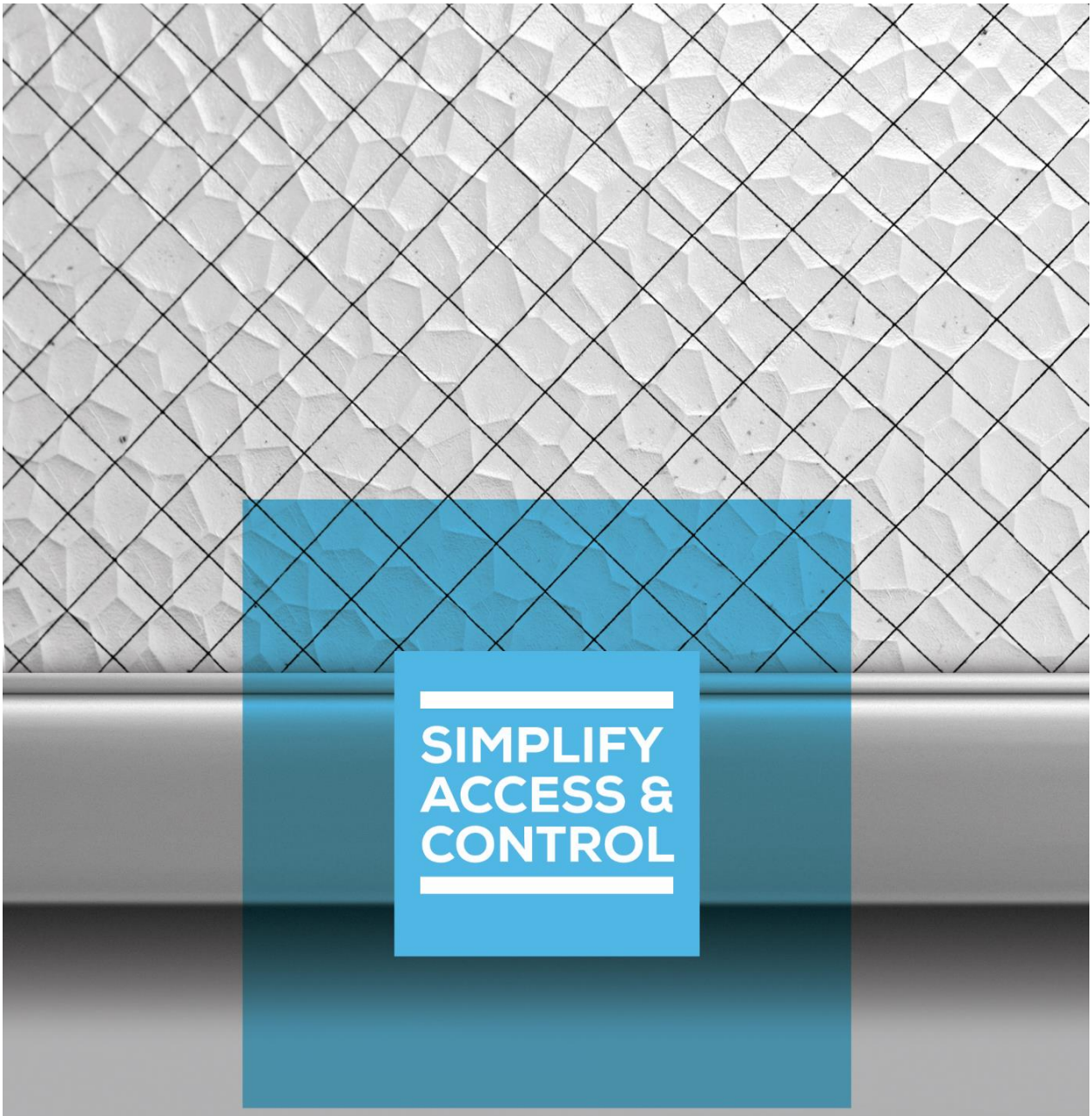

Omron PLC Panel Guide

Intelli–Site
Security Management Software

Omron PLC
Panel Guide

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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 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 messages that appear 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 Configuration Utility. *Create Support Package…* is the last option in the **Tools** menu.

Table of Contents

1 Introduction

The Intelli–Site Omron PLC panel integration was written using the OMRON SYSMAC CS/CJ/CP Series Communications Commands Reference Manual.

This guide explains using the Omron PLC with Intelli–Site Security Management Software.

2 Installation Guide

The Omron drivers in Intelli–Site must be installed. No external software is needed.

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

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

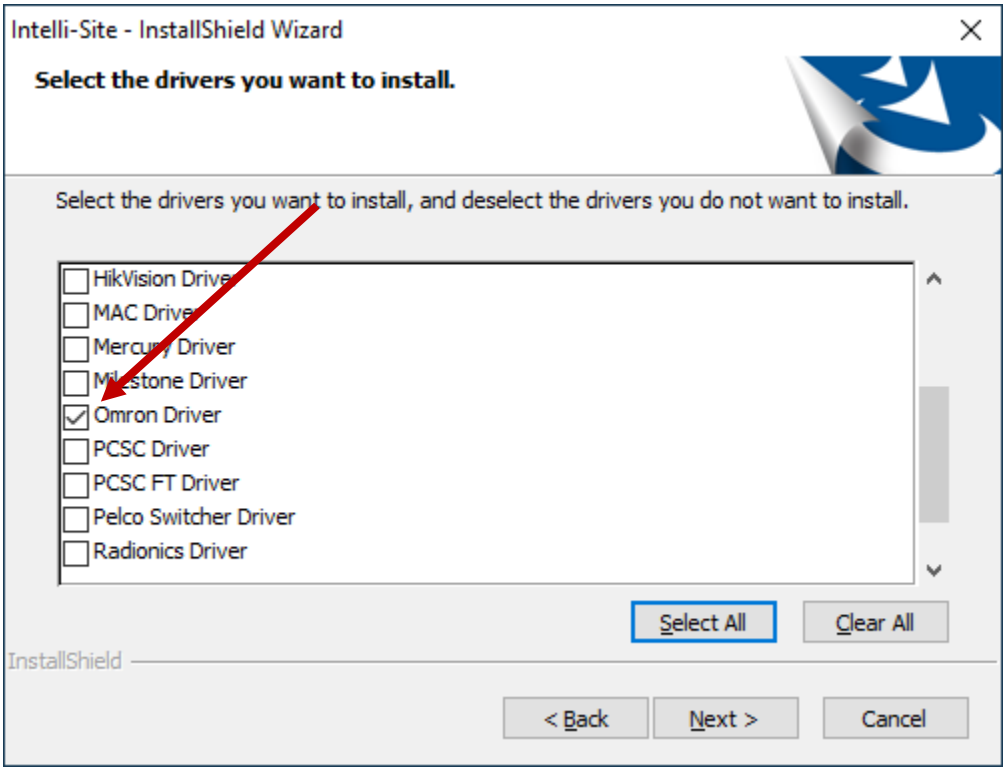


Figure 1 - Select the drivers you want to install

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

Note: It may be necessary to scroll down to locate the desired driver.

3 Hardware Management View

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

3.1 Setup

The Omron driver and Omron PLC panel are best configured in **Hardware Management View**. Before we begin though, it is a good idea to have the IP address and Port number of each of the Omron panels written down.

WARNING: There is a possible conflict in the default Port numbers for Omron and the Intelli–Site Engine Service. They both use 9600 as their default Port number. This only matters when the Omron is set up as a server so that it actively sends updates to Intelli–Site which is not the recommended setup. If Intelli–Site is required to act as a client of the Omron, you MUST change the Engine Connection Settings Port number in the Configuration Utility. This is the Port on which the Engine waits for connections from the Desktop Client and the Port number in the Desktop Client Settings.

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

1. Add an Omron driver
2. Add a Communication Method to the driver
3. Add an Omron PLC Panel
4. Configure the Panel
5. Enable the Driver

3.1.1 Add an Omron Driver

Adding an Omron Driver is simple, but important. Without it, no communication with the Omron PLC panels can occur.

Launch the Desktop Client and login.

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

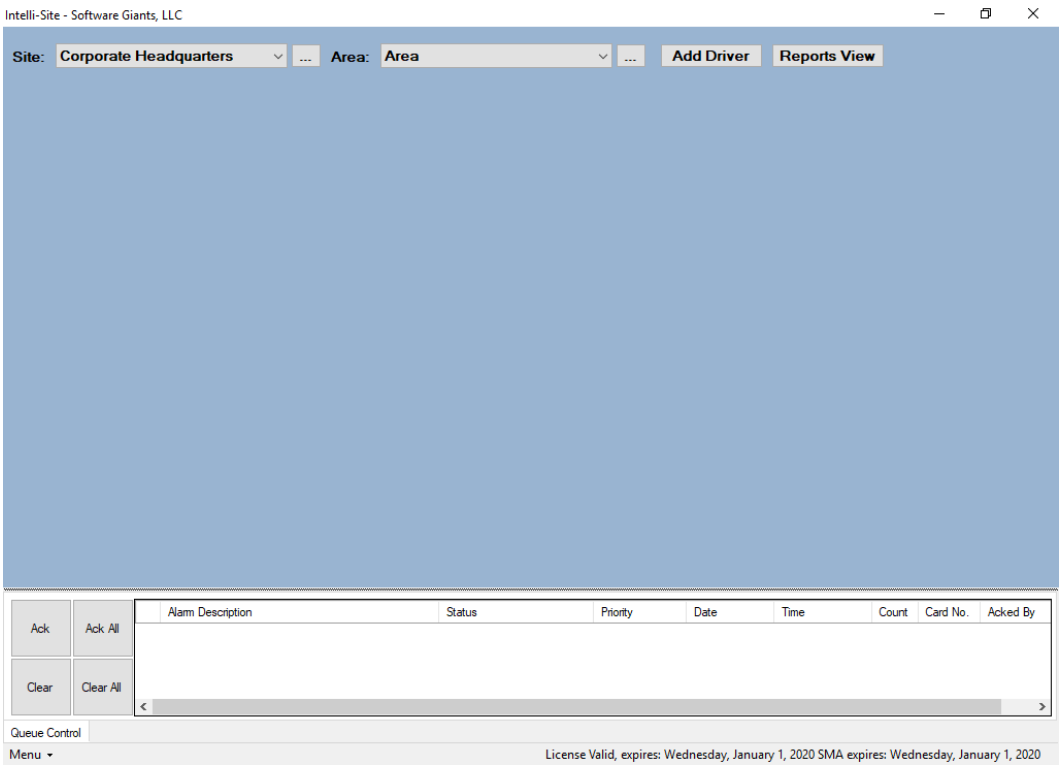


Figure 2 - Hardware Management View

To add the Omron driver, click Add Driver. The **Choose Driver Type** dialog displays.

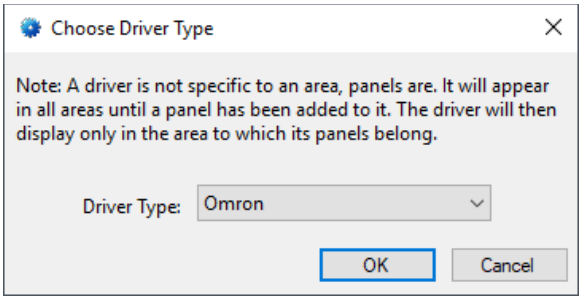


Figure 3 - Choose Driver Type Dialog

Select *Omron* from the **Driver Type** drop-down menu in the **Choose Driver Type** dialog. Click OK. A new OmronOmron PLC driver icon is added to the screen and its properties dialog opens.

Note: If only one driver is installed, the Choose Driver Type dialog does not display. The driver is automatically added and the properties dialog is opened.

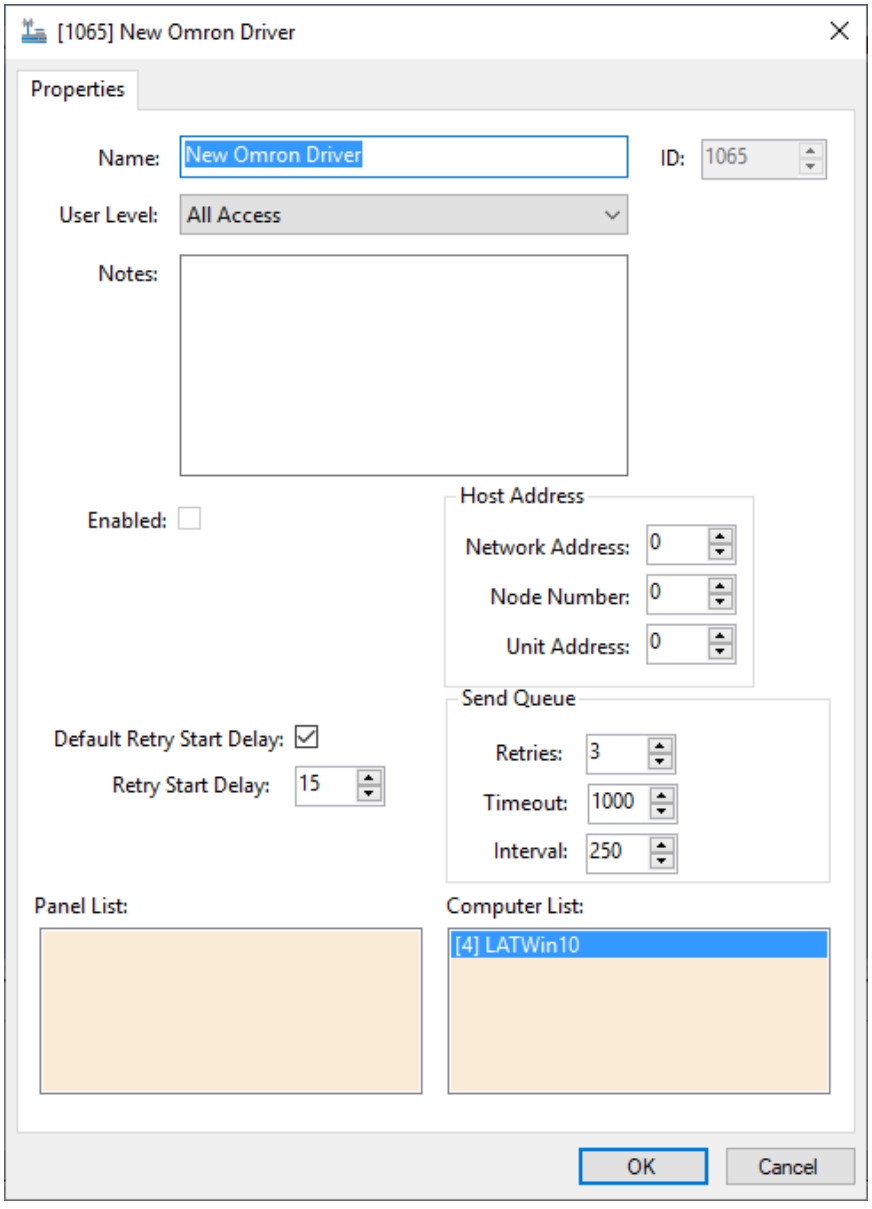


Figure 4 - Omron Driver Properties Dialog

Please change the name of the driver to reflect the use and/or location of the panels that this driver will manage. It is also necessary to set the **Node Address** field. If Intelli–Site is going to initiate the connection with the Omron PLC panel, set **Node Address** to the auto-allocated FINS Node number. If the Omron PLC panel will be initiating the communication, then set **Node Address** to the last number of the IP Address of the computer hosting the Intelli–Site Driver Service. For the example project, Intelli–Site will initiate the connection. Therefore, the **Node Address** is set to 241.

