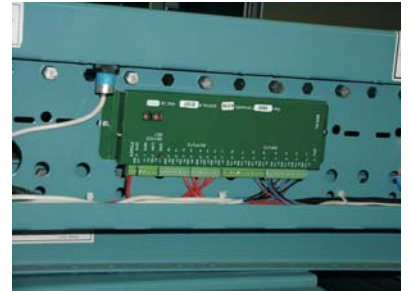
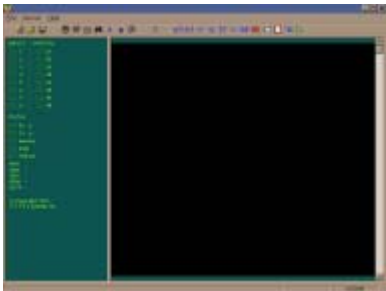


SuperLogic

SOFTWARE INSTALLATION AND OPERATION.




Industrial Automation and Controls
Gilbert, Arizona
www.omni-az.com
480-216-3286

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1.0 Overview

SuperLogic enables the configuration and programming of the OmniCon-LP control module. It is ladder logic based programming application, applying industry-programming standards. Its programming functionality is extensive and allows users to develop programs for many specialized applications. SuperLogic incorporates a drag-and-drop graphical interface to create a user-friendly programming environment. SuperLogic also has program monitor capabilities, which allow the user to debug a program against the system application. The SuperLogic software allows two methods of connection, Serial with a modem cable and CAN via a PCI Network Card, to OmniCon devices for program downloading and configuring. An OmniCon device can store up to 4KB of ladder program, this on average is an 80 to 100-rung program.

2.0 Software Requirements and Installation

To ensure the proper operation of the SuperLogic Software, your computer system should have the minimum requirements:

Operating System: Windows 98, Windows NT 4.0, or Windows 2000

Processor: 133 MHz Pentium

Memory: 32 MB RAM

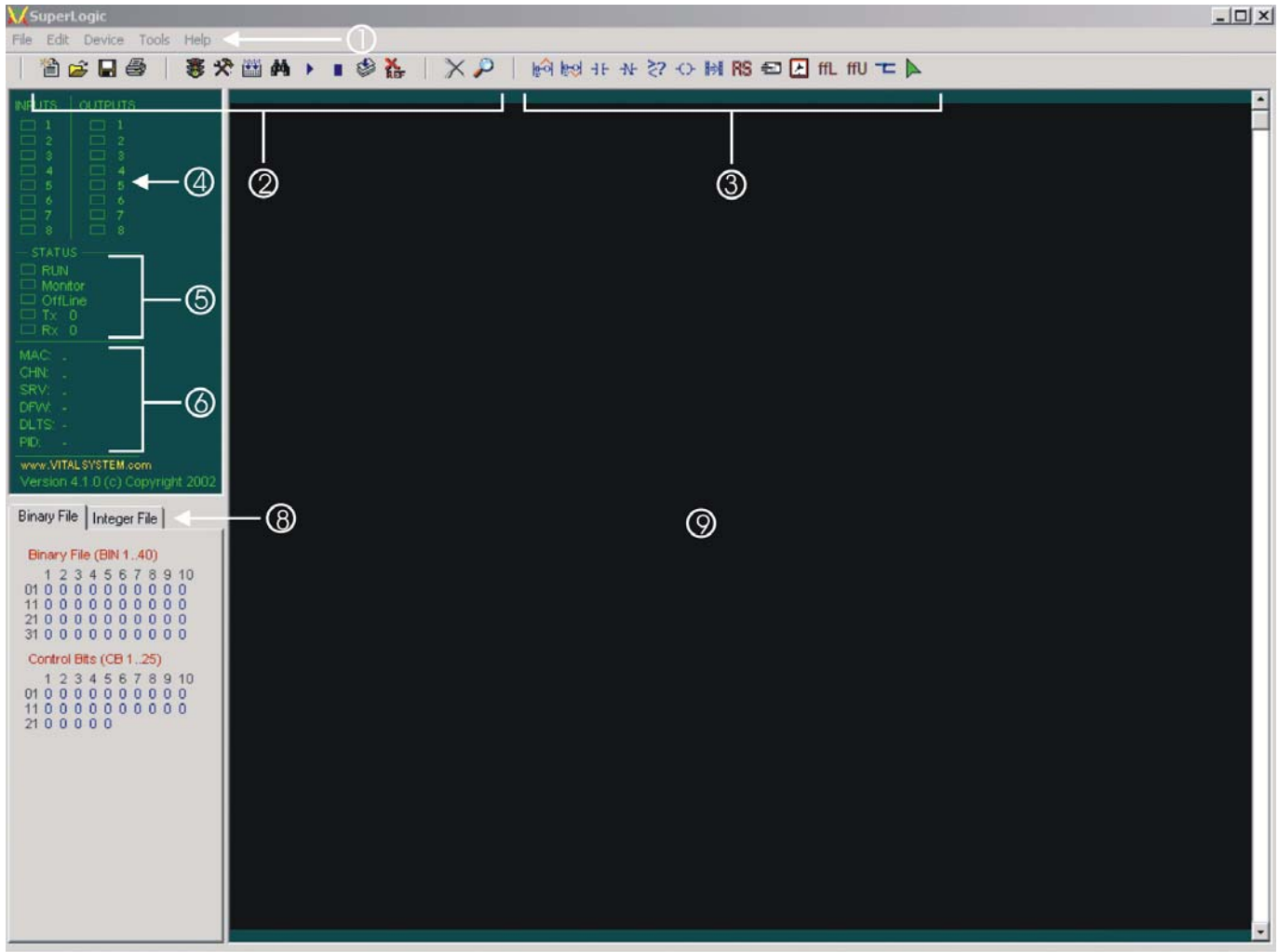
Hard drive: 200 MB

SuperLogic can be obtained through the Omni Automation website. The Omni Automation website is located at the URL- (<http://www.omni-az.com>). Download the installation file from the Products area (<http://www.omni-az.com/products.htm>) of the website.

Once the installation file has been acquired double-click the installation icon named SetupLdr4.1.0.exe. The installation process will begin, follow the installation wizard's instructions. Once the installation is complete, restart your computer system. Now, the SuperLogic shortcut icon will be present on the computer's desktop and the installation is complete.

3.0 Workbench Components

The SuperLogic Workbench components are numbered below:



3.1 Main Menu

File Submenu:



New Ladder Program: Create a New Ladder Program in the SuperLogic software.

Open: Open a previous Ladder Program to edit or download.

Save: Save a new or edited Ladder Program.

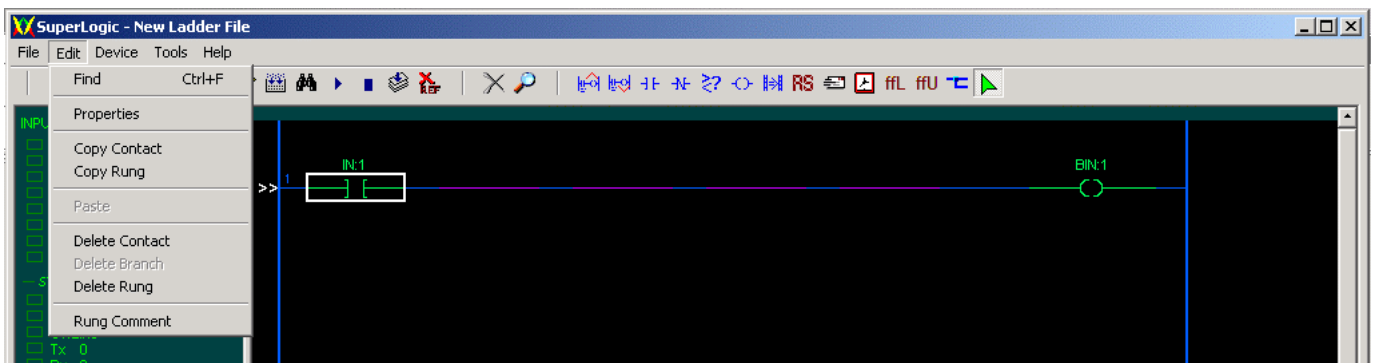
Save As: Save a new or edited Ladder Program.

