/plant.

WARNING!!!

Be VERY selective and careful in allowing users remote operation access. Users MUST take extreme care during remote operation. It is highly recommended that panel/machine be watched by someone during its remote operation, as remote changes can be dangerous and can cause accident or damage to machine!!!!

Run RMC Software

To access the panel over Ethernet, you need to install and run the EZ-RMC software on your PC. Once you run the software, you will see the following EZ-RMC dialog.

Select Parameters

The dialog box titled "EZ-RMC 0.99.25" has a section "Ethernet/COM Port". It contains the following fields:

- "Select Ethernet/COM Port:" with a dropdown menu set to "Ethernet".
- "IP Address:" with a text box containing "10 . 1 . 200 . 26".
- "Port Number:" with a text box containing "10001".
- "Polling Time:" with a dropdown menu set to "100 msec".

At the bottom are "OK" and "Cancel" buttons.

Select the communication port, IP Address if Ethernet is selected, and Polling Time. The IP Address is the IP Address of the RMC card you setup earlier. It is recommended to keep polling time as high as possible. **Polling time** determines how often RMC software would read information from the panel. A lower polling time may impact the performance of the panel.

Remote User

The dialog box titled "Authentication Information" contains the following fields:

- "User Name" with a text box containing "Andrew".
- "Password" with a text box containing "XXXXXXXXXX".

At the bottom are "OK" and "Cancel" buttons.

Clicking OK will prompt you to provide user name and password, if at least one remote user has been set up. **Please note that both user name and passwords are case sensitive.** If no remote users were defined, this dialog box would not appear.

Access Password

The dialog box titled "Enter Access Password" contains the following field:

- "Access Password" with a text box containing "xxxxx".

At the bottom are "OK" and "Cancel" buttons.

Projects requiring an Access Password will need the access password entered before the user information. You must have a correct Access Password in order to communicate with the panel. This is project level password set during screen design under **Setup > Panel Attribute > General Tab.**

Maintenance and Troubleshooting

Hardware Maintenance

Routine maintenance checks should be performed on the unit to avoid any risk of hardware problems. The EZTouch I/O Flex is designed to be a very rugged controller so that just a few checks periodically will help keep it up and running.

The key points to be checked include:

- Ambient operating conditions
- Wiring and connections

Maintaining the Ambient Operating Conditions

Keeping the EZTouch I/O Flex unit's environment within specified operating conditions is the best method to minimize the maintenance.

1. Always ensure that ambient temperature inside the cabinet is within EZTouch I/O Flex unit's temperature ratings.
2. If any other equipment inside or outside of the cabinet is producing heat, employ cooling methods like a blower fan to reduce 'hot spots' around the EZTouch I/O Flex.
3. Periodically inspect and clean if there are any air filters on the cabinet. Ensure that the unit is free from dust, humidity and corrosive gases.

Error Checking Process

The EZTouch I/O Flex performs a standard diagnostic routine during each CPU scan. This is called the error-checking step. The primary task of this step is to identify various types of CPU and I/O failures. We classify these errors/failures broadly into two categories: Fatal and Non-Fatal.

Fatal Errors

These errors are the ones that lead to the system failure. During the CPU scan if a fatal error is detected, PLC is automatically switched out of Run mode and all I/O points are disabled. Some instances of fatal errors include: Wrong parity value, Programming errors, etc. The EZTouch I/O Flex will not go into Run Mode from Program if it detects a fatal error.

Non-Fatal Errors

These errors just need your attention and are not detrimental to PLC operation. Unlike fatal errors, the PLC will continue in Run mode despite an occurrence of non-fatal errors. When you identify such errors, you can proceed with an orderly shutdown and take the required corrective action. An example of non-fatal error is – a minor programming error.

Changing the Battery

The unit comes with a built in Lithium battery with a 5 year life expectancy. The steps below outline the process to change the battery inside the unit. Since only the information saved to the registers/discretets available on a power cycle will remain intact, please save pertinent information before attempting to change the battery. Then remove power from the unit.

1. Open the back cover to access the battery.



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



3. Close rear cover and ensure that the door latches.
4. Reconnect power source. Connect to PC and run the Programming Software to transfer back the user program to the EZTouch I/O Flex.