Note: For an explanation of all of the driver properties, see Omron PLC Driver Node.

Figure 5 - Omron PLC Driver Icon

Notice the warning icon,  . This appears when the driver requires a communication method and one does not exist yet. So, let's add one.

3.1.2 Add a Communications Method

Each Omron driver must have a 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. Currently, it only has one option, *Add Comm Method.* Select it. The **Choose Communication Method Type** dialog appears.

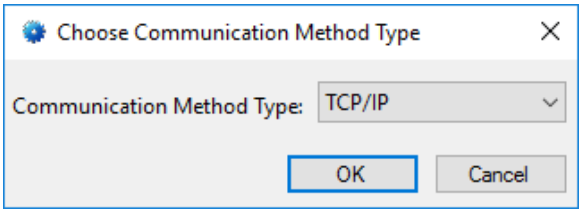


Figure 6 - The Choose Communication Method Type dialog

There are three (3) possible communication methods for any single Omron device:

- TCP/IP – the Driver will connect directly to the panel using TCP/IP ***RECOMMENDED***
- Rs232 – the Driver will connect to the panel using a COM port
- TCP/IP Listener – the panel will connect to the Driver using TCP/IP

For this example, we will select *TCP/IP* then click OK. A new TCP/IP communication method node is added to the driver and its properties dialog opens.

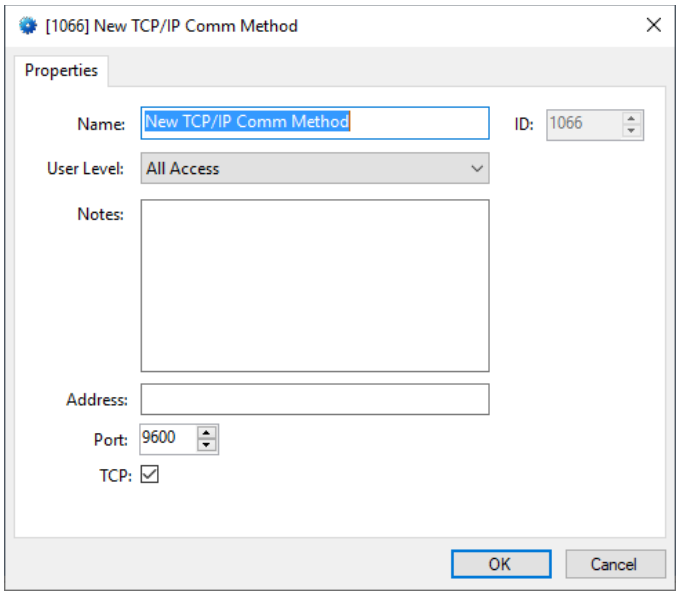


Figure 7 - The TCP/IP Communication Method properties dialog

Note: For a full explanation of all the fields on this dialog and each of the communication methods, please read Communication Method Node.

Enter the IP address of the Omron PLC in the **Address** field. When the Communication Method is added, the **Port** number is the already set to the default port number for the panel. If for some reason, the panel is set up at a different port, enter the new port here as well. Please change the name and click OK.

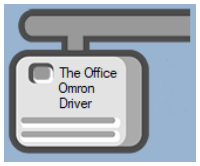


Figure 8 - The driver icon with a communication method

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.

3.1.3 Add an Omron PLC Panel

Once an Omron driver has been added, it's time to add an Omron PLC panel to it.

Right-click on the Omron PLC Driver and select *Add Panel*. The **Add Panel** dialog displays.

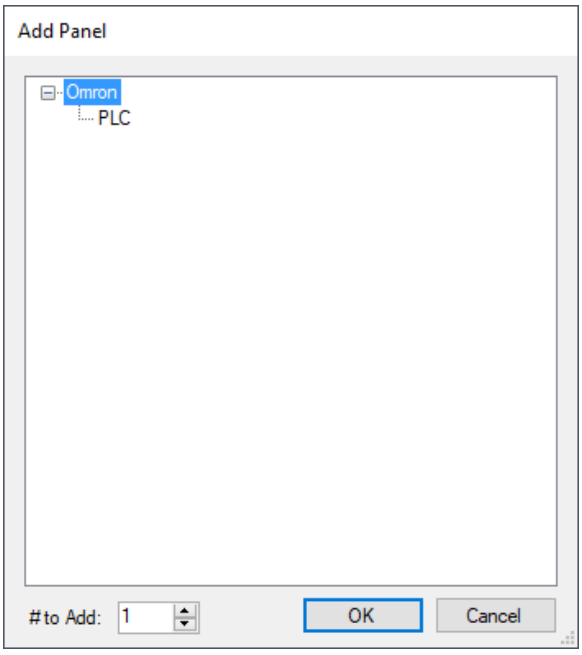


Figure 9 - Add Panel Dialog

This dialog only displays the panels that are appropriate for the target driver. Select the Omron PLC panel. Change the value of **# to Add** to the number of panels this driver will control. Additional panels can be added later. Click OK. A **New Omron PLC** icon is added to the target Omron PLC driver.

Note: Only add the panels that are controlled by the same communications module and have the same IP Address and Port Number. If either is different, a new Driver and Communication Method is required.

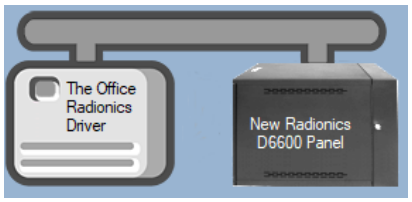


Figure 10 - A new Omron PLC panel attached to an Omron PLC driver

Next comes configuring the panel.

3.1.4 Configure the Omron PLC Panel

The Omron PLC panel is configured using the **Quick Config** dialog. To open the **Quick Config** dialog, right-click on the Omron PLC icon and select *Quick Config*.

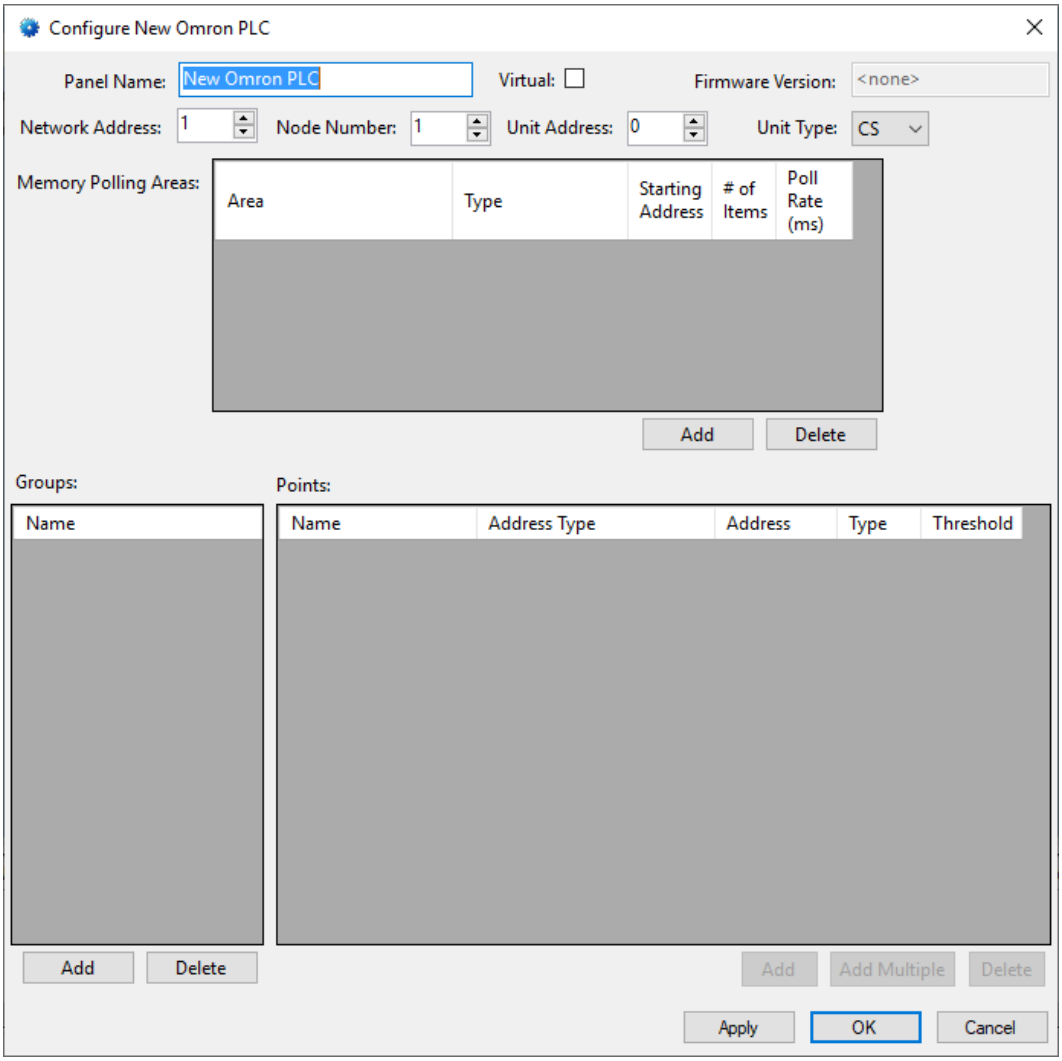


Figure 11 – Omron PLC Panel Quick Config Dialog

Change the **Panel Name** to describe its use or location. In our example, it is the control panel for The Office. Set the **Unit Type** to match the panel. Set the **Node Number** to the last digit of the IP Address of the panel. For the example, the IP Address of the panel is **192.168.12.99**, so the **Node Number** is **99**.

Note: It is assumed that the user is aware of the programming of the PLC and, therefore, knows the memory areas and the points needed.

Next add the **Memory Polling Areas** that the Driver will need to read from and/or write to.

3.1.4.1 Add Memory Polling Areas

The **Memory Polling Areas** are the memory areas of the Omron PLC that the Driver will read from and/or write to.

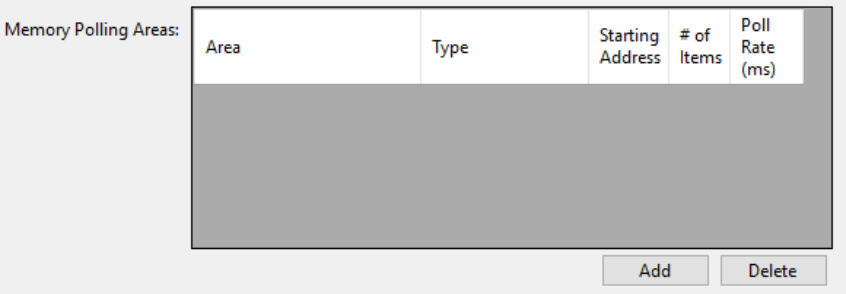


Figure 12 - Memory Polling Areas table

Before adding any polling areas, a little thought needs to go into deciding the configuration of each of them. You'll need at least one (1) row for each of the panel's memory areas that need to be accessed and managed by the software. **For the sake of efficiency, define polling areas such that a minimum number of poll commands are required.** A separate poll command is required by each **Memory Polling Area** line in the table. Consider both the memory area where points of interest to the Project are located as well as the size of the memory area. The maximum size of a **Memory Polling Area** is dictated by the connection type. Ethernet has an MTU (Maximum Transmission Unit) of 1500 bytes. Subtracting off the headers, the TCP payload is about 1400 bytes which is 700 words. A **Memory Polling Area** larger than this payload size requires TCP/IP to break it up into multiple messages. Therefore, **# of Items** should be less than or equal to 700 words.

For the example, Inputs are located at CIO Area word 0 bits 0 and 8, word 1 bits 0 and 8, and word 2 bit 0. The Outputs are located at CIO Area word 8 bits 0 and 8, and word 10 bit 15. It is better to combine this into a single **Memory Polling Area** rather than two or more areas.

