

S7-FileLogger



PLC Types

- S7-1500
- S7-1200
- S7-300/400 with TCP/IP on Board / PN or CP 343-x/443-x
- S7-300/400 MPI/Profibus with S7-LAN
- Win AC RTX
- S7-200 with CP 243-1
- S7-Soft-PLC
- SIMATIC-S5 over S5-LAN

Function Overview

The S7-FileLogger creates snapshots in the form of records from the data of SIMATIC S7. These records can be e.g.:

- production data
- disturbances
- recipes
- process data
- multiple records in the PLC memory stack (data array)

Features of the Editions

Feature	Standard	Advanced	Expert	Evaluation
Trigger-based logfile creation		x	x	x
Stack Memory-orientated data logging		x	x	x
Ring Memory-orientated data logging			x	x
Command Line Interface for data logging		x	x	x
System service integration for data logging	x	x	x	x
Maximum number of channels	4	16	256	256
Maximum number of records displayed	500	500	500	100
Maximum number of records logged per trigger event	1	32767	32767	1
Maximum number of triggers	2	4	8	8
Interval triggers	x	x	x	x
Value Change triggers	x	x	x	x
Boolean triggers		x	x	x
Conditional / Edge triggers		x	x	x
Maximum number of variables	100	500	1000	1000
Supported logfile formats	CSV	CSV, XML	CSV, XML	CSV, XML

Application Range of the S7-FileLogger

- logging
- fault diagnosis

- archiving
- back-up
- real-time data logging (by FIFO in the PLC)

Record Storage

Data format

The records are stored as CSV or XML files. For each entry a time stamp can be included. This way it is possible to re-use the data with Excel, Access and other programs at any time.

The following picture shows how to get an Excel file out of defined variables and the record .

	Name	Data Type	Length	Address	Format
<input checked="" type="checkbox"/>	Chargen-Nr.	String	254	DB1000.DBB 0	String, 'ABC...
<input checked="" type="checkbox"/>	pellets temperature (degree C)	Int	2	DB1000.DBW 255	Dec, fixed
<input checked="" type="checkbox"/>	barrel temperature (degree C)	Int	2	DB1000.DBW 257	Dec, fixed
<input checked="" type="checkbox"/>	Form temperature (degree C)	Int	2	DB1000.DBW 260	Dec, fixed
<input checked="" type="checkbox"/>	pressure (psi)	Double	4	DB1000.DBD 264	Dec, float (
<input checked="" type="checkbox"/>	period in ms	Int	2	DB1000.DBW 268	Dec, fixed
<input checked="" type="checkbox"/>	part/form	Int	2	DB1000.DBW 272	Dec, fixed



Connection	Variables / Columns	Logging	Records	Events				
	Time Stamp	Chargen-Nr.	pellets temperature (degree C)	barrel temperature (degree C)	Form temperature (degree C)	pressure (psi)	period in ms	part/form
	12:21:34.755	CH-984F5-67JK-37	26	255	67	10,4938	1376	40
	12:21:33.099	CH-984F5-67JK-36	27	244	43	10,8828	1206	40
	12:21:31.449	CH-984F5-67JK-35	25	248	56	10,8489	1336	40
	12:21:29.669	CH-984F5-67JK-34	23	250	58	10,4385	1265	40
	12:21:27.918	CH-984F5-67JK-33	23	240	77	11,0847	1213	40
	12:21:26.155	CH-984F5-67JK-32	20	240	44	10,3551	1263	40
	12:21:24.444	CH-984F5-67JK-31	20	240	78	11,1134	1280	40
	12:21:22.820	CH-984F5-67JK-30	20	254	64	11,1148	1335	40
	12:21:21.152	CH-984F5-67JK-29	26	252	75	11,6726	1313	40
	12:21:19.494	CH-984F5-67JK-28	24	254	46	11,2760	1368	40
	12:21:17.844	CH-984F5-67JK-27	30	244	80	11,9027	1219	40



2015.02.02.csv

```

1 Time Stamp;Chargen-Nr.;pellets temperature (degree C);barrel temperature (degree C);Form temperature (degree C);
2 12:20:51.257;CH-984F5-67JK-12;25;244;75;11,4059;1206;40
3 12:20:52.947;CH-984F5-67JK-13;30;241;48;11,3993;1374;40
4 12:20:54.945;CH-984F5-67JK-14;27;242;52;10,8299;1335;40
5 12:20:56.505;CH-984F5-67JK-15;29;258;60;11,2426;1330;40
6 12:20:58.280;CH-984F5-67JK-16;28;241;55;10,2535;1391;40
7 12:20:59.962;CH-984F5-67JK-17;24;252;46;11,1060;1306;40
8 12:21:01.715;CH-984F5-67JK-18;22;243;60;10,5059;1282;40
9 12:21:03.711;CH-984F5-67JK-19;23;241;43;10,2671;1379;40
10 12:21:05.485;CH-984F5-67JK-20;23;247;43;10,7733;1396;40
11 12:21:07.160;CH-984F5-67JK-21;20;257;63;11,8342;1222;40
12 12:21:09.056;CH-984F5-67JK-22;25;243;75;10,2934;1388;40
13 12:21:10.756;CH-984F5-67JK-23;27;260;55;10,4789;1268;40
14 12:21:12.683;CH-984F5-67JK-24;30;246;80;10,1237;1255;40
15 12:21:14.268;CH-984F5-67JK-25;22;241;46;11,1034;1276;40
16 12:21:15.973;CH-984F5-67JK-26;23;259;53;10,5940;1357;40
17 12:21:17.844;CH-984F5-67JK-27;30;244;80;11,9027;1219;40

