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Product Family:	C-More Micro Graphics Panel	Number:	AN-EA-006
Subject:	Using Function Keys	Date Issued:	January 22, 2024
		Revision:	V2.0

This application note will demonstrate how to set up a non-touch or touch model C-more Micro Graphics panel (C-more Micro) to use the function buttons. This application note will make a toggle pushbutton, an indicator light, a numeric entry object, and a numeric display object on the screen to interact with a DirectLogic PLC. The C-More Micro can be used with any PLC, but this example uses the DL05 PLC. The ladder logic example is specific to DirectLogic PLCs, so if you use another PLC, you will have to modify the ladder accordingly.

The project assigns all active buttons to function keys on the panel. The touch version panels can use the same function keys, or you can just touch the object on the screen to activate it. We will change the numeric entry object to allow a pop-up keypad on the touch version.

The ladder logic will accept the toggle pushbutton input from the C-more Micro and use it to turn on an output and the output will be reflected by the indicator light status. The numeric entry value will have a value of 10 added to it and copied to another v-memory address with will be displayed on the numeric display object. The toggle pushbutton will address C0 in the PLC. Y0 is the output that will be mirrored by the indicator light. The numeric entry object will write a 3 digit BCD value to V2000 and the ladder logic will add 10 to the number entered and output the new value to V2001, which will be displayed on the numeric display object on the C-more Micro.



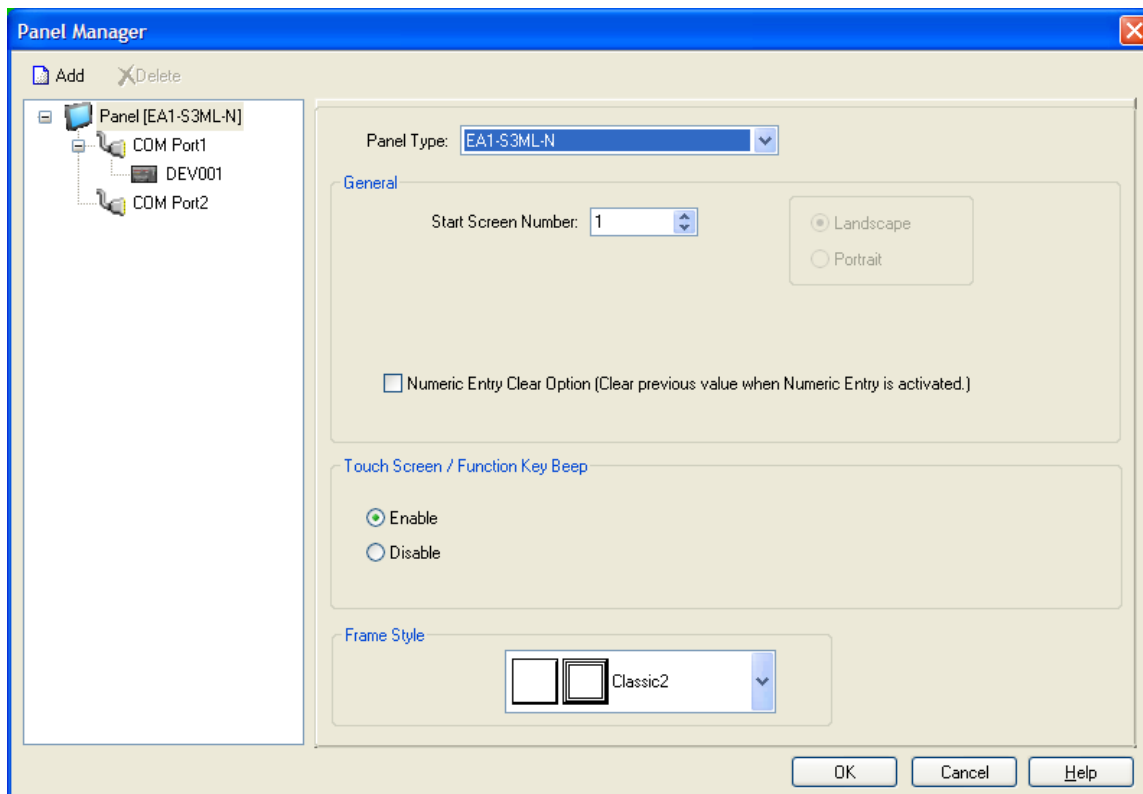
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Start by opening the C-more Micro software.

Go to the Setup / Panel Manager menu selection.

Select the panel part number that you are using. (This example uses the EA1-S3ML-N, but any Micro panel with Function buttons will work) Any settings or selections not mentioned should be left at their default value.

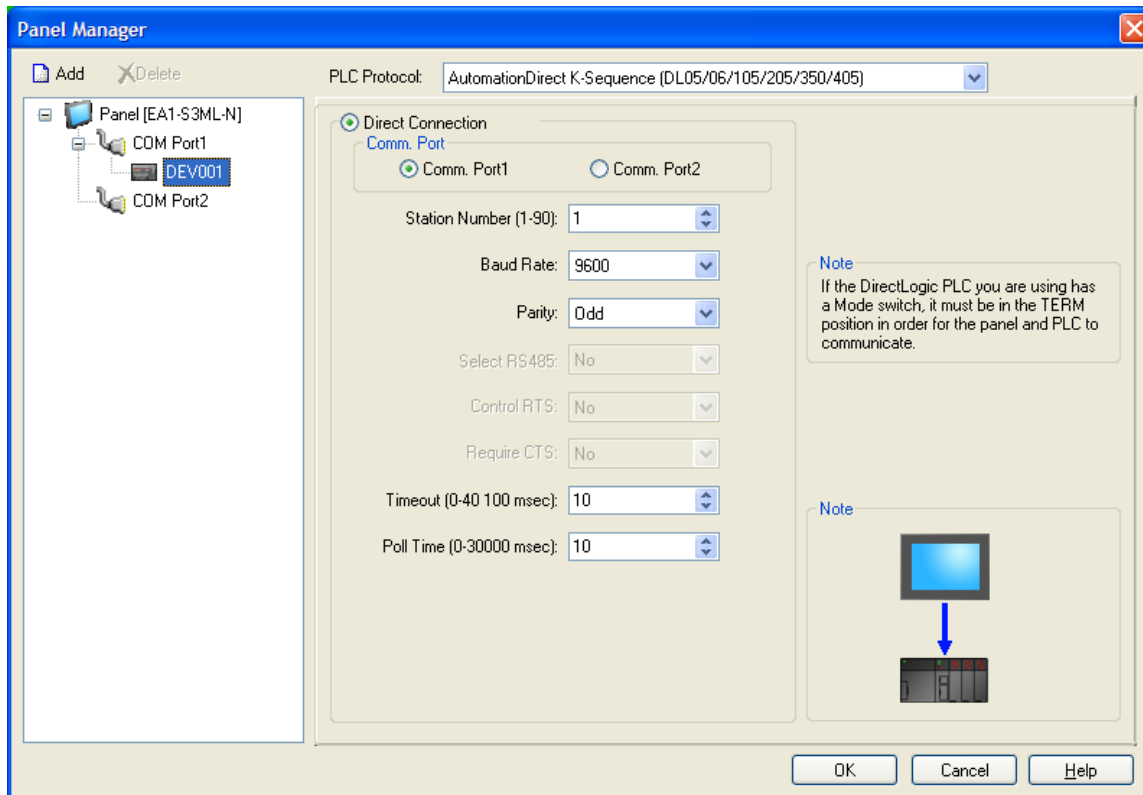




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On the left-hand side of the Panel Manager window, under the COM Port1 listing you should see DEV001. Click on the default device, DEV001, so that it's highlighted in blue. The right-hand side of the Panel Manager window will change to show the communication selections for the default device, DEV001.



