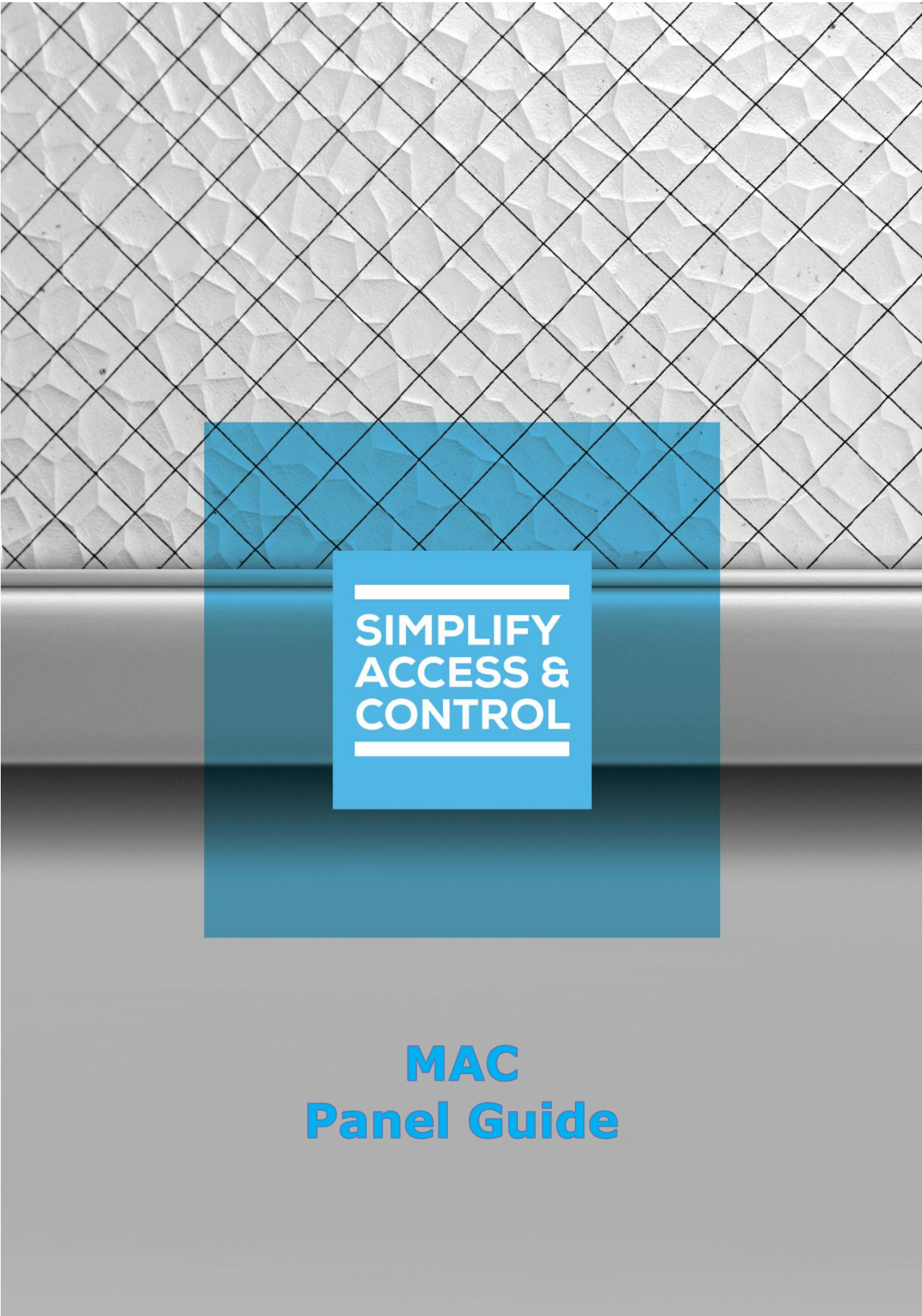




**SIMPLIFY
ACCESS &
CONTROL**

MAC Panel Guide

Intelli-Site

Security Management Software

MAC Panel Guide

MAC Panel Guide

Copyright

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OSSI, LLC
10125 S 52nd St.
Franklin, WI 53132-8677
ossi-usa.com

Telephone: (262) 522-1870
Toll Free: (888) 488-2623
Fax: (262) 522-1872

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Technical Support Assistance

OSSI, LLC Headquarters

OSSI, LLC
10125 S 52nd St.
Franklin, WI 53132-8677
(262) 522-1870

Technical Support

Technical support is available via telephone or email. Contact Technical Support 8:00 AM to 5:00 PM Central Standard time. When calling after hours, please leave a detailed voice mail message, and someone will return your call as soon as possible.

Email: support@ossi-usa.com

When calling, please be at the computer prepared to provide the following information:

- Product version number, found by selecting the  **About** button from the Intelli-Site Lite Application Menu.
- The type of computer being used, including operating system, processor type, speed, amount of memory, type of display, etc.
- Exact wording of any message that appears on the screen.
- What was occurring when the problem was detected?
- What steps have been taken to reproduce the problem?
- It is highly recommended that the user generate a support package for transmission to Intelli-Site technical support staff. To generate the package, run the Intelli-Site Lite Configuration Utility. *Create Support Package...* is the last option in the **Tools** menu.

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MAC Panel Guide

Introduction

The Intelli-Site MAC panel control driver integration uses no API or SDK. It was written using the panel communication protocol directly. The MAC driver supports the following MAC panels:

- MAC-4R Panel *legacy hardware*
- MLC-4R Panel
- MLC-16R Panel
- MLC-32I Panel
- MLC-8IC Dual Panel
- MLC-8IC Panel

This guide explains using the MAC driver and the MAC panels with Intelli-Site. It explains:

- Installation of the driver
- Hardware Management View
 - Adding drivers, communication methods, and panels,
 - Configuration, and
 - Management
- Access Management View
 - Adding holidays
 - Adding time zones
- Design View
 - The properties of the panels
 - Using the panels in screen object programming including the Door Construct
- Ladder Logic Programming

MLC-4R Panel

The **MLC-4R** panel is an intelligent, distributed processing access control panel that can control up to four doors or elevator cab and floor access. The panel supports ladder logic programming providing ultimate flexibility.

Note: Elevator control requires an MLC-4R and an MLC-16R.

MAC Panel Guide

MLC-16R Panel

The **MLC-16R** panel is a Smart Programmable Logic Controller (SPLC), built specifically for controlling system outputs. The panel supports peer-to-peer communication and ladder logic programming providing ultimate flexibility. The distributed processing and peer-to-peer communications provide a redundant robust solution that continues to function regardless of the condition of the rest of the system. The controller provides 16 Form C relay outputs that can be triggered by system events or through peer-to-peer commands from other controllers.

Note: Elevator control requires an MLC-4R and an MLC-16R.

MLC-32I Panel

The **MLC-32I** is a Programmable Logic Controller built specifically for monitoring system inputs, both analog and digital. It is equipped with distributed intelligence as each controller has its own processor and follows its own program. Ladder logic programming comes pre-configured to make start-up easy, but can be modified to meet your specific application.

MLC-8IC and MLC-8IC Dual Panel

The **MLC-8IC** is a Programmable Logic Controller built specifically for controlling audio. It supports both intercom and paging controls with PLC ladder logic. It is equipped with distributed intelligence as each controller has its own processor and follows its own programming. Ladder logic programming comes pre-configured to make start-up easy, but can be modified to meet your specific application.

The **MLC-8IC Dual** is built specifically for controlling dual channel audio. Otherwise, it is identical to the **MLC-8IC**.

MAC-4R Panel (Legacy)

The MAC-4R panel is legacy hardware that has been superseded by the MLC-4R panel. It is included in this guide to support existing installations that had this panel before the MLC-4R panel was produced. The MAC-4R panel is no longer in production.

Installation

Note: *If the panels communicate via an Echelon device, please install and configure the OpenLDV network driver.*

The MAC driver in Intelli-Site must be installed.

If Intelli-Site has been installed without the MAC driver, run the Intelli-Site installer again and select **Modify**.

During the Intelli-Site installation or modify installation process, you are presented with the **Select the drivers you want to install** window.

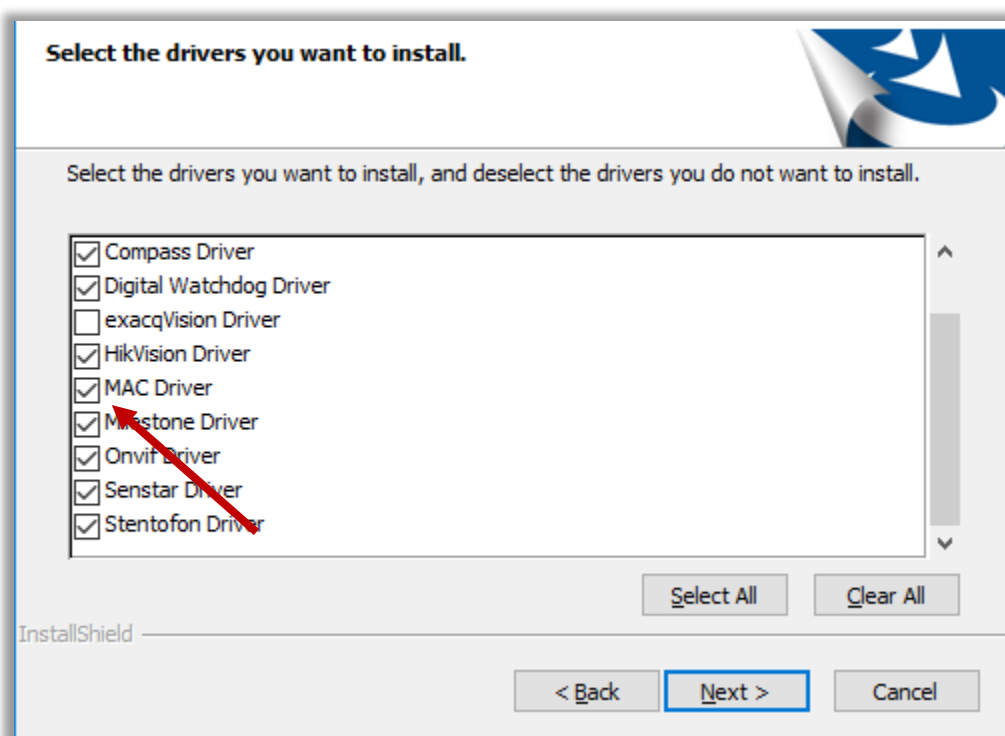


Figure 1 - Select the drivers you want to install

Ensure the **MAC Driver** option is checked then continue with the installation or modification.

Once the MAC driver is installed, the driver and panels are added in  **Hardware Management View**.

MAC Panel Guide

Hardware Management View

The MAC drivers and panels are best configured in  **Hardware Management View**. Once configured, the panels can be easily monitored and controlled using their panel control screens.

***Note:** This is where MAC panel programming takes a detour compared to other panels. To save time and effort in programming ladder logic, please go to [MAC Programming Template Panel](#). Once the template panels have been programmed, come back to  **Hardware Management View** to add the actual panels.*

Setup

The MAC drivers and panels are best configured in  **Hardware Management View**. Before we begin though, it is a good idea to have the connection information (e.g., IP address and Port number) of each panel on hand as well as the addresses of each of the panels in the chain.

***Note:** The word “panel” is used to refer to each physical piece of hardware that a MAC driver controls.*

Once the above information is obtained, the setup process is straight forward.

1. Add the MAC driver
2. Add a Communication Method to the driver
3. Add the desired MAC panel
4. Configure the panel
5. Enable the driver

Add a Driver

Adding a MAC Driver is simple, but important. Without it, no communication with the panel can occur.

Launch the Desktop Client and login.

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Hardware is managed in the  **Hardware Management View**. If you are not in  **Hardware Management View**, click on  in the lower lefthand corner and select .

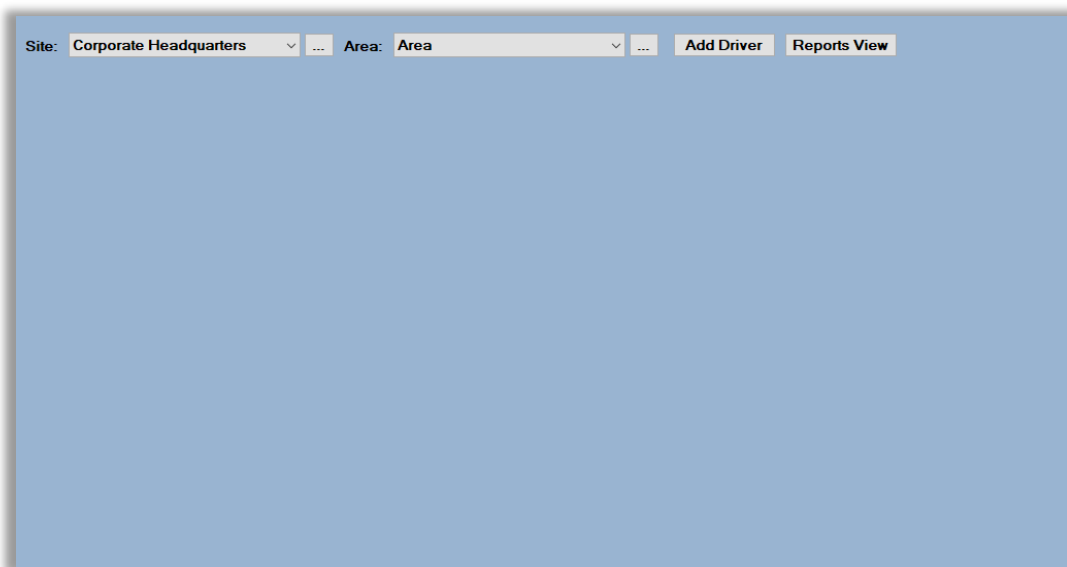
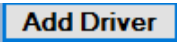
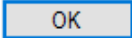


Figure 2 -  Hardware Management View

To add the MAC driver, click . The **Choose Driver Type** dialog displays. Click on **Driver Type** drop-down arrow to open the menu of available driver types. Locate and select the desired driver. from the drop-down menu in the **Choose Driver Type** dialog then click .

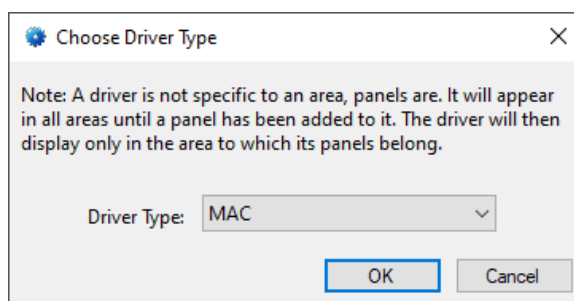


Figure 3 - Choose Driver Type Dialog

A new driver icon of the selected type is added to the screen and its properties dialog opens.

MAC Panel Guide

[1340] New MAC Driver

Properties

Name: New MAC Driver ID: 1340

User Level: All Access

Notes:

Domain: 40 Send Site Code: ☒

Enabled: ☐ Default Retry Start Delay: ☒ Retry Start Delay: 15

Setup

Host Net: 254

Host Node: 1

Heartbeat Interval (sec): 30

Send Queue

Retries: 3

Timeout: 1000

Interval: 250

Panel List:

Computer List: [4] LATWin10

OK Cancel

Figure 4 - Silver Driver Properties Dialog

Note: For an explanation of all of the driver's properties, see [The Driver Node](#).

Please change the name of the driver to reflect the use and/or location of the panels that this driver will manage. Set the **Domain** for the chain of MAC panels that will be managed by this driver.

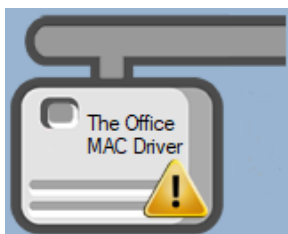


Figure 5 - MAC Driver Icon

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Notice the warning icon, . This appears when the driver needs a communication method. So, let's add one.

Add a Communication Method

Each MAC driver must have the communication method defined and configured. Without one, the Intelli-Site Driver Service does not know where or how to communicate with the panel.

The communication method is added using the right-click context menu on the driver. Right-click on the driver icon and hover over *Comm Method*. The side menu opens. At this time, it only has one option, *Add Comm Method*. Select it. The **Choose Communication Method Type** dialog appears.

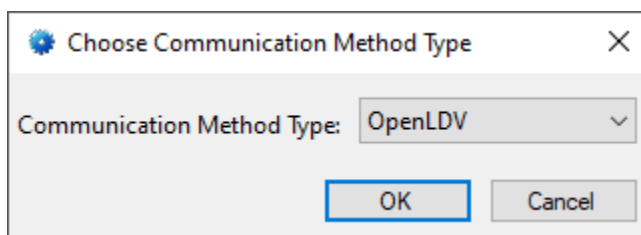
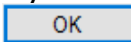


Figure 6 - The Choose Communication Method Type dialog

There are two possible communication method for the MAC drivers. They are *OpenLDV* and *TCP/IP*. Select the desired method then click . A new communication method node is added to the driver, and its properties dialog opens.

Note: If the panels will communicate with the software via an Echelon device, the OpenLDV network driver must be installed and configured before adding the communication method.

If OpenLDV is selected, the following dialog appears.

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The screenshot shows a software window titled "[1343] New Comm Method". Inside, there is a "Properties" tab. The "Name" field is set to "New Comm Method" and is highlighted with a blue border. The "ID" field is set to "1343". The "User Level" is set to "All Access". The "Notes" field is empty. Below these is an "Interface" section containing several settings: "Network Interface" is set to "X.Default.iLON10", "Domain Length" is 1, "Domain ID" is 1, "Host Subnet" is 254, "Host Node" is 1, "Retry" is 1, "Repeat Timer" is 6, and "TX Timer" is 8. At the bottom right are "OK" and "Cancel" buttons.

Field	Value
Name	New Comm Method
ID	1343
User Level	All Access
Notes	
Network Interface	X.Default.iLON10
Domain Length	1
Domain ID	1
Host Subnet	254
Host Node	1
Retry	1
Repeat Timer	6
TX Timer	8

Figure 7 - The OpenLDV Communication Method properties dialog

MAC Panel Guide

If TCP/IP is selected, the following dialog appears.

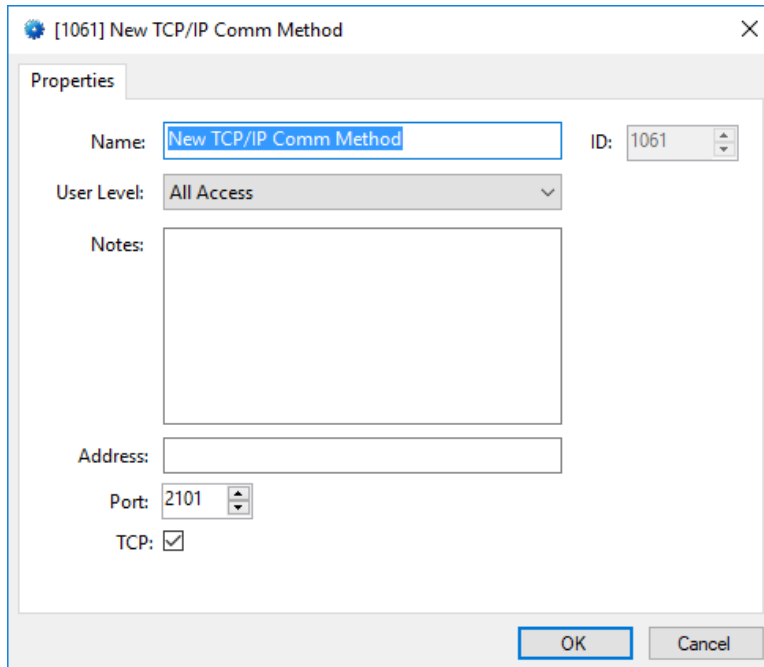


Figure 8 - The TCP/IP Communication Method properties dialog

Note: For a full explanation of all of the fields on these dialogs, please read [The Communication Method Node](#).

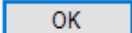
Fill in the correct information needed to communicate with the target panel. Oh, and as a personal favor, please change the name. Best practices suggest using the address or the driver's name, something that conveys what this comm method is linked to. Then click .



Figure 9 - The driver icon with a communication method

Notice the warning icon is no longer on the front of the driver icon.

It's now time to add a panel to the driver.

MAC Panel Guide

Add a Panel

Once the communication method has been defined, it's time to add a panel to the driver.

Note: *Ensure the desired Site and Area are selected in the drop-down lists at the top of the screen. This is where the panels will be added.*

Right-click on the driver and select *Add Panel*. The **Add Panel** dialog displays.

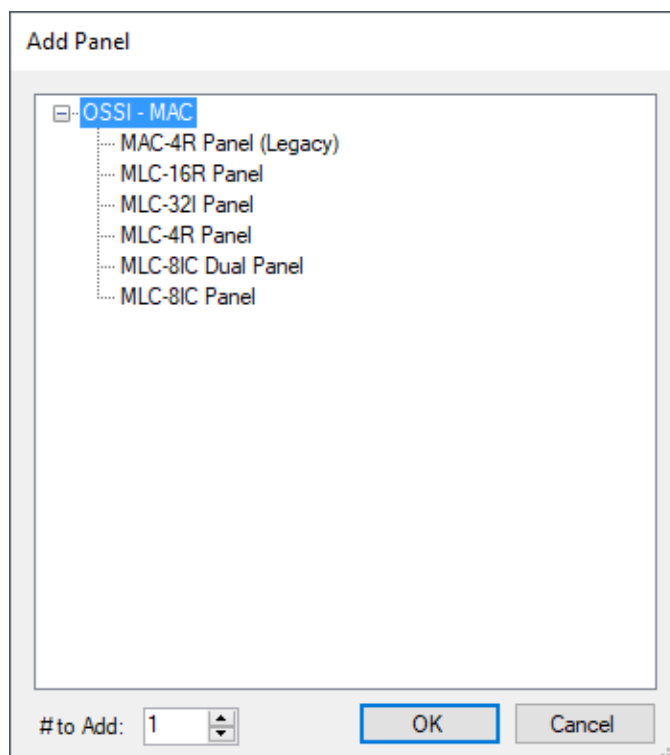
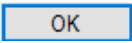


Figure 10 - Add Panel Dialog for the MAC driver

Note: *The Add Panel dialog is filtered to only show panel types that are valid for the target driver.*

Locate the desired panel in the list and select it. Change the value of **# to Add** to the number of panels of the selected type for this driver. Click . X panel icons are added to the driver where X is equal to the number entered in the **# to Add** field.

Next comes configuring the panel.

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Note: *It might be appropriate to add time zones before configuring the panels since time zones may be used in panel configuration.*

Time zones are added in  [Access Management View](#).

Configure the Panel

Before we can configure the panel, the Driver Service must be started and the driver enabled. Why? Because the Device ID must be retrieved from the panel.

To enable the driver, right-click on the driver and select *Enable Driver*. Wait for the driver's online indicator to turn green.

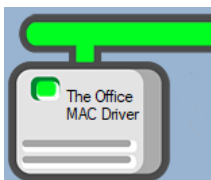


Figure 11 - Driver Online

The MAC panels are configured using the **Quick Config** dialog. The **Quick Config** dialog provides quick access to every property needed to quickly configure the panel. Many of these properties exist on different child nodes, for example, the Readers, Inputs and Outputs. Modifying all these nodes by hand would be difficult and time consuming. It would also increase the odds of making a mistake. That's why there is the **Quick Config** dialog.

How to Load the Device ID

The first thing that must be done for all MAC panels is load the Device ID while the **Quick Config** is open. To open the **Quick Config** dialog, right-click on the panel icon and select *Quick Config*.

With the driver online, press the service pin on the panel. The service pin is located in the upper left-hand corner of the panel if the panel is out of the cage. When it is in the cage, the service pin is located near the lowest phoenix connector. There are two micro switches, Sw1 and Sw2. Sw1 is the service pin and Sw2 is the reset button. A **Confirmation** dialog displays saying "Are you sure you want to set the Device ID for this panel?"

MAC Panel Guide

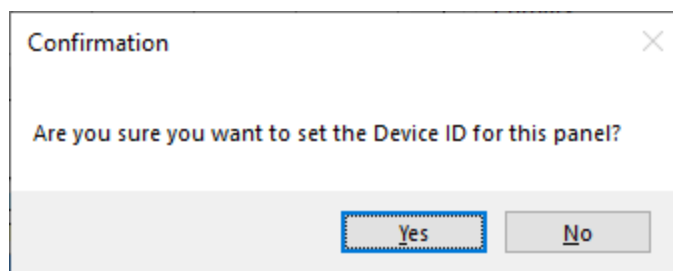


Figure 12 - Confirmation dialog

Click . Notice the **Device ID** has changed. Click to save the new **Device ID**. Then click . A **Load Device ID Confirmation** dialog displays. Click the button.

It is important to note that mistakes happen. If the service pin pushed is on hardware that doesn't match the panel type of the open **Quick Config**, the following dialog will pop up.

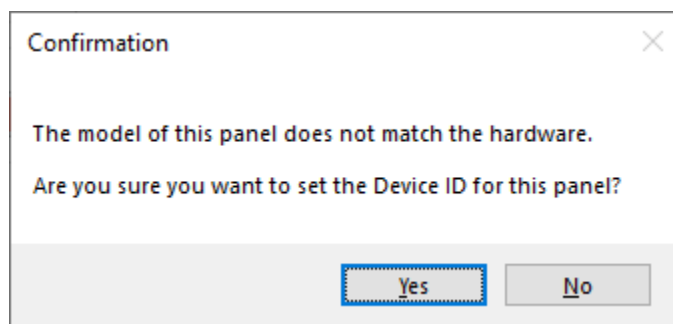


Figure 13 - Confirmation dialog when panel doesn't match the hardware

Please click ! Locate the correct hardware panel and try again.

Now continue configuring the panel. Each panel type has its own **Quick Config** dialog. The following explains configuring each panel type.

MAC Panel Guide

MLC-4R Panel Quick Config Dialog

The figure below is the MLC-4R Panel Quick Config dialog. For a full explanation of each field and tab, see [MLC-4R Panel Quick Config Dialog](#).

Configure MLC-4R Panel

Panel Settings Other Points Quick Door Quick Elevator Advanced Notes

Panel Name: Domain: Net: Node: Auto-download Valid Cards: ☒ Firmware Version: P1: 0.0.0 P2: 0.0.0

Device ID: Load Device ID Virtual: ☐ APB Time: Duress PIN:

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Door 1 DPS	TwoState	☒	127	511	0	0
Door 1 REX	TwoState	☐	127	511	0	0
Door 2 DPS	TwoState	☒	127	511	0	0
Door 2 REX	TwoState	☐	127	511	0	0
Door 3 DPS	TwoState	☒	127	511	0	0
Door 3 REX	TwoState	☐	127	511	0	0
Door 4 DPS	TwoState	☒	127	511	0	0

Readers

Name	Reader Type	Card Bits	LED Time	PIN and 2-Man Exemption Time Zone
Door 1 Reader	CardOnly	26	3	
Door 2 Reader	CardOnly	26	3	
Door 3 Reader	CardOnly	26	3	
Door 4 Reader	CardOnly	26	3	

Site Codes

Site Code 1:
Site Code 2:
Site Code 3:
Site Code 4:

Host Address

Primary

Net:
Node:
Dial Threshold:

Secondary

Net:
Node:
Dial Threshold:

Download

Holidays Time Zones Ladder **Settings** Cards Complete Clear All Set Time

Apply OK Cancel

Figure 14 – MLC-4R Panel Quick Config Dialog

The first thing that must be done for all MAC panels is load the Device ID. See [How to Load the Device ID](#).

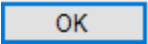
Now change the default values in the dialog to the values of the panel.

- Change the **Name** of the panel to describe its use or location.
- Set the panel's peer-to-peer address **Net** and **Node** numbers. Every panel on the same **Net** can communicate with each other. Each panel on a **Net** must have a unique **Node** number.

MAC Panel Guide

- Change the reader names to reflect their uses.

Note: *Changing the Readers Name fields will automatically update the names of the corresponding Inputs, Outputs, General points, and Input Supervision points.*

- Set the **Card Bits** for each reader to the card format that the reader will be using. See [Appendix II - Supported Card Formats](#).
- Change any of the other settings as needed by your installation including ladder logic programming on the **Advanced** tab. For a simple MLC-4R, the settings on the **Quick Door** tab should be sufficient. If it isn't, program the ladder logic needed. If you have created the ladder logic templates as suggested, now would be the ideal time to add the templates to the panel. See [Programming Template](#) or [Create Multiple](#). If not, see [Ladder Logic Programming](#).
- Click  to save the changes.

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MLC-16R Panel Quick Config Dialog

The figure below is the MLC-16R Panel Quick Config dialog. For a full explanation of each field and tab, see [MLC-16R Panel Quick Config Dialog](#).

The screenshot shows the 'Configure MLC-16R Panel' dialog box with the 'Panel Settings' tab selected. The dialog includes the following fields and controls:

- Panel Name:** A text field containing 'MLC-16R Panel'.
- Device ID:** A text field containing '000000000000' and a 'Load Device ID' button.
- Virtual:** A checkbox that is currently unchecked.
- Firmware Version:** A label with two sub-fields: 'P1: 0.0.0' and 'P2: 0.0.0'.
- Domain:** A spinner box set to '41'.
- Net:** A spinner box set to '1'.
- Node:** A spinner box set to '3'.
- Host Address:** A section with two sub-sections:
 - Primary:** Contains 'Net: 254', 'Node: 1', and 'Dial Threshold: 0'.
 - Secondary:** Contains 'Net: 254', 'Node: 2', and 'Dial Threshold: 800'.
- Download:** A row of buttons: 'Holidays', 'Time Zones', 'Ladder', 'Settings' (highlighted in red), 'Clear All', and 'Set Time'.
- Buttons:** 'Apply', 'OK', and 'Cancel' at the bottom right.

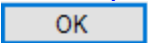
Figure 15 – MLC-16R Panel Quick Config Dialog

The first thing that must be done for all MAC panels is load the Device ID. See [How to Load the Device ID](#).

Now change the default values in the dialog to the values of the panel.

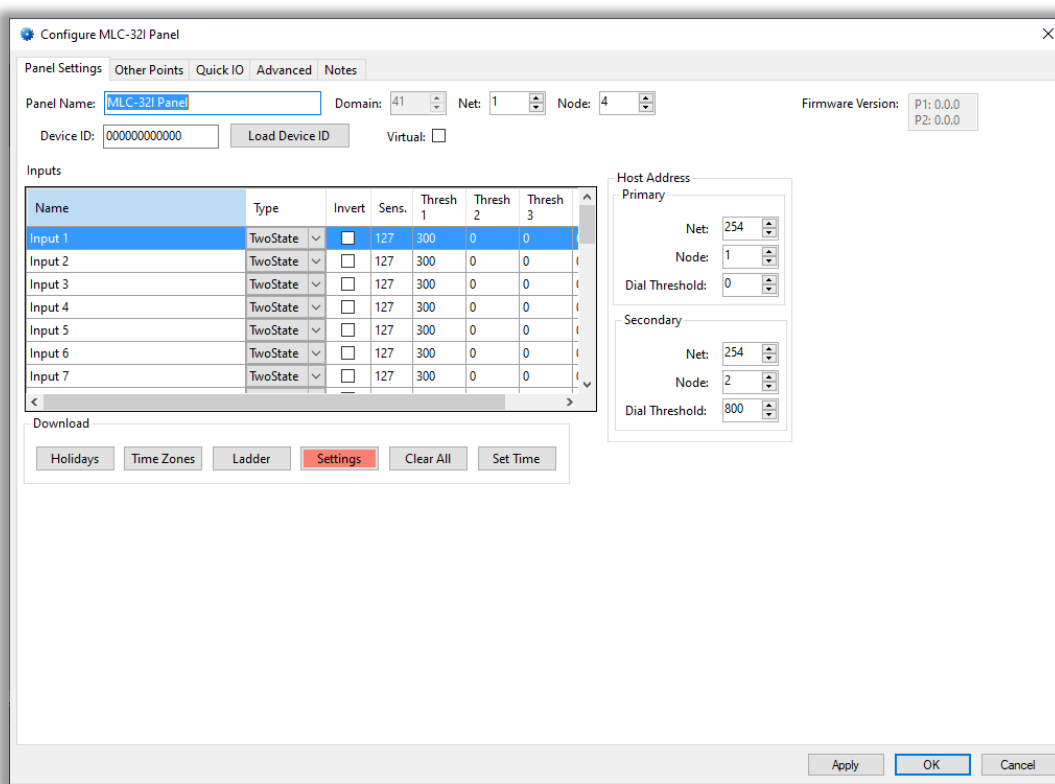
- Change the **Name** of the panel to describe its use or location.
- Set the panel's peer-to-peer address **Net** and **Node** numbers. Every panel on the same **Net** can communicate with each other. Each panel on a **Net** must have a unique **Node** number.
- Change the **Output** names on the **Other Points** tab.