```



	Time Stamp	Chargen-Nr.	pellets temperature (degree C)	barrel temperature (degree C)	Form temperature (degree C)	pressure (psi)	period in ms	part/form
1	12:20:51.257	CH-984F5-67JK-12	25	244	75	11,4059	1206	40
2	12:20:52.947	CH-984F5-67JK-13	30	241	48	11,3993	1374	40
3	12:20:54.945	CH-984F5-67JK-14	27	242	52	10,8299	1335	40
4	12:20:56.505	CH-984F5-67JK-15	29	258	60	11,2426	1330	40
5	12:20:58.280	CH-984F5-67JK-16	28	241	55	10,2535	1391	40
6	12:20:59.962	CH-984F5-67JK-17	24	252	46	11,1060	1306	40
7	12:21:01.715	CH-984F5-67JK-18	22	243	60	10,5059	1282	40
8	12:21:03.711	CH-984F5-67JK-19	23	241	43	10,2671	1379	40

Location / File Name

The directory and file name can be freely specified by the user. The following items can be included in generating the file name:

- date
- time
- channel name

Triggers

The storage operation of a record is triggered by a triggering event. S7-FileLogger provides the following trigger types:

- manual trigger
- time-based / interval trigger
- state-level trigger
- value change trigger
- conditional / edge trigger

The user can define these triggers to his needs. By that, time and condition of the logging process are determined. The trigger can be interconnected with each other, meaning a trigger can influence the start / stop behavior of another trigger.

The interval time should at least be half the time the value is held in the PLC. This way you assure that the trigger can determine the changed data reliably.

Start Options

Starting the logging process can be approached in the following ways:

- manually, by pressing a button
- automatically at the startup
- through a logging cycle by starting the logger via the command line (e.g. Windows batch file)

Requirements

Connection to the PLC

The connection to the S7 happens via TCP/IP. There is no need for special configuration of the PLC. S7-FileLogger can connect to any reachable S7 PLC in the network. You need:

- the IP address, the slot , the rack of the PLC
- the address of the desired variables (e.g. DB10.DBB20)

Supported Operating Systems

Windows

- 10
- 8
- 7
- Vista
- XP

Windows Server

- 2019
- 2016
- 2012 R2
- 2012
- 2008 R2
- 2008
- 2003

with .NET Framework

- min. 4.0 without dongle
- min. 4.6 with dongle

Installation

Delivery takes place either via email or download. You will receive a zip package.


Also included in the delivery of a license is a license file. This is a text file that contains the license key. It includes the encrypted licensee, the license type and the license period.

A particular installation process is not necessary. Unzip the downloaded zip package to the desired destination directory. Start S7FileLogger.exe and, if necessary, enter your license code from the license file (copy / paste). You can also enter the license using the "Licenser.exe" tool (included in the package).

Use USB Dongle

The License key is also available as a USB-Dongle.

We use the products from MARX Software Security. To use the Dongles you have to do following steps:

- minimum .NET Framework V 4.6.0 (check version / install)
- [install MARX "CBIOS Server Windows" as a service](#)
- plug in the Dongle
- only using S7-FileLogger: [install S7-FileLogger for Dongle](#)
- start the program
- Under  you will find the license informations

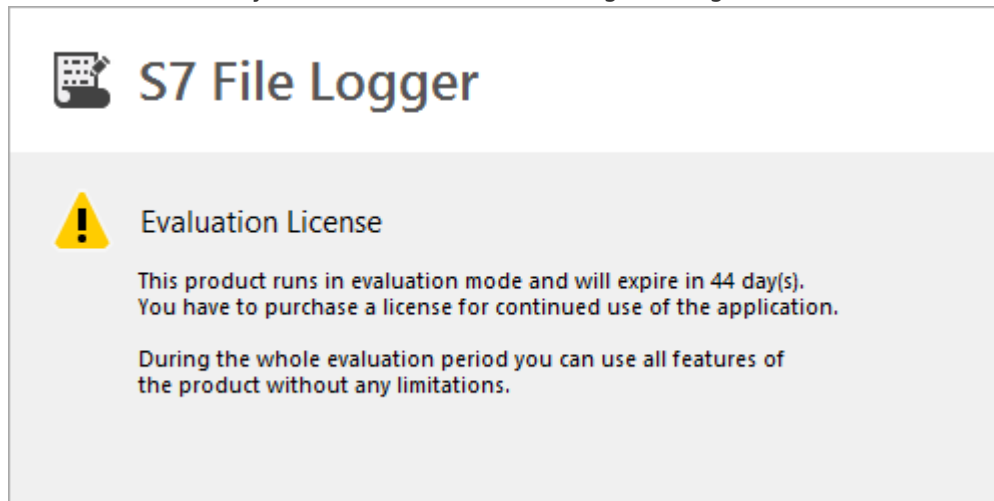


Uninstall

You can remove the S7-FileLogger at any time. To do this, simply delete the directory created from the ZIP package. Do not forget to save your recorded data beforehand.

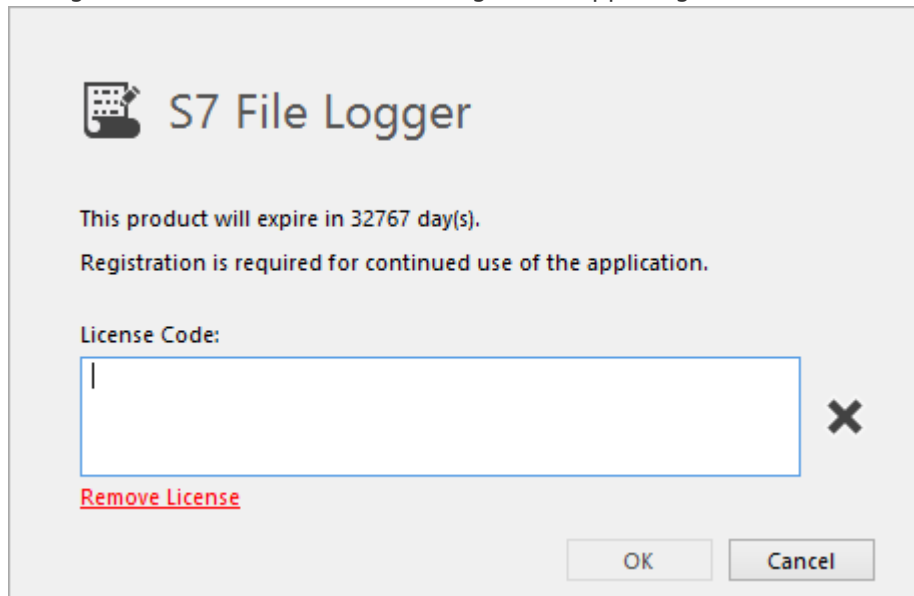
The First Start

After the first start you will receive the following message:



This dialog tells you that at the moment the installed version of S7-FileLogger is running with an evaluation license, which will expire after 14 days. After this period, the application can be used exclusively after acquiring a valid license key.

This message will appear until you enter a valid license key. Enter the license key in the license dialog. You can find the license dialog in the upper right corner of the toolbar of the main window.



The license key is checked on validity during entry. The result of the check can be seen on the right next to the text box. ✖ invalid, ✔ valid.

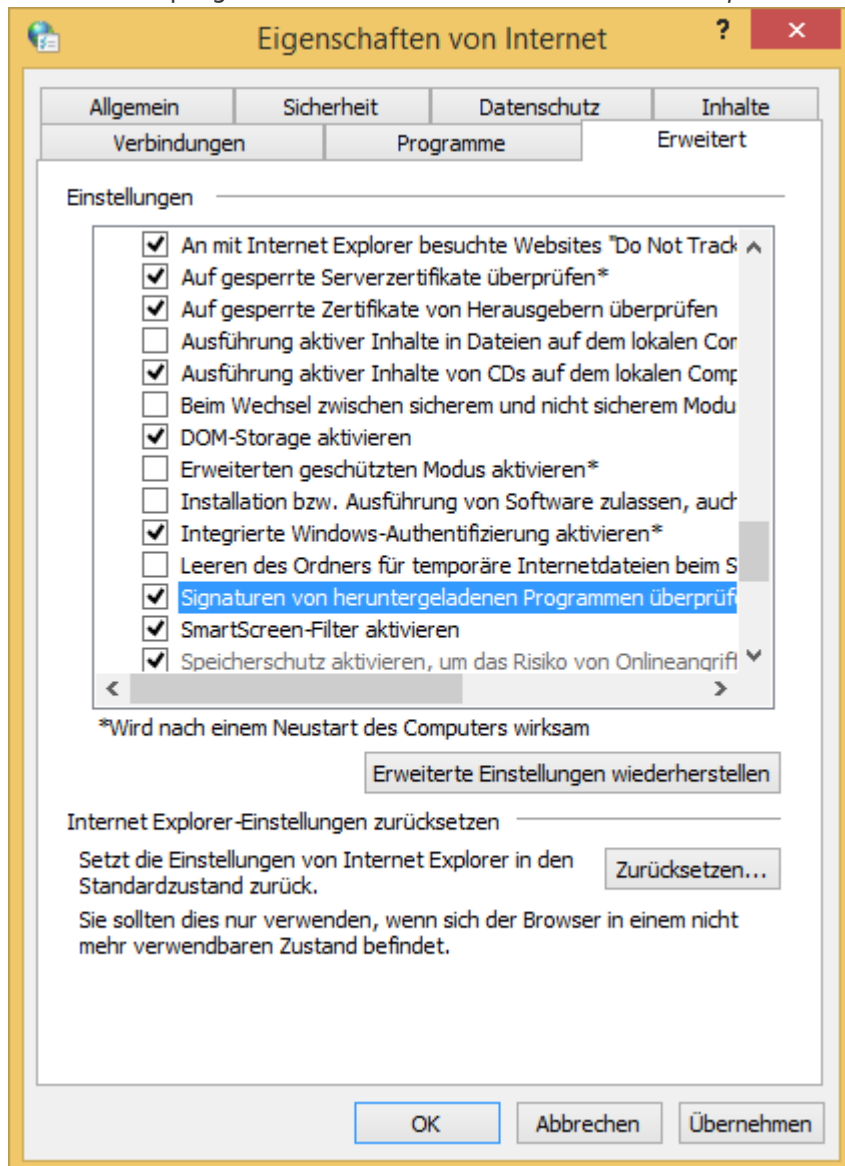
If the key is valid, you can adopt it by clicking **OK**.

S7-FileLogger starts very slowly

Ever software released by us contains a digital signature..

If your computer cannot connect to the internet in order to check the signature, the application only starts after the timeout expiration.

In order for the application to start faster, you can deactivate the function "Check for signatures on downloaded programs" under *Control Panel* → *Internet Options* → *Advanced* and there under *Security*.