The default settings should work for any connection to port 1 of any DirectLogic PLC, except the DL330 and DL340 CPUs. The default values should be:

- PLC Protocol: AutomationDirect K-Sequence (DL05/06/105/205/350/405)
- Comm. Port: Comm. Port1
- Station Number: 1
- Baud Rate: 9600
- Parity: Odd
- Timeout: 10
- Poll Time: 10

If any of these values don't match those listed above, you can change them to match (unless you know your PLC communication port settings are different).

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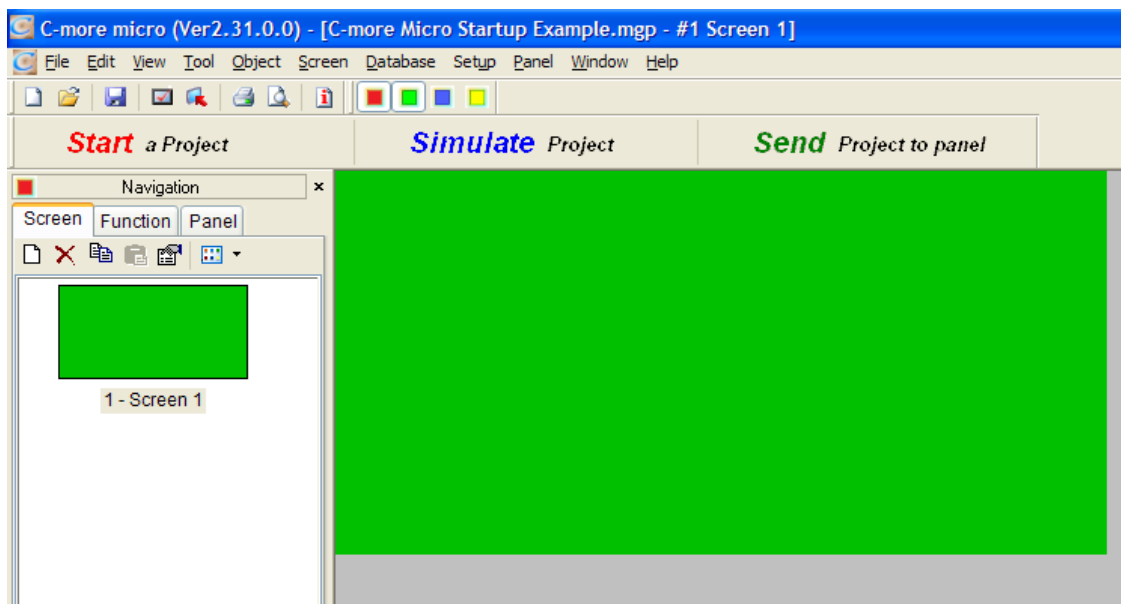


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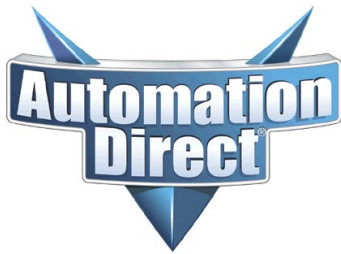
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Now click the OK button and we have told the new C-more Micro project which panel it is being programmed for as well as the communication parameters it will use to talk to the PLC when connected.

At this point you can save the project, which will allow you to give it a name. Select the **File** menu, then **Save Project**. A standard Windows file save window will open and allow you to name the file. By default, the file is saved in the C-more Micro folder named Project and this is fine for our example. The file name you give it is the project name and will appear at the very top of the C-more Micro software window on the Title Bar.



By default, the Navigation pane of the C-more Micro software is on the left-hand side of the software window. It has 3 tabs: Screen, Function, and Panel. The Screen tab shows you each screen you have created and by clicking on a screen you can see that screen in the center panel. A default screen 1 is created and displayed when you start a new project or open the software. We are only going to use a single screen, Screen 1, to put our pushbutton, indicator light, numeric entry and numeric display.



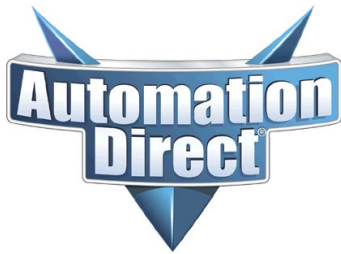
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We'll start by adding the pushbutton to the screen. There are several ways to add an object to the screen:

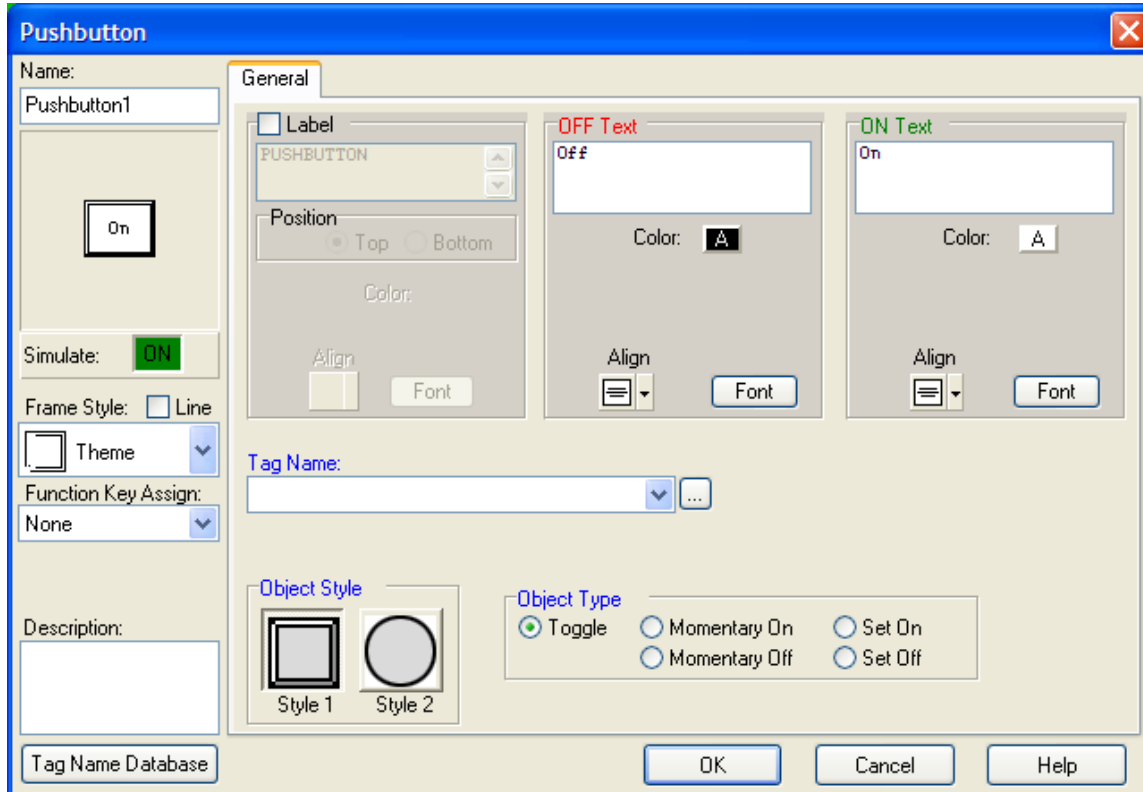
1. You can select the **Object** menu item on the menu at the top, then the category of the object, then the object itself. The cursor will change to a PLUS (+) sign and you can click on the green or light grey area in the center pane to indicate where you want the object to appear. This will open the object window so you can define the object selected. Don't worry if you don't get the exact location right, you can resize and move the object as much as you want later. To put a pushbutton on the screen select **Object/Button/Pushbutton** then click anywhere on the green section of the screen. This will open the Pushbutton object. Note, the green section of the center pane is the section of the current screen that will be displayed on the C-more Micro panel when Screen 1 is being shown. Objects in the light grey section are still on the screen but won't be displayed because they're outside the display area.
2. By default, the window pane on the right hand side of the C-more Micro software is the Object List pane and below that is the Parts List pane. You can drag an object from the Object List pane onto the green or light grey area in the center pane to place an object. The object window will open to allow you to define the selected object. To put a Pushbutton object on the screen using this method click the **Pushbutton** list under **Button**, hold down the mouse and drag the cursor over to the green or light grey area of the screen and let go of the mouse button. The Pushbutton object window will open and you can configure the pushbutton.
3. You can double-click an object on the Object List pane and the object will appear in the center of the green area of the screen and the Object window will open to allow you to define the object. If you double-click the Pushbutton listing on the Object List pane a pushbutton object will appear in the center of the green screen and the Pushbutton object window will open to allow you to define the pushbutton.
4. If you single click on an object in the Object List pane, the Parts List window will change to show some sample objects of that type. If you want to use one of the sample objects you can click and drag it to the center window, then fill out the Object window to define the object properties.

