

AutomationDirect ECOM Driver Help

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AutomationDirect ECOM Driver Help

Help version 1.012

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Overview

The AutomationDirect ECOM Driver provides an easy and reliable way to connect AutomationDirect ECOM controllers to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for use with AutomationDirect Programmable Logic Controllers that may be accessed via an ECOM Ethernet module.

Device Setup

Supported Devices*

DL-05
DL-06
DL-240
DL-250(-1)
DL-260
DL-430
DL-440
DL-450

*All PLCs via an Hx-ECOM module.

Communication Protocol

Ethernet using Winsock V1.1 or higher.

Connection Timeout

This parameter specifies the time that the driver will wait for a connection to be made with a device. Depending on network load, the connect time may vary with each connection attempt. The default setting is 3 seconds. The valid range is 1 to 60 seconds.

Request Timeout

This parameter specifies the time the driver will wait on a response from the device before giving up and going on to the next request. Longer timeouts only affect performance if a device is not responding. The default setting is 250 milliseconds. The valid range is 50 to 9999 milliseconds.

Retry Attempts

This parameter specifies the number of times the driver will retry a message before giving up and going on to the next message. The default setting is 3 retries. The valid range is 1 to 10.

Device IDs

Up to 1024 devices may be defined on a given channel. Each device on the channel must be uniquely identified by its own IP address. In general the Device ID has the following format `YYY.YYY.YYY.YYY` where `YYY` designates the device IP address. Each `YYY` byte should be in the range of 0 to 255.

An ECOM module's IP address can be determined using NetEdit, an AutomationDirect device configuration utility. To launch NetEdit, select the Device ID Wizard button on the General tab in Device Properties.



Note: NetEdit has the ability to query the network, configure network parameters and update firmware for ECOM devices.

Automatic Tag Database Generation

[Tag Import Settings](#)

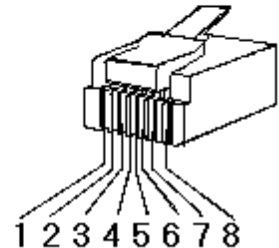
Cable Diagrams

Patch Cable (Straight Through)

| | | | |
|--------|---------|---------|--------|
| TD + 1 | OR/WHT | OR/WHT | 1 TD + |
| TD - 2 | OR | OR | 2 TD - |
| RD + 3 | GRN/WHT | GRN/WHT | 3 RD + |
| 4 | BLU | BLU | 4 |
| 5 | BLU/WHT | BLU/WHT | 5 |
| RD - 6 | GRN | GRN | 6 RD - |
| 7 | BRN/WHT | BRN/WHT | 7 |
| 8 | BRN | BRN | 8 |

RJ45 RJ45

10 BaseT



Crossover Cable

| | | | |
|--------|---------|---------|--------|
| TD + 1 | OR/WHT | GRN/WHT | 1 TD + |
| TD - 2 | OR | GRN | 2 TD - |
| RD + 3 | GRN/WHT | OR/WHT | 3 RD + |
| 4 | BLU | BLU | 4 |
| 5 | BLU/WHT | BLU/WHT | 5 |
| RD - 6 | GRN | OR | 6 RD - |
| 7 | BRN/WHT | BRN/WHT | 7 |
| 8 | BRN | BRN | 8 |

RJ45 RJ45

8-pin RJ45

Communication Parameters

Port

This parameter specifies the port number that the remote device is configured to use. The default port number is 28784 (0x7070).

Tag Import Settings

Tag Import File

This parameter is used to specify the exact location of the DirectSoft export file from which tags will be imported. This file will be used when Automatic Tag Database Generation is instructed to create the tag database. The two files types that can be imported are Supported and Not Supported.

Supported Import Files

Program (via Export), .txt extension
Element Documentation (via Export), Standard Format, .csv extension

Import Files Not Supported

Element Documentation (via Export), Standard Format, .txt extension
Element Documentation (via Export), EZ-Touch Format, .csv and .txt extension
Element Documentation (auto created), .esd extension
DirectSoft Project, .prj extension

Display Descriptions

When checked, this option will import tag descriptions. A description will be given to tags with long names that states the original tag name when necessary.

See Also: [Automatic Tag Database Generation](#)

Automatic Tag Database Generation

The AutomationDirect ECOM Driver generates its tags offline, meaning that a connection to the device is not required to generate tags. Automatic Tag Database Generation is a two step procedure. First, DirectSoft is used to create a tag export file. Then, the export file is accessed from within the OPC server in order to generate tags. For more information on creating an export file (*.txt or *.csv) from DirectSoft, refer to [Import Preparation: DirectSoft Steps](#). For more information on configuring the OPC server to use the DirectSoft file for automatic tag database generation, refer to [Import Preparation: OPC Server Steps](#).

See Also: [Tag Import Settings](#)

Tag Hierarchy

The tags created by Automatic Tag Database Generation follow a specific hierarchy. The root level groups (or subgroup level of the group specified in "Add generated tags to the following group") are determined by the tag's memory type referenced (such as X, C, V and etc.).

Example

Every variable that is of address type "X" will be placed in a root level group called "X." The only exception applies to counter and timer accumulator addresses CTA and TA respectively. In these cases, the address is converted to a V-memory reference (TA0 = V0) but the tags generated will be assigned to the root level group CTA or TA, not V. But explicit V-memory references to CTA and TA locations will be assigned to the root level group V as intended.