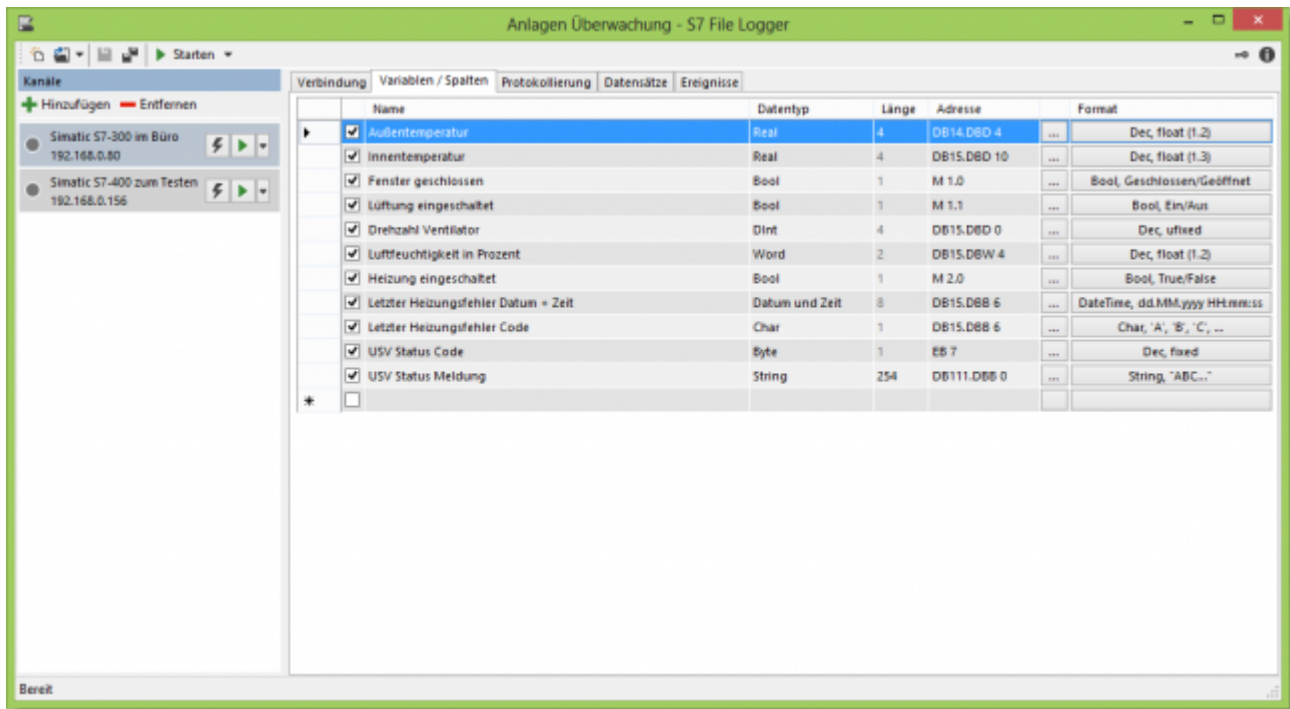


General

The S7-FileLogger works according to the function patterns of a wizard and follows a simple principle: Each configuration page in the main window is arranged in descending order of priority from left to right. The first page provides the obligatorily necessary settings whereupon the following pages provide less and less important settings.

Logging is not yet performed at this stage. Records are not recognized by the system until you click **Start**. Up to this command the S7-FileLogger only summarizes those settings to be considered at the logging, that are changeable or discardeable at any point up until the confirmation.

This easy use is taken for granted in the entire manual. It is mostly not explicitly mentioned in the description of the processes that you have to open the next configuration page by clicking on the appropriate tab.



Toolbar

The toolbar icons are all also accessible via keyboard shortcuts. You can see in the short description appearing when hovering the mouse over the buttons what keyboard shortcuts to use in order to trigger the buttons.

The status bar provides the current state of the application at all times.