Close: Close the current Ladder Program in SuperLogic Workbench.

Print: Prints the current Ladder Program in SuperLogic Workbench.

Exit: Exit from the SuperLogic software.

Edit Submenu:



Find: Search through ladder programs to find desired inputs, outputs, binaries, etc.

Properties: Shows properties of element currently selected.

Copy Contact: Copy the contact/element currently selected.

Copy Rung: Copy the rung currently selected.

Paste: Paste the a element into a rung or a entire rung into the program.

Pasting a element – After coping contact/element click on position in program where paste is desired. Select paste from edit submenu and copied contact/element will appear.

Pasting a rung – After coping rung click on a rung above or below the position desired for pasting of copied rung. Select paste from edit submenu and you will be prompted to insert copied rung after or before currently selected rung.

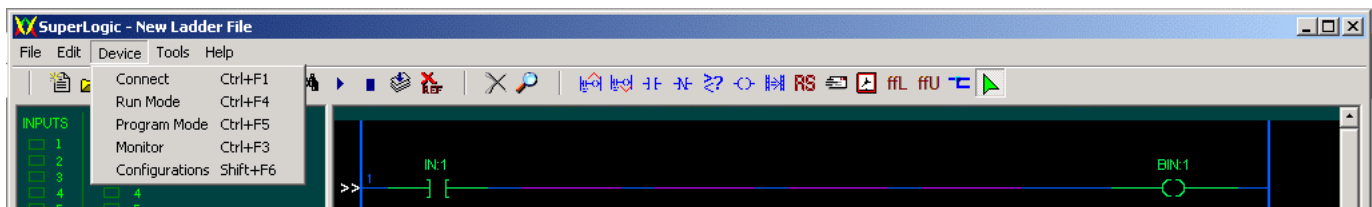
Delete Contact: Deletes the currently selected contact.

Delete Branch: Deletes the currently selected branch circuit.

Delete Rung: Deletes the currently selected rung.

Rung Comment: Allows user to insert a comment for an entire rung.

Device Submenu:



Connect: Initiates a connection between computer running SuperLogic software and a OmniCon device. If connection is successful the device will be online, which is indicated by the "Yellow" Online Status Indicator. Connections take place through a serial port on OmniCon or over DeviceNet network.

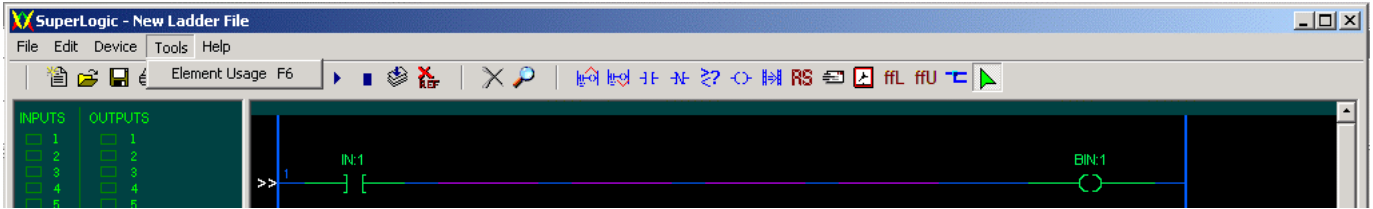
Run Mode: While connected and online to a OmniCon device this command will put controller into Run Mode, which will be indicated by the "Green" RUN Status Indicator. The Controller must be in Run Mode to execute the program stored in its memory.

Program Mode: While connected and online to a OmniCon device this command will put the controller into Program Mode, which will be indicated by a "Red" RUN Status Indicator. After downloading a program or re-configuring an OmniCon, the controller state will initialize to Program Mode.

Monitor: While connected and online with a controller the program the controller is executing can be monitored, which will be indicated by the "Blue" Status Indicator. The current program the OmniCon is executing must be opened in the SuperLogic Workbench and the controller must be in Run Mode.

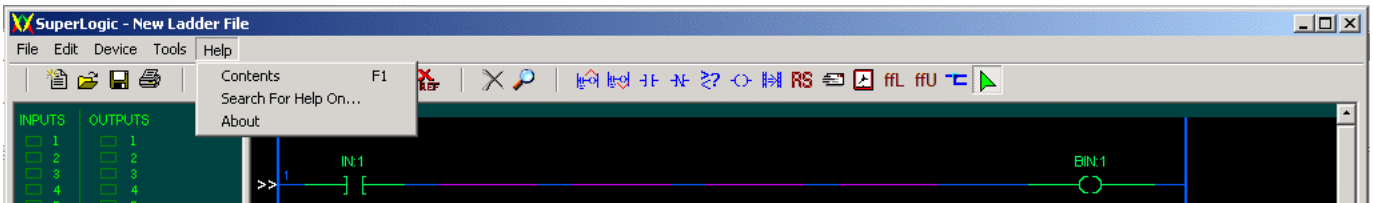
Configurations: While connected and online with an OmniCon device, the following device characteristics can be configured: Upstream MAC ID, Downstream MAC ID, Zone Count, Singulation or Slug Mode, and Host ID.

Tools Submenu:



Element Usage: A pop-up window will appear with a list of all elements used in current ladder program. It will also list the rungs each element is used in. Informs programmers of the elements still available for use, feature is very helpful when creating and editing ladder programs.

Help Submenu:

















Contents: This displays the contents of the Help Files.

Search for Help: Allows users to search Help Files for specific information.













About: This displays the version and copyright details for SuperLogic Software.

3.2 Shortcut Icons

-  Create a new Ladder Program.
-  Open a previous Ladder Program to edit or download.
-  Save a new or edited Ladder Program.
-  Print Ladder Program that is currently open in workbench.
-  Connect to OmniCon device.
-  Configure OmniCon device.
-  Download Ladder Program to OmniCon device.

-  Monitor current program running on OmniCon device.
-  Set OmniCon to Run Mode.
-  Set OmniCon to Program Mode.
-  Check for Syntax Errors in Ladder Program.
-  Show element usage for ladder program currently open in workbench.
-  Delete selected element or rung.
-  Find a desired element in program.

3.3 Ladder Programming Icons

-  Inserts a new rung above the currently selected rung.
-  Inserts a new rung below the currently selected rung.
-  Inserts a branch into a rung.
-  Cancels selected element and returns the pointer to its original state.
-  Normally Open **Condition**.
-  Normally Closed **Condition**.
-  Compare **Conditions**: =, NEQ, >=, >, <=, <.
-  Output **Results**: Normal, Latch, Unlatch, and Pulse.
-  Move **Result**.
-  Reset Timer/Counter **Result**.
-  Send Message **Result**.
-  Timer/Counter **Results**: Timers (TON, TOFF, and RTO) and Counters (Up and Down).

