



APPLICATION NOTE

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Product Family:
C-MORE MICRO GRAPHICS 3" PANEL

Number: AN-EA-007

Subject:
GETTING STARTED

Date Issued:

Revision: Original

C-MORE MICRO GRAPHICS PANEL, 3" NON-TOUCH, TO AN AUTOMATIONDIRECT PRODUCTIVITY 3K PAC, USING GENERIC MODBUS RTU DRIVER, GETTING STARTED

This application note will demonstrate how to set up a non-touch or touch 3" C-more Micro Graphics panel (C-more Micro). 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 P3000 PAC. The project assigns all active buttons to function keys on the panel, so the non-touch version has a membrane function key to activate the pushbutton or numeric entry object. The touch version 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 a tag in the PAC. The numeric entry value will have a value of 10 added to it and copied to another tag which will be displayed on the numeric display object. The toggle pushbutton will address Internalbit0 in the PAC. Output0 is the output that will be mirrored by the indicator light. The numeric entry object will write a 3 digit value to Internalregister0 and the ladder logic will add 10 to the number entered and output the new value to Internalregister1, which will be displayed on the numeric display object on the C-more Micro.

Start by opening the C-more Micro software.

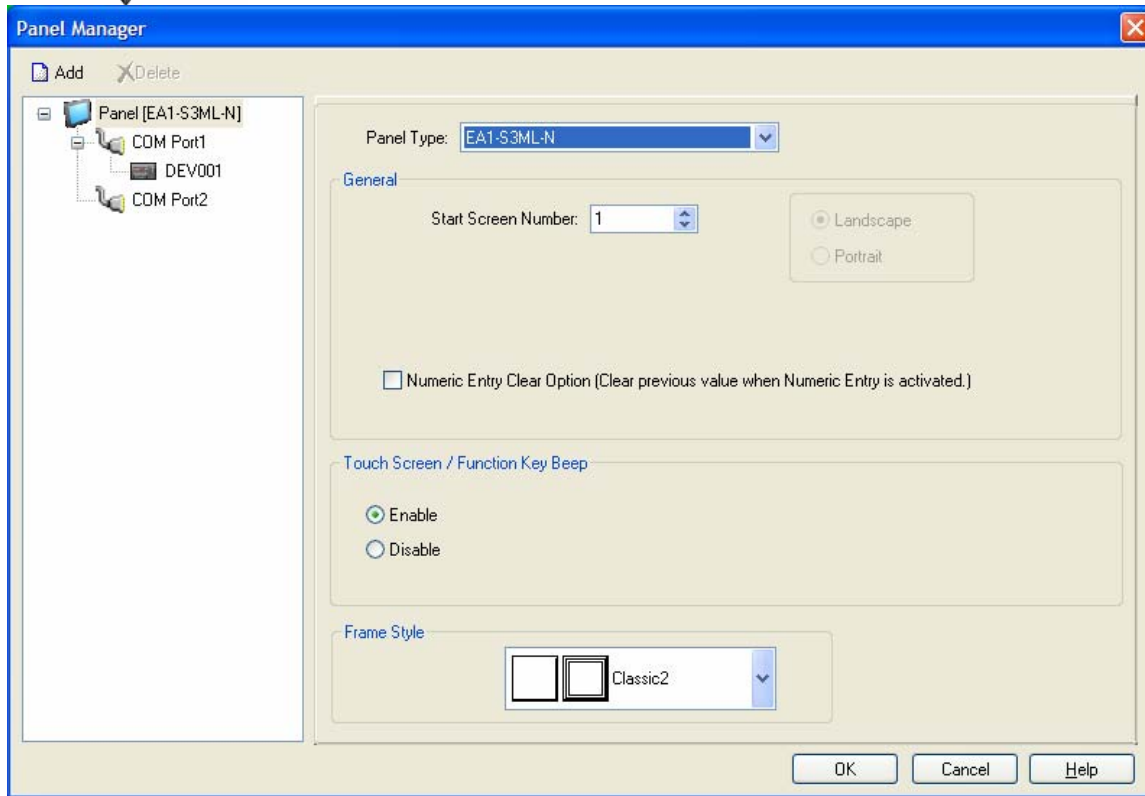
Go to the Setup / Panel Manager menu selection.

Select the EA1-S3ML-N part number in the Panel Type field (unless you're using a different panel). 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 selection for the P3000 PAC's serial port is the generic Modbus RTU protocol. The default settings will not match the default settings of the P3000 port, they will need to be changed as below:

