



FP4030MR Serial HMI

## 1. Introduction

The FP4030MR is a serial based keypad and LCD screen combination that is designed into an IP65 rated bezel. It can connect to any of the 'Super' PLCs supplied by Triangle Research International (TRI) via RS232 or RS485 and communicates via the native Hostlink protocol as well as Modbus TCP if interfacing to 3rd party controllers.

This guide offers a walkthrough on how to get the FP4030MR HMI connected to a PC in order to transfer a HMI demo program to the unit, and also connect the HMI to a PLC in order to run the program and demonstrate some basic control of a PLC from the HMI.

If at any time more information is required on HMI safety and protection ratings, HMI Power, and HMI communication, please refer to the FP4030 Hardware or User Manual provided at the following links:

[http://www.triplc.com/documents/FP4030MR\\_Hardware.pdf](http://www.triplc.com/documents/FP4030MR_Hardware.pdf)  
[http://www.triplc.com/documents/FP4030MR\\_Reference.pdf](http://www.triplc.com/documents/FP4030MR_Reference.pdf)

The following is only the minimum basic information required to get the FP4030MR set up with TRI PLCs in most situations.

### Getting Connected at a Glance:

1. Connect the HMI to a PC by plugging the mini-USB end of the USB cable into the FP4030MR and the standard USB end of the cable into one of your PCs USB ports.
2. Connect the HMI to the PLC by
  - a. Plugging the male end of the RS232/RS485 serial cable into the female DB9 connector on the FP4030MR.
  - b. Wiring the Tx+ (black wire) to the RS485+ terminal on the PLC and the Tx- (red wire) to the RS485- terminal on the PLC.
3. [Download and Install the Flexisoft for TRi PLCs Software](#)
4. Connect 24V DC power to both the PLC and HMI.
5. Install the FP4030MR drivers to your PC from the C:\TRiLOGI\FlexiSoft for TRi PLCs\USB Drivers folder if not installed previously.
6. Open the "TRi PLC Demo.pzm" file from FlexiSoft using Project -> Open and select the file from the C:\TRiLOGI\FlexiSoft for TRi PLCs\Samples folder.
7. Transfer the demo program to the HMI using Project -> Transfer -> Download
8. Use TRiLOGI to open the FP4030MR.PC6, which is also included in the "FP4030MR Demos and Guides.zip" file, and transfer it to the PLC

For more detailed instructions, proceed to the subsequent sections of this guide.

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## 2. Connect the HMI to a PC

Your FP4030MR requires a USB A-B cable (standard PC USB to Square USB) to connect the HMI to your PC (not included), and a custom serial cable with RS232 and RS485 connectors to connect to your TRi PLC (included).

It should be connected per the below diagram:

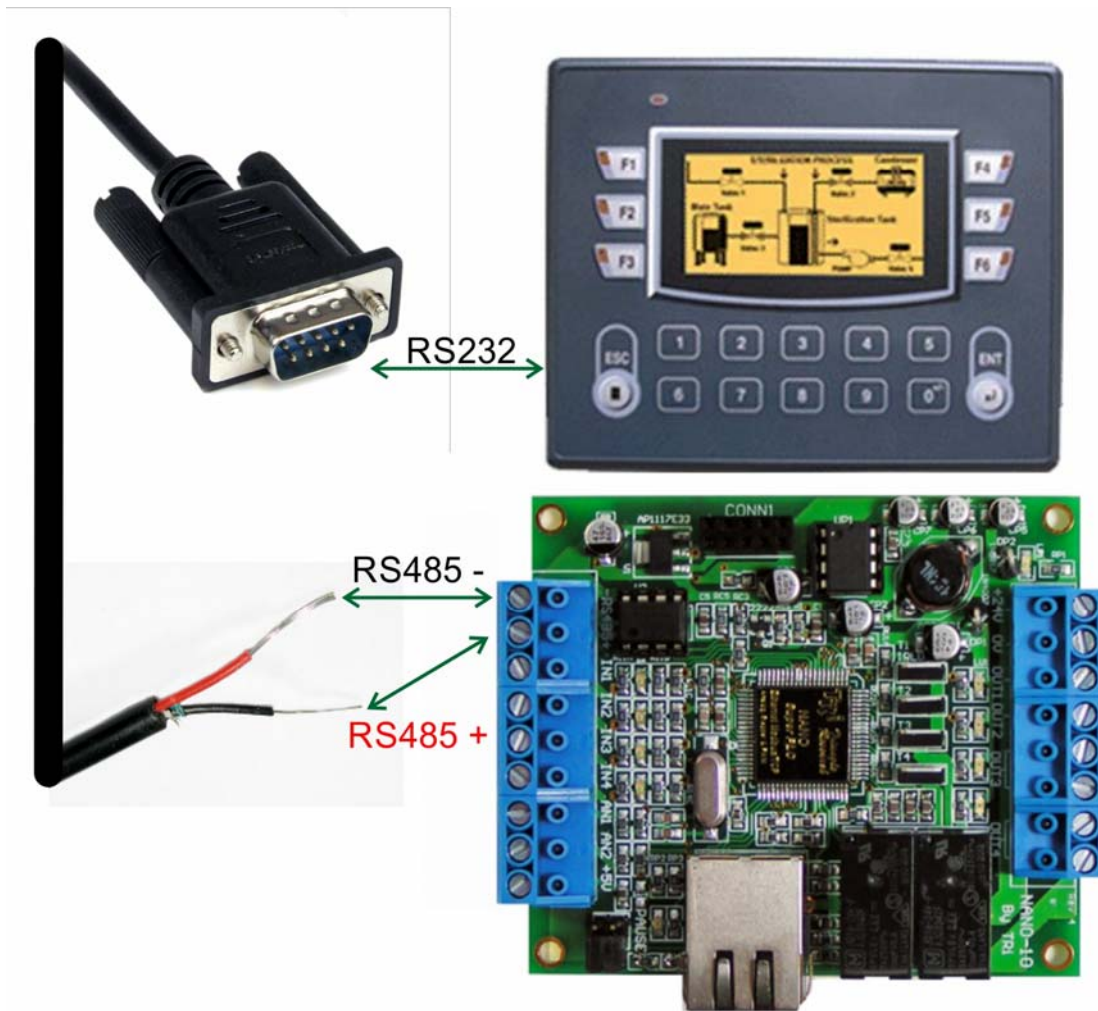


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### 3. Connect FP4030MR to PLC

The included RS232 to RS485 (2 wire) cable connects between the HMI RS232 port (DB9 connector) and the PLC RS485 port (2 wire), as per the below diagram. **Note that the black wire is actually the RS485 + signal and the red wire is actually the RS485 - signal.**

We recommend crimping plugs onto the red and black RS485 wires on the DB9 cable supplied with the FP4030MR. This will ensure a proper connection when plugged into the PLC RS485 screw terminal.



The above drawing can also be referenced in case a custom cable is being built. Note that pins 1 and 4 must be tied together and pins 8 and 9 must be tied together on the HMI COM port when constructing the RS485 cable connection.

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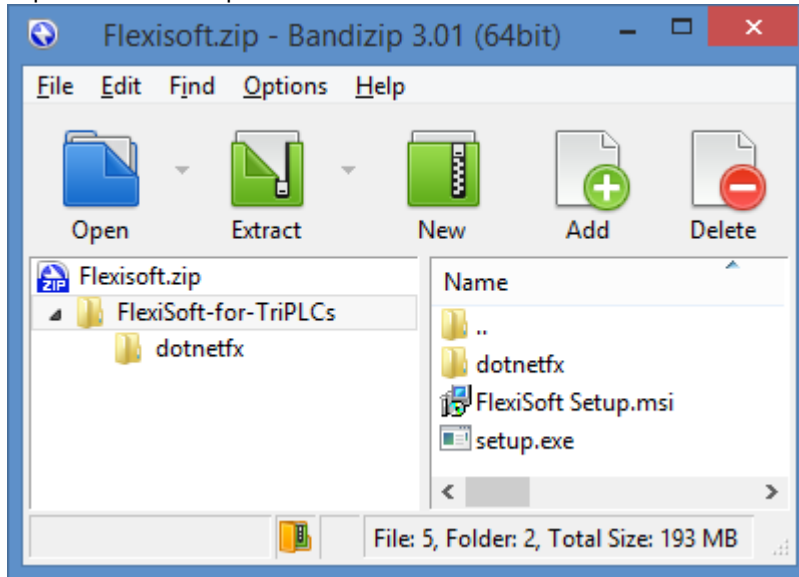
#### 4. Download and Install FlexiSoft for TRi PLCs HMI Software

You will have received an information sheet with the software download link, but the download page can be accessed directly here:

<http://www.tri-plc.com/FP4030MR/Flexisoft.zip>

After downloading the software, do the following to complete the installation:

1. Open the .zip file and extract the contents somewhere on your PC



2. Run the "FlexiSoft SetUp.msi" file that is located in the "FlexiSoft-for-TriPLCs" folder where you extracted the files.
3. Follow the steps to install the software. The FlexiPanels user manual should be referenced for more information.

Once the software has installed you can start FlexiSoft from the start menu or desktop icon on your PC. You should then see something similar to the following picture :