Once you've placed the pushbutton object on the screen, the Pushbutton window appears to allow you to define the properties of the pushbutton.



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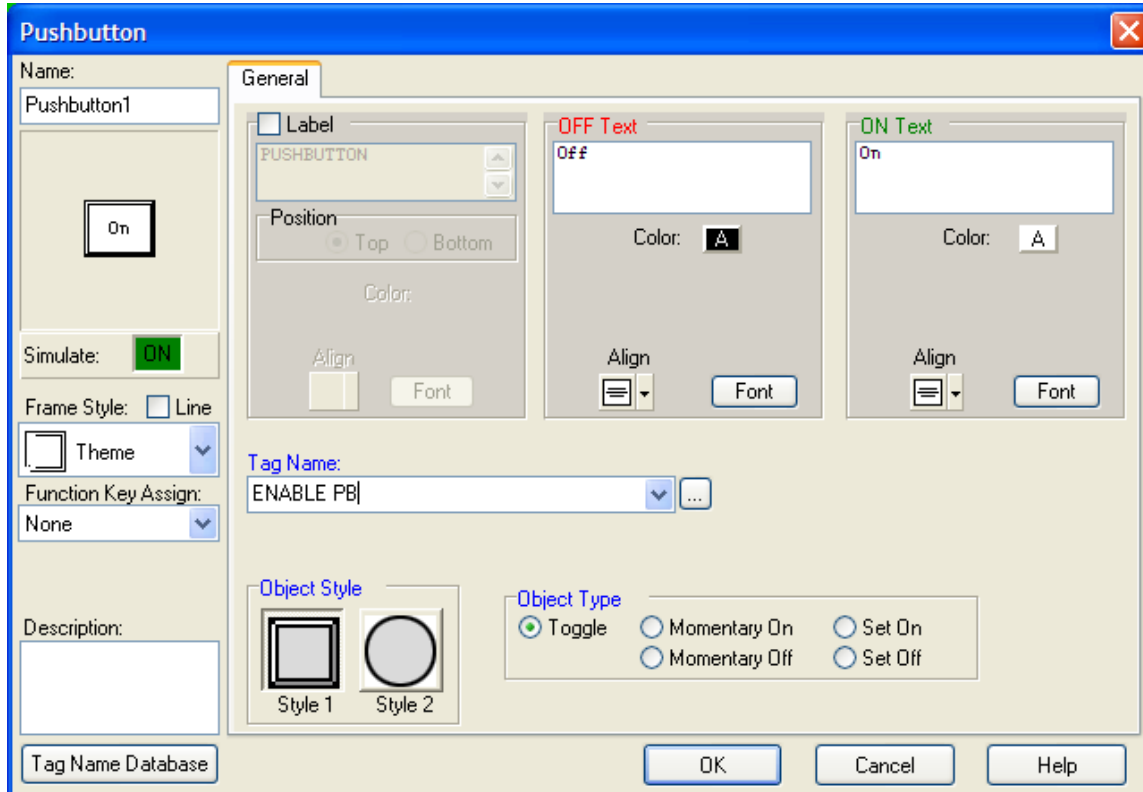


The most important part is the tag you'll use to tell the pushbutton what bit and where the bit is that the pushbutton will be controlling. As mentioned, we will control the PLC bit C0 with this pushbutton, so we need to define a tag that points to C0 through DEV001 in the C-more Micro. Every tag needs a unique Tag Name. Although you can pre-define your tags in the Tag Name Database, we'll just create them as we need them in the object that will be using the tag. So we need to type a unique tag name in the Tag Name field. For this tag, let's "ENABLE PB" (without the quotes) in the Tag Name field of the Pushbutton object. The software will automatically capitalize the name.



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As soon as you have the tag name entered, press the enter key on your keyboard and the Tag Name – Add window will pop up to allow you to define the new tag called “ENABLE PB”. The Device Name is the ‘where’ location for the tag. Since we set up DEV001 to be the communication link to our PLC, we’ll select DEV001. The Tag Name field is already filled in. The Tag Data Type tells the panel what type of information we’re reading and/or controlling. In this case, a pushbutton is always a discrete (on or off) type, so the software default to Discrete. The last part of the tag is what address in the PLC this tag will be reading and/or controlling. The Memory Type should be C, and the Address is 0, for C0.



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Tag Name - Add

Tag Information

Device Name: DEV001

Tag Name: ENABLE PB

Tag Data Type: Discrete

Characters: 40

PLC Address

Memory Type	Address
C	0

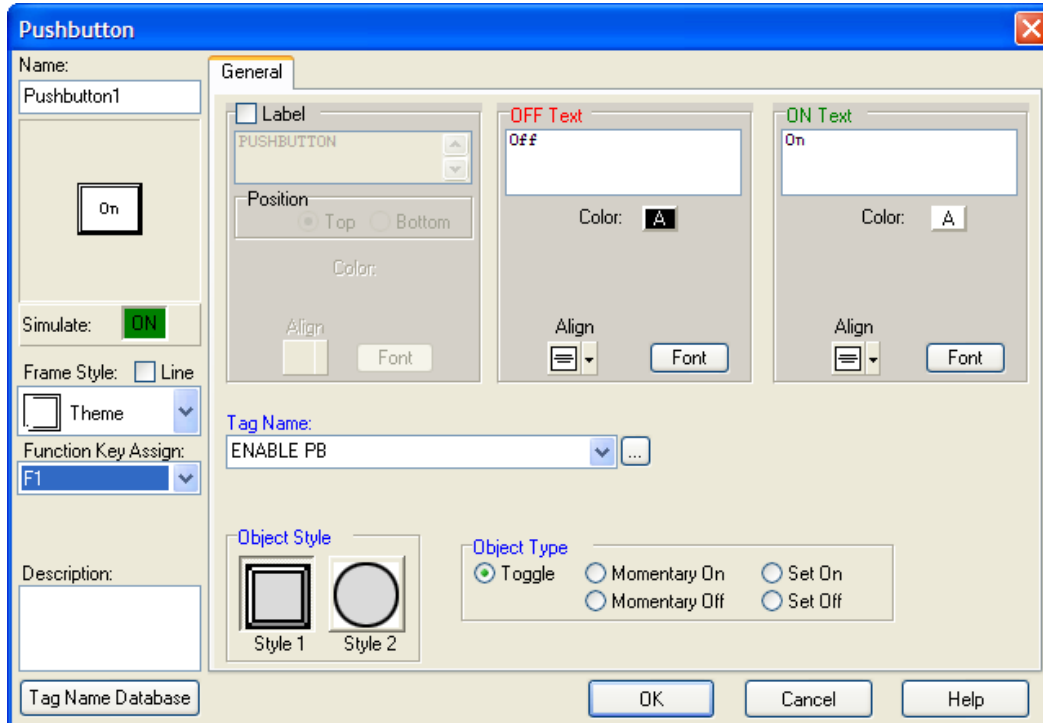
Add Close Help

Click the OK button and now we've created a tag called ENABLE PB and assigned it to this pushbutton object. There are many other things we can configure, but there are two important ones for this demonstration. Since we're using a non-touch version of the C-more Micro, we need to assign one of the Function Keys on the panel to this pushbutton object. On the left-hand side of the Pushbutton window is a drop-down menu labeled "Function Key Assign". Click in this box and select F1, and now we've configured the project so that when the F1 function key is pressed it will activate this pushbutton.