Import File-to-Server Name Conversions

Leading Underscores

Leading underscores (_) in tag names will be removed. This is required since the server does not accept tag names beginning with an underscore.

Invalid Characters in Name

The only characters allowed in the server tag name are A-Z, a-z, 0-9, and underscore (_). As mentioned above, a tag name cannot begin with an underscore. All other invalid characters encountered will be removed from the tag name.

Importing DirectSoft Elements

This driver uses files generated from DirectSoft via the Program or Element Documentation Export feature to generate the tag database. In both methods, the items of interest are the Elements (such as nickname, address and description) that were created in the DirectSoft Documentation Editor.

How do I create a DirectSoft tag import file (*.txt or *.csv)?

See [Import Preparation: DirectSoft Steps](#)

How do I configure the OPC Server to use this import file for Automatic Tag Database Generation?

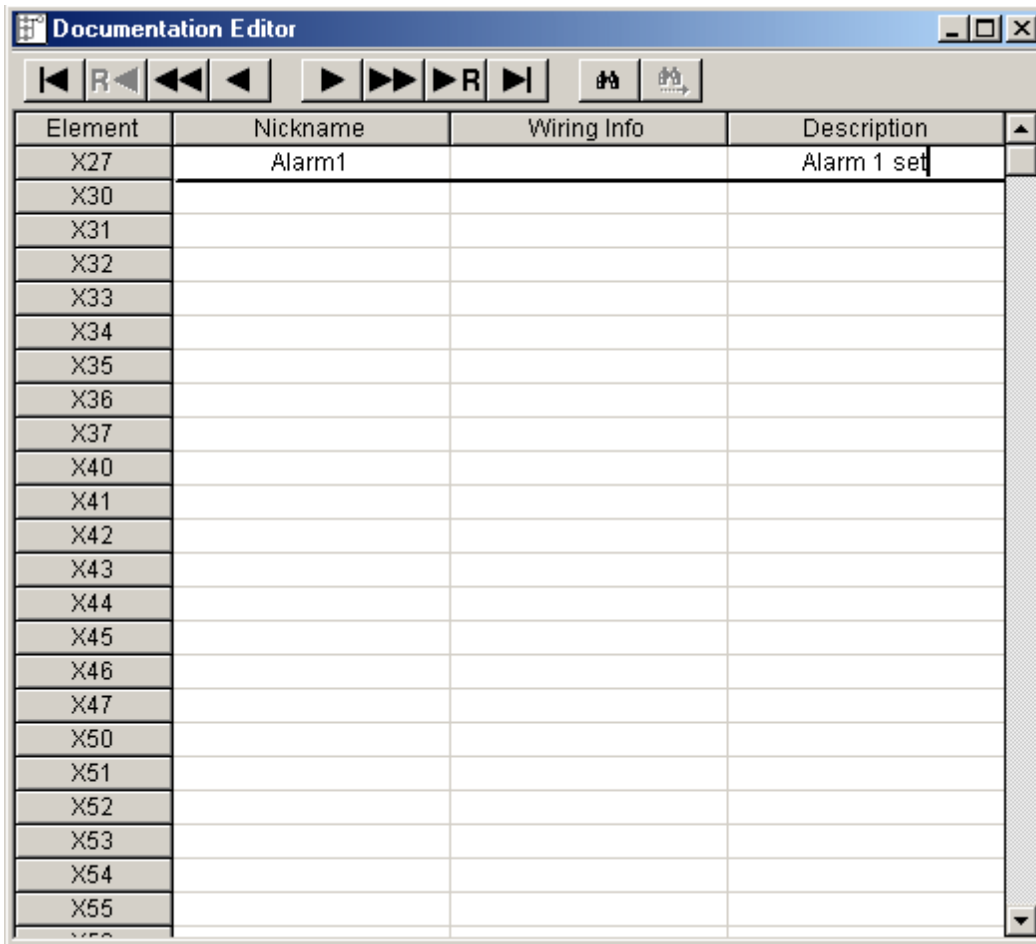
See [Import Preparation: OPC Server Steps](#)

Import Preparation: DirectSoft Steps

There are two supported methods for generating an export file in DirectSoft for the driver to use as a tag import file: Program Export (*.txt extension) and Element Documentation Export, Standard Format (*.csv extension).

Step 1: Create Nicknames

1. Open the DirectSoft project containing the tags (elements) that will be ported to the OPC Server.
2. Launch the **Documentation Editor** by clicking **Tools | Documentation Editor**.
3. For each **Memory Reference** of interest, enter both a **Nickname** and a **Description**.

