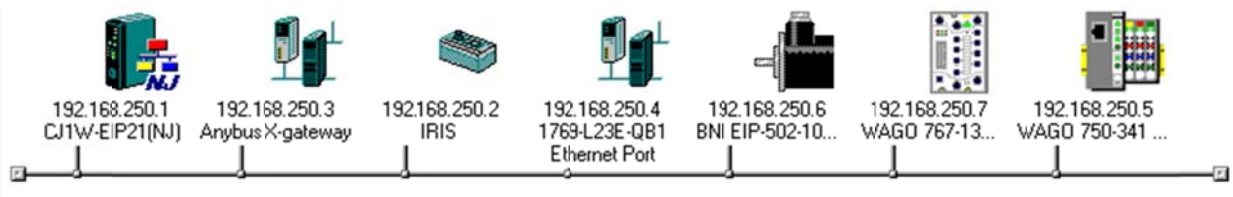
EtherNet/IP Error Code Decoder



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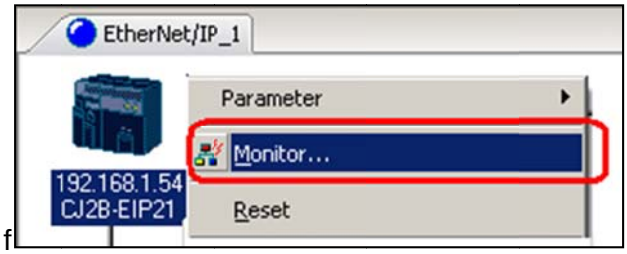
This document is intended to help the user identify the causes of error codes generated when connecting EtherNet/IP devices to Omron PLC and MAC controllers such as CS1, CJ2, CJ1, and NJ products. Detailed troubleshooting procedures for common errors are also provided.

Section 1: Reading the Error Code

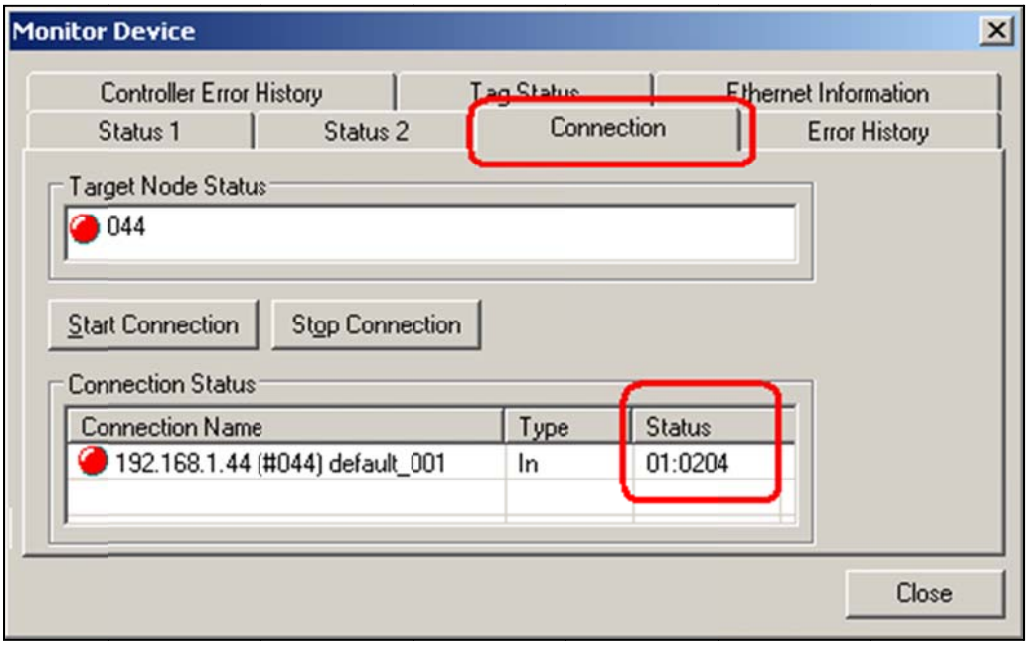
1. Go online with the Omron **Network Configurator for EtherNet/IP**.

2. Upload the parameters from the PLC / MAC if the configuration in the EtherNet/IP module is different from the configuration in the Network Configurator for EtherNet/IP by right clicking on the PLC / MAC, and selecting **Parameter / Upload**.

3. Right Click on the PLC / MAC and select **Monitor**.



4. Go to the **Connection** tab. The detailed error code for each device is shown in **Status**. Nodes with communications errors will be shown with a red circle next to the node. Refer to the error code list in Section 2 of this document for the specific error information.



Section 2: Error Code List

Note: error codes shown in bold have troubleshooting procedures in section 3.