PAC Protocol: Modicon Modbus RTU

Comm. Port: Comm. Port1

Baud Rate: 19200

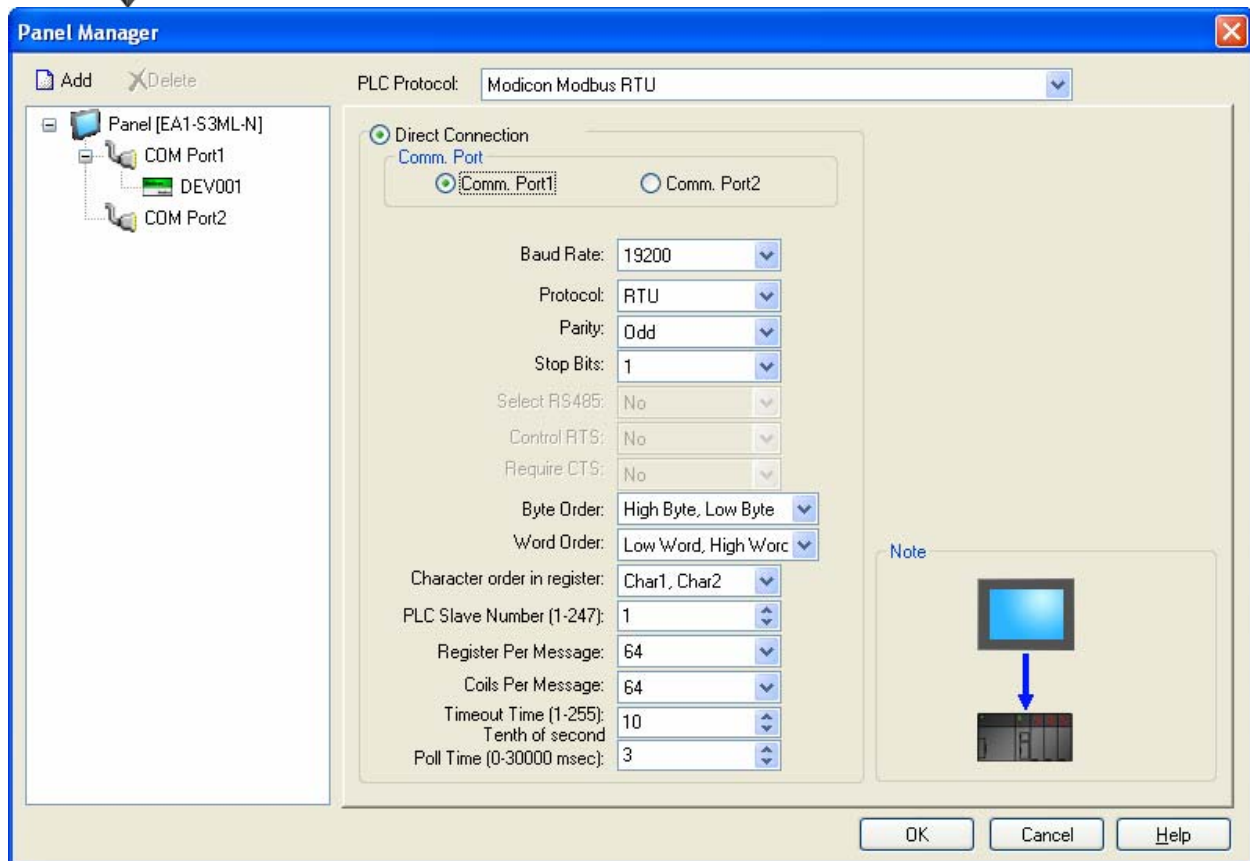
Parity: Odd

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



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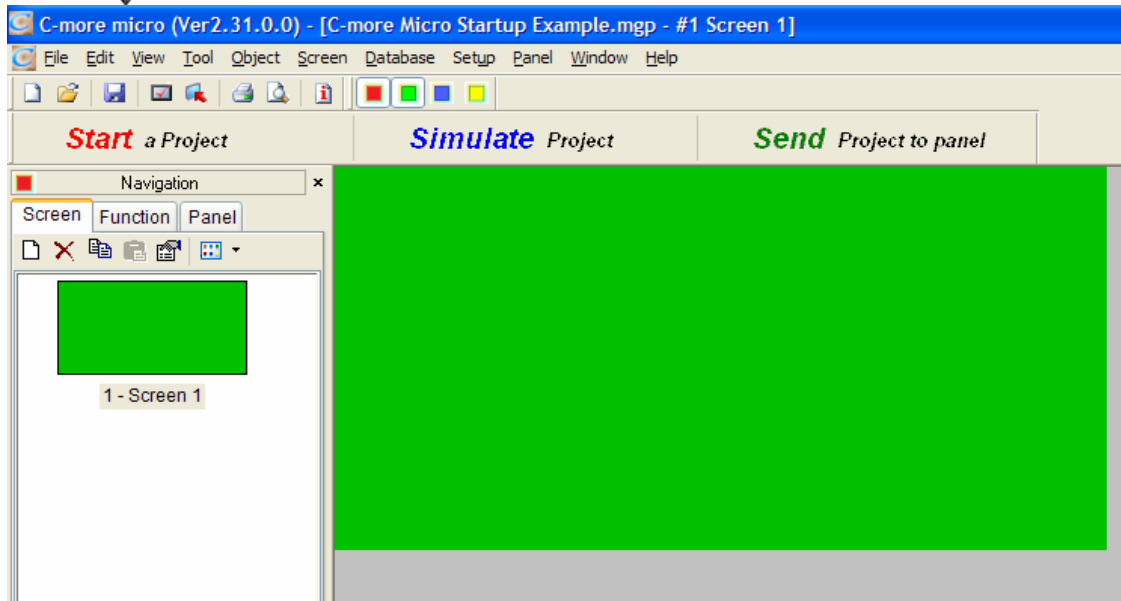
Now click the OK button and we have told the new C-more Micro project which panel it is being programmed for as well as the communication parameters it will use to talk to the PAC when connected.

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.



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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.

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 actually 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