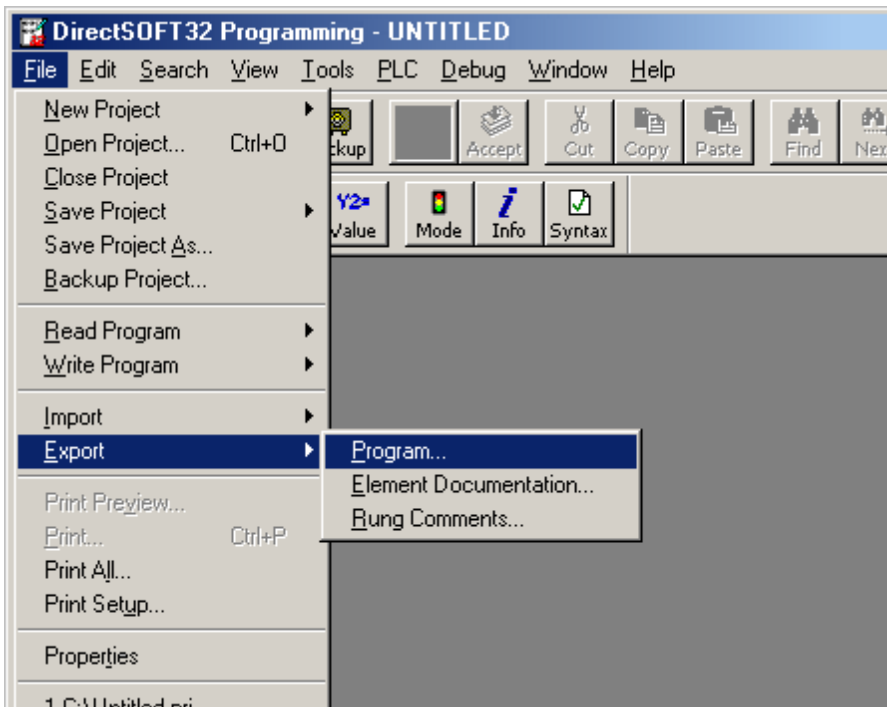


| Element | Nickname | Wiring Info | Description |
|---------|----------|-------------|-------------|
| X27 | Alarm1 | | Alarm 1 set |
| X30 | | | |
| X31 | | | |
| X32 | | | |
| X33 | | | |
| X34 | | | |
| X35 | | | |
| X36 | | | |
| X37 | | | |
| X40 | | | |
| X41 | | | |
| X42 | | | |
| X43 | | | |
| X44 | | | |
| X45 | | | |
| X46 | | | |
| X47 | | | |
| X50 | | | |
| X51 | | | |
| X52 | | | |
| X53 | | | |
| X54 | | | |
| X55 | | | |

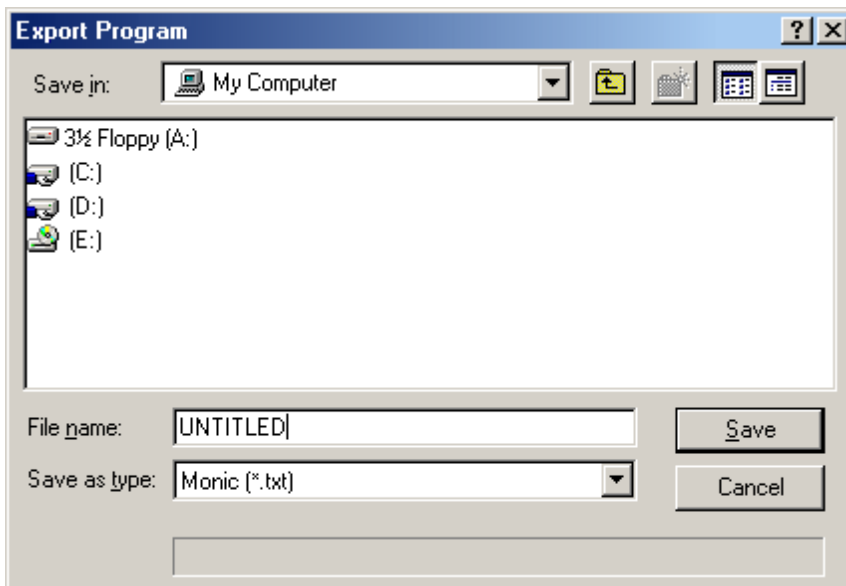
Step 2: Export the Elements

Program Export (.txt)