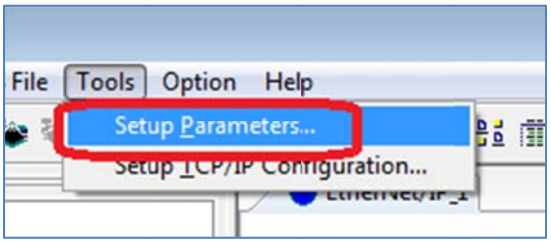
01:0100	Connection in use or duplicate forward open
01:0103	Transport class and trigger combination not supported
01:0106	Ownership Conflict
01:0107	Target connection not found
01:0108	Invalid network connection parameter
01:0109	**Invalid connection size**
01:0110	Target for connection not configured
01:0111	RPI not supported
01:0113	Out of connections
01:0114	**Vendor ID or Product Code mismatch**
01:0115	**Product Type Mismatch**
01:0116	**Revision Mismatch**
01:0117	**Invalid Produced or Consumed application path**
01:0118	Invalid or inconsistent configuration application path
01:0119	Non-Listen only connection not opened
01:011A	Target object out of connections
01:011B	RPI is smaller than the production inhibit time
01:011C	Transport Class Not Supported
01:011D	Production Trigger Not Supported
01:011E	Direction Not Supported
01:011F	Invalid Originator to Target Network Connection FIXVAR
01:0120	Invalid Target to Originator Network Connection FIXVAR
01:0121	Invalid Originator to Target Network Connection Priority
01:0122	Invalid Target to Originator Network Connection Priority
01:0123	Invalid Originator to Target Network Connection Type
01:0124	Invalid Target to Originator Network Connection Type
01:0125	Invalid Originator to Target Network Connection Redundant_Owner
01:0126	Invalid Configuration Size
01:0127	**Invalid Originator to Target Size**
01:0128	**Invalid Target to Originator Size**
01:0129	Invalid Configuration Application Path
01:012A	Invalid Consuming Application Path
01:012B	Invalid Producing Application Path
01:012C	Configuration Symbol Does Not Exist
01:012D	Consuming Symbol Does Not Exist
01:012E	Producing Symbol Does Not Exist
01:012F	Inconsistent Application Path Combination
01:0130	Inconsistent Consume Data Format

01:0131	Inconsistent Produce Data Format
01:0132	Null Forward Open Function Not Supported
01:0133	Connection Timeout Multiplier Not Acceptable
01:0203	Connection timed out
01:0204	Unconnected request timed out
01:0205	Parameter error in unconnected request service
01:0206	Message too large for unconnected send service
01:0207	Unconnected acknowledgement without reply
01:0301	No buffer memory available
01:0302	Network bandwidth not available for data
01:0303	No consumed connection ID filter available
01:0304	Not configured to send scheduled priority data
01:0305	Schedule signature mismatch
01:0306	Schedule signature validation not possible
01:0311	Port not available
01:0312	Link address not valid
01:0315	Invalid segment in connection path
01:0316	Error in Forward Close service connection path
01:0317	Scheduling not specified
01:0318	Link address to self invalid
01:0319	Secondary resource unavailable
01:031A	Rack connection already established
01:031B	Module connection already established
01:031C	**Miscellaneous**
01:031D	Redundant connection mismatch
01:031E	No more user configurable link consumer resources available in the producing module
01:031F	No more user configurable link consumer resources available in the producing module
01:0800	Network link in path to module is offline
01:0810	No target application data available
01:0811	No originator application data available

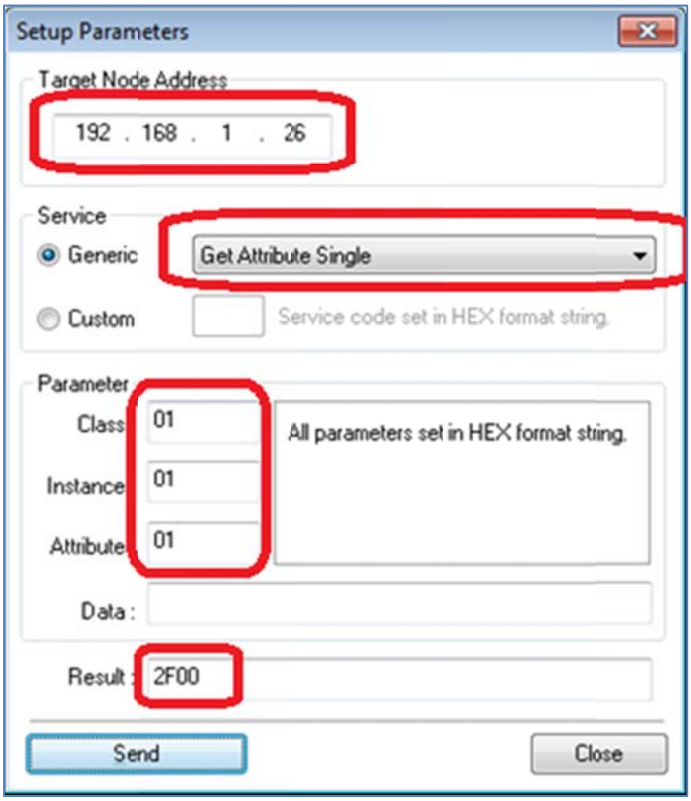
Section 3: Troubleshooting common error codes:

EDS file differences: Error codes **01:0114**, **01:0115**, and **01:0116,** are caused by differences in the Identity Object between the .eds file installed in the Network Configurator for EtherNet/IP and the actual hardware device. To correct these errors, read the actual value of the parameters from the device, and modify the .eds file (using Notepad) to match the hardware device.

1. Using the Network Configurator for EtherNet/IP, select **Tools** / **Setup Parameters**. The Network Configurator for EtherNet/IP must be online to select this menu option.



2. Using the Setup Parameter tool, read the value of each of the 4 parameters shown, and modify the .eds file for the device to match the values read from the device. To read the data, send the messages to the IP Address of the device, using a service of **Get Attribute Single.** Refer to the table below for Class, Instance, and Attribute information.



	Class	Instance	Attribute
VendCode	01	01	01
ProdType	01	01	02
ProdCode	01	01	03
MajRev/MinRev	01	01	04

3. **Response to VendCode:** The response to reading Attribute 1 will be a hexadecimal number, which is byte swapped. Example: 2F00 = VendCode **47**.

4. **Response to ProdType:** The response to reading Attribute 2 will be a hexadecimal number, which is byte swapped. Example: 0700 = ProdType **7**.

5. **Response to ProdCode:** The response to Attribute 3 will be a hexadecimal number, which is byte swapped. Example: 5104 = VendCode **1105.**

6. **Response to MajRev/MinRev:** The response to Attribute 4 will be 2 digits of MajRev in hexadecimal and 2 digits of MinRev in hexadecimal. Example: 0201 = MajRev **02**, MinRev **01**.

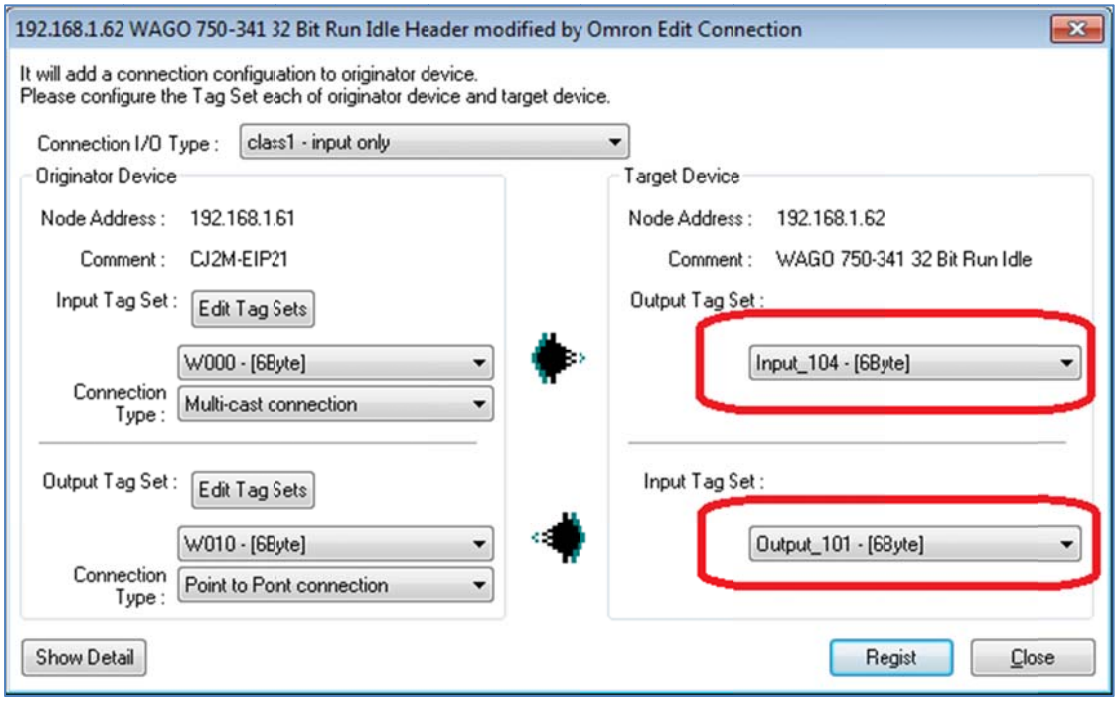
7. The **Device** section of the .eds file should be modified to match the values read from the parameters, as shown below.