 Load FIFO/LIFO Queue **Result**.

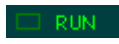
 Unload FIFO/LIFO Queue **Result**.


** A rung has two types of elements; Conditions and Results. Conditions are the elements in rung that when true make it possible for the result to become true. The Result elements are always in the far right positions of a rung and when true execute commands for memory manipulations.


3.4 I/O Status Indicators

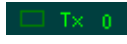
While monitoring the program of an OmniCon device, the Status Indicators give visual state verification for the 8 inputs and 8 outputs.


3.5 State Indicators

 This State Indicator will illuminate in "Green" when the OmniCon device, the SuperLogic software is online with, is in "RUN" mode.


 This State Indicator will illuminate in "Blue" when the SuperLogic software is monitoring the current program opened in workbench.


 This State Indicator will illuminate in "Yellow" and change to "Online" when the SuperLogic software is online with a OmniCon device.

 This State Indicator will illuminate when a message is transmitted to a controller. It will also tally the total number of messages transmitted.

 This State Indicator will illuminate when a message is received from a controller. It will also tally the total number of messages received.

3.6 Network and Device Statistics


 MAC ID of OmniCon device online with SuperLogic software.

 Identifies the type of connection established with OmniCon.

“Local” will be displayed if it is a local COM Port connection.

“Serial-CAN Bridge X” will be displayed if it is a Serial-CAN Bridge connection and X will be the MAC ID of the OmniCon being bridged.

“1 or 2” will be displayed if a network connection via PCI card is established. This number refers to the channel the connection is taking place over.

 Server name of host computer.

- bFW:** Identifies firmware version.
- DLTS:** Identifies the date and time of the last download to OmniCon online with.
- PID:** Program ID of program running in OmniCon.

3.7 Binary and Integer Files

The binary and integer file tabs are used to monitor Binaries, Control Bits, Integers, and Control Words. When in monitor mode the status of these files will be updated in real-time. This is a useful tool when debugging programs and applications.

3.8 Programming Window

This is the window where ladder programs are created and edited.

4.0 System Files

OmniCon-LP devices support both bit and word addressable files for storing program and intermediate data. In addition to, general binary and integer files the OmniCon-LP use Control Bit and Control Word files for device specific data.

4.1 File Addressing

Abbreviation used in ladder file	Description	Address Range
BIN	Binary	BIN:1....BIN:40
REG	Integer	REG:1....REG:25 (value -32767 to 32767)
REG	Integer Bits	REG:1.x....REG:25.x where x is 0 to15
CW	Control Word	CW:1....CW:35
CB	Control Bit	CB:1....CB:25
TMR	Timer Bit	TMR:1.x....TMR:25.x where x is DN, TM, or EN
CNT	Counter Bit	CNT:1.x....CNT:10.x where x is DN or EN
IN	Inputs	IN:1....IN:8
OUT	Outputs	OUT:1....OUT:8

4.2 Control Bit and Control Word Addresses

Control Bit	Description	Type
CB:1	Package Approaching from Merge Branch	Read Only
CB:2	Ready to Receive Package from Merge Branch Controller	Read/Write
CB:3	Package Exiting to Divert Branch 1 (Left)	Read/Write
CB:4	Divert Branch 1 (Left) Ready to Receive Package	Read Only
CB:5	Package Exiting to Divert Branch 2 (Right)	Read/Write
CB:6	Divert Branch 2 (Right) Ready to Receive Package	Read Only
CB:7 – CB:9	Reserved	
CB:10	New barcode received (set by firmware – cleared by ladder program)	Read/Write
CB:11	Package/Unit exiting last zone controlled by OmniCon-LP.	Read/Write
CB:12	First zone ready to receive a package/unit from upstream OmniCon-LP.	Read/Write
CB:13	Reserved.	
CB:14	OmniCon-LP is configured for singulation operation.	Read Only
CB:15	Reserved.	
CB:16	Reserved.	
CB:17	Reserved.	
CB:18	Package/Unit approaching first zone from upstream OmniCon-LP	Read Only
CB:19	Downstream OmniCon-LP is ready to accept a package/unit.	Read Only
CB:20	Reserved.	Read Only
CB:21	FIFO/LIFO memory stack is full.	Read Only
CB:22	FIFO/LIFO memory stack is empty.	Read Only
CB:23...CB:25	Reserved.	

Control Word	Description	Type
CW:1...CW:5	Reserved.	Read Only
CW:6	MAC ID merge branch	Read Only
CW:7	MAC ID divert 1 (left) branch	Read Only
CW:8	MAC ID divert 2 (right) branch	Read Only
CW:9	Produce/Read data for DeviceNet Polling Message Connections.	Read/Write
CW:10	Consume/Write data for DeviceNet Polling Message Connections.	Read Only
CW:11	MAC ID for OmniCon-LP device.	Read Only
CW:12	MAC ID for downstream OmniCon-LP device.	Read Only
CW:13	MAC ID for upstream OmniCon-LP device.	Read Only
CW:14	Reserved.	
CW:15	Number of motorized roller zones OmniCon-LP is controlling.	Read Only
CW:16	MAC ID for a peer-to-peer messaging target.	Read/Write
CW:17...CW:22	Send peer-to-peer explicit message buffer (6 Bytes).	Read/Write
CW:16	Reserved.	
CW:24	Current FIFO/LIFO memory stack level.	Read Only
CW:25...CW:30	Receive peer-to-peer explicit message buffer (6 Bytes).	Read/Write
CW:31...CW:32	Reserved.	
CW:33...CW:52	FIFO/LIFO memory stack. 20 locations	Read Only
CW:53...CW:62	Barcode memory buffer. 10 locations	Read/Write

5.0 Ladder Programming Elements

An element is any entry in a rung of a ladder program. The elements are divided into two categories, Conditions and Results.

5.1 Condition Elements

A Condition can be entered in any positions of a rung, except the far right, which is reserved for Result elements. When all the conditions in a rung are “TRUE” then the rung and the Result becomes “TRUE.”

5.1.1 Normally Open Condition

This condition is true when the bit pointed to by the address is true (1 or high). This condition supports the following addresses:

- | | |
|------------------|--|
| 1. Inputs | IN:1 - IN:8 |
| 2. Outputs | OUT:1 - OUT:8 |
| 3. Binaries | BIN:1 - BIN:40 |
| 4. Integers | REG:1.x - REG:25.x where x = 0 - 15 |
| 5. Timers | TMR:x.DN, TMR:x.EN, TMR:x.TM where x = 1- 25 |
| 6. Counter | CNT:x.DN, CNT:x.EN where x = 1 - 10 |
| 7. Control Bits | CB:1 - CB:25 |
| 8. Control Words | CW:1.x – CW:83.x where x = 0 - 15 |



5.1.2 Normally Closed Condition

This condition is true when the bit pointed to by the address is False (0 or low). This condition supports the following addresses:

- | | |
|------------------|--|
| 1. Inputs | IN:1 - IN:8 |
| 2. Outputs | OUT:1 - OUT:8 |
| 3. Binaries | BIN:1 - BIN:40 |
| 4. Integers | REG:1.x - REG:25.x where = 0 -15 |
| 5. Timers | TMR:x.DN, TMR:x.EN, TMR:x.TM where x = 1- 25 |
| 6. Counter | CNT:x.DN, CNT:x.EN where x = 1 - 10 |
| 7. Control Bits | CB:1 - CB:25 |
| 8. Control Words | CW:1.x – CW:83.x where x = 0 - 15 |

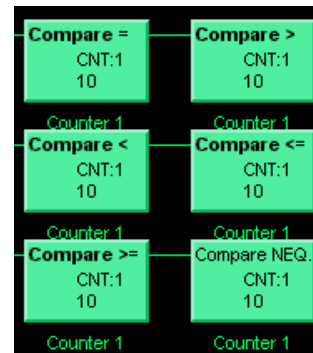


5.1.3 Compare Condition

There are six compare conditions: =, >, <, <=, >=, NEQ. These conditions expect two arguments labeled Argument 1 and Argument 2. In a mathematical statement, Argument 1 will be on left side and Argument 2 will be on right side. i.e. Argument 1 < Argument 2, or Argument 1 >= Argument 2, etc.