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- Change any of the other settings as needed by your installation including ladder logic programming on the **Advanced** tab. If you have created the ladder logic templates as suggested, now would be the ideal time to add the templates to the panel. See [Programming Template](#) or [Create Multiple](#). If not, see [Ladder Logic Programming](#).
- Click  to save the changes.

MLC-32I Panel Quick Config Dialog

The figure below is the MLC-32I Panel Quick Config dialog. For a full explanation of each field and tab, see [MLC-32I Panel Quick Config Dialog](#).



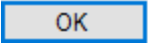
Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Input 1	TwoState	☒	127	300	0	0
Input 2	TwoState	☐	127	300	0	0
Input 3	TwoState	☐	127	300	0	0
Input 4	TwoState	☐	127	300	0	0
Input 5	TwoState	☐	127	300	0	0
Input 6	TwoState	☐	127	300	0	0
Input 7	TwoState	☐	127	300	0	0

Figure 16 – MLC-32I Panel Quick Config Dialog

The first thing that must be done for all MAC panels is load the Device ID. See [How to Load the Device ID](#).

Now change the default values in the dialog to the values of the panel.

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- Change the **Name** of the panel to describe its use or location.
- Set the panel's peer-to-peer address **Net** and **Node** numbers. Every panel on the same **Net** can communicate with each other. Each panel on a **Net** must have a unique **Node** number.
- Change the **Input** names and check **Invert** if the input is Normally Closed. Unchecked means the input is Normally Open.
- Change any of the other settings as needed by your installation including ladder logic programming on the **Advanced** tab. If you have created the ladder logic templates as suggested, now would be the ideal time to add the templates to the panel. See [Programming Template](#) or [Create Multiple](#). If not, see [Ladder Logic Programming](#).
- Click  to save the changes.

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MLC-8IC Panel and MLC-8IC Dual Panel Quick Config Dialog

The MLC-8IC panel and the MLC-8IC Dual panel have the same quick config dialog. The figure below is the MLC-8IC Panel Quick Config dialog. For a full explanation of each field and tab, see [MLC-8IC Panel Quick Config Dialog](#).

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
IC-1 Call Button	TwoState	☐	127	511	0	0
IC-2 Call Button	TwoState	☐	127	511	0	0
IC-3 Call Button	TwoState	☐	127	511	0	0
IC-4 Call Button	TwoState	☐	127	511	0	0
IC-5 Call Button	TwoState	☐	127	511	0	0
IC-6 Call Button	TwoState	☐	127	511	0	0
IC-7 Call Button	TwoState	☐	127	511	0	0

Figure 17 – MLC-8IC Panel Quick Config Dialog

The first thing that must be done for all MAC panels is load the Device ID. See [How to Load the Device ID](#).

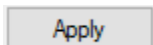
Now change the default values in the dialog to the values of the panel.

- Change the **Name** of the panel to describe its use or location.
- Set the panel's peer-to-peer address **Net** and **Node** numbers. Every panel on the same **Net** can communicate with each other. Each panel on a **Net** must have a unique **Node** number.

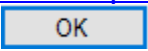
MAC Panel Guide

- Change the **Input** names of the Intercom Call Buttons.

Note: *When the Call Button names have been updated, click*



. The corresponding Output, General, and Alarm points names will be modified to reflect the changed name assuming the new name follows the naming convention "<identifier> Call Button".

- Change any of the other settings as needed by your installation including ladder logic programming on the **Advanced** tab. If you have created the ladder logic templates as suggested, now would be the ideal time to add the templates to the panel. See [Programming Template](#) or [Create Multiple](#). If not, see [Ladder Logic Programming](#).
- Click  to save the changes.

MAC-4R (Legacy) Panel Quick Config Dialog

Note: *MAC-4R panel is legacy hardware provided to support existing installations with these panels. The MAC-4R panel is no longer in production.*

The figure below is the MAC-4R Panel Quick Config dialog. For a full explanation of each field and tab, see [MAC-4R Panel Quick Config Dialog](#).

MAC Panel Guide

Figure 18 – MAC-4R (Legacy) Panel Quick Config Dialog

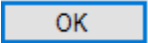
The first thing that must be done for all MAC panels is load the Device ID. See [How to Load the Device ID](#).

Now change the default values in the dialog to the values of the panel.

- Change the **Name** of the panel to describe its use or location.
- Set the panel's peer-to-peer address **Net** and **Node** numbers. Every panel on the same **Net** can communicate with each other. Each panel on a **Net** must have a unique **Node** number.
- Change the reader names to reflect their uses.

Note: Changing the Readers Name fields will automatically update the names of the corresponding Inputs, Outputs, General points, and Input Supervision points.

MAC Panel Guide

- Set the **Card Bits** for each reader to the card format that the reader will be using. See [Appendix II - Supported Card Formats](#).
- Change any of the other settings as needed by your installation including ladder logic programming on the **Advanced** tab. For a simple MLC-4R, the settings on the **Quick Door** tab should be sufficient. If it isn't, program the ladder logic needed. If you have created the ladder logic templates as suggested, now would be the ideal time to add the templates to the panel. See [Programming Template](#) or [Create Multiple](#). If not, see [Ladder Logic Programming](#).
- Click  to save the changes.

Enable the Driver and Download Settings

At this point, the driver and panel are configured, but the driver is not online. A quick way to know this is that the communication indicator is grey.

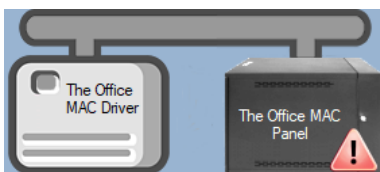


Figure 19 – Disabled MAC Driver

Right-click on the driver to open the context menu; select *Enable Driver*. The communications indicator will change color to green when it's online.

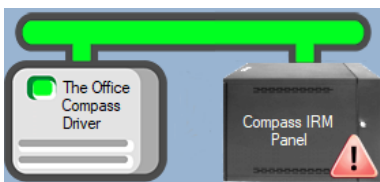


Figure 20 - Enabled MAC Driver

If for some reason the Engine cannot connect to the Driver Service or the Driver cannot connect to the MAC panel, the communication indicator will be red.

MAC Panel Guide

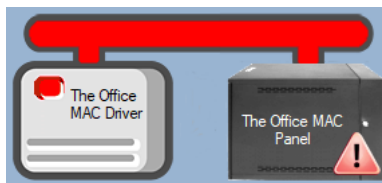


Figure 21 - Enabled MAC Driver that is not communicating with the Driver Service

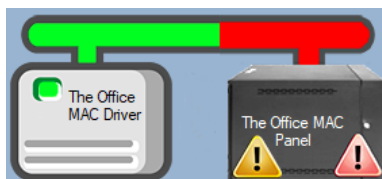


Figure 22 - Enabled MAC Driver that is not communicating with the panel

Did you notice the  symbol on the panel icon? This symbol means that Intelli-Site has information that needs to be downloaded to the panel. Open the **Quick Config** dialog and locate the **Download** group which contains the download buttons.

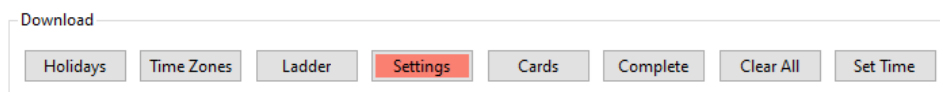


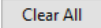
Figure 23 - The Download group

The color of the download button indicates which kind of download is needed for the panel. Grey buttons are not required. Salmon buttons are. In the figure above settings is required. Clicking the button will cause the download to begin. When the download is done, the button will return to the grey color. When you leave the **Quick Config** dialog, the  icon will be gone as well.

Did you notice the  symbol on the panel icon? This is the “hardware fault” symbol. In figure 20, the panel is offline meaning the **Panel Status** alarm is high. That is why the symbol is present. The reasons this symbol may appear are:

- Any of the first 10 alarm points is high and **Add to Queue on High** or **Low** is checked (See [Alarms](#))
- Any Input Supervision point is high and **Add to Queue on High** or **Low** is checked (See [Input Supervision](#))

MAC Panel Guide

- Firmware failure: see the firmware version at the top of the dialog. If it says "Fail", pull the panel from the rack and reseal it. Click the  button. Then download the settings.

Congratulations! The MAC panel is integrated and ready to use in screen design for  **Live View**. Screen design occurs in  **Design View**.

If there are more panels in your facility, please add them before going on. For peer-to-peer communication, please ensure the panels with the same **Net** are added the same driver. You need an additional driver for each communication method address.

Panel Control Screen

Every MAC panel has a **Panel Control Screen**. From this screen, the user can monitor the current state of the panel and all of its inputs, outputs, and alarms.

Clicking on the panel icon opens the **Panel Control Screen** of the target panel. The content of the screen is dictated by the panel.

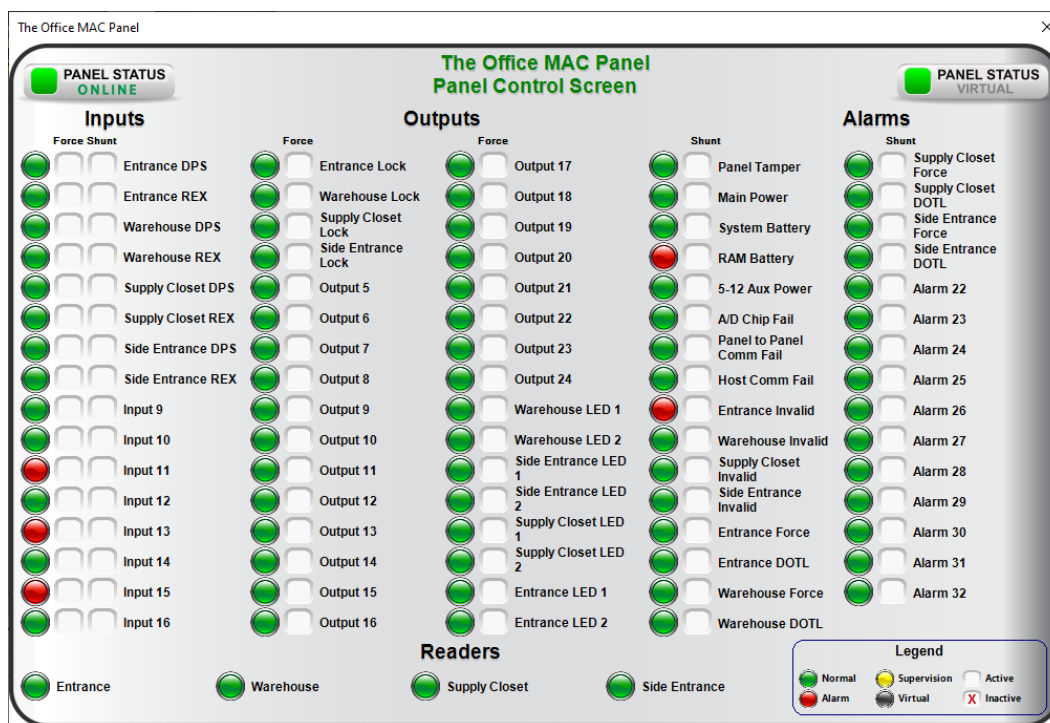


Figure 24 - Example Panel Control Screen

MAC Panel Guide

The color of the light, red, green, or yellow, indicates the state of the point. Green is normal or secure, yellow is supervision/trouble, and red is alarm. Outputs can be set or cleared at the click of a mouse. If the output is a target in ladder logic, trigger the output by clicking the reader icon. If not a target in ladder logic, click the output itself.

MAC Panel Guide

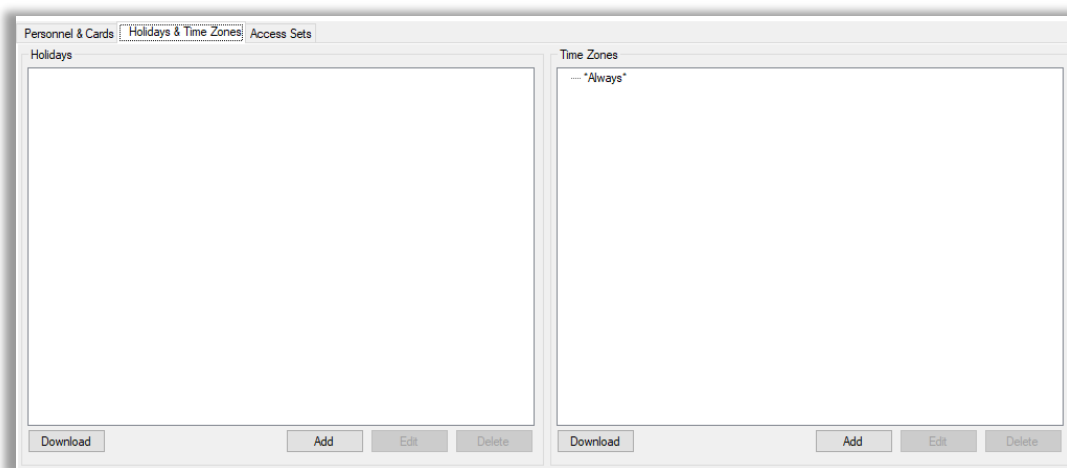
Access Management View

MAC panels, specifically the MLC-4R, may require a number of time zone definitions to restrict access based on day and time. Also, if your installation has any holidays, then they need to be defined as well. They are defined on the **Holidays & Time Zones** tab in  **Access Management View**. In addition, once the holidays and time zones are defined, access entries and access sets must be added as well.

Note:  **Access Management View is fully explained in the Intelli-Site User's Guide. This section is provided to explain the unique differences specific to MAC panels.**

Holidays

If you are not in  **Access Management View**, click on **Menu** in the lower lefthand corner and select . Switch to the **Holidays & Time Zones** tab.



**Figure 25 - Access Management View:
Holidays & Time Zones tab**

Click the  button to add a new holiday.

MAC Panel Guide

The screenshot shows a 'New Holiday' dialog box. The title bar reads '[1281] New Holiday'. Inside, there's a 'Properties' tab. The 'Name' field is a text box containing 'New Holiday'. The 'ID' field is a spin box set to '1281'. The 'User Level' is a dropdown menu currently showing 'All Access'. Below that is a large, empty 'Notes' text area. At the bottom, there are two date pickers: 'Start' and 'End', both set to 'Wednesday, May 23, 2018'. Each date picker has a small calendar icon to its right. At the very bottom of the dialog are 'OK' and 'Cancel' buttons.

Figure 26 - Holiday dialog

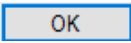
Name – edit box; the name of the Holiday

Start – date picker; the start date for the Holiday

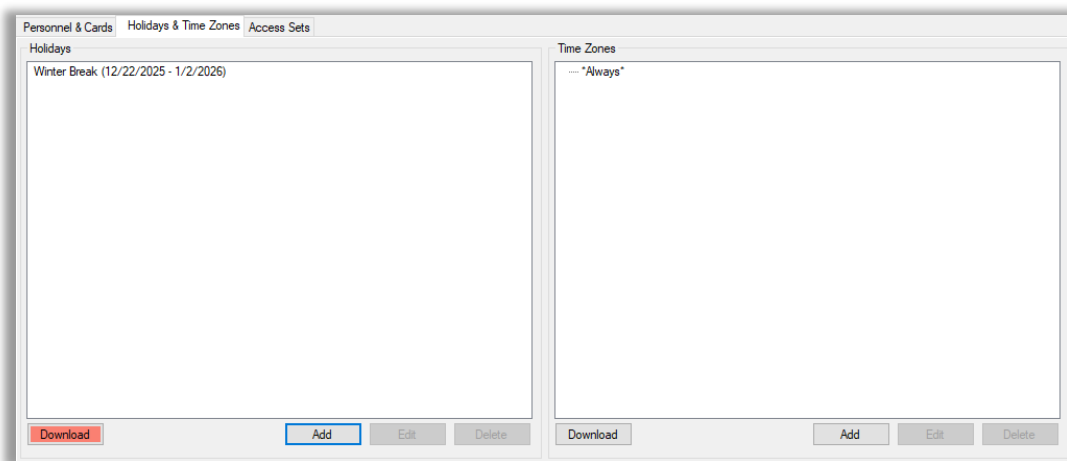
End – date picker; the end date for the Holiday; if the holiday is a single day, set both fields to the same value

Note: Holidays are stored on MAC panels as Month, Day, Year.
If the Start and End dates cover a range, the panel stores each day of the range individually. The MLC-4R supports up to 32 days for holidays.

Holidays must be defined annually.

Click the  button to save the new holiday settings.

MAC Panel Guide



**Figure 27 – Access Management View:
Holidays & Time Zones tab with a new holiday**

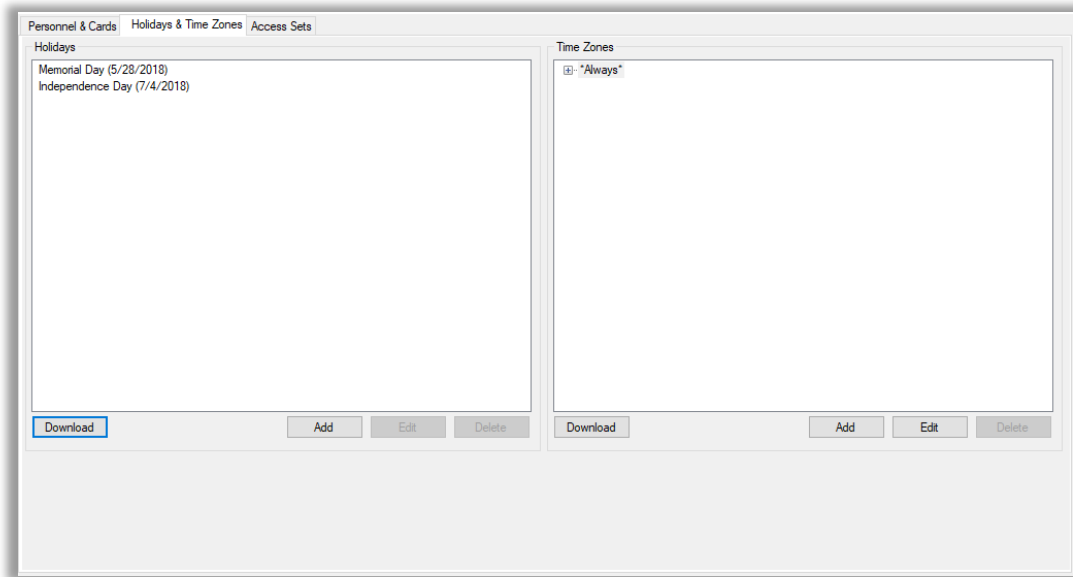
Notice the **Download** button is now salmon colored. This indicates at least one panel requires a download of the holidays. Clicking on this button here will initiate a download to all panels. It will stay salmon until all downloads are successful.

Time Zones

If you are not in  **Access Management View**, click on **Menu** in the lower lefthand corner and select . Switch to the **Holidays & Time Zones** tab.

Note: We expect that you have added holidays. More importantly you must have added at least one MAC panel to the project.

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**Figure 28 - Access Management View:
Holidays & Time Zones tab**

Notice that there is already a time zone, "Always". This time zone is required by MAC and is added by Intelli-Site when a MAC panel is added to the project. Editing it opens the time zone properties dialog.

MAC Panel Guide

Properties

Name: ID:

User Level: TZ #:

Notes:

A day checkbox with a checkmark includes that day unless it is a holiday. A solid box includes that day even if it is a holiday.

Time Intervals

Enabled	Start Time	Stop Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat
☒	12:00 AM	11:59 PM	☒	☒	☒	☒	☒	☒	☒
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐

OK Cancel

Figure 29 - Time Zone "Always" properties dialog

The first line is enabled. The **Start Time** and **Stop Time** are set to indicate the full 24 hours of the day. And each day of the week is ☒ which means the day is included even if it is a holiday.

Note: DO NOT MODIFY OR DELETE THIS TIME ZONE!

Click the button to add a time zone. A **Time Zone** dialog displays.

MAC Panel Guide

Properties

Name: ID:

User Level: TZ #:

Notes:

A day checkbox with a checkmark includes that day unless it is a holiday. A solid box includes that day even if it is a holiday.

Time Intervals

Enabled	Start Time	Stop Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat
☒	12:00 AM	12:00 AM	☒	☒	☒	☒	☒	☒	☒
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐
☐	12:00 AM	12:00 AM	☐	☐	☐	☐	☐	☐	☐

OK Cancel

Figure 30 - Time Zone properties dialog

Notice the **Time Intervals** table. It has multiple lines, each line designating a different time interval with different settings.

Name – edit box; name of the time zone

Time Intervals – table defining the time periods included in this time zone

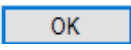
Enabled – checkbox; when checked, this time interval is included in the time zone’s definition

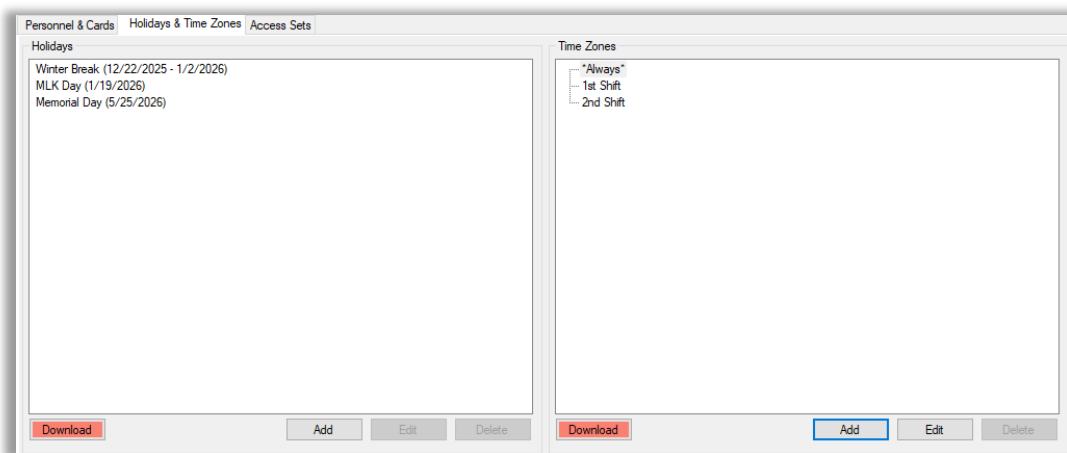
Start Time – time picker; the start time for this time interval; the earliest time is 12:00 AM

End Time – time picker; the end time for this time interval; the latest time is 23:59 PM which covers all the time leading up to midnight

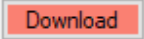
MAC Panel Guide

Sun, Mon, Tue, Wed, Thu, Fri, Sat – check box with three states (☐, ☒, ☐); days of the week; when checked this day is included in this time line; if the box is ☒, this time interval *does not* apply to holidays; if the box is ☐, this time interval applies to holidays

Click the  button to save the new time zone settings.



**Figure 31 - Access Management View:
Holidays & Time Zones tab after expanding the new time zone**

Notice the  button is now salmon colored. This indicates at least one panel requires a download of the time zones. Clicking on this button here will initiate a download to all panels. It will stay salmon until all downloads are successful.

Access Entries

Access entries associate time zones with doors on an access control panel. When the time zones have been defined, it's time to create access entries. If you are not in  **Access Management View**, click on  in the lower lefthand corner and select . Switch to the **Access Sets** tab.

MAC Panel Guide

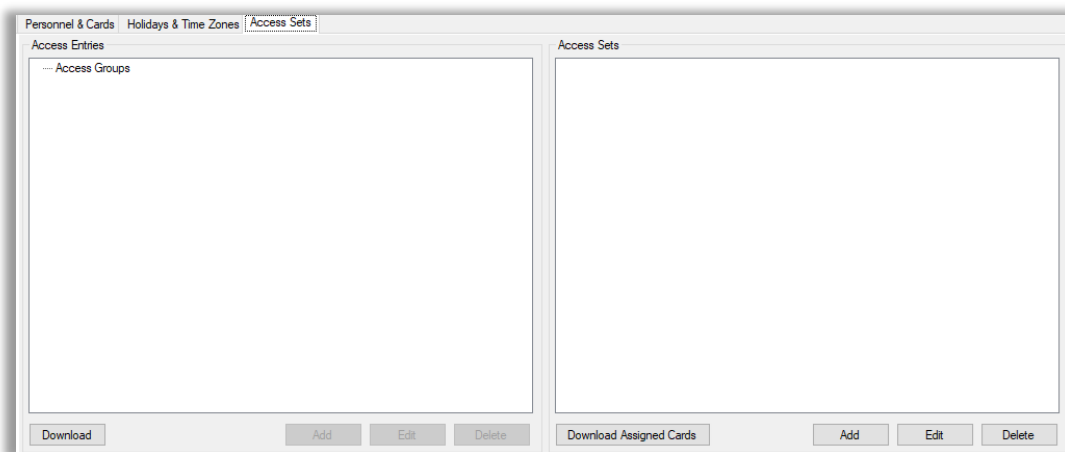


Figure 32 - Access Management View: Access Sets tab

Notice “Access Groups” in the **Access Entries** tree view. In MAC parlance, an access entry is an access group. All MAC access groups are stored under this “Access Groups” node.

Note: Every different type of access panel has some sort of access entry concept. Each has its own name for it. MAC calls them **Access Groups**. For simplicity's sake, Intelli-Site refers to them generically as **Access Entries**.

Select the “Access Groups” node. The  button becomes active. Click it. A **New Access Group** dialog appears.

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The screenshot shows a software window titled "[1876] New Access Group". Inside, there's a "Properties" tab. Under "Properties", there are four fields: "Name" with the text "New Access Group", "ID" with the value "1876", "User Level" set to "All Access" with a dropdown arrow, and a "Notes" text area. To the right of the "Notes" area is a "Select Readers" button. Below the "Properties" section is an "Access Data" section containing a table with two columns: "Reader" and "Time Zone". The table body is currently empty. At the bottom of the "Access Data" section are "Add" and "Delete" buttons. At the very bottom of the window are "OK" and "Cancel" buttons.

Figure 33 – New Access Level dialog

Name – edit box; name of the access group

Access Data – table containing the Time Zone to Reader assignments

Click **Select Readers** to open the **Select Readers** dialog. This allows you to select all the readers that are to be included in this access group. Select all the readers that are to be included then click **OK**. A line per selected reader is added to the **Access Data** table.

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[1876] New Access Group

Properties

Name: New Access Group ID: 1876

User Level: All Access

Notes:

Select Readers

Access Data:

Reader	Time Zone
[1435] The Office MAC Panel\Main Entrance	*Always*
[1438] The Office MAC Panel\Service Entrance	*Always*

Add Delete

OK Cancel

Figure 34 - Example Access Group dialog after selecting readers

Select the **Time Zone** for each reader for this access group. Click the **OK** button to save the access group settings. Expanding the "Access Groups" root node reveals the new access group.

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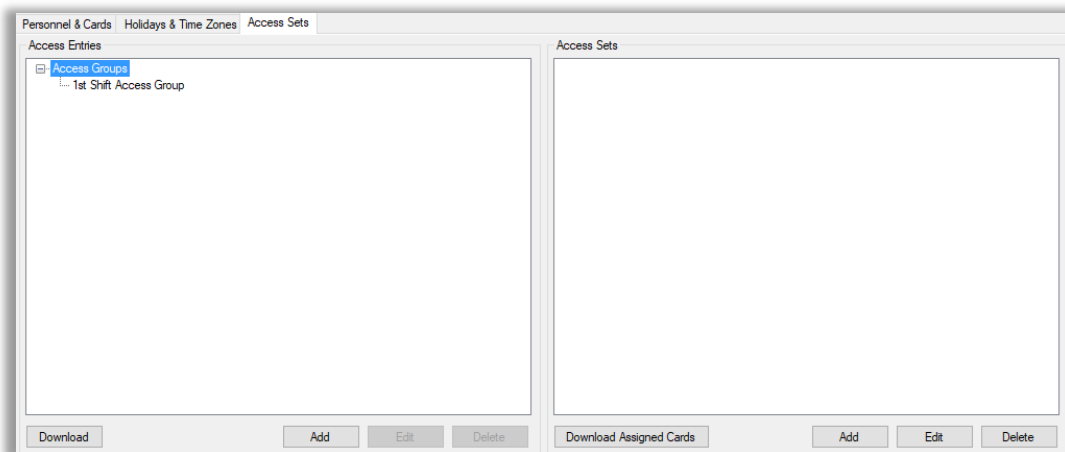


Figure 35 - Example access group

Access groups cannot be directly assigned to personnel or cards. Access sets are assigned instead. This allows multiple different access groups to be part of a single access set. The definition of access sets and assigning them is not specific to MAC panels and therefore not germane to this document. It is covered in the Quick Start Guide, specifically the section entitled "Access Entries".

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Design View

 **Design View** is the home of the Project Node Tree and the place where screens and screen objects are programmed. The following sections explain the MAC Driver node properties, each MAC panel type's node properties, their child nodes and their properties, and screen object programming.

If you are not in  **Design View**, click on  in the lower lefthand corner and select .

The Driver Node

The driver node is found by expanding **Setup→Computer Setup→Drivers**.

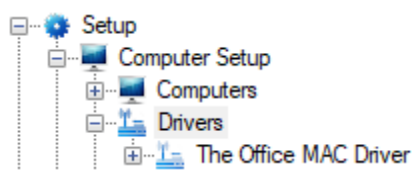


Figure 36 – Example MAC driver node in the Project Node Tree

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Right-click on the driver node and select *Properties* to open the properties dialog.

The screenshot shows the 'Properties' dialog for '[1329] The Office MAC Driver'. The 'Name' field is 'The Office MAC Driver' and the 'ID' is '1329'. The 'User Level' is set to 'All Access'. There is a large empty 'Notes' text area. The 'Domain' is '40' and 'Send Site Code' is checked. Under 'Enabled', 'Default Retry Start Delay' is checked and 'Retry Start Delay' is '15'. The 'Setup' section includes 'Host Net' (254), 'Host Node' (1), and 'Heartbeat Interval (sec)' (30). The 'Send Queue' section includes 'Retries' (3), 'Timeout' (1000), and 'Interval' (250). The 'Panel List' contains '[1333] The Office MAC Par' and the 'Computer List' contains '[4] LATWin10'. 'OK' and 'Cancel' buttons are at the bottom right.

Figure 37 – A MAC driver properties dialog

Name – edit box; the name for the node; the name doesn't have to be unique

ID – numeric (disabled); the unique identifier of this node; generated by Intelli-Site

User Level – drop-down menu (default: All Access); the User Level a user must possess to open the properties for this node

Notes – multiline edit box; any notes the user may have for the node

Domain – numeric (disabled when the panel is online); the domain of the MAC "network"; it must be unique per driver

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Send Site Code – checkbox; check if site code is to be included in the card ID data that is sent to and from the panel (card number and site code); if not checked, only the card number is transmitted

Enabled – check box; when checked the driver is enabled

Default Retry Start Delay – check box (default: checked); if the driver did not connect, pause before attempting to connect again

Setup group box

Host Net, Host Node – numeric; the Echelon device address; by default, all control panels are programmed to communicate through a network interface at Subnet 254, Node 1. If you change these parameters, you will also have to change the settings of each MAC panel on the network.

Heartbeat Interval (sec) – numeric (default: 30); the frequency of poll commands to ensure the panels are online; the total interval time between heartbeats from the first panel to the last panel on that com line. For best throughput, take the total number of panels on the com line and multiply it by 20 or 30 (**panels x 20**). For example, if you have 20 panels, $20 \times 20 = 400$. The system will poll all 20 panels within 400 seconds. This provides 20 seconds in between polls for activity and commands. As another example, if there are 5 panels on a com line, $5 \times 20 = 100$. The system will poll all 5 panels within 100 seconds.

Send Queue group box

Retries – numeric (default: 3); number of retries for sending a packet

Timeout – numeric (default: 1000); number of milliseconds to wait for a response before assuming the packet was not received

Interval – numeric (default: 25); number of milliseconds to wait after a timeout before sending the packet again

Panel List- drop box; the MAC panel nodes attached to this driver; the panels on the same com line

MAC Panel Guide

Computer List – drop box (default: the computer on which the Engine is running); the computer node on which this driver is running

The Communication Method Node

The communication method is a child node of the driver.

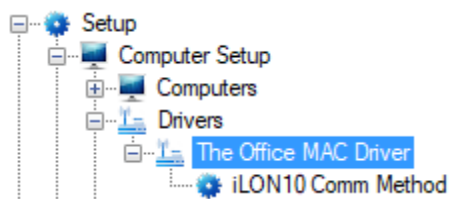


Figure 38 - The communication method node in the Project Node Tree

The MAC driver has two different types of communication methods.

- OpenLDV Communication Method
- TCP/IP Communication Method

Right-click on the communication method node and select *Properties* to open the properties dialog.