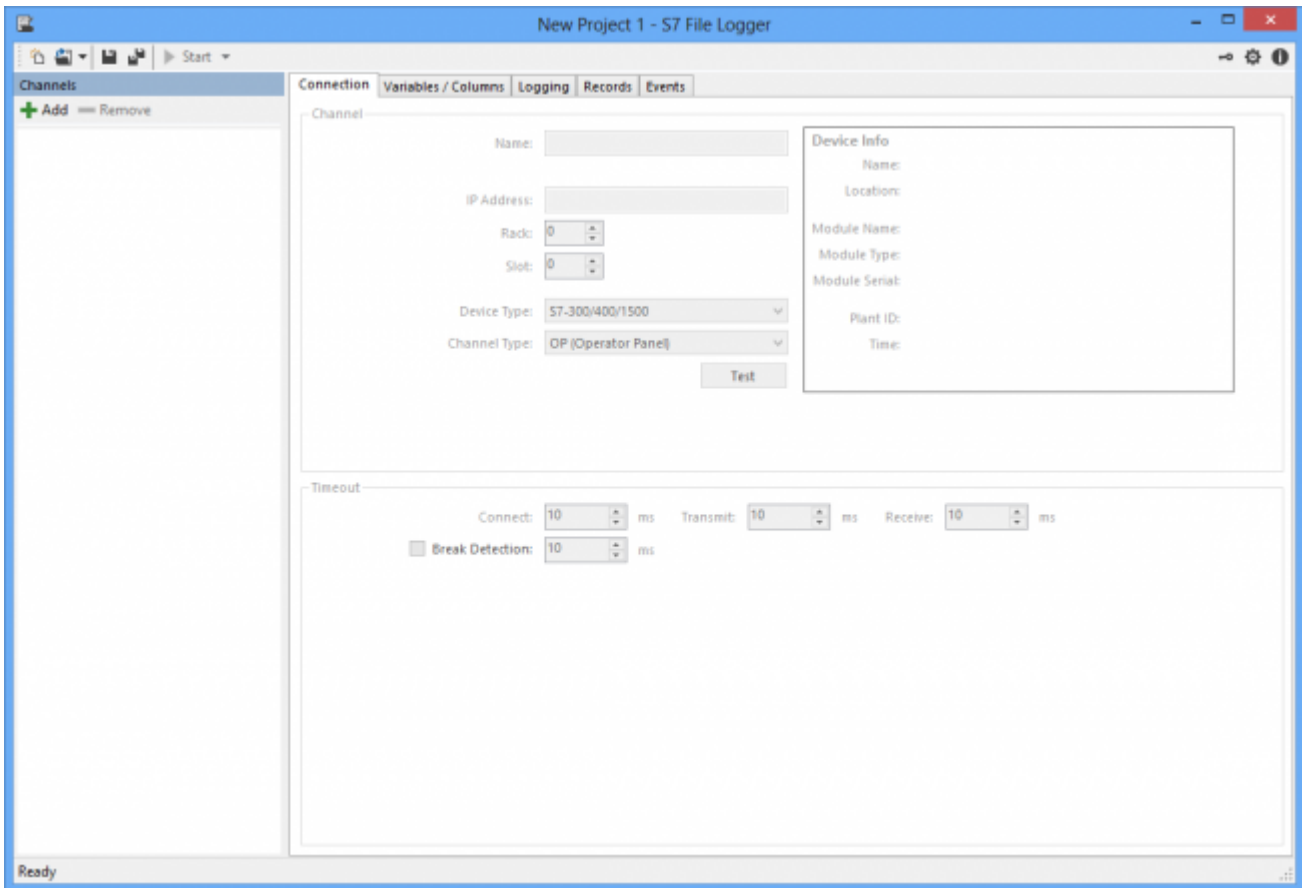
Other Functions

- **Simulation mode** Logging can also start in simulated mode. It offers the possibility to check and, if necessary, correct the output to the desired format, based on the changes made by test data generated by the S7-FileLogger.
- **File organization** The dynamic as well as automatic assignment of the target directory, the subdirectory and also the file name during logging assists your application-oriented storage of log data.
- **Data integrity** The incremental logging (append data) ensures even after repeated logging runs, that the same file is always used as the data target while a parallel “read along” the written data is ensured and even with complex documents the integrity of the log files is maintained.
- **Data types system** The context-sensitive data types system of the S7-FileLogger is supporting you in configuring the variables. This way, for example, an unwanted wrong addressing of a data block at the change of the output data type can be prevented. The appropriate output format is automatically pre-assigned to selected data types.

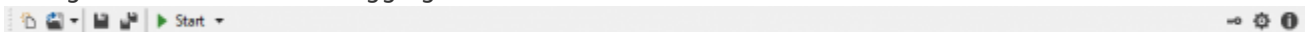
The Main Application Window

After starting the application, the main application window is the first window that will open (except from the dialog that appears when using an evaluation license).

The middle part of the main window can be divided furthermore into a left and a right part. In the left part the overall management of channels configured in the project takes place, whereas in the right part the actual configuration and monitoring of logging of a single channel is done.



While working with S7-FileLogger, the main window is the primary and only dialogue with which you can configure and monitor the logging.



In the upper part of the main window is the toolbar, which provides direct access to key functions. The toolbar is divided into the following buttons and their tools:

"New Project"



Creates a new project

"Open Project"



Load an existing project or open one from the list of "Recent projects" by clicking on the arrow to the right of the icon.

"Save Project"

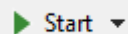


Save Project . If it is a new project the target directory and name of the project file will be requested. Otherwise, the currently open project will be overwritten.


"Save Project As ..."

 Save a project under a different name.

"Start"

	<p>Run the logging for all configured channels synchronously. As soon as at least one channel has been created the button will be available.</p> <p>Using the arrow to the right of the symbol, the login mode can be selected in which the logging shall take place in.</p> <p>Available modes:</p> <ul style="list-style-type: none"> * Standard mode (PLC based logging) = direct click on the button * Simulation mode (logging is simulated without establishing a real connection to PLC)
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"Stop"

 Stop all created channels synchronously. Once logging is active for at least one channel, this button will be available.

"License"

 Opens the license dialog for entering the license data and displaying the license info

"About"

 "About" dialog provides general information about the software and your license

The middle part of the main window can be divided furthermore into a left and a right part. The left part is for the overall management of configured channels while in the right part the actual configuration and monitoring of logging of each channel takes place.

Channel Configuration and Channel Monitoring

The combined overview of configuring and monitoring a channel summarizes all necessary information and groups it logically into tabs. This way the navigation between the different areas of the configuration and monitoring of the channel is possible .

Connection Variables / Columns Logging Records Events

The tabs

- Connection
- Variables / Columns
- Logging

refer to the configuration section of the selected channel.

The tabs

- Records
- Events

show all necessary information about the current logging run.

The Channel Management

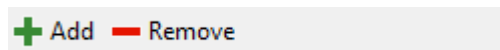


The channel management provides all features for managing the channels. These include :

- Creating and deleting a channel
- Controlling the logging
- Monitoring the channel state

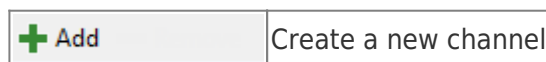
Also you will get information on:

- Error conditions
- a brief preview of the main communication data of the channel



The toolbar used in this view consists of the following buttons:

"Add Channel"



"Channel Remove "



For each channel there is an entry in the administration list over which further channel-context based actions are executed. This display has the following elements :



1. Status LED, current status of the channel	
Color	Description
	Logging is not active, the last active logging was flawless
	An error was detected during communication. The type of error is displayed when pointing to the LED with the mouse
	Logging is flawlessly active
	simulated logging active
2. IP address of the connection	
3. channel name	
4. manual trigger	

1. Status LED, current status of the channel	
Color	Description
Makes it possible during the active and inactive logging to create a “snapshot” record regardless of trigger conditions if a manual trigger is configured	
5. Logging start / stop	
Explicitly start / stop logging for this channel depending on the state of the icon (green arrow starts, red square stops)	
6. Start logging as ...	
Select specific logging mode under which the logging shall be started. (PLC based or simulation)	

Channel configuration

The tabs are arranged in logical order. When configuring a new channel you should work from left to right. Each tab provides the recommended default settings by itself.

Connection

Channel

Name:

IP Address:

Rack:

Slot:

Device Type:

Channel Type:

Device Info

Name:

Location:

Module Name:

Module Type:

Module Serial:

Plant ID:

Time:

In the right area the primary configuration of the channel occurs.

