OmronCIP Communication Driver

This document has the specific information related to this driver configuration. For a generic explanation on Device Module, Channels, Nodes and Points configuration, please refer to reference guide.

Contents

Section 1 – Summary Information 2
Section 2 – Channels Configuration 2
Protocol Options 2
Section 3 – Nodes Configuration 2
Station Configuration 2
Example Nodes Configuration 2
Section 4 – Points Configuration 3
Address Column Configuration 3
Section 5 – Troubleshoot 3
Error Codes 4
CIP Error Codes 4
Revision History 6

Section 1 – Summary Information

Communication Driver Name: OmronCIP

Implementation DLL: T.ProtocolDriver. OmronCIP.dll

Protocol: OmronCIP (CIP over TCP/IP)

Interface: TCPIP

PLC types supported: NX-Series (tested with NX102-9020).

Manufacturer: OMRON

PC Hardware requirements: Ethernet board

Section 2 – Channels Configuration

Protocol Options

Model: Set the PLC model. It can be:

- ***NX-Series:*** For all models NX-Series and compatible.

Section 3 – Nodes Configuration

Station Configuration

Stations syntax: <IP > ; <Port > ; <Slot>

Where :

<**IP**> = IP address of the slave device in the network

< **Port** > = TCP port where the slave device is listening (default is 44818)

<**Slot**> = Slot is the Slot number where the CPU is connected.

Example Nodes Configuration

Name	Node	PrimaryStation	SecundaryStation	Description
Node1	OmronCIP	192.168.1.101;44818;0		

Section 4 – Points Configuration

Address Column Configuration

The syntax for the ControlLogix communication points are:

- ***<Type> : <DeviceTagName>***

  Type**:** Type is data type of the Tag in PLC.

  The valid type values are:

Type	Read	Write	Size
BOOL	✓	✓	1 bit
SINT	✓	✓	1 byte or 8 bits
INT	✓	✓	2 bytes or 16 bits
DINT	✓	✓	4 bytes or 32 bits
REAL	✓	✓	4 bytes or 32 bits IEEE Floating point
LREAL	✓	✓	8 bytes or 64 bits IEEE Floating point
STRING	✓	✓	n bytes

  DeviceTagName: Tag Name in PLC.

Section 5 – Troubleshoot

The status of the driver execution can be observed through the diagnostic tools, which are:

- TraceWindow (with Settings, Device enabled)
- PropertyWatch
- ModuleInformation

Status value of 0 (zero) means communication success. Negative values indicate internal driver error and positive values means protocol error.

Error Codes

Error Code	Description	Possible Solution
0	Success	• None
-100	Error Sending Message	• Turn PLC on • Plug the PLC Ethernet cable • Check configured IP Address field in Device > Node • Ping PLC using prompt command
-101	Error Sending and Waiting Message	
-102 … -105	Error creating TCP/IP connection	
-106	Error Receiving Message	
-112	Timeout Start Message	• Turn PLC on • Plug the PLC Ethernet cable • Ping PLC using prompt command • Check configured IP Address field in Device > Node • Increase the driver timeout field in Device > Channel
-113	Timeout between Treated Chars	
-114	Timeout End Message	
-115	Timeout Connect	
-200	Protocol Error	• Check if the PLC model is compatible with driver documentation • Check the configured Address field in Device > Points
-201	Invalid Protocol	• Check if the PLC model is compatible with driver documentation • Contact technical support
-202	Invalid Station	• Check configured IP Address field in Device > Node • Restart the driver
-204	Invalid Message Sequence	• Check if the PLC model is compatible with driver documentation • Check the configured Address field in Device > Points
> 0	CIP Error	• See CIP error codes table

CIP Error Codes

The following error codes are in decimal.

Error Code	Description
1	Connection Failure.
2	Insufficient resources.
3	Value invalid.
4	IOI could not be deciphered or tag does not exist.
5	Unknown destination.
6	Data requested would not fit in response packet.
7	Loss of connection.

8	Unsupported service.
9	Error in data segment or invalid attribute value.
10	Attribute list error.
11	State already exists.
12	Object model conflict.
13	Object already exists.
14	Attribute not settable.
15	Permission denied.
16	Device state conflict.
17	Reply will not fit.
18	Fragment primitive.
19	Insufficient command data / parameters specified to execute service.
20	Attribute not supported.
21	Too much data specified.
26	Bridge request too large.
27	Bridge response too large.
28	Attribute list shortage.
29	Invalid attribute list.
30	Embedded service error.
31	Failure during connection.
34	Invalid reply received.
37	Key segment error.
38	Number of IOI words specified does not match IOI word count.
39	Unexpected attribute in list.

In this driver is very important to enable the TraceWindow messages, as invalid addresses can cause all the communication block with the PLC to fail, the TraceWindow tool (when Device is enabled on the settings) will display the first invalid address found on the block.

In order to have a quick view on the many communication blocks, open the ModuleInformation, navigate on the tree to find OmronCIP and them select the Read Groups. Looking at the number and success and fail communication counters, you can easily identify if there is a block with error and then use the TraceWindow to locate the wrong address.

Revision History

Revision	Description	Date
A	Initial Revision	*November* 2018