The OpenLDV Communication Method

The OpenLDV communication method dialog contains the properties used to manage the OpenLDV communication between the driver and the panel.

Note: If the panels will communicate with the software using an Echelon device, the OpenLDV network driver must be installed and configured before adding the communication method.

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The screenshot shows a Windows-style dialog box titled "[1343] New Comm Method". It has a "Properties" tab selected. The "Name" field is a text box containing "New Comm Method". The "ID" field is a numeric spinner box set to "1343". The "User Level" is a dropdown menu showing "All Access". Below these is a large empty text area for "Notes". Underneath the "Notes" area is a group box labeled "Interface". Inside this group box, there is a "Network Interface" dropdown menu showing "X.Default.iLON10". Below that are several numeric spinner boxes: "Domain Length" (1), "Domain ID" (1), "Host Subnet" (254), "Host Node" (1), "Retry" (1), "Repeat Timer" (6), and "TX Timer" (8). At the bottom right of the dialog are "OK" and "Cancel" buttons.

Figure 39 - OpenLDV communication method node properties dialog

Name – edit box; the name for the node; the name doesn't have to be unique

ID – numeric (disabled); the unique identifier of this node; generated by Intelli-Site

User Level – drop-down list (default: All Access); the User Level a user must possess to open the properties for this node

Notes – multiline edit box; any notes the user may have for the node

Interface – group box

Network Interface - drop-down menu (list of all OpenLDV interfaced installed on this computer); the

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network interface of between the driver and the MAC panels

Domain Length – numeric (default: 1) the length in bytes of the hardware domain number of the MAC panel

Domain ID – numeric (default: 1) the hardware domain of the MAC panel; all equipment is shipped to operate on Domain 1

Host Subnet, Host Node – numeric; the Echelon device address; by default, all control panels are programmed to communicate through a network interface at Subnet 254, Node 1. If you change these parameters, you will also have to change the settings of each MAC panel on the network.

Note: *The following fields are part of the LON Link Descriptor properties. Usually, the default values are correct. Only adjust these values if the LON device is responding slowly.*

Retry – numeric (default: 1); link descriptor

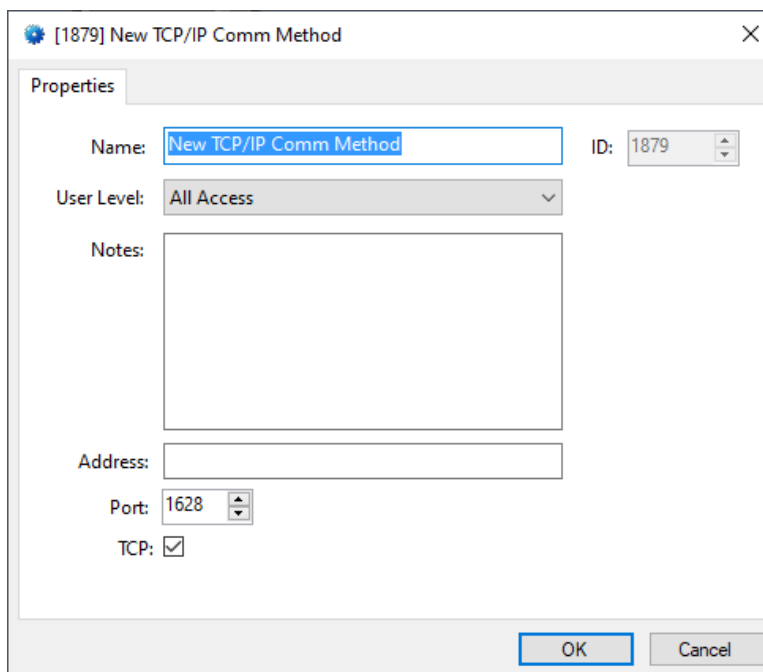
Repeat Timer – numeric (ms default: 6); link descriptor

TX Timer - numeric (ms default: 8); link descriptor

The TCP/IP Communication Method

The TCP/IP communication method dialog contains the properties used to manage the TCP/IP communication between the driver and the panel.

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The screenshot shows a window titled "[1879] New TCP/IP Comm Method" with a close button (X) in the top right corner. The window contains a "Properties" tab with the following fields:

- Name:** A text box containing "New TCP/IP Comm Method".
- ID:** A numeric field containing "1879".
- User Level:** A drop-down menu showing "All Access".
- Notes:** A large, empty multiline text area.
- Address:** An empty text box.
- Port:** A numeric field containing "1628".
- TCP:** A checked checkbox.

At the bottom right of the dialog are "OK" and "Cancel" buttons.

Figure 40 - A TCP/IP communication method node properties dialog

Name – edit box; the name for the node; the name doesn't have to be unique, but it should be descriptive of its use or address

ID – numeric (disabled); the unique identifier of this node; generated by Intelli-Site

User Level – drop-down menu (default: All Access); the User Level a user must possess to open the properties for this node

Notes – multiline edit box; any notes the user may have for the node

Address – edit box; the IP address of the panel

Port – numeric; the TCP port to connect with the panel; it is set to the default value for the panel

TCP – check box (default: checked); when checked the driver will communicate via TCP; when clear, UDP is the communication protocol

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The Panel Node

The panel node is found by expanding **System Layout** then the Site and Area to which the panel was added in  **Hardware Management View**. In the example below, the panel was added to the site **Corporate Headquarters** and the area **Area**.

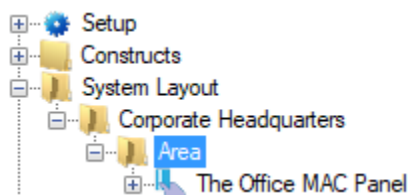


Figure 41 – A MAC panel node in the Project Node Tree

The panel node is the root node for the panel. In it are the properties about the panel. Each of the inputs, outputs, general points, input supervision points, readers, alarms, and power up alarms of the panel are child nodes of the panel node.

The following sections will explain:

- The Project Node Tree context menu options specific to MAC panels
- The properties of the panel node, including:
 - The child nodes of the panel and
 - Each child nodes properties
- The properties of the Quick Config dialog for each panel type

Context Menu

The context menu is the primary means of managing the Tree. To open the context menu, place the mouse cursor on a node and hit the right-click button. Not all the options in the context menu are applicable to all nodes. And there are some options that only appear under certain conditions. In the case of a MAC panel node, there are two new menu items.

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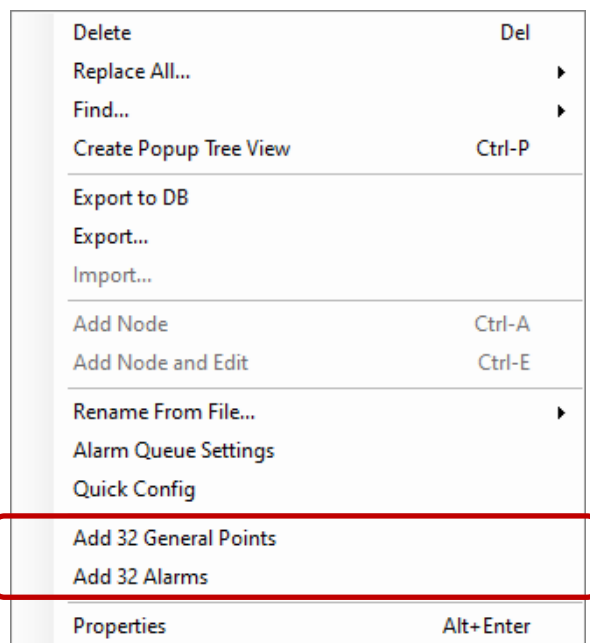


Figure 42 - The context menu for a MAC panel node

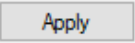
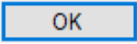
These new menu items, *Add 32 General Points* and *Add 32 Alarms*, will do just what they say when selected. A new set of virtual points are added to the panel, within the panel's memory. These new points are mapped to new points in Intelli-Site under the panel node's corresponding child node. The 32 new General points are added to the **General** node. Then 32 new Alarm points are added to the **Alarms** node. These new points are used in ladder logic programming. See [Ladder Logic Programming](#).

Note: *Once the General or Alarm points have been added, they cannot be removed. They are permanent additions to the panel.*

The Quick Config Dialogs

The **Quick Config** dialog allows the user to manage the panel in one dialog instead of having to go to each of the different nodes in the Project Node Tree. It is the dialog that is used in  **Hardware Management View**. It can also be accessed in  **Design View**.

MAC Panel Guide

To open the **Quick Config** dialog, right-click on the panel node then select *Quick Config* from the context menu. As with all dialogs in the software, the  button saves all changes made to the dialog without closing it. The  button saves all changes made and closes the dialog. The  button closes the dialog abandoning all changes.

The following describes each of the tabs and fields of the **Quick Config** dialog by panel type.

MLC-4R Panel Quick Config Dialog

The **MLC-4R** panel is an intelligent, distributed processing access control panel that can control up to four doors or elevator cab and floor access. The panel supports ladder logic programming providing ultimate flexibility. The **Quick Config** dialog allows you to manage the properties and the ladder logic programming in one dialog.

Note: *Elevator control requires an MLC-4R and an MLC-16R.*

MAC Panel Guide

Configure MLC-4R Panel

Panel Settings | Other Points | Quick Door | Quick Elevator | **Advanced** | Notes

Panel Name: Domain: Net: Node: Auto-download Valid Cards: ☒ Firmware Version: P1: 0.0.0 P2: 0.0.0

Device ID: Load Device ID Virtual: ☐ APB Time: Duress PIN:

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Door 1 DPS	TwoState	☒	127	511	0	0
Door 1 REX	TwoState	☐	127	511	0	0
Door 2 DPS	TwoState	☒	127	511	0	0
Door 2 REX	TwoState	☐	127	511	0	0
Door 3 DPS	TwoState	☒	127	511	0	0
Door 3 REX	TwoState	☐	127	511	0	0
Door 4 DPS	TwoState	☒	127	511	0	0

Readers

Name	Reader Type	Card Bits	LED Time	PIN and 2-Man Exemption Time Zone
Door 1 Reader	CardOnly	26	3	
Door 2 Reader	CardOnly	26	3	
Door 3 Reader	CardOnly	26	3	
Door 4 Reader	CardOnly	26	3	

Download

Holidays Time Zones Ladder **Settings** Cards Complete Clear All Set Time

Site Codes

Site Code 1: Site Code 2: Site Code 3: Site Code 4:

Host Address

Primary

Net: Node: Dial Threshold:

Secondary

Net: Node: Dial Threshold:

Apply OK Cancel

Figure 43 – MLC-4R panel Quick Config dialog

There are six (6) tabs on the **Quick Config** dialog.

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Panel Settings tab

The first tab is the *Panel Settings* tab.

Configure MLC-4R Panel

Panel Settings | Other Points | Quick Door | Quick Elevator | Advanced | Notes

Panel Name: Domain: Net: Node: Auto-download Valid Cards: ☒ Firmware Version: P1: 0.0.0 P2: 0.0.0

Device ID: Load Device ID Virtual: ☐ APB Time: Duress PIN:

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Door 1 DPS	TwoState	☒	127	511	0	0
Door 1 REX	TwoState	☐	127	511	0	0
Door 2 DPS	TwoState	☒	127	511	0	0
Door 2 REX	TwoState	☐	127	511	0	0
Door 3 DPS	TwoState	☒	127	511	0	0
Door 3 REX	TwoState	☐	127	511	0	0
Door 4 DPS	TwoState	☒	127	511	0	0

Readers

Name	Reader Type	Card Bits	LED Time	PIN and 2-Man Exemption Time Zone
Door 1 Reader	CardOnly	26	3	
Door 2 Reader	CardOnly	26	3	
Door 3 Reader	CardOnly	26	3	
Door 4 Reader	CardOnly	26	3	

Site Codes

Site Code 1:
Site Code 2:
Site Code 3:
Site Code 4:

Host Address

Primary
Net:
Node:
Dial Threshold:

Secondary
Net:
Node:
Dial Threshold:

Download

Holidays | Time Zones | Ladder | **Settings** | Cards | Complete | Clear All | Set Time

Apply OK Cancel

Figure 44 – MLC-4R panel Quick Config dialog: Panel Settings tab

Panel Name – edit box; the name for the panel node; the name doesn't have to be unique, but it should be descriptive of its use

Domain – numeric (disabled); the hardware domain of the MAC equipment

Net – numeric (values: 1-254); the LONWorks network number; every panel that needs to communicate with each other peer-to-peer must have the same **Net** setting

Node – numeric (values: 1-127); the LONWorks node number of the panel on the network; each panel on **Net** must have a unique node number;

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Note: *If the Node is set to zero, 0, all commands to that panel are global and will affect all panels with the same Net. This is only used for special applications that require global commands.*

Auto-download Valid Cards – checkbox; when a card is presented at a reader on this panel and the panel sends either “Card Not in Database” or “Card Not Assigned”, Intelli-Site will check to see if the card is valid. If the card is valid, it will download the card to the panel immediately.

Firmware Version – edit box (disabled); the P1 and P2 firmware versions of the panel; loaded from the panel

Device ID – numeric; the unique neural ID of the panel; it is loaded from the panel using the service pin (preferred) or entered manually from the supplied panel Test Sheet.

Load Device ID

- button; send the **Device ID** to the panel

Virtual – check box; when checked the panel is virtualized, allowing the driver to be brought online without having the physical panel available

APB Time – numeric (default: 0); the time in minutes that must expire before a token can be used again at any one reader. When set to zero, timed Anti-Passback is disabled.

Duress PIN – numeric (default: 1234) **NOT IMPLEMENTED and NOT SUPPORTED**

Site Codes group box – a panel can be limited to use 1, 2, 3, or 4 site codes or unlimited site codes. If there is only one site code at a facility, the same site code must be entered in each site code field. Similarly for two or three site codes. If 255 is in any one of the site code fields, then the site code values are not limited.

Host Address group box – the properties related to the Echelon network; there is a primary and a secondary interface the panel. If the primary interface fails, the backup interface will take over. The same device can operate under both roles.

Net – numeric (default: 254); the Echelon network ID

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Node – numeric (default: 1 (primary), 2 (secondary)); the node ID of the panel on the Echelon network

Dial Threshold – **OBSOLETE** numeric; a remnant from the days when the panels were serial devices

Inputs Table

The **Inputs** table contains the properties of all the inputs of the panel. Each row contains the properties of a single input. You must scroll to the right to see all of the properties of an input point, and scroll down to see each of the points.

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Door 1 DPS	TwoState	☒	127	511	0	0
Door 1 REX	TwoState	☐	127	511	0	0
Door 2 DPS	TwoState	☒	127	511	0	0
Door 2 REX	TwoState	☐	127	511	0	0
Door 3 DPS	TwoState	☒	127	511	0	0
Door 3 REX	TwoState	☐	127	511	0	0
Door 4 DPS	TwoState	☒	127	511	0	0

Name – edit box; the name of the input; the name of the input will change when the name of the associated reader is changed as long as they begin with the same set of characters. If the name of the input is modified such that it doesn't conform to the naming convention, it cannot be automatically updated when the reader's name is modified.

Note: *Please name the I/O Points and readers to reflect their usage. It will make reading the ladder logic so much easier.*

Type - drop-down menu (values: *TwoState* (default), *EOL*, *Series*, *FourState*, *Analog*); the type of input device attached to the panel

- *TwoState* – no end-of-line resistors; contact can be normally open or closed
- *EOL* – one end-of-line resistor across a normally open contact

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- *Series* – One end-of-line resistor wired in series with a normally closed contact
- *FourState* – requires resistors across the switch and another one in series
- *Analog* – Wired to an analog device, whose output is not greater than 12 volts

Inverted – checkbox; Changes the normal status of the contact from normally open to normally closed. If the box is not checked, the contact is wired normally open. If it is checked, the contact is normally closed.

Sens. – numeric (default: 127); the measure of incremental change required before re-evaluation; measured in mv. 12 mv is the minimum amount of change that can be detected. This value is normally increased to decrease the sensitivity of the point.

Thresh 1 – numeric (default: 512); determines the boundaries between Active and non-Active. The total value from high to low is 0 to 1024. Threshold 1 is used as the mid marker for 2-state inputs. A 2-State input only has two states, so we divide 1024 by 2 and find the midpoint. When the value of the point moves above 511 the point become Active.

Thresh 2 – numeric (default: 0); 3-State inputs needs the total value divided into 3 pieces while 4-State inputs need the pie divided into 4 pieces. The Threshold determines the boundary for each.

Threshold 3 – numeric (default: 0); see above

	2-State	3-State	4-State
Sensitivity	127	127	127
Threshold 1	512	350	250
Threshold 2	0	700	500
Threshold 3	0	0	750

Figure 45 - Sensitivity and Threshold Setting for different Input State Types

Debounce (1/10 sec increments) – numeric (default: 0); postpones triggering the point until the specified idle time passes, effectively filtering out rapid, redundant, or noisy inputs

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Readers Table

The **Readers** contains the properties of all readers. Each row contains the properties of one reader. You must scroll to the right to see all of the properties.

Readers					
Name	Reader Type	Card Bits	LED Time	PIN and 2-Man Exemption Time Zone	
Door 1 Reader	CardOnly	26	3		
Door 2 Reader	CardOnly	26	3		
Door 3 Reader	CardOnly	26	3		
Door 4 Reader	CardOnly	26	3		

Name – text box; the name of the reader; when modified, all the associated point/property names are modified as well. The points are considered associated if they begin with the same string (e.g. Door 1 Reader is associated with all points that begin with Door 1).

Reader Type – drop-down menu (values: *CardOnly* (default), *CardPlusPIN*, and *PINOnly*)

Card Bits– numeric (default: 26); the identifier for the card format. Originally, it was the number of bits in the card ID. Over time, with the ability to program different card formats with the same number of bits, the **Card Bits** became an identifier of the format and not the number of bits in the format. Standard formats are 26-, 32-, 34-, 35-, 37-, 40-, and 48-bit card formats. When a custom format is being used, the field should be set to 127. The panel comes with the following formats The format must also be added to  **Access Management View**. See [Adding Card Formats to !\[\]\(0e9febff239a56772fdeb7d774e7b3ea_img.jpg\) Access Management View](#).

LED Time – numeric (default: 3); measured in seconds; how long the LED changes state on a valid read

PIN and 2-Man Exemption Time Zone – drop-down list (values: all defined time zones); during the selected time zone, PIN and 2-Man required are not enforced

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PIN Timeout – numeric (default: 6); measured in seconds, how long the control panel will wait for a PIN code to be completed

APB – checkbox; when checked, this reader is in Anti-Passback mode

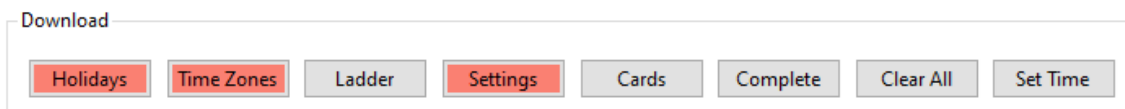
APB Zone – numeric (0 – 255, default: 0, no zone) the Anti-Passback zone this reader belongs to; See [Anti-Passback Zone](#) for a full explanation.

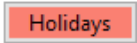
2-Man Req – checkbox; when checked, 2 valid and separate cards must be swiped before the door can be opened

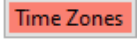
2-Man Timeout – numeric (default: 10) (disabled); measured in seconds, time lapse between the two valid card swipes required to open the door if two-man rule is specified.

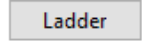
Download Buttons

The **Download** group box contains the button to download data to the panel. When a button is salmon-colored, data has been updated in the software and must be downloaded to the panel to take effect. When any button is clicked, a confirmation dialog displays.

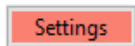


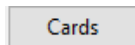
 – button; when clicked, the holidays that were defined in  **Access Management View** are downloaded

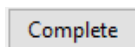
 – button; when clicked, the time zones that were defined in  **Access Management View** are downloaded

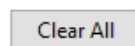
 – button; when clicked, the ladder logic is downloaded; ladder logic is defined on the **Advanced** tab.

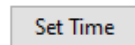
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 – button; when clicked all of the settings of this panel including Holidays, Time Zones, and Ladder are downloaded to the panel; the settings on all of the child nodes are downloaded too. See the Quick Config dialog for the specific MAC panel type to better visualize all the settings that are downloaded.

 – button; when clicked all cards with access to the panel are downloaded; this will replace the existing cards table ensuring that cards that no longer have access to the panel are removed.

 – button; when clicked everything is downloaded to the panel including all of the other buttons except Clear All.

 – button; when clicked, a Clear All command is sent to the panel. The Clear All command causes a reset of the panel memory settings to the factory default.

 – button; when clicked, the date and time on the panel is set to the current date and time

Other Points

The **Other Points** tab is where the names of the Output points, General points, and Alarms are managed in the Quick Config.

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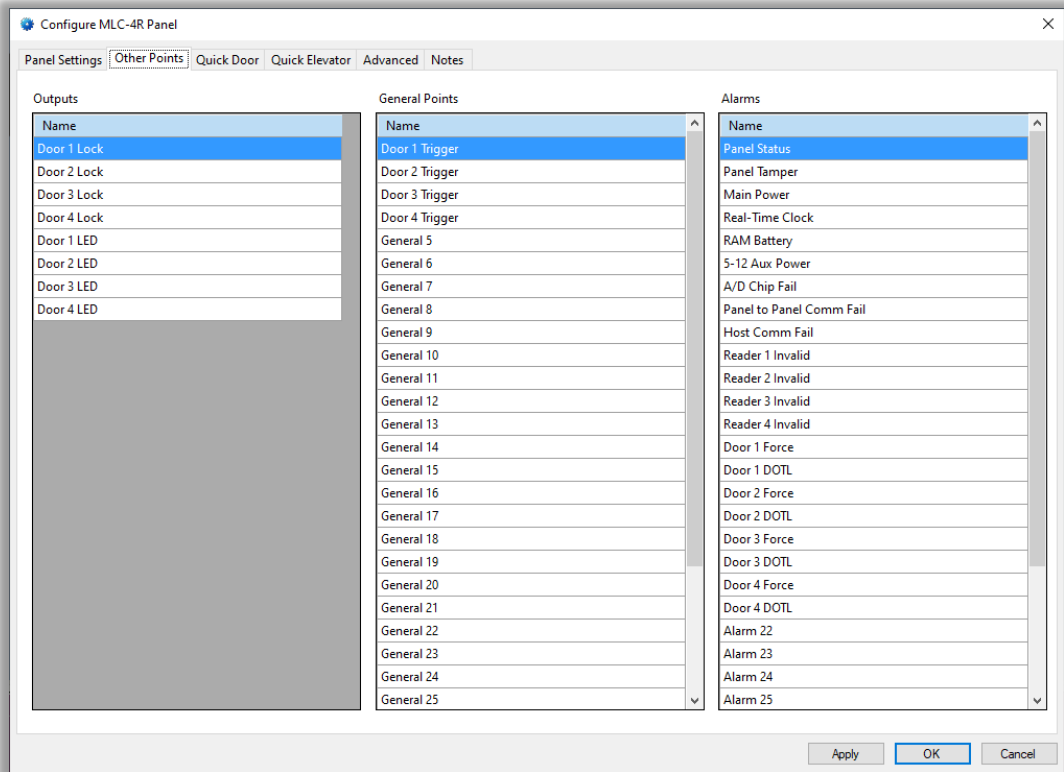


Figure 46 - MLC-4R panel Quick Config dialog: Other Points tab

Quick Door tab

The **Quick Door** tab is a quick way to write the ladder logic for a door. Each of the devices, inputs, and timers associated with a door along with different standard behaviors are grouped together in sets. These sets are used to write the ladder logic for each door. Changes made here are reflected on the **Advanced** tab.

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The screenshot shows the 'Configure MLC-4R Panel' dialog box with the 'Quick Door' tab selected. The dialog is organized into four sections, one for each door set (Door Set 1 to Door Set 4). Each section contains the following fields:

- Entry Device:** A drop-down menu with 'Door 1 Reader' selected for Door Set 1.
- Exit Device:** A drop-down menu with 'Door 1 REX' selected for Door Set 1.
- REX Operation:** A drop-down menu with 'UnlockForUnlockTime' selected for Door Set 1.
- Door Forced Alarm:** A drop-down menu with 'ResetOnClose' selected for Door Set 1.
- Unlock Time (seconds):** A numeric field with a value of 6.
- DOTL Time (seconds):** A numeric field with a value of 30.
- Unlock Time Zone:** A drop-down menu.
- Not In Use:** A checkbox.
- Reset to Default:** A button.

The 'Apply', 'OK', and 'Cancel' buttons are located at the bottom right of the dialog.

Figure 47 - MLC-4R panel Quick Config dialog: Quick Door tab

Entry Device – drop-down list (values: the readers' names, the DPS points, and the REX points default: reader 1); the reader or input point to associate with this door to allow ingress through the door

Exit Device - drop-down list (values: the DPS points, the REX points, and the readers' names default: door 1 REX); the reader or input point to associate with this door to allow egress through the door

REX Operation – drop-down list (default: *UnlockForUnlockTime*)

- *UnlockForUnlockTime* – Unlock the door and leave it unlocked for the number of seconds specified in the field **Unlock Time** then relock the door
- *LockFollowREX* – Unlock the door while the REX is high
- *ShuntForcedOnly* – The REX does not unlock the door

Door Forced Alarm – drop-down list (default: *ResetOnClose*)

- *ResetOnClose* – When the door is closed, automatically reset the Door Force alarm to low

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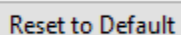
- *ResetOnCommand* – Do not automatically reset the Door Force alarm

Unlock Time (Seconds) – numeric (default: 6); how long in seconds to leave a door unlocked before locking it again; used in the ladder logic programming of this door

DOTL Time (seconds) – numeric (default: 30); how long the DPS point can be high before the DOTL alarm is triggered

Unlock Time Zone – drop-down list (values: the user-defined time zones); when the selected time zone is active, the door will be unlocked

Not In Use – checkbox; when checked, the associated ladder logic is removed; the unused readers and points are available for use in **Quick Elevator** or can be used in other ladder logic programming.

 - button; reset all of the fields for this door set to the default values

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Quick Elevator tab

The **Quick Elevator** tab is a quick way to write the ladder logic for an elevator. There are cab configurations and floor configurations necessary to provide access control for an elevator. Changes made here are reflected on the **Advanced** tab.

Configure MLC-4R Panel

Panel Settings | Other Points | Quick Door | **Quick Elevator** | Advanced | Notes

Cab Configuration

Reader	16R Board	Relay Group	1st Relay	2nd Relay	3rd Relay	4th Relay	5th Relay	6th Relay	7th Relay	8th Relay

Add Delete

Floor Configuration

Floor Name	Time Zone	General Point	Group 1	Group 2	Group 3	Group 4

Add Floor Delete Floor

Apply OK Cancel

Figure 48 - MLC-4R panel Quick Config dialog: Quick Elevator tab

Note: Elevator control requires an MLC-4R and an MLC-16R.

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Advanced tab

The **Advanced** tab is where ladder logic is written.

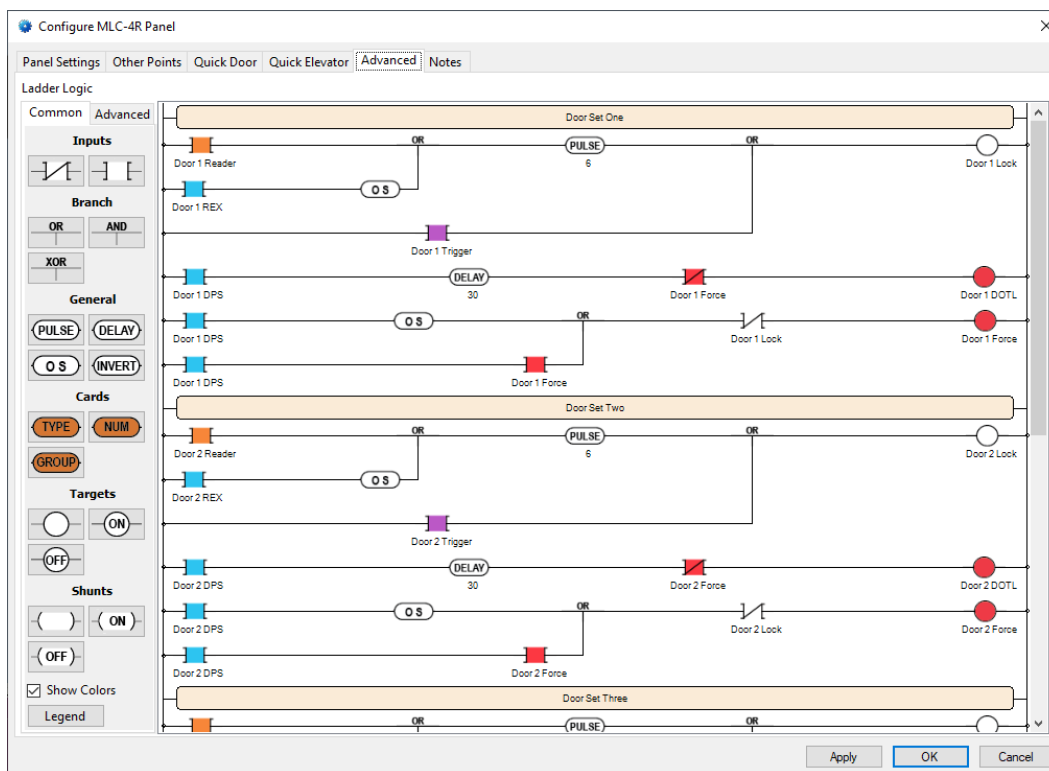


Figure 49 - MLC-4R panel Quick Config dialog: Advanced tab

For more information on reading and writing ladder logic, see [Ladder Logic Programming](#).

Notes tab

The **Notes** tab is where any notes, thoughts, ideas are stored. Wax poetic if you want. This tab has no bearing on the panel itself but is used to keep ... notes.

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MLC-16R Panel Quick Config Dialog

The **MLC-16R** panel is a Smart Programmable Logic Controller (SPLC), built specifically for controlling system outputs. The panel supports peer-to-peer communication and ladder logic programming providing ultimate flexibility. The distributed processing and peer-to-peer communications provide a redundant robust solution that continues to function regardless of the condition of the rest of the system. The controller provides 16 Form C relay outputs that can be triggered by system events or through peer-to-peer commands from other controllers. The **Quick Config** dialog allows you to manage the properties and the ladder logic programming in one dialog.

Note: Elevator control requires an MLC-4R and an MLC-16R.

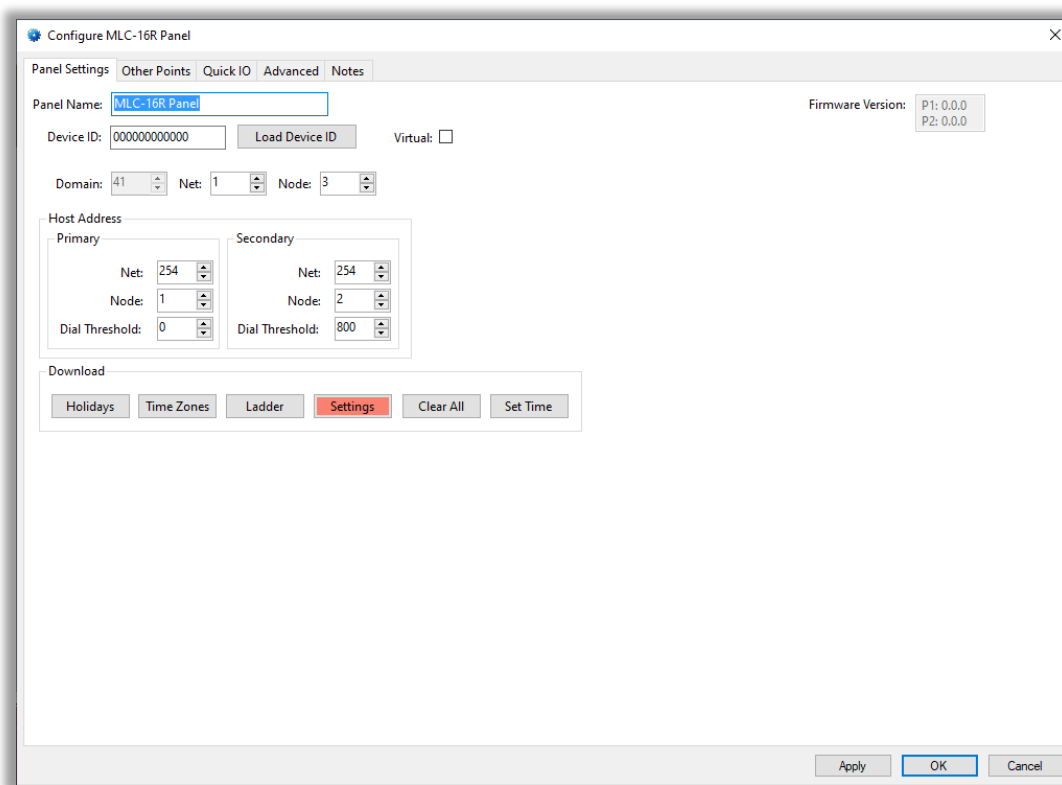


Figure 50 – MLC-4R panel Quick Config dialog

There are five (5) tabs on the **Quick Config** dialog.