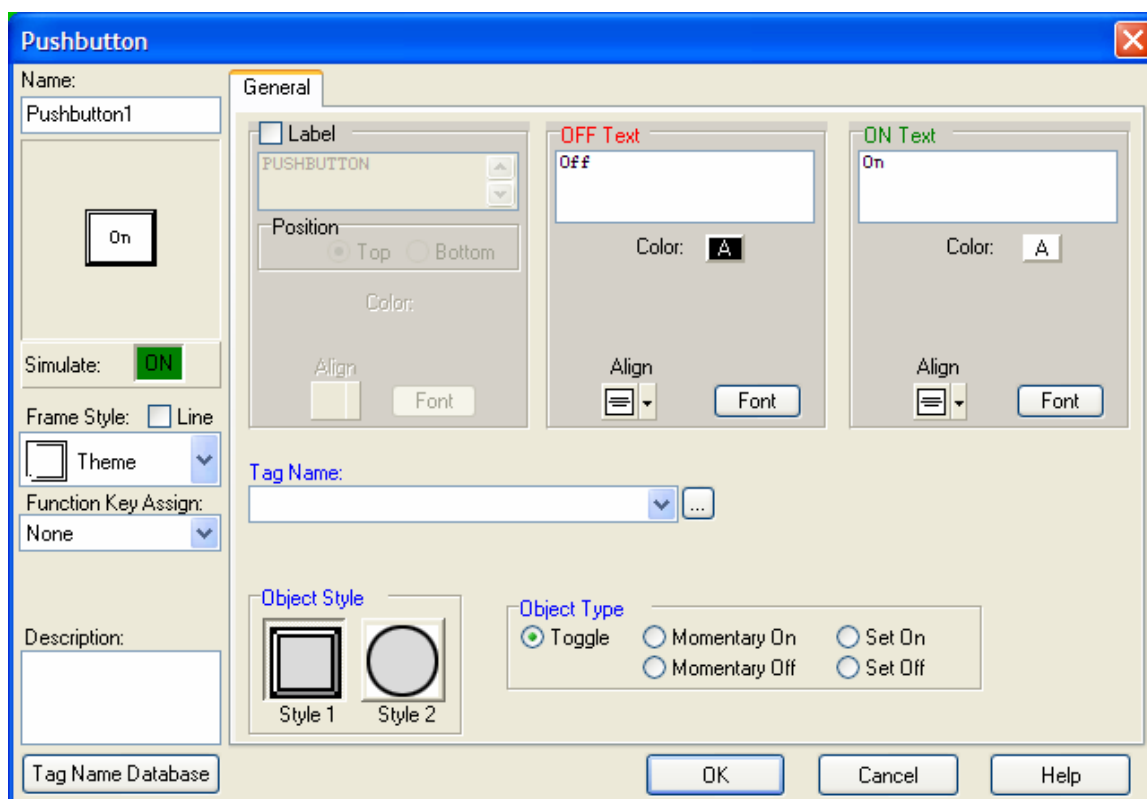
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and let go of the mouse button. The Pushbutton object window will open and you can configure the pushbutton.

- 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.



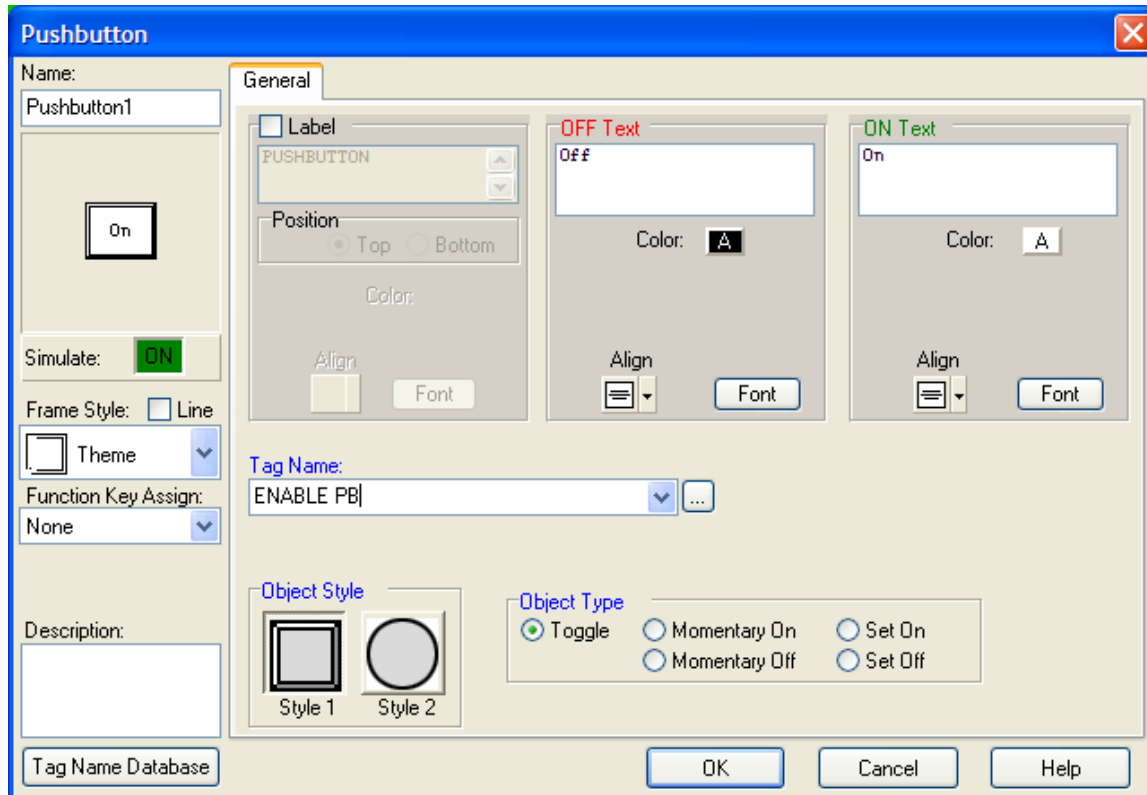
The most important part is the tag you'll use to tell the pushbutton what bit and where the bit is that the pushbutton will be controlling. As mentioned, we will control the PAC bit internalbit0 with this pushbutton, so we need to define a tag that points to internalbit0 through DEV001 in the C-more Micro. Every tag needs a unique Tag Name. Although you can pre-define your tags



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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 type "ENABLE PB" (without the quotes) in the Tag Name field of the Pushbutton object. The software will automatically capitalize the name.



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 PAC, 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 PAC this tag will be reading and/or controlling. The Memory Type should be 0, and the Address is 3073, for internalbit0.