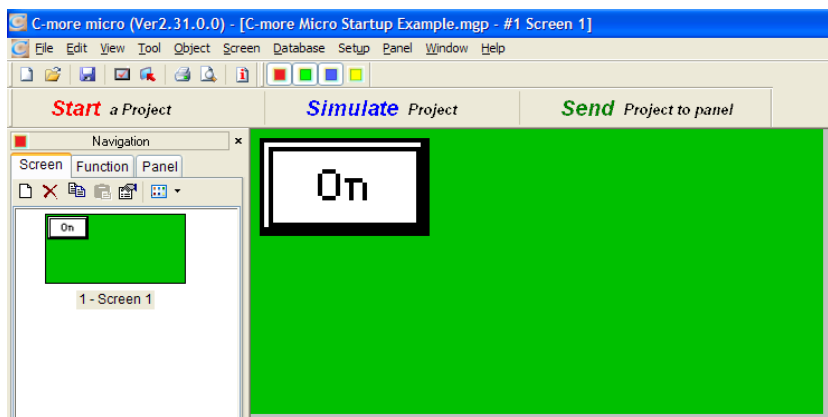
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The other important configuration option is the Object Type in the lower right-hand side of the Pushbutton window. It defaults to Toggle and this is what we want, but it's important to select the type of operation you want. In this case, every time you press the F1 function key and it activates this pushbutton, it will toggle the state of C0 to its opposite state. If C0 is OFF, pressing F1 will turn it ON. If C0 is ON, pressing F1 will turn it OFF. You have to release F1 and press it again to change the state one time.

Now we have a pushbutton on the screen that changes state every time F1 is pressed.



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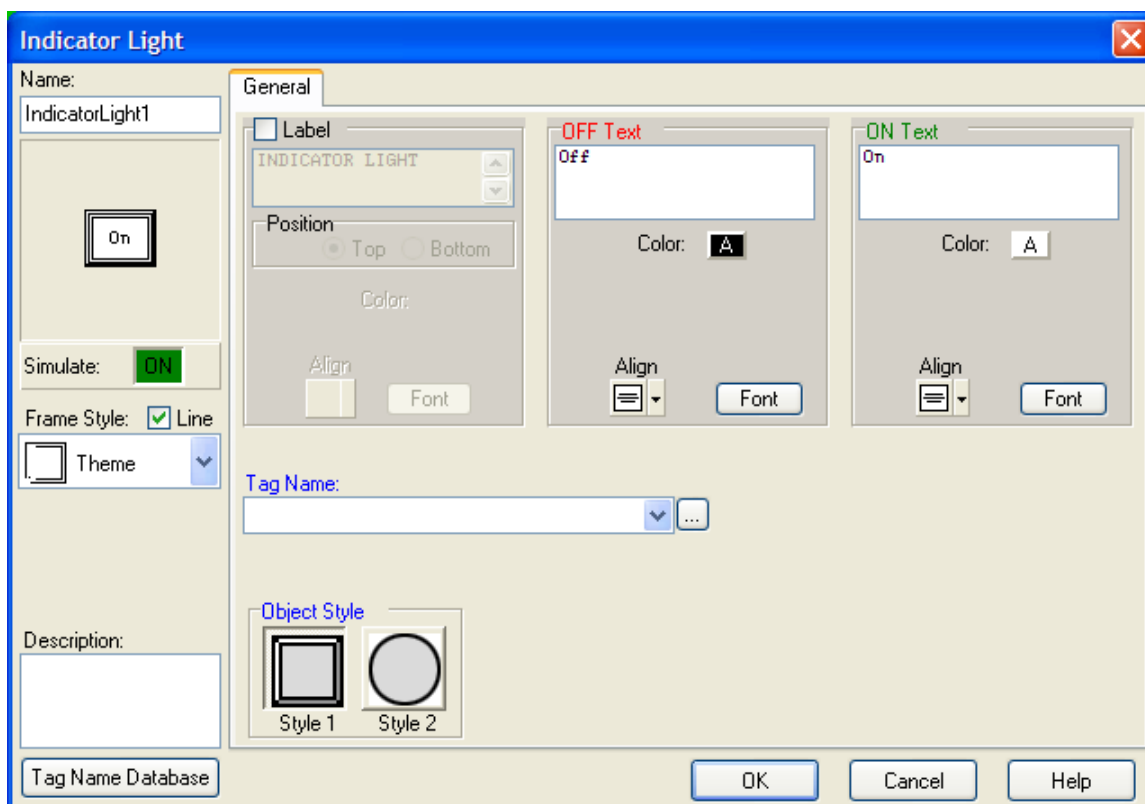


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Next we'll add the Indicator Light that reflects the status of the Y0 output on the PLC. Later, we'll write a line of ladder logic code that makes Y0 follow the status of C0, so if C0 is OFF, Y0 is OFF and if C0 is ON then Y0 is ON.

To add the Indicator Light to the screen, select the Indicator Light object via one of the previously described methods.



When the Indicator Light window is open, create a Tag Name called OUTPUT LT by typing this name in the Tag Name box. Press the Enter key on your keyboard to open the Tag Name – Add window. The Device Name should be DEV001, the Tag Data Type will default to Discrete, and select PLC Address Memory Type as Y and Address as 0.



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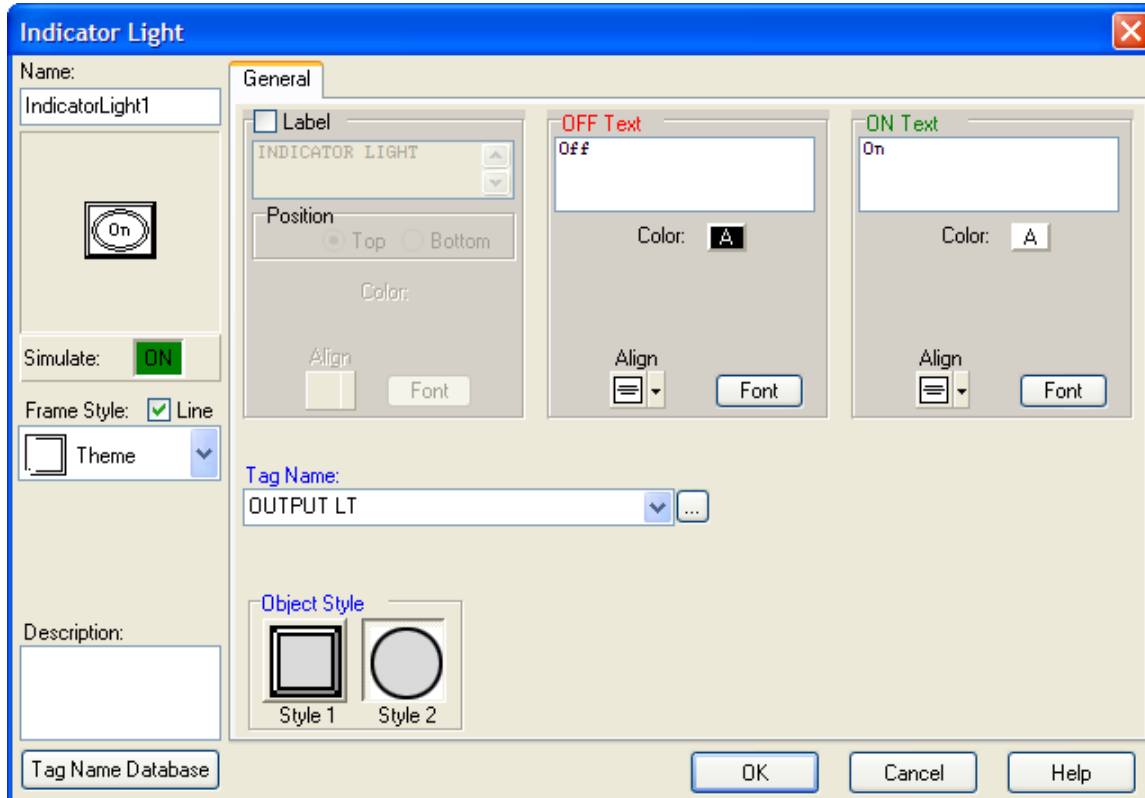
A screenshot of a software dialog box titled "Tag Name - Add". The dialog has a blue title bar with a close button (X) in the top right corner. It contains two main sections: "Tag Information" and "PLC Address".
In the "Tag Information" section, there are four fields:
- "Device Name": A dropdown menu with "DEV001" selected.
- "Tag Name": A text input field containing "OUTPUT LT".
- "Tag Data Type": A dropdown menu with "Discrete" selected.
- "Characters": A spinner box set to "40".
In the "PLC Address" section, there are two fields:
- "Memory Type": A dropdown menu with "Y" selected.
- "Address": A text input field containing "0".
At the bottom of the dialog, there are three buttons: "Add", "Close", and "Help".