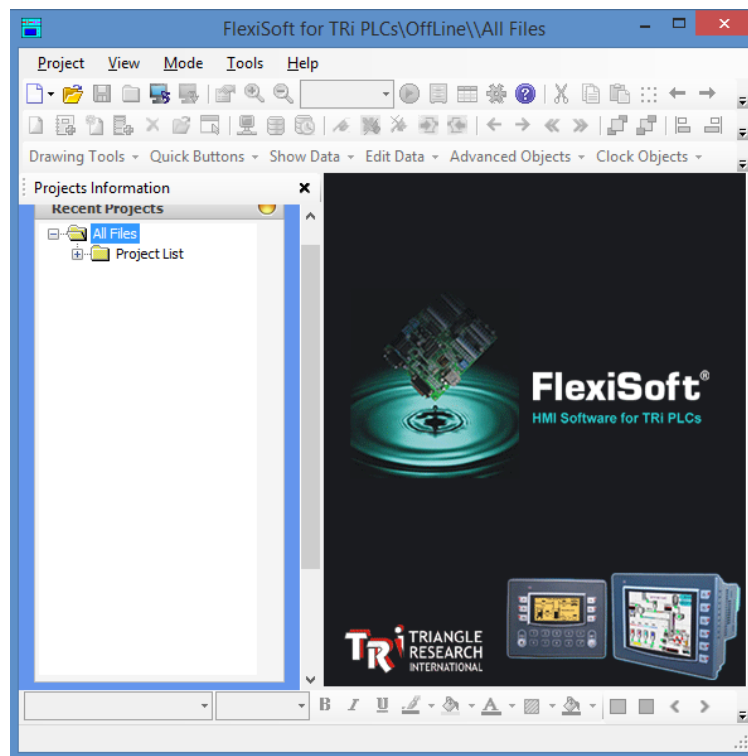


Figure 1: FlexiSoft Startup Screen

## 5. Connect Power to HMI and PLC

The FP4030MR has 3 connections for power: +, -, and  $\frac{1}{\equiv}$ . A 24VDC power supply should be used, which can be the same supply used for the PLC.

Power should be connected to the FP4030MR as follows :

1. Connect the +24VDC terminal from the power supply to the + terminal on the HMI.
2. Connect the 0VDC (-) terminal from the power supply to the - terminal on the HMI.
3. The  $\frac{1}{\equiv}$  can generally be left unused, but the FlexiPanels user manual should be referenced if you are unsure.

Power should be connected to the PLC as follows :

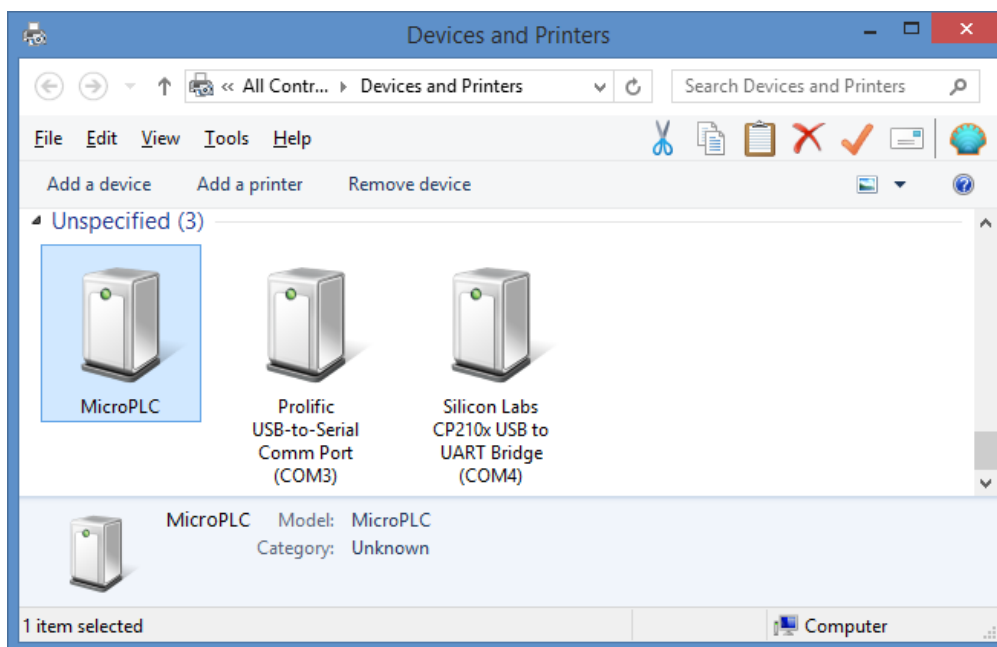
1. Connect the +24VDC terminal from the power supply to the +24V terminal on the PLC.
2. Connect the 0VDC (-) terminal from the power supply to the 0V terminal on the PLC.
3. Reference the PLC documentation for more information on this.

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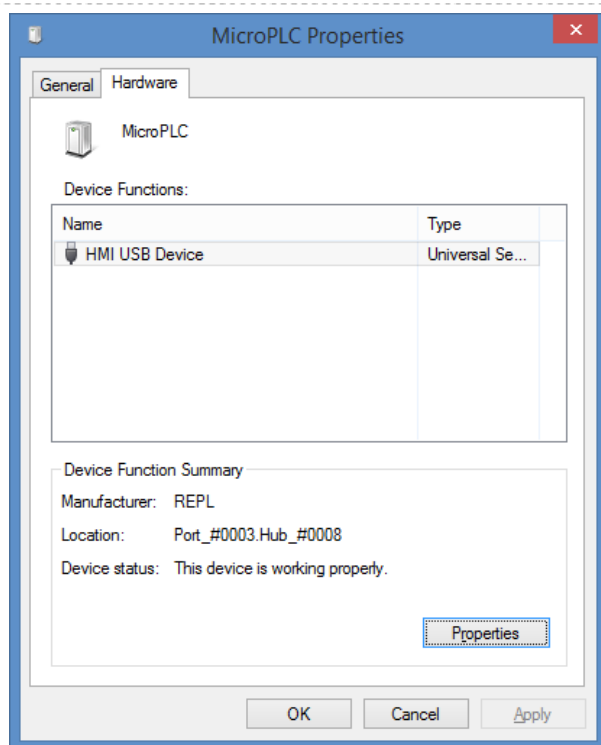
## 6. Install the FP4030 Device Drivers on the PC

The drivers may install automatically, but if not, then you can install the device manually and select the **C:\TRiLOGI\FlexiSoft for TRi PLCs\USB Drivers** folder to install from.