Possible Arguments:

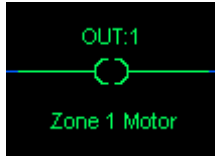
- | | |
|------------------------|----------------|
| 1. Integer Constant | -32676...32767 |
| 2. Integer | REG:1 - REG:25 |
| 3. Control Word | CW:1 - CW:83 |
| 4. Timer Accumulator | TMR:1 - TMR:25 |
| 5. Counter Accumulator | CNT:1 - CNT:10 |



5.2 Result Elements

A Result Element can only be entered in the far right insert positions of a rung. When the condition elements in a rung are “TRUE” then the rung and the Result Element becomes “TRUE.”

5.2.1 Output/Coil Result



This result sets the addressed bit to true or false. This result can also turn “on or off” the OmniCon outputs. When the rung condition is true, the addressed bit or output is set to true (1 or high) and with rung condition false, the bit or output is set to false (0 or low). This result supports the following addresses:

- | | |
|-----------------|-------------------------------------|
| 1. Outputs | OUT:1 - OUT:8 |
| 2. Binaries | BIN:1 - BIN:40 |
| 3. Integers | REG:1.x - REG:25.x where x = 0 - 15 |
| 4. Control Bits | CB:1 - CB:25 |

5.2.2 Output/Coil Latch Result



This result sets the addressed bit to true when the rung becomes true. However, when the rung goes to false the bit is not reset. An Unlatch Result for the corresponding bit address must be set to true to reset the addressed bit to false (0 or low). This result supports the following addresses:

- | | |
|-----------------|-------------------------------------|
| 1. Outputs | OUT:1 - OUT:8 |
| 2. Binaries | BIN:1 - BIN:40 |
| 3. Integers | REG:1.x - REG:25.x where x = 0 - 15 |
| 4. Control Bits | CB:1 - CB:25 |

5.2.3 Output/Coil Unlatch Result



This result resets the addressed bit to false (0 or low), when the rung becomes true. However, when the rung goes to false the bit addressed is not modified. This result supports the following addresses:

- | | |
|-----------------|-------------------------------------|
| 1. Outputs | OUT:1- OUT:8 |
| 2. Binaries | BIN:1 - BIN:40 |
| 3. Integers | REG:1.x - REG:25.x where x = 0 - 15 |
| 4. Control Bits | CB:1 - CB:25 |

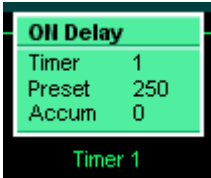
5.2.4 Output/Coil Pulse Result



This result is used to set a bit to true for the rest of the program scan. If the rung condition is true, the addressed bit will be set to true (1 or high). After the program scan is complete, the bit will reset back to false (0 or low). If the bit is already set, it will not change the bit’s state.. This result supports the following addresses:

- | | |
|-------------|----------------|
| 1. Binaries | BIN:1 - BIN:40 |
|-------------|----------------|

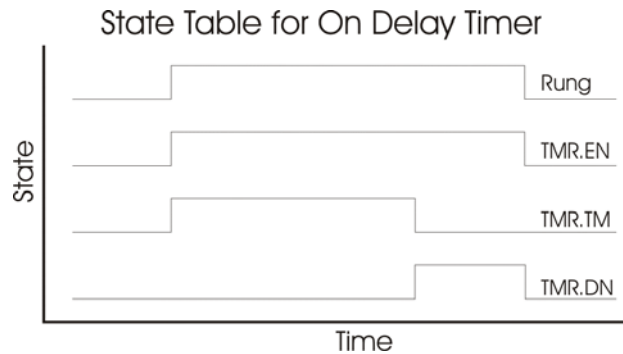
5.2.5 On Delay Timer Result



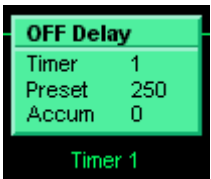
This result starts timing when the rung condition becomes true. As long as the rung condition is true, the accumulator keeps on timing until it reaches the preset value.

When Accumulator is equal to Preset, the Done bit is set and the Timing bit is reset. The Timer Enable bit follows the rung condition. The Done bit, Timing Bit and Enable Bit are reset as soon as the rung condition becomes false. The Accumulator is reset to 0 until the rung condition becomes true again.

The time base is fixed at 10 mSec. Ex. Preset is 250, which is 2.5 seconds.



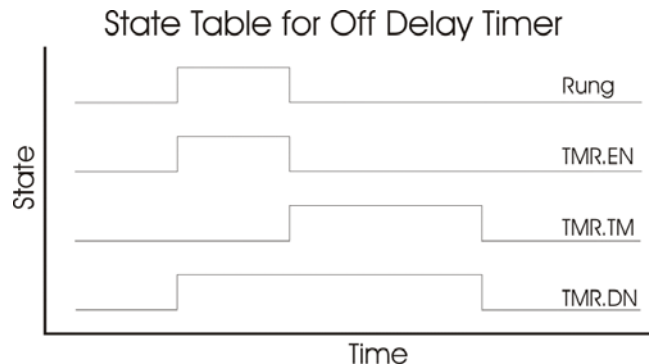
5.2.6 Off Delay Timer Result



This result starts timing when the rung condition becomes false. As long as the rung condition is false, the accumulator keeps on timing until it reaches the preset value. If the rung becomes true again before the Off Delay Timer reaches the preset then the timer stops.

The Enable Bit is true when the rung is also true. The Timer Bit is true when the rung is false and the timer is timing. The Done Bit is a result of OR'ing the Enable and Timer Bit states. When the accumulator is equal to the preset value then the Timer and Done Bits are reset.

The time base is fixed at 10 mSec. Ex. Preset is 250, which is 2.5 seconds.



5.2.7 Retentive Timer Result

Retentive	
Timer	1
Preset	250
Accum	0
Timer 1	

The Retentive Timer begins to increment the accumulator when rung conditions become true. As long as rung condition is true the accumulator increments until it reaches the Preset value. However, unlike the TON, the RTO does not reset its accumulator when the condition goes false. Instead, a reset command is required to reset the accumulator and the done bit. Please refer to Timer/Counter Reset element.

The Retentive Timer does not retain its accumulator value when you cycle the power of the controller or change the controller mode to program mode. The accumulator is retained only during run mode.

The time base is fixed at 10 mSec. Ex. Preset is 250, which is 2.5 seconds.

5.2.8 Up Counter Result

UP Count	
Counter	1
Preset	250
Accum	0
Counter 1	

This result will count the rung state transitions from 0 to the preset value. Each transition is registered by incrementing the accumulator by 1. When the accumulator is equal to the preset value, the Done Bit is set to true. The Enable Bit follows the rung condition. To reset the counter, the Reset Result is used. At reset, the accumulator and the Done Bit are set to zero. Please refer to Timer/Counter Reset element.