Field	Function
Name	Name of the channel
IP address	IP address of the PLC
Rack	number of the rack where the PLC (S7) is plugged
Slot	Number of the slot in which the PLC (S7) is plugged
Device Type	Type of PLC (S7-1200, S7-1500, S7-300/400, LOGO!, S7-200)
Channel Type	Type of connection channel (OP, PG or other)

Information

You will receive an error when pushing the test button in a LOGO! controller because the LOGO! does not support this function.

Connection parameters:

- Rack = 0
- Slot = 0

After a new channel has been created in the channel management, continue the configuration of the channel directly in the tab “Connection”. This tab is divided into “channel” and “timeout” .

Timeout

Connect: 5000 ms Transmit: 5000 ms Receive: 5000 ms

☐ Break Detection: 5000 ms

The values set in the area **timeout** are used to establish the connection to the PLC and during communication.

Field	function
Connect	timeout in ms for connecting
Transmit	timeout in ms for sending to the PLC
Receive	timeout in ms for receiving data from the PLC
Break Detection	KeepAlive time for monitoring the TCP/IP connection (interesting for large intervals)

Before you proceed to the next area, you already have the opportunity to let your configuration be checked by clicking **Test**. On successful completion you will receive all data provided by the device in the righthand part of the view.

Variables / Columns / Data

	Name	Data Type	Length	Address	Format
<input checked="" type="checkbox"/>	motor	Bool		DB1.DBX 0.0	Bool, True/False
<input checked="" type="checkbox"/>	motors	Bool	10	DB1.DBX 0.1	Bool, True/False
<input checked="" type="checkbox"/>	charge	DWord		DB1.DBD 0	Dec, ufixed

Here you set the definition of the variables in the PLC, including addresses. You define one variable per line that is part of the record to be archived or logged. A "variable line" corresponds to a column in the logging.

Meaning of the columns	
<input checked="" type="checkbox"/>	Write the value
<input type="checkbox"/>	Don't write the value
Name	Name = of a variable = Name for a column header for logging, e.g. in CSV
Data Type	see list Permitted operands
Length	Size of the data to be read; at Byte or String: Length of the data to be read. If a value is set to other types, an array of the type will be read. As you see in the example <i>Motors Conveyor Belt</i> a Bool array with the length of 10 is read. Output in file: Variablename_ArrayIndex, e.g. motors_0;motors_1;...
Address	Address of the PLC variable in the syntax. The format behaves as shown in the following table for SIMATIC S7
Format	Defines the desired output format

Create an Array

You can't create Byte and String variables as an array.

If you insert a length in all other types an array will be generated.

Sample:

For each charge the condition of the engine 10.5 and the 4 states of the engines of the conveyor belt shall be logged.

Save addresses:

Name	save address	Length
Charge	DB1000.DBB 0	15
Engine 10.5	DB1000.DBX 20.0	1
states of the engines of the conveyor belt (short ST)	DB1000.DBX 30.0 - DB1000.DBX 30.3	4

Possible solutions:

- add all variables manually
- add a bit-array with the length of 4

Solution by means of an array:

	Name	Data Type	Length	Address	Format
<input checked="" type="checkbox"/>	Charge	String	15	DB1000.DBB 0	String, "ABC..."
<input checked="" type="checkbox"/>	Engine 10.5	Bool		DB1000.DBX 20.0	Bool, True/False
<input checked="" type="checkbox"/>	ST	Bool	4	DB1000.DBX 30.0	Bool, True/False
<input checked="" type="checkbox"/>	ST 1	Bool	4	DB1000.DBX 30.4	Bool, True/False

View variable definition

Connection	Variables / Columns	Logging	Records	Events
	Time Stamp	Charge	Engine 10.5	ST
	11:09:17.292	ASDB23D454	False	False, True, False, False
	11:09:06.071	ASDB23D453	False	False, False, False, False

View records

1	Time Stamp; Charge; Engine 10.5; ST 0; ST 1; ST 2; ST 3;
2	11:09:06.071; ASDB23D453; False; False; False; False; False;
3	11:09:17.292; ASDB23D454; False; False; True; False; False;
4	

View CSV-file

Hint: In the variable definition the next value span will be automatically calculated with the help of the data entered before (marked entry in view variable definition).

Permitted operands

Operand

Name	Abbreviation (Siemens, DE)	Abbreviation(IEC)
Input	E	I
Output	A	Q
Flag	M	M
Peripherals	P	P
Counter	Z	C
Data Block	DB	DB
Timer	T	16

Data types

Name	Abbreviation	Bit size	Range	Description	Array
BOOL	X	1	0 to 1	single bit representing true (1) or false (0)	x
BYTE	B	8	0 to 255	unsigned 8-bit	x

Name	Abbreviation	Bit size	Range	Description	Array
WORD	W	16	0 to 65.535	unsigned 16-bit (Word)	x
DWORD	D	32	0 to $2^{32}-1$	unsigned 32-bit (Double Word)	x
CHAR	B	8	A+00 to A+ff	ASCII-Code unsigned 8-bit character	x
INT	W	16	-32.768 to 32.767	signed 16-bit integer	x
DINT	D	32	-2^{31} to $2^{31}-1$	signed 32-bit integer (Double Word)	x
REAL	D	32	+1.5e-45 to +3.4e38	IEEE754 32-bit single precision floating point number	x
S5TIME	W	16	00.00:00:00.100 to 00.02:46:30.000	binary coded decimal (BCD) number representing a time span	
TIME	D	32	00.00:00:00.000 to 24.20:31:23.647	signed 16-bit integer representing a time span in milliseconds	
TIME_OF_DAY	D	32	00.00:00:00.000 to 00.23:59:59.999	unsigned 16-bit integer representing a time span in milliseconds	
DATE	W	16	01.01.1990 to 31.12.2168	unsigned 16-bit integer representing a date in days	
DATE_AND_TIME	D	64	00:00:00.000 01.01.1990 to 23:59:59.999 31.12.2089	binary coded decimal (BCD) number representing a date and time	
S7String	B	any	A+00 to A+ff	ASCII-Code, max. 254 Bytes	

