

PLC-ANALYZER pro 6

PLC-Logic analysis in no time

Driver Addendum



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QB

MW



PLC-driver

GE Fanuc CNC / PMC
Ethernet TCP/IP / HSSB



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PLC-ANALYZER pro 6 - Driver Addendum

GE Fanuc CNC / PMC - Ethernet TCP/IP / HSSB


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Signal source

GE Fanuc CNC / PMC

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

- GE Fanuc CNC/PMC - Ethernet TCP/IP / HSSB

With the PLC driver "GE Fanuc CNC/PMC - Ethernet TCP/IP / HSSB" PLC signals can be acquired via Industrial Ethernet (TCP/IP) or through the HSSB of the PLC.

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

If you have already connected your programming device or PC to the PLC via a TCP/IP network or via the HSSB, you normally do not need to do anything else. Otherwise, establish a connection to the PLC via the HSSB or connect your PC to the TCP/IP network to which the PLC is connected.

Installing additional software

No software is required in addition to the PLC-ANALYZER pro basic module and the PLC driver.

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.

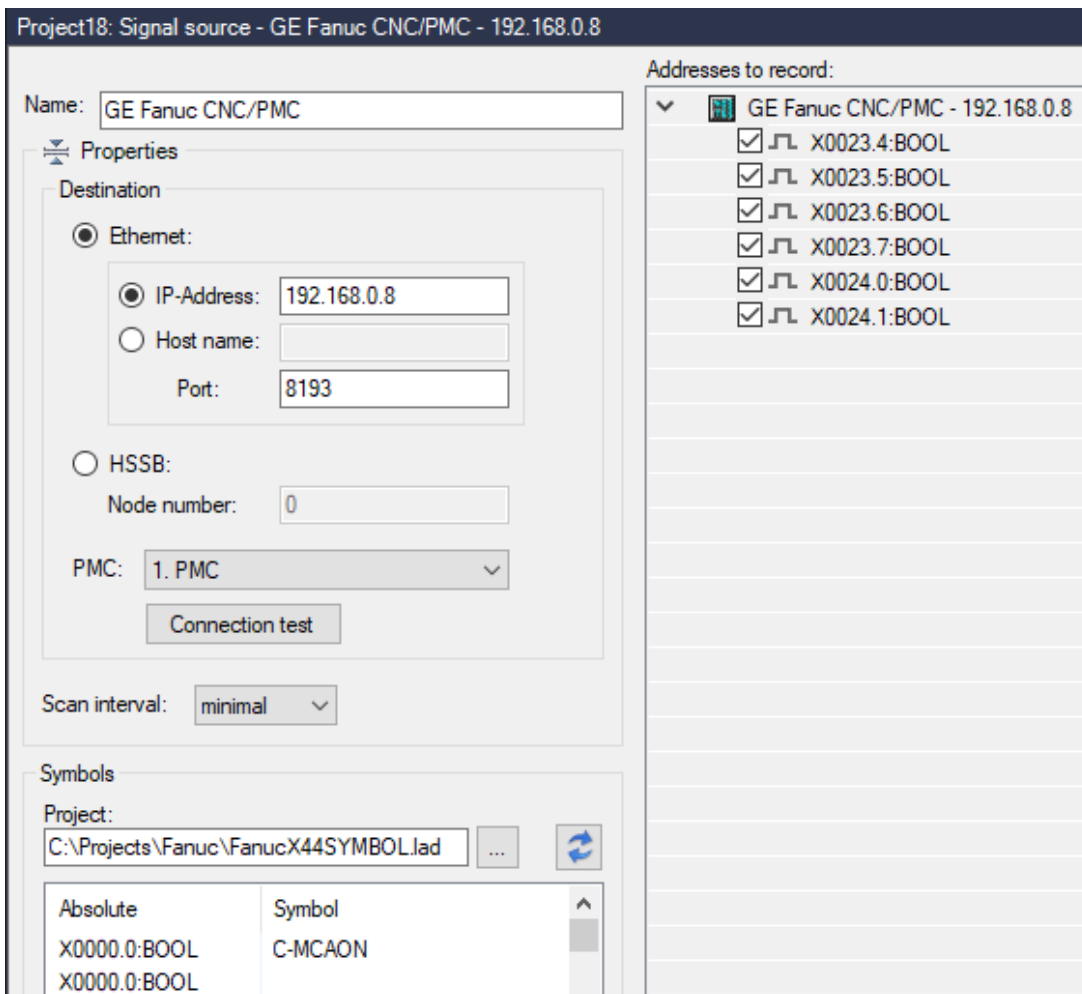


Fig. 1-1 Settings GE Fanuc CNC/PMC

Choose a meaningful *Name* for the driver first, specify whether the PLC is connected via *Ethernet* or via *HSSB* and specify under *Connection* the *IP-Address* and the *Port* of PLC. If you use a HSSB connection set the *HSSB* with the *Hostname*. If you use a HSSB-connection add the node number of the PLC

Some PLCs can be controlled by several CPUs. So choose under *PMC* the correct CPU to record data from the PLC needed.