Click the Add button to add a row to the **Memory Polling Areas** table. A new row is added.

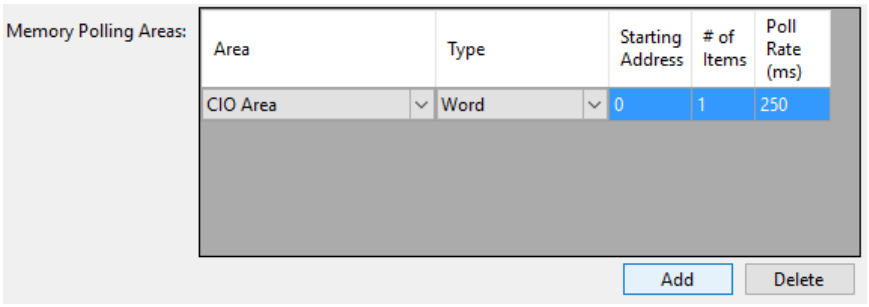


Figure 13 - Memory Polling Areas table with a new row

Click on the **Area** cell and select the desired area. Click on the **Type** cell and select the desired type. Set the **Starting Address** and the **# of Items** for this area. The default value for **Polling Rate** is fine for most cases.

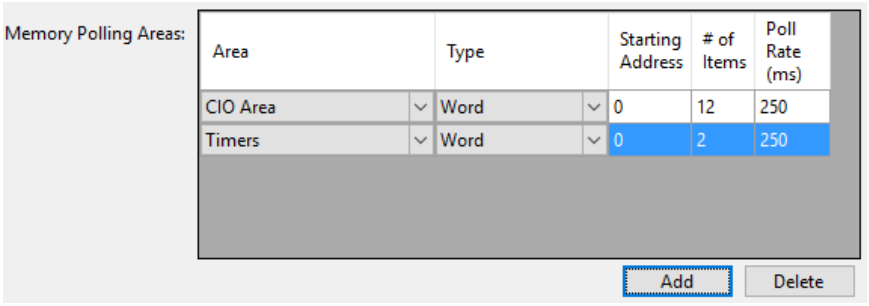


Figure 14 - Example Memory Polling Area

Now add **Groups** and **Points** to map the **Memory Polling Areas** for use.

3.1.4.2 Add Groups and Points

With the **Memory Polling Areas** are defined, points need to be added to access the data found in those areas.

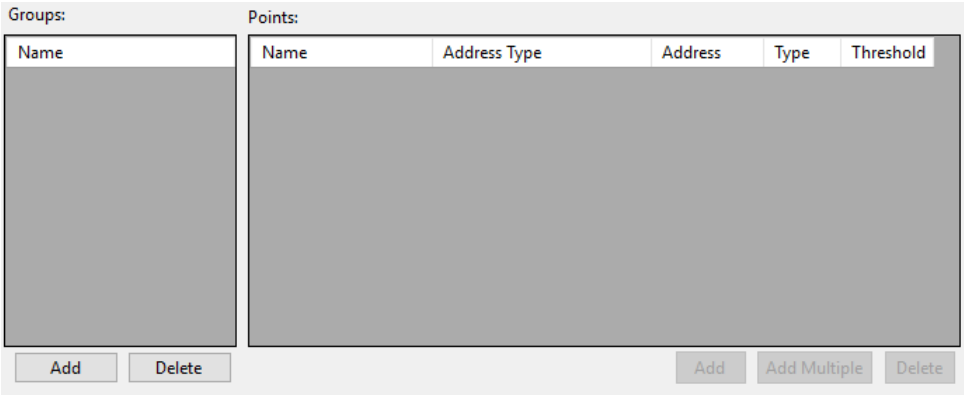


Figure 15 - Groups and Points tables

No point can be added until a group is added and selected. A group is a method to organize the points into logical collections. A group is an artifact of Intelli–Site and not the panel. How a point is used should dictate the group it belongs to. The example being used has points that are inputs and points that are outputs as well as points that are timers. We will group those points as **Inputs**, **Outputs**, and **Timers**. Locating those points in the Project Node Tree when programming screen objects will be easier to find since we know the type of points they are. But another way to group them could be based on how those points are used. If those points are associated with a door as a DPS, REX, lock, and timers, one could create groups for each door and assign the points associated with that door to it. It's about how you think about it. Do you see the points as their type or as their usage? This example groups points by their type.

Add a group by clicking the 

button under the **Groups** table.

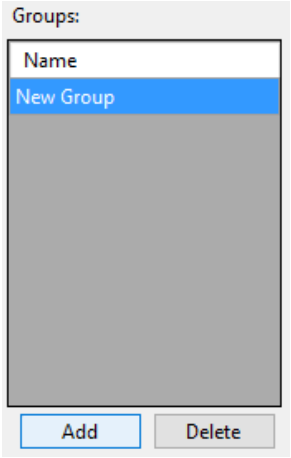


Figure 16 - New Group added to the Groups table

Click on the group in the table to rename it. Notice that the buttons under the **Points** table are enabled. You can now add points to the selected group.

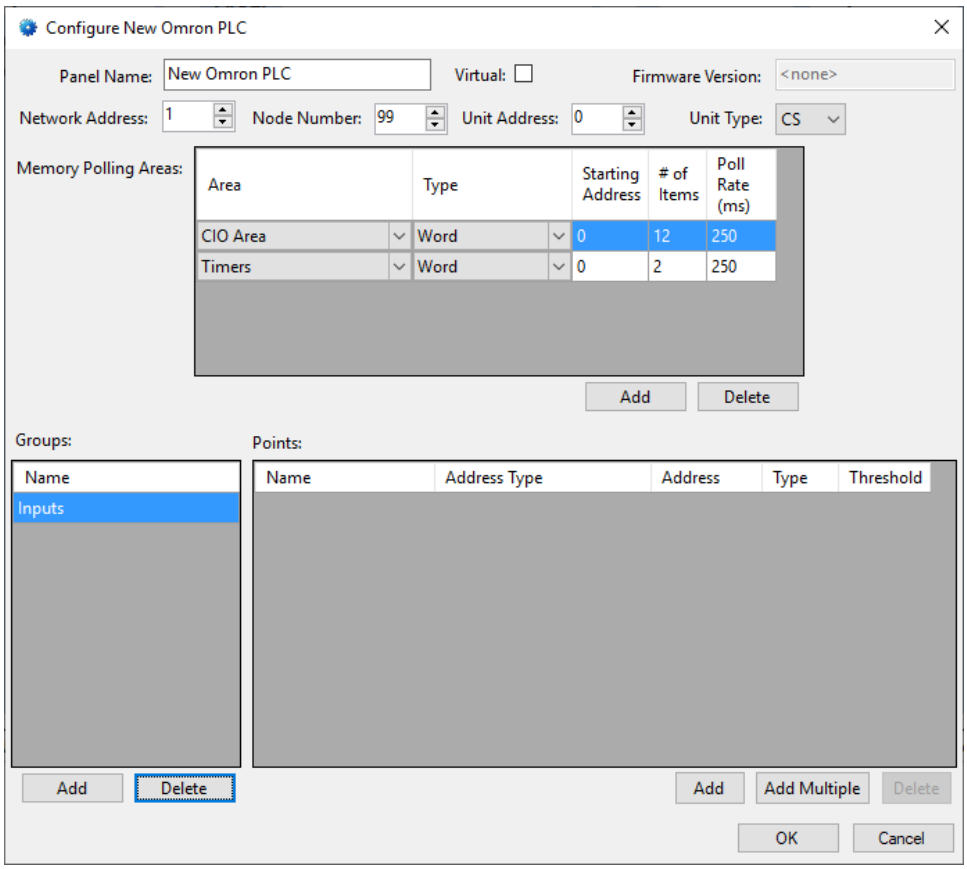


Figure 17 - Partially configured Quick Config

You can add points one at a time using the Add button or you can add many points in one fell swoop using the Add Multiple button. The example project has five (5) input points. The Add Multiple button opens the **Add Multiple** dialog.

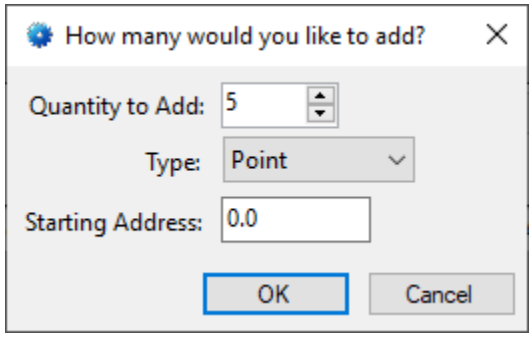


Figure 18 - The Add Multiple dialog

Set **Quantity to Add**, the **Type**, and the **Starting Address**. Then click the OK button.

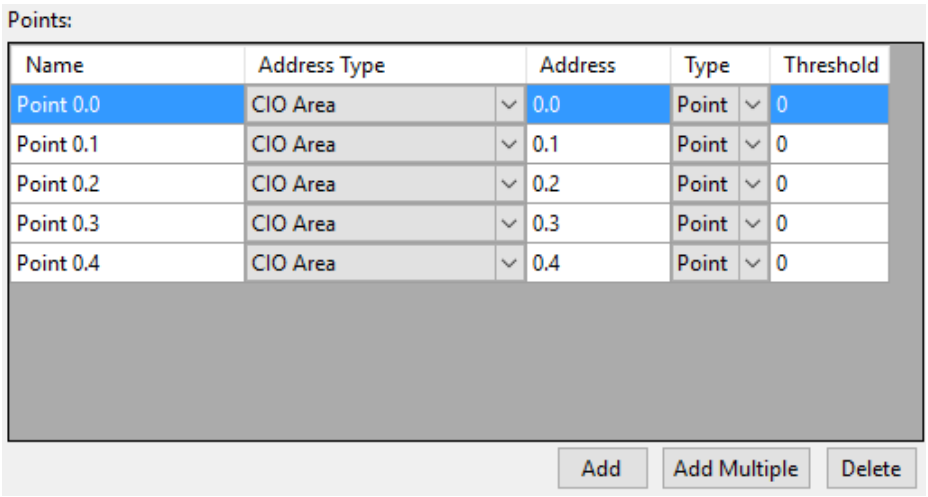


Figure 19 - Newly added points when using the Add Multiple button

Set the **Name**, **Address Type**, **Address**, **Type**, and **Threshold** for each of the points in the group. Add any additional groups and points needed for your installation.

Note: When a large number of points is added, using the Rename From File… tool is probably the better option. See section 9.4.11 Rename From File in the Intelli–Site User's Guide.

Once all the **Memory Polling Areas, Groups**, and **Points** have been added, click the OK button to save the changes and close the **Quick Config** dialog.

3.1.5 Enable the Omron Driver

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

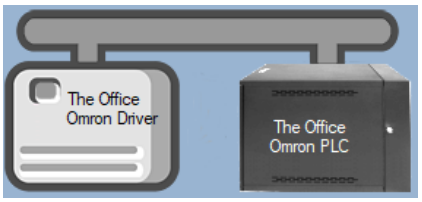


Figure 20 – Disabled Omron Driver

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.

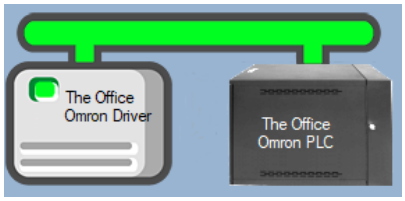


Figure 21 - Enabled Omron Driver

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

Figure 22 - Enabled Omron PLC Driver that is not communicating with the Driver Service

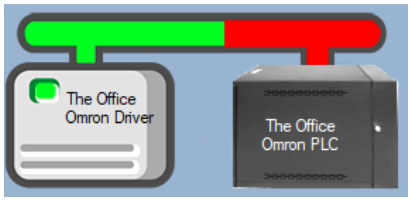


Figure 23 - Enabled Omron PLC Driver that is communicating with the Driver Service but NOT the panel

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

3.2 Panel Control Screen

Every Omron PLC panel has a **Panel Control Screen**. From this screen, the user can monitor the current state of the panel. Clicking on the panel icon in **Hardware Management View** opens the **Panel Control Screen** of the target panel. The content of the screen is dictated by the panel.

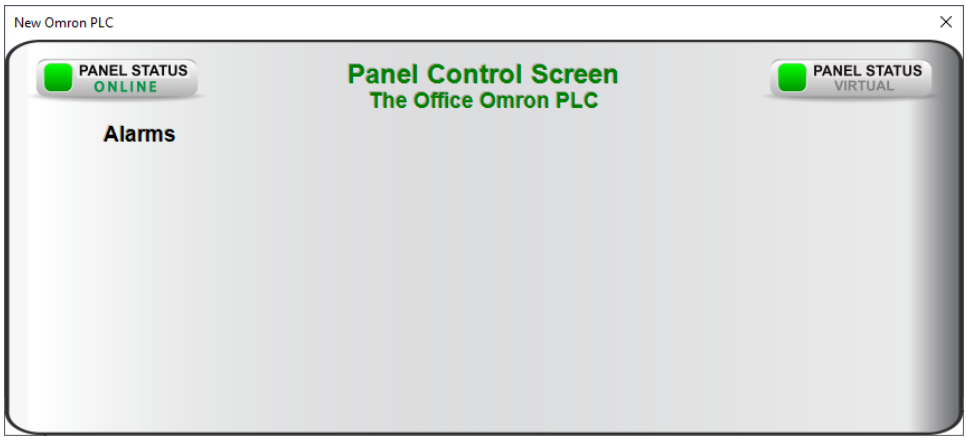


Figure 24 - Sample Omron PLC Panel Control Screen

Because there are no IO Points associated with a Omron PLC panel, there are no points on this screen other than the Online Panel Status and the Virtual Panel Status.