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Tag Name - Add

Tag Information

Device Name: DEV001

Tag Name: BBOP

Tag Data Type: Discrete

Characters: 40

PLC Address

Memory Type: 0

Address: 3073

Add Close Help

The mapping for the Modbus addresses for the tags is done in the P3000 controller, here is a screen capture of the tag database showing how the internalbit0 tag is defined.

Tag Database

Tags to show in the Editor

Show All ☒ Discrete Inputs ☒ Analog Inputs ☒ Integers ☒ System Data ☒ Booleans

Invert ☒ Discrete Outputs ☒ Analog Outputs ☒ Floats ☒ Strings ☒ bob

Editor

Name	Type	Rows	Cols	Num Chars	Retentive	Init Value	Mod Start	Mod End	F
Every Other Scan Bit	Boolean, System, Read Only								
Firmware Version	Integer, 16 Bit System, Re...								
First Scan Bit	Boolean, System, Read Only								
Forces Enabled	Boolean, System, Read Only								
I/O Configuration Error	Boolean, System, Read Only								
I/O Error	Boolean, System, Read Only								
Identify Module Base Number	Integer, 16 Bit System								
Identify Module Group Number	Integer, 16 Bit System								
Identify Module Request bit	Boolean, System								
Identify Module Slot Number	Integer, 16 Bit System								
Initiate_New_Date	Boolean, System								
Initiate_New_Time	Boolean, System								
internalbit0	Boolean				<input type="checkbox"/>	<input type="checkbox"/>	003073	003073	
internalregister1	Integer, 16 Bit				<input type="checkbox"/>	0	400001	400001	
internalregister2	Integer, 16 Bit				<input type="checkbox"/>	0	400002	400002	
Last Logic Scan Time [x100=usec]	Integer, 16 Bit System, Re...								
Last Scan Interval [x100=usec]	Integer, 16 Bit System, Re...								

Add Tags Delete Tags

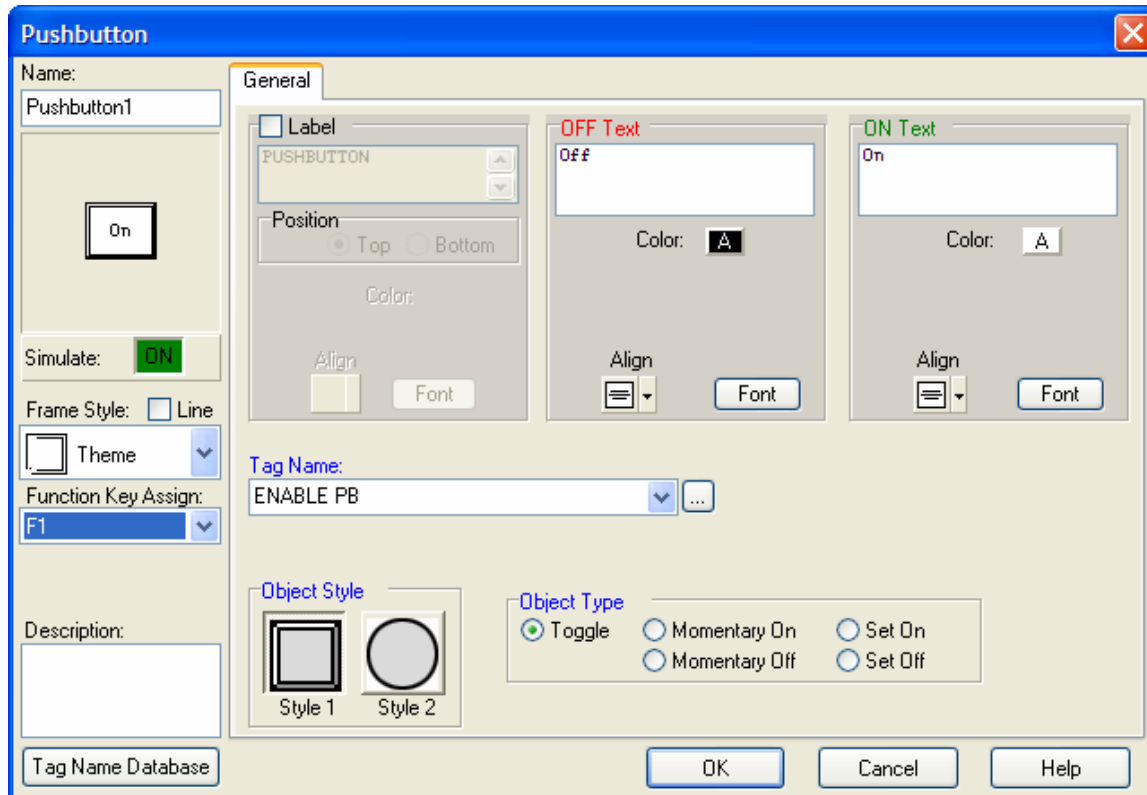
Click the OK button and now we've created a tag called ENABLE PB and assigned it to this pushbutton object. There are many other things we can configure, but there are two important ones for this demonstration. Since we're using a non-touch version of the C-more Micro, we need to assign one of the Function 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



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pressed it will activate this pushbutton. 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 internalbit0 to its opposite state. If internalbit0 is OFF, pressing F1 will turn it ON. If internalbit0 is ON, pressing F1 will turn it OFF. You have to release F1 and press it again to change the state one time.