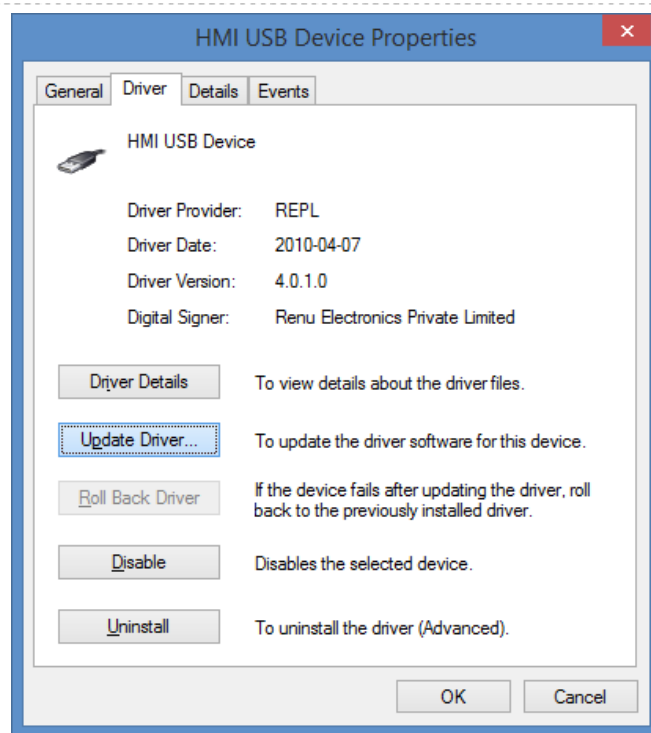
Open "Devices" or "Devices and Printers" from your PC control panel and open the properties for the "Micro PLC" device.



Right Click on MicroPLC and select Properties.