5.2.9 Down Counter Result

DOWI Count	
Counter	1
Preset	250
Accum	0
Counter 1	

This result will count the rung state transitions from preset value to 0. Each transition is registered by decrementing the accumulator by 1. When the accumulator is equal to the preset value, the Done Bit is set to true. The Enable Bit follows the rung condition. To reset the counter, the Reset Result is used. At reset, the accumulator and the Done Bit are set to zero. Please refer to Timer/Counter Reset element.

5.2.10 Timer/Counter Reset Result

RESET TMR:1

This element resets a timer or a counter. A timer is selected by using a TMR in the address followed by the index of the timer. A counter is selected by using a CNT followed by the index of the counter. When the rung condition is true, the result will clear the accumulator of timer or counter specified. For a timer it will reset the done and timing bit. For a counter it will reset the done bit.

5.2.11 Move Result

This element moves data from a source location to a destination.



Possible Source Arguments:

1. Integer Constant (-32767 to 32767)
2. Integer (REG:1 - REG:25)
3. Control Word (CW:1 - CW:62)
4. Timer Accumulator (TMR:1 - TMR:25)
5. Counter Accumulator (CNT:1 - CNT:10)

Possible Destination Arguments:

1. Integer (REG:1 - REG:25)
2. Control Word (CW:1 - CW:62)
3. Timer Preset (TMR:1 - TMR:25)
4. Counter Preset (CNT:1 - CNT:10)

5.2.12 Send Message Result



This element sends an explicit message from one OmniCon-LP device to another. When rung becomes true, the 6 bytes of data in the send message buffer will be sent to the receive buffer of the designated OmniCon-LP. The send and receive buffers can only hold values from 0 to 255.

Send Buffer (CW:17 - CW:22) Receive Buffer (CW:25 - CW:30) MAC ID of Destination (CW:16)

5.2.13 FIFO/LIFO Load



When Rung Conditions go True, this Result command will copy the source data to the bottom of the queue (CW: 33). Queue pointer (CW: 24) is incremented by one. Queue Empty bit (CB: 22) is set to False. If the queue pointer (CW: 24) becomes equal to Size, the Full bit (CB: 21) is set to True.

If Queue is already full, no action is taken.

Note: The Queue grows toward bottom. New data always end up at the bottom. Queue is 20 Bytes (CW: 33 – CW: 52)

Possible addresses or constant data that can be loaded into the queue:

- | | |
|---------------------|-------------------------------|
| 1. Integer Constant | 0 - 32000 |
| 3. Integers | REG: 1 - REG: 25 |
| 4. Control Word | CW: 1 - CW: 83 |
| 4. Timer | TMR: x.ACC, where x is 1 - 25 |
| 5. Counter | CNT: x.ACC, where x is 1 – 10 |

Queue Size: Range 2 ... 20

5.2.14 FIFO Unload



When Rung Conditions go True, The integer value stored at the top of the queue is copied to the destination address. The entire queue is then moved one step towards the top, decrementing the Queue pointer (CW: 24) by one. The Queue Full bit (CB: 21) is set to false. If Queue Count (CW: 24) becomes zero, the Empty bit (CB: 22) is set to true.

If queue is empty, no action is taken.

Possible destination addresses of the file to receive data from the queue:

- | | |
|-----------------|------------------|
| 1. Integer | REG: 1 – REG: 25 |
| 2. Control Word | CW: 1 – CW: 83 |

5.2.15 LIFO Unload



When Rung Conditions go True, The integer value stored at the bottom of the queue is copied to the destination address. The Queue Pointer (CW: 24) is decremented by one. The Queue Full bit (CB: 21) is set to false. If Queue Count (CW: 24) becomes zero, the Empty bit (CB: 22) is set to true.

If queue is empty, no action is taken.

Possible destination addresses of the file to receive data from the queue:

- | | |
|-----------------|------------------|
| 1. Integer | REG: 1 – REG: 25 |
| 2. Control Word | CW: 1 – CW: 83 |

6.0 Introduction to Programming and an Example Ladder Program

6.1 Ladder Programming Introduction

Ladder programming is a controls industry standard for I/O device level programming. A ladder program is created by inserting “Rungs”, just like connecting an electrical wire path from a left bus (-) to a right bus (+). Between the two buses, logic conditions such as relay contact, AND, OR, Compare, etc. are added. A Result Element (traditionally a coil) is always inserted on the far right. This Result Element is executed if linking condition elements become true. If you think of it electrically, when a condition becomes true it creates a short across itself and when linking conditions become true the left bus (-) and right bus (+) are connected completing the circuit. The Result element would be the load and when the circuit is completed it is activated and the corresponding address state becomes true/high or a command is executed.

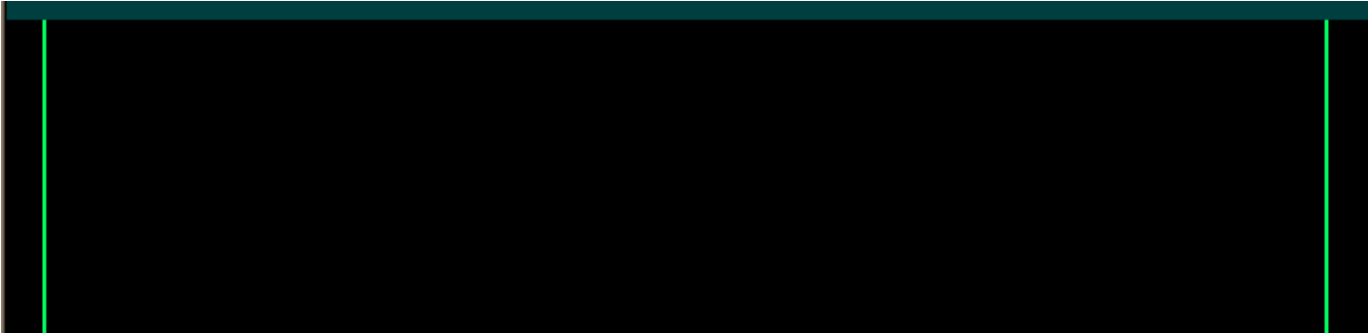
6.2 Example Ladder Program

6.2.1 Create New Ladder Program

Click on the New Ladder Program Icon:



A new ladder project/program with no rungs will appear, as shown below:

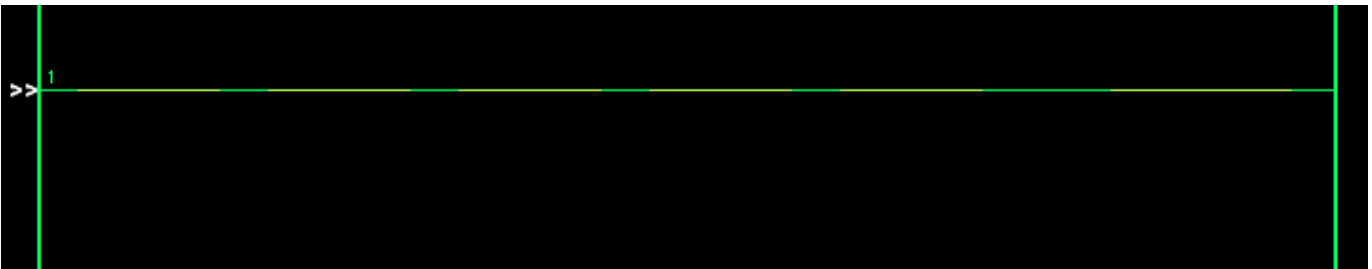


6.2.2 Insert a Rung

Click on the Insert Rung Before or After Icon:



A new rung with no condition or result elements will appear, as shown below:

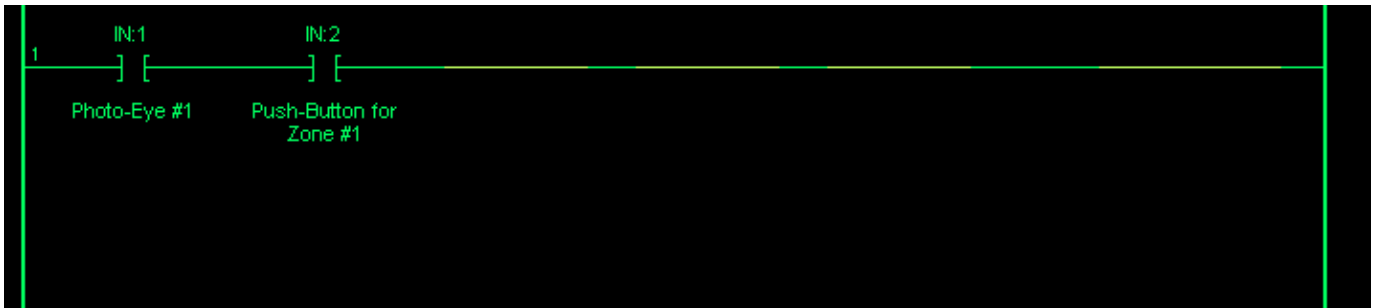


6.2.3 Insert Conditions into Rung


Insert 2 Open Contact Elements into rung #1. Click on the Normally Open Contact Icon:



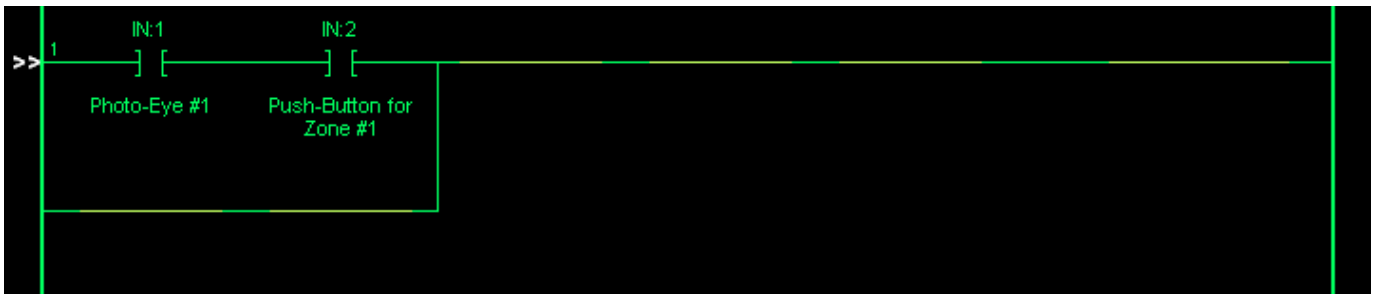
Next, click an entry point in the rung where you want to place the element. A properties window will appear, address the element accordingly and type a description of the element in the comment field. Repeat steps for next Normally Open Contact. The result is shown below:




6.2.4 Insert Branch into Rung

Click on the Branch button Icon: 

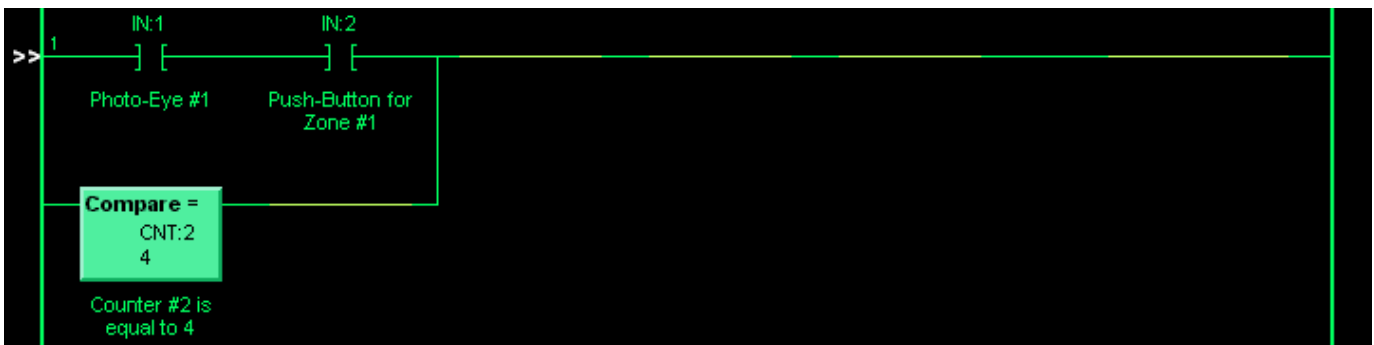
Select a beginning point on the desired rung. The possible beginning and ending points are indicated by red squares on the rungs. Then select the ending point for the new branch. A branch will appear between the two selected points. Below shows this example:




6.2.5 Insert New Condition into New Branch

Click on the Compare Button: 

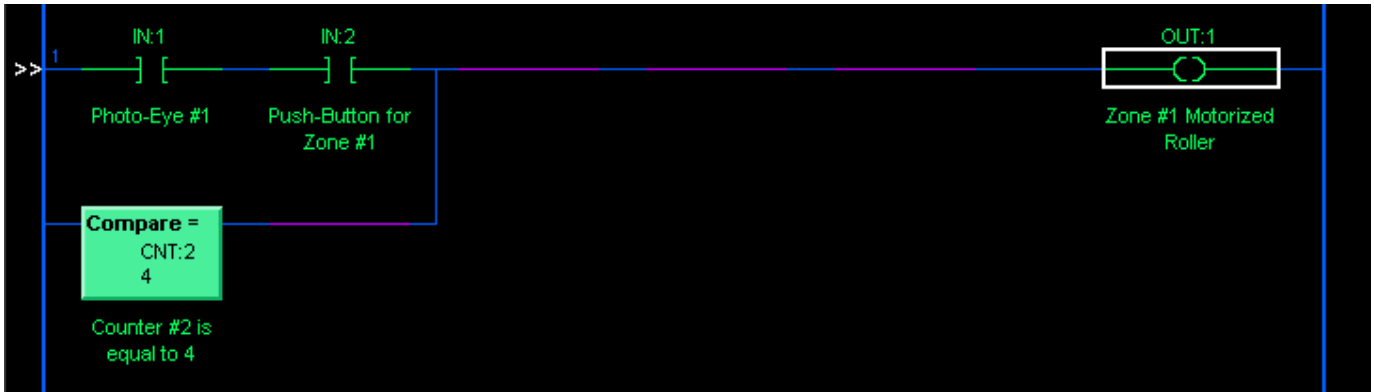
Then, click an entry point on the new branch where you want to insert the new Compare Condition. A properties window will appear, Select the equal command with Argument 1 = CNT: 2 and Argument 2 = 4. Also, type a description for the element in the comment field. Below shows the result of the following step:



6.2.6 Insert Output/Result into Rung

Click on the Output Button: 

Then, click on the far right Result entry point. A properties window will appear, Select the Normal Output Result and address the Result accordingly. Also, type a description of the element in the comment field. Below shows the result of the following step:



6.2.7 Explanation of Example Ladder Program

If Input #1 **AND** Input #2 are both TRUE then, the Result Element (OUT: 1) becomes TRUE or ON. **OR** if Counter #2 has accumulated/equal to 4 then, OUT: 1 is TRUE or ON.