The Real Time Clock (RTC) will need reset after the battery has been replaced. All information saved to the registers/discretets available on a power cycle will remain intact. Data not saved to registers/discretets available during a power cycle will be lost.

Update Firmware

There are several methods to update the firmware for an EZTouch I/O Flex unit. Previously, it was explained how to update firmware through an OEM Packager file. Alternatively, the user can follow the steps below to update firmware through the EZ Series Software and a COM port on the EZTouch I/O Flex unit.

NOTE: A firmware upgrade will wipe out the existing project in the unit; it is always advised to take a backup of the project before firmware upgrade process.

1. Insert the EZ-PGM CBL programming cable into the COM1 port. Then launch the EZ Panel Editor software.
2. Select Edit Program OFFLINE and enter a project name (e.g. Test). Click OK.

ENTER PROJECT INFORMATION

Project Location : \\Avgapp1\Profiles\cspinler\Utico\

Project Name : Test

3. Under Panel Family, select EZ3 Series. Then select the size appropriate for your purchased unit (6", 8" or 10").

Select EZSeries Panel

Panel Family: EZ3 Series

Size: 4" 6" 8" 10" 15"

4. Under PLC, select EZPLC as PLC Model and then select purchased PLC type (Std, Micro or Nano).

PLC

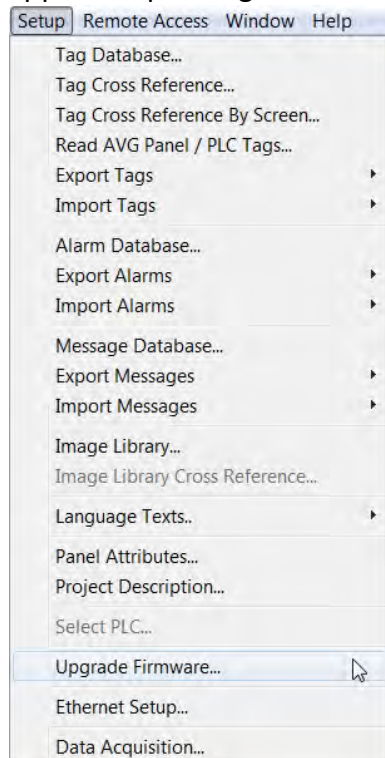
PLC Manufacturer: AVG PLC Model and Protocol: EZPLC - Rev d / F

View/Edit PLC Com Setup...

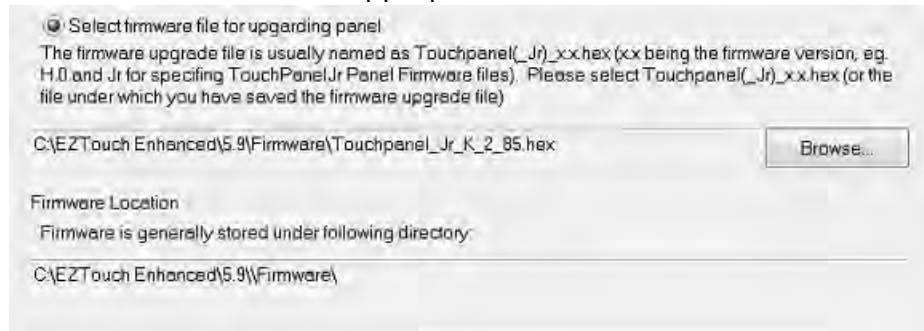
PLC Type: Std PLC Jr PLC Nano PLC Micro PLC

PLC I/O Modules: Inputs (24VDC): I1-I16, Outputs (Relay): O1-O8

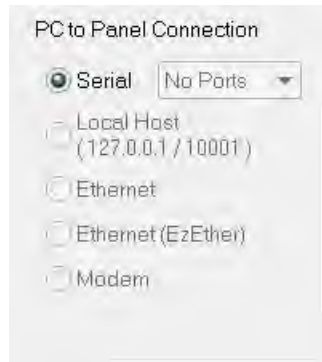
5. After the project loads, click **Setup > Upgrade Firmware**. A dialog box will appear requesting the firmware file you would like to load to the unit.