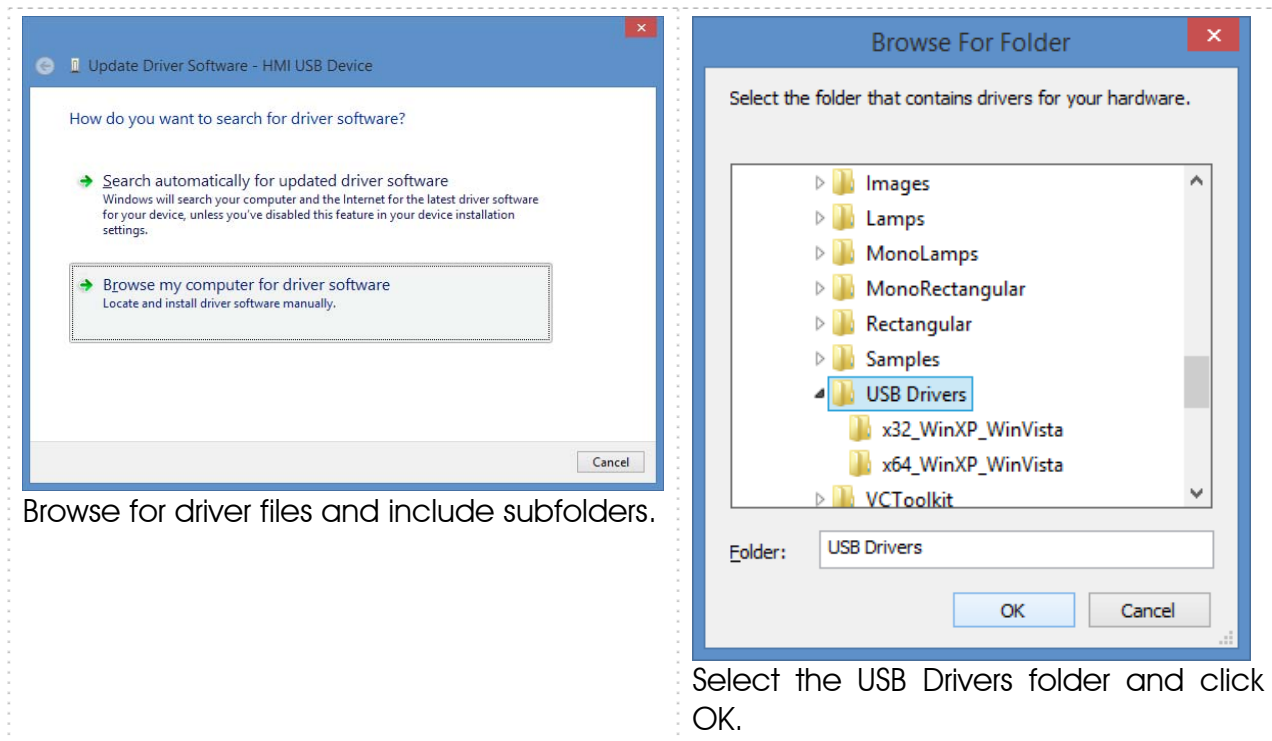


Select Properties



Select Update Driver





## 7. Load and Transfer HMI Sample Program

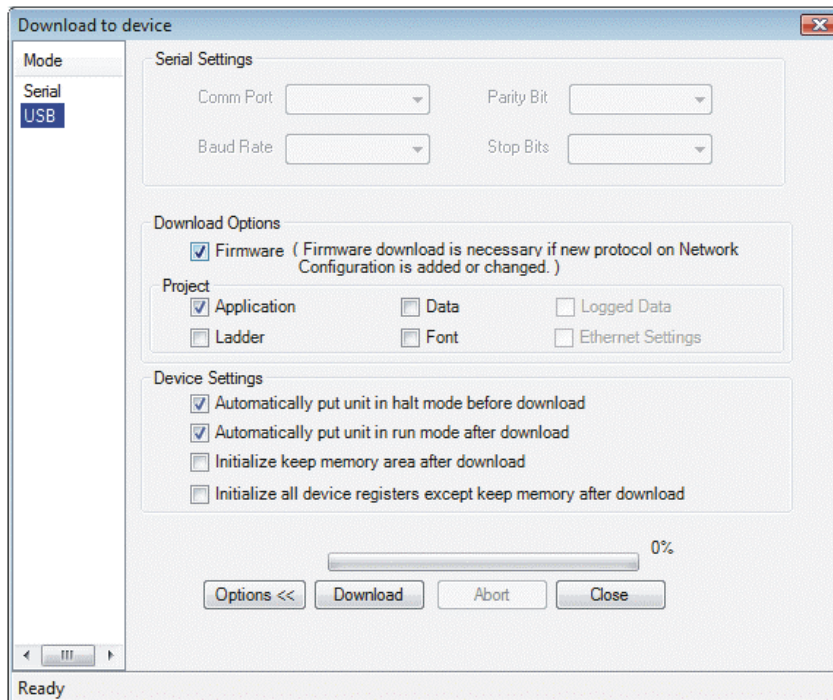
The sample program included with this quick start guide is called "TRi PLC Demo.pzm". You can open this file from FlexiSoft using Project – Open and selecting the file from the **C:\TRILOGI\FlexiSoft for TRi PLCs\Samples** folder.

This sample program is already pre-configured for communication with a TRi PLC, and it is possible to connect via RS485 or RS232 since both are shared on the HMI COM port and there is no need to specify the specific interface.

Once you have opened the sample program, you can transfer it to the HMI as follows :

1. Go to the "Project" menu and select "Transfer→Download".
2. A new window should appear as shown in Figure 2.
3. Make sure that USB mode is selected at the top-left of the window.
4. Make sure the Firmware box is checked.
5. Make sure that boxes under Project and Device Settings are all selected as shown in Figure 2.
6. Click Download and wait for the message that the download has finished.



**NOTE:**

The "Firmware" box typically only needs to be checked the first time a program is being transferred to the HMI or if any COM settings have changed or if there is a firmware update being installed to the HMI.

Figure 2: Download Window

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## 8. Load and Transfer PLC Sample Program

A Trilogi PLC sample program, called FP4030MR.PC6, is also included in the "FP4030MRdoc.zip" file. This should be opened with Trilogi and transferred as normally done with Trilogi (and TLServer for serial connections). You can find more information on communicating with a PLC using Trilogi from the [TL6 Programmers Reference Manual](#).

The FP4030MR.PC6 sample program is only required for the Data Entry function included in screen 11 of the "TRi PLC Demo.pzm" sample program. It could be modified to do more if desired.

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## 9. Using the FP4030MR Sample Program

Now that the TRi PLC Demo.pzm sample program has been loaded in the HMI, you should see the Home screen for this program :

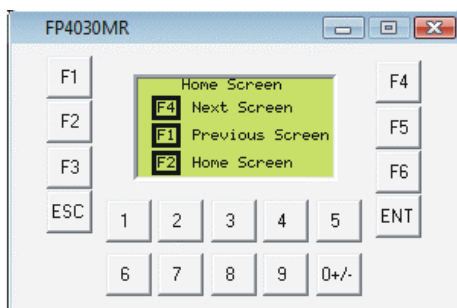


Figure 3: Home Screen

You can traverse through the different screens in the sample program by pressing F4 for the next screen or F1 to go backward one page. You can also go back to the home screen (above) by pressing F2. There are 12 screens total, but only screens 2-5 are shown in Figures 4-7 below.