Once the panel has been configured, screen objects can be added to this **Panel Control Screen** popup screen to give the user quick access to the point states and values. See Adding Points to the Panel Control Screen.

4 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 Omron PLC Driver node properties, the Omron PLC node properties, and screen object programming especially the automatically created screen objects.

4.1 Omron Driver Node

The Omron PLC driver node is found by expanding **Setup->Computer Setup->Drivers**.

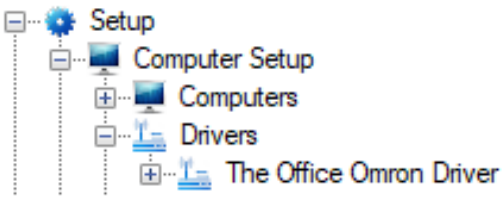


Figure 25 - Omron Driver node in the Project Node Tree

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

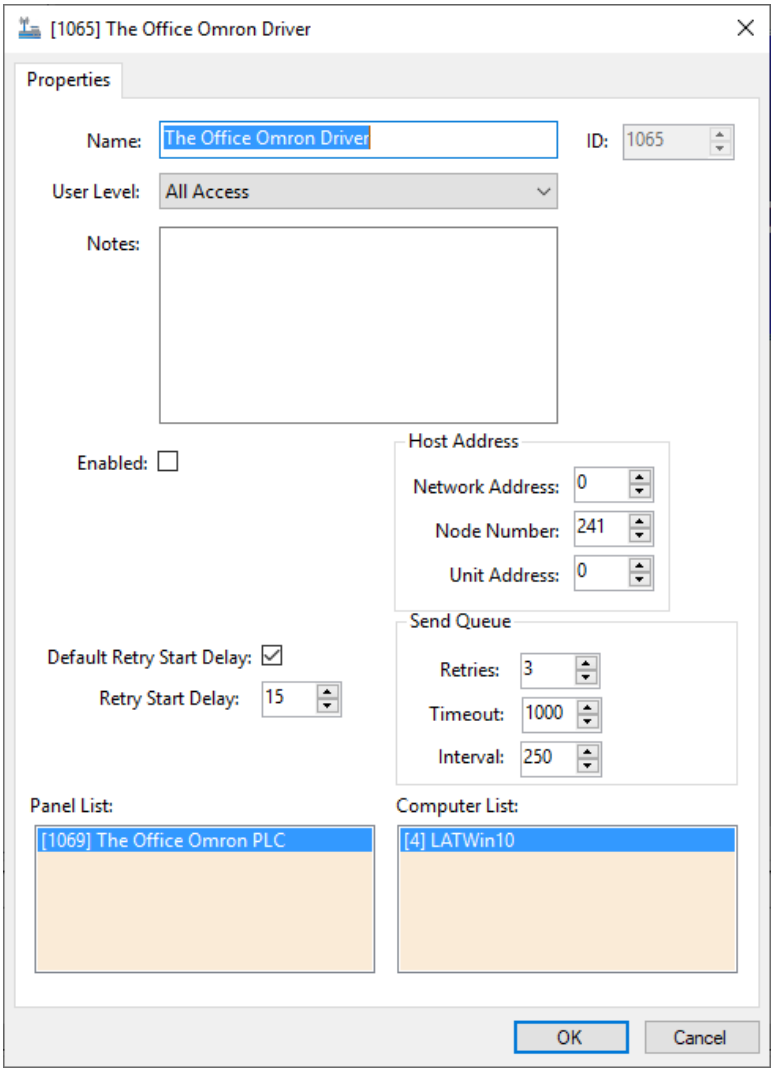


Figure 26 - Omron PLC Driver properties dialog

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 the software

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

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

Retry Start Delay – numeric (default: 15); number of seconds to wait between retries on connection attempts

Host Address – group box; fields associated with addressing the Omron PLC panel

Network Address – numeric (default: 0)

Node Number – numeric (default:0); value depends on the communication method needed

- TCP/IP Communication Method – auto-allocated FINS node number
- TCP/IP Listener Communication Method – the last number of the Engine's IP Address

Unit Address – numeric (default: 0)

Send Queue – group box; fields associated with the Send Queue behavior

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 Omron PLC nodes attached to this driver

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

4.2 Communication Method Node

The communication method node is a child of the driver. It defines the properties needed to communicate with the panel.

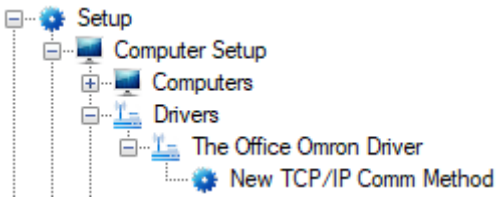


Figure 27 - Communication Method node in the Project Node Tree

There are three (3) different possible communication types for the Omron PLC driver.

- TCP/IP
- TCP/IP Listener
- Rs232

4.2.1 TCP/IP Communication Method Node

This is the recommended method. With this communication method, Intelli–Site initiates the TCP/IP communication with the panel. When the driver is enabled or if for some reason communication is lost, the software actively attempts to connect with the panel instead of waiting for the panel.

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

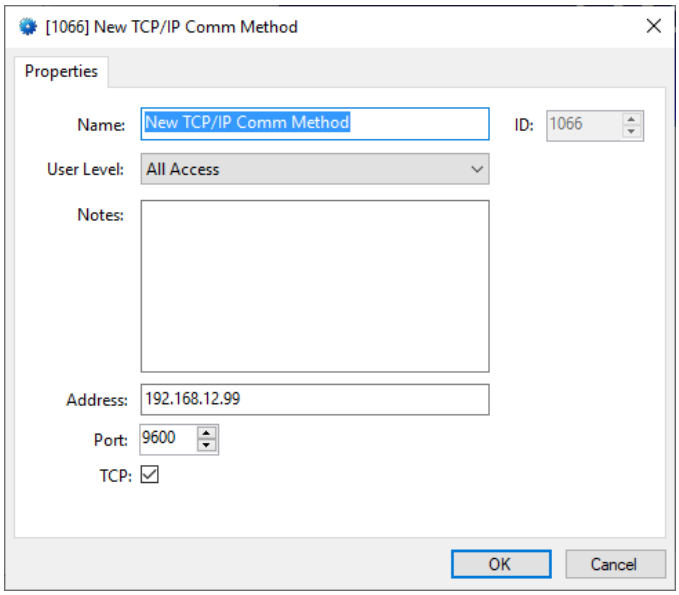


Figure 28 – TCP/IP Communication Method node properties dialog

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 the software

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 (default: 9600); the TCP or UDP port number

TCP- checkbox (default: checked); when checked, the driver will communicate with the panel using TCP; when not checked, the driver assumes UDP is the desired communication protocol

4.2.2 TCP/IP Listener Communication Method Node

With this communication method, the panel initiates communication with Intelli–Site. When the driver is enabled, the software waits for the panel to initiate the TCP/IP communication.

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

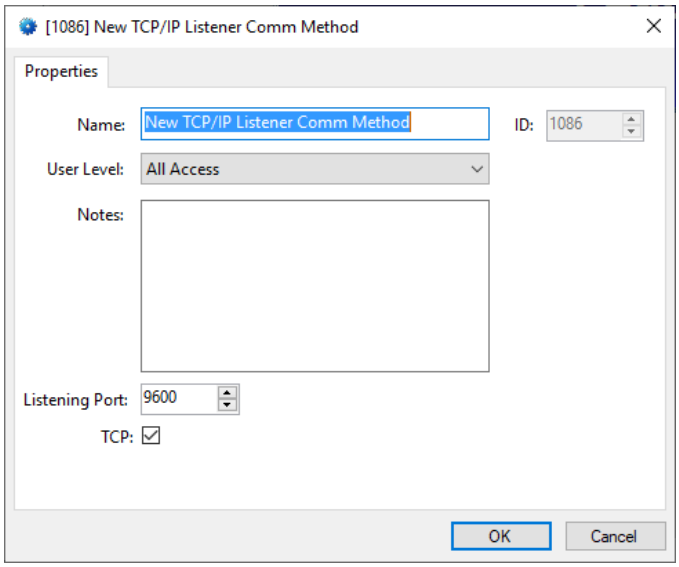


Figure 29 – TCP/IP Listener Communication Method node properties dialog

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 the software

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

Listening Port – numeric (default: 9600); the TCP or UDP port number

TCP- checkbox (default: checked); when checked, the driver will communicate with the panel using TCP; when not checked, the driver assumes UDP is the desired communication protocol

---

WARNING: There is a possible conflict in the default Port numbers for Omron and the Intelli–Site Engine Service. They both use 9600 as their default Port number. This only matters when the Omron is set up as a server so that it actively sends updates to Intelli–Site which is not the recommended setup. If Intelli–Site is required to act as a client of the Omron, you MUST change the Engine Connection Settings Port number in the Configuration Utility. This is the Port on which the Engine waits for connections from the Desktop Client and the Port number in the Desktop Client Settings.

4.2.3 Rs232 Communication Method Node

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

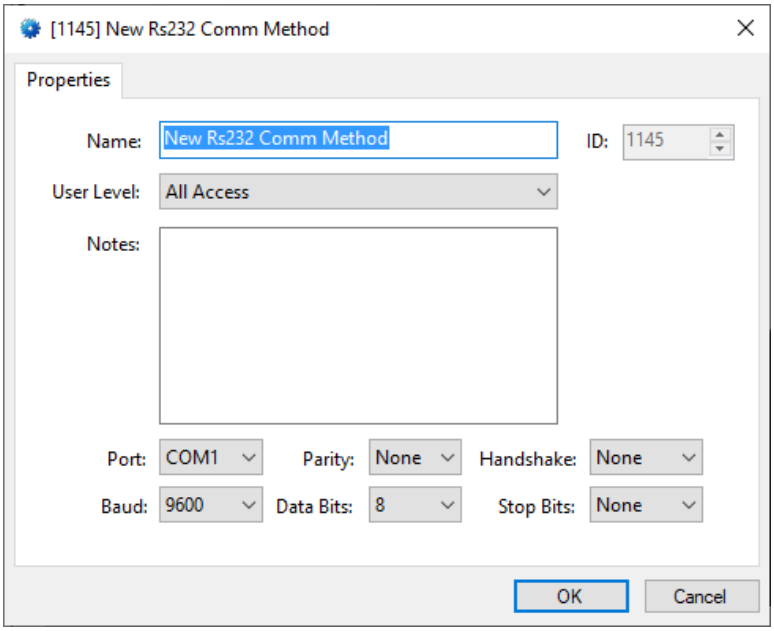


Figure 30 – Rs232 Communication Method node properties dialog

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 the software

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

Port – drop-down menu (default: COM1); the COM port

Parity, Handshake, Baud, Data Bits, and **Stop Bits –** configuration parameters associated with Rs232 communication; for an explanation of Rs232 see How RS232 Works.

4.3 Omron PLC Panel Node

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

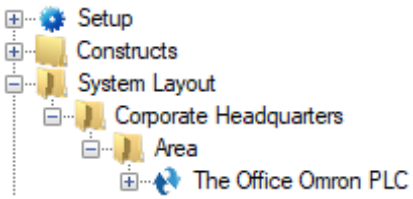


Figure 31 - The Omron PLC panel node in the Project Node Tree

The Omron PLC panel node is the root node for the panel. The following sections will explain:

- The configuration of the Omron PLC panel (a.k.a. **Quick Config**)
- The properties of the Omron PLC panel node
- The child nodes of the Omron PLC panel

4.3.1 Omron PLC Panel Quick Config

The **Quick Config** dialog is accessible either in **Hardware Management View** or in **Design View**. To open the **Quick Config** dialog, right-click on the Omron PLC panel node and select *Quick Config*.

