Chapter 4

Getting Ready to Program Labeling the System, Modules and Channels

Getting Ready to Program the System

After you have created your I/O list, the next step before you begin programming a system, is to determine the relationships between the inputs and outputs and record them. Two words must be emphasized here: ***organization*** and ***documentation***. This can't be emphasized enough. Without effort here, a lot of confusion and mistakes will be made later. These interrelationships *must be written out to aid in the understanding of all the functions.* In some simple applications, this step may seem unnecessary, but it will often prove helpful as the process moves along.

Some examples of these interrelationships would be:

If a light should be on when a switch is on, the statement would be written**: Light = Switch**
In the future we will refer to these relationships as Booleans.

If there are more conditions, then it might be written as:

Light = Switch OR Ignition
(This statement means that if either the switch is on or ignition is on, the light will be on.)

Light = Switch AND Ignition
(This statement means that both the switch and ignition inputs must be on for the light to be on.)

Another operator that needs to be discussed is the **NOT** function.
This is written into the Boolean logic statement as follows**: Light = Switch AND NOT ignition**
(This statement means that the light will be on when the switch is on and ignition is not on.)

The last and final operator is **PR**, which stands for **prior state**.
This will be discussed in detail later in this chapter.

Short hand is as follows *OR* = +, *AND* =*, *NOT* = *!*, *Prior State* = *Pr*
Example: Light = Switch+ ! Ignition
Just as you would in algebra, parenthesis can also be used to group items.

These relationships can become fairly complex when interlocks and timers get involved. By writing them out this way, it will help you when you begin to enter your program.

Once all the names (I/O list) and relationships of the inputs and outputs have been determined and recorded, then it is time to program the system. All the programming is done using a computer with Windows™ and the Intellitec WinPMC programming software. The first step is to install the program on a computer. There are two versions of the programming software. WinPMC allows you to program the 160 channel CPU and WinPMCII allows you to program the 320 channel CPU.
Some features such as Pr (prior state) are not available with the 160 channel system.

Once you have installed the program, an icon will appear on your desktop. Double click the icon to open WinPMC II. Once opened, the tip of the day screen will appear. The "tips" screen should be closed by clicking on the "X" in the upper right-hand corner of the window.

To gain programming rights, contact intellitec for a password. After you have obtained the password, open the WinPMC II software and open the utility menu. Select password and enter it on the screen provided. The password enables programming rights. Without the password, the program can be used to read relationships previously programmed into a vehicle, or it may be used to upload/download previously written programs to and from a CPU. This is useful if an OEM wishes to email changes to a dealer, to allow the dealer to download them to the vehicle. This allows the OEM to maintain control over the functions of the vehicle.

Getting Ready to Program the System

This password is only required one time immediately after software installation to enable programming rights. Once you have entered the password on your computer, it will not be needed again. The password expires 2 weeks after it has been issued. If you wish to install the software on another computer at a later date, a new password can be obtained from Intellitec.

IMPORTANT

To begin programming from scratch, **be sure there are no commands remaining in the computers memory. This is IMPORTANT! as the previous program you had written could mix with the new program you are about to write.** To clear the memory click on **"PMC Labels",** select **"Clear All"**. The panel will appear asking if you want to clear the entire system. Click "OK". This clears the memory. **WARNING** *If the port is open and the RS232 cable is connected to the CPU and computer, any program stored in the CPU will also be cleared.* To see if the port is open or closed, click on CPU Comm. "Open Port" means that the port is closed. Clicking on it will open the port. It is not necessary to have the port open, or the computer connected to the CPU via the RS232 cable while writing the program. The program can be written and stored as a file on your computer, then downloaded to the PMC CPU at a later time. With the port open and CPU connected, changes made to Booleans (logic statements) are immediately transmitted to the CPU and take effect immediately.

TO MODIFY AN EXISTING PROGRAM THAT IS ALREADY ON THE VEHICLE

Begin by clearing the memory in the computer with the port closed.
Then do one of the following:

Open the port and upload the file from the CPU
Open the port and download the new file from your computer and transfer it to the PMC CPU.
Make modifications as necessary.