Click the Add button to add the new tag to the Indicator Light window. Select Style 2 to make the Indicator Light visually different from the Pushbutton.

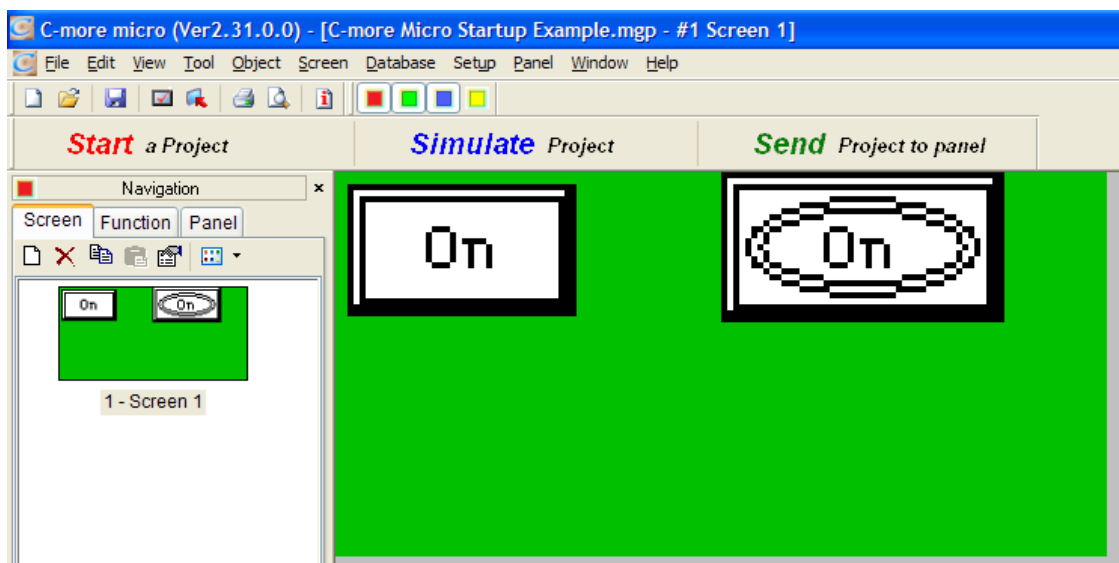


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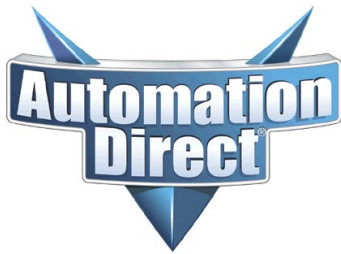
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Click OK to add the Indicator Light to the screen.



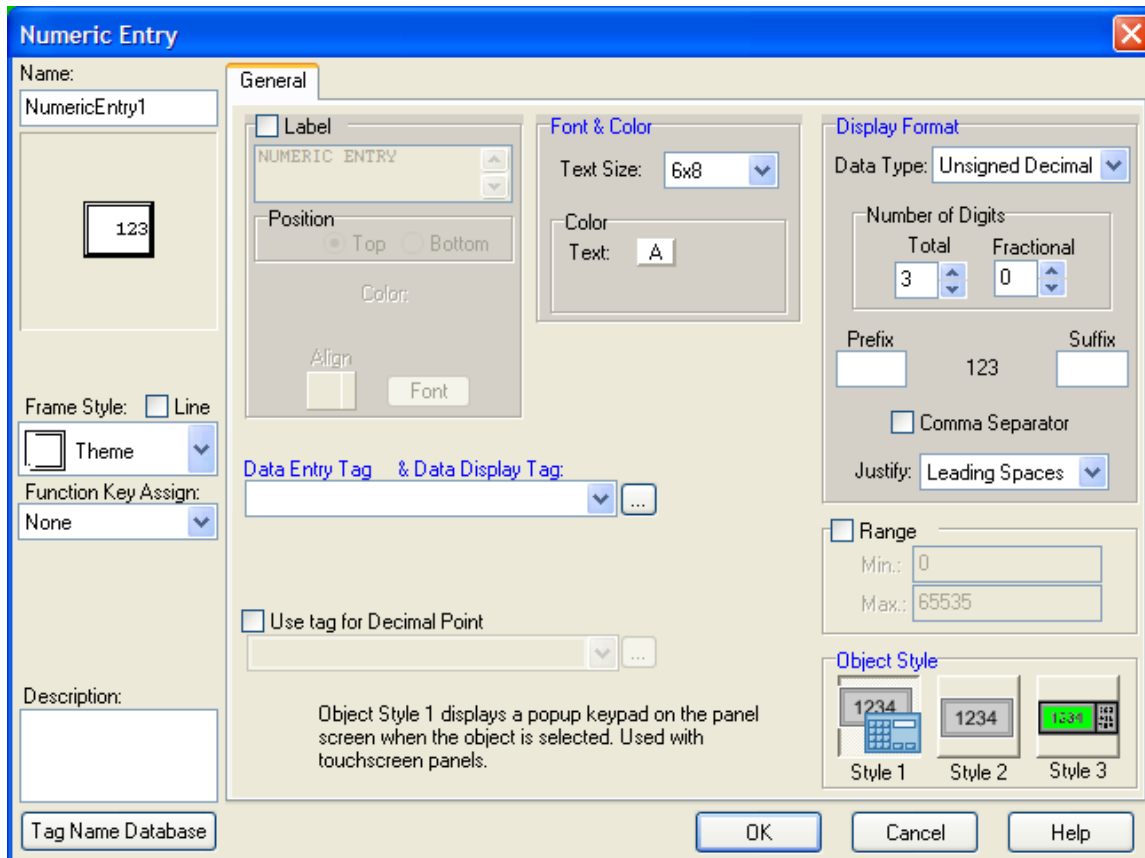
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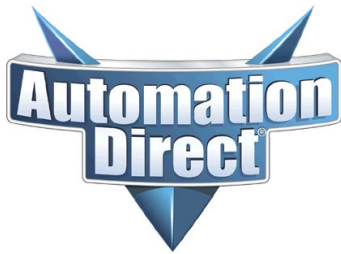
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Next we want to add the Numeric Entry object to the screen. Add the Numeric Entry object so that the Numeric Entry window opens.



