

PLC-ANALYZER pro 6

PLC-Logic analysis in no time

Driver Addendum



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QB

MW



PLC-driver

MITSUBISHI MELSEC Q/L/A/FX
Ethernet TCP/IP / programming interface

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PLC-ANALYZER pro 6 - Driver Addendum

MITSUBISHI MELSEC Q / L / A / FX - Ethernet TCP/IP MITSUBISHI MELSEC Q / L / A / FX - programming interface


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1st Edition 2022

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Signal source

MITSUBISHI MELSEC Q / L / A / FX

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

- MITSUBISHI MELSEC Q / L / A / FX - Ethernet TCP/IP
- MITSUBISHI MELSEC Q / L / A / FX - PG-Interface

With the PLC driver "MITSUBISHI MELSEC Q / L / A / FX - Ethernet TCP/IP" PLC signals can be acquired via Industrial Ethernet (TCP/IP) and with the PLC driver "MITSUBISHI MELSEC Q / L / A / FX - PG-Interface" through the serial communication port 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 unit (or your PC) for programming under Mitsubishi GX Developer with the automation device, then you normally must do nothing else. Otherwise connect your programming unit (or PC) with the Ethernet interface or with the programming interface of the automation device.

Installing additional software

Aside from the PLC-ANALYZER pro base module and PLC driver you must install the programming software Mitsubishi GX Developer.

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.

