

Fields of application

- Failure diagnosis in PLC systems
- Detecting and localizing of sporadic errors
- Analysis and optimisation / cycle time reduction
- Long-term recording of measured values
- Documentation + support of QA, EU-Machinery Directive, TPM/OEE
- Installation, maintenance and construction

PLC-ANALYZER pro **5** is a software system for logic analysis and acquisition of recorded data on PLCcontrolled facilities. Acquisition, representation, and evaluation of PLC signals such as inputs, outputs, flags, data words, etc. is now very easy. Online display makes possible observation of the signal waveform in real time.

In addition to long-term recording, trigger conditions can be specified for the acquisition of particular events. This allows rarely occurring sporadic errors to be recorded for later analysis.

In contrast to traditional logic analyzers, the **PLC-ANALYZER** pro **5** has the decisive advantage of recording process data through standardized PLC interfaces. The program e. g.



supports MPI/PPI, PROFIBUS and TCP/IP Ethernet for SIMATIC S7 or programming unit interface for SIMATIC S5. A computer that is connected for the purpose of programming the PLC can be used for recording process data without hardware modifications. The tiresome process of hooking up monitoring cables is now a thing of the past. Signals can also be recorded from different PLCs at the same time. Cycle-precise recording is attractive



because of the complete acquisition of measured values in each PLC cycle. By using the measurement interface **AD_USB-Box**[®] external voltage and current signals, which are not available in the PLC, can also be recorded. Project files make it possible to automate frequently recurring acquisition sessions for various facilities.

For a direct integration in the facility AUTEM offers the **BLACKBOX** ultracompact Mini-PC for long-term PLC process data recording. Thanks to the numerous remote connection possibilities (modem, VPN, LAN), the **BLACKBOX** is particularly suitable for facility remote service.

PLC-ANALYZER pro **5** is an indispensable tool for PLC software development, construction, installation, technical service and training.

AUTEM offers an inexpensive licensing model with primary and additional licenses for one or more than one workstations.

For prices and part-numbers please refer to our current price list.

PLC-Logic analysis in no time

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Technical Features

- Data acquisition via programming unit interface of the PLC, or via the automation network / fieldbus
- Acquisition of input, output, flag, counter, timer, peripheral, data word, data block, etc.
- Signal display in bit, byte, word and double-word formats
- Creating of pseudo signals
- Adding of additional addresses or trigger conditions while recording
- Simultaneous acquisition on several PLC systems
 (e. g. SIMATIC S7 + S5 or SIMATIC S7 + Allen-Bradley ...)
- Software solution, no additional hardware necessary
- Modification of PLC program not necessary
- Cycle precise acquisition for SIMATIC-PLCs
- Storage of the signal waveform on hard disk
- Trigger-controlled signal file creation or long-term recording
- Time controlled signal recording
- Online signal display (similar to a line printer or an oscilloscope)
- Comfortable definition of triggers by drag & drop
- Substantial trigger features with AND-/OR logic and cascading
- Pretrigger and posttrigger time can be set by user
- Start- and Stopptrigger
- Trigger on binary values and register values
- Automatic alarm in case of trigger event (E-mail or sms, acoustic announcement)
- Comparing of signal files
- Search for trigger, edge, bit pattern, time and notices parallel in more than one signal file
- Measuring of periods of time and measuring of bits
- Relative and absolute data time
- Flexible register scaling and conversion to physical units
- Data format: decimal, hexadecimal, binary, ASCII, real (floating point), S5-time, date
- Use of symbolic address names and commentaries of the PLC-programming software
- Project files for pre-configuring and automating data acquisition runs
- Print/Storage of complete project settings for documentation of test sequence and measurements
- Printing of signal files
- Export from signal files as image format, text (csv / Excel) or HTML file
- Import of measured values in text format (csv)
- S7-PLCSIM support
- Multilingual
- AD_USB-Box[®] (optional): Recording of external voltage and current possible, connection via USB-port
- BLACKBOX (optional): Ultra compact Mini-PC for installation in switching cabinet, long-term recording of measured values over several years
- System requirements: PC with 1 GHz, 256 MB RAM, 100 MB of available hard-disk space, MS Windows 98SE/2000/XP/Vista/7