[Device]
VendCode = **47;**
VendName = "OMRON Corporation";
ProdType = **7**;
ProdTypeStr = "General Purpose Discrete I/O";
ProdCode = **1105**;
MajRev = **2**;
MinRev = **1**;
ProdName = "ERT1-MD32SLH-1";

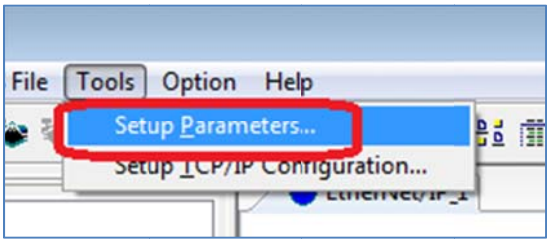
8. After making the changes, save the file, delete the device from the product tree in the Network Configurator for EtherNet/IP, and remove any instances of the device in the network diagram. Reload the .eds file and complete the connections.

IO Size Mismatches: Error codes **01:0109**, **01:0127**, **01:0128** and sometimes **01:031C** are caused by differences in the produced or consumed data size specified in the connection to a device, compared to the actual assembly sizes of the device. To correct these errors, read the actual produced and consumed assembly data from the device, determine the size from the response data, and modify the connection size.

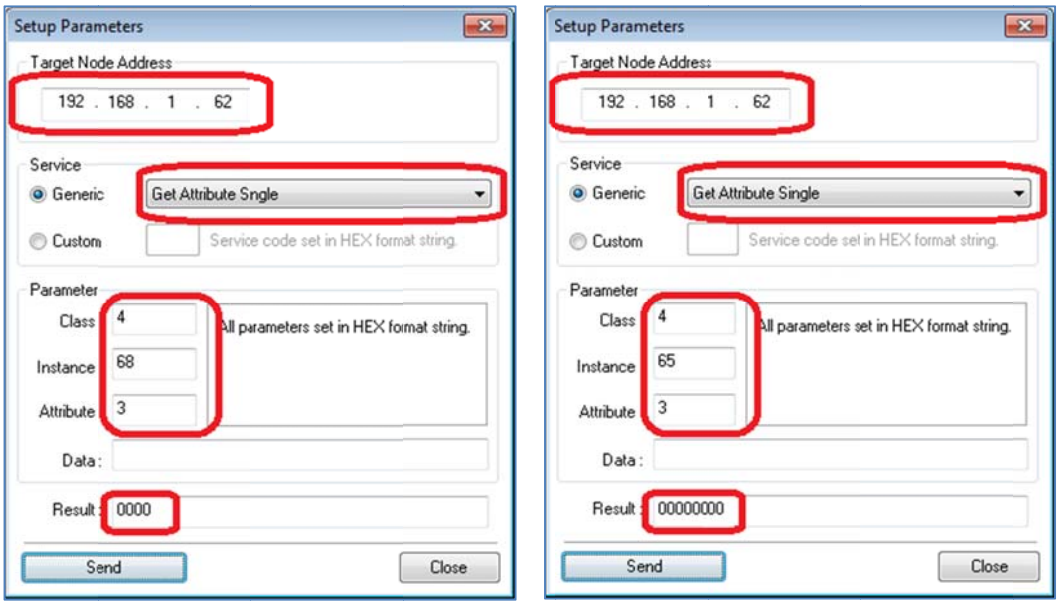
1. Using the Connection information for the device, determine the produced and consumed assembly numbers for the device. Shown below are assemblies 104 and 101.



2. Using the Network Configurator for EtherNet/IP, select **Tools** / **Setup Parameters**. The Network Configurator for EtherNet/IP must be online to select this menu option.



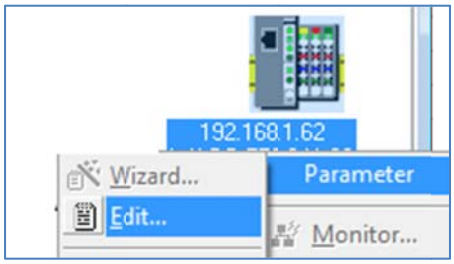
3. Using the Setup Parameter tool, read the raw data for each assembly. To read the data, send the messages to the IP Address of the device, using a service of **Get Attribute Single.** Use **Class 4**, **Instance <Assembly Number in hexadecimal>**, **Attribute 3.** From the example in step 1, Assembly 104 (**Instance 68,** which is 104 in hexadecimal) and Assembly 101 (**Instance 65**, which is 101 in hexadecimal) are read.



