PLC-ANALYZER pro 6

PLC-Logic analysis in no time

Driver Addendum

PLC-driver

B&R

Ethernet TCP/IP / serial

AUTEM
www.autem.de

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

B&R - serial / Ethernet TCP/IP

AUTEM GmbH
Dithmarscher Straße 29
26723 Emden
Germany

+49 4921 9610 0
info@autem.de
www.autem.de

For references, suggestions and improvement suggestions we are always grateful. Please send these to AUTEM.

1st Edition 2022

Table of Contents

Signal source 3
B&R 3
Installation 3
Installing additional hardware 3
Installing additional software 3
Configuration 4
Data acquistion 6
Supported PLC models and CPUs 6
Recordable PLC addresses 6
Number of recordable addresses 6
Time behaviour and particularities 6

Signal source

B&R

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

- B&R - Ethernet TCP/IP / serial

With the PLC driver „B&R - Ethernet TCP/IP / serial" PLC signals can be acquired via Industrial Ethernet (TCP/IP) or 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) with the automation device by serial connection or via Ethernet TCP/IP network, usually nothing else must be done. Otherwise establish a serial connection between PC and PLC or connect your PC to the TCP/IP network, which is connected to the PLC.

Installing additional software

Besides PLC-ANALYZER pro basic module and the PLC driver the B&R "PVI Manager" is needed. See also Configuration and Time behaviour and particularities.

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.

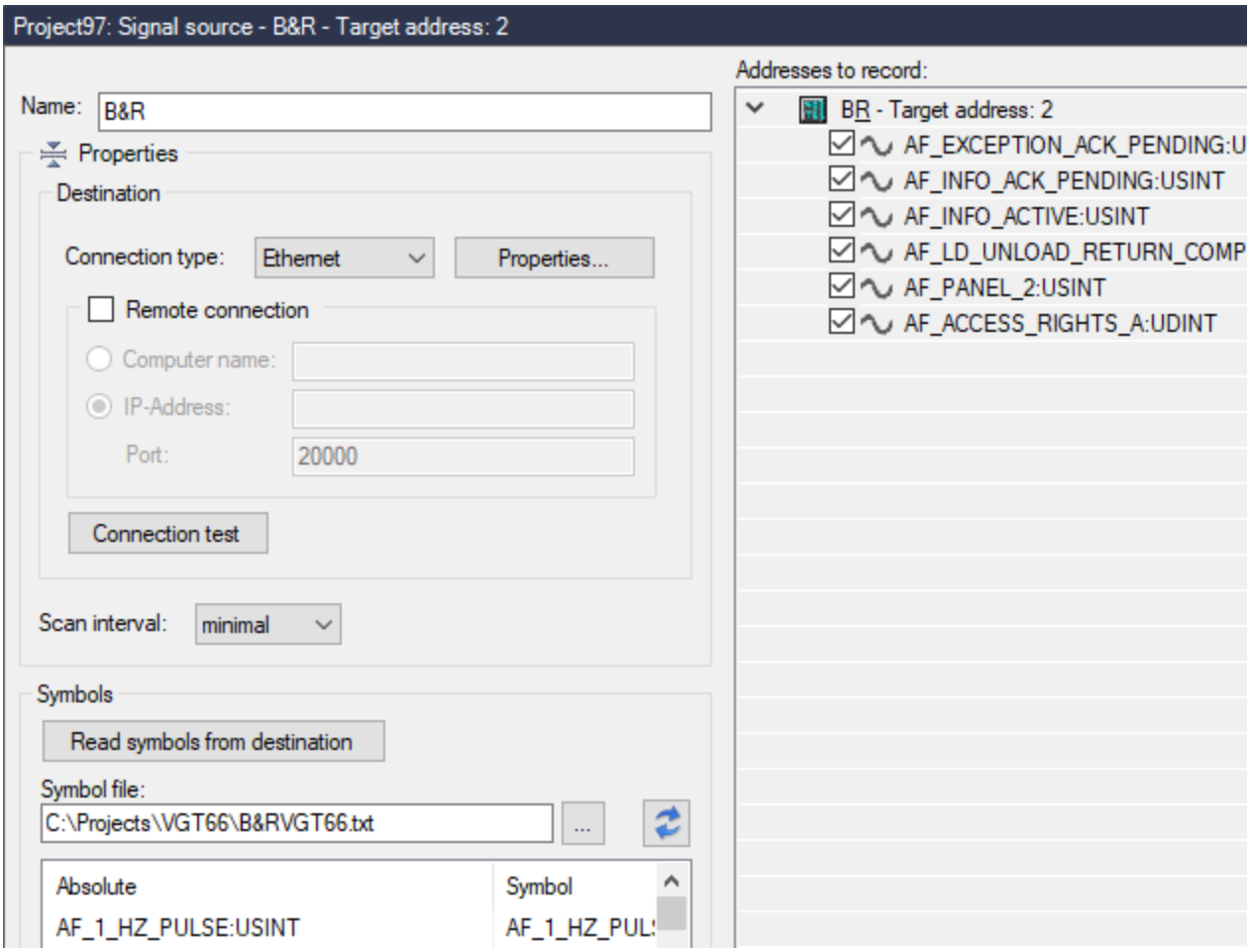

Fig. 1-1 Settings B&R

First give the driver a meaningful name. Then set under *Destination* whether PC and PLC are connected *serially* or via *Ethernet*. Then select Properties to set the connection parameters.