7.0 Explicit Messaging Example

7.1 Sending a Peer-to-Peer Explicit Message

When sending an explicit peer-to-peer message, the message value and the destination MAC ID must be designated.

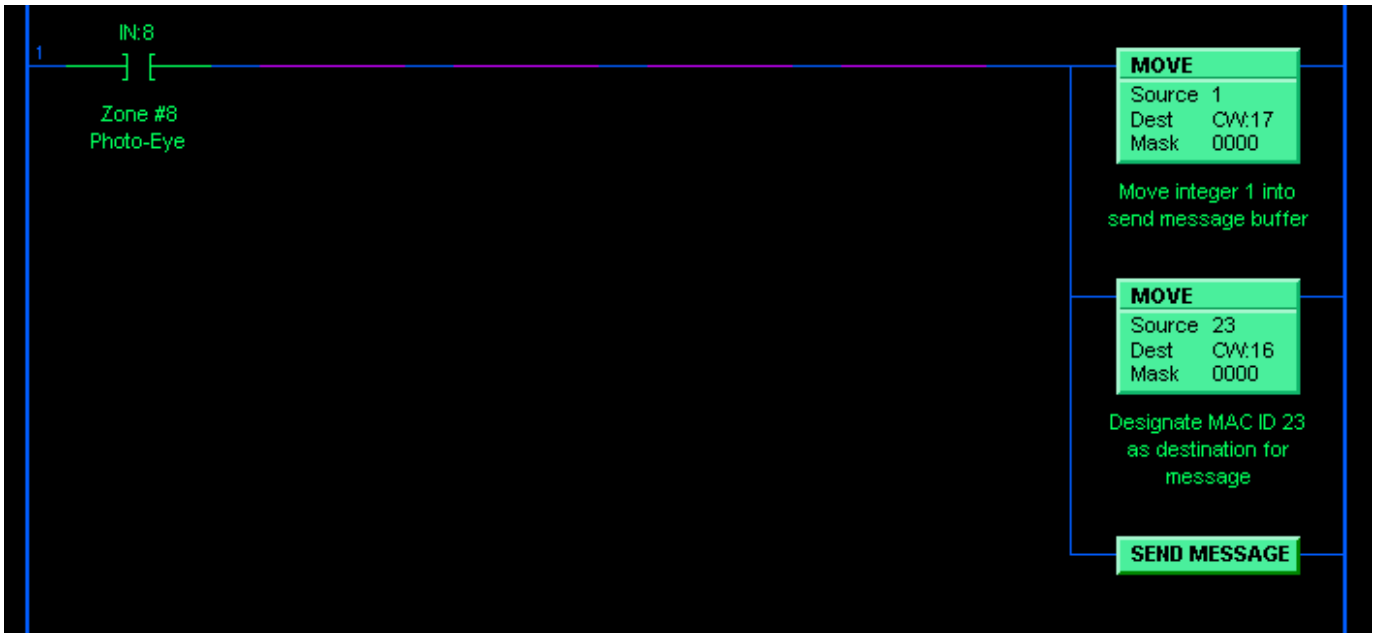
The message value is stored in the send memory buffer from CW: 17 to CW: 22 and the destination MAC ID is stored in CW: 16. The Graphic below shows the operations necessary to send an explicit message. The message value** is "1" is moved into CW: 17 and the destination MAC ID "23" is moved into CW: 16.

****The message value can be a value between 0 and 255 only.**

When IN: 8 becomes true the data is moved into the corresponding memory spaces and the send explicit peer-to-peer message is executed. The message value "1" will be sent to the OmniCon-LP device with the MAC ID "23". The send command is only executed once every time rung is true. All 6 bytes (CW: 17 – 22) are sent when send command is executed.

The send memory buffer and receive memory buffer map-out as follows:

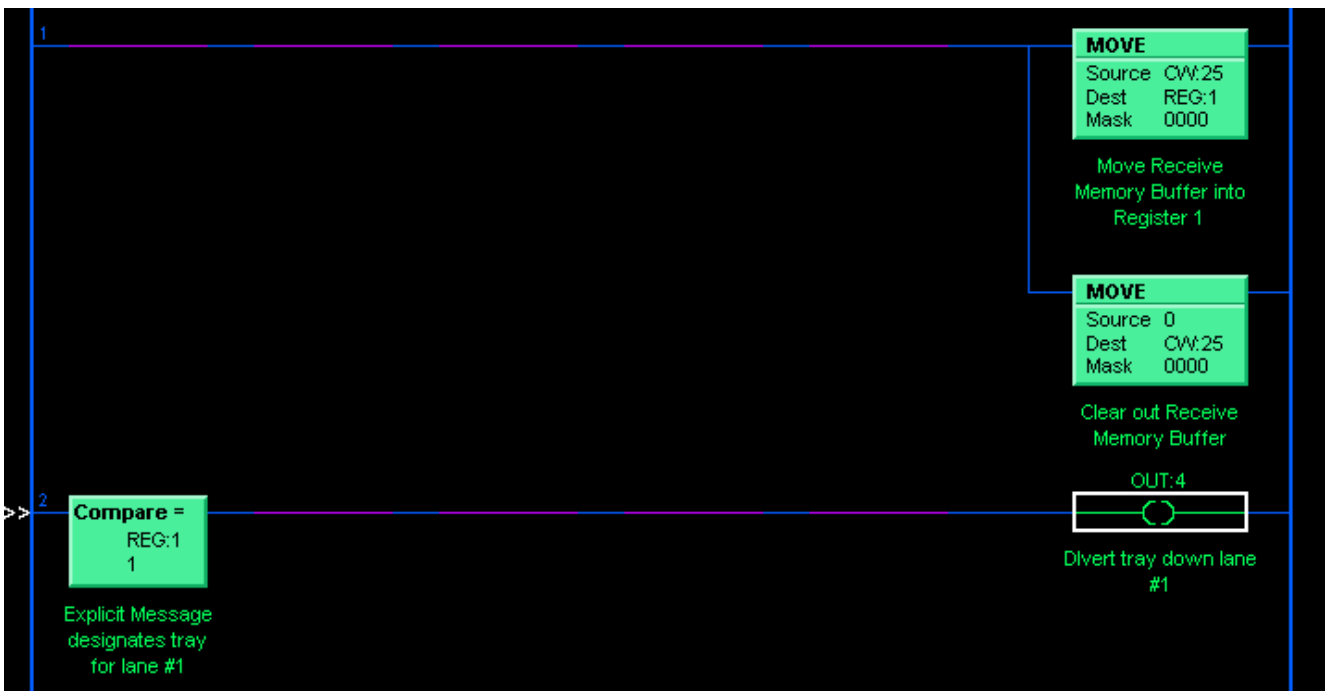
<u>Send Memory Buffer</u>		<u>Receive Memory Buffer</u>
CW: 17	⇒	CW: 25
CW: 18	⇒	CW: 26
CW: 19	⇒	CW: 27
CW: 20	⇒	CW: 28
CW: 21	⇒	CW: 29
CW: 22	⇒	CW: 30



7.2 Receiving a Peer-to-Peer Explicit Message

When receiving an explicit message, the message will be received in the memory buffer CW: 25 to CW: 30. The receive memory buffer is checked at the beginning of every program scan.