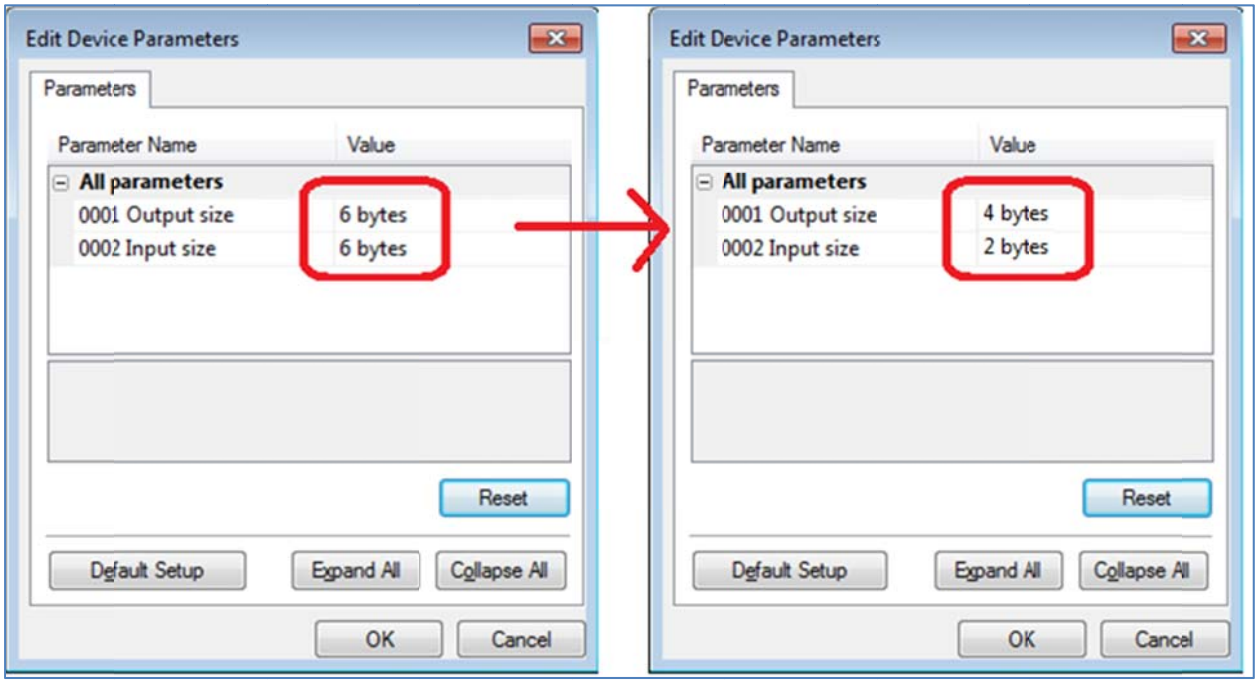
4. Count the number of digits received in the Result, and divide the number of digits by 2 to determine the number of bytes. If the response in the Result window is large, highlight the entire Result, and copy / paste into Notepad to facilitate counting the number of digits. In the example above, the response to reading the data from Assembly 104 is **2 bytes** long (4 digits) and the response to reading the data from Assembly 101 is **4 bytes** long (8 digits).

5. Modify the Assembly Size for the device by:

    a. Right click on the device in the network diagram, and selecting **Parameter** / **Edit**.



