

# PLC-ANALYZER pro 6

PLC-Logic analysis in no time

## Driver Addendum



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PLC-driver

**OMRON**

C / CV / CS1 / NJ/ NX / NY / CJ2

Ethernet TCP/IP / programming interface (Host Link)



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# **PLC-ANALYZER pro 6 - Driver Addendum**

## **OMRON NJ / NX / NY / CJ2 - Ethernet TCP/IP OMRON C / CV / CS1 - programming interface (Host Link)**


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## Signal source

### OMRON C / CV / CS1 / NJ / NX / NY / CJ2

This driver addendum describes the particularities of the following PLC drivers and gives you hints on using them.

- OMRON NJ / NX / NY / CJ2 - Ethernet TCP/IP
- OMRON C / CV / CS1 - PG-Schnittstelle (Host Link)

The OMRON C / CV / CS1 / NJ / NX / NY / CJ2 driver can be used to acquire signals provided by an OMRON controller of type C, CV, CS1, NJ, NX, NY or CJ2.

It is important that you read through the driver addendum before using a PLC driver. Please pay attention to the WARNINGS that advise you on possible dangers when using PLC-ANALYZER pro.



#### **WARNING**

Errors that may occur in the automated facility, endangering humans or causing large-scale material damage, must be prevented by additional precautions. These precautions (e.g. independent limit monitors, mechanical interlocks) must guarantee safe operation, even in case of dangerous errors.

## Installation

The PLC driver can be added to the project as a new signal source. If the driver you want is not yet in the list of available signal sources, you must first activate the license for the PLC-driver with the AUTEM LicenseManager on your computer.

### Installing additional hardware

Additional hardware installations are not necessary. Just make sure that the devices can be accessed via TCP/IP in your network.

## Installing additional software

If you want to acquire data via the programming interface, no additional software is required apart from the PLC-ANALYZER pro 6 base module and the PLC driver.

If you want to acquire data via Ethernet TCP/IP, the *SYSMAC Gateway* and the *CX-Compolet* must first be installed.

Make sure that in the *SYSMAC Gateway Console* table the Status of the communication via Ethernet is set to "Open".