1. In DirectSoft, click **File** | **Export**. Then, select **Program**.

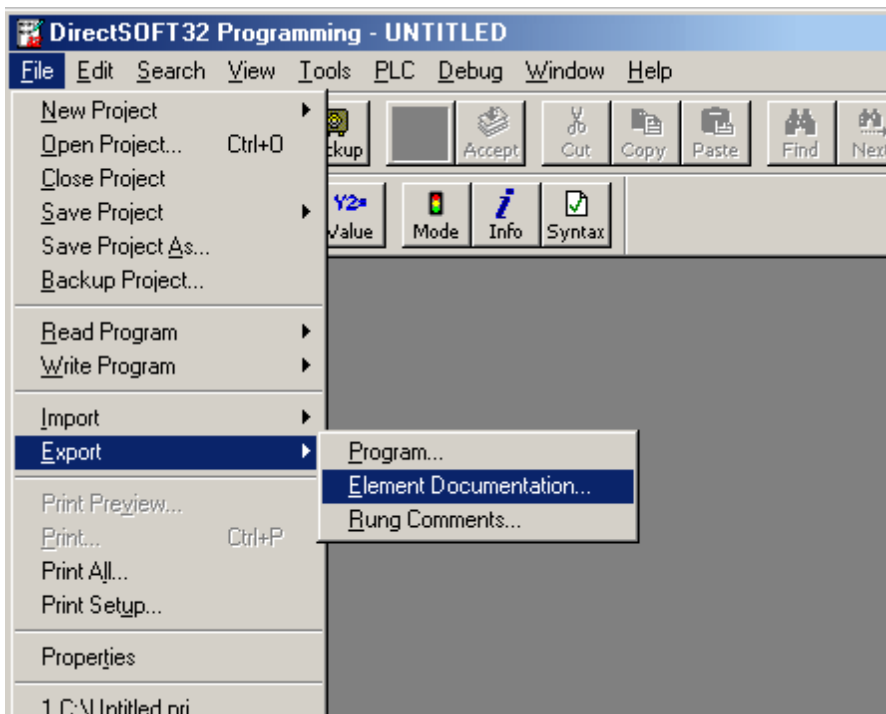


2. The Save dialog will appear, showing the file in text (*.txt) format.

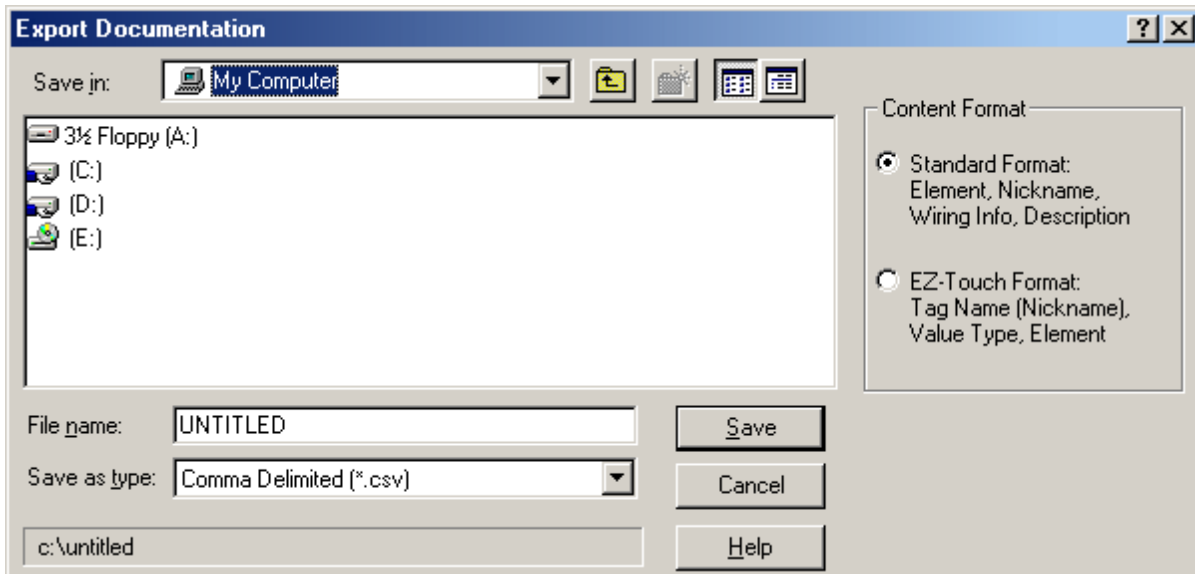


Element Documentation Export (.csv)

1. In DirectSoft, click **File | Export**. Then, select **Element Documentation**.



2. The Save dialog will appear. Select **Comma Delimited (*.csv)** and **Standard Format**.



Note: Any other format or file type will not import properly. The file will be in comma separated variable format.

Import Preparation: OPC Server Steps

An export file from DirectSoft must be created before completing the following steps. For more information, refer to [Import Preparation: DirectSoft Steps](#).

1. In the driver, click on the device of interest (for which tags will be generated).
2. Next, open its **Device Properties** dialog and select the **Tag Import Settings** tab.
3. Browse and select the location of the DirectSoft export file previously created and then click **Apply**.
4. Next, select the **Database Creation** tab and configure the Database Creation settings.
5. Click **Auto Create** to create the tag database.
6. The OPC Server will then attempt to create the tag database while posting messages to the event log on the status of the import. When finished, it will state that the tag import has completed. All elements exported out of DirectSoft will appear in the OPC Server in the layout discussed in [Tag Hierarchy](#).

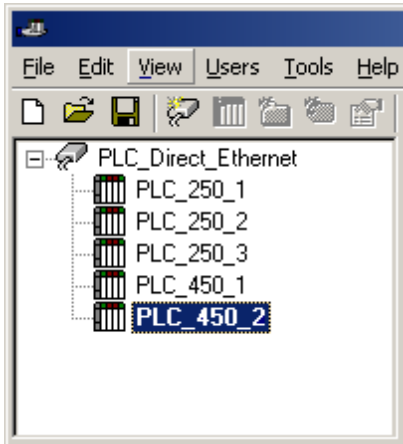
Note: The OPC tags generated are given meaningful names in the OPC Server that are based on the variables imported. These tags are also placed in meaningful tag groups to provide a structured and manageable interface. The end result is a well-organized OPC Server project that directly reflects the variable import file.

See Also: [Import File-To-Server Name Conversions](#) and [Tag Import Settings](#).