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Panel Settings tab

The first tab is the *Panel Settings* tab.

The screenshot shows the 'Configure MLC-16R Panel' dialog box with the 'Panel Settings' tab selected. The dialog has a title bar with a close button. Below the title bar are tabs: 'Panel Settings', 'Other Points', 'Quick IO', 'Advanced', and 'Notes'. The 'Panel Settings' tab contains the following fields and controls:

- Panel Name:** A text box containing 'MLC-16R Panel'.
- Device ID:** A text box containing '000000000000' and a 'Load Device ID' button.
- Virtual:** A checkbox that is currently unchecked.
- Firmware Version:** A text box containing 'P1: 0.0.0' and 'P2: 0.0.0'.
- Domain:** A dropdown menu showing '41'.
- Net:** A dropdown menu showing '1'.
- Node:** A dropdown menu showing '3'.
- Host Address:** A section with two sub-sections: 'Primary' and 'Secondary'. Each sub-section has fields for 'Net' (both set to '254'), 'Node' (Primary set to '1', Secondary set to '2'), and 'Dial Threshold' (Primary set to '0', Secondary set to '800').
- Download:** A section with buttons: 'Holidays', 'Time Zones', 'Ladder', 'Settings' (highlighted in red), 'Clear All', and 'Set Time'.

At the bottom right of the dialog are three buttons: 'Apply', 'OK' (highlighted in blue), and 'Cancel'.

Figure 51 – MLC-16R panel Quick Config dialog: Panel Settings tab

Panel Name – edit box; the name for the panel node; the name doesn't have to be unique, but it should be descriptive of its use

Firmware Version – text box (disabled); the P1 and P2 firmware versions of the panel; loaded from the panel.

Device ID – numeric; the unique neural ID of the panel; it is loaded from the panel using the service pin (preferred) or entered manually from the supplied panel Test Sheet.

Load Device ID

- button; send the **Device ID** to the panel

Virtual – check box; when checked the panel is virtualized, allowing the driver to be brought online without having the physical panel available

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Domain – numeric (disabled); the hardware domain of the MAC equipment

Net – numeric; the LONWorks network number; every panel that needs to communicate with each other peer-to-peer must have the same **Net** setting

Node – numeric; the LONWorks node number of the panel on the network; each panel must have a unique node number

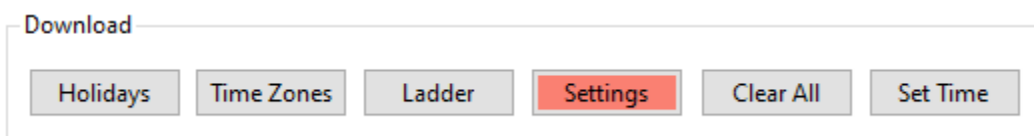
Host Address group box – the properties related to the Echelon network; there is a primary and a secondary interface the panel. If the primary interface fails, the backup interface will take over. The same device can operate under both roles.

Net – numeric (default: 254); the Echelon network ID

Node – numeric (default: 1 (primary), 2 (secondary)); the node ID of the panel on the Echelon network

Dial Threshold – **OBSOLETE** numeric; a remnant from the days when the panels were serial devices

Download - group box; contains the button to download data to the panel. When a button is salmon-colored, data has been updated in the software and must be downloaded to the panel to take effect. When any button is clicked, a confirmation dialog displays.



Holidays – button; when clicked, the holidays that were defined in  **Access Management View** are downloaded

Time Zones – button; when clicked, the time zones that were defined in  **Access Management View** are downloaded

Ladder – button; when clicked, the ladder logic is downloaded; ladder logic is defined on the **Advanced** tab.

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Settings – button; when clicked all of the settings of this panel including Holidays, Time Zones, and Ladder are downloaded to the panel; the settings on all of the child nodes are downloaded too. See the Quick Config dialog for the specific MAC panel type to better visualize all the settings that are downloaded.

Clear All – button; when clicked, a Clear All command is sent to the panel. The Clear All command causes a reset of the panel memory settings to the factory default.

Set Time – button; when clicked, the date and time on the panel is set to the current date and time

Other Points

The **Other Points** tab is where the names of the Output points, General points, and Alarms are managed in the Quick Config.

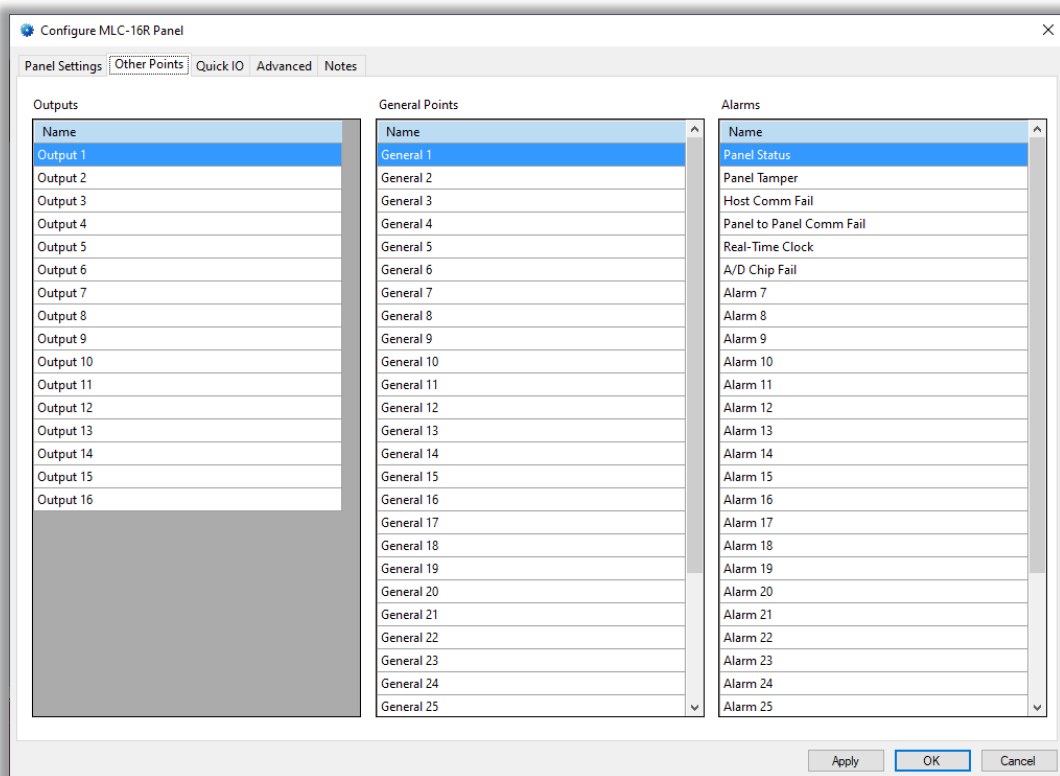


Figure 52 - MLC-16R panel Quick Config dialog: Other Points tab

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Quick IO tab

The **Quick IO** tab is a way to quickly generate ladder logic programming without knowing how to write ladder logic. Quick IO guides you through defining the various points and values needed for the three most common uses of this panel type. The most common uses are *Cell Door (Swing)*, *Gate/Slider Door*, and *Operator Reset Alarm*.

Note: *This tab has been improved upon by the [MAC Programming Template Panel](#).*

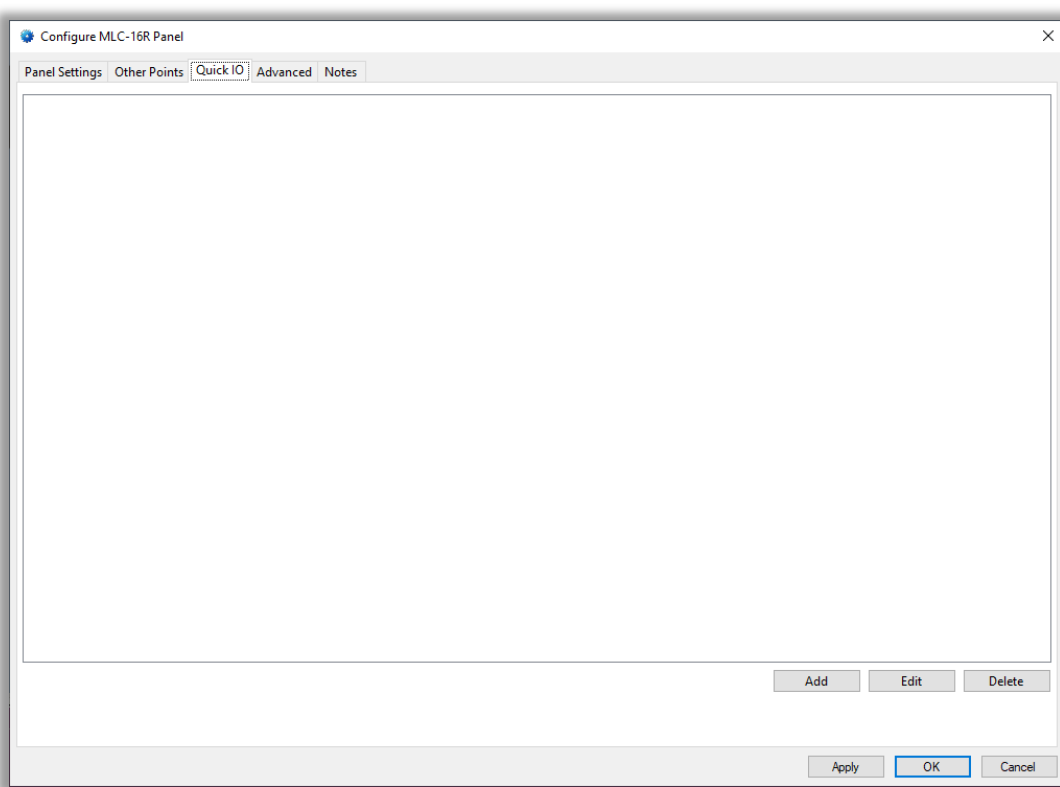
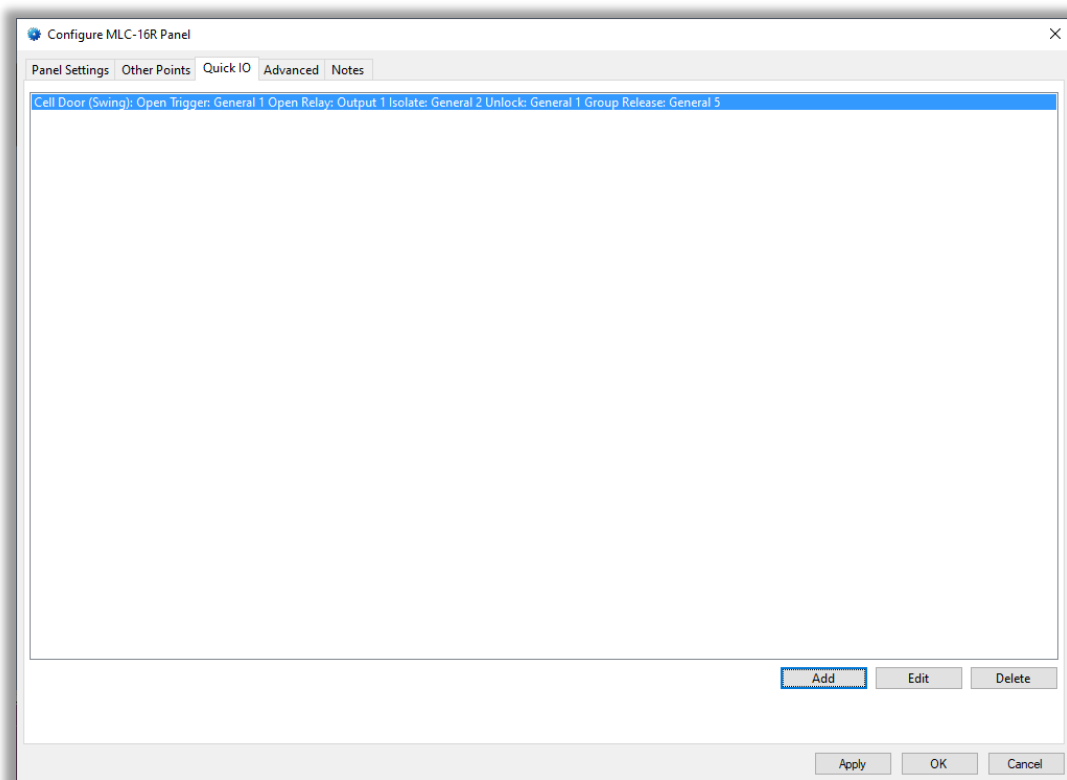


Figure 53 - MLC-16R panel Quick Config dialog: Quick IO tab

To add a Quick IO definition, click the **Add** button. A **Choose Quick Config Type** dialog displays. The possible **Quick Config Types** are *Cell Door (Swing)*, *Gate/Slider Door*, and *Operator Reset Alarm*. Select the desired type and click **OK**. A configuration dialog will display appropriate for the Quick Config type you selected. See the following sections for details on configuring each type.

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Once the properties for the Quick IO definition have been set and saved, a new line is added to the table for the Quick Config Type that was just created.



**Figure 54 - MLC-16R panel Quick Config dialog:
Quick IO tab with a Quick IO definition**

For each line in this table, there is a corresponding line of ladder logic. Switch to the **Advanced** tab to see the ladder logic.

The use of the Edit and Delete buttons is similar to their use throughout Intelli-Site. One hopes their use is easily discernable.

Cell Door (Swing)

Selecting *Cell Door (Swing)* as the **Quick Config Type** opens a **Cell Door (Swing)** configuration dialog. Select the points and set the timer appropriately then click **OK**. A new line will be added to the table, and the corresponding ladder logic programming will be added. To read the ladder logic, switch to the **Advanced** tab.

MAC Panel Guide

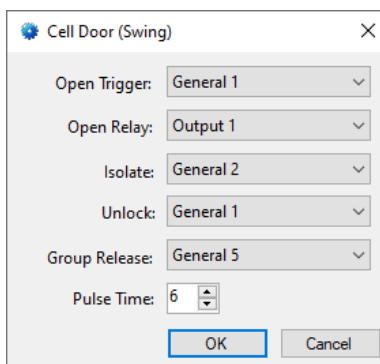


Figure 55 - Cell Door (Swing) configuration dialog

Open Trigger – drop-down list (values: all of the General points, default: the first General point) the point to use as the Open Trigger

Open Relay – drop-down list (values: all of the Output points, default: the first output point) the point to use as the Open Relay point

Isolate – drop-down list (values: all of the General points, default: the next unused General point) the point to use as the Isolate point

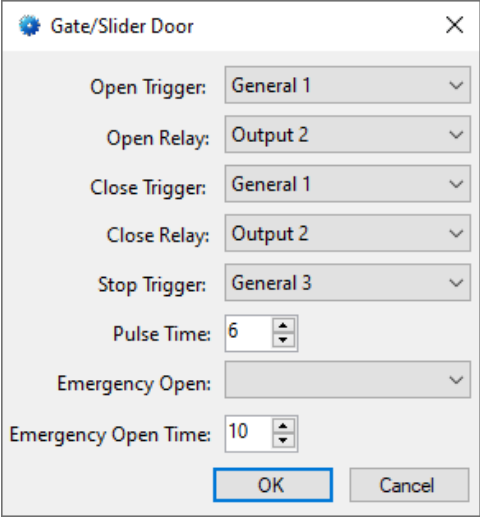
Unlock – drop-down list (values: all of the General points, default: the first General point) the point to use as the Unlock point

Group Release – drop-down list (values: all of the General points, default: the fifth available general point) the point to use as the Group Release point

Gate/Slider Door

Selecting *Gate/Slider Door* as the **Quick Config Type** opens a **Gate/Slider Door** configuration dialog. Select the points and set the timers appropriately then click . A new line will be added to the table, and the corresponding ladder logic programming will be added. To read the ladder logic, switch to the **Advanced** tab.

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The image shows a software dialog box titled "Gate/Slider Door" with a close button (X) in the top right corner. The dialog contains several configuration options, each with a label and a control element:

- Open Trigger:** A drop-down menu currently showing "General 1".
- Open Relay:** A drop-down menu currently showing "Output 2".
- Close Trigger:** A drop-down menu currently showing "General 1".
- Close Relay:** A drop-down menu currently showing "Output 2".
- Stop Trigger:** A drop-down menu currently showing "General 3".
- Pulse Time:** A numeric input field with a spinner, showing the value "6".
- Emergency Open:** A drop-down menu that is currently empty.
- Emergency Open Time:** A numeric input field with a spinner, showing the value "10".

At the bottom of the dialog are two buttons: "OK" and "Cancel".

Figure 56 – Gate/Slider Door configuration dialog

Open Trigger – drop-down list (values: all of the General points)
the point to use as the Open Trigger

Open Relay – drop-down list (values: all of the Output points)
the point to use as the Open Relay point

Close Trigger – drop-down list (values: all of the General points)
the point to use as the Close Trigger

Close Relay – drop-down list (values: all of the Output points)
the point to use as the Close Relay point

Pulse Time – numeric (default: 6) how long a point will be set
high (in seconds) before setting it low

Emergency Open – drop-down list (values: all of the General
points or nothing, default: nothing) the point to use for Emergency
Open

Emergency Open Time – numeric (default: 10) how long in
seconds the Emergency Open point is allowed to be open

MAC Panel Guide

Operator Reset Alarm

Selecting *Operator Reset Alarm* as the **Quick Config Type** opens an **Operator Reset Alarm** configuration dialog. Select the points then click . A new line will be added to the table, and the corresponding ladder logic programming will be added. To read the ladder logic, switch to the **Advanced** tab.

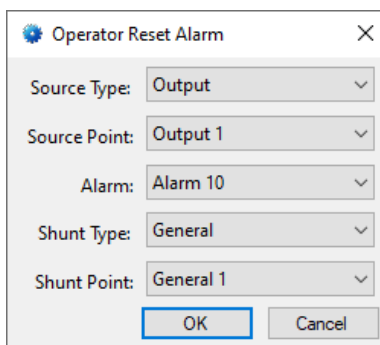
The image shows a configuration dialog box titled "Operator Reset Alarm" with a close button (X) in the top right corner. The dialog contains five drop-down menus: "Source Type" (set to "Output"), "Source Point" (set to "Output 1"), "Alarm" (set to "Alarm 10"), "Shunt Type" (set to "General"), and "Shunt Point" (set to "General 1"). At the bottom of the dialog are two buttons: "OK" and "Cancel".

Figure 57 - Operator Reset Alarm configuration dialog

Source Type – drop-down list (values: *Output*, *General*, and *Alarm*, default: *Output*) which set of points to use for **Source Point**

Source Point – drop-down list (values: points of type specified in **Source Type**) the point to use as the Source Point

Alarm - drop-down list (values: all of the soft alarm points starting with alarm 10) which point to use as the alarm point for this operator reset alarm

Shunt Type - drop-down list (values: *Output*, *General*, and *Alarm*, default: *Output*) which set of points to use for **Shunt Point**

Shunt Point – drop-down list (values: points of type specified in **Shunt Type**) the point to use as the Shunt Point; when this point is high, the alarm is ignored. See [Shunt](#).

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Advanced tab

The **Advanced** tab is where ladder logic is written.

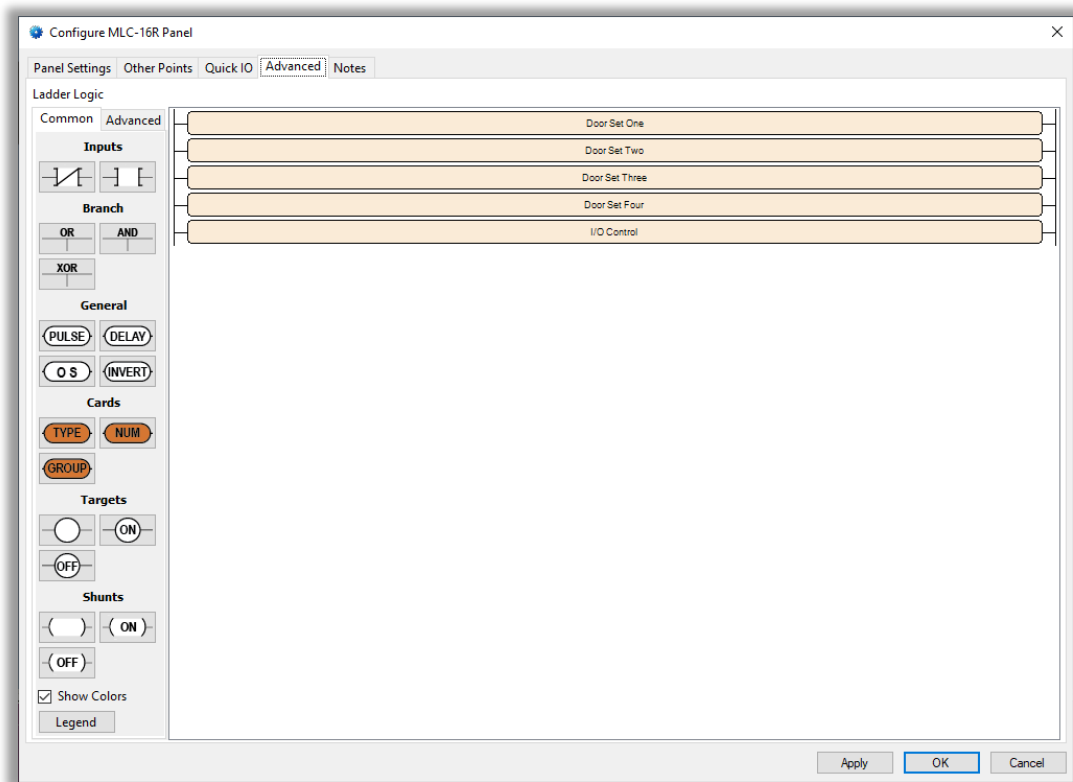


Figure 58 - MLC-16R panel Quick Config dialog: Advanced tab

For more information on reading and writing ladder logic, see [Ladder Logic Programming](#).

MAC Panel Guide

Notes tab

The **Notes** tab is where any notes, thoughts, ideas are stored. Wax poetic if you want. This tab has no bearing on the panel itself but is used to keep ... notes.

MLC-32I Panel Quick Config Dialog

The **MLC-32I** is a Programmable Logic Controller built specifically for monitoring system inputs, both analog and digital. It is equipped with distributed intelligence as each controller has its own processor and follows its own program. Ladder logic programming comes pre-configured to make start-up easy, but can be modified to meet your specific application. The **Quick Config** dialog allows you to manage the properties and the ladder logic programming in one dialog.

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Input 1	TwoState	☒	127	300	0	0
Input 2	TwoState	☐	127	300	0	0
Input 3	TwoState	☐	127	300	0	0
Input 4	TwoState	☐	127	300	0	0
Input 5	TwoState	☐	127	300	0	0
Input 6	TwoState	☐	127	300	0	0
Input 7	TwoState	☐	127	300	0	0

Host Address		
Primary		
Net:	254	
Node:	1	
Dial Threshold:	0	
Secondary		
Net:	254	
Node:	2	
Dial Threshold:	800	

Figure 59 – MLC-32I panel Quick Config dialog

There are five (5) tabs on the **Quick Config** dialog.

MAC Panel Guide

Panel Settings tab

The first tab is the *Panel Settings* tab.

Configure MLC-32I Panel

Panel Settings Quick IO Advanced Notes

Panel Name: Domain: Net: Node: Firmware Version: P1: 0.0.0 P2: 0.0.0

Device ID: Load Device ID Virtual: ☐

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Input 1	TwoState	☒	127	300	0	0
Input 2	TwoState	☐	127	300	0	0
Input 3	TwoState	☐	127	300	0	0
Input 4	TwoState	☐	127	300	0	0
Input 5	TwoState	☐	127	300	0	0
Input 6	TwoState	☐	127	300	0	0
Input 7	TwoState	☐	127	300	0	0

Host Address

Primary

Net: Node: Dial Threshold:

Secondary

Net: Node: Dial Threshold:

Download

Holidays Time Zones Ladder **Settings** Clear All Set Time

Apply OK Cancel

Figure 60 – MLC-32I panel Quick Config dialog: Panel Settings tab

Panel Name – edit box; the name for the panel node; the name doesn't have to be unique, but it should be descriptive of its use

Domain – numeric (disabled); the hardware domain of the MAC equipment

Net – numeric; the LONWorks network number; every panel that needs to communicate with each other peer-to-peer must have the same **Net** setting

Node – numeric; the LONWorks node number of the panel on the network; each panel must have a unique node number

Firmware Version – text box (disabled); the P1 and P2 firmware versions of the panel; loaded from the panel

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Device ID – numeric; the unique neural ID of the panel; it is loaded from the panel using the service pin (preferred) or entered manually from the supplied panel Test Sheet.

Load Device ID

- button; send the **Device ID** to the panel

Virtual – check box; when checked the panel is virtualized, allowing the driver to be brought online without having the physical panel available

Inputs – table; contains the properties of all the inputs of the panel. Each row contains the properties of a single input. You must scroll to the right to see all of the properties of an input point, and scroll down to see each of the points.

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
Input 1	TwoState	☐	127	300	0	0
Input 2	TwoState	☐	127	300	0	0
Input 3	TwoState	☐	127	300	0	0
Input 4	TwoState	☐	127	300	0	0
Input 5	TwoState	☐	127	300	0	0
Input 6	TwoState	☐	127	300	0	0
Input 7	TwoState	☐	127	300	0	0

Name – text box; the name of the input.

Note: Please name the I/O Points to reflect their usage. It will make reading the ladder logic so much easier.

Type – drop-down list (values: *TwoState* (default), *EOL*, *Series*, *FourState*, *Analog*); the type of input device attached to the panel

- *TwoState* – no end of line resistors; contact is normally open or closed
- *EOL* – one end of line resistor across a normally open contact

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- *Series* – One end of line resistor wired in series with a normally closed contact
- *FourState* – requires resistors across the switch and another one in series
- *Analog* – Wired to an analog device, whose output is not greater than 12 volts

Invert – checkbox; Changes the normal status of the contact from normally open to normally closed. If the box is not checked, the contact is wired normally open. If it is checked, the contact is normally closed.

Sens. – numeric (default: 127); the measure of incremental change required before re-evaluation; measured in mv. 12 mv is the minimum amount of change that can be detected. This value is normally increased to decrease the sensitivity of the point.

Thresh 1 – numeric (default: 512); determines the boundaries between Active and non-Active. The total value from high to low is 0 to 1024. Threshold 1 is used as the mid marker for 2-state inputs. A 2-State input only has two states, so we divide 1024 by 2 and find the midpoint. When the value of the point moves above 511 the point become Active.

Thresh 2 – numeric (default: 0); 3-State inputs needs the total value divided into 3 pieces while 4-State inputs need the pie divided into 4 pieces. The Threshold determines the boundary for each.

Threshold 3 – numeric (default: 0); see above

	2-State	3-State	4-State
Sensitivity	127	127	127
Threshold 1	512	350	250
Threshold 2	0	700	500
Threshold 3	0	0	750

Figure 61 - Sensitivity and Threshold Setting for different Input State Types

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Debounce (1/10 sec increments) – numeric (default: 0); postpones triggering the point until the specified idle time passes, effectively filtering out rapid, redundant, or noisy inputs

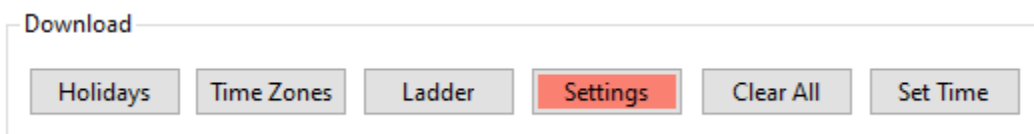
Host Address group box – the properties related to the Echelon network; there is a primary and a secondary interface the panel. If the primary interface fails, the backup interface will take over. The same device can operate under both roles.

Net – numeric (default: 254); the Echelon network ID

Node – numeric (default: 1 (primary), 2 (secondary)); the node ID of the panel on the Echelon network

Dial Threshold – **OBSOLETE** numeric; a remnant from the days when the panels were serial devices

Download - group box; contains the button to download data to the panel. When a button is salmon-colored, data has been updated in the software and must be downloaded to the panel to take effect. When any button is clicked, a confirmation dialog displays.



Holidays – button; when clicked, the Holidays that were defined in  **Access Management View** are downloaded

Time Zones – button; when clicked, the time zones that were defined in  **Access Management View** are downloaded

Ladder – button; when clicked, the ladder logic is downloaded; ladder logic is defined on the **Advanced** tab.

Settings – button; when clicked all of the settings of this panel including holidays, time zones, and ladder are

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downloaded to the panel; the settings on all of the child nodes are downloaded too. See the **Quick Config** dialog for the specific MAC panel type to better visualize all the settings that are downloaded.

Clear All – button; when clicked, a Clear All command is sent to the panel. The Clear All command causes a reset of the panel memory settings to the factory default.

Set Time – button; when clicked, the date and time on the panel is set to the current date and time

Other Points

The **Other Points** tab is where the names of the General points, and Alarms are managed in the Quick Config. There are no Outputs because this is a 32I panel. It monitors system inputs, both analog and digital and leaves the outputs for the 16R.

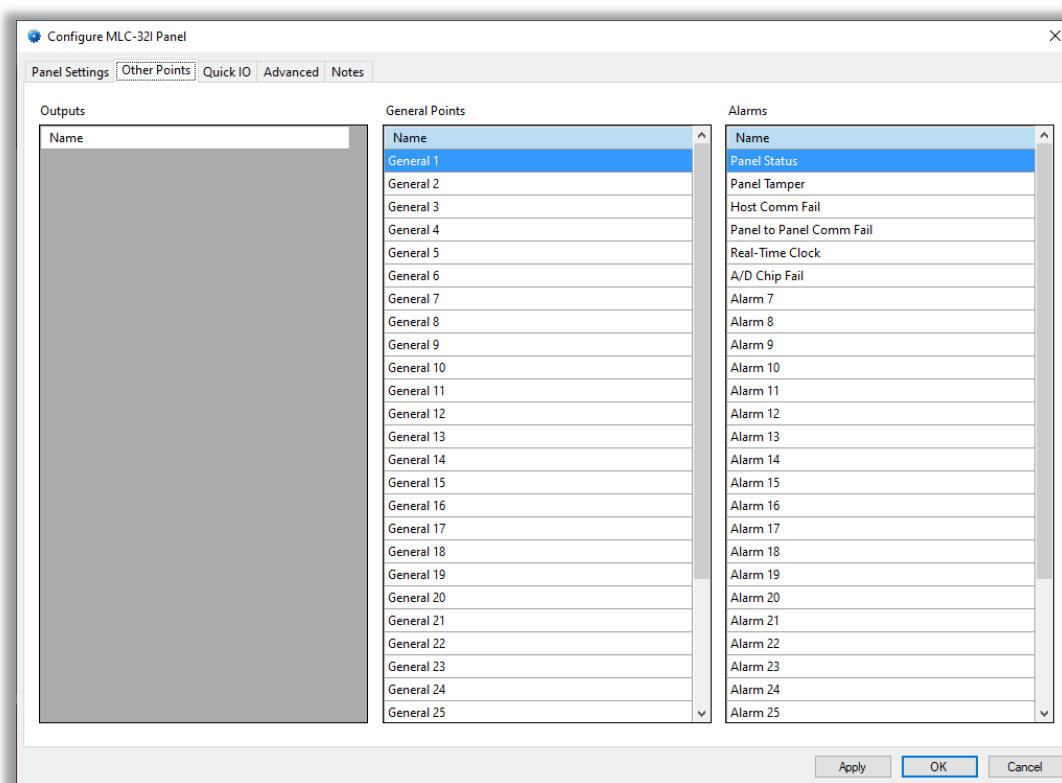


Figure 62 - MLC-32I panel Quick Config dialog: Other Points tab

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Quick IO tab

The **Quick IO** tab is a way to quickly generate ladder logic programming without knowing how to write ladder logic. Quick IO guides you through defining the various points and values needed for the most common uses of this panel type. The most common uses are *Controlled Door*, and *Operator Reset Alarm*.