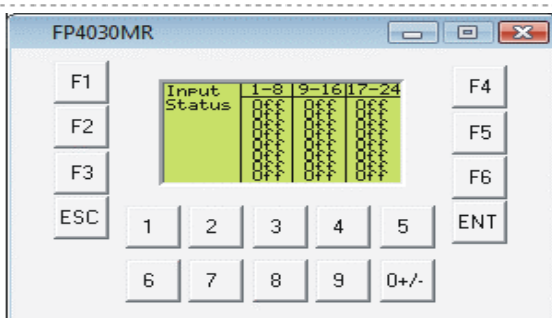


Figure 4: I/O Screen

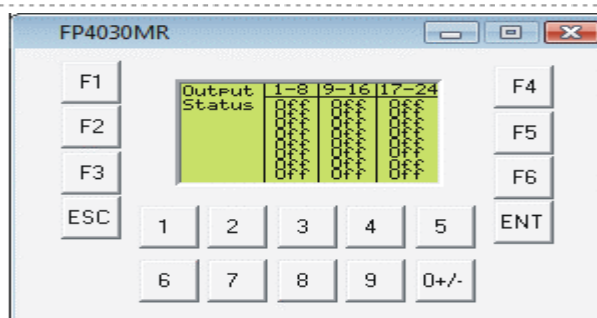


Figure 5: Analog Screen

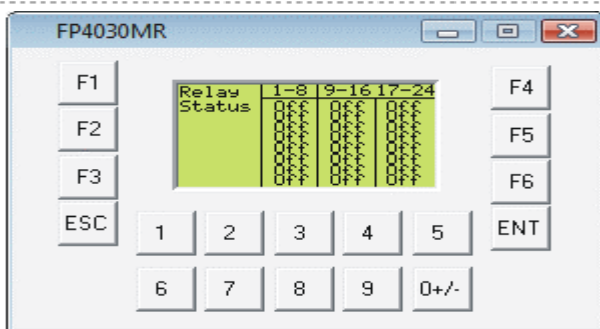


Figure 6: PWM Screen

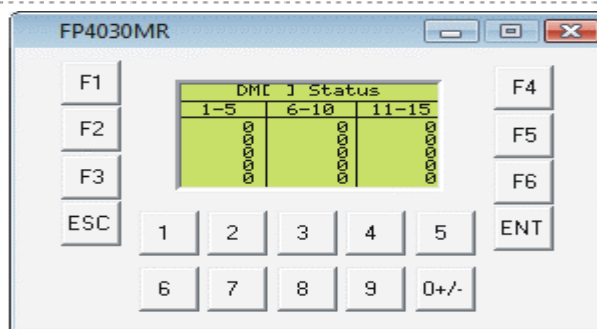


Figure 7: LCD Screen

## 10. Start a New Program and Configure for a TRI PLC

When you start a new program you will be asked to select your HMI model and screen orientation. You should select the FP4030MR (128 x 64) model as per the following screenshot :

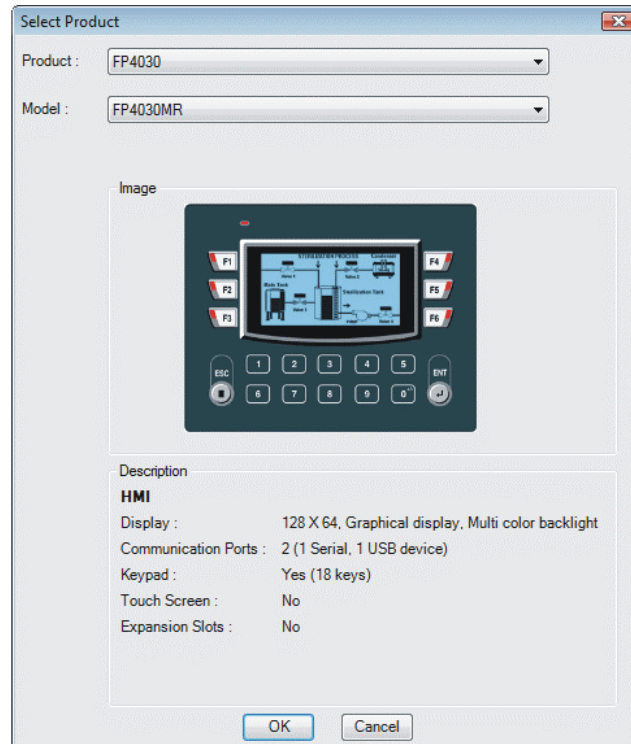
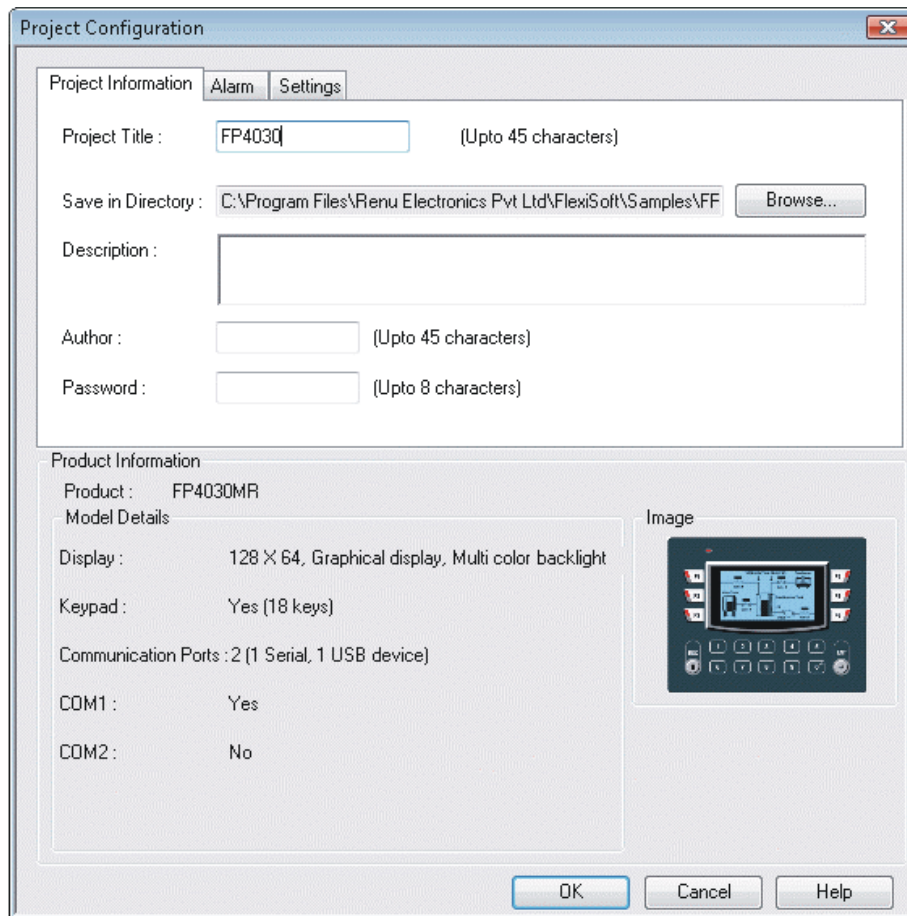