We want to create a tag called NUM ENTRY in the Data Entry Tag & Data Display Tag box. Press the Enter key on the keyboard to open the Tag Name – Add window and set the Device Name to DEV001, the Tag Data type to BCD int 16, and the PLC Address Memory Type to V and Address to 2000.



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Tag Name - Add

Tag Information

Device Name: DEV001

Tag Name: NUM ENTRY

Tag Data Type: BCD int 16

Characters: 40

PLC Address

Memory Type	Address
V	2000

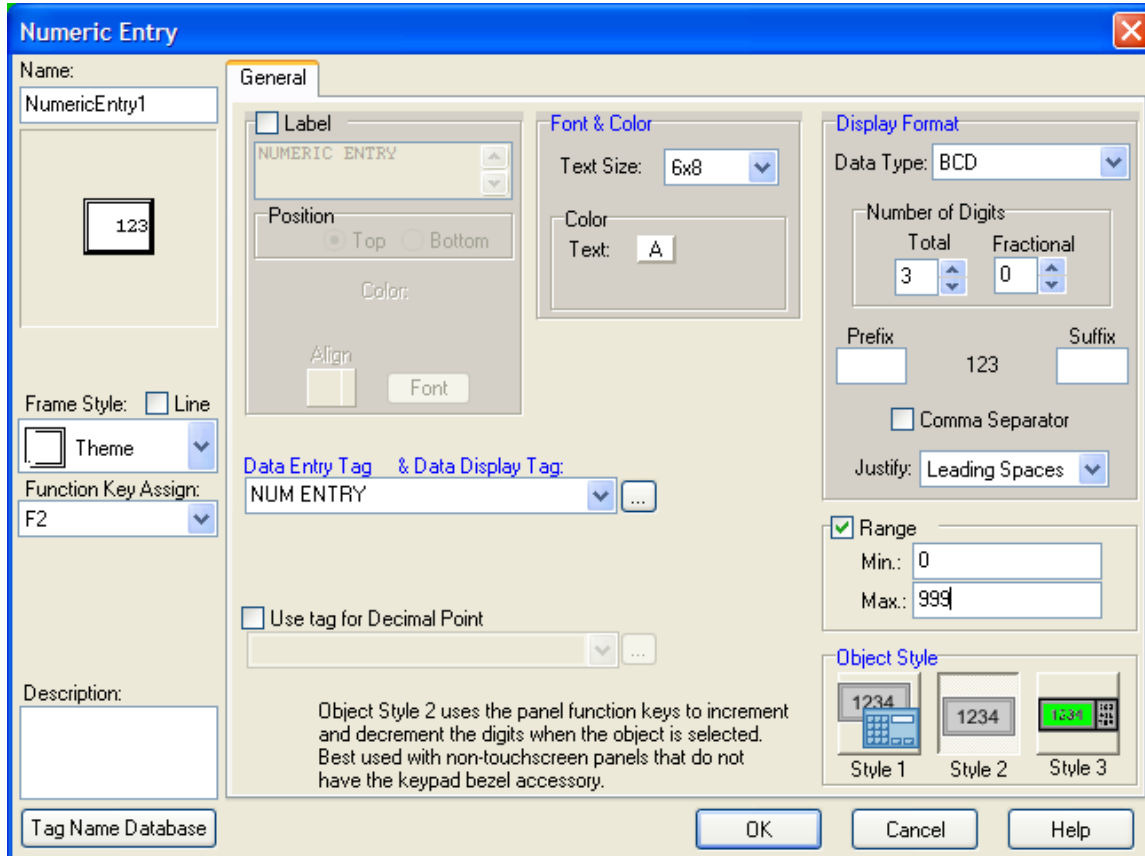
Add Close Help

Click the Add button. We need to assign the F2 function key to this Numeric Entry object, so click in the drop-down window for the Function Key Assign: box and pick F2. On the upper right, set the Number of Digits, Total to 3 and the Fractional to 0. Click the Range box below that and set the Min: to 0 and the Max: to 999. Below that in the Object Style,



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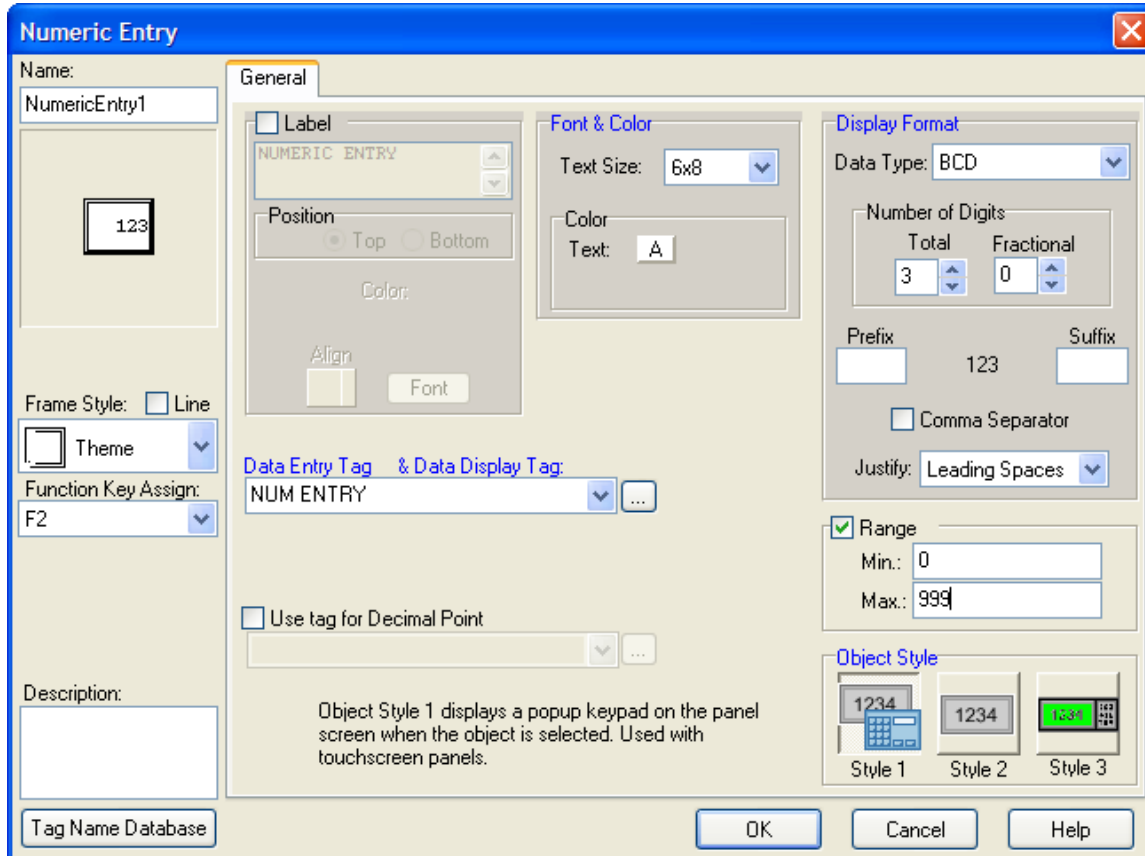


Pick Style 2 if you're using a non-touch version of the C-more Micro panel,



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or Style 1 if you're using a touch version of the C-more Micro panel..