Note: *This tab has been improved upon by the [MAC Programming Template Panel](#).*

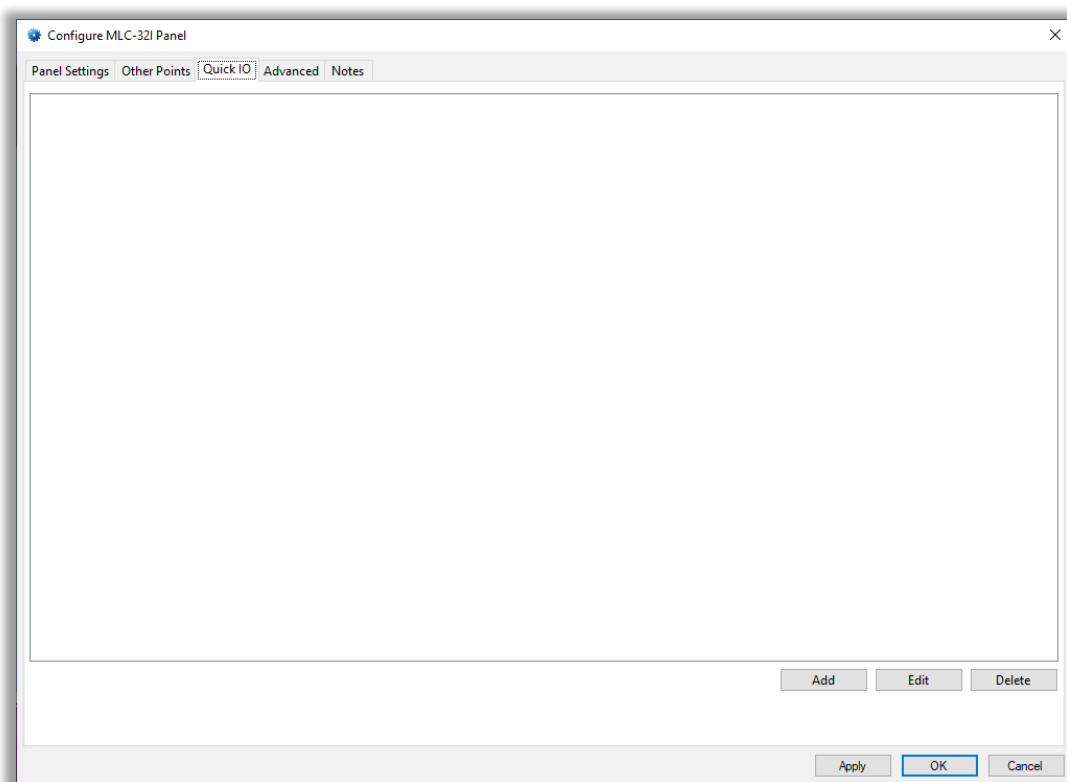
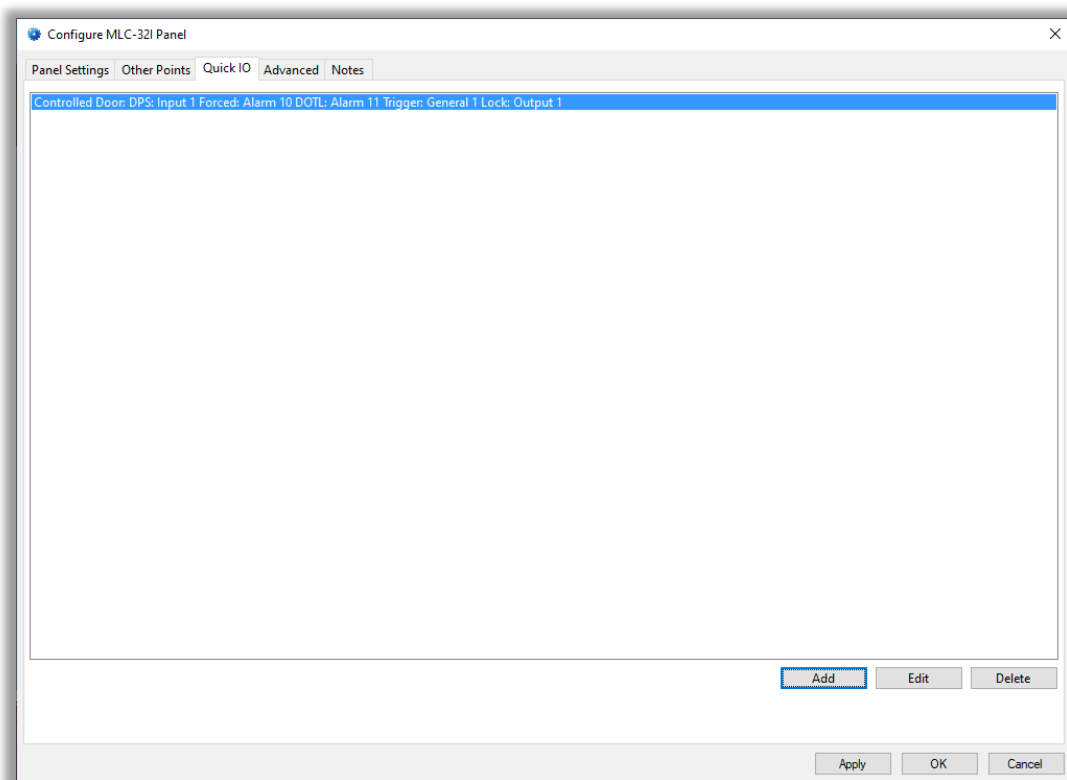


Figure 63 - MLC-132I panel Quick Config dialog: Quick IO tab

To add a Quick IO definition, click the **Add** button. A **Choose Quick Config Type** dialog displays. The possible **Quick Config Types** are *Controlled Door*, and *Operator Reset Alarm*. Select the desired type and click **OK**. A configuration dialog will display appropriate for the Quick Config type you selected. See the following sections for details on configuring each type.

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Once the properties for the Quick IO definition have been set and saved, a new line is added to the table for the Quick Config Type that was just created.



**Figure 64 - MLC-32I panel Quick Config dialog:
Quick IO tab with a Quick IO definition**

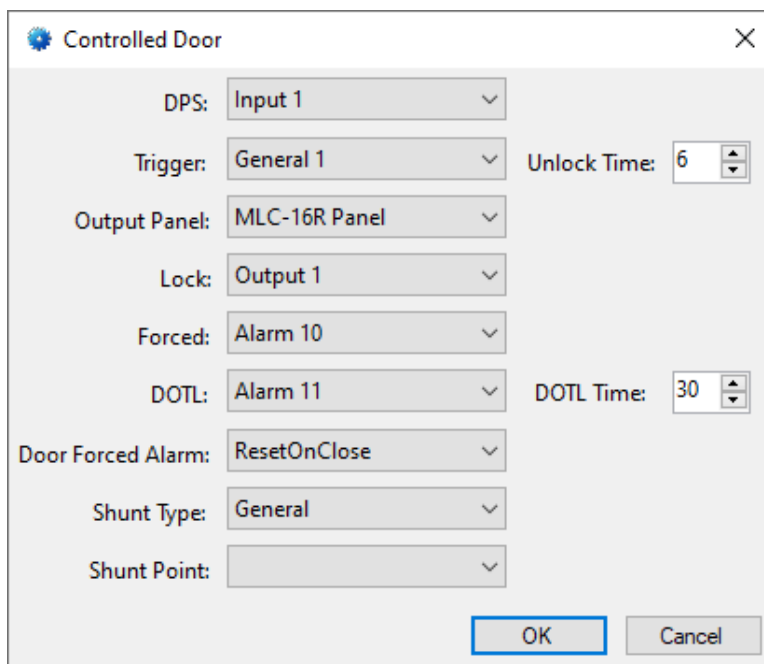
For each line in this table, there is a corresponding line of ladder logic. Switch to the **Advanced** tab to see the ladder logic.

The use of the Edit and Delete buttons is similar to their use throughout Intelli-Site. One hopes their use is easily discernable.

Controlled Door

Selecting *Controlled Door* as the **Quick Config Type** opens a **Controlled Door** configuration dialog. Select the points and set the timers appropriately then click . A new line will be added to the table, and the corresponding ladder logic programming will be added. To read the ladder logic, switch to the **Advanced** tab.

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The image shows a software dialog box titled "Controlled Door" with a close button (X) in the top right corner. The dialog contains several configuration options, each with a label and a control element (either a drop-down menu or a numeric spinner). The options are: "DPS:" with a drop-down menu showing "Input 1"; "Trigger:" with a drop-down menu showing "General 1"; "Unlock Time:" with a numeric spinner set to "6"; "Output Panel:" with a drop-down menu showing "MLC-16R Panel"; "Lock:" with a drop-down menu showing "Output 1"; "Forced:" with a drop-down menu showing "Alarm 10"; "DOTL:" with a drop-down menu showing "Alarm 11"; "DOTL Time:" with a numeric spinner set to "30"; "Door Forced Alarm:" with a drop-down menu showing "ResetOnClose"; "Shunt Type:" with a drop-down menu showing "General"; and "Shunt Point:" with an empty drop-down menu. At the bottom right of the dialog are two buttons: "OK" and "Cancel".

Figure 65 – Controlled Door configuration dialog

DPS – drop-down list (values: all of the Input points) which input is the door position switch input

Trigger – drop-down list (values: all of the General points) the point to use as the trigger for this controlled door

Unlock Time – numeric (default: 6) time in seconds to allow the lock to be unlocked before triggering an alarm

Output Panel – drop-down list (values: the list of available panels with outputs for this panel to use)

Lock – drop-down list (values: the output points from the selected **Output Panel**) the point to use as the door lock point

Unlock Time – numeric; the number of seconds the door will remain unlocked before locking again

Forced – drop-down list (values: the alarm points) the point to use as the door forced point

DOTL – drop-down list (values: the alarm points) the point to use as the **DOTL** point

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DOTL Time – numeric; the number of seconds the door is allowed to be open before the **DOTL** point is set

Door Forced Alarm - drop-down list (values: *ResetOnClose*, *ResetOnCommand*) when is the door force alarm reset

Shunt Type – drop-down list (values: *Input*, *General*, *Supervision*, *Alarm*) which set of points to use as the set from which the **Shunt Point** is to be selected

Shunt Point – drop-down list (values: blank and then the list of points specified in **Shunt Type**) when this point is set, the alarms will not be reported to the user, only logged

Operator Reset Alarm

Selecting *Operator Reset Alarm* as the **Quick Config Type** opens an **Operator Reset Alarm** configuration dialog. Select the points then click . A new line will be added to the table, and the corresponding ladder logic programming will be added. To read the ladder logic, switch to the **Advanced** tab.

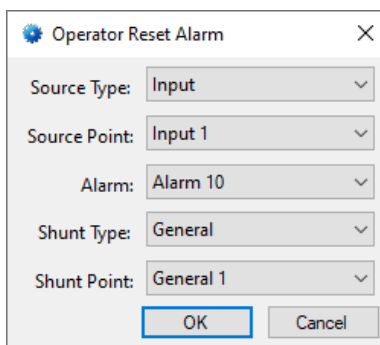
The image shows a configuration dialog box titled "Operator Reset Alarm" with a close button (X) in the top right corner. The dialog contains five dropdown menus: "Source Type" set to "Input", "Source Point" set to "Input 1", "Alarm" set to "Alarm 10", "Shunt Type" set to "General", and "Shunt Point" set to "General 1". At the bottom, there are two buttons: "OK" and "Cancel". The "OK" button is highlighted with a blue border.

Figure 66 - Operator Reset Alarm configuration dialog

Source Type – drop-down list (values: *Output*, *General*, and *Alarm*, default: *Input*) which set of points to use for **Source Point**

Source Point – drop-down list (values: points of type specified in **Source Type**) the point to use as the Source Point

Alarm - drop-down list (values: all of the soft alarm points starting with alarm 10) which point to use as the alarm point for this operator reset alarm

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Shunt Type - drop-down list (values: *Output*, *General*, and *Alarm*, default: *General*) which set of points to use for **Shunt Point**

Shunt Point – drop-down list (values: points of type specified in **Shunt Type**) the point to use as the Shunt Point; when this point is high, the alarm is ignored. See [Shunt](#).

Advanced tab

The **Advanced** tab is where ladder logic is written.

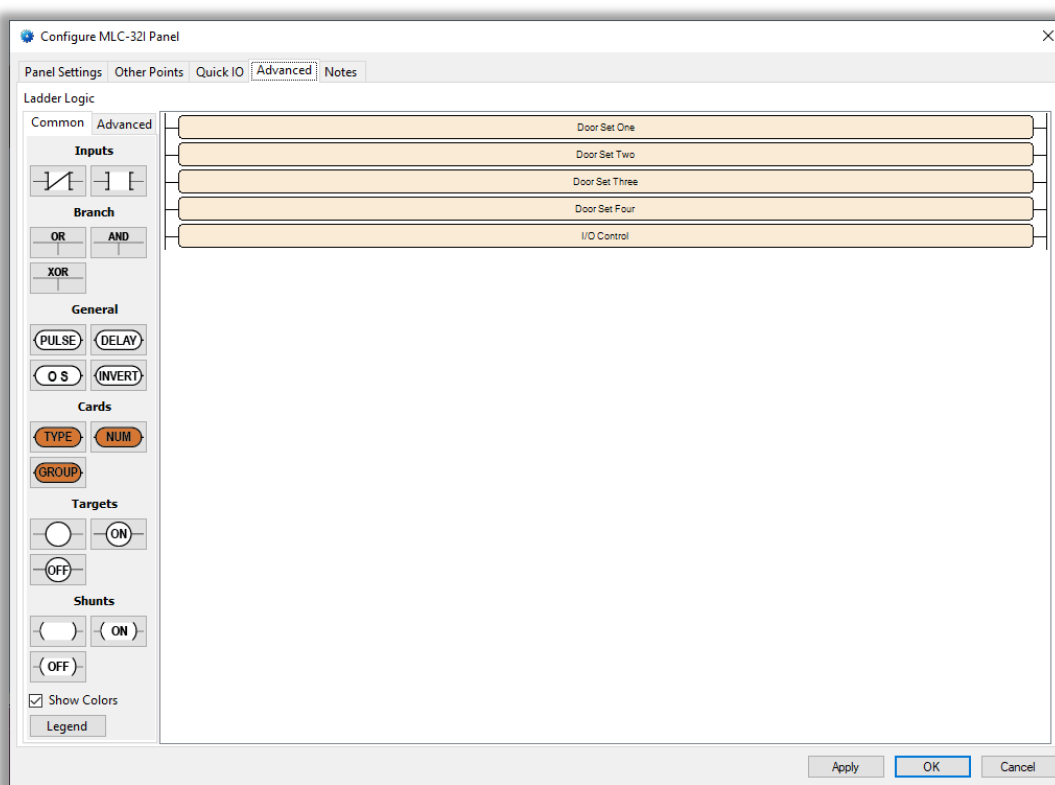


Figure 67 - MLC-32I panel Quick Config dialog: Advanced tab

For more information on reading and writing ladder logic, see [Ladder Logic Programming](#).

Notes tab

The **Notes** tab is where any notes, thoughts, ideas are stored. Wax poetic if you want. This tab has no bearing on the panel itself but is used to keep ... notes.

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MLC-8IC Panel Quick Config Dialog

The **MLC-8IC** is a Programmable Logic Controller built specifically for controlling audio. It supports both intercom and paging controls with PLC ladder logic. It is equipped with distributed intelligence as each controller has its own processor and follows its own programming. Ladder logic programming comes pre-configured to make start-up easy, but can be modified to meet your specific application.

The **MLC-8IC Dual** is built specifically for controlling dual channel audio. Otherwise, it is identical to the **MLC-8IC**.

The **Quick Config** dialog allows you to manage the properties and the ladder logic programming in one dialog.

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
IC-1 Call Button	TwoState	☒	127	511	0	0
IC-2 Call Button	TwoState	☐	127	511	0	0
IC-3 Call Button	TwoState	☐	127	511	0	0
IC-4 Call Button	TwoState	☐	127	511	0	0
IC-5 Call Button	TwoState	☐	127	511	0	0
IC-6 Call Button	TwoState	☐	127	511	0	0
IC-7 Call Button	TwoState	☐	127	511	0	0

Host Address	
Primary	
Net:	254
Node:	1
Dial Threshold:	0
Secondary	
Net:	254
Node:	2
Dial Threshold:	800

Figure 68 - MLC-8IC panel Quick Config dialog

There are five (5) tabs on the **Quick Config** dialog.

Panel Settings tab

The first tab is the *Panel Settings* tab.

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Configure MLC-8IC Panel

Panel Settings | Other Points | Quick IO | Advanced | Notes

Panel Name: Domain: Net: Node: Firmware Version: P1: 0.0.0 P2: 0.0.0

Device ID: Load Device ID Virtual: ☐

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
IC-1 Call Button	TwoState	☒	127	511	0	0
IC-2 Call Button	TwoState	☐	127	511	0	0
IC-3 Call Button	TwoState	☐	127	511	0	0
IC-4 Call Button	TwoState	☐	127	511	0	0
IC-5 Call Button	TwoState	☐	127	511	0	0
IC-6 Call Button	TwoState	☐	127	511	0	0
IC-7 Call Button	TwoState	☐	127	511	0	0

Host Address

Primary

Net: Node: Dial Threshold:

Secondary

Net: Node: Dial Threshold:

Download

Holidays Time Zones Ladder **Settings** Clear All Set Time

Apply OK Cancel

Figure 69 – MLC-8IC panel Quick Config dialog: Panel Settings tab

Panel Name – edit box; the name for the panel node; the name doesn't have to be unique, but it should be descriptive of its use

Domain – numeric (disabled); the hardware domain of the MAC equipment

Net – numeric; the LONWorks network number; every panel that needs to communicate with each other peer-to-peer must have the same **Net** setting

Node – numeric; the LONWorks node number of the panel on the network; each panel must have a unique node number

Firmware Version – text box (disabled); the P1 and P2 firmware versions of the panel; loaded from the panel

Device ID – numeric; the unique neural ID of the panel; it is loaded from the panel using the service pin (preferred) or entered manually from the supplied panel Test Sheet.

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Load Device ID

- button; send the **Device ID** to the panel

Virtual – check box; when checked the panel is virtualized, allowing the driver to be brought online without having the physical panel available

Inputs – table; contains the properties of all the inputs of the panel. Each row contains the properties of a single input. You must scroll to the right to see all of the properties of an input point, and scroll down to see each of the points.

Inputs

Name	Type	Invert	Sens.	Thresh 1	Thresh 2	Thresh 3
IC-1 Call Button	TwoState	☐	127	511	0	0
IC-2 Call Button	TwoState	☐	127	511	0	0
IC-3 Call Button	TwoState	☐	127	511	0	0
IC-4 Call Button	TwoState	☐	127	511	0	0
IC-5 Call Button	TwoState	☐	127	511	0	0
IC-6 Call Button	TwoState	☐	127	511	0	0
IC-7 Call Button	TwoState	☐	127	511	0	0

Name – text box; the name of the input.

Note: Please name the I/O Points to reflect their usage. It will make reading the ladder logic so much easier.

Type - drop-down list (values: *TwoState* (default), *EOL*, *Series*, *FourState*, *Analog*); the type of input device attached to the panel

- *TwoState* – no end of line resistors; contact is normally open or closed
- *EOL* – one end of line resistor across a normally open contact
- *Series* – One end of line resistor wired in series with a normally closed contact
- *FourState* – requires resistors across the switch and another one in series

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- *Analog* – Wired to an analog device, whose output is not greater than 12 volts

Invert – checkbox; Changes the normal status of the contact from normally open to normally closed. If the box is not checked, the contact is wired normally open. It is checked if the contact is normally closed.

Sens. – numeric (default: 127); the measure of incremental change required before re-evaluation; measured in mv. 12 mv is the minimum amount of change that can be detected. This value is normally increased to decrease the sensitivity of the point.

Thresh 1 – numeric (default: 512); determines the boundaries between Active and non-Active. The total value from high to low is 0 to 1024. Threshold 1 is used as the mid marker for 2-state inputs. A 2-State input only has two states, so we divide 1024 by 2 and find the midpoint. When the value of the point moves above 511 the point become Active.

Thresh 2 – numeric (default: 0); 3-State inputs needs the total value divided into 3 pieces while 4-State inputs need the pie divided into 4 pieces. The Threshold determines the boundary for each.

Threshold 3 – numeric (default: 0); see above

	2-State	3-State	4-State
Sensitivity	127	127	127
Threshold 1	512	350	250
Threshold 2	0	700	500
Threshold 3	0	0	750

Figure 70 - Sensitivity and Threshold Setting for different Input State Types

Debounce (1/10 sec increments) – numeric (default: 0); postpones triggering the point until the specified idle time passes, effectively filtering out rapid, redundant, or noisy inputs

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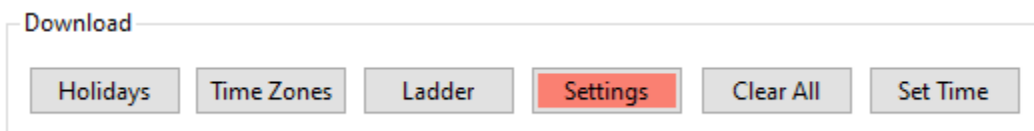
Host Address group box – the properties related to the Echelon network; there is a primary and a secondary interface the panel. If the primary interface fails, the backup interface will take over. The same device can operate under both roles.

Net – numeric (default: 254); the Echelon network ID

Node – numeric (default: 1 (primary), 2 (secondary)); the node ID of the panel on the Echelon network

Dial Threshold – **OBSOLETE** numeric; a remnant from the days when the panels were serial devices

Download - group box; contains the button to download data to the panel. When a button is salmon-colored, data has been updated in the software and must be downloaded to the panel to take effect. When any button is clicked, a confirmation dialog displays.



Holidays – button; when clicked, the holidays that were defined in  **Access Management View** are downloaded

Time Zones – button; when clicked, the time zones that were defined in  **Access Management View** are downloaded

Ladder – button; when clicked, the ladder logic is downloaded; ladder logic is defined on the **Advanced** tab.

Settings – button; when clicked all of the settings of this panel including holidays, time zones, and ladder are downloaded to the panel; the settings on all of the child nodes are downloaded too. See the **Quick Config** dialog for the specific MAC panel type to better visualize all the settings that are downloaded.

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Clear All – button; when clicked, a Clear All command is sent to the panel. The Clear All command causes a reset of the panel memory settings to the factory default.

Set Time – button; when clicked, the date and time on the panel is set to the current date and time

Other Points

The **Other Points** tab is where the names of the Output points, General points, and Alarms are managed in the Quick Config.

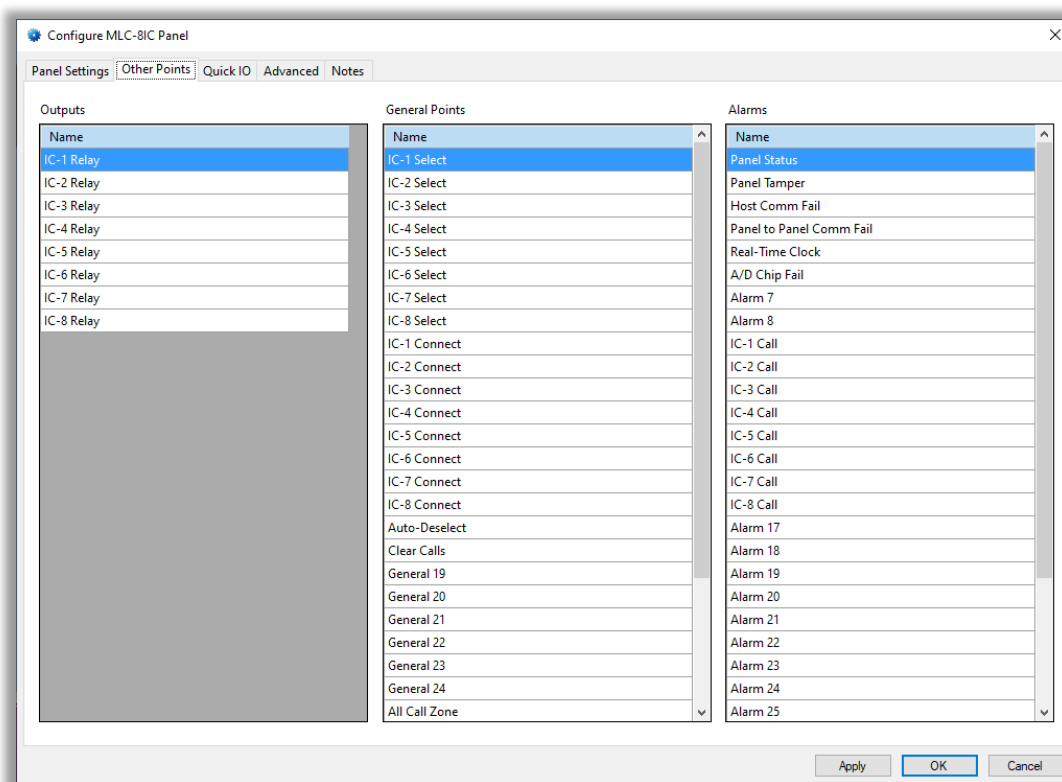


Figure 71 - MLC-8IC panel Quick Config dialog: Other Points tab

Quick IO tab

The **Quick IO** tab is included for possible future use. At this time, this panel does not allow any Quick I/O configuration. Since Quick I/O configurations has been greatly improved upon by the [MAC Programming Template Panel](#), there is no known reason for the integrator to need Quick I/O.

MAC Panel Guide

Advanced tab

The **Advanced** tab is where ladder logic is written.

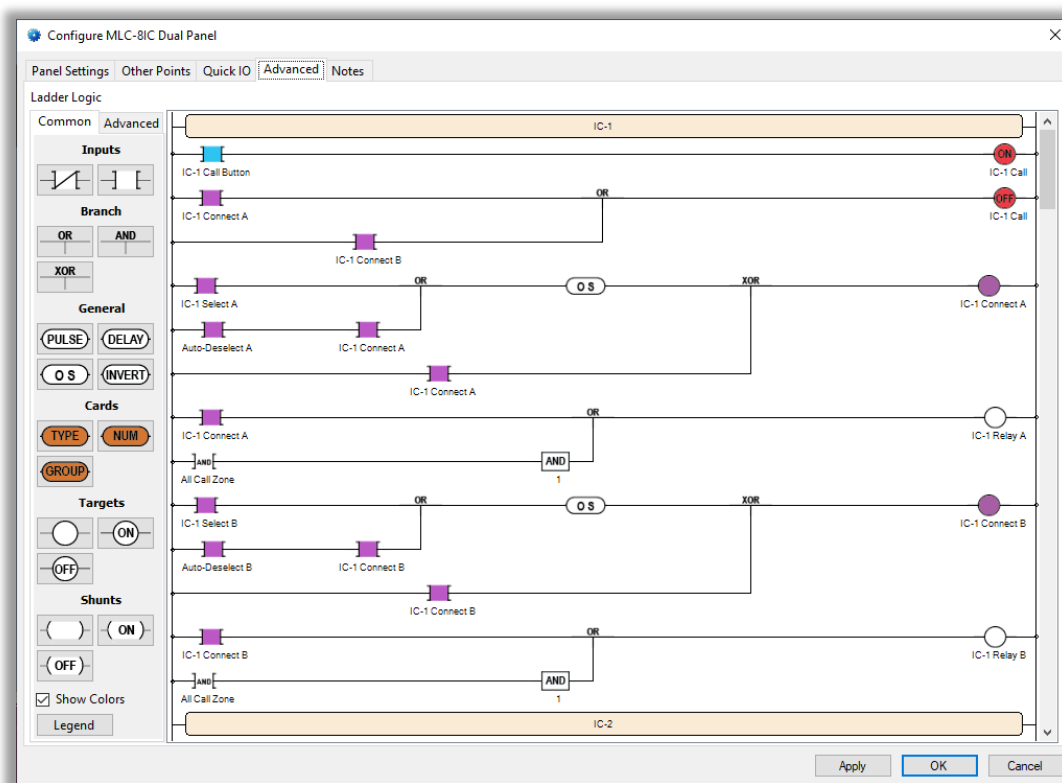


Figure 72 - MLC-8IC panel Quick Config dialog: Advanced tab

The panel comes fully programmed. For more information on reading and writing ladder logic, see [Ladder Logic Programming](#).

Notes tab

The **Notes** tab is where any notes, thoughts, ideas are stored. Wax poetic if you want. This tab has no bearing on the panel itself but is used to keep ... notes.

MAC-4R (Legacy) Panel Quick Config Dialog

MAC-4R (Legacy) panel is legacy hardware provided to support existing installations with these panels. The MAC-4R panel is no longer in production.

MAC Panel Guide

The MLC-4R panel is the next generation of the MAC-4R panel. The MAC-4R Quick Config dialog is the same as the MLC-4R without the **Quick Elevator** tab. Therefore, see [MLC-4R Panel Quick Config Dialog](#) for details.

Panel Properties

Each of the different MAC panels has the same or similar properties and child nodes. The properties of each different panel type is the same for all panels. The possible child nodes and their properties will be examined as well.

Panel Node Properties

Right-click on the panel node to open the properties dialog. The MAC panel properties dialog has two tabs: **Properties**, and **Advanced**. Each panel type has its own properties dialog. The differences are on the **Properties** tab.

Properties tab

There is only one properties dialog for any MAC panel. Each panel has its own properties dialog, but the fields and settings are the same.

MAC Panel Guide

The screenshot shows the 'The Office MAC Panel' Properties dialog box, Advanced tab. The dialog is titled '[1333] The Office MAC Panel'. It has a 'Properties' tab and an 'Advanced' tab. The 'Advanced' tab is active. The 'Name' field is 'The Office MAC Panel'. The 'ID' field is '1333'. The 'User Level' is 'All Access'. The 'Notes' field is empty. The 'Host Settings' section has a 'Virtual Point' checkbox and an 'Event buffer delta (min)' spinner set to 0. The 'Panel Settings' section has 'Domain' (40), 'Net' (1), 'Node' (1), 'Device Address' (002237278500), 'Auto-download Valid Cards' (checked), 'Anti-Passback Time' (0), 'Duess PIN' (1234), 'Firmware Version' (P1: 0.0.0, P2: 0.0.0), 'Site Codes' (Site Code 1: 255, Site Code 2: 255, Site Code 3: 255, Site Code 4: 255), and 'Host Address' (Primary: Net: 254, Node: 1, Dial Threshold: 0; Secondary: Net: 254, Node: 2, Dial Threshold: 800). The 'Custom Card Format' section has 'Card Bits', 'Parity 1 Bits', and 'Parity 2 Bits' fields. At the bottom are buttons for 'Holidays', 'Time Zones', 'Ladder', 'Settings', 'Cards', 'Complete', 'Clear All', 'Set Time', 'Apply', 'OK', and 'Cancel'.

Figure 73 – MAC panel node properties dialog: Properties tab

Name – edit box; the name for the node; the name doesn't have to be unique

ID – numeric (disabled); the unique identifier of this node; generated by Intelli-Site

User Level – drop-down menu (default: All Access); the User Level a user must possess to open the properties for this node

Notes – multiline edit box; any notes the user may have for the node

Host Settings group box – the properties defining the host's interaction with the panel

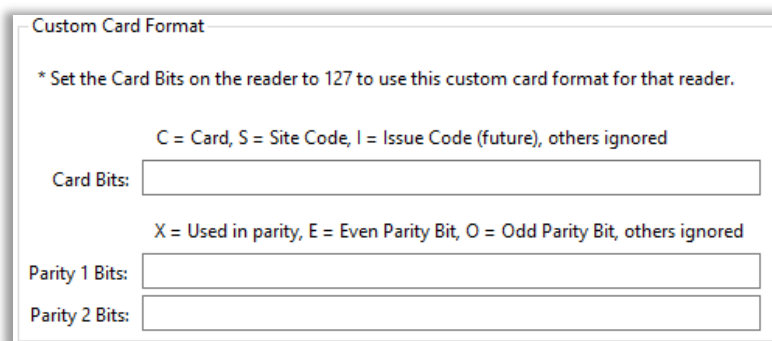
Virtual Point – check box; when checked the panel is virtualized, allowing the driver to be brought online without having the physical panel available

Virtual Point – drop box; this I/O Point will be set when the panel is virtualized, clear when it is not

MAC Panel Guide

Event buffer delta (min) – numeric (default: 0); only applies to panels that buffer data; the Engine compares the time an event occurs versus the current time, if the difference is greater than the **Event buffer delta**, the event is logged but not acted upon. If **Event buffer delta** is 0, the events are always acted upon.

Custom Card Format group box – the properties related the definition of the custom card format



The screenshot shows a dialog box titled "Custom Card Format". Inside, there is a note: "* Set the Card Bits on the reader to 127 to use this custom card format for that reader." Below this, a legend states: "C = Card, S = Site Code, I = Issue Code (future), others ignored". There are three text input fields: "Card Bits:", "Parity 1 Bits:", and "Parity 2 Bits:". Below the "Card Bits:" field, another legend states: "X = Used in parity, E = Even Parity Bit, O = Odd Parity Bit, others ignored".