6. Use *Browse* to locate the appropriate firmware version.



7. Verify Serial (COM1) is selected under the PC to Panel Connection, then click OK.



Setup IP Address

The EZTouch I/O Flex will arrive with a factory-programmed IP Address that may need edited to be compatible with your LAN network. Once the IP Address has been adjusted to the LAN, the EZTouch I/O Flex can receive programming instructions through either the serial port (COM1) connection or via the Ethernet. Follow the steps below to use the editing software to update the IP Address information through a COM port on the EZTouch I/O Flex.

1. Insert a USB cable or EZ-PGM CBL programming cable. Then launch the editing software EZPanel Editing Software.
2. Select Edit Program OFFLINE and enter a project name (e.g. Test). Click OK.

ENTER PROJECT INFORMATION

Project Location : \\Avgapp1\Profiles\cspinler\Utico\
 Project Name : Test

3. Select EZ3 under Panel Family. Then select the size appropriate for your purchased unit (6", 8" or 10").

Select EZSeries Panel

Panel Family: EZ3 Series Size: 6"

4. Under PLC, select EZPLC as PLC Model and then select purchased PLC type (Std, Micro or Nano).

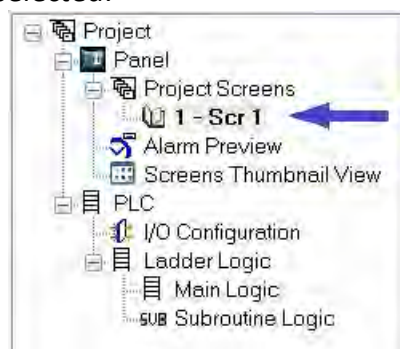
PLC

PLC Manufacturer: AVG PLC Model and Protocol: EZPLC - Rev d / F View/Edit PLC Com Setup...

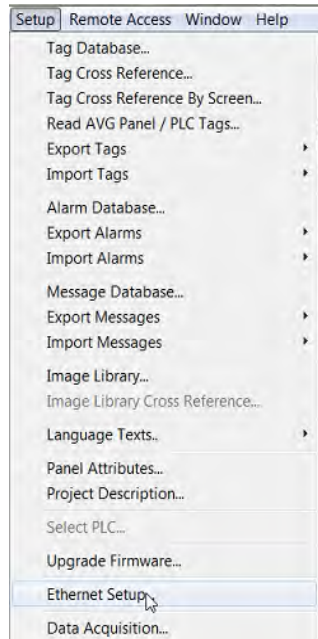
PLC Type: Std PLC Jr PLC **Nano PLC** Micro PLC

PLC I/O Modules: Inputs (24VDC): I1-I16 Outputs (Relay): O1-O8

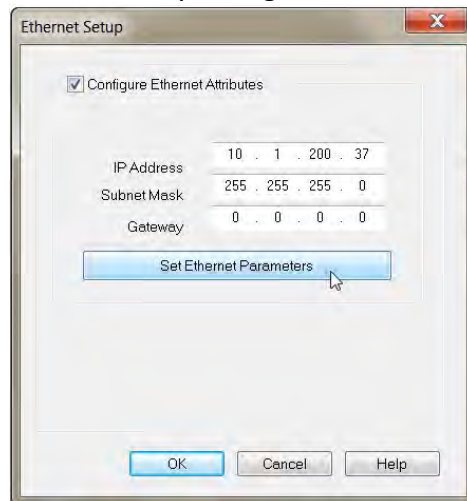
5. Click OK to launch the editing software program.
6. The Main Project Window will then appear showing both the PLC and Panel sides to the program. To adjust the IP Address, the Panel side will need to be selected.



7. Click **Set-up > Ethernet Set up**. A dialog box will appear displaying the current IP parameters.



8. Once the dialog box appears, select 'Configure Ethernet Attributes.' Type in the necessary changes and click 'Set Ethernet Parameters.' Click OK.



9. Next, save the project.

Troubleshooting

If you encounter difficulties while using the EZTouch I/O Flex device, please consult the list below which outlines common troubleshooting issues and their solutions. Additional assistance is also available within the **EZ Panel Enhanced Software Help**. Alternatively, you may also find answers to your questions in the operator interface section of our website @ flash.ezautomation.net.