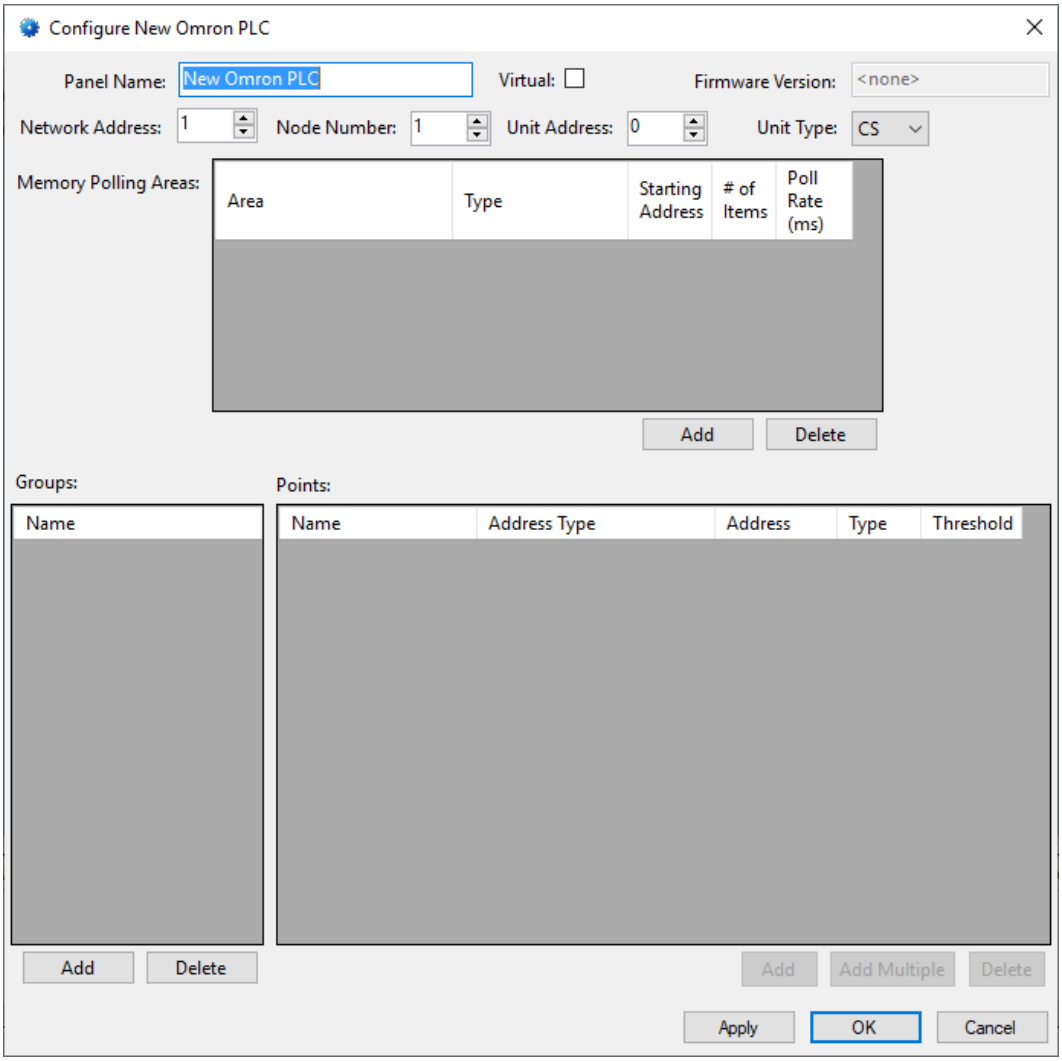


Figure 32 - Omron PLC panel Quick Config dialog

Panel Name – edit box; the name of the Omron PLC panel; updating this field will change the name of the node

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

Firmware Version – edit box (disabled); the firmware version of the panel as discovered by the software

Network Address – numeric (default: 1)

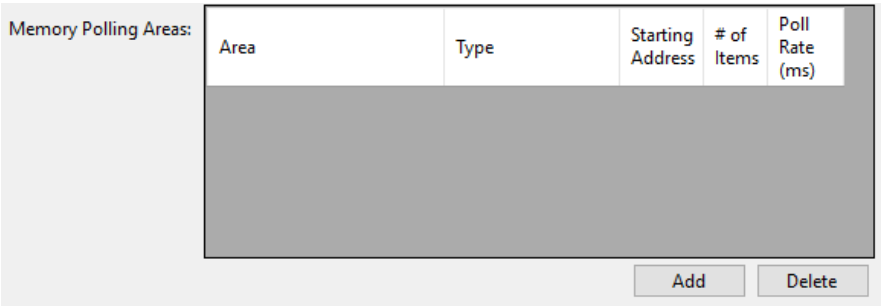
Node Number – numeric; the last byte of the IP Address of the Omron PLC panel

Unit Address – numeric

Apply - button; save all modifications but do not close the dialog

OK - button; save all modifications and close the dialog

Cancel - button; abandon any modifications and close the dialog



Memory Polling Areas – table; lists the regions of PLC memory that are polled and mapped

Area – the memory area on the PLC

Type – the memory unit: *Word, Bit, Completion, PV, Bank No, Status*

Starting Address – numeric; the offset in the memory are to begin copying; zero-based, the first word/bit/etc. at address 0

# of Items – numeric; the number of units to copy

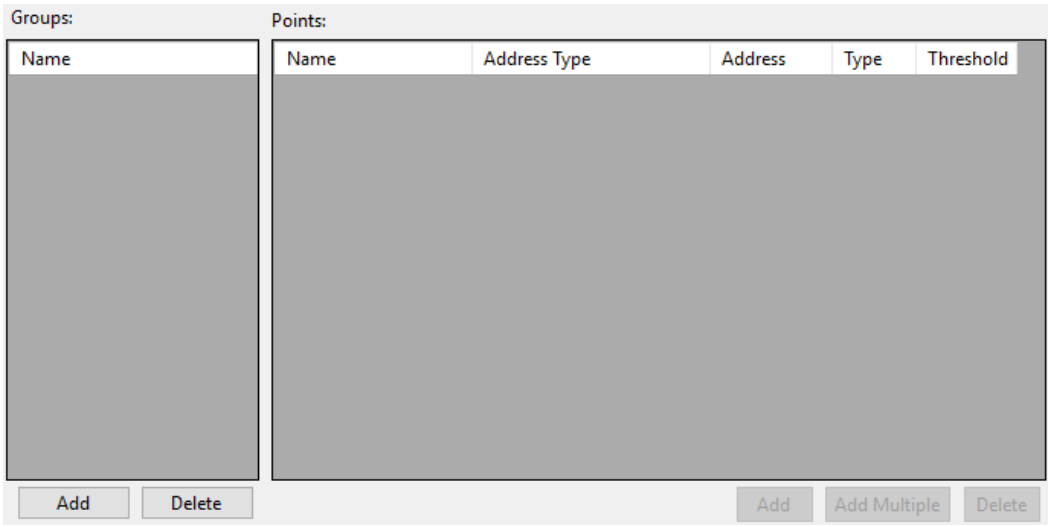
Polling Rate – numeric (default: 250); microseconds; how often to request the data for this area

Add - button; add a row to the **Memory Polling Areas** able

Delete - button; delete the highlighted row from the **Memory Polling Areas** table

When defining Memory Polling Areas, please consider network efficiency. Each Memory Polling Area is a separate poll command. **For the sake of efficiency, define areas such that a minimum number of poll commands and responses are required.** When the type is *Bits*, a different poll message is received for each bit. Words are the most efficient. Points can be mapped on a Memory Polling Area for the specific bits and specific words.

When defining the **# of Items**, keep in mind that the size must be no bigger than the payload size for a single packet. If it is larger, it will require multiple packets. Ethernet has an MTU (Maximum Transmission Unit) of 1500 bytes. Subtracting off the headers, the TCP payload is about 1400 bytes which is 700 words. A Memory Polling Area larger than this payload size requires TCP/IP to break it up into multiple messages. Therefore, **# of Items** should be less than or equal to 700 words.



Groups – table; lists the groups by which the points are organized; each group is a child node of the panel node in the Project Node Tree; use the buttons below the table to add and delete groups; click on the group in the table to edit the name of the group

Points – table; lists the memory mappings of different types of points to places in the memory polling areas

Name – edit box; the name for the point

Address Type – drop-down menu (default: CIO Area); the address area in which this point exists

Address – numeric; the offset in the **Address Type** area of the point as `word.bit`; offset is zero-based; For example, the point is the first bit in the second word. The first word is at offset 0; the second word is at offset 1. The first bit is at offset 0. Therefore, the point address is 1.0.

Type – drop-down menu (default: *Point*); how to evaluate the point mapping; *Point* is a single bit and *Value* is the word as an unsigned integer

Threshold – numeric (default: 0); the point is set high when the value is at or above this number; only applies to **Type** is *Value*

Add - button; add a row to the **Points** table

Add Multiple - button; add more than one point to the table; opens the **Add Multiple** dialog

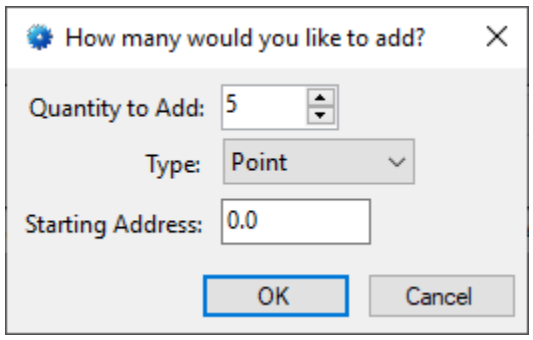


Figure 33 - The Add Multiple dialog

Delete - button; delete the highlighted point

4.3.2 Omron PLC Panel Node Properties

Right-click on the Omron PLC panel node to open the properties. These fields are those specifically about the panel. The **Quick Config** dialog is the recommend means to manage the panel and its child node properties.

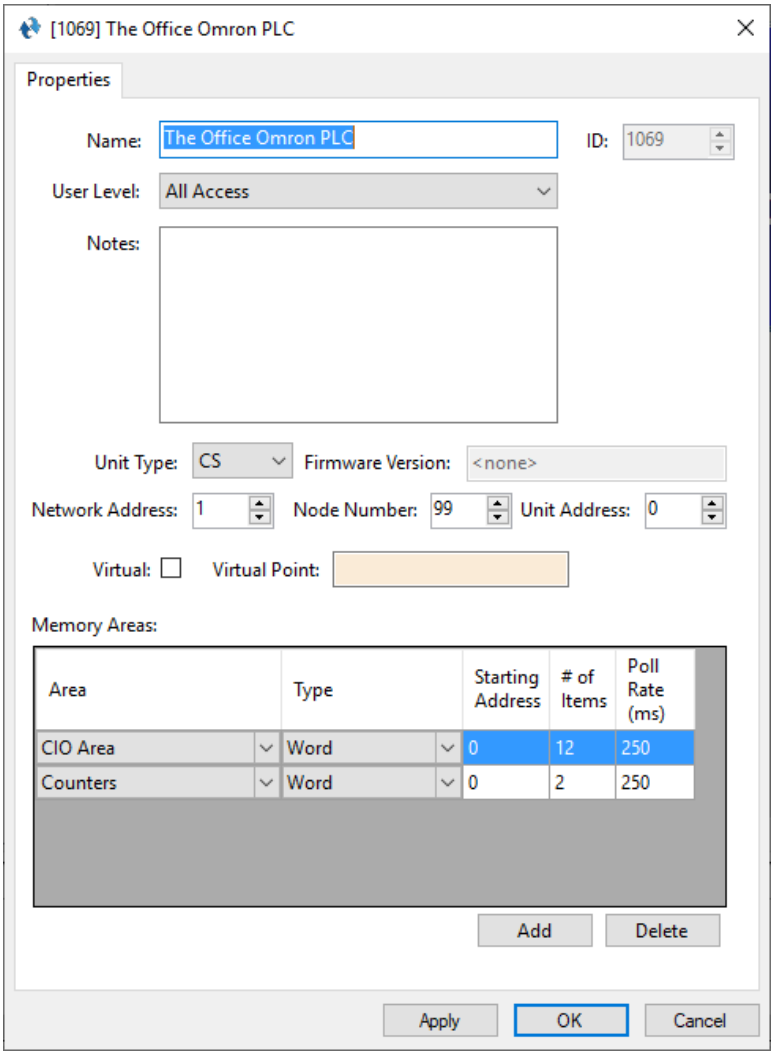


Figure 34 - Omron PLC node properties dialog

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 the software

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

Unit Type – drop-down menu (default: CS); the type of panel

Firmware Version – edit box (disabled); the firmware version of the panel as discovered by the software

Network Address – numeric (default: 1)

Node Number – numeric; the last byte of the IP Address of the Omron PLC panel

Unit Address – numeric

Virtual – 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

Memory Polling Areas – table; lists the regions of PLC memory that are polled and mapped

> **Area –** the memory area on the PLC
>
> **Type –** the memory unit: *Word, Bit, Completion, PV, Bank No, Status*
>
> **Starting Address –** numeric; the offset in the memory are to begin copying; zero-based, the first word/bit/etc. at address 0
>
> **# of Items –** numeric; the number of units to copy
>
> **Polling Rate –** numeric (default: 250); microseconds; how often to request the data for this area

When defining Memory Polling Areas, please consider network efficiency. Each Memory Polling Area is a separate poll command. **For the sake of efficiency, define areas such that a minimum number of poll commands and responses are required.** When the type is *Bits*, a different poll message is received for each bit. Words are the most efficient. Points can be mapped on a Memory Polling Area for the specific bits and specific words.

When defining the **# of Items**, keep in mind that the size must be no bigger than the payload size for a single packet. If it is larger, it will require multiple packets. Ethernet has an MTU (Maximum Transmission Unit) of 1500 bytes. Subtracting off the headers, the TCP payload is about 1400 bytes which is 700 words. A Memory Polling Area larger than this payload size requires TCP/IP to break it up into multiple messages. Therefore, **# of Items** should be less than or equal to 700 words.

4.3.3 Omron PLC Child Nodes

The Omron PLC child nodes are the **Alarms** node and the group nodes. When a group is added in **Quick Config**, a node is added to the panel node in the Tree for that group. Any points added to the group in the **Quick Config** are added to the Tree as child nodes of the group node. The alarms are children of the Alarms node.

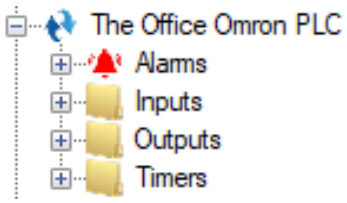


Figure 35 - Sample panel node and the Group nodes

4.3.3.1 Alarms

The alarm for the Omron PLC is located under the **Alarms** node. There is one (1) alarm, **Panel Status**.

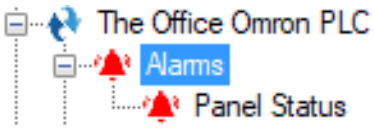


Figure 36 - Omron PLC panel Alarms child nodes

The **Panel Status** point is high when the panel is offline (assuming the driver is online, and the panel is not virtualized).

4.3.3.2 Point Nodes

The point nodes are the children of the group nodes. While they are referred to as points in general, they are specifically points or values. Point nodes that are of **Type** *Point* are single bits that are on or off. Point nodes that are of **Type** *Value* are integers. Point nodes of **Type** *Value* can also have child nodes (a.k.a. sub-nodes) added to them in **Design View**.