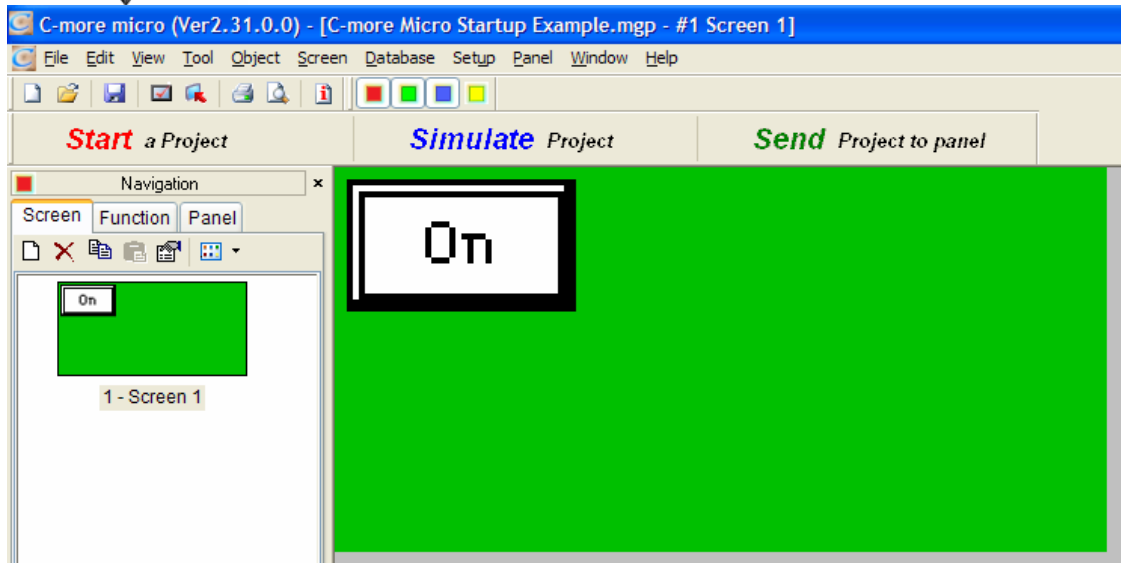
Click OK on the pushbutton window.

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



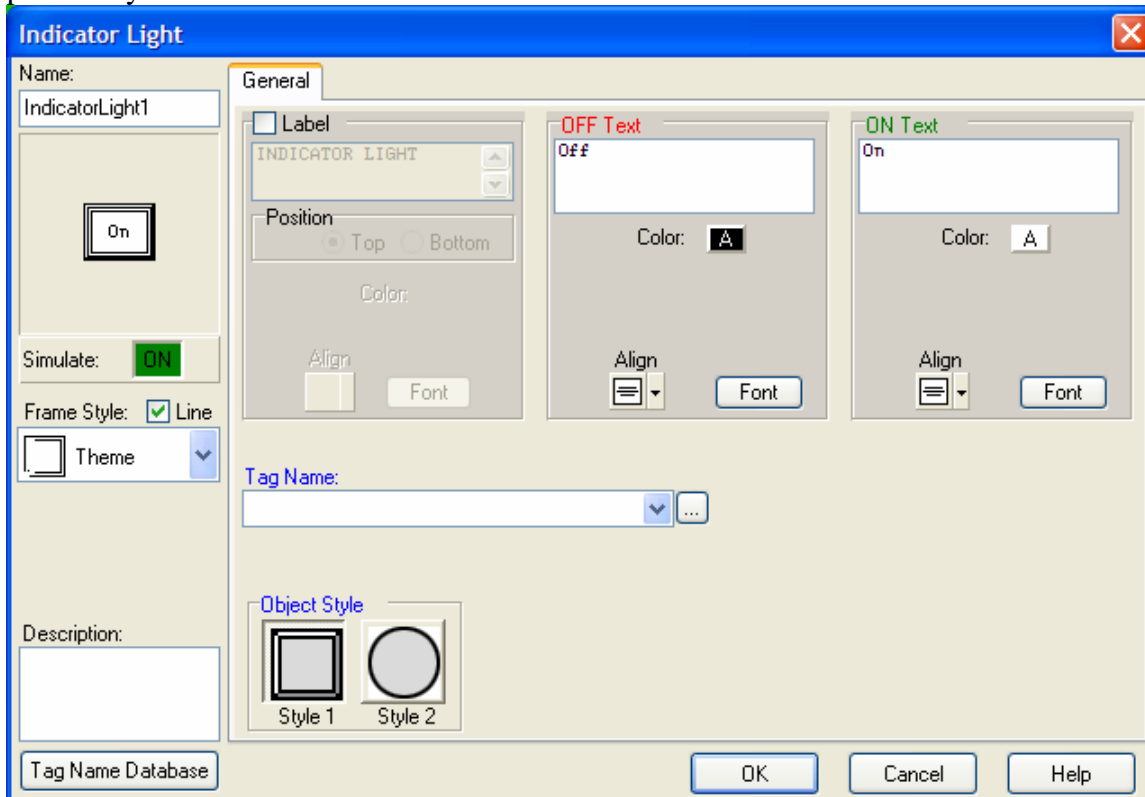
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Next we'll add the Indicator Light that reflects the status of the Output0 tag in the PAC. Later, we'll write a line of ladder logic code that makes Output0 follow the status of internalbit0, so if internalbit0 is OFF, Output0 is OFF and if internalbit0 is ON then Output0 is ON.