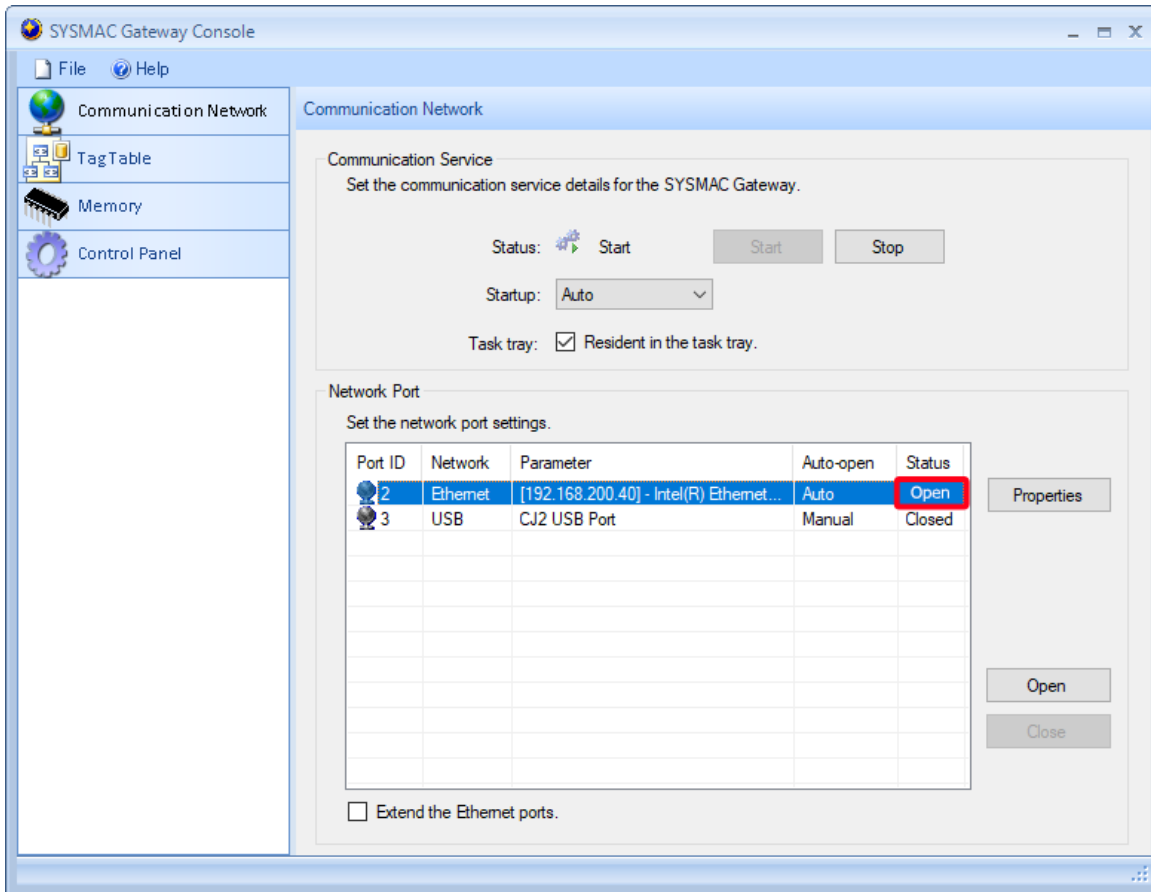


Fig. 1-1 Settings SYSMAC Gateway

## Configuration

Open driver settings to set important parameters for data recording. If you have added the driver to the project several times, you can set the properties individually for each individual driver.

### Recording via Ethernet TCP/IP

Symbol	Absolute	Comment
TableProductionI...	TableProductionInsert.V...	
ControlNX.Cmd.S...	ControlNX.Cmd.Start;BO...	
ControlNX.Cmd.S...	ControlNX.Cmd.Stop;BO...	
ControlNX.Cmd	ControlNX.Cmd.Reset;R...	

Fig. 1-2 Settings OMRON Ethernet TCP/IP

First give the driver a meaningful *Name*. Then set the *Station address* of the PLC under destination station. Select the appropriate *Port* (default value: 2) and PLC type of the controller.

Use the *Connection test* to check whether a PLC connection can be successfully established.

All PLC variables that are available for address selection are listed under *Symbols*. The symbols are read out by selecting the *Read symbols from destination* button. Only variables that are declared as "Publish only" in the SYSMAC Studio programming software are read. Alternatively, projects can be loaded from the SYSMAC Studio via the "..." button. This allows the use of symbolic identifiers when entering addresses.

After setting the communication properties, add the PLC signals to be recorded. When a project is loaded, the signals to be recorded can be conveniently selected from the symbol list by double-click or drag and drop.

## Recording via Programming interface

Name: OMRON

Properties

Destination

Port: COM3

Baudrate: 9600

Data bits: 7

Stop bits: 2

Parity: Even

Host Link: 0

Connection test

Scan interval: minimal

**Fig. 1-3 Settings OMRON Programming interface**

First enter a meaningful name. Then select under *Port* the COM port from the PC, where the connection cable is connected with the PLC.

Set under *Baudrate, Databits, Stopbits and Parity* the parameters for the serial connection between PC and PLC. The parameters have to agree with the attitudes of the PLC.

Adjust under *Host Link Unit* the Host-Link-Channelnumber of the PLC.

Use the *Connection test* to check whether a PLC connection can be successfully established.

After setting the communication properties, add the signals to be recorded.



### NOTICE

The higher the data transmission rate, the higher is the temporal resolution of the recorded data. To recommend is baudrate 19200.

## Data acquisition

### Supported PLC models and CPUs

The PLC driver „OMRON NJ / NX / NY / CJ2 - Ethernet TCP/IP“ supports the following CPUs:

- NJ
- NX
- NY
- CJ2

The PLC driver „OMRON C / CV / CS1 - PG-Interface (Host Link)“ supports:

- C20, C20H, C120, CPM1/CPM1A, CQM1, C200, C200HS, C200HX, C200HG, C200HE, C500, C1000, C1000H, C2000, C2000H, SRM1
- CV500, CV1000, CV2000, CVM1, CVM1-V2
- CS1

### Recordable PLC addresses

The PLC driver „OMRON NJ / NX / NY / CJ2 - Ethernet TCP/IP“ can only acquire symbolic PLC signals. The following types are supported:

- BOOL
- BYTE
- WORD
- DWORD
- LOWRD
- SINT
- INT
- DINT
- LINT
- USINT
- UINT
- UDINT
- ULINT
- REAL
- LREAL
- DATE
- TIME\_OF\_DAY or TOD
- DATE\_AND\_TIME or DT
- TIME



To be able to read variables, they must be marked "Publish Only" in the SYSMAC Studio programming software:

Name	Data Type	Initial Value	AT	Retain	Constant	Network Publish
Data_Curr_Rivet_OS_Y	ARRAY[1..4] OF Real			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
Cam_Func_Rdy_Rivet	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
Cam_Func_Rdy_TDC	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
Cam_Func_Rdy_Bead	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_Cam_Func_Rdy_Rivet	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_Cam_Func_Rdy_TDC	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_Cam_Func_Rdy_Bead	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
MS_State_Last	ARRAY[0..100] OF INT			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
Prod_Recess_Distal	LREAL			<input type="checkbox"/>	<input type="checkbox"/>	Do not publish
h_VL_TDC_Find_Next	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
VL_TDC_Find_Latch	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Do not publish
h_R1_Load_Z_Mand	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R1_Stage_Z_Mand	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R2_Z_Plus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R1_Z_Plus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R2_Z_Minus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R1_Z_Minus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R2_Swage_Z_Minus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_R2_Swage_Z_Plus	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_VL_Master_Home	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
h_VL_Master_Home_Rtrn	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
plc_VL_HdStk_Close	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
plc_Tail_Stk_Open_Pos	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only
plc_Cam_TDC_Job_Setup	BOOL			<input type="checkbox"/>	<input type="checkbox"/>	Publish Only

Fig. 1-4 Variable definition in SYSMAC Studio

The following table shows the addresses that can be recorded and the associated address syntax that can be recorded with the PLC driver "OMRON C / CV / CS1 - PG interface (Host Link)":

Syntax	Address type	Example
xxxx	I/O-Channel wort xxxx	0001
xxxx.yy	I/O-Channel bit yy from word xxxx	0002.15
LR xxxx	Link Relay word xxxx	LR 0121
LR xxxx.yy	Link Relay bit yy from word xxxx	LR 0215.09
HR xxxx	Holding Relay word xxxx	HR 0312
HR xxxx.yy	Holding Relay bit yy from word xxxx	HR 0012.01
AR xxxx	Auxiliary Relay word xxxx	AR 0014
AR xxxx.yy	Auxiliary Relay bit yy from word xxxx	AR 0014.15
TIM xxxx	TIM-Timer xxxx	TIM 0144
TIMH xxxx	TIMH-Timer xxxx	TIMH 0221
TTIM xxxx	TTIM-Timer xxxx	TTIM 0002
CNT xxxx	Counter xxxx	CNT 0012
CNTR xxxx	switchable counter xxxx	CNTR 0024
DM xxxx	Data memory xxxx	DM 2112
EM xxxx	Enl. Data memory xxxx in act. bank	EM 0012
EM xxxx:yy	Enl. Data memory xxxx in bank yy	EM 0003:3

Table 1-1 Address syntax Omron C / CV / CS1



#### NOTE

OMRON PLCs only allow word wise data acquisition. The PLC-ANALYZER pro converts an entered bit address into a word adress automatically. All bits are available for the visualization.

## Number of recordable addresses

### Ethernet TCP/IP

A maximum of 16 million addresses can be acquired from up to 250 signal sources.

### Programming interface

Up to 128 word values can be monitored simultaneously.

## Time behaviour and particularities

### Ethernet TCP/IP

Scan data	Scan interval
20 Symbols	13,8 ms
45 Symbols	27,6 ms

Table 1-2 Ethernet TCP/IP: Time behaviour during data acquisition

The number of symbols to be captured influences the sampling rate.

### Programming interface

Normally the required data from one scan are from one PLC cycle. The intervals between scan transfers from the PLC to the computer depend on the speed of the data transfer (baudrate), the set min. of transmit data and the number of recorded signals.

The following table shows typical scan times for:

Scan data	Scan interval
1 word	45 ms
5 words	70 ms
20 words	160 ms

Table 2-2 Programming interface: Time behaviour during data acquisition

The more addresses will be recorded, the longer the cycle time will be.