Optimizing the AutomationDirect ECOM Communications

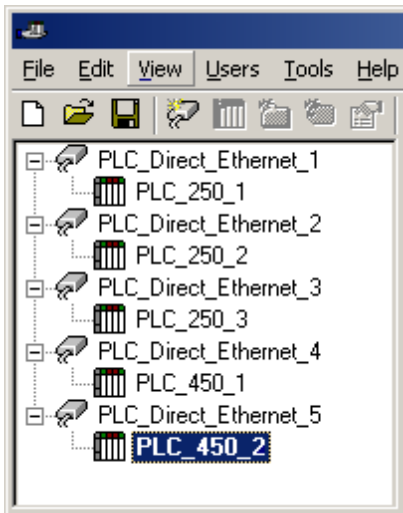
The AutomationDirect ECOM driver has been designed to provide the best performance with the least amount of impact on the system's overall performance. While the AutomationDirect ECOM driver is fast, there are a couple of guidelines that can be used in order to control and optimize the application and gain maximum performance.

Our server refers to communications protocols like AutomationDirect ECOM as a channel. Each channel defined in the application represents a separate path of execution in the server. Once a channel has been defined, a series of devices must then be defined under that channel. Each of these devices represents a single AutomationDirect ECOM from which data will be collected. While this approach to defining the application will provide a high level of performance, it won't take full advantage of the AutomationDirect ECOM driver or the network. An example of how the application may appear when configured using a single channel is shown below.



Each device appears under a single AutomationDirect ECOM channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall update rate begins to suffer.

If the AutomationDirect ECOM driver could only define one single channel, then the example shown above would be the only option available; however, the AutomationDirect ECOM driver can define up to 16 channels. Using multiple channels distributes the data collection workload by simultaneously issuing multiple requests to the network. An example of how the same application may appear when configured using multiple channels to improve performance is shown below.



Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 16 or fewer devices, it can be optimized exactly how it is shown here.

The performance will improve even if the application has more than 16 devices. While 16 or fewer devices may be ideal, the application will still benefit from additional channels. Although by spreading the device load across all channels will cause the server to move from device to device again, it can now do so with far less devices to process on a single channel.

Data Types Description

| Data Type | Description |
|-----------|--|
| Boolean | Single bit |
| Word | Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit |
| Short | Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit |
| DWord | Unsigned 32 bit value bit 0 is the low bit bit 31 is the high bit |
| Long | Signed 32 bit value bit 0 is the low bit bit 30 is the high bit bit 31 is the sign bit |
| Float | 32 bit floating point value. The driver interprets two consecutive registers as a floating-point value by making the second register the high word and the first register the low word. |
| BCD | Two byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range. |
| String | Null terminated ASCII string. Includes HiLo LoHi byte order selection. |

Address Descriptions

Address specifications vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

[DL-05](#)

[DL-06](#)

[DL-240](#)

[DL-250\(-1\)](#)

[DL-260](#)

[DL-430](#)

[DL-440](#)

[DL-450](#)

DL-05 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
- V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|------------------------|---------------------------|-----------------------|
| Input Points | X0-X377 | V40400-V40417 |
| Output Points | Y0-Y377 | V40500-V40517 |
| Control Relays | C0-C777 | V40600-V40637 |
| Special Relays | SP0-SP777 | V41200-V41237 |
| Timer Status Bits | T0-T177 | V41100-V41107 |
| Timer Current Values | N/A | V0-V177 |
| Counter Status Bits | CT0-CT177 | V41140-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V1200-V7377 |
| Data Words | N/A | V1200.2H-V7377.126H |

| | | |
|----------------------------------|---------|--|
| String Access HiLo Byte Ordering | | .Bit is string length, range 2 to 126 bytes. |
| Data Words | N/A | V1200.2L-V7377.126L |
| String Access LoHi Byte Ordering | | .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) | N/A | V7400-V7577 |
| Data Words (Non-volatile) | N/A | V7400.2H-V7577.126H |
| String Access HiLo Byte Ordering | | .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) | N/A | V7400.2L-V7577.126L |
| String Access LoHi Byte Ordering | | .Bit is string length, range 2 to 126 bytes. |
| Stages | S0-S377 | V41000-V41017 |
| System Parameters | N/A | V7600-V7777 |

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| V41100 | Timer status bits 0-17 (octal). |
| V1200.1 | Bit access to V1200 bit 1. |
| V1200.100H | String with length 100 and HiLo byte ordering starting at V1200. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

DL-06 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y,GX,GY | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1200 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1200.
- V1200 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1200.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|----------------|---------------------------|-----------------------|
| Input Points | X0-X777 | V40400-V40437 |
| Output Points | Y0-Y777 | V40500-V40537 |
| Control Relays | C0-C1777 | V40600-V40677 |

| | | |
|---|--------------------------|---|
| Special Relays | SP0-SP777 | V41200-V41237 |
| Timer Status Bits | T0-T377 | V41100-V41117 |
| Timer Current Values | N/A | V0-V377 |
| Counter Status Bits | CT0-CT177 | V41040-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V400-V677 V1200-V7377 V10000-V17777 |
| Data Words String Access HiLo Byte Ordering | N/A | V400.2H-V677.126H V1200.2H-V7377.126H V10000.2H-V17777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V400.2L-V677.126L V1200.2L-V7377.126L V10000.2L-V17777.126L .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) | N/A | V7400-V7577 |
| Data Words (Non-volatile) String Access HiLo Byte Ordering | N/A | V7400.2H-V7577.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) String Access LoHi Byte Ordering | N/A | V7400.2L-V7577.126L .Bit is string length, range 2 to 126 bytes. |
| Stages | S0-S1777 | V41000-V41077 |
| Remote I/O | GX0-GX3777 GY0-GY3777 | V40000-V40177 V40200-V40377 |
| System Parameters | N/A | V700-V737 V7600-V7777 V36000-V37777 |