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

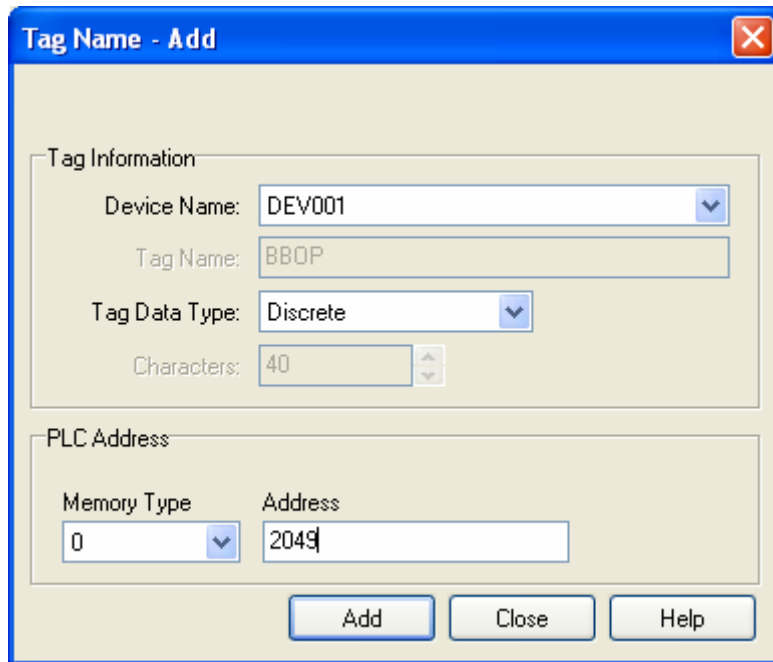




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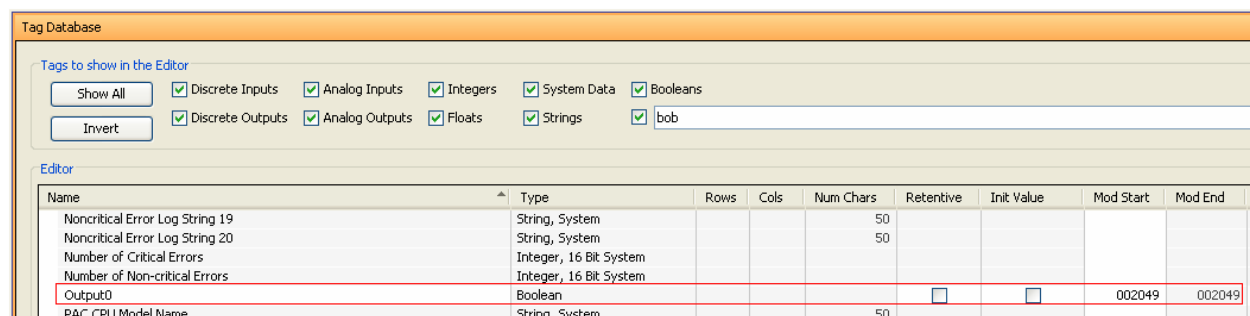
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When the Indicator Light window is open, create a Tag Name called OUTPUT LT by typing this name in the Tag Name box. Press the Enter key on your keyboard to open the Tag Name – Add window. The Device Name should be DEV001, the Tag Data Type will default to Discrete, and select PLC Address Memory Type as 0 and Address as 2049.



The 'Tag Name - Add' dialog box is shown. It has a blue title bar with a close button. The 'Tag Information' section contains: 'Device Name' dropdown set to 'DEV001', 'Tag Name' text box containing 'BBOP', 'Tag Data Type' dropdown set to 'Discrete', and 'Characters' spinner set to '40'. The 'PLC Address' section contains: 'Memory Type' dropdown set to '0' and 'Address' text box containing '2049'. At the bottom are 'Add', 'Close', and 'Help' buttons.

Again, in the P3000 controller we define the tag labeled Output0 to be Modbus address 2049, here is a screen shot of the tag database showing this mapping.



The 'Tag Database' window shows a list of tags. The 'Output0' tag is highlighted with a red border. It is a Boolean type, located at Modbus address 2049.

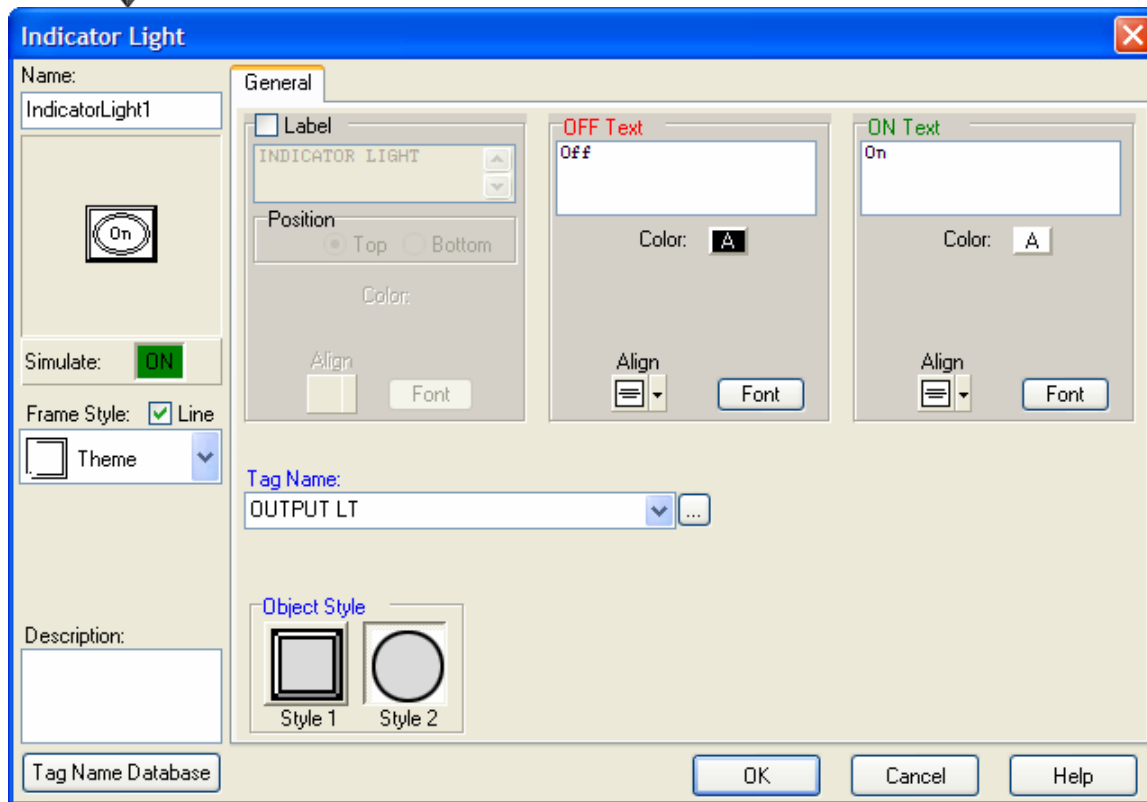
Name	Type	Rows	Cols	Num Chars	Retentive	Init Value	Mod Start	Mod End
Noncritical Error Log String 19	String, System			50				
Noncritical Error Log String 20	String, System			50				
Number of Critical Errors	Integer, 16 Bit System							
Number of Non-critical Errors	Integer, 16 Bit System							
Output0	Boolean				<input type="checkbox"/>	<input type="checkbox"/>	002049	002049
PAC CPU Model Name	String, System			50				