4.3.3.2.1 Point Node Properties

Right-click on the point node to open the properties. These fields are those specifically about the point. The **Quick Config** dialog is the recommend means to manage the point node properties. The point node is a special kind of I/O Point node called GenProto node. It has all the fields of an I/O Point with a few additional fields specific to the point. We will only discuss the additional fields. For an explanation of the I/O Point, see section 9.3 The Properties Dialog of the Intelli–Site User's Guide.

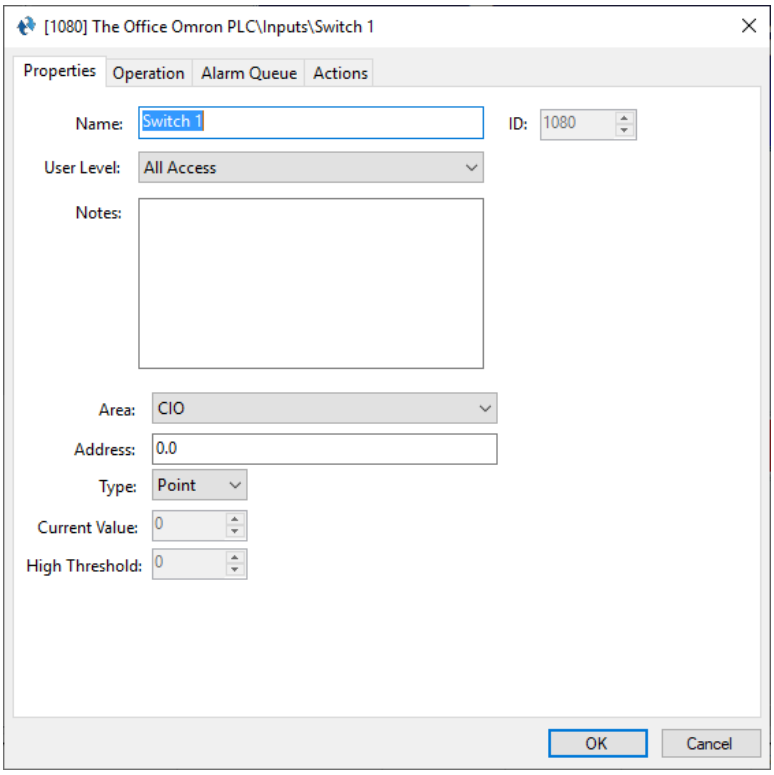


Figure 37 - Point node properties dialog

Area – drop-down menu; the memory polling area in which this point is located

Address – edit box; the address of the point in the **Area**; an integer defines a word address; a decimal number is a word and bit address

Type – drop-down menu (*Value, Point*); the type of point this is; *Points* are bits and *Values* are words

Current Value – numeric; the current value of the point; disabled when the **Type** is *Point*

High Threshold – numeric; when the **Current Value** is equal to or greater than this number, the point is high; disabled when the **Type** is *Point*

4.3.3.2.2 Value Sub-Nodes

When a point node is of **Type** *Value*, child nodes can be added to it in **Design View**. Like their parents, these sub-nodes are special GenProto nodes. They are like counter value nodes in that their state is tied to the current value of their parent node. And like a counter value, when a value sub-node is the target of a **SendCommand** action, the parent node is acted on by the value child node if possible.

To better understand these nodes, let's examine the properties dialog. Because a value sub-node is a GenProto node, we will only discuss the additional fields specific to a value sub-node. For an explanation of the rest of the fields and tabs, see section 9.3 The Properties Dialog of the Intelli–Site User's Guide.

First, though, one needs to add a value child node. Locate the desired point node in the Tree. Right-click on it and select either *Add Node*, *Add Multiple…*, or *Add Node and Edit*.

Note: If the point node is not a* Value *node, these menu options are disabled. In fact,* Add Multiple… *is not present.

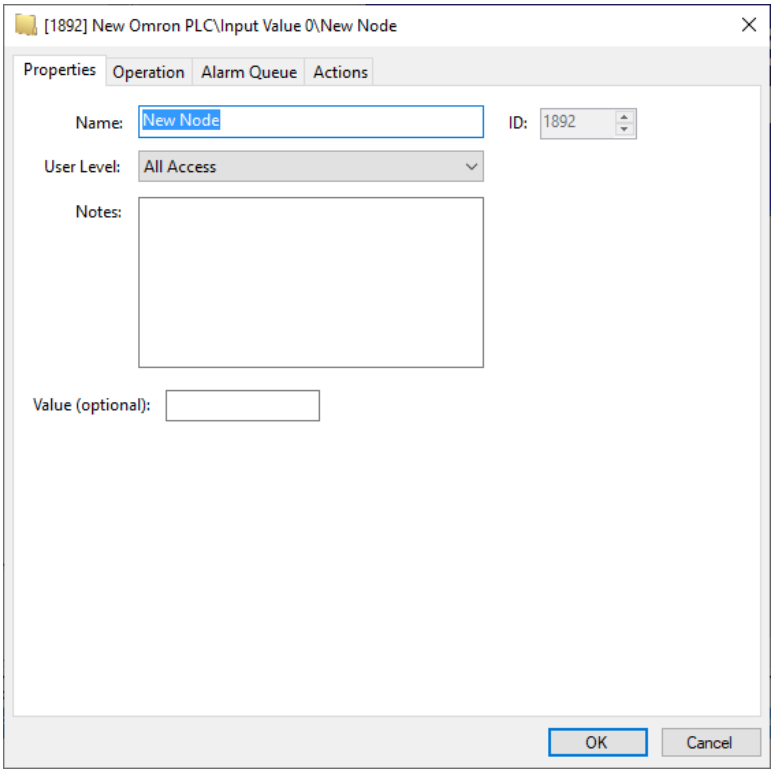


Figure 38 - Value Sub-Node properties dialog

The Properties tab has the standard properties of **Name**, **ID**, **User Level**, and **Notes**. The only new field is **Value**. It is an optional field. If it is empty, this node is treated as group node. This means even value sub-nodes can have child nodes. There is no limit to the depth of child nodes. This gives the user flexibility in organizing the sub-values. Even if the value sub-node has a number in the **Value** field, it can still have child nodes of its own.

The **Value** field is an integer field that can have a signed or unsigned number in it. When the number is signed, it can be used to increment or decrement the parent Value node's value using **SendCommand**. For example, the sub-node **Value** field is -2. **SendCommand** targeting this sub-node will decrement the parent Value node by 2.

When the **Value** field is unsigned, it is treated much like a counter value. When the parent Value node equals this sub-node, this sub-node is in the high state. The parent Value node can be set to the value of this sub-node using **SendCommand**.

4.4 Project Programming

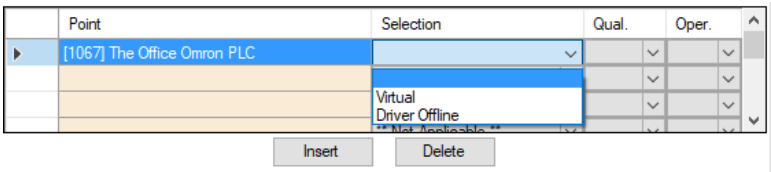
The point nodes can be used in project programming in evaluation grids and in action grids. The point nodes can also be dragged and dropped onto screens to automatically create screen objects.

4.4.1 Evaluation Grids and Action Grids

The panel and point nodes can be used in evaluation and action grids.

4.4.1.1 The Panel Node

When a panel node is used in the evaluation grid, there are two **Selection** options: *Virtual* and *Driver Online*.



The panel node can be used in action grids as the target of the following actions:

- VirtualizePanel
- UnvirtualizePanel

4.4.1.2 The Point Nodes

The point nodes are I/O Points. Therefore, they can be used in evaluation grids and action grids.

4.4.1.3 The Sub-nodes of Point Nodes

The sub-nodes of Point Nodes of **Type** value can be used in action grids to modify the Point Node's value if the Memory Polling Area is writeable.

4.4.1.3.1 Sub-nodes with Unsigned Values

To set the parent Value node to equal the sub-node, use **SendCommand** and target the sub-node.

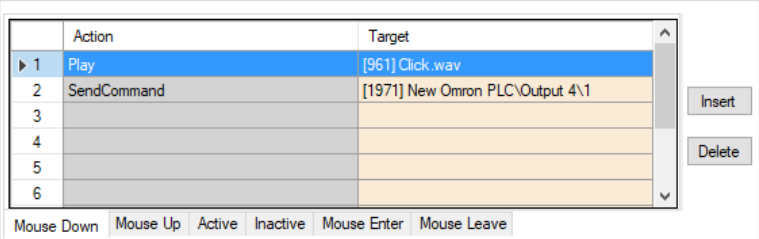


Figure 39 - Example Action grid using a sub-value node

If the memory polling area at the address of Output 4 is writeable, it will be set to the **Value** of sub-node 1.

4.4.1.3.2 Sub-nodes with Signed Values

Below are the properties of a sub-node with a signed **Value** field.

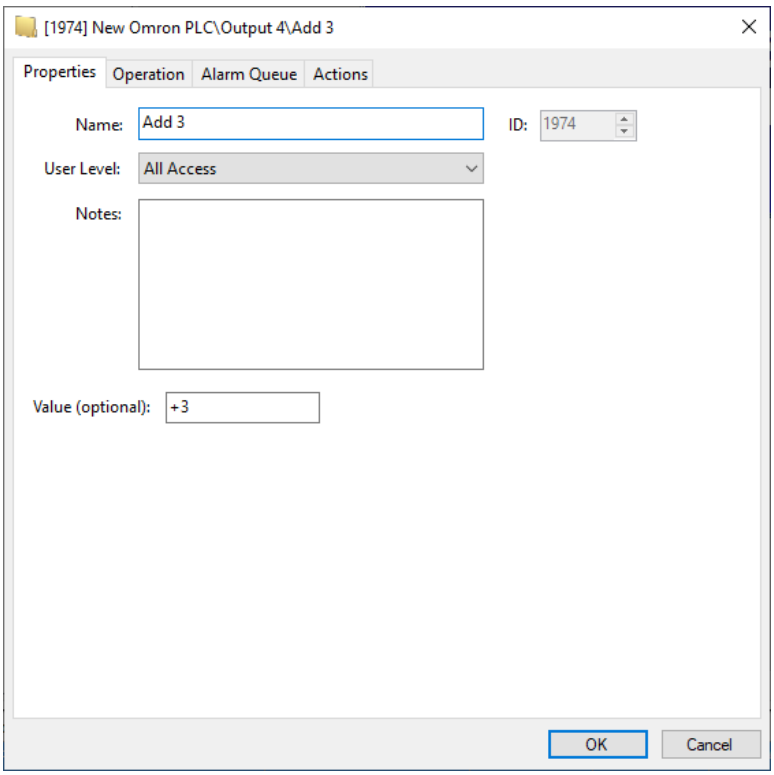


Figure 40 - Example sub-node with a signed Value field

When the **Value** field is signed (e.g., +1 or -2), this node can be used to increment or decrement the parent Value node. Use **SendCommand** and target this node in any action grid.

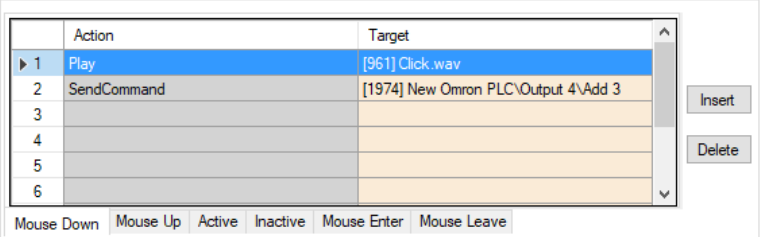


Figure 41 - Example Action grid using sub-node

In this example, if the memory polling area at the address of Output 4 is writeable, the value of Output 4 will be incremented by 3 because the value of **Add 3** is +3.

4.4.2 Automatically Created Screen Objects

The point nodes can be used as evaluation points for the evaluation grids of screen objects. This allows the user to monitor and control the state of each point.

Instead of programming the screen objects by hand, drag and drop the nodes onto the screen to automatically create screen objects that are programmed based on the type of point it is.

4.4.2.1 Point Type Screen Objects

When a panel point of **Type** *Point* is dragged and dropped onto the screen, a button is created.

Figure 42 - Sample screen node created from a Point node of type *Point*

The screen object is programmed to display the current state of the point. Clicking on the button will set the point on or off.

Note: If the memory in the PLC is not a writable point, setting it on or off will do nothing.

The following examines the properties of the button screen object and the programming of the different states.

4.4.2.1.1 State 0 – Normal

State 0 is the base state. It displays when the evaluation grid on the other state does not evaluate to true. Stated more simply, when the point is off, this state displays.