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| V41100 | Timer status bits 0-17 (octal). |
| V700 | System parameter word 700. |
| V2000.1 | Bit access to V2000 bit 1. |
| V1200.100H | String with length 100 and HiLo byte ordering starting at V1200. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

DL-240 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

1. V2000 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V2000.
2. V2000 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V2000.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|---|---------------------------|---|
| Input Points | X0-X477 | V40400-V40423 |
| Output Points | Y0-Y477 | V40500-V40523 |
| Control Relays | C0-C377 | V40600-V40617 |
| Special Relays | SP0-SP137 SP540-SP617 | V41200-V41205 V41226-V41230 |
| Timer Status Bits | T0-T177 | V41100-V41107 |
| Timer Current Values | N/A | V0-V177 |
| Counter Status Bits | CT0-CT177 | V41140-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V2000-V3777 |
| Data Words String Access HiLo Byte Ordering | N/A | V2000.2H-V3777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V2000.2L-V3777.126L .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) | N/A | V4000-V4377 |
| Data Words (Non-volatile) String Access HiLo Byte Ordering | N/A | V4000.2H-V4377.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words (Non-volatile) String Access LoHi Byte Ordering | N/A | V4000.2L-V4377.126L .Bit is string length, range 2 to 126 bytes. |
| Stages | S0-S777 | V41000-V41037 |
| System Parameters | N/A | V7620-V7737 V7746-V7777 |

Examples

| Example | Description |
|------------|--|
| V40500 | bits 0-17 (octal) of Y Output. |
| CT65 | Counter contact 65. |
| S57 | Stage control bit 57. |
| V2000.1 | Bit access to V2000 bit 1. |
| V2000.100H | String with length 100 and HiLo byte ordering starting at V2000. |
| V2000.78L | String with length 78 and LoHi byte ordering starting at V2000. |

DL-250(-1) Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

1. V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
2. V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|--|---------------------------|--|
| Input Points | X0-X777 | V40400-V40437 |
| Output Points | Y0-Y777 | V40500-V40537 |
| Control Relays | C0-C1777 | V40600-V40677 |
| Special Relays | SP0-SP777 | V41200-V41237 |
| Timer Status Bits | T0-T377 | V41100-V41117 |
| Timer Current Values | N/A | V0-V377 |
| Counter Status Bits | CT0-CT177 | V41140-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V1400-V7377 V10000-V17777 |
| Data Words String Access HiLo Byte Ordering | N/A | V1400.2H-V7377.126H V10000.2H-V17777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V1400.2L-V7377.126L V10000.2L-V17777.126L .Bit is string length, range 2 to 126 bytes. |
| Stages | S0-S1777 | V41000-V41077 |
| System Parameters | N/A | V7400-V7777 V37000-V37777 |

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| V41100 | Timer status bits 0-17 (octal). |
| V7400 | Stage control bit 57. |
| V1400.1 | Bit access to V1400 bit 1. |
| V1400.100H | String with length 100 and HiLo byte ordering starting at V1400. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

DL-260 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-----------|----------------|
| I/O | X,Y,GX,GY | Boolean |

| | | |
|------------|-------------|---|
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
- V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|--|---------------------------|---|
| Input Points | X0-X1777 | V40400-V40477 |
| Output Points | Y0-Y1777 | V40500-V40577 |
| Control Relays | C0-C3777 | V40600-V40777 |
| Special Relays | SP0-SP777 | V41200-V41237 |
| Timer Status Bits | T0-T377 | V41100-V41117 |
| Timer Current Values | N/A | V0-V377 |
| Counter Status Bits | CT0-CT377 | V41140-V41157 |
| Counter Current Values | N/A | V1000-V1377 |
| Data Words | N/A | V400-V777 V1400-V7577 V10000-V35777 |
| Data Words String Access HiLo Byte Ordering | N/A | V400.2H-V777.126H V1400.2H-V7577.126H V10000.2H-V35777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V400.2L-V777.126L V1400.2L-V7577.126L V10000.2L-V35777.126L .Bit is string length, range 2 to 126 bytes. |
| Remote I/O | GX0-GX3777 GY0-GY3777 | V40000-V40177 V40200-V40377 |
| Stages | S0-S1777 | V41000-V41077 |
| System Parameters | N/A | V7600-V7777 V36000-V37777 |

Examples

| Example | Description |
|---------|--------------------------------|
| V40401 | Bits 20-27 (octal) of X Input. |

| | |
|-----------|---|
| V41100 | Timer status bits 0-17 (octal). |
| V7600 | System parameter word 7600. |
| V2000.1 | Bit access to V2000 bit 1. |
| V400.100H | String with length 100 and HiLo byte ordering starting at V400. |
| V1400.78L | String with length 78 and LoHi byte ordering starting at V1400. |