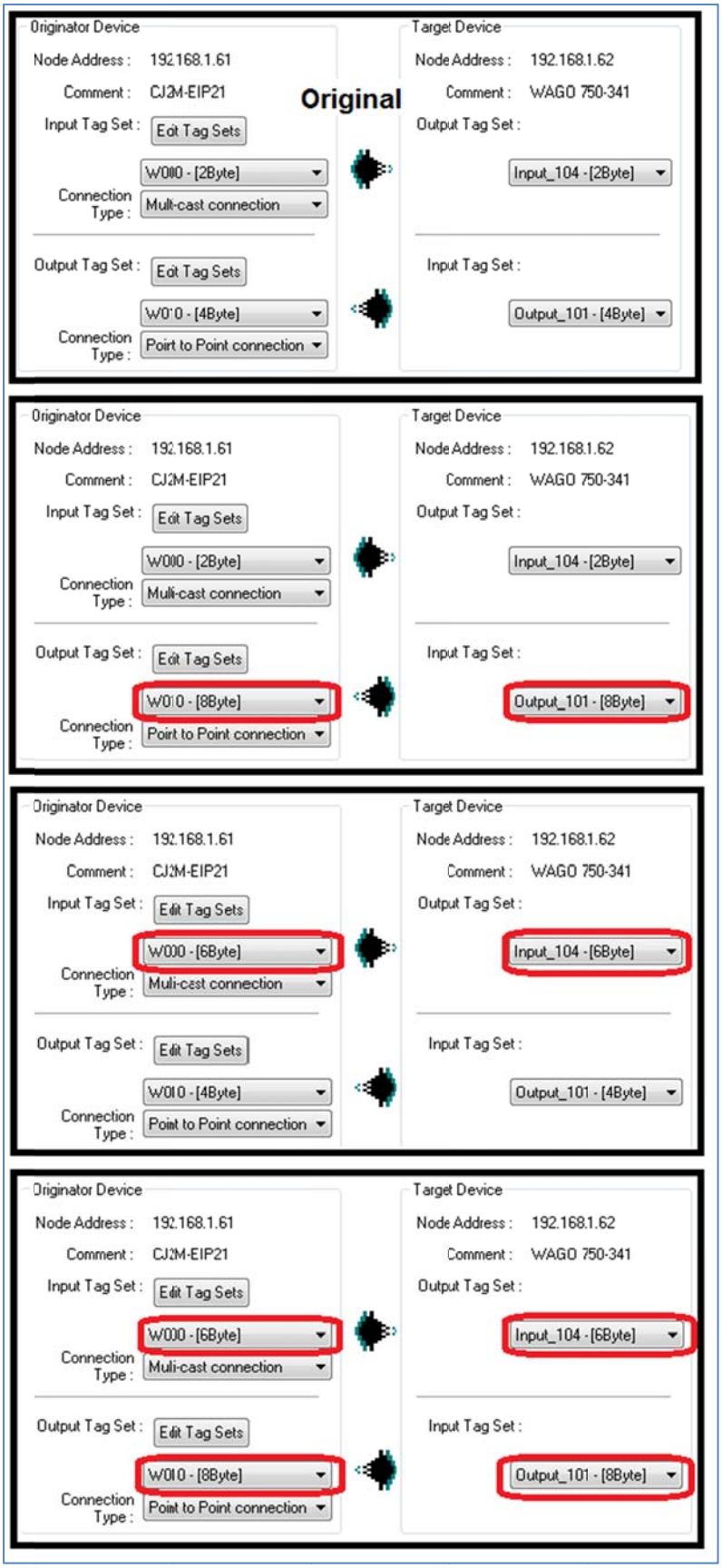
    b. Modify the assembly sizes as shown. After modifying the sizes, edit the Tag sizes for the PLC / MAC, modify the Connection to reflect the new sizes, and download to the PLC / MAC.



6. If the above steps do not resolve error code **01:0109**, **01:0127**, **01:0128** and sometimes **01:031C**, try the following to address a specific situation in which the .eds file for the EtherNet/IP device indicates that the product does not use a 32 Bit Run / Idle Header, but the hardware does use a 32 Bit Run / Idle Header. This Run / Idle Header mismatch could be in the produced connection, the consumed connection, or both connections, so there are 3 different combinations to try. See the image on the following page for an example of each of the 3 combinations.

    a. Add 4 extra bytes to the Produced Data (both the size for the device and the Omron PLC / MAC Tag).
    b. Add 4 extra bytes to the Consumed Data (both the size for the device and the Omron PLC / MAC Tag).
    c. Add 4 extra bytes to both the Produced and Consumed Data (both the size for the device and the Omron PLC / MAC tags).

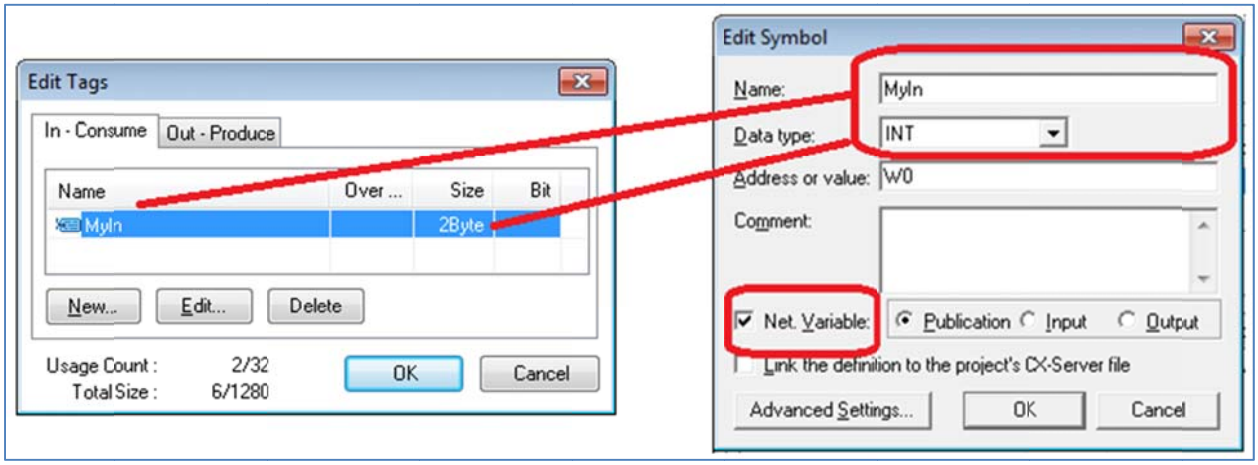
    If this does resolve the communication error, the data in the Omron PLC / MAC will be offset by 4 bytes from the beginning of the PLC tag or memory address. The first 4 bytes will be the 32 Bit Run / Idle header, and should not be used in the PLC / MAC program.