Figure 8: Select Model

Once you select OK, you will see a screen like Figure 9 below that allows you to configure the name and save directory for your current project.



The image shows a 'Project Configuration' dialog box with three tabs: 'Project Information', 'Alarm', and 'Settings'. The 'Project Information' tab is active. It contains the following fields and options:

- Project Title:** A text box containing 'FP4030' with a note '(Upto 45 characters)'.
- Save in Directory:** A text box showing 'C:\Program Files\Renu Electronics Pvt Ltd\FlexiSoft\Samples\FF' and a 'Browse...' button.
- Description:** An empty text box.
- Author:** An empty text box with a note '(Upto 45 characters)'.
- Password:** An empty text box with a note '(Upto 8 characters)'.

Below these fields is the 'Product Information' section:

- Product:** FP4030MR
- Model Details:**
  - Display:** 128 X 64, Graphical display, Multi color backlight
  - Keypad:** Yes (18 keys)
  - Communication Ports:** 2 (1 Serial, 1 USB device)
  - COM1:** Yes
  - COM2:** No

On the right side of the 'Product Information' section is an 'Image' placeholder showing a small image of the FP4030MR device. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

Figure 9: Project Configuration

Then you can click OK on the Project Configuration window and you should see a starting screen similar to Figure 10.

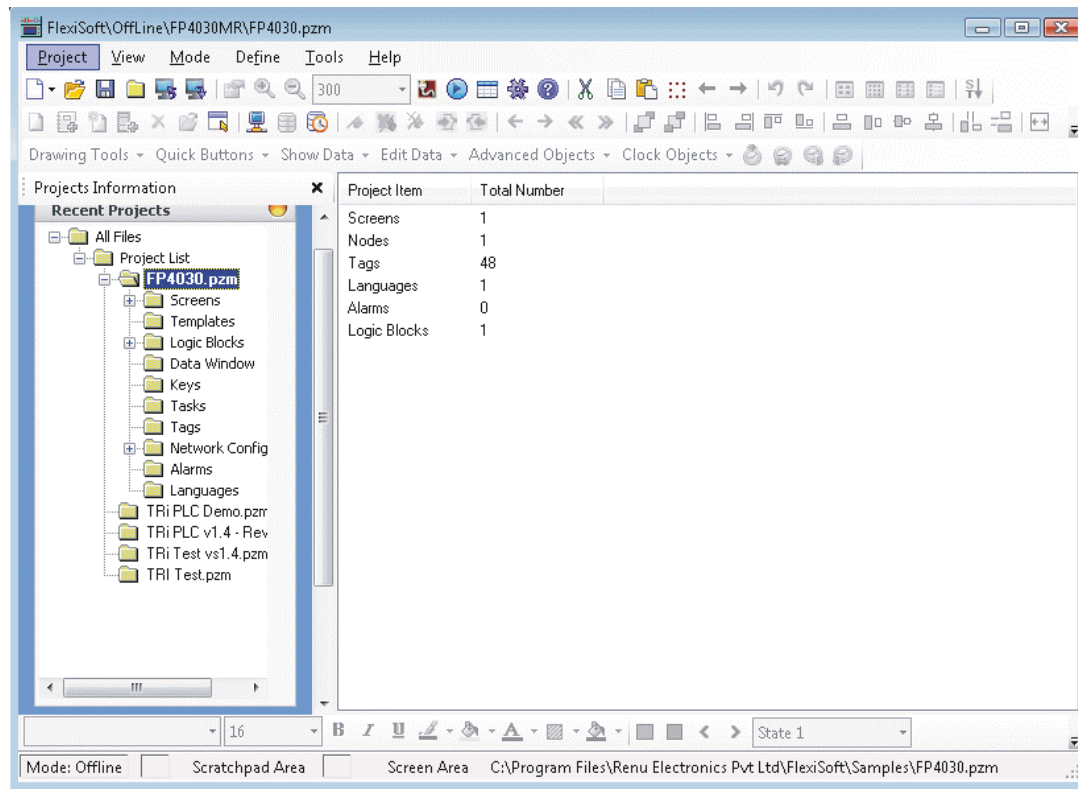


Figure 10: New Program Window