LABELING

The first step in setting up the system is to label all of the modules and each of their channels. This is a very important step in the process, as it helps to keep track of the *functions* of the system. Careful labeling will be very important later in the programming process. **DO NOT skip this step.**

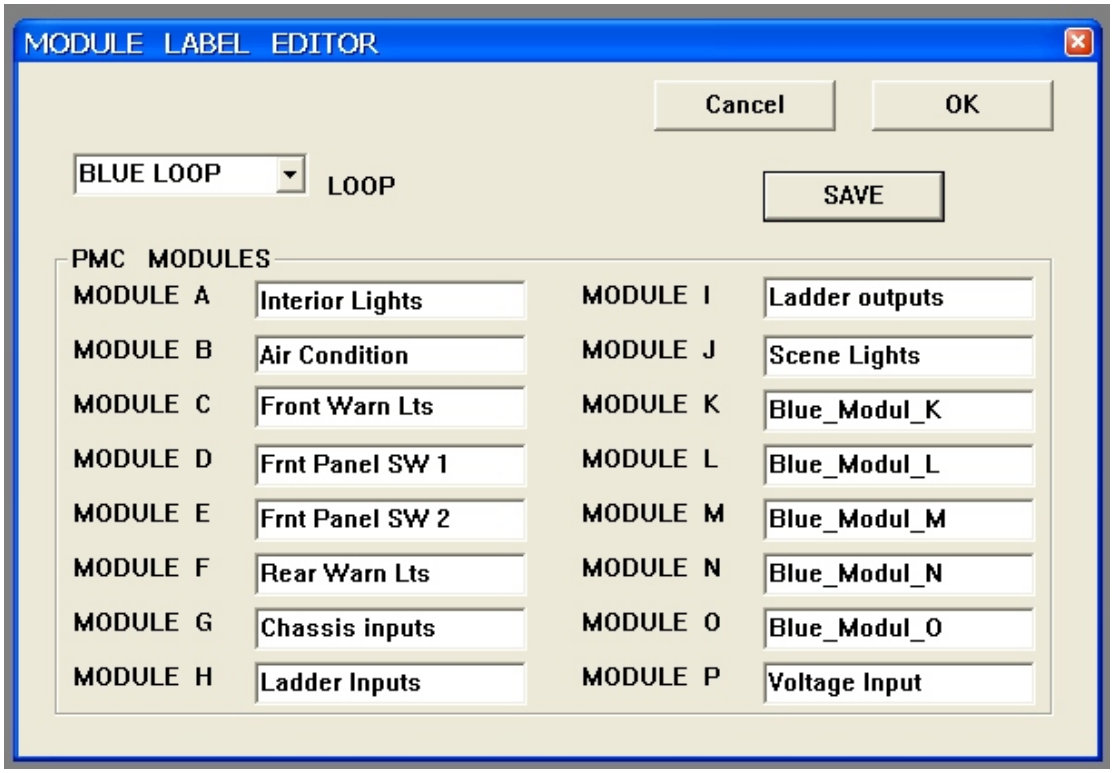
SYSTEM LABELS

System labels provide a place for you to identify the vehicle. This information is stored in the PMC CPU, as well as in your computer and will appear on the spreadsheet. *The PMC spreadsheet will be discussed later.* From the PMC Labels menu, select "System Label". We have defined the fields as Vehicle Model, Author and Revision Date. You can enter any information that may be appropriate. You may wish to put a document number in place of author. It is entirely up to you. This information will become most important when you retrieve a program from the CPU after a long period of time. You will be able to determine what version of software the vehicle was programmed with. The revision date changes automatically, when the program is revised.

Getting Ready to Program the System

MODULE LABELS

The next step is to label each module in the system. To do this, click on "PMC Labels" in the task bar. This will create a flyout list of functions. Move down this list to "Module Labels" and click. The Module Label editor screen will appear, as shown here. This screen allows you to identify each of the modules in the system. While the screen allows you to identify all the modules, you need only identify those you are using.