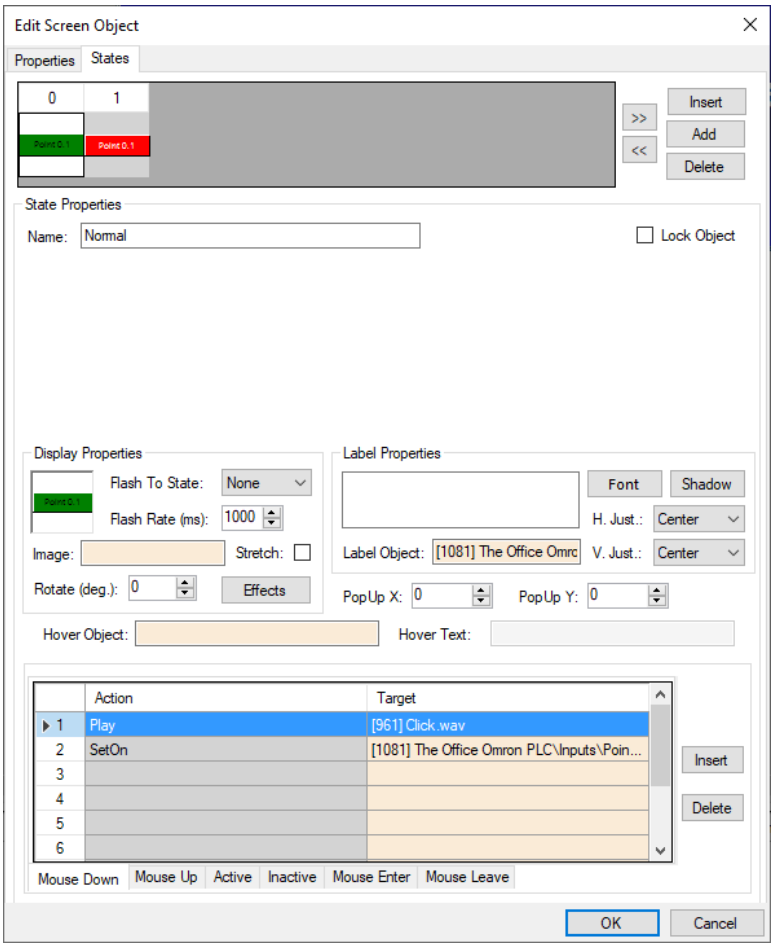


Figure 43 - Sample point button properties dialog: State 0

Notice the **Action** grid. When this button is clicked in this state, a **SetOn** command is sent to the PLC panel for this point. The panel will set the point if applicable. Intelli–Site will receive the updated state of the point in the next poll.

4.4.2.1.2 State 1 - Alarm

This state displays when the point is high. See the evaluation grid. The evaluation grid is programmed to return true when the point's state evaluates as high.

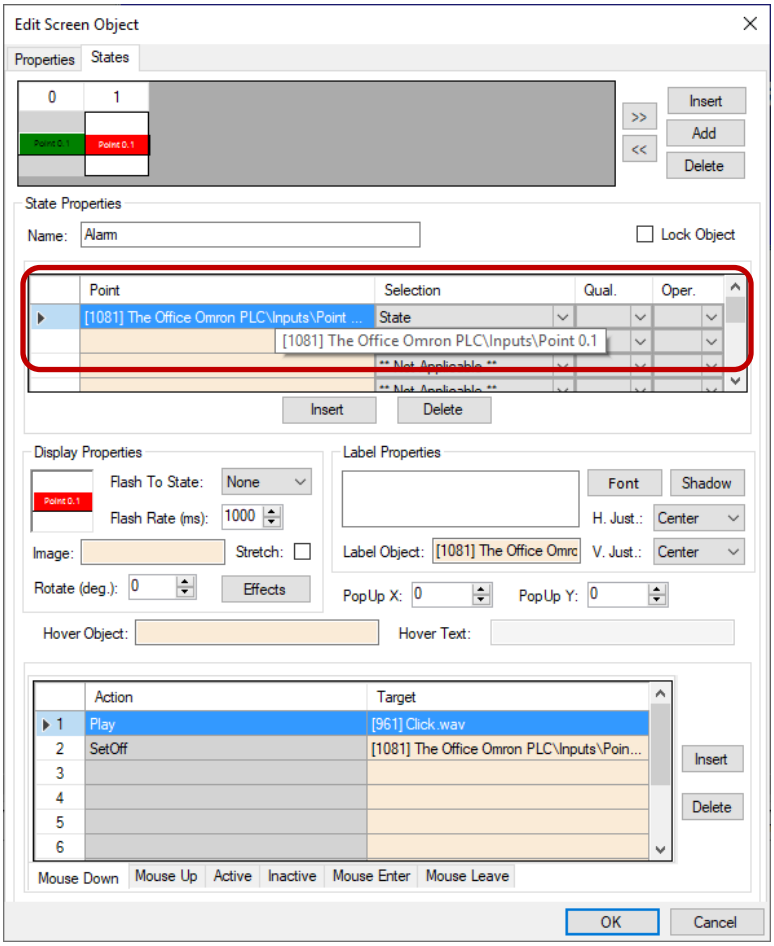


Figure 44 - Sample point button properties dialog: State 1

Notice the **Action** grid. When this button is clicked in this state, a **SetOff** command is sent to the PLC panel for this point. The panel will turn off the point if applicable. Intelli–Site will receive the updated state of the point in the next poll.

4.4.2.2 Value Type Screen Objects

When a *Value* type node is dragged and dropped to the screen, a simple screen object is created that displays the current value of the object.

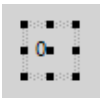


Figure 45 - Sample screen node created from a Point node of type *Value*

The screen object is programmed to display the current value of the point.

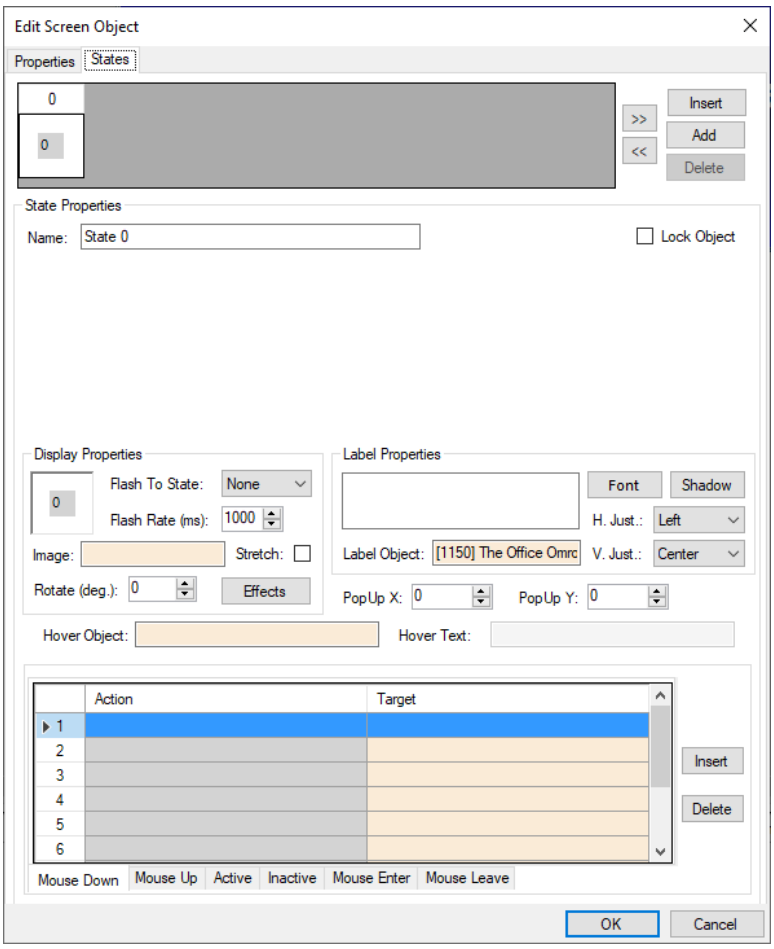


Figure 46 - Sample value screen object properties dialog: State 0

Values cannot be set on or off; they can only be displayed. Therefore, the **Action** grid has no programming.

4.4.2.3 Sub-Value Node Screen Objects

When a sub-value node is dragged and dropped onto a screen, a button screen object is created. If the **Value** field of the node is unsigned, a two-state button is created. If the **Value** field is signed, a single state button is created

4.4.2.3.1 Signed Sub-Value Node Screen Object

When a sub-node of a Value node whose **Value** field is signed is dragged and dropped on the screen, a single state button screen object is created.

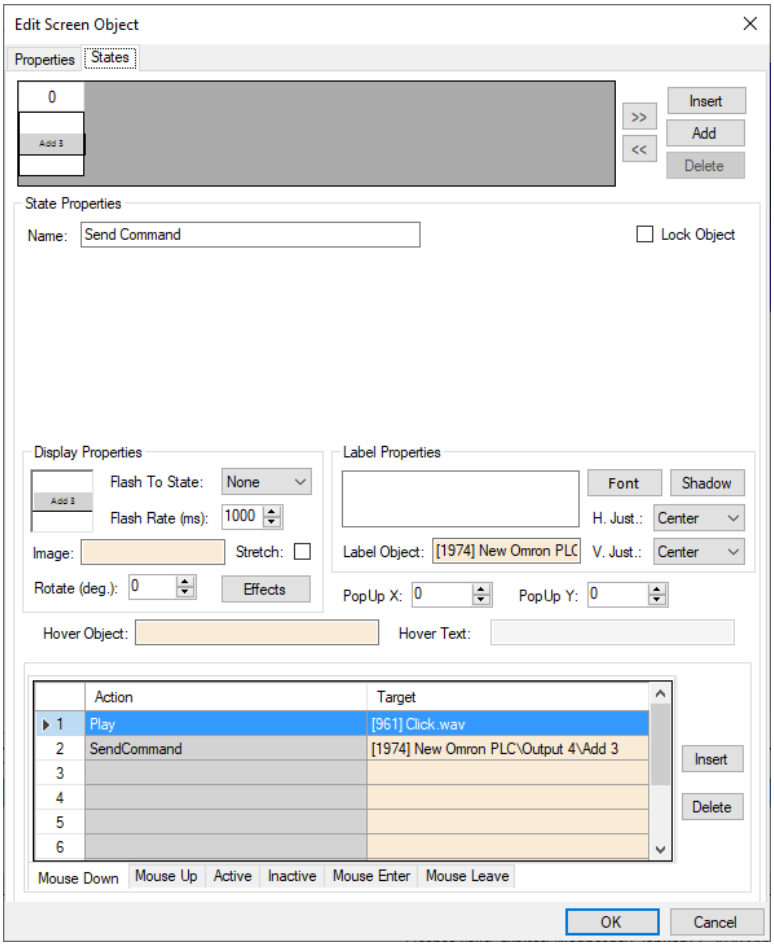


Figure 47 - Sample sub-value node screen object properties dialog

Notice the **Action** grid. When this button is clicked, a **SendCommand** action targeting this sub-value node is executed. If the memory polling area for the parent Value point is writeable, the value will be modified by the signed value in the sub-value node and sent to the panel. It will be incremented if the sign is positive and decremented if the sign is negative. Intelli–Site will receive the updated state of the point in the next poll.

4.4.2.3.2 Unsigned Sub-Value Node Screen Object

When a sub-node of a tag node whose **Value** field is unsigned is dragged and dropped on the screen, a two-state button screen object is created.

4.4.2.3.2.1 State 0 – Off

State 0 is the base state. It displays when the evaluation grid on the other state does not evaluate to true. Stated more simply, when the point is off, this state displays.

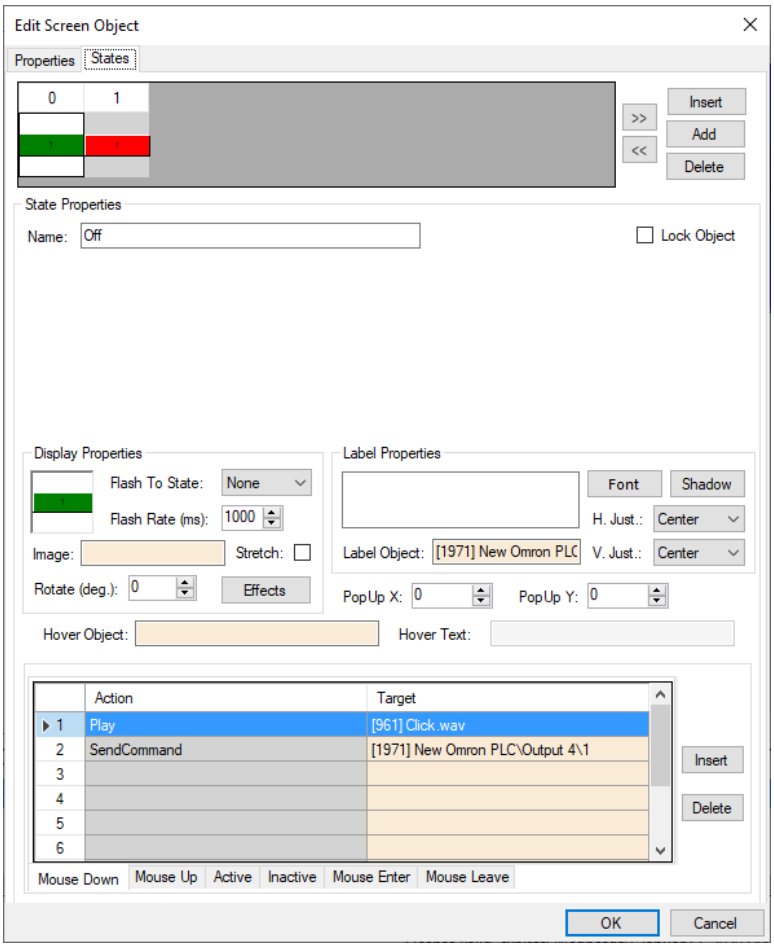


Figure 48 - Sample sub-value node screen object properties dialog: State 0

Notice the **Action** grid. When this button is clicked in this state, a **SendCommand** action targeting this sub-value node is executed. If the memory polling area for the parent Value point is writeable, the value of the parent Value node will be set to the value in the sub-value node. The new value for the parent Value node is sent to the panel. Intelli–Site will receive the updated state of the point in the next poll.

4.4.2.3.2.2 State 1 - On

This state displays when the point is high. See the evaluation grid. The evaluation grid is programmed to return true when the point's state evaluates as high.