Card Bits – text box; the definition of the card format, which bits are part of the card number, the site code, and the issue code. Each letter corresponds to a single bit. The format must also be added to  **Access Management View**. See [Adding Card Formats To !\[\]\(0c260414ed62794554e2e2eeee4b0b15_img.jpg\) Access Management View](#).

Parity 1 Bits – text box; which bits are used in Parity 1 and if it is Even or Odd parity

Parity 2 Bits – text box; which bits are used in Parity 2 and if it is Even or Odd parity

MAC Panel Guide

Panel Settings group box – the properties related the panel

The screenshot shows the 'Panel Settings' window with the following fields and controls:

- Domain:** 40 (disabled)
- Net:** 1
- Node:** 1
- Firmware Version:** P1: 0.0.0, P2: 0.0.0
- Device Address:** 002237278500
- Load Device ID** button
- Auto-download Valid Cards:** ☒
- Anti-Passback Time:** 0
- Duress PIN:** 1234
- Site Codes:**
 - Site Code 1: 255
 - Site Code 2: 255
 - Site Code 3: 255
 - Site Code 4: 255
- Host Address:**
 - Primary:** Net: 254, Node: 1, Dial Threshold: 0
 - Secondary:** Net: 254, Node: 2, Dial Threshold: 800
- Download** section with buttons: Holidays, Time Zones, Ladder, Settings (highlighted), Cards, Complete, Clear All, Set Time

Domain – numeric (disabled); the hardware domain of the MAC equipment

Net – numeric; the LONWorks network number; every panel that needs to communicate with each other must have the same **Net** setting

Node – numeric; the LONWorks node number of the panel on the network; each panel must have a unique node number

Device Address – numeric; the unique neural ID of the panel; it is loaded from the panel using the service pin (preferred) or entered manually from the supplied panel Test Sheet.

Load Device ID - button; send the **Device Address** to the panel

Auto-download Valid Cards – checkbox; when a card is presented at a reader on this panel, the Intelli-Site will check to see if the card is valid. If the card is valid, it will download the card to the panel immediately

Anti-Passback Time – numeric (default: 0); the time in minutes that must expire before a token can be used again at any one reader. When set to zero, timed Anti-Passback is disabled.

Duress PIN – numeric (default: 1234) **NOT IMPLEMENTED and NOT SUPPORTED**

MAC Panel Guide

Firmware Versions – text box (disabled); the P1 and P2 firmware versions of the panel; loaded from the panel

Site Codes group box – a panel can be limited to use 1, 2, 3, or 4 site codes or unlimited site codes. If there is only one site code at a facility, the site code must be entered in each site code field. Similarly for two or three site codes. If 255 is in any one of the site code fields, then the site code values are not limited.

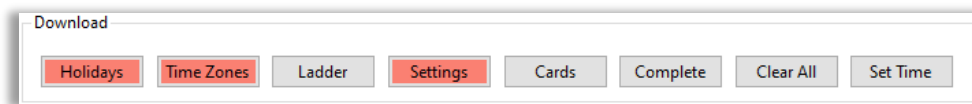
Host Address group box – the properties related to the Echelon network; there is a primary and a secondary interface the panel. If the primary interface fails, the backup interface will take over. The same device can operate under both roles.

Net – numeric (default: 254); the Echelon network ID

Node – numeric (default: 1 (primary), 2 (secondary)); the node ID of the panel on the Echelon network

Dial Threshold – **OBSOLETE** numeric; a remnant from the days when the panels were serial devices

Download group box contains the button to download data to the panel; when a button is salmon-colored, data has been updated in the software and must be downloaded to the panel to take effect; when any button is clicked, a confirmation dialog displays.

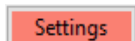


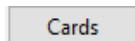
Holidays – button; when clicked, the holidays that were defined in  **Access Management View** are downloaded

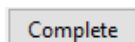
Time Zones – button; when clicked, the time **zones that were defined in**  **Access Management View** are downloaded

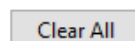
Ladder – button; when clicked, the ladder logic is downloaded; ladder logic is defined on the **Advanced** tab.

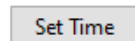
MAC Panel Guide

 – button; when clicked all of the settings of this panel including holidays, time zones, and Ladder are downloaded to the panel; the settings on all of the child nodes are downloaded too. See the Quick Config dialog for the specific MAC panel type to better visualize all the settings that are downloaded.

 – button; when clicked all cards with access to the panel are downloaded; this will replace the existing cards table ensuring that cards that no longer have access to the panel are removed.

 – button; when clicked everything is downloaded to the panel including all of the other buttons except Clear All.

 – button; when clicked, a Clear All command is sent to the panel. The Clear All command causes a reset of the panel memory settings to the factory default.

 – button; when clicked, the date and time on the panel is set to the current date and time

Advanced

This is the **Advanced** tab of the MAC panel node properties dialog. This is where the ladder logic is written.

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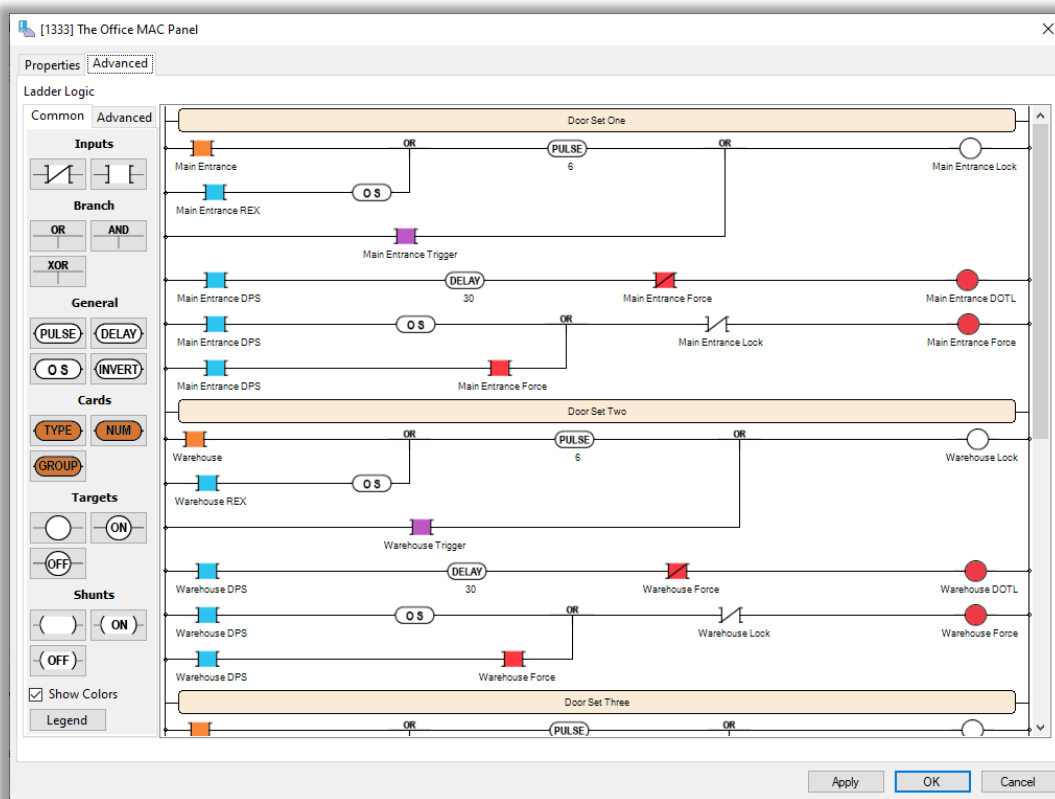


Figure 74 - MAC panel node properties dialog: Advanced tab

Ladder logic is incredibly powerful and it's an extremely advanced topic. Suffice it to say Intelli-Site generates the base table for each panel. This ladder logic is sufficient for most basic usage of the panel. For more information on programming ladder logic, see [Ladder Logic Programming](#).

Panel Child Nodes

Each MAC panel may have a number of inputs, outputs, general points, input supervision points, readers, time zones, alarms, and/or power up alarms. Not every panel type has all of these, but they will all have a subset of them. Each of these is a child node of the panel grouped by usage type.

MAC Panel Guide

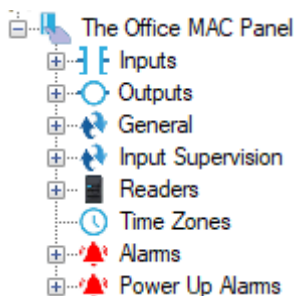


Figure 75 – MAC panel child nodes

Notice that there are Inputs, Outputs, General, Input Supervision, Readers, Time Zones, Alarms and Power Up Alarms nodes.

Note: Time Zones are managed in  **Access Management View.**

The majority of child nodes are simple I/O Points that are high when the appropriate condition is met. They are low when the appropriate condition is clear. For more information about I/O Points, see the User's Guide section "I/O Points and Their Functionality". We'll only discuss those nodes and properties that are not simple I/O Points.

The "Panel Will Transmit" Property

If a point exists internally on the panel, it is set by the panel and used by the panel. State changes of these points are only transmitted to Intelli-Site if it expressly told to do so. The **Panel Will Transmit** property tells the panel to send state changes of the point to Intelli-Site.

MAC Panel Guide

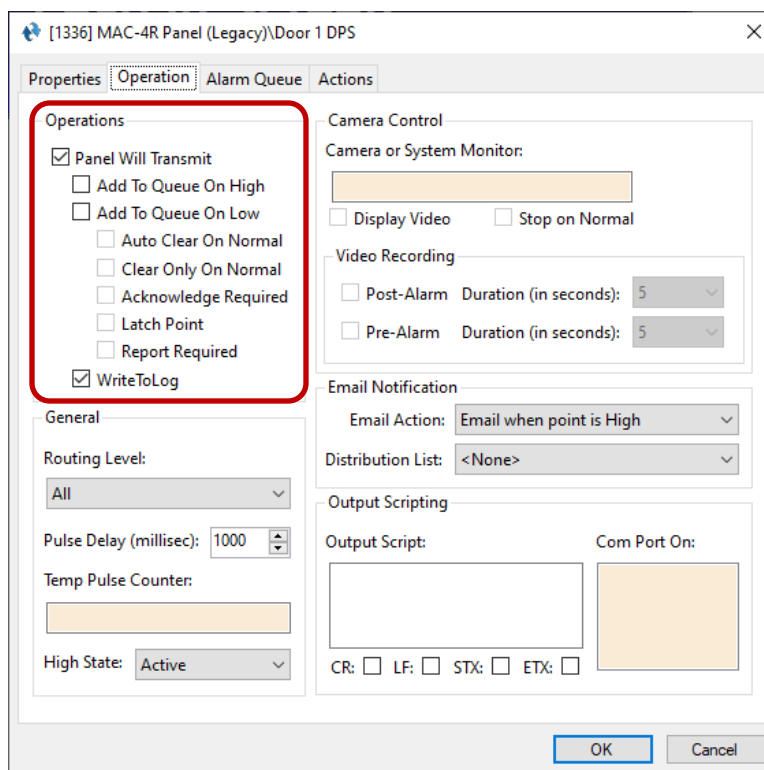
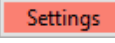


Figure 76 - Properties dialog: Operations tab with Operations highlighted

Notice the **Operations** group in the figure above. **Panel Will Transmit** is checked. This is the only property in the group that is sent to the panel. The remaining properties govern what Intelli-Site does when it receives the point state change from the panel. If **Panel Will Transmit** is not checked, the panel will not send Intelli-Site updates for this point. If this property is changed here or in the **Alarm Queue Settings** dialog, a  download must be performed to update the panel. See [The Quick Config Dialogs](#).

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Inputs

The panel input points are I/O Points.

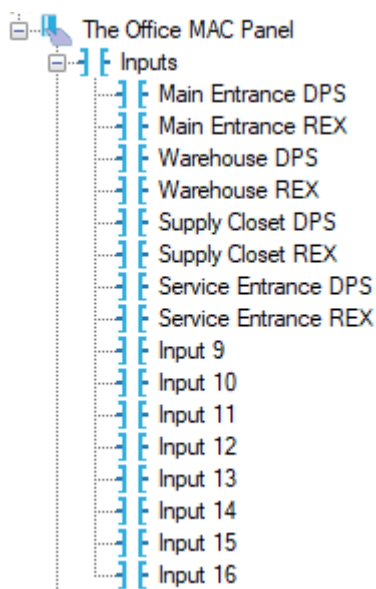


Figure 77 - MAC panel Input points

The properties dialog has the standard properties plus a few more advanced properties in the **Input Setup** group box and the **Analog Setup** group box on the **Properties** tab.

Note: *The Quick Config dialog is the proper place to manage these settings.*

MAC Panel Guide

The screenshot shows the 'MAC Input properties dialog' for 'Main Entrance DPS' with ID 1335. The 'Properties' tab is selected. The 'User Level' is set to 'All Access'. The 'Notes' field is empty. The 'Input Setup' group box shows 'Input Type' as 'TwoState', 'Sensitivity' as 127, 'Threshold 1' as 512, 'Threshold 2' as 0, 'Threshold 3' as 0, 'Inverted' checked, and 'Debounce' as 0. The 'Analog Setup' group box shows 'Input Minimum' as 0, 'Input Maximum' as 940, 'Display Minimum' as 0, and 'Display Maximum' as 100. 'OK' and 'Cancel' buttons are at the bottom right.

Figure 78 - MAC Input properties dialog

Input Setup group box – the properties associated with defining the input hardware settings

Input Type – drop-down list (values: *TwoState* (default), *EOL*, *Series*, *FourState*, *Analog*); the type of input device attached to the panel

- *TwoState* – no end of line resistors; contact is normally open or closed
- *EOL* – one end of line resistor across a normally open contact
- *Series* – One end of line resistor wired in series with a normally closed contact
- *FourState* – requires resistors across the switch and another one in series
- *Analog* – Wired to an analog device, whose output is not greater than 12 volts

Sensitivity – numeric (default: 127); the measure of incremental change required before re-evaluation;

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measured in mv. 12 mv is the minimum amount of change that can be detected. This value is normally increased to decrease the sensitivity of the point.

Threshold 1 – numeric (default: 512); determines the boundaries between Active and non-Active. The total value from high to low is 0 to 1024. Threshold 1 is used as the mid marker for 2-state inputs. A 2-State input only has two states, so we divide 1024 by 2 and find the midpoint. When the value of the point moves above 511 the point become Active.

Threshold 2 – numeric (default: 0); 3-State inputs needs the total value divided into 3 pieces while 4-State inputs need the pie divided into 4 pieces. The Threshold determines the boundary for each.

Threshold 3 – numeric (default: 0); see above

	2-State	3-State	4-State
Sensitivity	127	127	127
Threshold 1	512	350	250
Threshold 2	0	700	500
Threshold 3	0	0	750

Inverted – checkbox; Changes the normal status of the contact from normally open to normally closed. If the box is not checked, the contact is wired normally open. It is checked if the contact is normally closed.

Debounce (1/10 sec increments) – numeric (default: 0); postpones triggering the point until the specified idle time passes, effectively filtering out rapid, redundant, or noisy inputs

Analog Setup group box – the properties associated with defining the analog hardware settings

Input Minimum – numeric (values: 0 – 1014, default: 0); the minimum value expected to receive from the analog device

MAC Panel Guide

Input Maximum – numeric (values: 0 – 1014, default: 940); the maximum value expected to receive from the analog device

Display Minimum – numeric (values: 0 – 1014, default: 0); the minimum value to display on the screen

Display Maximum – numeric (values: 0 – 1014, default: 100); the maximum value to display on the screen

MAC Panel Guide

Outputs

The panel Output points are I/O Points with additional properties.

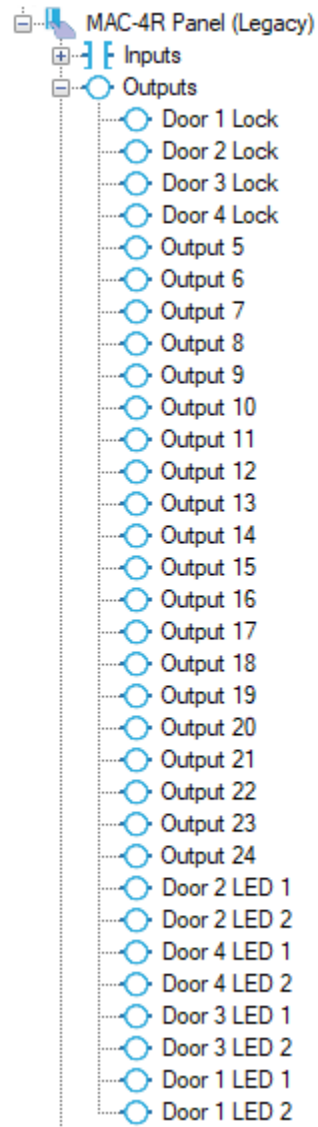


Figure 79 - MAC panel Output points

MAC Panel Guide

The properties dialog only has the standard properties. There are no properties specific to the MAC panel.

General

The panel General points are I/O Points. These points are used in ladder logic programming. The panel has 32 General points initially. More general points can be added as needed in groups of 32. See [Context Menu](#). Depending on the type of panel this is, several of the General points are defined and used when the panel is added to the project.

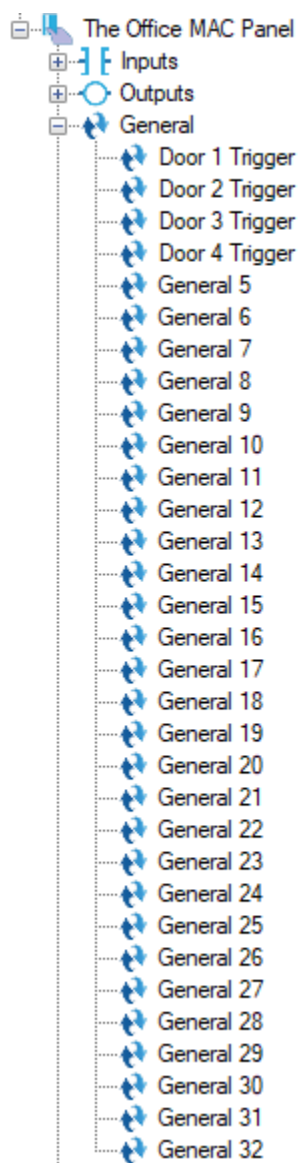


Figure 80 - Example MAC-4R panel General points

MAC Panel Guide

The properties dialog only has the standard properties. There are no properties specific to the MAC panel.

Input Supervision

The panel Input Supervision points are I/O Points. When the inputs on the panel have been programmed to supervise the contacts, these inputs come into play. This allows the user to have complete control of the alarm routing because an input supervision alarm can be treated differently and may cause other things to happen.

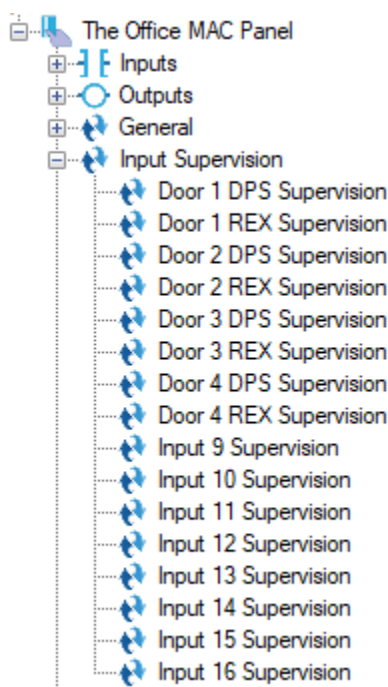


Figure 81 - Example MAC-4R panel Input Supervision points

The properties dialog only has the standard properties. There are no properties specific to the MAC panel.

Readers

The panel reader points are I/O Points.

MAC Panel Guide

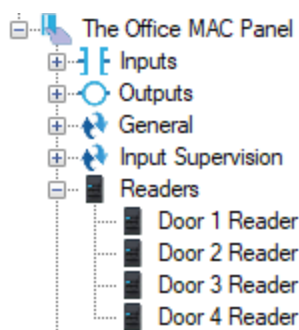


Figure 82 - MAC panel Input points

The properties dialog has the standard properties plus a few more advanced properties on the **Properties** tab.

Note: The Quick Config dialog of the panel node is the proper place to manage these settings. See [MLC-4R Panel Quick Config Dialog](#) or [MAC-4R \(Legacy\) Panel Quick Config Dialog](#).

[1436] The Office MAC Panel\Door 1 Reader

Properties Operation Alarm Queue Actions

Name: Door 1 Reader ID: 1436

User Level: All Access

Notes:

Settings

Reader Type: CardOnly

Card Bits: 26

LED Time: 3

Keypad/PIN Timeout: 6

2-Man Required: ☐

2-Man Timeout: 10

PIN and 2-Man Exemption Time Zone:

Anti-Passback: ☐

APB Zone: 0

OK Cancel

Figure 83 - MAC Reader properties dialog

MAC Panel Guide

Settings group box – the properties associated with defining the reader settings

Reader Type – drop-down menu (values: *CardOnly* (default), *CardPlusPIN*, and *PINOnly*)

Card Bits – numeric (default: 26); the number of bits in a card's format; standard formats are 26-, 32-, 34-, 35-, 37-, 40-, and 48-bit card formats. When a custom format is being used, the field should be set to 127. The format must also be added to  **Access Management View**. See [Adding Card Formats to Access Management View](#).

LED Time – numeric (default: 3); measured in seconds; how long the LED changes state on a valid read

Keypad/PIN Timeout – numeric (default: 6) (disabled); measured in seconds, how long the control panel will wait for a PIN code to be completed

2-Man Required – checkbox; when checked, 2 valid and separate cards must be swiped before the door can be opened

2-Man Timeout – numeric (default: 10) (disabled); measured in seconds, time lapse between the two valid card swipes required to open the door if two-man rule is specified.

PIN and 2-Man Exemption Time Zone – drop-down list (values: all defined time zones); during the selected time zone, PIN and 2-Man required are not enforced

Anti-Passback – checkbox; when checked, this reader is in Anti-Passback mode

APB Zone – numeric (0 – 255, default: 0, no zone) the anti-passback zone this reader belongs to; See [Anti-Passback Zone](#) for a full explanation.

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Alarms

Each MAC panel has a set of 32 alarm points. More alarm points may be added in groups of 32 via the context menu option, *Add 32 Alarms* on the panel node. See [Context Menu](#). These points can be used ladder logic programming.

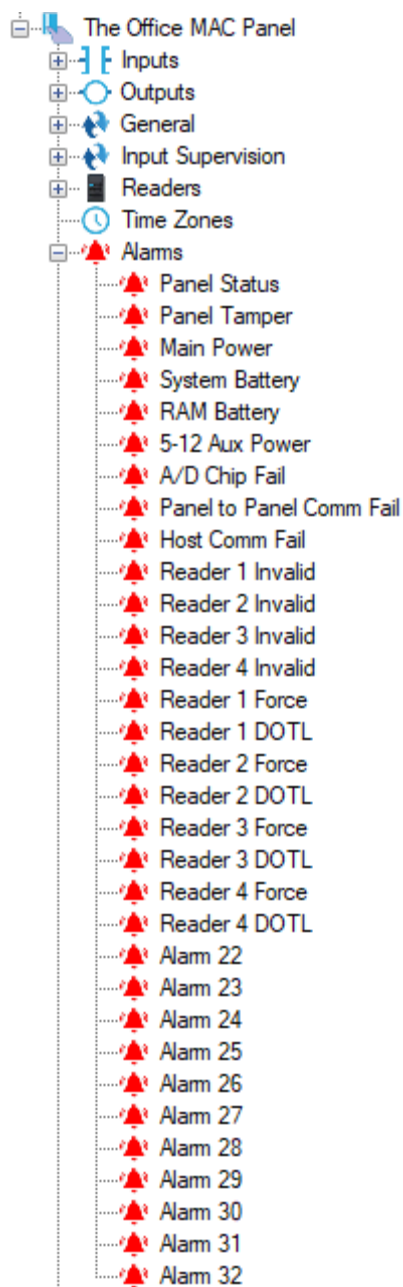


Figure 84 - Example MLC-4R Panel Alarms

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Alarm points 1-13 for the MLC-4R, 1-13 for the MAC-4R (Legacy), and 1-9 for the other panel types are predefined and reflect different types of hardware-related alarms. They are used by the firmware and should not be set by Intelli-Site programming only monitored for state changes. The points beyond that are user-definable and should be renamed to reflect the true nature of the alarm. The Alarm points are not physical points on the panel but reside in the panel's memory. The ladder programming of the panel ties the inputs together with the alarm points to create alarms when all the conditions have been met. In the example figure below, the door alarms are programmed for points 14 – 21, the Force and DOTL alarms for each door/reader. These points are automatically programmed by Intelli-Site when an MLC-4R is added to the project.

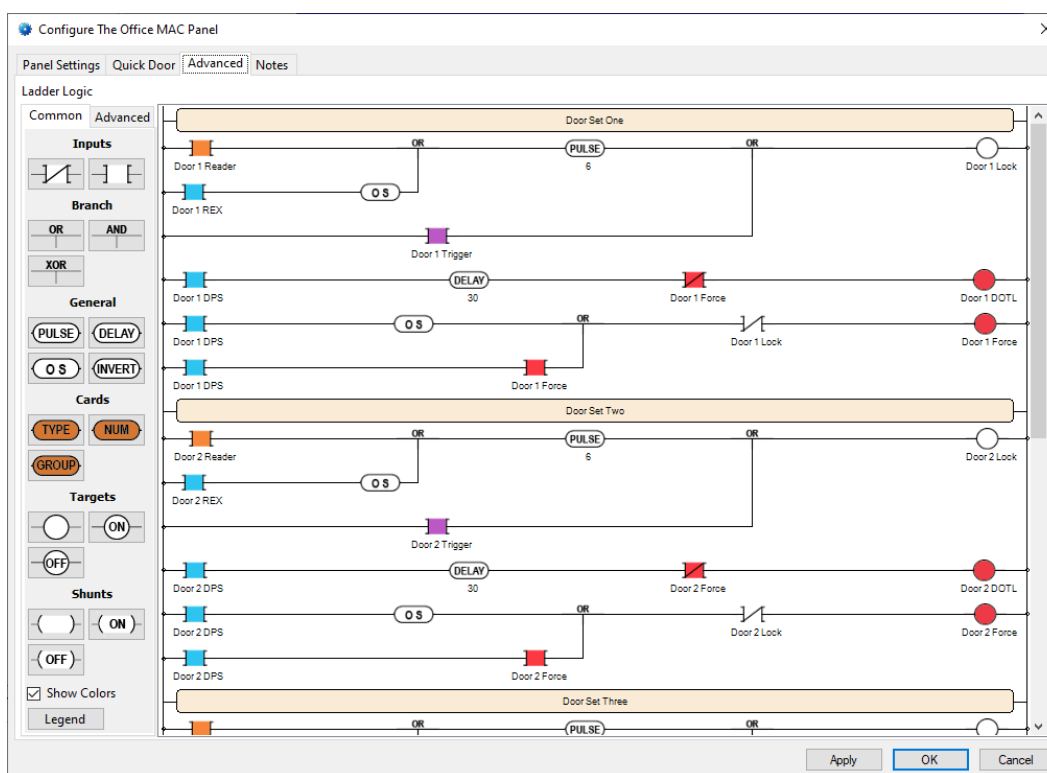


Figure 85 - Example Ladder Logic Programming for Door Alarms

It is assumed that the user is familiar enough with access control panel alarms that an explanation of those alarms would be redundant. Only those alarms specific to a MAC panel will be discussed.

Panel Status – Point is high when the driver is not connected to the panel. The panel is considered offline.

MAC Panel Guide

Panel Tamper – Point is high when tampering has been detected by the panel via the tamper switch.

Main Power – **OBSOLETE** Older models of the panels were powered using A/C transformers. This point was set high when main power is lost and the panel is using the battery. All current models of MAC are always DC.

System Battery – **OBSOLETE** Point is high when the system battery power is low and in need of replacement.

RAM Battery – Point is high when the RAM battery power is low and needs to be replaced.

5-12 Aux Power – **OBSOLETE**

A/D Chip Fail – Point is high when an A/D chip failure is detected. A/D Chips monitor inputs and provide status. When this alarm point is high the A/D chip is no longer functioning.

Panel to Panel Comm Fail – Point is high when a panel-to-panel communication failure is detected. Ladder logic can communicate peer-to-peer to control I/O. If this alarm goes high the panel was not able to control the remote I/O on another panel.

Host Comm Fail – Point is high when a host communication failure is detected. If the panel attempts to send an event to Intelli-Site (a.k.a. the host) and fails, this point is alarm is set high. The panel continues to send the same event over and over again until it gets through.

“reader” Invalid – Point is set when the “reader” has detected an invalid card or PIN read; This point is not programmed to be transmitted to the host because invalid card reads are handled differently. This point is used in ladder logic locally on the panel. The name of the point is changed when the name of the reader is changed.

Each of these points are standard I/O Points with no additional properties.

MAC Panel Guide

Power Up Alarms

Each MAC panel has a set of power up alarm points. These alarms are events that happen during start up allowing Intelli-Site to log these events. As these events come in from the panel, these points are pulsed and written to the log.

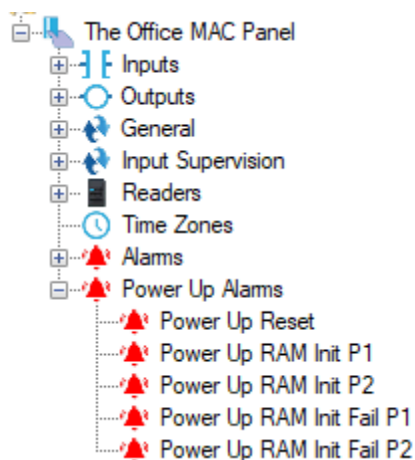


Figure 86 - Example MAC Panel Power Up Alarms

Adding Card Formats to Access Management View

 **Access Management View** lists the most commonly used card formats in the **Card Format** field. The MAC panel supports more card formats than are listed. Also, a custom card format can be defined. (See [Properties tab](#).) To use a format not listed in the **Card Format** field in  **Access Management View**, the format must be added to the **Card Format** field's list of values.

The **Card Format** field is a database control field on the **Card Data** screen. To edit it, go to  **Design View**. In the Project Node Tree, expand **Cardholder Control->Card Data Screens->Card Data->Card Data->Card Format**.

MAC Panel Guide

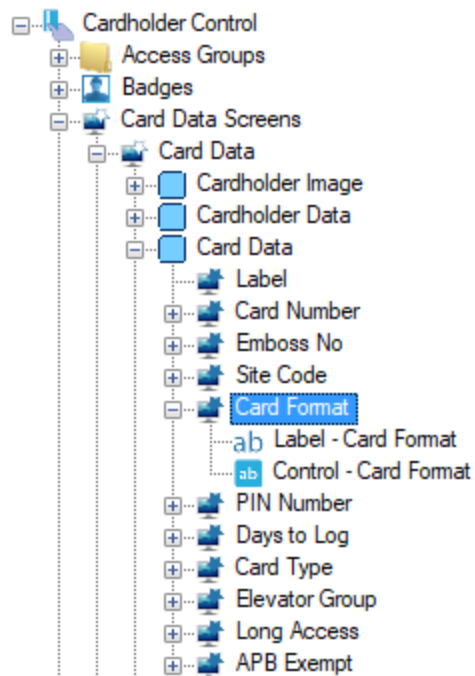


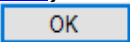
Figure 87 - Card Format screen object location

Righth+click on the **Control – Card Format** node and select *Properties* from the context menu. The properties dialog for the database control screen object displays.

MAC Panel Guide

The screenshot shows the 'Control - Card Format' dialog box. The 'Name' field is 'Control - Card Format', 'ID' is '275', 'User Level' is 'All Access', and 'Control Type' is 'Combo Box'. The 'Values' list contains several entries, each with a format name and a value separated by two colons. The 'Location' section shows 'X Position: 94', 'Y Position: 271', 'Width: 112', and 'Height: 23'. The 'Display' section has a 'Font' button. The 'OK' button is highlighted.

Figure 88 - Card Format database field control properties dialog

The **Values** list contains the items in the drop-down list for the **Card Format** field. This list is populated with the most used card formats. Each line in this list has the text to display on the screen and the value to store in the database separated by two colons (;). The value stored in the database is also what the panel uses to identify the card format. To add a format to the list, click in the **Values** box and add a line following the prescribed formatting. For example, we want to add the HID 40-bit LSB format. The panel uses 40 to identify this format. (See [Supported Card Formats](#)) The new line would read *HID 40-bit LSB;;40*. Then click the  button.

Now when a card is being added, the **Card Format** drop down list contains *HID 40-bit LSB*.

Note: The reader must be configured to use the desired card format as well. (See [Readers Table](#).)