The variables are composed of operand and data type. Examples:

Examples	Data type	Example Siemens	Example IEC
Input Byte 1, Bit 0	BOOL	E 1.0	I 1.0
Output Byte 1, Bit 7	BOOL	A 1.7	Q 1.7
Flag Byte 10, Bit 1	BOOL	M 10.1	M 10.1
Data Block 1, Byte 1, Bit 0	BOOL	DB1.DBX 1.0	DB1.DBX 1.0
Input Byte 1	BYTE	EB 1	IB 1
Output Byte 10	BYTE	AB 10	QB 10
Flag Byte 100	BYTE	MB 100	MB 100
Peripherals Input Byte 0	BYTE	PEB 0	PIB 0
Peripherals Output Byte 1	BYTE	PAB 1	PQB 1
Data Block 1, Byte 1	BYTE	DB1.DBB 1	DB1.DBB 1

Data Block 1, Data Block 1 Typ bool, Address 1.0 → DB1.DBX 1.0

Data Block 1, Data Block Typ Byte, Address 1 → DB1.DBB 1

Peripherals Input, Typ DWORD, Address 0 → PED 0

Help:

DB#.DBB # = Data Block#.Data Block Byte #

DB#.DBW # = Data Block#.Data Block Word #

DB#.DBD # = Data Block#.Data Block Doubleword #

= Address

The Editor supports you with the entry:

- When pressing the ENTER key

- the name entered will be copied and an incremented number is appended
- the next possible address will be registered on the basis of the previously entered address
- the previous format will be taken on
- After selecting the data type (after a click in another column), the corresponding address format is automatically set, for example:

Type	address	format
bool	DB100.DBX 0.0	Bool , True / False
word	DB100.DBW 0	Dec, ufixed

Addresses Editor

The addresses editor appears when you press the “...” button next to the address input. The editor is useful if you are unfamiliar with the addressing of a variable by Siemens S7 or IEC format.

type	Description
Title	preview of the address of the variable
Operands ID	data area of the PLC
DB number	data block number DB
Operand type	- just the heading -
Byte Index	byte address
Bit Index	Bit number
✓	Take data
X	Discard input

Format Editor

In the Format Editor you set the output format of the variable.

Type	options
Dez	Choice between fixed point, floating point and scientific values
Bool	any value for the display is enterable
The date and / or time	You can enter the default system placeholders as follows: day (dd) month (MM) year (yyyy) hours (HH) minutes (mm) seconds (ss) \\ You define the length of each number by the number of characters used.
Bin and Hex	to be defined using an appropriate selection. Since V2.0.10.0 output HEX with prefix 0x possible
Title	small preview of the output
	Confirm selection
X	Discard selection.

Logging

This configuration page provides further options on how the S7-FileLogger shall proceed the logging.

Location

Directory

Directory

Directory:

Subdirectory:

[C:\Users\developer\Documents\S7 File Logger\K2](#)

Category	Description
Directory:	destination directory where the log data shall stored by the S7-FileLogger
Subdirectory:	Optional: Creates a subdirectory in the root directory in dependance to a predefined name format or a custom name
LinkLabel:	Preview of the destination file directory. The directory will be opened when clicked.

File

File

File Name:

Format:

[C:\Users\developer\Documents\S7 File Logger\2016.08.19.csv](#)

Filename:	<p>ways of generating</p> <ul style="list-style-type: none"> *dynamic *custom formatting <p>Keywords:</p> <ul style="list-style-type: none"> {ChannelName} {Year} {Month} {Day} {Hour} {Minute} {Second} {DateTime} = Date and Time <p>{Hour=HH} = 24 hour format</p> <p>{Hour=hh} = 12 hour format</p> <p>{Month=MMM} = short form of the month e.g. Nov</p> <p>After the = all data is valid that is shown in the tooltip (see section "Implement Timestamp")</p>
Combine data name at:	<p>every logging start</p> <p>every logging</p>
Format:	output file format (CSV, XML ...)
LinkLabel	Preview destination directory and file name. If the file exists it will be opend when clicked.

Data Management

General

Behavior: How and **when** is data written?

Behaviour

Mode:

☐ Autostart on startup

Mode	Description
Append new entries	Records are appended to the existing file
Truncate old entries on start	The log file is emptied at each protocol start (deleted and recreated)
Truncate old entries on write	The log file is deleted at each protocol process, then newly created and the current record and the log file are written. Only one protocol cycle is stored in the log file
Autostart on startup	Automatic start of the channel when starting the application When used as a service, only channels with active auto start are used!

Options: additional options of the S7-FileLogger.

Options

☒ Always close file after write access

☒ Include Time Stamp

☒ Compound Format


Date + Time: HH:mm:ss.fff ?

☐ Partitioned Format

Date: yyyy-MM-dd ?

Time: HH:mm:ss.fff ?