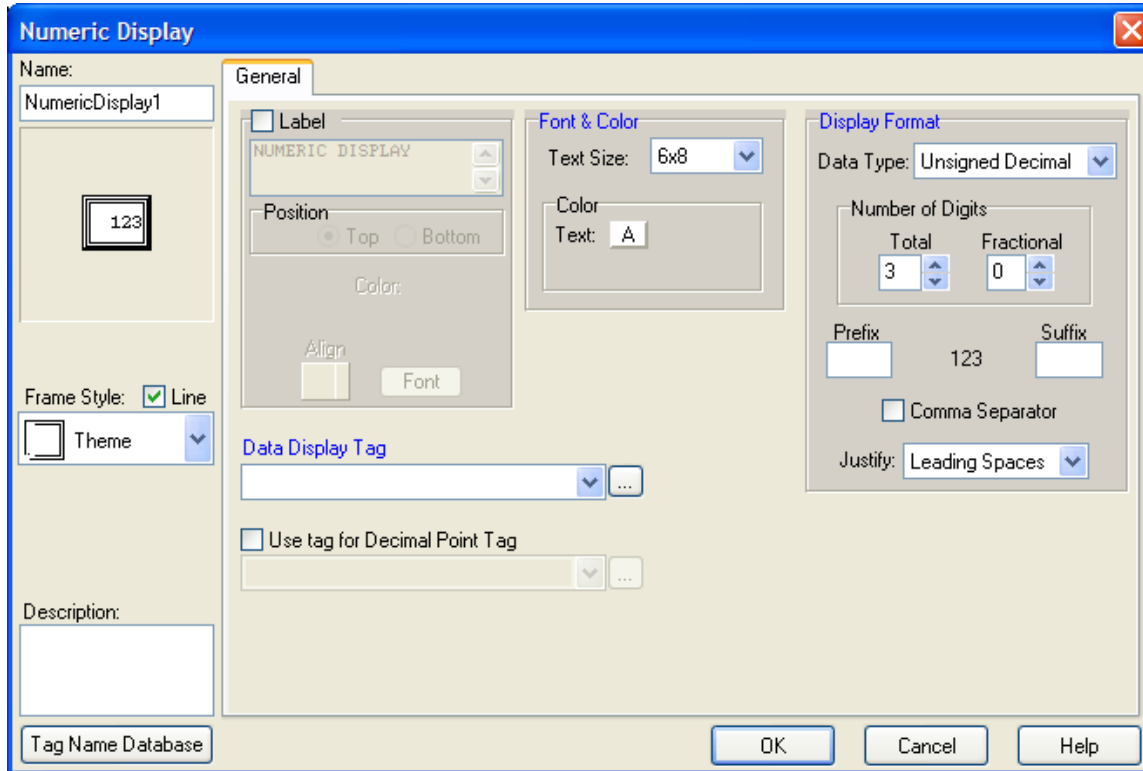
Click OK and position the Numeric Entry object on the screen where you want it to appear.

Last, we want to add the Numeric Display object to the screen. Add the Numeric Display object so the Numeric Display window opens.



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Add the tag name NUM CALC in the Data Display Tag and press the Enter key on the keyboard to cause the Tag Name – Add to open. Set the Device Name to DEV001, the Tag Data Type to BCD in 16, and the PLC Address Memory Type to V and Address to 2001.



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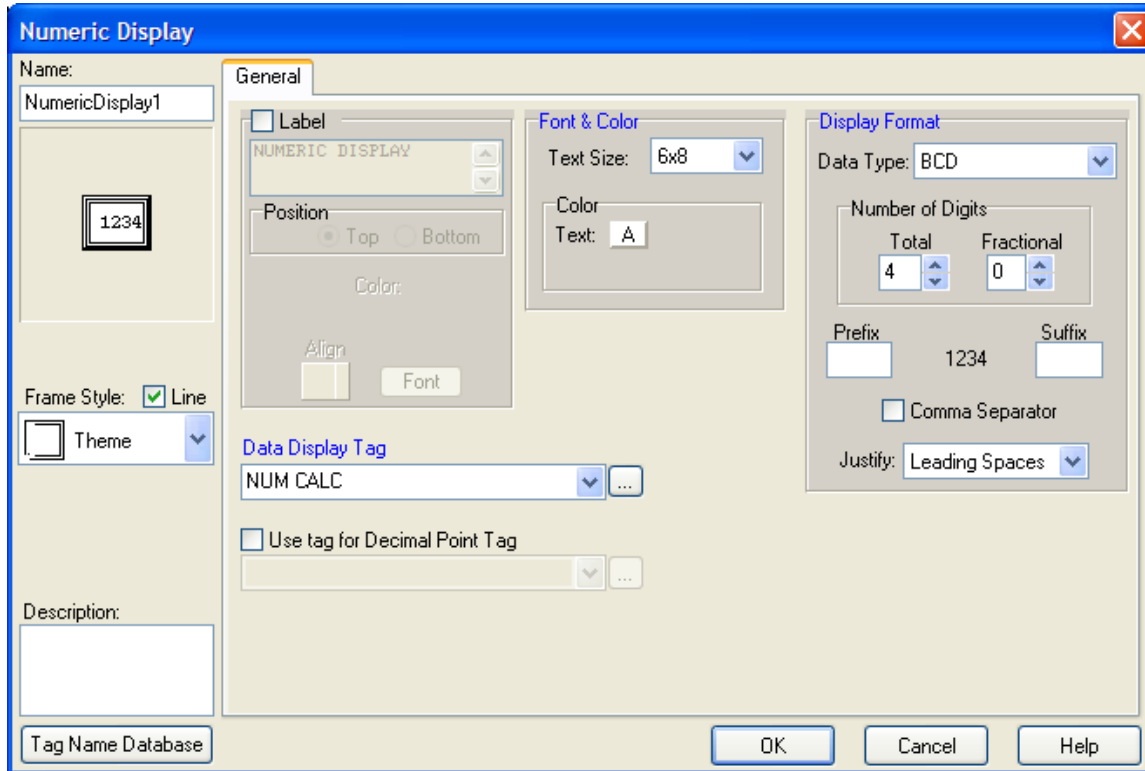
A screenshot of a software dialog box titled "Tag Name - Add". The dialog has a blue title bar with a close button (X) in the top right corner. It contains two main sections: "Tag Information" and "PLC Address".
In the "Tag Information" section, there are four fields:
- "Device Name": A dropdown menu with "DEV001" selected.
- "Tag Name": A text input field containing "NUM CALC".
- "Tag Data Type": A dropdown menu with "BCD int 16" selected.
- "Characters": A spin box with the value "40".
In the "PLC Address" section, there are two fields:
- "Memory Type": A dropdown menu with "V" selected.
- "Address": A text input field containing "2001".
At the bottom of the dialog, there are three buttons: "Add", "Close", and "Help".

Click the Add button. Set the Number of Digits Total to 4 and the Fractional to 0.

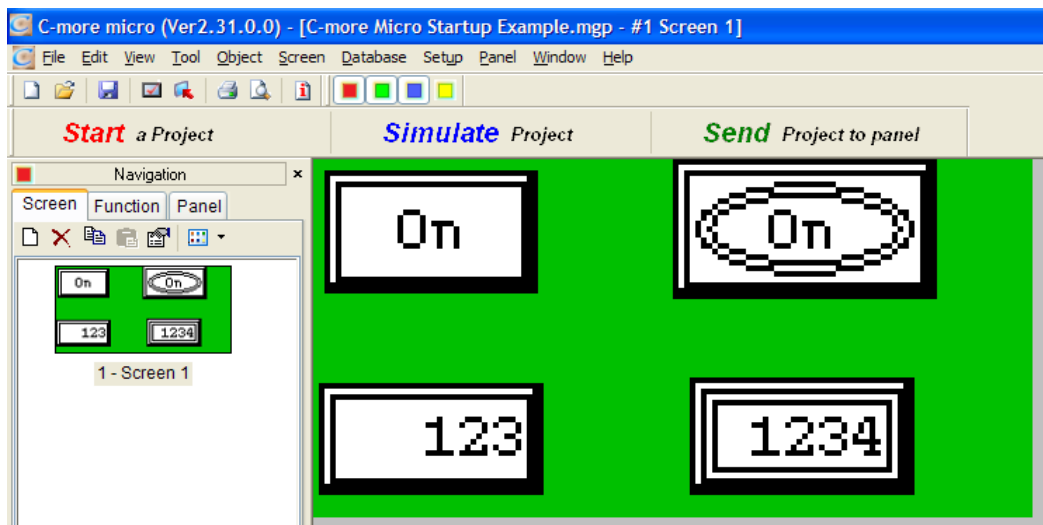


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Click the OK button and then click and drag to position the Numeric Display object on the screen.