DL-430 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y,GX | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxx>.<yy> where xxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
- V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|--|---------------------------|---|
| Input Points | X0-X477 | V40400-V40423 |
| Output Points | Y0-Y477 | V40500-V40523 |
| Control Relays | C0-C737 | V40600-V40635 |
| Special Relays | SP0-SP137 SP320-SP617 | V41200-V41205 V41215-V41230 |
| Timer Status Bits | T0-T177 | V41100-V41107 |
| Timer Current Values | N/A | V0-V177 |
| Counter Status Bits | CT0-CT177 | V41040-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V1400-V7377 |
| Data Words String Access HiLo Byte Ordering | N/A | V1400.2H-V7377.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V1400.2L-V7377.126L .Bit is string length, range 2 to 126 bytes. |
| Remote I/O | GX0-GX737 | V40000-V40037 |
| Stages | S0-S577 | V41000-V41027 |

| | | |
|-------------------|-----|-------------|
| System Parameters | N/A | V7400-V7777 |
|-------------------|-----|-------------|

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| T172 | Timer contact 172. |
| GX5 | Remote I/O bit 5. |
| V2000.1 | Bit access to V2000 bit 1. |
| V1400.100H | String with length 100 and HiLo byte ordering starting at V1400. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

DL-440 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y,GX | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxxx>.<yy> where xxxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
- V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|------------------------|---|---|
| Input Points | X0-X477 | V40400-V40423 |
| Output Points | Y0-Y477 | V40500-V40523 |
| Control Relays | C0-C1777 | V40600-V40677 |
| Special Relays | SP0-SP137 SP320-SP617 SP620-SP717 | V41200-V41205 V41215-V41230 V41231-V41234 |
| Timer Status Bits | T0-T377 | V41100-V41117 |
| Timer Current Values | N/A | V0-V377 |
| Counter Status Bits | CT0-CT177 | V41040-V41147 |
| Counter Current Values | N/A | V1000-V1177 |
| Data Words | N/A | V1400-V7377 V10000-V17777 |

| | | |
|--|------------|--|
| Data Words String Access HiLo Byte Ordering | N/A | V1400.2H-V7377.126H V10000.2H-V17777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V1400.2L-V7377.126L V10000.2L-V17777.126L .Bit is string length, range 2 to 126 bytes. |
| Remote I/O | GX0-GX1777 | V40000-V40077 |
| Stages | S0-S1777 | V41000-V41077 |
| System Parameters | N/A | V700-V737 V7400-V7777 |

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| V41100 | Timer status bits 0-17 (octal). |
| V700 | System parameter word 700. |
| V2000.1 | Bit access to V2000 bit 1. |
| V1400.100H | String with length 100 and HiLo byte ordering starting at V1400. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

DL-450 Addressing

The default data types are shown in **bold**.

| Memory Type | Reference | Data Types |
|-------------|-------------|---|
| I/O | X,Y,GX,GY | Boolean |
| Devices | C,SP,T,CT,S | Boolean |
| Data Words | V | Boolean, Word, Short , DWord, Long, LBCD, Float, String, BCD* |

*The default is for Timers and Counters only.

Bit Access to V Memory

Bit information can be directly accessed within V memory registers. To access a bit within a V memory register, a bit number can be appended to any V memory address. V memory addressing with bit access would appear as follows: V<xxxx>.<yy> where xxxx is the V memory register location and yy is the bit number (0 to 15) within that register. If the V memory location is either a Long or DWord, the bit number yy can be (0 to 31). For more information, refer to the examples below.

Array Support for Data Words

This driver supports array notation for V memory Data Word addresses. To specify an array, append the array size to the address specification as follows: address[array size] or address[rows][cols]. Array size is limited to 63 elements when referenced as a Word, Short, and BCD, and 31 elements when referenced as a DWord, Long, Float, and LBCD.

Examples

- V1400 [63] @ Word - Array of 63 Words (Maximum allowed) starting at V1400.
- V1400 [31] @ DWord - Array of 31 DWords (Maximum allowed) starting at V1400.

String Access to Data Words

This driver supports reading and writing V memory Data Words as an ASCII string. When using V memory for string data, each register will contain two bytes of ASCII data. The order of the ASCII data within a given register can be selected when the string is defined. The length of the string can be from 2 to 126 bytes and is entered in place of a bit number. The length must be entered as an even number. The byte order is specified by appending either a "H" or "L" to the address.