Originator Device
Node Address : 192.168.1.61
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
W000 - [2Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
W010 - [4Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.1.62
Comment : WAGO 750-341
Output Tag Set :
Input_104 - [2Byte]
Input Tag Set :
Output_101 - [4Byte]
Original
Originator Device
Node Address : 192.168.1.61
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
W000 - [2Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
W010 - [8Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.1.62
Comment : WAGO 750-341
Output Tag Set :
Input_104 - [2Byte]
Input Tag Set :
Output_101 - [8Byte]
Originator Device
Node Address : 192.168.1.61
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
W000 - [6Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
W010 - [4Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.1.62
Comment : WAGO 750-341
Output Tag Set :
Input_104 - [6Byte]
Input Tag Set :
Output_101 - [4Byte]
Originator Device
Node Address : 192.168.1.61
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
W000 - [6Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
W010 - [8Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.1.62
Comment : WAGO 750-341
Output Tag Set :
Input_104 - [6Byte]
Input Tag Set :
Output_101 - [8Byte]

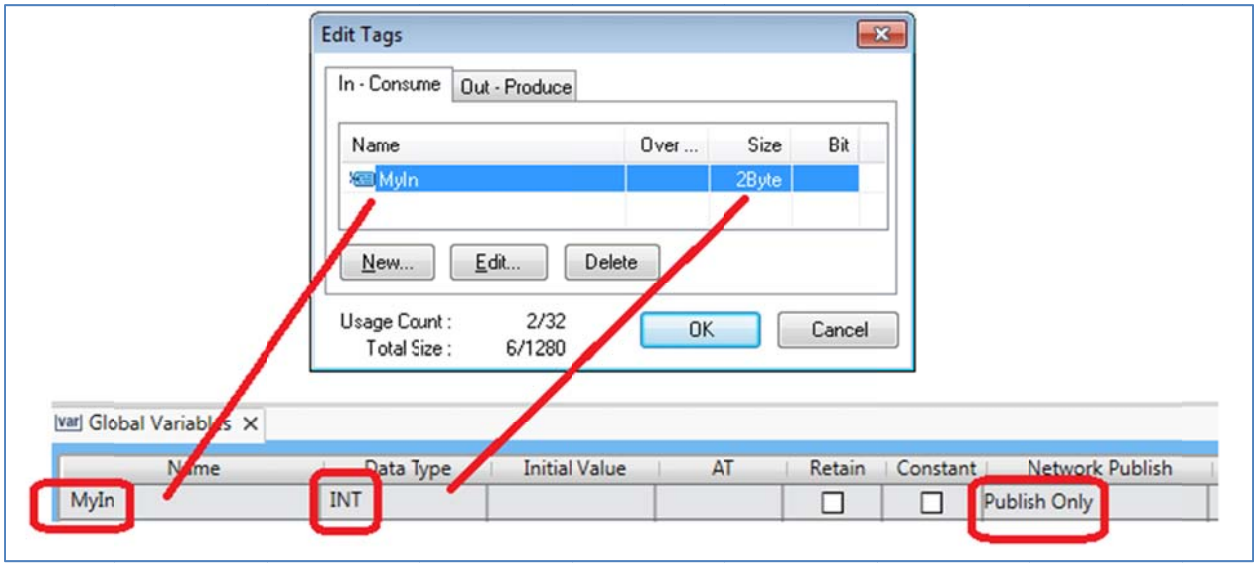
Invalid Produced or Consumed Application Path: Error code **01:0117** may be caused by Tag Names used in the Network Configurator for EtherNet/IP that do not exist in the PLC / MAC, do not have the same size in the PLC as in the Network Configurator for EtherNet/IP, or are not marked as network variables in the PLC / MAC.