DIAGNOSTIC FOR

PROCESS AUTOMATION PLC CONTROL TECHNOLOGY

PLC-Driver

Siemens SIMATIC S7* MPI/PPI + PROFIBUS (cycle precise) Siemens SIMATIC S7* Ethernet TCP/IP / PROFINET (cycle precise) Siemens SIMATIC S5 Progr. interface (cycle precise) / Ethernet TCP/IP Siemens LOGO! Programming interface Siemens SINUMERIK (S5) Programming interface (cycle precise) Siemens SIMOTION C/P/D MPI/PROFIBUS/Ethernet TCP/IP (servo-cycle p.) BOSCH CL Programming interface (BUEP19E)

CoDeSys Ethernet TCP/IP

PILZ PSS Programming interface

PILZ PSS Ethernet TCP/IP

PHOENIX ILC Ethernet TCP/IP

Jetter JetControl / Delta / Nano Seriell / Jetway / PC-PPLC

Jetter JetControl Ethernet TCP/IP B&R

Ethernet TCP/IP / serial Allen-Bradley ControlLogix / PLC / SLC DF1 / DH+ / DH-485

Allen-Bradley Compact/ControlLogix / PLC / SLC Ethernet TCP/IP

GE Fanuc Serie 90 / VersaMax / Nano / Micro Programming interface (SNP)

GE Fanuc CNC/PMC Ethernet TCP/IP / HSSB

HITACHI H / EH-150 / Micro-EH Programming interface

HITACHI H / EH-150 / Micro-EH Ethernet TCP/IP

MITSUBISHI MELSEC Q / A / FX Programming interface

MITSUBISHI MELSEC Q / A Ethernet TCP/IP

Schneider Modicon TSX Quantum / Momentum Compact - Modbus I / Modbus Plus

Schneider Modesor TSX Quantum / Momentum Compact / M340 - Modbus TCP/IP

Schneider Modicon TSX Premium / Atrium Micro / Nano - TCP/IP / Uni-Telway

Schneider AEG TSX A250 / A120 / Micro Programming interface (KS)

OMRON C / CV / CS1 Programming interface (Host Link)

Beckhoff TwinCAT I/O Recording of TwinCAT-I/O-variables AUTEM AD_USB-Box[®]

USB-Port (recording of ext. voltage and current)

*also for SIMATIC C7, M7, SINUMERIK (S7), SAIA xx7, VIPA S7

PLC-Logic analysis in no time

Typical fields of application



Cycle time optimization

- Determination of dead time in a production facility in order to optimize run time
- The acknowledgement signals READY_1 to READY_7 signal the end of certain subprocesses that have all been started together with INIT.
- With PLC-ANALYZER pro 5, you can see that station 3 (READY_3) was the last station to finish.
- The time measurement function determines the working time of station 3 to be 46,8 seconds.
- The measurement results show the design engineer that station 3 must be investigated further in order to increase system speed.
- In this example the pause-times of each single station have also been measured



Failure diagnosis

- Limit switch monitoring (detector control)
- Detector control MK is triggered on the flag's falling edge (dashed line).
- **PLC-ANALYZER** pro **5** makes the problem clear. There is something wrong at the end switch SR01 (see trigger), because it is active at the same time as SA01.
- For clear documentation, every signal can be given free text as comment.
- This type of data acquisition can be done within any desired recording time interval.



Signal-file comparison

- Comparison of two signal files for a rolling mill
- For the analysis the current recording from 17. April, 2009 is compared with an older recording from 17. February, 2009.
- Visual comparison takes place by overlapping the signal files. Input bit I 0.2 serves as common reference point.
- The time measurement function determines that the timer T1 started 5,1 s later. This strongly indicates slower running times in the system.
- PLC-ANALYZER pro 5 can be used in this way to analyse differences in signal files (runtime slow-downs, wear and tear ...).



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