To name a module, select the loop that the module is attached to, either Blue or Yellow. Then, click in the box of the module you want to name. Enter a name that describes the module, application, or location for that module. The names are limited to 15 characters. Continue to do this for each module in the system. When you have finished, click on Save before changing loops, or “OK” to exit the Module Editor.

Getting Ready to Program the System

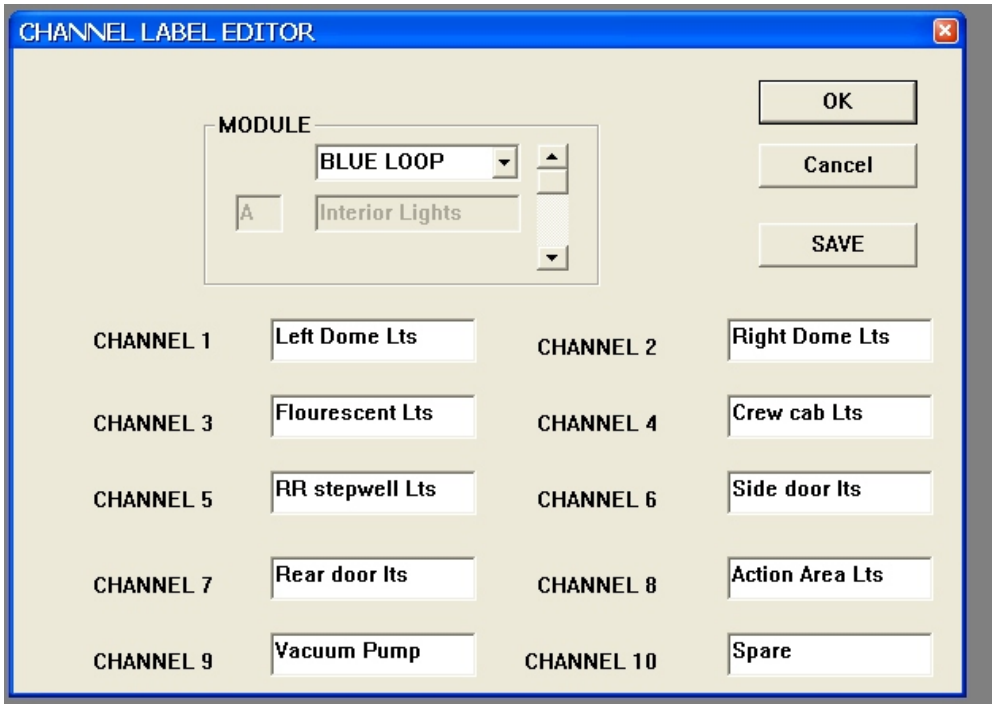
CHANNEL LABELS

The next step in the process is to label the function of each channel in the system. *Again, this is a **very important step** in the process* to keep things well documented.

The labels should be descriptive of the function of that channel. ***Since input and output names are often similar, we recommend that you label inputs and switches with a descriptor. For example "Head Lt SW"***. This way you will not be confused later on as to whether the channel is an input or output.
Do not use the same label for more than one channel.

To label channels, click on "PMC labels" in the task bar. This will create a "flyout". Move down this list to "Channel Labels" and click. The screen should appear, as shown here.

Select the module to be labeled by clicking the loop selector *(the 160 channel CPU does not have a loop selector)* and then, on the up or down arrow. Enter the label for each channel in the module. After leach channel has been labeled, click on "Save" prior to moving on to the next module. Repeat this process for each module.



SAVING DATA

Now, you will save the data you have entered. Click on "File" to produce the "flyout". Then, click on "Save as". The first time you do this for a particular system, you will have to name the file. Again, as mentioned previously, the name should be descriptive. A suggestion would be the name, or Model and Revision of the vehicle. This will allow you to keep track of the files. After the name is typed in, click on the "Save" box.