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.

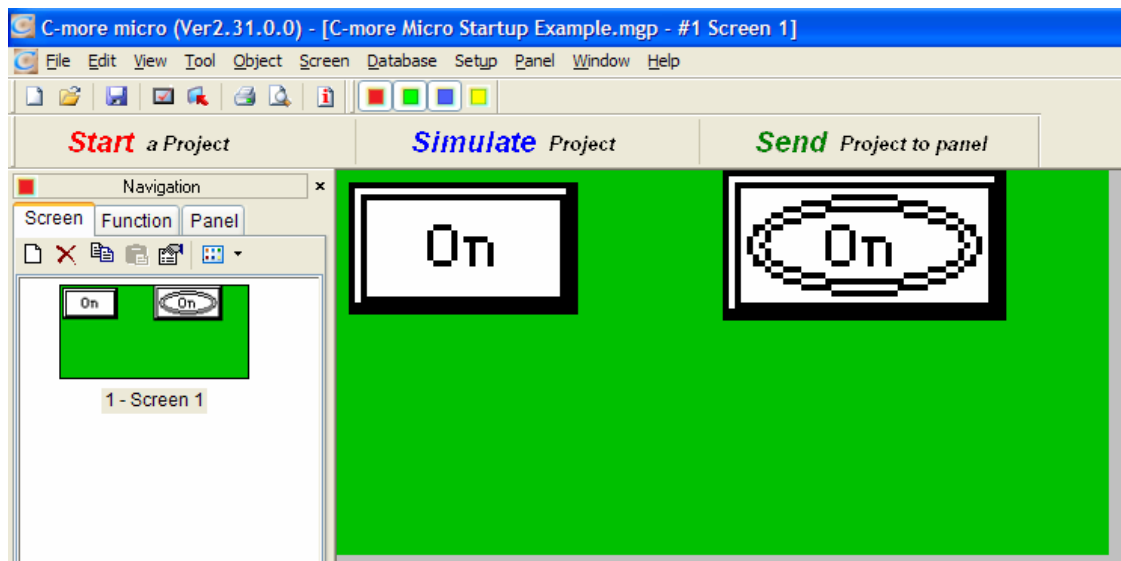


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Click OK to add the Indicator Light to the screen.



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



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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 Signed int 16, and the PAC Address Memory Type to 4 and Address to 1.



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Tag Name - Add

Tag Information

Device Name: DEV001

Tag Name: EFEF

Tag Data Type: Signed int 16

Characters: 40

PLC Address

Memory Type: 4

Address: 0001|

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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The 'Numeric Display' dialog box is shown with the 'General' tab selected. The 'Name' field contains 'NumericDisplay1'. A preview window shows a digital display with the number '123'. The 'Frame Style' is set to 'Line' and 'Theme' is selected. The 'Description' field is empty. The 'Data Display Tag' field is empty. The 'Use tag for Decimal Point Tag' checkbox is unchecked. The 'Display Format' section shows 'Data Type' as 'Unsigned Decimal', 'Total' digits as 3, and 'Fractional' digits as 0. The 'Justify' is set to 'Leading Spaces'. The 'Font & Color' section shows 'Text Size' as 6x8 and 'Text' as 'A'. The 'Label' section is unchecked. The 'Position' is set to 'Top'. The 'Color' field is empty. The 'Align' button is visible. The 'Tag Name Database' button is at the bottom left. The 'OK', 'Cancel', and 'Help' buttons are at the bottom right.

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 Signed int 16, and the PAC Address Memory Type to 4 and Address to 2.

The 'Tag Name - Add' dialog box is shown. The 'Tag Information' section contains: 'Device Name' set to 'DEV001', 'Tag Name' set to 'EFEF', 'Tag Data Type' set to 'Signed int 16', and 'Characters' set to 40. The 'PLC Address' section contains: 'Memory Type' set to 4 and 'Address' set to '0002'. The 'Add', 'Close', and 'Help' buttons are at the bottom.



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Here is a screen shot of the mapping for the Modbus addresses for the two numeric tags internalregister1 and internalregister2 used in this example.

Name	Type	Rows	Cols	Num Chars	Retentive	Init Value	Mod Start	Mod End
internalbit0	Boolean				<input type="checkbox"/>		003073	003073
internalregister1	Integer, 16 Bit				<input type="checkbox"/>	0	400001	400001
internalregister2	Integer, 16 Bit				<input type="checkbox"/>	0	400002	400002
Last Logic Scan Time [x100=usec]	Integer, 16 Bit System, Re...							