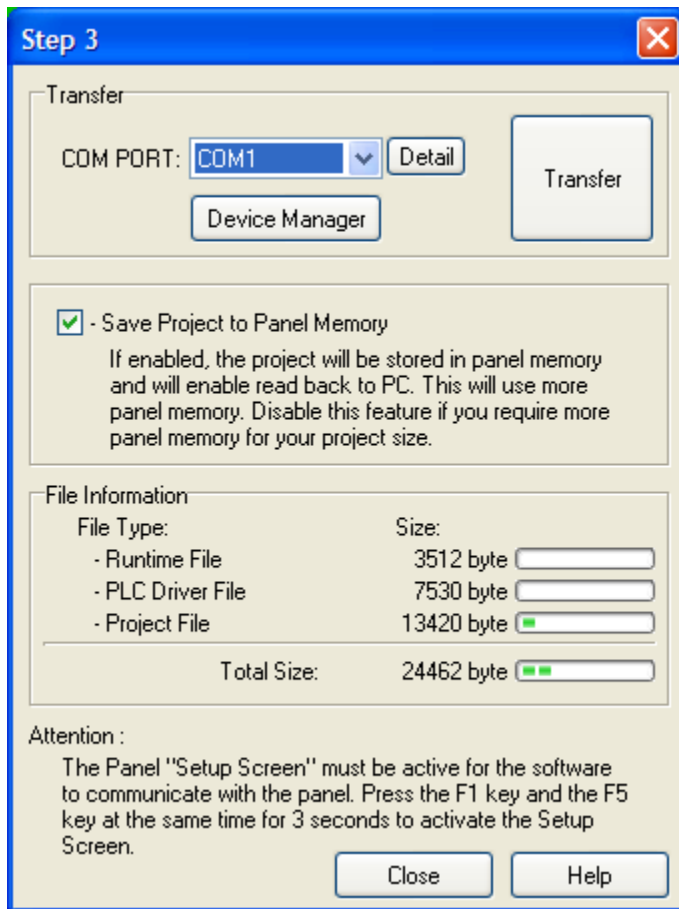
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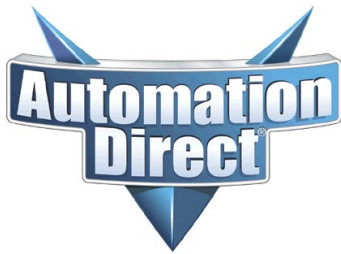
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The next step is to save your project and then transfer it to your C-more Micro panel. To save the project, select File/Save Project. If this is the first time you've saved this project, a standard Windows Save window will open and allow you to select the location and the file name of the project file. If it's not the first time, then saving will use the same location and file name. Once that's done you should transfer the project to the panel. Connect the panel to the programming cable, EA-MG-PGM-CBL and if it's not already in the SETUP MENU screen, press the F1 and F5 keys simultaneously to put the panel in the SETUP MENU. Then you can do a File/Project Transfer to send the project to the screen.



If you didn't already save the project you will be prompted to save the project at this point. Once you select the correct COM port you can click the TRANSFER button to send your project to the panel. Now you should connect the panel to your PLC (use the DV-1000CBL to connect to port 1 of most of our DirectLogic CPUs).

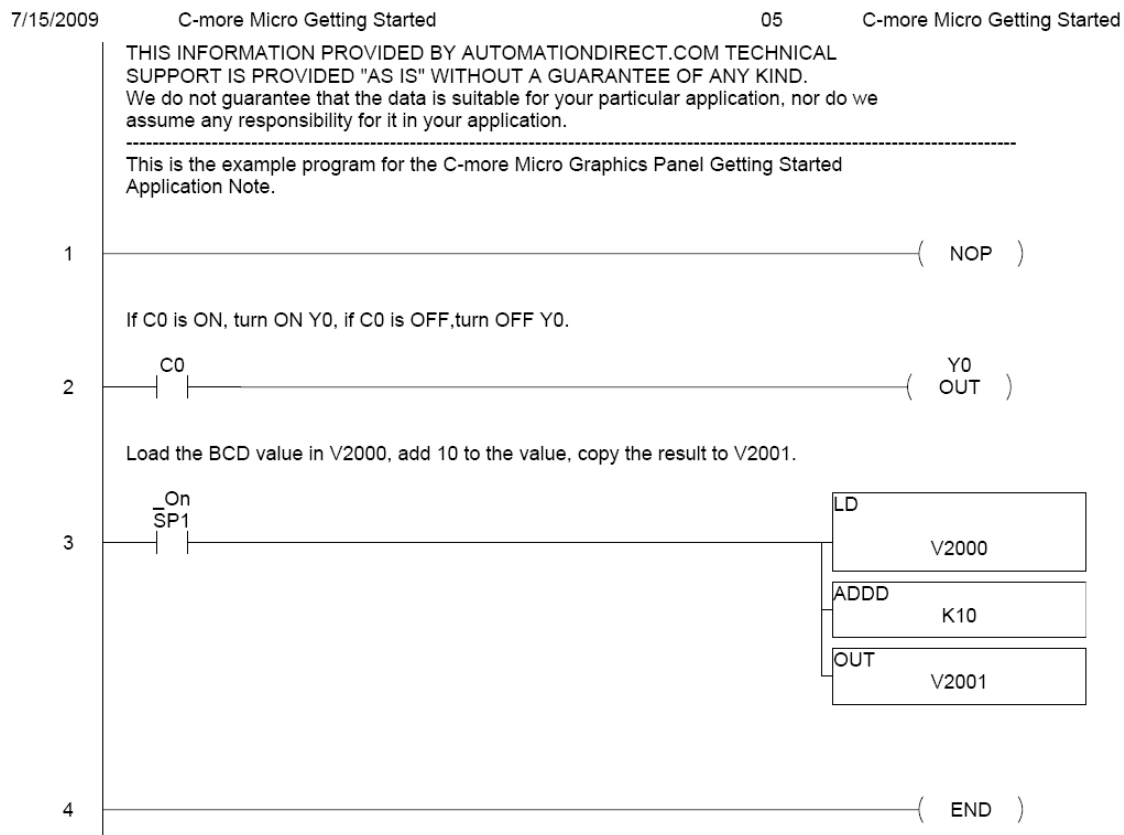


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Once you have connected to the CPU, even though there isn't a program in the PLC yet, you can look at the 2 LEDs on the back of the C-more Micro panel to see if it's communicating. The TxD and RxD LED should be blinking if the panel is talking to the PLC. Once we put the program in the PLC we can test the objects to verify proper operation.

The PLC program to enter into the DL05 (or similar PLC) is listed below. If you're using a different PLC family or brand, you can modify the two rungs to fit the PLC requirements. Address changes due to PLC differences will require changes in the C-more Micro project as well.



Once the C-more Micro and DL05 PLC are programmed, connected, and the PLC in in the RUN mode, you can use the F1 key to make the PLC output Y0 turn ON and OFF and see the indicator light on the panel follow the Y0 status. You can enter a value in the C-more Micro panel using the F2 key and see the value in the numeric display change to be the value in the numeric entry object plus 10.