Press *Test Connection* to check, whether a connection to the PLC can be established.

Under *Scan interval* you specify the time interval at which measured values are read out from the PLC. A longer sampling interval can be selected for signal paths that are not time-critical, e. g. temperature. As a result, the generated signal files become smaller.

Under *Symbols* select the PLC project of your programming software (FANUC LADDER), to make the symbols of this project available for address selection. A selected project makes it possible to use symbolic identifiers when entering addresses. In addition to the absolute address, the symbolic identifier and comment are also displayed and stored in a signal- or project file.

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.

Data acquisition

Supported PLC models and CPUs

The following models of the GE CNC Fanuc-family are supported:

0i - A, B, C and D¹, 150 - B, 15i and 150i - A and B, 160 - B and C, 16i and 160i - A, L, P and W, 180 - B and C, 18i and 180i - A, P and W, 210 - B, 21i and 210i - A, 30i, 300i, 31i, 310i, 32i, 320i, PMi - H, PMi - D

Not listed automation instruments and CPUs of the GE CNC/PMC Fanuc-family are normally compatible, but not explicitly tested for it.

Recordable PLC addresses

All available PLC addresses can be recorded in BOOL, BYTE, WORD or DWORD format. The following table shows the addresses possible and the appropriate syntax:

| Syntax | Address type | Example |
|--------|--------------------------------------|-------------|
| Xx:y | Input x in format y | X14.3:BOOL |
| Yx:y | Output x in format y | Y33.4:BYTE |
| Rx:y | Non residual flag x in format y | R1200:WORD |
| Ex:y | Optional residual flag x in format y | E3211:DWORD |
| Dx:y | Residual Merker x in format y | D12.3:BOOL |
| Fx:y | NC ⇔ PMC signal x in format y | F322:BYTE |
| Gx:y | PMC ⇔ NC signal x in format y | G351:WORD |
| Kx:y | switsch x in format y | K12:DWORD |
| Ax:y | Message apply x in format y | A249.2:BOOL |
| Mx:y | PMC1 ⇔ PMC2 signal x in format y | M739:BYTE |
| Nx:y | PMC2 ⇔ PMC1 signal x in format y | N211:WORD |
| Tx:y | Timer x in format y | T79:WORD |
| Cx:y | Counter x in format y | C399:WORD |

Table 1-1 Address-Syntax GE Fanuc CNC/PMC

Number of recordable addresses

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

Time behaviour and particularities

The intervals between scan transfers from the Fanuc-PLC to the computer depend on:

- Type and speed of the data transfer
- Cycle time of the PLC
- Number and combination of selected addresses. Transfer blocks are formed from the selected addresses. Each block causes further delays.

With Typ 160i using Ethernet TCP/IP the scan interval is 15 ms for each byte, means if cycle time > 15 ms each cycle a scan. In the event of larger cycle times PLC data transfer and PLC cycle synchronise one another. In the event of shorter cycle times one scan per cycle is not possible. Repeated measurement of the relevant procedures can balance this problem out.

For a scan interval of e.g. 20 ms and an equal cycle time of the CPU there is one scan for each cycle. If the cycle time of the PLC is longer, the scan intervals synchronize with the PLC cycle. For a shorter cycle time the computer does not obtain a scan for each cycle, resulting in a partial loss of information. This loss can be made up by repeated measurement of the signals in question.

Each additional word value scan causes a further 0,5 ms delay. If several words from one file be monitored, the block with the lowest address comes at the beginning. If R0034, R0035 and R0039 are monitored, then the block consists of 6 addresses (R0034 up to R0039). In this example the scan delay would increase by 3 ms.

If data from various files is requested, the scan delay increases by 15 ms per file.

The following table shows typical approximately scan times for GE Fanuc 160i:

| Scan data | Scan distance |
|----------------------------------------|---------------|
| 1 Byte | 15 ms |
| 10 Byte of one adresstyp | 20 ms |
| 100 Byte of one adresstyp | 65 ms |
| 100 Byte of two different adresstypes | 80 ms |
| 100 Byte of four different adresstypes | 110 ms |

Table 1-2 Recording time GE Fanuc 160i via Ethernet TCP/IP