Next you will want to expand the Network Config menu and right click on the Com1 folder to add a device as shown in Figure 11. This will open the Com settings window shown in Figure 12.

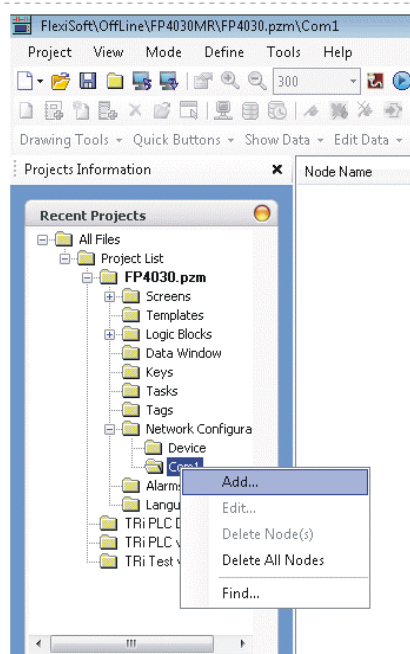


Figure 11: Add PLC to Com1

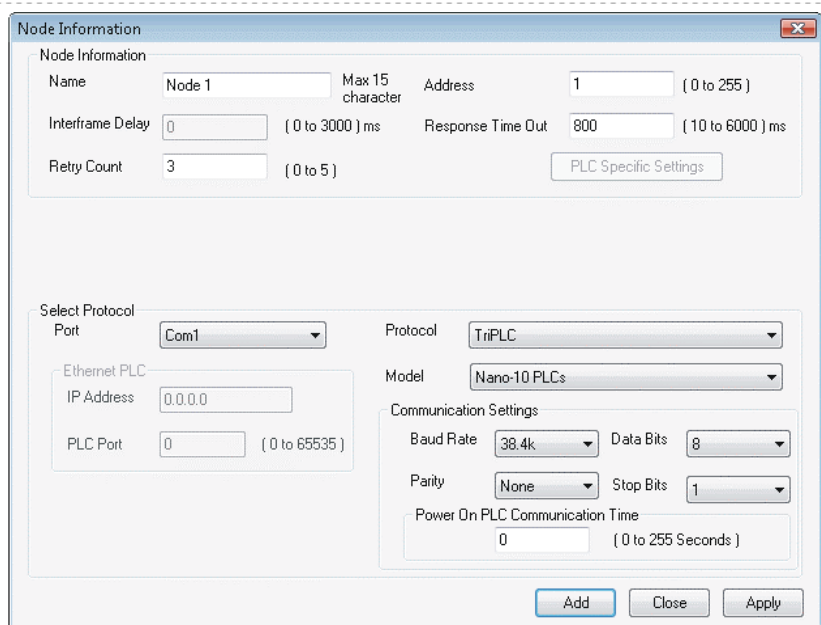


Figure 12: Configure HMI Com Settings to Match PLC



The default settings should be configured for TRi 'Super' PLCs already, but if not, you will need to configure the following as per figure 12 above:

1. Name: Can be anything
2. Address: the PLC ID, which is 01 by default.
3. Port: Com1, which is the only option for this HMI model.
4. Protocol: Select TriPLC from the dropdown list.
5. Baud Rate: select 38.4k from the dropdown list.
6. Data Bits: select 8.
7. Parity: select None.
8. Stop Bits: select 1.
9. Click Add and then Close (everything else can be left as default).

*Note: Other settings such as Response Time Out and Retry Count can be modified to handle com connection issues differently.*

Now you can add new screens and configure them with button functions and display objects as well as general text and pictures.

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You can find more information on configuring the program for an FP4030MR with a TRI PLC as well as information on PLC data mapping between the PLC and HMI in the "FP4030MR Mapping.pdf" document included in the "FP4030MR Demos and Guides.zip" package. The Help menu in FlexiSoft also has a lot of information on the available components that will help to design your touch screen program.