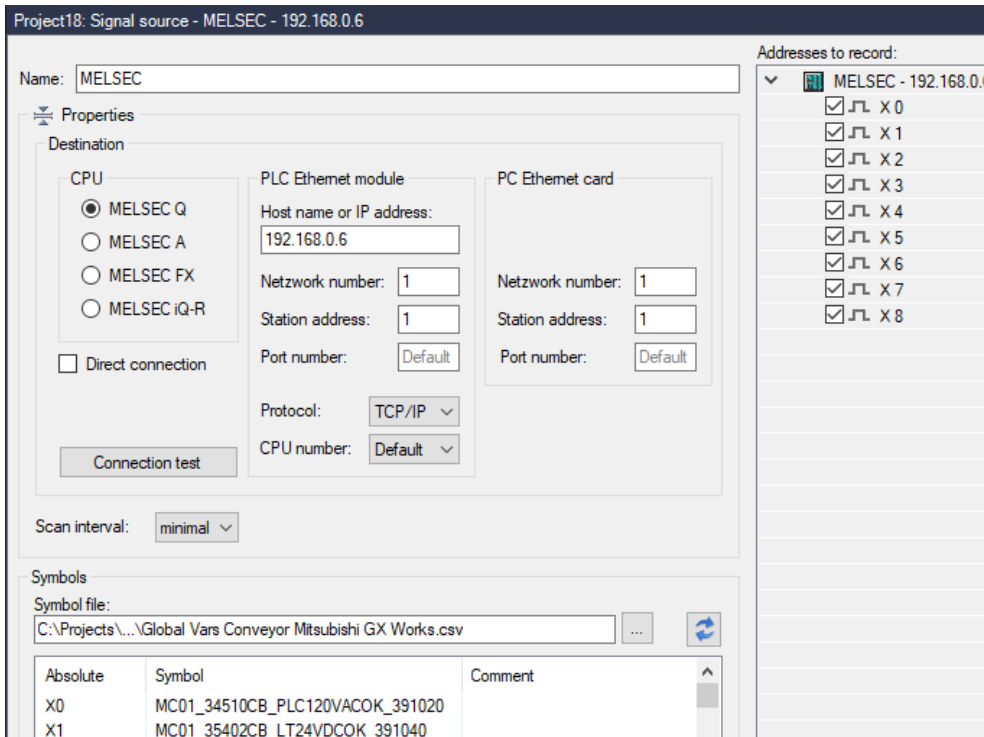


Fig. 1-1 Settings Mitsubishi MELSEC - Ethernet TCP/IP

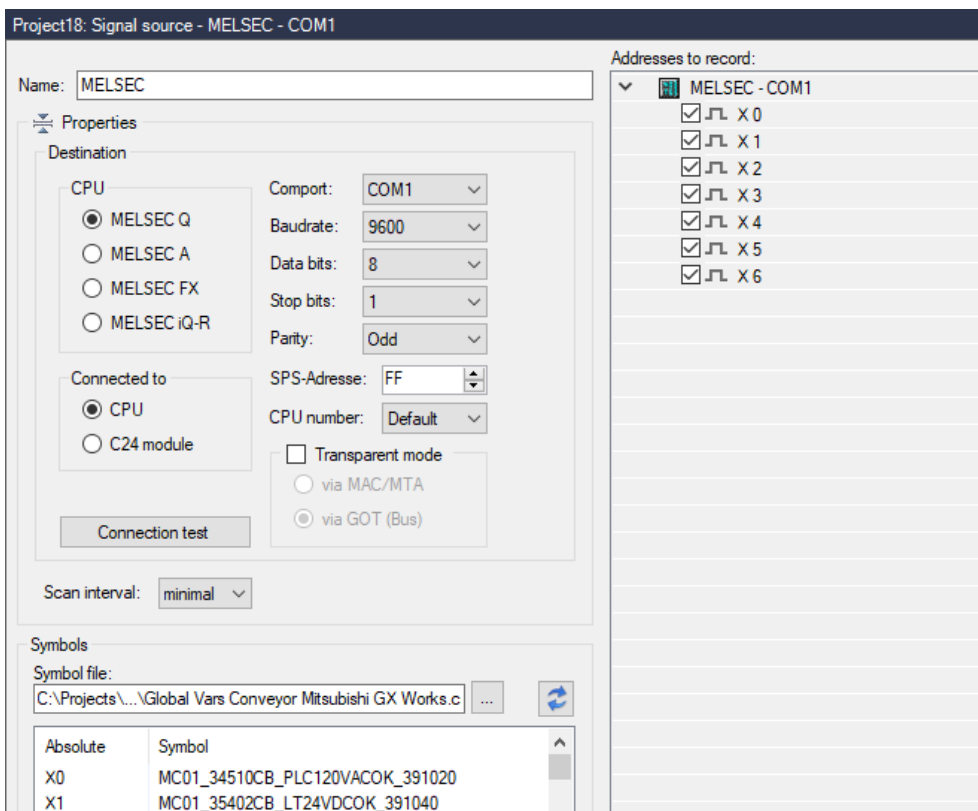


Fig. 1-2 Settings Mitsubishi MELSEC - PG interface

Choose a meaningful *Name* for the driver first, then specify under *CPU*, if you want to establish a connection to a MELSEC Q-, A-, FX- or iQ-R CPU.

For the Ethernet TCP/IP driver, set the *Network number* and the *Station address* of the *PC Ethernet card*. For self-configured Ethernet networks you may also have to enter a port number. Under *PLC Ethernet module* you set the parameters of the Ethernet module of the PLC. In addition to the *Network number* and the *Station address*, also enter the *Host name or the IP address* of the Ethernet module here. Also set the *Protocol* of the data transfer. You may also have to enter a *Port number* for the Ethernet module of the PLC in self-configured Ethernet networks.

For the PLC driver "MITSUBISHI MELSEC Q / L / A / FX - PG interface", select the COM port (serial interface) or the USB port of the computer to which the connection cable to the PLC is connected under *Comport*. Under *Connect to* you can set whether the connection cable is connected directly to the *CPU* or to a *C24 module*. Set the transmission parameters *Baudrate*, *Data bits*, *Stop bits* and *Parity* for the serial connection between PC and PLC. Enter the address of the MELSEC CPU under *PLC address*. The address is specified as a two-digit hex value. The default value is "FF", so the station itself is addressed. In a MELSECNET or MELSECNET/B you can access a slave by specifying the station number. Please note that from a master station access to all slaves is possible, from a slave station only to the master and the slaves in between. Also set a *Transparent mode*, if used.