Note: The references are in Octal format.

| Memory Type | Discrete Memory Reference | Word Memory Reference |
|---------------|---------------------------|-----------------------|
| Input Points | X0-X1777 | V40400-V40477 |
| Output Points | Y0-Y1777 | V40500-V40577 |

| | | |
|--|--------------------------|--|
| Control Relays | C0-C3777 | V40600-V40777 |
| Special Relays | SP0-SP137 SP320-SP717 | V41200-V41237 |
| Timer Status Bits | T0-T377 | V41100-V41117 |
| Timer Current Values | N/A | V0-V377 |
| Counter Status Bits | CT0-CT377 | V41040-V41157 |
| Counter Current Values | N/A | V1000-V1377 |
| Data Words | N/A | V1400-V7377 V10000-V37777 |
| Data Words String Access HiLo Byte Ordering | N/A | V1400.2H-V7377.126H V10000.2H-V37777.126H .Bit is string length, range 2 to 126 bytes. |
| Data Words String Access LoHi Byte Ordering | N/A | V1400.2L-V7377.126L V10000.2L-V37777.126L .Bit is string length, range 2 to 126 bytes. |
| Remote I/O | GX0-GX3777 GY0-GY3777 | V40000-V40177 V40200-V40377 |
| System Parameters | N/A | V700-V737 V7400-V7777 |

Examples

| Example | Description |
|------------|--|
| V40401 | Bits 20-27 (octal) of X Input. |
| V41100 | Timer status bits 0-17 (octal). |
| V700 | System parameter word 700. |
| V2000.1 | Bit access to V2000 bit 1. |
| V1400.100H | String with length 100 and HiLo byte ordering starting at V1400. |
| V1500.78L | String with length 78 and LoHi byte ordering starting at V1500. |

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

[Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Device address '<address>' is not supported by model '<model name>'](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

Device Specific Messages

[Winsock initialization failed \(OS Error = n\)](#)

[Winsock V1.1 or higher must be installed to use the AutomationDirect ECOM device driver](#)

[Bad address in block \[<start address> to <end address>\] on device '<device name>'](#)

Automatic Tag Database Generation Messages

[Unable to generate a tag database for device <device name>. Reason: Low memory resources](#)

[Unable to generate a tag database for device <device name>. Reason: Import file is invalid or corrupt](#)

Address Validation

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

[Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Device address '<address>' is not supported by model '<model name>'](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

Missing address

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has no length.

Solution:

Re-enter the address in the client application.

Device address '<address>' contains a syntax error

Error Type:

Warning

Possible Cause:

1. A tag address contains one or more invalid characters.
2. The Bit addressing notation conflicts with the assigned data type.

Solution:

Re-enter the address in the client application.

Address '<address>' is out of range for the specified device or register

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically references a location that is beyond the range of supported locations for the device.

Solution:

Verify that the address is correct; if it is not, re-enter it in the client application.

Device address '<address>' is not supported by model '<model name>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically references a location that is valid for the communications protocol but not supported by the target device.

Solution:

Verify that the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

Data Type '<type>' is not valid for device address '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has been assigned an invalid data type.

Solution:

Modify the requested data type in the client application.

Device address '<address>' is Read Only

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has a requested access mode that is not compatible with what the device supports for that address.

Solution:

Change the access mode in the client application.

Device Status Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

Device '<device name>' not responding

Error Type:

Serious

Possible Cause:

1. The Ethernet connection between the device and the Host PC is broken.
2. The named device may have been assigned an incorrect IP address.
3. The requested address is not available in the device.

Solution:

1. Verify the cabling between the PC and the ECOM device network.

2. Verify that the IP address given to the named device matches that of the actual device.
3. Verify that the device supports the requested address.

Unable to write to '<address>' on device '<device name>'

Error Type:

Serious

Possible Cause:

1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.

Solution:

1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.

Device Specific Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Specific Messages

[Winsock initialization failed \(OS Error = n\)](#)

[Winsock V1.1 or higher must be installed to use the AutomationDirect ECOM device driver](#)

[Bad address in block \[<start address> to <end address>\] on device '<device name>'](#)

Winsock initialization failed (OS Error = n)

Error Type:

Fatal

| OS Error | Possible Solution |
|----------|---|
| 10091 | Indicates that the underlying network subsystem is not ready for network communication. Wait a few seconds and restart the driver. |
| 10067 | Limit on the number of tasks supported by the Windows Sockets implementation has been reached. Close one or more applications that may be using Winsock and restart the driver. |

Winsock V1.1 or higher must be installed to use the AutomationDirect ECOM device driver

Error Type:

Fatal

Possible Cause:

The version number of the Winsock DLL found on the system is less than 1.1.

Solution:

Upgrade Winsock to version 1.1 or higher.

Bad address in block [<start address> to <end address>] on device '<device name>'

Error Type:

Serious

Possible Cause:

An attempt has been made to reference a nonexistent location in the specified device.

Solution:

Verify the tags assigned to addresses in the specified range on the device. Eliminate those that reference invalid locations.

Automatic Tag Database Generation Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Automatic Tag Database Generation Messages

[Unable to generate a tag database for device <device name>. Reason: Low memory resources](#)

[Unable to generate a tag database for device <device name>. Reason: Import file is invalid or corrupt](#)

Unable to generate a tag database for device <device name>. Reason: Low memory resources

Error Type:

Warning

Possible Cause:

Memory required for database generation could not be allocated. The process is aborted.

Solution:

Close any unused applications and/or increase the amount of virtual memory and try again.

Unable to generate a tag database for device <device name>. Reason: Import file is invalid or corrupt

Error Type:

Warning

Possible Cause:

The file specified as the Tag Import File in the Database Settings tab in Device Properties is an improperly formatted txt or csv file.

Solution:

If importing Element Documentation, verify that the export file was saved in "Standard Format" with a .csv extension. If problem resumes, try re-exporting the file.

See Also:

[Importing DirectSoft Elements](#)

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