1. Verify that any Tag Names used in the Network Configurator for EtherNet/IP
    a. Exist in the PLC / MAC, and are spelled correctly.
    b. Are marked as network variables or Publish Only.
    c. Are the correct size in the PLC to match the size in the Network Configurator for EtherNet/IP (in Bytes).

Example from CX Programmer



Example from Sysmac Studio

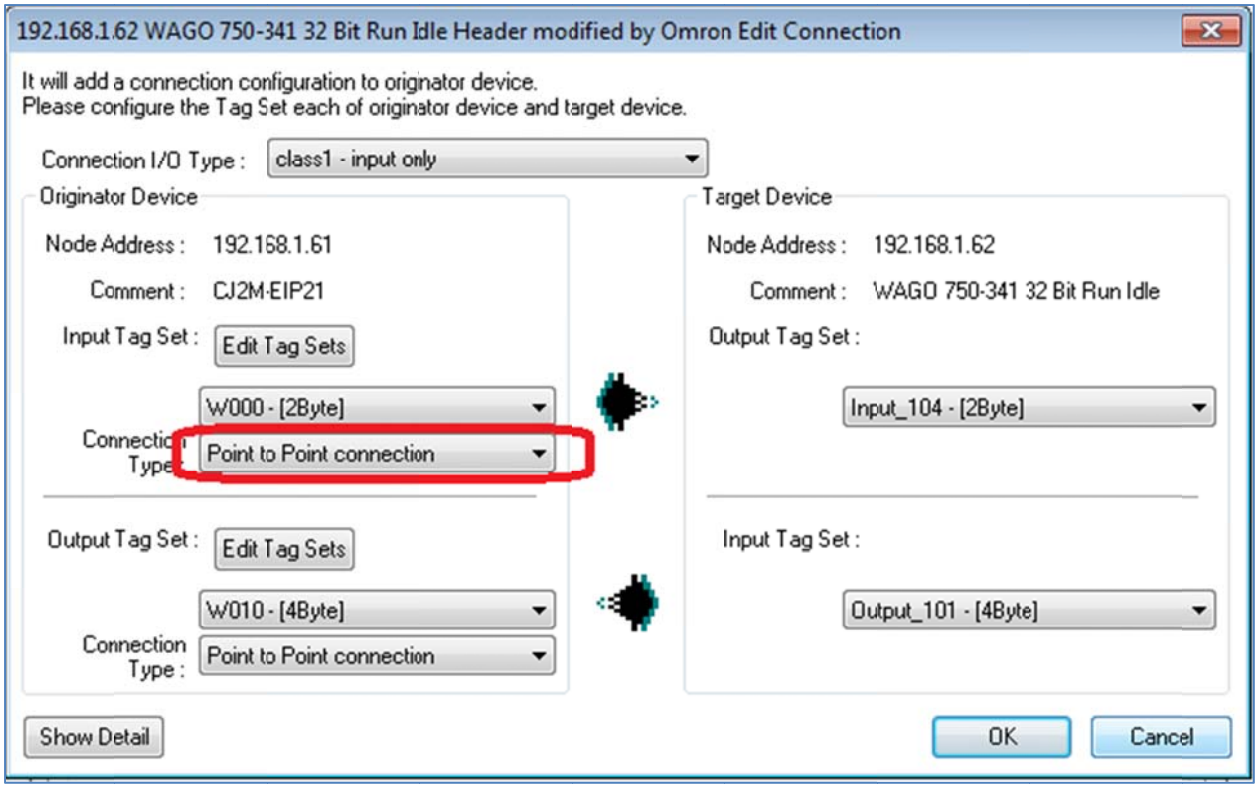


Other error codes: Error codes other than those described in section 3 of this document may indicate that additional modifications to the .eds file are necessary, or that the product itself does not comply with the EtherNet/IP specification.

Please contact Omron and / or the EtherNet/IP device manufacturer for additional support.

Section 4: Other general EtherNet/IP troubleshooting recommendations:

1. Use **Point to Point** connections, instead of Multicast connections. Some devices do not support Multicast connections, or do not implement them properly, and some IT devices block Multicast packets.



2. Remove Ethernet switches from the network, and use a crossover Ethernet cable between the PLC / MAC and the EtherNet/IP device.

3. Try different Ethernet cables. Ethernet cables degrade with rough use in the field (laptop bags, etc.). Also, sometimes cables are over crimped during manufacturing, causing intermittent connections.

4. If the Status of the connection as read in section 1 is 00:0000, but the data received from the EtherNet/IP device is always 0 for all bytes received, this may indicate improper implementation of the 32 Bit Run / Idle Header in the EtherNet/IP device. Contact Omron Technical Support for assistance removing the Run / Idle Header from the .eds file, and add extra bytes as described in step 6 of section 3 of this document.

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