Press *Connection test* 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 a symbol file (CSV file) created by Mitsubishi GX Developer, to make the symbols of this file available for address selection. A loaded symbol file 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 symbol file 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 MELSEC Q series are supported by the driver:

- Q02(H)CPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02(H) A mode, Q06HCPU A mode, Q12HCPU A mode, Q25HCPU A mode, Q2A(-S1)CPU, Q3A, Q4A, Q4AR

The following models of the MELSEC A series are supported by the driver:

- A0J2HCPU, A1CPU, A1NCPU, A1SCPU, A2CPU(-S1), A2NCPU(-S1), A2ACPU(-S1), A2CCPU, A3CPU, A3NCPU, A3ACPU, A3HCPU, A3MCP, A3UCPU, A4UCPU

The following models of the MELSEC FX series are supported by the driver::

- FX-x, FX0N-x, FX0-x

The following models of the MELSEC iQ-R series are supported by the driver::

- R04, R08, R16, R32, R120

Other automation devices and CPUs from the MELSEC family are generally compatible with PLC-ANALYZER pro, but have not been explicitly tested.

Recordable PLC addresses

The following table shows the addresses possible and the appropriate syntax:

Syntax	Type of address	Example
Xxxxxx	Input relay (Hex.)	X 3F
Yxxxxx	Output relay (Hex.)	Y 47
FXxxxxx	Argument input (Dez.)	FX 13
FYxxxxx	Argument output (Dez.) ¹	FY 74
DXxxxxx	Direct input (Hex.) ¹	DX D3
DYxxxxx	Direct output (Hex.) ¹	DY 1A
Mxxxxx	Internal relay (Dez.)	M 113
Lxxxxx	Latch relay (Dez.)	L 13
Sxxxxx	Step relay (Dez.)	S 512
SMxxxxx	Special relay (Dez.) ¹	SM 17
SDxxxxx	Special register (Dez.) ¹	SD 112
Fxxxxx	Annunciator (Dez.)	F 12
TSxxxxx	Timer contact (Dez.)	TS 5
TCxxxxx	Timer coil (Dez.)	TC 6
TNxxxxx	Timer present value (Dez.)	TN 5
SSxxxxx	Accumulative Timer contact (Dez.) ¹	SS 5

Syntax	Type of address	Example
SCxxxxx	Accumulative Timer coil (Dez.) ¹	SC 6
SNxxxxx	Accumulative Timer present value (Dez.) ¹	SN 5
CSxxxxx	Counter contact (Dez.)	CS 5
CCxxxxx	Counter coil (Dez.)	CC 2
CNxxxxx	Counter present value (Dez.)	CN 2
SBxxxxx	Special linked relay (Hex.) ¹	SB 1B6
SWxxxxx	Special linked register (Hex.) ¹	SW 2C4
Gxxxxx	Buffer memory (Dez.) ¹	G 34
Dxxxxx	Data register (Dez.)	D 113
FDxxxxx	Argument register (Dez.)	FD 432
Wxxxxx	Link register (Hex.)	W F1A
Bxxxxx	Link relay (Hex)	B 1CF
Rxxxxx	File register (Dez.)	R 432
Axxxxx	Accumulator (Dez.)	A 122
Zxxxxx	Index register (Dez.)	Z 472
ZRxxxxx	Extended file register (Dez.) ¹	ZR 36733

Table 1-1 Address-Syntax Mitsubishi MELSEC

¹ No recordable from a MELSEC A² No recordable from a MELSEC FX

Number of recordable addresses

A maximum of 1000 addresses per signal source can be recorded. Simultaneous acquisition from up to 250 signal sources is possible.

Time behaviour and particularities

The data requested by the PC from the PLC - a scan - usually originates from a PLC cycle. The minimum time interval of the scans depends on the cycle time of the PLC as well as on the data load and size of the network.

With a scan interval of e.g. 20 ms and a PLC cycle time of the same size, one scan is obtained for each cycle. If the cycle time of the PLC is longer, the data transmission is synchronized with the PLC cycle. If the cycle time is shorter, the PC no longer receives a scan for each cycle, so that some of the queried information is lost. This can be compensated by repeatedly measuring the sequences of interest.

The acquisition influences the cycle time of the control. The more addresses that are acquired, the longer the cycle time. This effect is normal and also occurs in monitor operation with the programming software GX Developer