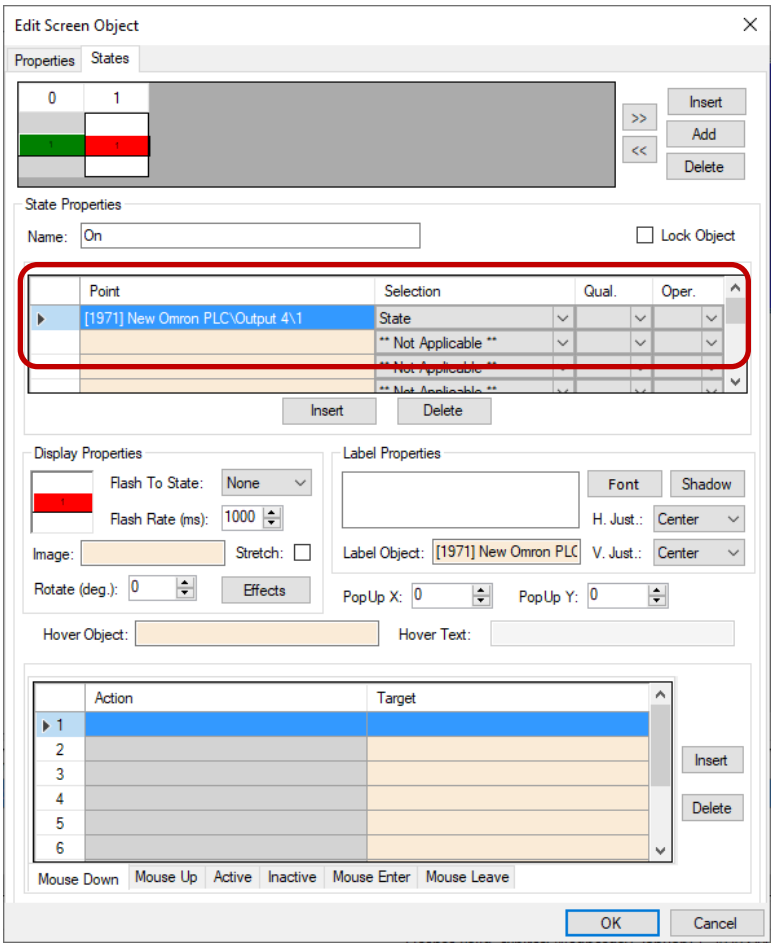


Figure 49 - Sample sub-value node screen object properties dialog: State 0

Notice the **Action** grid. There are no actions when the screen object is in this state. Clicking on this button at this time does nothing.

4.4.3 The Panel Control Screen

The Panel Control Screen is a popup screen that is added when the panel is added. It can be displayed in **Hardware Management View** by clicking on the panel icon.

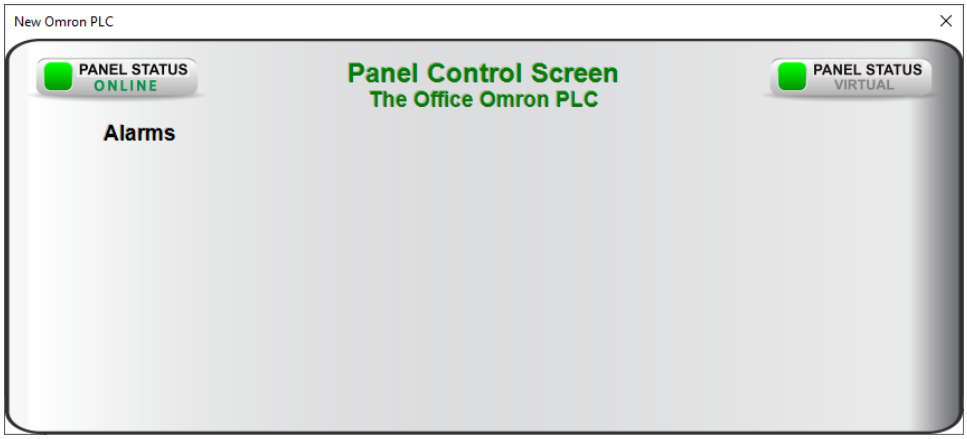


Figure 50 - Panel Control Screen

When an Omron PLC panel is added, there are no points. Therefore, the Panel Control Screen has no points. You must program the screen to display the points and values once the panel is programmed.

To find and modify the Panel Control Screen, you'll need to be in **Design View**. The Panel Control Screens are found by expanding **Screen Control->Popup Screens->Area Popup Screens**.

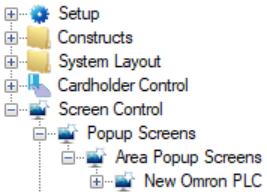


Figure 51 - Panel Control Screens in the Project Node Tree

If there is only one or two Omron PLC panels, finding the corresponding Panel Control Screen is relatively simple. Open the properties dialog of the Panel Control Screen and examine **Base Object** field.

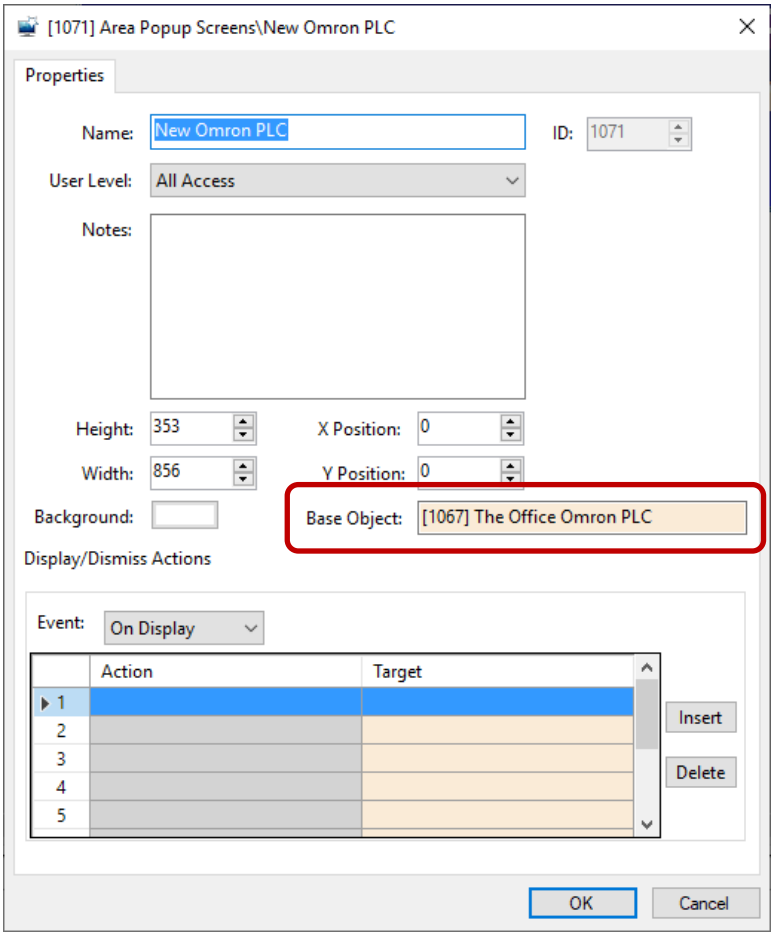


Figure 52 - Panel Control Screen properties dialog

Another way to locate the corresponding Panel Control Screen is to use *Find...->All objects referencing this node* on the panel node itself.

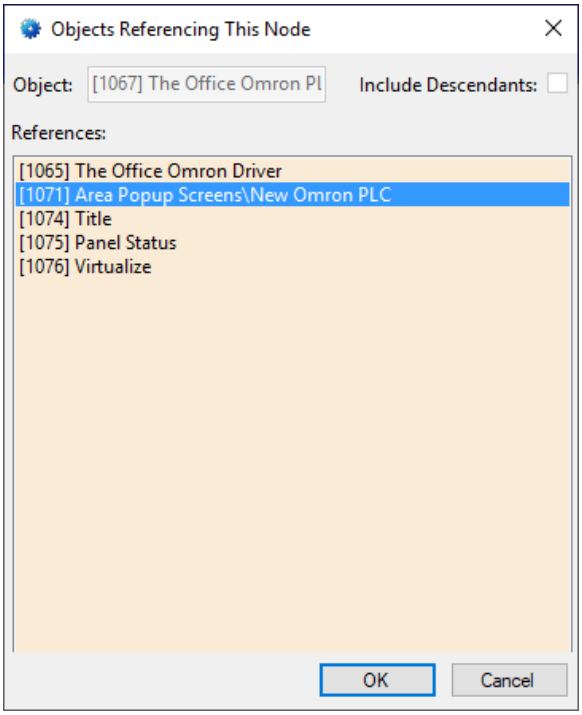
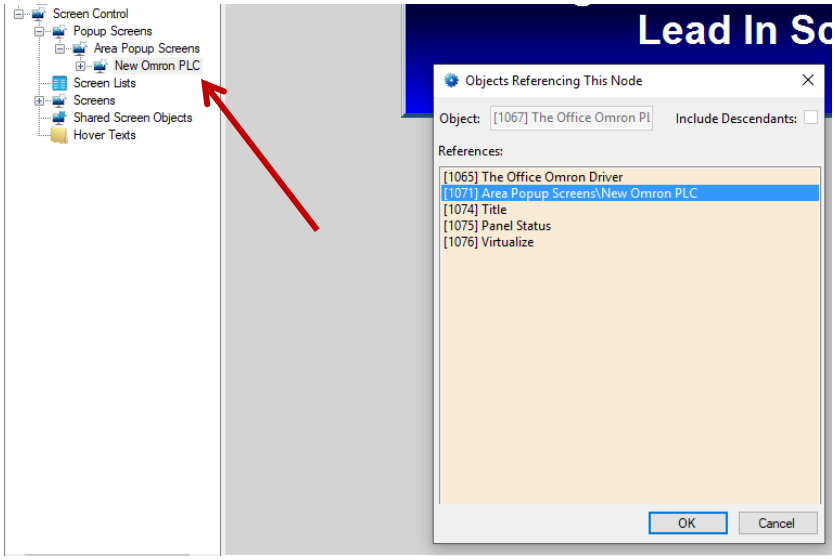


Figure 53 - Find...->All objects referencing this node dialog

Right-click on the Panel Control Screen in the **References** and select *Go To/Find In Tree*. The software will expand the Tree and select the Panel Control Screen node.



The highlighting is grey because it does not have focus. Cancel out of the **Objects Referencing This Node** dialog and the highlighting will be blue. Double-click on the Panel Control Screen node to open the screen for programming.

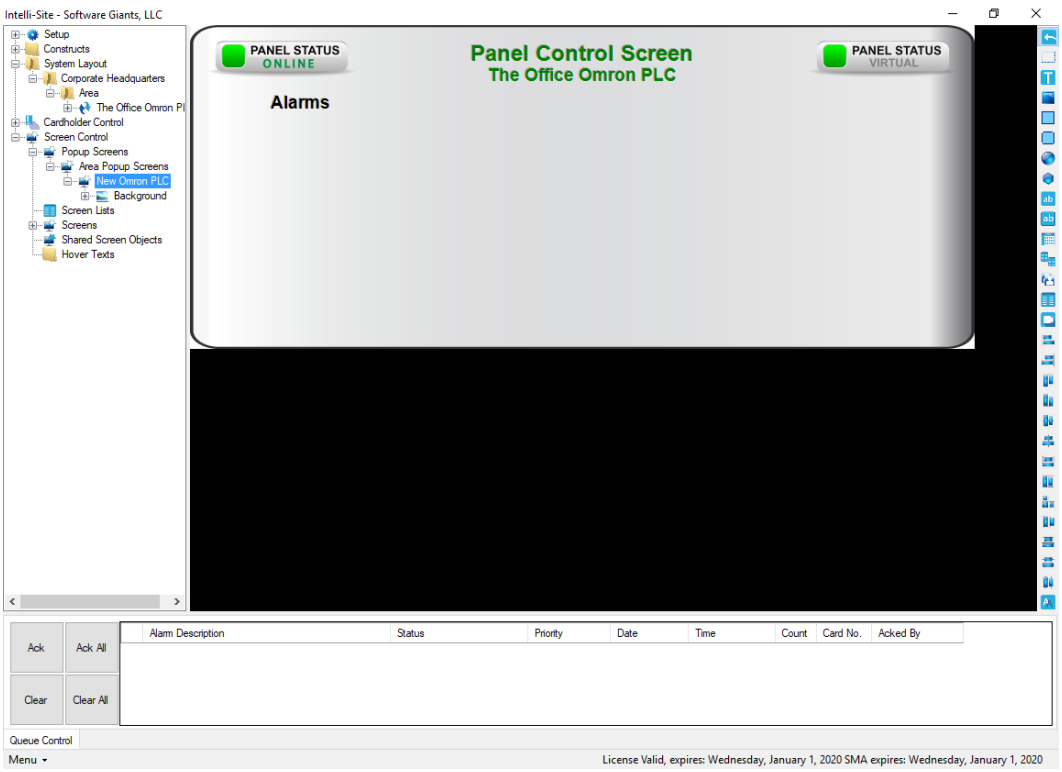


Figure 54 - Panel Control Screen in Design View

Add the points that are important to watch in **Hardware Management View**.

Revision History

2019-02-26 Creation Date

2019-03-22 Updated the Table of Contents
Added Value Sub-Nodes
Added Sub-Nodes to the Project Programming sections
The Sub-nodes of Point Nodes, Sub-Value Node Screen Objects

2019-06-19 Bookmarks were not generated for the PDF file

2019-06-27 Grammatical errors

2019-11-08 Fig. 8 was the wrong driver panel type

2021-07-29 Changed Note to Node on page 12
Replace Radionics with Omron
Removed the supported OSes, see the User's Guide for the currently supported ones
Updated the Copyright