MAC Panel Guide

The Door Construct

The door construct is a powerful tool to collect hardware and actions that are part of operating a door in a security or access control environment. It quickly and efficiently performs the majority of the programming necessary. The Intelli-Site User's Guide fully describes the ins and outs of the door construct. Please read it. This Panel Guide will not go into the details of a door construct only in how the MAC panel can be used with it.

Intelli-Site has made the creation of door constructs as simple as drag and drop. It helps if you expand the **Constructs** node to reveal the different constructs nodes. And expand the **System Layout**, **Site**, and **Area** nodes.

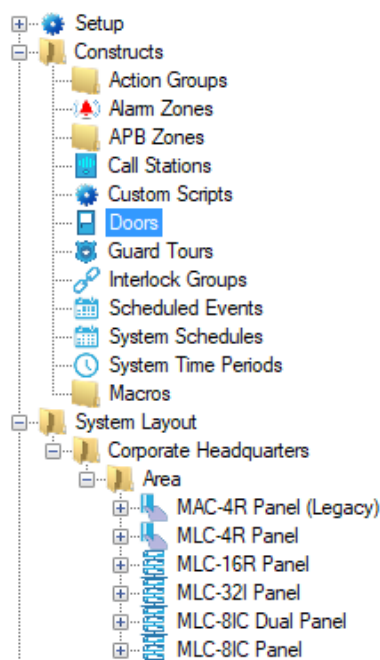


Figure 89 - Project Node Tree displaying Constructs and panel nodes

With the mouse, grab an MLC-4R panel and drag it up to the **Doors** construct node and drop it. Intelli-Site pops up a confirmation dialog. Click . Expanding the **Doors** construct node reveals a new group node named for the MLC panel. Under that node are the door construct nodes, one for each of the readers on the panel.

MAC Panel Guide

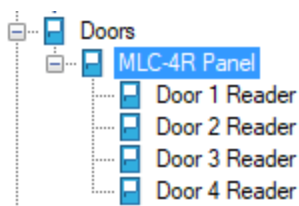


Figure 90 - Door Construct nodes

Each of these constructs can be dragged onto the screen to automatically create screen objects to represent these doors. Please read the Intelli-Site User's Guide to truly grasp the power of the door construct.

Panel Control Screen

When a panel is added to the Project, a popup screen is added to the Tree as well. This is the panel control screen that is displayed in  **Hardware Management View**. This popup screen can be found by expanding **Screen Control**→**Popup Screens**. Here you will find a node named for the area in which the panel was added. In the example used in this document, the panel was added to the area named **Area**. Therefore, the node that groups these panel control screens is named **Area Popup Screens**. Expanding this node reveals the panel control screen nodes.

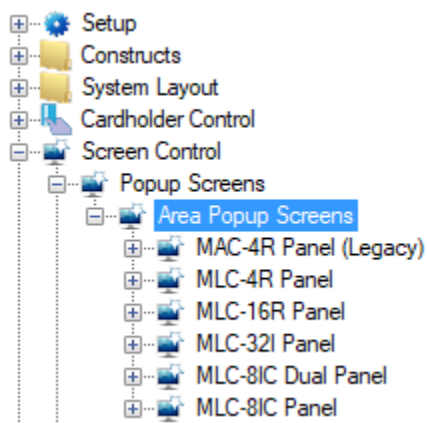


Figure 91 - An example Panel Control Screen popup screen node in the Project Node Tree

The node name of the panel control screen popup screen reflects the panel type and not the specific panel. The panel to which the popup screen is linked is denoted in the **Base Object** field of the popup screen's properties.

MAC Panel Guide

[1990] Area Popup Screens\MLC-4R Panel

Properties

Name: MLC-4R Panel ID: 1990

User Level: All Access

Notes:

Width: 910 X Position: 0

Height: 595 Y Position: 0

Background: Base Object: [1884] MLC-4R Panel

Transparent Background (PopUp action only):

Display/Dismiss Actions

Event: On Display

	Action	Target
1		
2		
3		
4		
5		

Insert Delete

OK Cancel

Figure 92 - Panel Control Screen node properties dialog

To display this popup screen in  **Live View**, an action grid must be programmed to do so. Use either the **PopUp** or **PopUpDialog** action with the popup screen node as the target. The **PopUpDialog** action allows the user to move the dialog around the screen and to dismiss it. **PopUp** does not.

Note: Drag and drop of the popup screen node onto the design area will create a button that pops up the popup screen. This gives you a starting point.

MAC Panel Guide

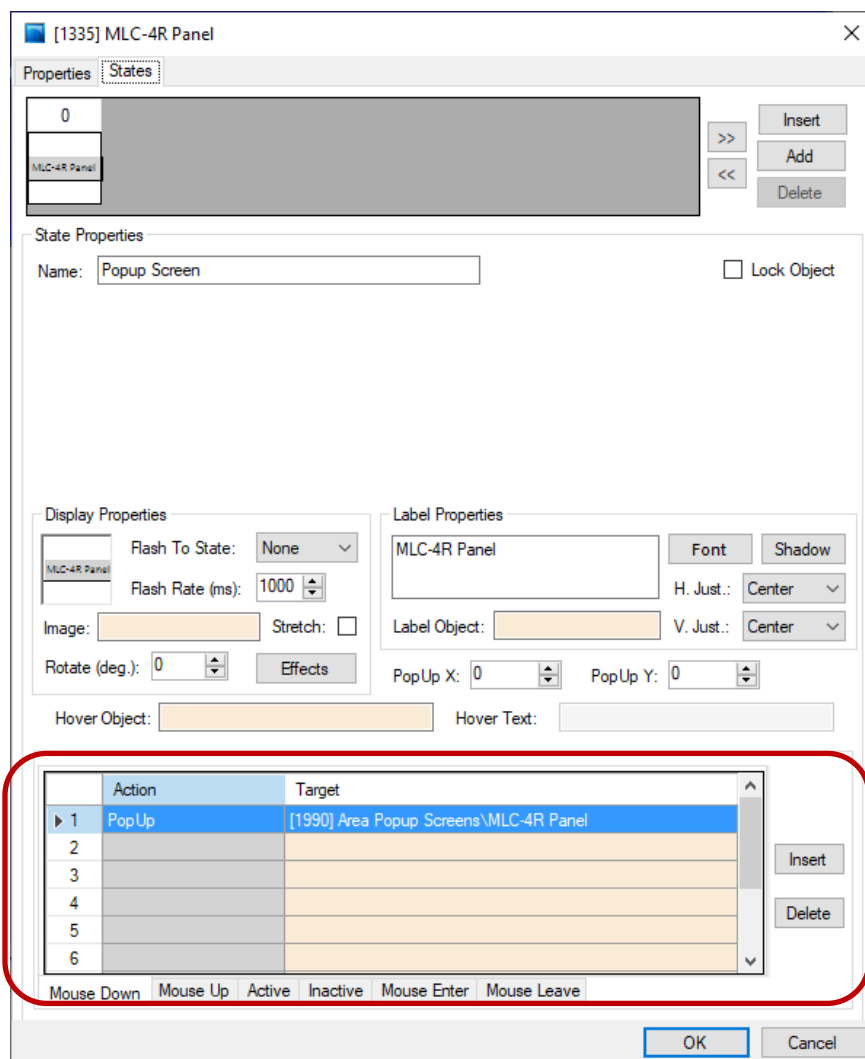


Figure 93 - Example programming to popup a Panel Control Screen

To dismiss the popup screen, an action grid must be programmed to do so using the action **Popoff**.

MAC Panel Guide

Ladder Logic Programming

All MAC panels are intelligent, programmable modules. They can be configured to meet the individual needs of any installation. The programming uses ladder logic. Ladder logic is a graphical programming language that can be thought of as a rule-based language rather than a procedural language. Each rule is a “rung” in the ladder.

The ladder logic for any panel is located on the **Advanced** tab of its **Quick Config** dialog.

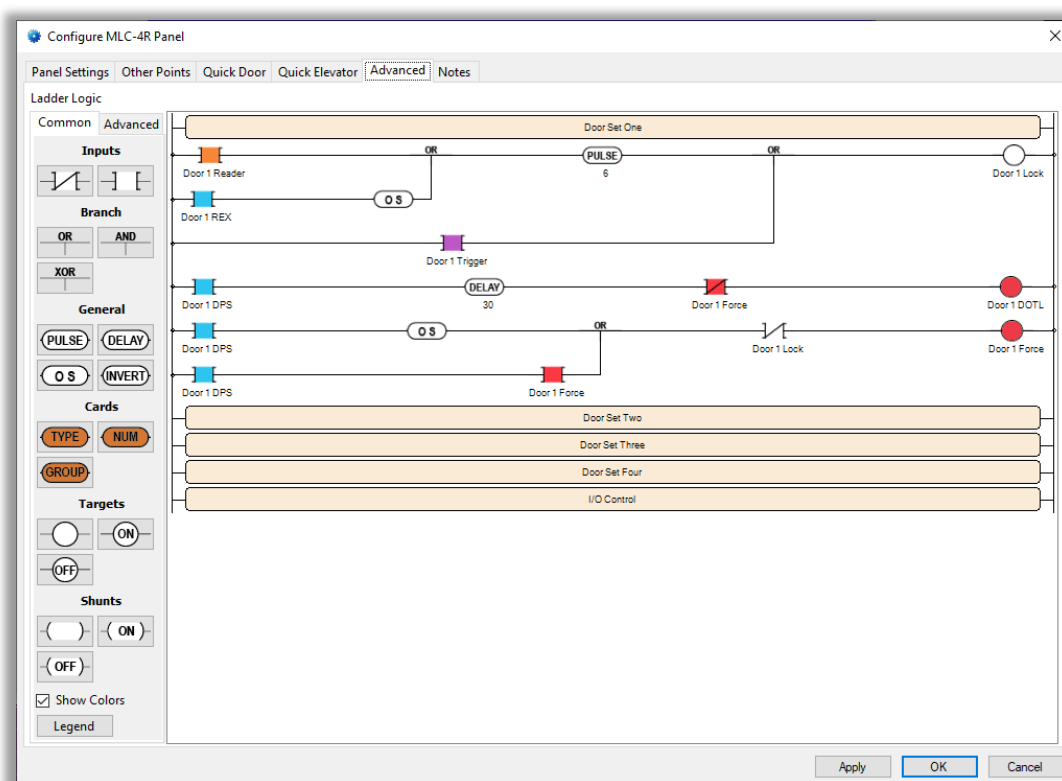


Figure 94 - MLC-4R panel Quick Config: Advanced tab

The figure above shows the ladder logic for one door. The basic door ladder logic has three rungs. Arguably, the easiest way to distinguish each rung is to locate the target points on the right. In the above example, there are three target points: **Door 1 Lock**, **Door 1 DOTL**, and **Door 1 Force**. Therefore, there are three rungs. Clicking on each rung will highlight the whole rung, making it easier to see what the programming entails.

MAC Panel Guide

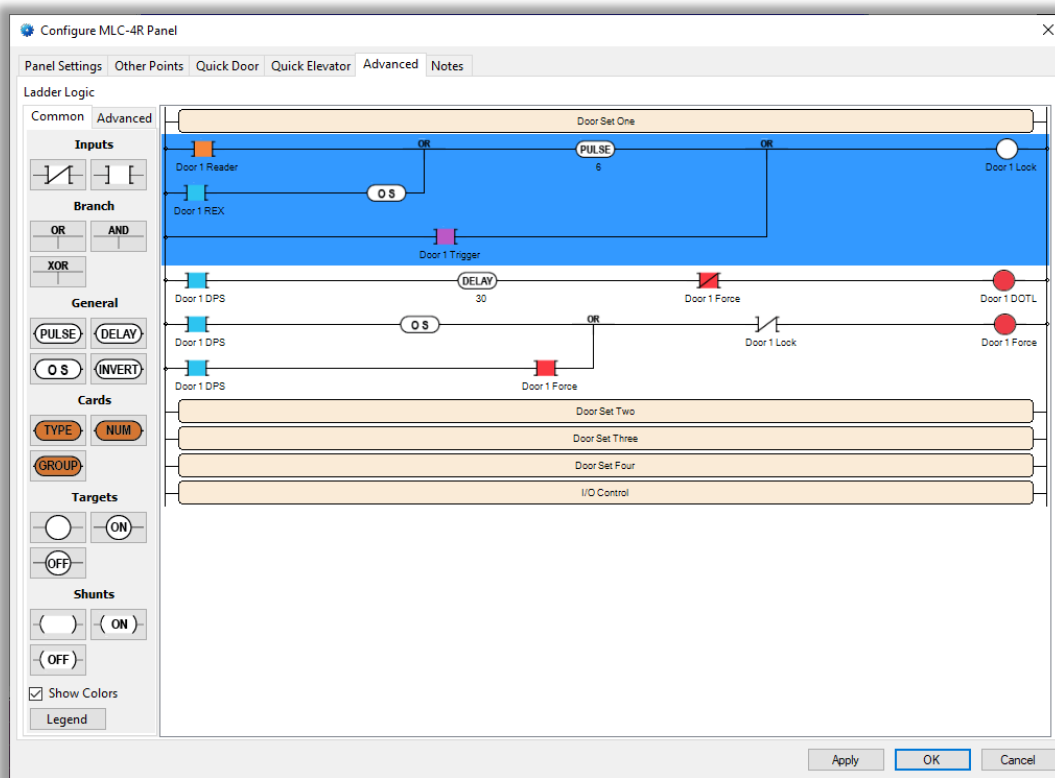


Figure 95 - MLC-4R panel Quick Config: Advanced tab with a ladder logic rung highlighted

Each rung is read from left to right like an electrical drawing. When the conditions are met (true or non-zero), the target is acted on as defined. Each command point must be evaluated as non-zero (true) to flow to the next command point. When looking at the drawing, you cannot look at the point as being opened or closed. A point is either in its normal condition (set off) or active (set on) condition.

In the above example, the first rung controls the output for the door; the conditions to unlock the door and for how long. The second rung defines the conditions for a door held open too long alarm. The third rung sets the door forced alarm if the door is opened while the door is locked.

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Basic Rules

Before we can go into the rules themselves, we need to understand the symbols and colors. The colors were added to clarify the type of point at a glance.

- Input points are  blue.
- Input Supervision points are  blue hatched.
- General points are  purple.
- Alarm points are  red.
- Time Zone points are  yellow.
- Card Reader points are  orange.

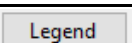
The colors can be disabled by clearing the **Show Colors** checkbox.

The input symbol defines the normal state of the point.

-   Normally open input
-   Normally closed input

The target or shunt symbols define the action to take when the rung evaluates high.

-  Target will follow the action of its evaluation state
-  ,  Target will latch as indicated based on the high evaluation state. (See [Latch.](#))
-  Shunt will follow its evaluation point
-   Shunt will latch as indicated based on its evaluation state (See [Latch.](#))

Note: Click the  button to open the Ladder Logic Legend dialog for an explanation of all of the symbols.

The following rules apply to ladder logic programming.

1. The first point coming off the left-hand side of the screen is always considered a source or decision point. All source and decision points should have a point name and use either the  command or  command.

MAC Panel Guide

2. All source or decision points in the rung must be from this panel that is being programmed.
3. The last point on the right side of the rung is the target point. It can be taken from the **Output** points, the **General** points, or the **Alarm** points from this panel or another panel in the chain. If the target is from a different panel, the name of the point under the symbol is **blue**. See [Add Rung](#) for more information.
4. **A point can be a target only once in all the ladder logic on a panel.** If the point is not showing in the list of available points, it has been used as a target elsewhere in the ladder.

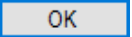
Note: When comparing single points, use the Branch command set.

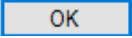
MAC Programming Template Panel

Before going any further in explaining ladder logic programming, let's consider that the programming of one panel will be the same or similar on many panels in a larger facility. Wouldn't it be great if you could reuse the programming of one panel for another panel or several other panels? Enter template panels. Template panels allow you to program and store ladder logic in one location and use this programming in the real panels. Think of it as writing functions in software. Except for specific parameters, the ladder is exactly the same over and over again. Writing the ladder once is so much faster than writing it again and again for every panel at the facility.

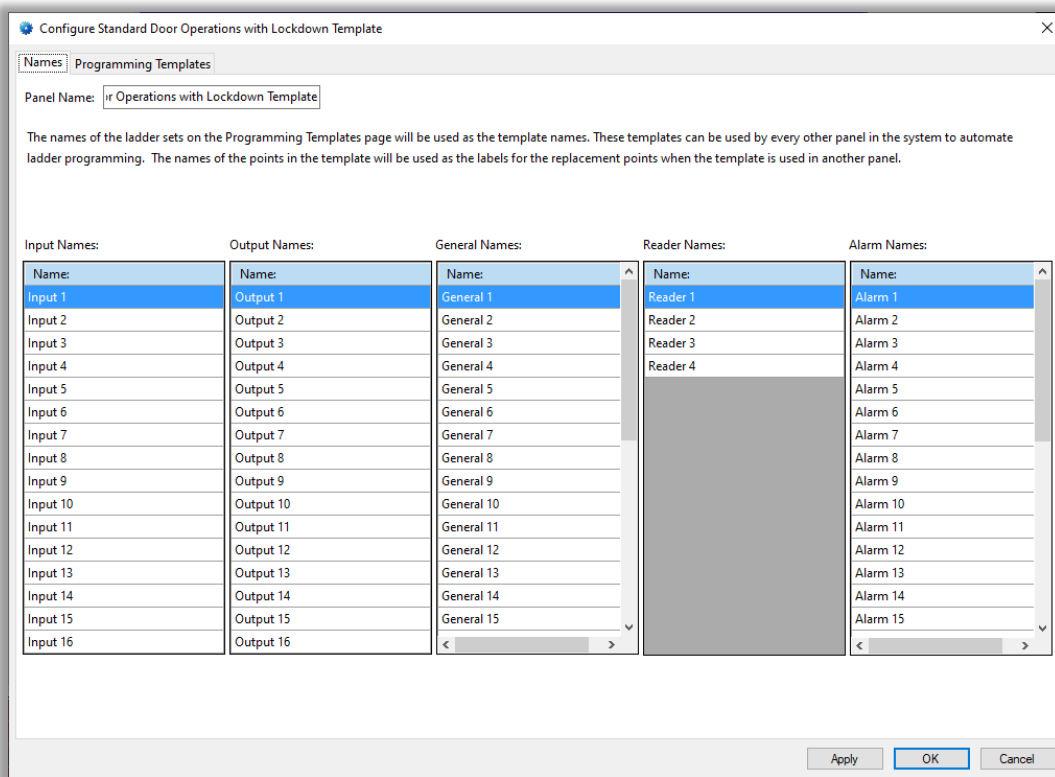
Because the MAC programming template panel is a system tool and not associated with any hardware, it is added and managed in  **Design View**. It is added to an area under **System Layout** like any other panel or system tool. Before adding the template panel, please consider carefully how the template panels will be organized. Do you want to see them in the area the panels using them exist? Do you want to keep the template panels segregated like a library? There is no right or wrong answer. It's how you will remember it and what looks pleasing to you. In the following example, a new area named "MAC Panel Templates", was added to store all of the template panels.

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Right click on the area node in the Tree and select *Add Node and Edit*. The **Add Panel** dialog displays. Locate the **OSSI – MAC** option and expand it. The first panel listed is the **MAC Programming Template Panel**. Select it then click .

The **Properties** dialog for the programming template panel displays. Name it to reflect the ladder logic programming that it will contain such as “Standard Door Operations with Lockdown Template”. Click . The template panel is added to the target area.

Right-click on the template panel and select *Quick Config*.



Configure Standard Door Operations with Lockdown Template

Names Programming Templates

Panel Name:

The names of the ladder sets on the Programming Templates page will be used as the template names. These templates can be used by every other panel in the system to automate ladder programming. The names of the points in the template will be used as the labels for the replacement points when the template is used in another panel.

Input Names:	Output Names:	General Names:	Reader Names:	Alarm Names:																																																																							
<table><thead><tr><th>Name:</th></tr></thead><tbody><tr><td>Input 1</td></tr><tr><td>Input 2</td></tr><tr><td>Input 3</td></tr><tr><td>Input 4</td></tr><tr><td>Input 5</td></tr><tr><td>Input 6</td></tr><tr><td>Input 7</td></tr><tr><td>Input 8</td></tr><tr><td>Input 9</td></tr><tr><td>Input 10</td></tr><tr><td>Input 11</td></tr><tr><td>Input 12</td></tr><tr><td>Input 13</td></tr><tr><td>Input 14</td></tr><tr><td>Input 15</td></tr><tr><td>Input 16</td></tr></tbody></table>	Name:	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8	Input 9	Input 10	Input 11	Input 12	Input 13	Input 14	Input 15	Input 16	<table><thead><tr><th>Name:</th></tr></thead><tbody><tr><td>Output 1</td></tr><tr><td>Output 2</td></tr><tr><td>Output 3</td></tr><tr><td>Output 4</td></tr><tr><td>Output 5</td></tr><tr><td>Output 6</td></tr><tr><td>Output 7</td></tr><tr><td>Output 8</td></tr><tr><td>Output 9</td></tr><tr><td>Output 10</td></tr><tr><td>Output 11</td></tr><tr><td>Output 12</td></tr><tr><td>Output 13</td></tr><tr><td>Output 14</td></tr><tr><td>Output 15</td></tr><tr><td>Output 16</td></tr></tbody></table>	Name:	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8	Output 9	Output 10	Output 11	Output 12	Output 13	Output 14	Output 15	Output 16	<table><thead><tr><th>Name:</th></tr></thead><tbody><tr><td>General 1</td></tr><tr><td>General 2</td></tr><tr><td>General 3</td></tr><tr><td>General 4</td></tr><tr><td>General 5</td></tr><tr><td>General 6</td></tr><tr><td>General 7</td></tr><tr><td>General 8</td></tr><tr><td>General 9</td></tr><tr><td>General 10</td></tr><tr><td>General 11</td></tr><tr><td>General 12</td></tr><tr><td>General 13</td></tr><tr><td>General 14</td></tr><tr><td>General 15</td></tr></tbody></table>	Name:	General 1	General 2	General 3	General 4	General 5	General 6	General 7	General 8	General 9	General 10	General 11	General 12	General 13	General 14	General 15	<table><thead><tr><th>Name:</th></tr></thead><tbody><tr><td>Reader 1</td></tr><tr><td>Reader 2</td></tr><tr><td>Reader 3</td></tr><tr><td>Reader 4</td></tr></tbody></table>	Name:	Reader 1	Reader 2	Reader 3	Reader 4	<table><thead><tr><th>Name:</th></tr></thead><tbody><tr><td>Alarm 1</td></tr><tr><td>Alarm 2</td></tr><tr><td>Alarm 3</td></tr><tr><td>Alarm 4</td></tr><tr><td>Alarm 5</td></tr><tr><td>Alarm 6</td></tr><tr><td>Alarm 7</td></tr><tr><td>Alarm 8</td></tr><tr><td>Alarm 9</td></tr><tr><td>Alarm 10</td></tr><tr><td>Alarm 11</td></tr><tr><td>Alarm 12</td></tr><tr><td>Alarm 13</td></tr><tr><td>Alarm 14</td></tr><tr><td>Alarm 15</td></tr></tbody></table>	Name:	Alarm 1	Alarm 2	Alarm 3	Alarm 4	Alarm 5	Alarm 6	Alarm 7	Alarm 8	Alarm 9	Alarm 10	Alarm 11	Alarm 12	Alarm 13	Alarm 14	Alarm 15
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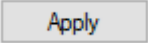
Apply OK Cancel

Figure 96 - MAC Programming Template Quick Config dialog

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There are two tabs: **Names** and **Programming Templates**. It is important to change the names of the points to reflect how they will be used the ladder logic. When it comes time to map the template points to the points on the real panel, it will be helpful if the names match their intended use. If the point will be used as the DPS, name the point something like "DPS". When programming an interlock where there are multiple doors, DPSes, REXes, etc., then the name should reflect which set of points it is part of (e.g., Door 1 DPS, Door 2 DPS, Door 1 REX, Door 2 REX, Door 1 Lock, Door 2 Lock, etc.). Our example is for a simple door. **Input 1** is renamed **DPS**; **Input 2** is renamed **REX**; **Output 1** is now **Door Lock**; **General 1** is now **Trigger**; **Reader 1** became **Reader**; and **Alarm 1** and **Alarm 2** are now **DOTL** and **Door Force**.

Note: The actual points from the panel have to match the point type in the template but not the specific point in the list. When the template is added to a panel's ladder logic the points used in the template are replaced by the actual points from the panels as the user specifies. Each replacement point will give the user the list of points that match the type in the template.

Once the points are named for the different programming templates, be sure to click  to save the changes. It's now time to use these points in programming the ladder.

How to Program Ladder Logic

Ladder Logic is programmed in a template panel on the **Programming Templates** tab of the **Quick Config** dialog. For an actual panel, the ladder is on the **Advanced** tab of its **Quick Config** dialog. How the ladder is programmed is the same for templates and panels with a few minor variations. The examples are written for a programming template, but the methods are exactly the same for a panel. Once programmed, we will discuss how to add a template to the ladder logic of an actual panel.

MAC Panel Guide

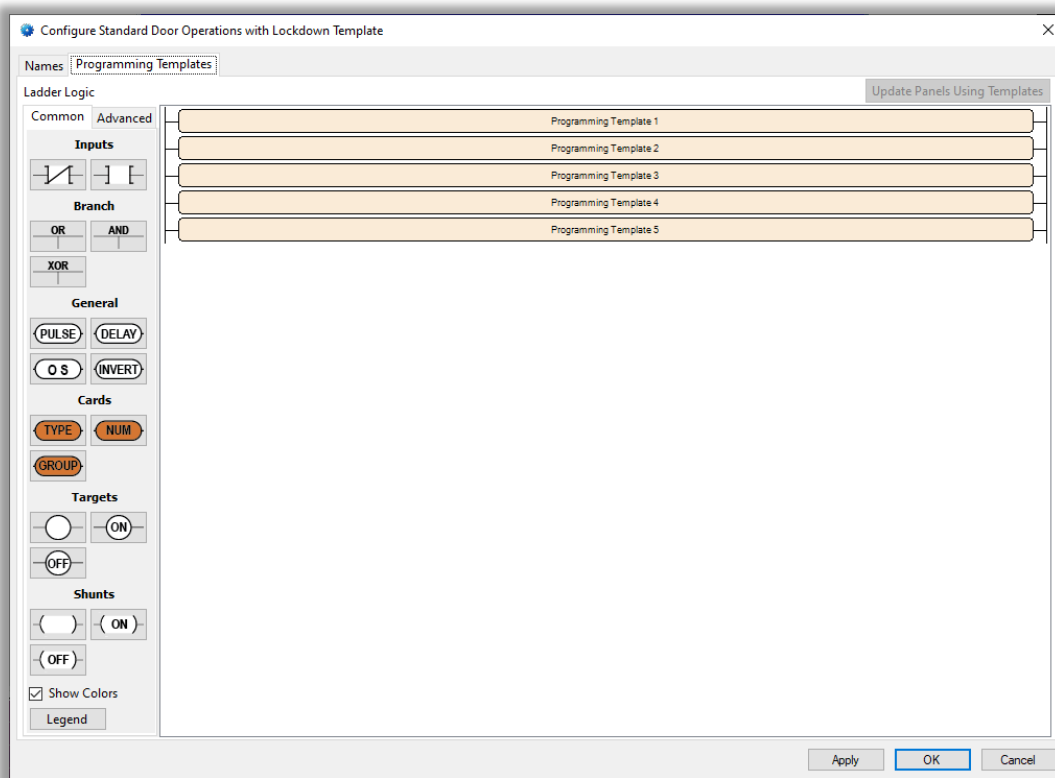
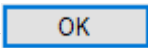


Figure 97 - MAC Programming Template Panel: Quick Config - Programming Templates tab

The programming template panel has 5 empty template ladder sets by default. An actual panel may or may not have any ladder sets initially. A ladder set holds the rungs of logic programming that are related. Clicking on a ladder set selects it. To add a new ladder set right click on the ladder logic area and select *Add Ladder Set*. The properties dialog of the new ladder set displays. Set the **Name** field such that then name describes the use of the ladder set. Then click . The new ladder set is added.

Right click on the ladder set that you want to add programming to. Select *Add Rung*. The **New Rung** dialog displays. This is where you define the input point and the target point of the rung. The simplest example is setting the door lock to follow a general point, meaning the lock is triggered by the general point.

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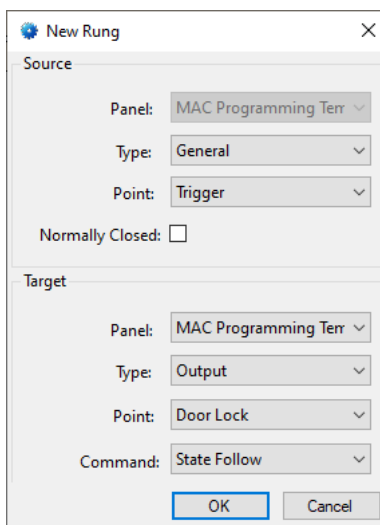
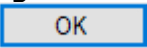
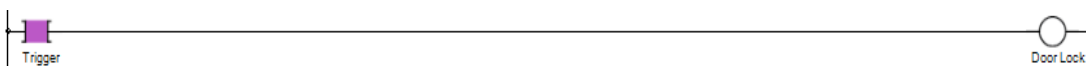


Figure 98 - New Rung dialog example

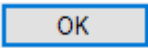
Notice the **Type** field is set to *General*, and the **Point** field is set to *Trigger*. One of the General points is named Trigger because we want to use it as the trigger for the Door Lock. The **Command** is set to *State Follow* so that the Door Lock follows the Trigger. When the trigger is high the lock is high. When the trigger is low, the lock is low. Click . A new rung is added to the ladder set.



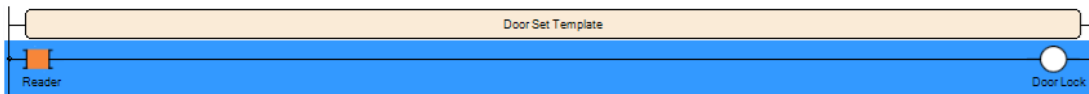
Pretty easy, right?

Now let's program a typical door set. A door set will pulse the door lock for 6 seconds on a valid card read, or pulse the door lock for 6 seconds when the REX is pressed, or the lock will follow the trigger. There are also two alarms associated with a door. One is door open too long (DOTL) and the other is Door Forced.

Unlock the Door

Add a rung to the ladder set for the door. The example ladder set is named "Door Set Template". The first condition for this rung uses *Reader* as the input **Type** and the **Point** is the reader for the door being programmed. After clicking , the new rung looks like this.

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This rung will unlock the door on a valid read. But we want to pulse the door lock so that it will relock after 6 seconds. Drag and drop the **PULSE** icon onto the rung between the input and the output points. The **Command Value** dialog displays.

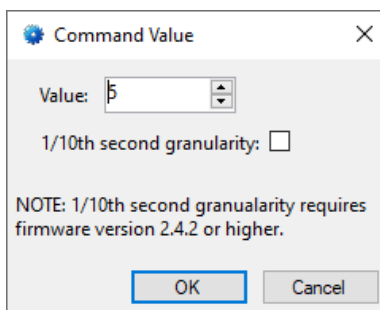
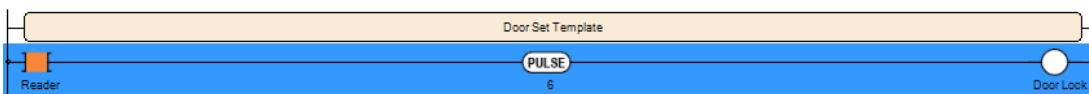


Figure 99 - Command Value dialog

Enter the number of seconds to pulse the lock then click **OK**. The command is added to the rung.



Now let's add the REX button press. The desired behavior is if there is a valid read **or** the REX button is pressed, pulse the door lock for 6 seconds. This means we need an **OR** branch before the **PULSE** command. Drag and drop the **OR** icon onto the rung before the **PULSE** command. A **New Branch** dialog displays.