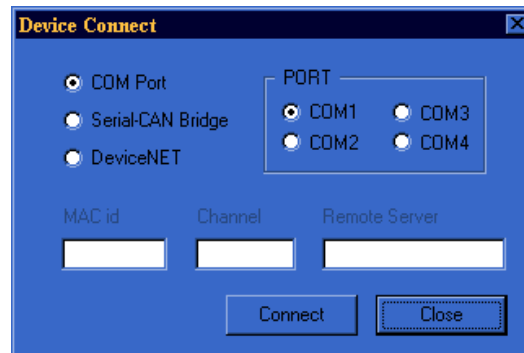
The Graphic below shows the operations necessary to receive an explicit message. The message value is moved from the receive memory buffer at CW: 25 to REG: 1 (any Register may be used REG: X, X = 1-25). The receive buffer is then cleared and REG: 1 can be used to initiate a Result Element in the destination OmniCon-LP device.



8.0 Connecting to OmniCon-LP

8.1 Local COM Port Connection

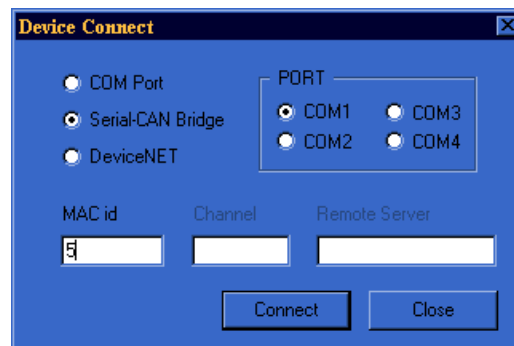
Physically connect a standard modem or serial cable between the serial port of the OmniCon-LP device and COM port of the computer running SuperLogic software. From the SuperLogic Main menu, select the **Connect** option from the **Device** sub-menu. From the Device Connect pop-up window, select the **COM Port** radio button on the left and the corresponding radio button of the **PORT** number the serial cable is connected to. After selecting connect button from the pop-up window the OmniCon-LP device will be “Online.” The **Offline Status Indicator** on left side of the workbench will visually verify this.



Device Connect Pop-Up Window

8.2 Remote Serial-CAN Bridge Connection

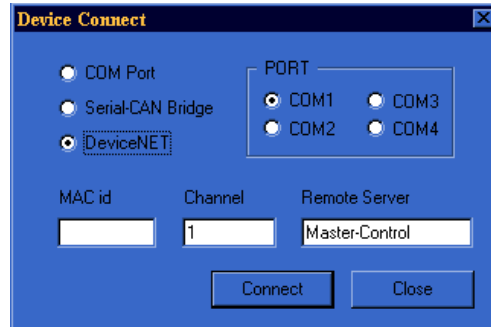
Physically connect a standard modem or serial cable between the serial port of any OmniCon-LP device and COM port of the computer running SuperLogic software. From the SuperLogic Main menu, select the **Connect** option from the **Device** sub-menu. From the Device Connect pop-up window, select the Serial-CAN Bridge radio button on the left and enter the MAC id of the desired OmniCon-LP. After selecting connect button from the pop-up window the OmniCon device will be “Online.” The **Offline Status Indicator** on left side of the workbench can visually verify this.



Device Connect Pop-Up Window

8.3 Network Connection Through PCI Network Card

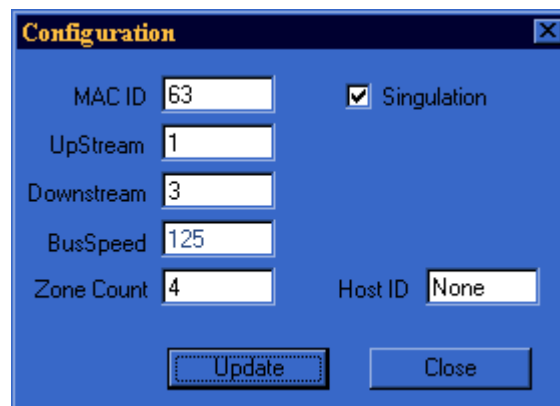
A connection to an OmniCon-LP device can take place via an OmniNet PCI network card over the DeviceNet network. From the SuperLogic Main menu, select the **Connect** option from the **Device** sub-menu. From the Device Connect pop-up window, select DeviceNet radio button and designate the MAC ID and Network Channel of the desired device. If OmniNet PCI Card is installed in a Remote Server computer enter the computer name in the Remote Server field. After selecting connect button from window the OmniCon-LP device will go "Online". **Offline Status Indicator** on left side of the workbench can visually verify this.



9.0 Configuring an OmniCon-LP Device.

The configuration utility is built into the SuperLogic software. It enables users to configure Omni Automation’s ladder programs for standard conveyor operations or other programs that utilize the corresponding **Control Words and Bits**.

While online with an OmniCon-LP click the Configure option from the Device menu. The following configuration pop-up window will appear:



Configuration Pop-Up Window

MAC ID (CW: 11): The Node or Device ID of the device currently "Online" with. Range of MAC IDs (0 - 63). This value can't be changed through the software and is only for visual verification.

Upstream (CW: 13): The MAC ID of the upstream OmniCon-LP. Upstream is in reference to the direction of material flow.

Downstream (CW: 12): The MAC ID of the downstream OmniCon device. Downstream is in reference to the direction of material flow.

BusSpeed: Network baud rate in KBPS, at this time the OmniCon-LP only incorporates the 125 kps network speed. Therefore, this value can't be changed and is only for visual verification.

Zone Count (CW: 15): The number of motorized roller zones being controlled by the OmniCon-LP; the maximum Zone Count number is 8. Leave Value as "0" if not using standard program or CW: 15 in ladder program.

Singulation (CB: 15): This box is "checked" if the accumulation program is to operate in "singulation" mode. Otherwise, the accumulation program will operate in "slug" mode.


Singulation Mode: Material is only allowed to enter downstream zone if it is completely void.

Slug Mode: Material is allowed to enter downstream zone when material is present and zone is running. Therefore, only when last zone of system is full will material begin accumulating back.

Host ID: MAC ID of PC Host with OmniNet PCI card (If PCI Host is present).

10.0 Monitoring a Program in an OmniCon-LP Device.

While connected to an OmniCon-LP, open the current program that is running on that particular device. Before monitoring a program, ensure that the device is in "RUN" mode, cannot monitor programs while device is in "Program" mode.

Start monitoring the program by either clicking-on its shortcut icon or selecting "Monitor" from the Device Submenu. 

If the program that is open on the Workbench does not match the program running in the OmniCon-LP then the following **error** message will result "Program Mismatch". If the programs match then SuperLogic will begin monitoring the running program.

While monitoring, if a Condition Element is red in color then its state is "True" at that moment. Otherwise, the Condition Element is the default green color and its state is "False". Also, the Result Elements are a blue color when their state is "True" and the default green color when their state is "False". Similarly, while monitoring the program the "INPUTS" and "OUTPUTS" Status Indicators update the status of the OmniCon's 8 inputs and 8 outputs. Also, the state of the Binary and Integer files can be monitored through the corresponding maps. Stop monitoring a program by again clicking-on the shortcut icon or selecting "Stop Monitoring" from the Device Submenu.