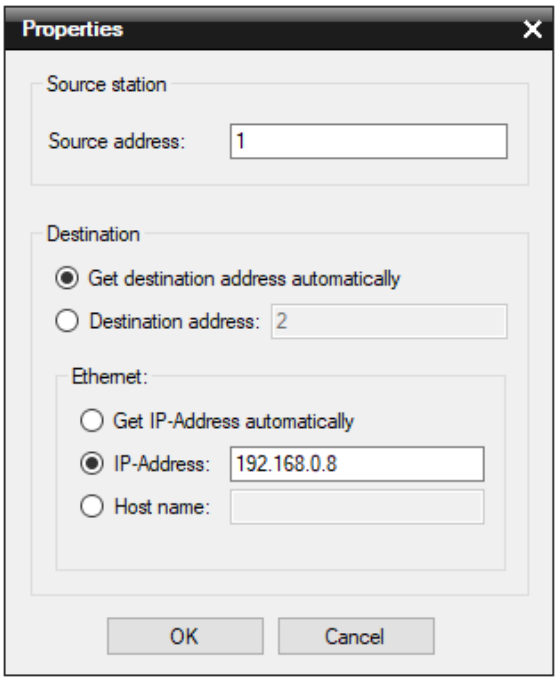

Fig. 1-2 Ethernet settings

When setting up an Ethernet connection, first enter the *Source address* (station number) of the acquisition PC. This can be any number that has not yet been assigned.

Then enter under *Destination* the parameter of the desired PLC. The *Destination address* (station number) can be obtained automatically, if the *IP address* or *Hostname* was entered manually. Otherwise the *IP address* can be obtained automatically, if the *Destination address* (station number) was entered manually.

Confirm with *OK*.

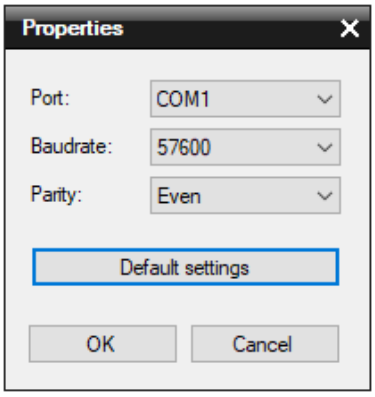

Fig. 1-3 Serial settings

For a serial connection enter the *Port*, *Baudrate* and *Parity*.

Pressing *Default settings* selects the default parameters of the serial port automatically.

Confirm with *OK*.

If the „PVI-Manager“ is not installed on the PC where the PLC-ANALYZER pro is running, you can also use the “PVI-Manager” on another PC via remote connection. For that check the box *Remote connection* and enter the *Computername* or *IP address* of the „PVI-Manager“ PC. Also enter the *Port* which is used by the „PVI-Manager“.

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 a *Symbol file* to make the symbols available for address selection. Select *Read symbols from destination* to read the symbols directly from the controller. This makes it possible to use symbolc 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 acquistion

Supported PLC models and CPUs

The driver supports all PLC models, which are supported by B&R „PVI-Manager“ via serial or Ethernet TCP/IP connection.

Recordable PLC addresses

All global variables and task variables of the PLC can be recorded, which are contained in the selected variable list.

Number of recordable addresses

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

Time behaviour and particularities

NOTE

Acquiring data with PLC-ANALYZER pro results in a small increase in cycle time in the PLC to the same manner as it happens with programming software in the online-mode.

NOTE

The B&R „PVI-Manager“ is necessary for data acquisition. If the „PVI-Manager“ was installed without PVI-Security-Key, the “PVI-Manager” runs in demo mode. In this case the data recording will be interrupted every 2 hours for about 3 seconds and then resumed automatically.

The intervals between scan transfers from B&R PLC and the computer are depending on the PLC type, type of connection, cycle time of PLC and the number of recorded addresses.

For a B&R „X20“ the scan interval for an address is approximately 12 ms via Ethernet TCP/IP, i.e. for a cycle time of 12 ms there is one scan for each cycle. A longer PLC cycle time results in more than one scan for each 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 compensated by repeated measurements of the interesting signals.

For every additional address the scan interval increases by 12 ms. The following table exemplarily shows some values of time behaviour during acquisition from a PLC model B&R „X20“:

Requested data	Scan time
1 byte	12 ms
2 word	24 ms
5 words	60 ms
10 double words	121 ms

Table 1-1 Scan time on B&R „X20“ via Ethernet TCP/IP