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

Numeric Display

Name: NumericDisplay1

Frame Style: ☒ Line

Theme: [Dropdown]

Description:

Tag Name Database

General

☐ Label

NUMERIC DISPLAY

Position: ☒ Top ☐ Bottom

Color: [Color Picker]

Align: [Align Buttons]

Font: [Font Picker]

Font & Color

Text Size: 6x8

Color: [Color Picker]

Text: A

Display Format

Data Type: Signed Decimal

Number of Digits

Total: 4

Fractional: 0

Prefix: [Text Box]

Suffix: [Text Box]

Comma Separator: ☐

Justify: Leading Spaces

Data Display Tag

NUM CALC

Use tag for Decimal Point Tag: ☐

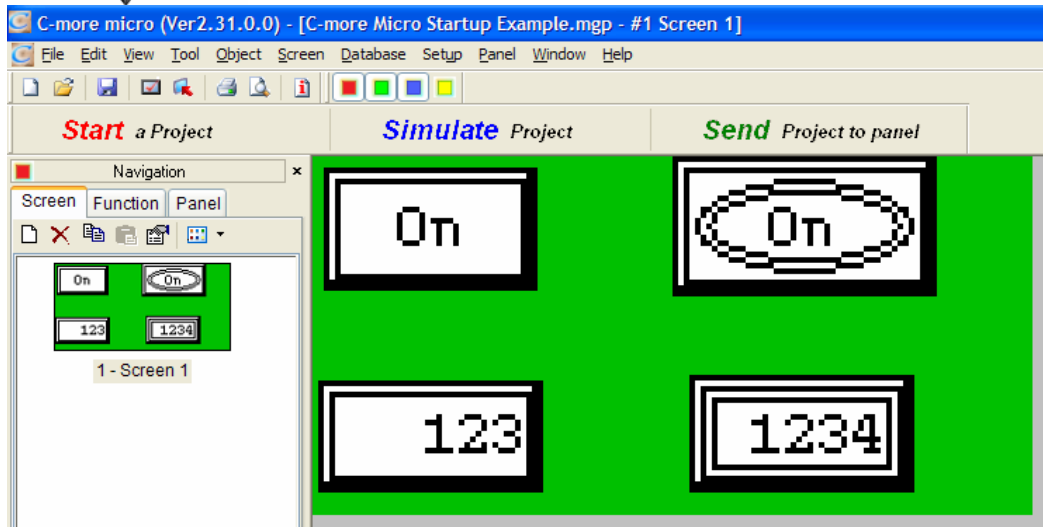
OK Cancel Help

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



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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.



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Step 3

Transfer

COM PORT: **COM1**

☒ - Save Project to Panel Memory

If enabled, the project will be stored in panel memory and will enable read back to PC. This will use more panel memory. Disable this feature if you require more panel memory for your project size.

File Information

File Type:	Size:
- Runtime File	3512 byte <input type="text"/>
- PLC Driver File	7530 byte <input type="text"/>
- Project File	13420 byte <input type="text"/>
Total Size: 24462 byte <input type="text"/>	

Attention :

The Panel "Setup Screen" must be active for the software to communicate with the panel. Press the F1 key and the F5 key at the same time for 3 seconds to activate the Setup 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 PAC (use the DV-1000CBL to connect to the RS232 port of our P3-550 CPU).

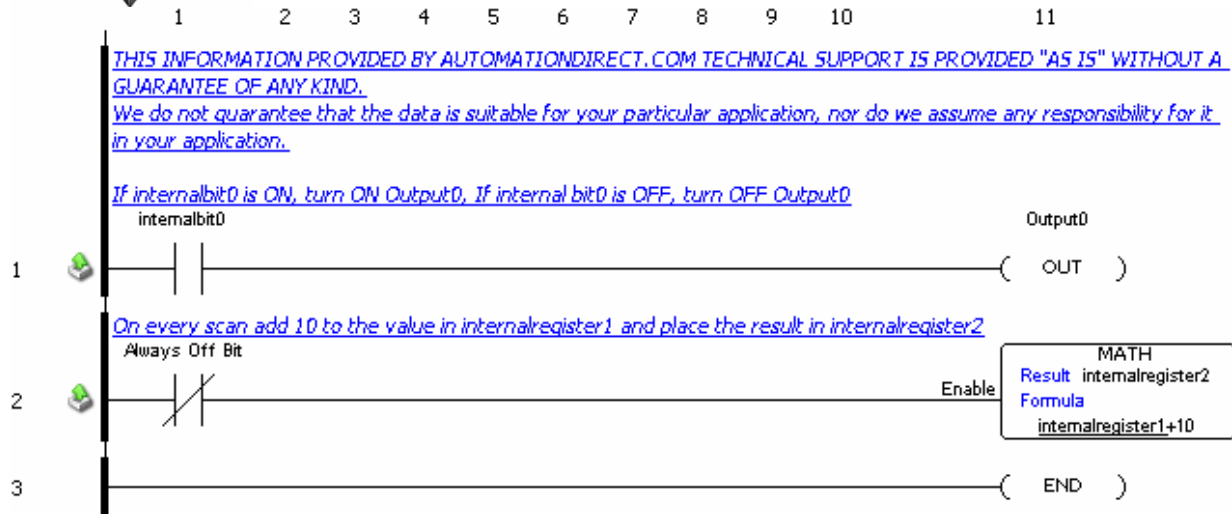
Once you have connected to the CPU, even though there isn't a program in the PAC yet, you can look at the 2 LEDs on the back of the C-more Micro panel to see if it's communicating. The TxD and RxD LED should be blinking if the panel is talking to the PAC. Once we put the program in the PAC we can test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

The PAC program to enter into the P3000 is listed below. If you're using a different PAC family or brand, you can modify the two rungs to fit the PAC requirements. Address changes due to PAC differences will require changes in the C-more Micro project as well.



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Once the C-more Micro and P3000 PAC are programmed, connected, and the PAC is in the RUN mode, you can use the F1 key to make the PAC Output0 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.



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