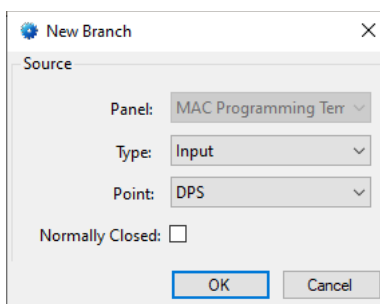
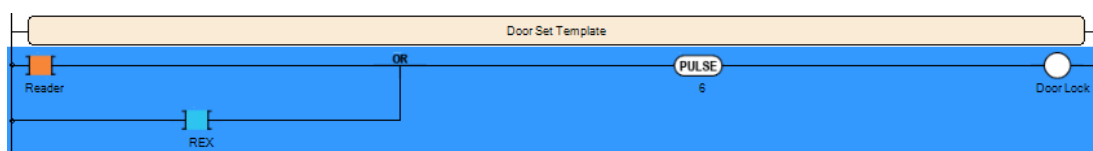


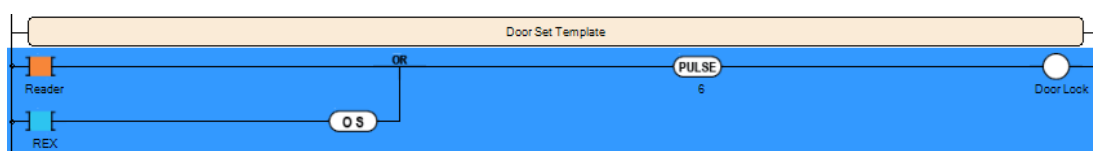
Figure 100 - New Branch dialog

MAC Panel Guide

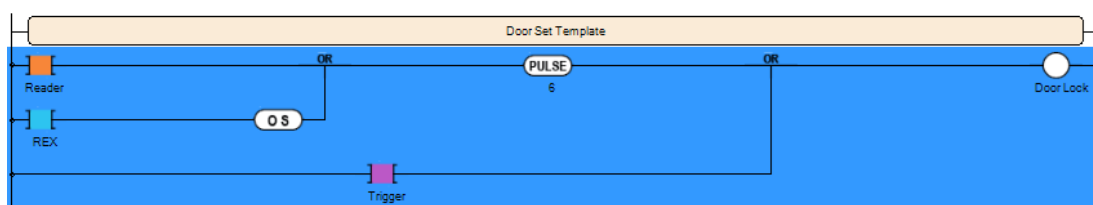
Select the **Type** and **Point**. In the example, the REX point is an *Input*. Click . The branch is added to the rung.



We don't want the lock to be pulsed multiple times while the REX is held. We want to unlock the door when the REX button is pressed but not stay unlocked if the button is held down. We do want the door to unlock for the duration of the pulse, then lock. When the REX button is pressed again after it was released, pulse the lock again. We want the door to unlock once per button press. We need to make the button push a "one shot". Drag and drop the **OS** icon onto the branch after the REX.



The third condition that will unlock the door is the door trigger. We want the lock to be unlocked as long as the door trigger is high. Therefore, the **OR** must be after the **PULSE** command. Drag and drop another **OR** onto the rung after the **PULSE** command. In the **New Branch** dialog set the **Type** and **Point** fields to the door trigger. Click . A second branch is added to the rung.



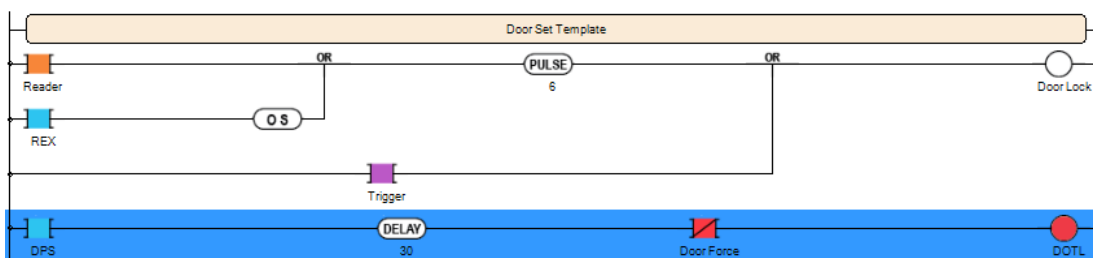
Now let's address the two alarms associated with this door.

Door Alarms

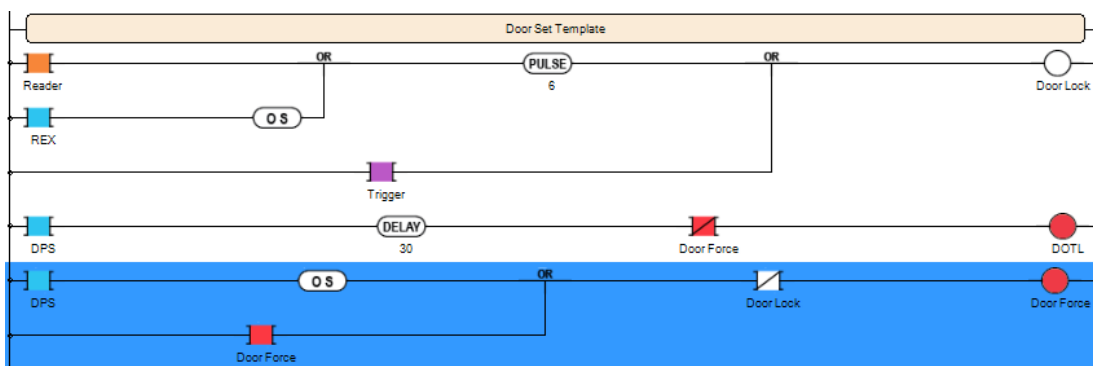
Both the DOTL and the Door Force alarms are related to the DPS. Each alarm point will be a separate rung because a rung can target only one point.

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The DOTL alarm follows the DPS, but only if the DPS has been open for more than 30 seconds and the Door Force alarm isn't high. The Door Force alarm is a higher priority alarm. If the door is forced, we don't need to see the DOTL alarm repeatedly. We do need to see that the Door Forced alarm until it is no longer forced.



The Door Force alarm should be set when the DPS goes high while the door is locked, or it should remain high while the DPS is high, and the Door Force alarm is high. If the door closes, the Door Force alarm should go low. Therefore, it is set to follow.



Note: To save the changes to the ladder logic, click or

.

[Appendix III – Ladder Logic Commands](#) describes each of the ladder logic command.

After the templates have been programmed, return to  **Hardware Management View** [Setup](#) to add the drivers and panels.

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Ladder Logic Context Menus

There are many different context menus. Each ladder set, rung, and command has a context menu. Each menu contains options that pertain to the specific object and options that affect the rung or ladder set as a whole. Therefore, we will discuss every possible option but not every possible context menu. If the context menu is missing an option, assume it doesn't apply to the object that was the target of the right-click.

Properties

Opens the properties dialog for the object.

Ladder Set Properties Dialog

The ladder set has one property, **Name**.

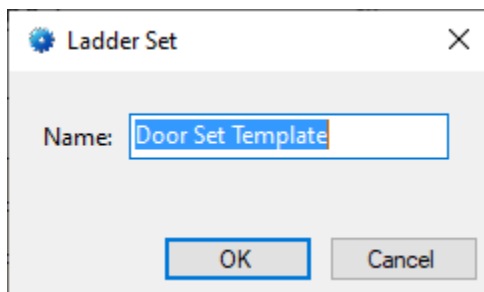


Figure 101 - Ladder Set dialog

Command Value Properties Dialog

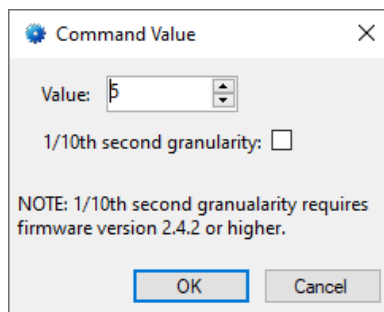


Figure 102 - Command Value dialog

Value – (numeric; default: *Changes depending on the command*)

MAC Panel Guide

1/10th second granularity – (checkbox) when checked the **Value** is treated as tenths of seconds instead of seconds. **Note that 1/10th second granularity requires firmware version 2.4.2 or higher.**

Point Command Properties Dialog

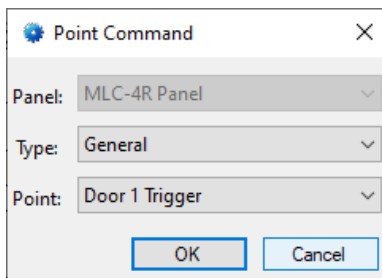


Figure 103 – Point Command dialog

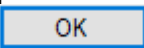
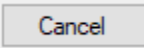
Panel – drop-down list (values: the panels on the same chain, default: current panel disabled) the source of the points for Type and Point fields

Type – drop-down list (values: the types of points on the panel) the set of points to uses as the option for the field **Point**

Point – drop-down list (values: the points of the selected **Type**) the selected option is point that is the source for this command

Note: When using a Byte Input command, care must be taken when selecting the Point. The panel internally groups the points as 1-8, 9-16, 17-24, etc. Referencing any point in a group with a Byte Input command will be the group to which that point belongs. Best practices dictates using the root point of a group as defined by the panel to ensure readability in the future. For example, use General 1 for points General 1 – General 8, use General 9 for points 9-16, use General 17 for points General 17 – 24, etc.

Add Ladder Set

Opens the ladder set properties dialog to set the properties for the new ladder set. Click  to add the new ladder set;  to exit without creating the new ladder set.

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Delete Ladder Set

Delete the highlighted ladder set. Opens a **Confirm Delete** dialog to ensure you don't accidentally delete a ladder set.

Add Rung

Opens a **New Rung** dialog.

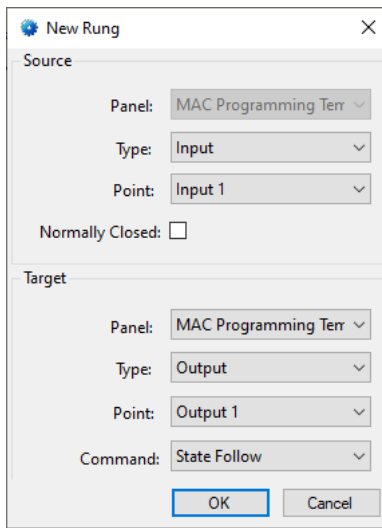
The image shows a 'New Rung' dialog box with a close button (X) in the top right corner. It is divided into two main sections: 'Source' and 'Target'. The 'Source' section contains a 'Panel' dropdown menu set to 'MAC Programming Terr', a 'Type' dropdown menu set to 'Input', a 'Point' dropdown menu set to 'Input 1', and a 'Normally Closed' checkbox which is currently unchecked. The 'Target' section contains a 'Panel' dropdown menu set to 'MAC Programming Terr', a 'Type' dropdown menu set to 'Output', a 'Point' dropdown menu set to 'Output 1', and a 'Command' dropdown menu set to 'State Follow'. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Figure 104 - New Rung dialog

Source group box – information about the rung's input

Panel – drop-down list (values: the panels on the same chain, default: *current panel disabled*) the source of the points for **Type** and **Point** fields

Type – drop-down list (values: the types of points on the panel)

Point – drop-down list (values: the points of the selected **Type**)

Normally Closed – checkbox; when checked, the input symbol used is the **Normally Closed** input. See [Input Set](#)

Target group box – information about the rung's target

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Panel – drop-down list (values: the panels on the same chain, default: *current panel*) the source of the points for **Type** and **Point** fields

Type – drop-down list (values: the types of points on the panel)

Point – drop-down list (values: the points of the selected **Type**) the target point for the rung

Command – drop-down list (values: *State Follow, Set On, Set Off, Shut Follow, Shunt On, Shunt Off*) the action to take on the target point

Note: *When the Target Point is not from the current panel, the ladder logic indicates this by using the color blue for the point's name.*



Opening the properties for the target command displays the panel name, the point type, and the point.

Delete Programming

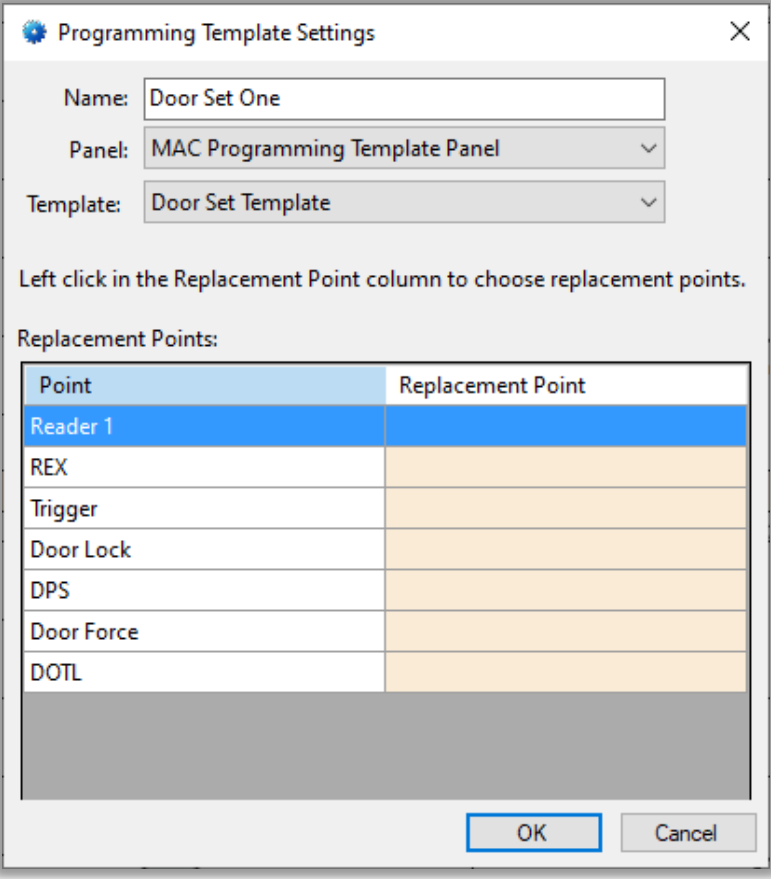
Delete all of the rungs of the highlighted ladder set leaving an empty ladder set. Opens a **Confirm Delete** dialog to ensure you don't accidentally delete all the programming of the ladder set.

Programming Template

Replace the programming of the highlighted ladder set with the specified programming template. If there is at least one rung in the ladder set, a **Confirm Delete** dialog displays to ensure you really want to replace the programming.

Opens the **Programming Template Settings** dialog.

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The dialog box is titled "Programming Template Settings" and has a close button (X) in the top right corner. It contains three input fields: "Name:" with the text "Door Set One", "Panel:" with a dropdown menu showing "MAC Programming Template Panel", and "Template:" with a dropdown menu showing "Door Set Template". Below these fields is a text instruction: "Left click in the Replacement Point column to choose replacement points." Underneath is a section labeled "Replacement Points:" containing a table. The table has two columns: "Point" and "Replacement Point". The "Point" column lists "Reader 1", "REX", "Trigger", "Door Lock", "DPS", "Door Force", and "DOTL". The "Replacement Point" column is empty for all rows. At the bottom right of the dialog are "OK" and "Cancel" buttons.

Point	Replacement Point
Reader 1	
REX	
Trigger	
Door Lock	
DPS	
Door Force	
DOTL	

Figure 105 - Programming Template Settings dialog

Name – (text box) the name of the ladder set. When this dialog is closed by clicking **OK**, then **Name** will display with the name of the template **Panel** and programming **Template** appended to it (e.g., Door Set One (MAC Programming Template Panel: Door Set Template)).

Panel – (drop-down list; values: the names of MAC programming template panels in the project)

Template – (drop-down list; values: the programming templates in the selected **Panel**)

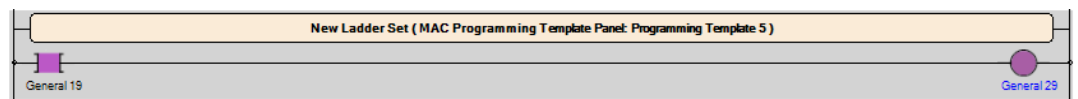
Replacement Points – (table) maps the points on the panel to the points in the template

Point – the points in the programming template

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Replacement Point – the point of the panel to pass into the template. Clicking on the cell opens the **Select Tree Item** dialog populated with the points of the same type as the template.

Note: *Both the ladder set name, and the background of the rungs indicate the ladder set was created using a template. The actual programming exists on the template panel.*



Create Multiple

Add multiple copies of the same template automatically updating the actual points used per copy. For example, an MLC-4R can control up to four doors. The programming for each is exactly the same. And let's assume there are several MLC-4R panels. Using the same template for each door would greatly shorten the programming time.

In the **Quick Config** dialog for an MLC-4R, the inputs, readers, outputs, general points, and alarms associated with a door will all update when the reader's name is updated assuming the names still follow the naming convention of "<name> Reader". Also, notice the inputs for door 1 are together, followed by the inputs for door 2, etc. It's the same for the outputs, triggers, and the alarms. *Create Multiple* takes advantage of this.

Selecting *Create Multiple* opens the **Create Multiple Template Ladder Sets** dialog.

MAC Panel Guide

Create Multiple Template Ladder Sets

Template Panel: MAC Programming Template Pa

Template: Door Set w/ lockdown

Click in a Replacement Point cell to choose the replacement point.
Setting Step to zero uses the same point for all ladder sets.

Replacement Points:

Point	Replacement Point	Ladder Set Name	Step
Reader		☐	1
REX		☐	1
Trigger		☐	1
Lockdown		☐	1
Door Lock		☐	1

Total Objects: 1

OK Cancel

Figure 106 - Create Multiple Template Ladder Sets dialog

Template Panel – drop-down list (values: a list of the MAC Programming Template panels in the Project)

Template – drop-down list (values: a list of the templates on the selected **Template Panel**)

Replacement Points – table list the points in the template and the replacement points

Point – the name of the point as it appears in the template

Replacement Point – the point on the panel to use when calling the template

Ladder Set Name – include the replacement point's name in the ladder set name

Step – where to find the replacement point for subsequent copies of the template; the number to increment the index of the list of replacement points

MAC Panel Guide

Total Objects – numeric (default: 1) the number of instances of the template to create

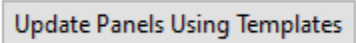
Keep Ladder, Remove Template

What if the template for a ladder set needs tweaking. The template is mostly right, but needs to be modified for one ladder set, but not all. That's where *Keep Ladder, Remove Template* is helpful.

When *Keep Ladder, Remove Template* is selected, a **Confirm Removal** dialog displays to ensure you want to break the link between this ladder set and the template. It cannot be undone.

The ladder is written to the panel's ladder logic. The background is white not grey. The name of the ladder set no longer includes the template panel name or the template name. The ladder set can be edited, deleted, and added to like any other ladder on the panel. Changes to the template will not be propagated here since the link between the template and this ladder set no longer exists.

Update All Panels Using a Template

It is conceivable that the programming of a template will be modified, added to, or updated. Maybe it has become important to implement lockdown on all door sets. When a template that is being used by at least one panel is modified such that new parameters need to be mapped, the  becomes enabled. A dialog may popup as well indicating there are panels that need to be updated. Clicking this button opens the **Update Panels Using Modified Template** dialog.

MAC Panel Guide

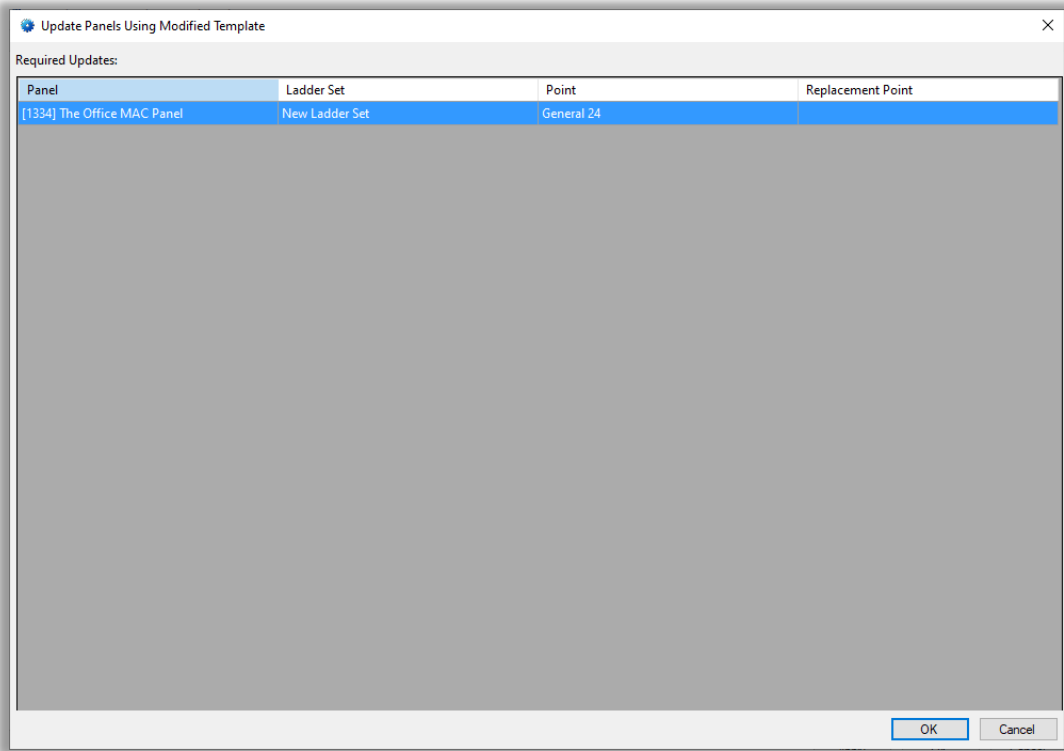


Figure 107 - Update Panels Using Modified Template

Required Updates – table listing the various panels using the modified template

Panel – the name of the panel

Ladder Set – the name of the ladder set in said panel that uses the modified template

Point – the new/modified point in the template

Replacement Point – the point from the panel or panel chain that is to map to the **Point**

Appendix I – Glossary

Anti-Passback - an access control security feature preventing credential sharing, ensuring a user must exit an area before their card can be used again to enter, enforcing a strict "in-then-out" sequence to stop tailgating and unauthorized access, often requiring dedicated entry/exit readers for tracking. It stops someone from swiping in and handing the card to a friend, adding security to places like offices, airports, or parking garages.

Anti-Passback Zone – The possible values are 0-255. Zero means this reader is part of no zones. Otherwise, each reader is assigned to an Anti-Passback Zone (1-255). Readers with the same APB Zone number are in the same zone. When a valid card read occurs, that card is placed in the APB Zone of the reader. The panel then sends out a message to all other panels, marking the card in this zone. If a card that is marked in a zone is presented to a reader in the same zone, an anti-passback violation is generated. This card must first move to another APB zone before it will be allowed access to this APB zone again.

Event Buffer Delta – the property that defines the time limit for Intelli-Site to act on an event from a panel. If the value of this property is zero (0), the software will act on every event no matter the difference in the timestamp on the event from the panel and the time the event was received by Intelli-Site. When the value is non-zero, then the timestamp of the event is compared to the time the event was received. If the difference is less than or equal to the defined time limit in minutes, Intelli-Site will act on the event and log it if appropriate. Otherwise, the event is only logged.

Latch – set and keep an output ON or OFF even after the initiating input signal (e.g., a momentary start button) is removed or the state of the rung changes. In Intelli-Site parlance, **SetOn** <output> or **SetOff** <output>. The output will remain ON/OFF until some other action or rung forces the output to change state.

MAC Panel Guide

Normally Closed - In a circuit with normally closed contacts, electricity flows through the circuit until you actuate the switch. The circuit is closed (complete) when the switch is in its normal, resting state. When there's no external force or input applied, the contacts are in physical contact with each other, allowing current to flow through the circuit. An example of a normally closed switch is the door position switch (DPS). While the door is closed, the DPS is in contact with the circuit and energy flows. The circuit is closed. When the door is opened, the circuit is broken (aka opened).

Normally Open – A normally open contact is an electrical switch or relay contact that remains open (disconnected) when at rest or not energized, preventing the current from flowing. When activated, actuated, or powered on, the contacts close, allowing electricity to complete the circuit. An example of a device using normally open contacts is a request-exit (REX) button. A REX button doesn't activate on its own, you have to push the button. Pushing the button closes the circuit, triggering the buzzer and sending the request signal up the line. Assuming everything is normal, the door lock will be unlocked.

Shunt - refers to a system that temporarily disables or "shunts" alarms for a set time during authorized entry/exit or specific operations, preventing nuisance alerts. Essentially, it's a controlled bypass of the normal alarm function for legitimate reasons or emergency intervention, not a failure.

Appendix II - Supported Card Formats

The card formats the MLC-4R supports are as follows.

- Wiegand, [26](#)
- HID 35-bit corporate card, [35](#)
- HID 36-bit card format #S12906, [36](#)
- Software House cards 36-bit HID Format # S10701, [164](#) (36 + 128)
- HID format H10304, [37](#)
- OSSI, [48](#)
- HID 40-bit LSB, [40](#)
- HID 40-bit MSB, [168](#)
- MiFare 40-bit readers
 - a. Lower 32 bits (Lower 4 bytes) as a card number, [41](#)
 - b. highest 32 bits (High 4 Bytes), [169](#)
- Morpho Sagem 520 48-bit Reader, [48](#)
- 48-bit CoreStreet FIPS201 supporting TWIX, CAC cards, [176](#)
- 75-bit format code to work with FIPS201 readers, [75](#)

A custom card format uses the number [127](#).

Note: *The reader must be configured to use the desired card format.
Enter the number in [blue](#) in the Card Bits column for the reader
(See [Readers Table](#))*

Appendix III – Ladder Logic Commands

This appendix explains the common and advanced commands of ladder logic programming. To see this information in product, click the button on the **Advanced** tab to bring up the **Ladder Logic Legend** dialog.

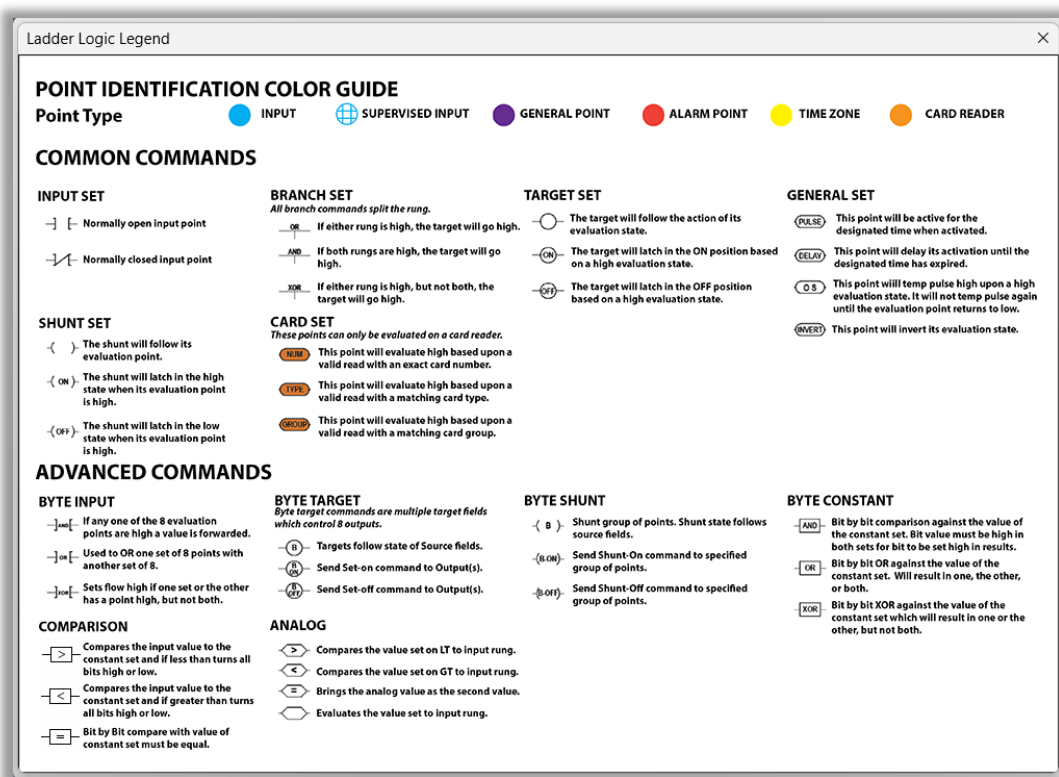


Figure 108 - Ladder Logic Legend dialog

Common Commands

The majority of ladder logic will use the common commands sets.

Input Set

The input set are those points that can be used as a source or decision point. The points used can be an **Input**, **Output**, **General**, **Input Supervision**, **Reader**, **Time Zone** or **Alarm**. Notice it is not necessarily an input point, but a point whose state can be detected. But the point must exist on the panel being programmed.

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The input symbol defines the normal state of the point.

-  Normally open input
-  Normally closed input

Branch Set

The branch set splits the rung, causing multiple conditions to be evaluated before the final action is possible.

-  If both branches are high, the rung evaluation is high
-  If either branch is high, the rung evaluation is high
-  If **only** one branch is high, the rung evaluation is high

Target Set

The target set defines what to do with the target when the rung evaluates high.

-  Target will follow the action of its evaluation state
-  Target will latch in the OFF position on a high evaluation state
-  Target will latch in the ON position on a high evaluation state

General Set

The general set qualifies the source point. The source point evaluates high. Then the general set command goes into effect.

-  The point will be active for the designated time when activated. The time is designated just below the symbol in the rung.
-  The point will delay its activation until the designated time has expired. The time is designated just below the symbol in the rung.
-  (one shot) The point will temporarily pulse high upon a high evaluation state. It will not pulse again unless the evaluation point returns to low.
-  The point will invert its evaluation state.

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Card Set

These commands can only be evaluated on a card reader.

- **NUM** This branch will evaluate high based upon a valid read with an exact card number.
- **TYPE** This branch will evaluate high based on a valid read with a matching card type.
- **GROUP** This branch will evaluate high based on a valid read with a matching card group.

Shunt Set

The shunt set defines what to do with the target when the rung evaluates high. See [Shunt](#) for the definition.

- **()** Shunt will follow the action of its evaluation state
- **(OFF)** Shunt will latch in the OFF position on a high evaluation state
- **(ON)** Shunt will latch in the ON position on a high evaluation state

Advanced Commands

The advanced commands include byte commands and analog commands.

Byte Commands

The byte commands are used to control 8 points per command as if each point is a single bit in a byte. The point supplied determines the set of points that will be monitored. If the point is in the first 8, the first 8 points will be monitored. If the point supplied is between 9 and 16 inclusively, then the second group of points will be monitored, and so on. For the sake of clarity, the point supplied should be on the 8-point boundary (e.g., General 1, General 9, General 17, etc., or Input 1, Input 9, Input 17, etc.)

Byte Input

The byte input set defines how to evaluate the 8 points of the byte that are used as the source or decision point.

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-  Input source, if any one of the 8 evaluation points is high, a value is forwarded
-  this set of points is OR'ed with the previous set of points. If one or both points are high, the corresponding "value" is high
-  this set of points is XOR'ed with the previous set of points. If one or the other point but not both is high, the corresponding "value" is high

Byte Target

The byte target set defines what to do with the target when the rung evaluates high.

-  Target will follow the state of the Source fields
-  Send Set-On command to Output(s)
-  Send Set-Off command to Output(s).

Byte Shunt

The byte shunt set defines what to do with the target when the rung evaluates high and shunting is required.

-  Shut group of points. Shunt state follows source fields.
-  Send Shunt-On command to the specified group of points.
-  Send Shunt-Off command to the specified group of points.

Byte Constant

The byte constant commands allow the user to specify a constant value in place of a second set of points. The constant set should always follow the set it is compared with.

-  Bit by bit comparison between the byte input set and the value of the constant set. A bit value must be high in both sets for the bit to be high in the results.
-  Bit by bit comparison between the byte input set and the value of the constant set. If a bit is high in either set or both sets, that bit is high in the results.

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-  Bit by bit comparison between the byte input set and the value of the constant set. If a bit is high in one set and not the other, that bit is high in the results.

Comparison

The comparison commands allow the user to compare the input value with the supplied constant value.

-  Compare the input value to the constant. If the constant is less than the input value, turn all bits high (or low).. Otherwise, the rung is set low.
-  Compare the input value to the constant. If the constant is greater than the input value, turn all bits high (or low).
-  Compare the input value to the constant. If the constant is equal to the input value, turn all bits high (or low).

Analog Commands

Every input has a value, 0-1024, 0 is open and 1024 is fully closed with no resistance. If an analog device is an input and the resistance changes, its value changes accordingly. For example, an analog device for temperature or pressure can be used to trip an alarm or relay.

While an input has a value of 0-1024 (two bytes), the rung only has a value of 255 (one byte). The constant used for comparison has to account for the difference in scale. The actual target number for comparison must be divided by 4 before entering it into the dialog in the software because 256 is 1/4th of 1024.

Analog commands provide a value for one point between 0 and 255. The point being monitored must be setup for analog operation. The MLC-4R/MAC-4R provides 10-bit resolution. When monitored, the two least significant bits are dropped.

Note: Analog points can only be input points. Set the Type field to Analog.

-  Compare the rung value to the point supplied. If the point is less than the rung, then the rung is high.

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-  Compare the rung value to the point supplied. If the point is greater than the rung, then the rung is high.
-  Brings the analog value as the second value
-  Perform an “and” comparison between two analog points or the rung and the supplied analog point. It is the same as adding a point to the rung.

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Revision History

2026-03-12 Initial Creation

2026-03-31 Reader properties dialog field name changed from "Card Bit Count" to "Card Bits" to agree with Quick Config and Panel properties dialog