Issue: *Panel won't power up*

Solution: *Apply power and observe the LED in the back of the panel*

- a) LED does not turn on: No power to the unit or power supply failed, check the power supply.
- b) LED turns RED and stays RED: Unit has failed, Please return the panel for repair.
- c) LED flashes RED and turns GREEN: Unit is OK, Display might have gone bad. Return panel for repair.

Issue: *Can't program the unit using USB Programming cable*

Solution: *Disconnect and then reconnect the programming cable*

Please unplug the USB programming cable from the computer and close the programming software.

Plug the USB cable back in, wait for 10 – 15 seconds and launch the Programming software.

Our programming software reads the com ports directly from the device manager of the computer and it has auto detect feature.

Issue: *USB Flash drive is not recognized*

Solution: *Using a different USB Flash drive, ensure the USB function is enabled*

Using a low memory capacity USB Flash drive, preferably less than 2 GB, press and hold the upper left corner of the Touch screen for about 6 seconds to reach the *Setup* menu on the panel. Click on *English*. Check the 2 pre-programmed buttons to ensure USB is enabled and “Log to SD (Now USB)” button is enabled. Restart / power cycle your panel.

Issue: *Touch cells not responding*

Solution: *Initiate a TouchPad Test*

Press and hold the upper left corner of the Touch screen for about 6 seconds to reach the *Setup* menu on the panel. Click on *English*. Click on the *Touchpad Test* button and press all Touch cells to see if it responds to Touch. If all buttons respond, then there is no problem with the Touch screen. If some or all of the touch cells don't respond to touch, then the unit needs to come back to the factory for repair.

Issue: *Ethernet not responding*

Solution: *Set the IP Address*

1. Please set the IP address for the panel using our programming software and going to **Setup > Ethernet Setup**.
 - a. Please match the first 3 octets of the IP address to your network and also enter subnet mask.
 - b. If your network has a gateway, then enter the gateway address.
2. Please use a straight Ethernet cable and connect it through a hub.

3. Power cycle the panel and ping the IP address assigned to the panel by going to your command prompt.
 - a. If it is pinging, disconnect the cable from the panel end and ping again, if it pings again, then there is another device with the same IP address in the network.
 - b. If it does not ping, then there is no duplicate device. Connecting the Ethernet cable back to the panel should resume communications.
4. If it is still not communicating, please restart your panel and during boot up check if the MAC ID is present. If it is not there then you will have to reset the MAC address. Please call EZ Automation Tech support for help.

Issue: *Incorrect Communication Packet (Time Out Error) Check cable and communication port*

Solution: *Check cable and communication port*

First, make sure you are using an EZ-PGMCBL. A standard RS-232 cable will not work. Next, check if the software / firmware incompatibility exists. Also check if you have selected the appropriate computer COM port to transfer the program in the panel programming software or see if there are any third party programs which might be using the communication port of your computer.

Issue: *Selected panel does not match the connected panel, write to panel is aborted*

Solution: *Correct panel type*

When writing/transferring the project to the panel, the panel type selected on the screen "Step 1: Project Information" must match the panel that the computer and PLC are physically connected to or the program loader will not upload the project. Exit the OFF-LINE Editor to the "Step 1: Project Information" screen, and select the appropriate panel type and size of the connected panel and try transferring the project to the panel.

Issue: *Unable to open communication port*

Solution: *Change communication ports*

Select a different communication port in the programming software to transfer the project.

Still Need Help?

Technical Support

Most of the frequently encountered problems regarding the EZTouch I/O Flex unit's operation are answered in the sections above. However, if you still need answers to your questions, please call our technical support at 1-877-774-EASY or email us at techsupport@ezautomation.net.

Warranty Repairs

If your EZTouch I/O Flex is under warranty, contact us at 1-877-774-EASY.

Out of Warranty Services

If your EZTouch I/O Flex is out of warranty, contact EZ Automation at 1-877-774-EASY for an evaluation of repair costs. You can then decide whether it is more economical to proceed with the repairs or to upgrade your system with a new unit.