☐ Do not include Header in CSV

Version	Option	Description																																															
from Advanced	Close log file after each write operation	Closes the file after each write operation. This is helpful in long interval timings, if the file is in the meantime e.g. to be read / copied / cut out																																															
	Do not write header in CSV file	Deactivates the writing of the header when starting a new file																																															
from Standard	Timestamp Embed:	If enabled, a timestamp is added by default at the beginning of each record																																															
		<div>Tooltip for time logging: Take the mouse over the icon. Thereafter, the possible date / time formats appear as depicted below</div> <table><tr><td>d</td><td>The day of the month, from 1 through 31.</td></tr><tr><td>dd</td><td>The day of the month, from 01 through 31.</td></tr><tr><td>ddd</td><td>The abbreviated name of the day of the week.</td></tr><tr><td>dddd</td><td>The full name of the day of the week.</td></tr><tr><td>f</td><td>The tenths of a second in a date and time value.</td></tr><tr><td>ff</td><td>The hundredths of a second in a date and time value.</td></tr><tr><td>fff</td><td>The milliseconds in a date and time value.</td></tr><tr><td>ffff</td><td>The ten thousandths of a second in a date and time value.</td></tr><tr><td>h</td><td>The hour, using a 12-hour clock from 1 to 12.</td></tr><tr><td>hh</td><td>The hour, using a 12-hour clock from 01 to 12.</td></tr><tr><td>H</td><td>The hour, using a 24-hour clock from 0 to 23.</td></tr><tr><td>HH</td><td>The hour, using a 24-hour clock from 00 to 23.</td></tr><tr><td>m</td><td>The minute, from 0 through 59.</td></tr><tr><td>mm</td><td>The minute, from 00 through 59.</td></tr><tr><td>M</td><td>The month, from 1 through 12.</td></tr><tr><td>MM</td><td>The month, from 01 through 12.</td></tr><tr><td>MMM</td><td>The abbreviated name of the month.</td></tr><tr><td>MMMM</td><td>The full name of the month.</td></tr><tr><td>s</td><td>The second, from 0 through 59.</td></tr><tr><td>ss</td><td>The second, from 00 through 59.</td></tr><tr><td>y</td><td>The year, from 0 to 99.</td></tr><tr><td>yy</td><td>The year, from 00 to 99.</td></tr><tr><td>yyy</td><td>The year, with a minimum of three digits.</td></tr><tr><td>yyyy</td><td>The year as a four-digit number.</td></tr></table>	d	The day of the month, from 1 through 31.	dd	The day of the month, from 01 through 31.	ddd	The abbreviated name of the day of the week.	dddd	The full name of the day of the week.	f	The tenths of a second in a date and time value.	ff	The hundredths of a second in a date and time value.	fff	The milliseconds in a date and time value.	ffff	The ten thousandths of a second in a date and time value.	h	The hour, using a 12-hour clock from 1 to 12.	hh	The hour, using a 12-hour clock from 01 to 12.	H	The hour, using a 24-hour clock from 0 to 23.	HH	The hour, using a 24-hour clock from 00 to 23.	m	The minute, from 0 through 59.	mm	The minute, from 00 through 59.	M	The month, from 1 through 12.	MM	The month, from 01 through 12.	MMM	The abbreviated name of the month.	MMMM	The full name of the month.	s	The second, from 0 through 59.	ss	The second, from 00 through 59.	y	The year, from 0 to 99.	yy	The year, from 00 to 99.	yyy	The year, with a minimum of three digits.	yyyy
d	The day of the month, from 1 through 31.																																																
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yy	The year, from 00 to 99.																																																
yyy	The year, with a minimum of three digits.																																																
yyyy	The year as a four-digit number.																																																

Event logging: the maximum count of entries in the *.err-file.

Event Logging

Maximum Number of Records: 100

Acknowledgement: Add an acknowledgement when logging was successful

Acknowledgement

☐ Use Acknowledgement using: DB1.DBX 0.0 ... Type: Set Flag

Category	Description
Use Acknowledgement via	Bit address in the PLC
Type	Set Flag: value 1 Delete Flag: value 0 Toggle Flag: value 1 is read and inverted

Data

Set reading pattern of data management.

General
Data
Trigger

☒ Struct Storage [?](#)
☐ Stack Storage [?](#)
☐ Ring Storage [?](#)

Number of records per read: 1
☐ Manual Record Byte Offset: 0

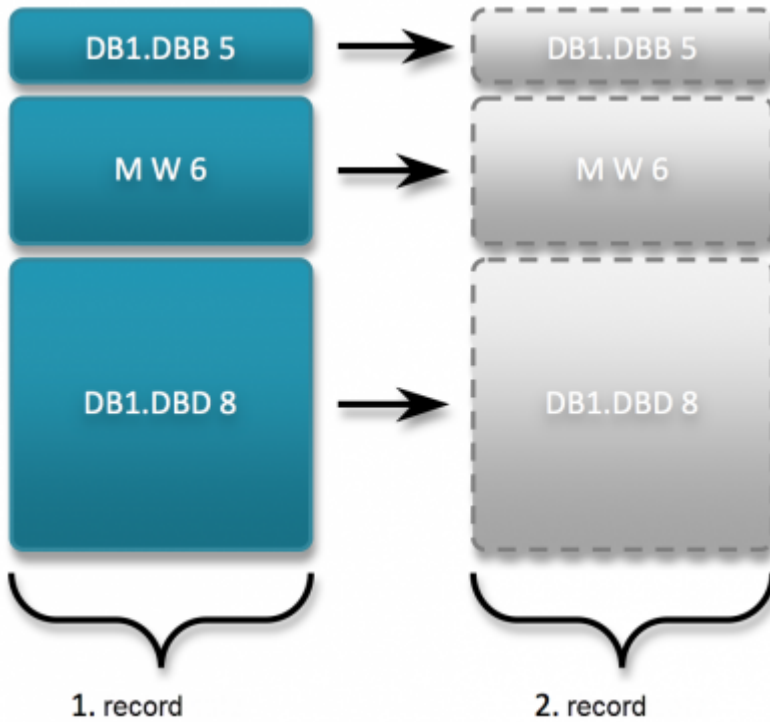
Number of records: 1
☐ Manual Record Byte Offset: 0

Interval: 00:00:00 = 250 ms.

Start Pointer: DB 1 .DBW 0
End Pointer: DB 1 .DBW 2

Structured Data Management

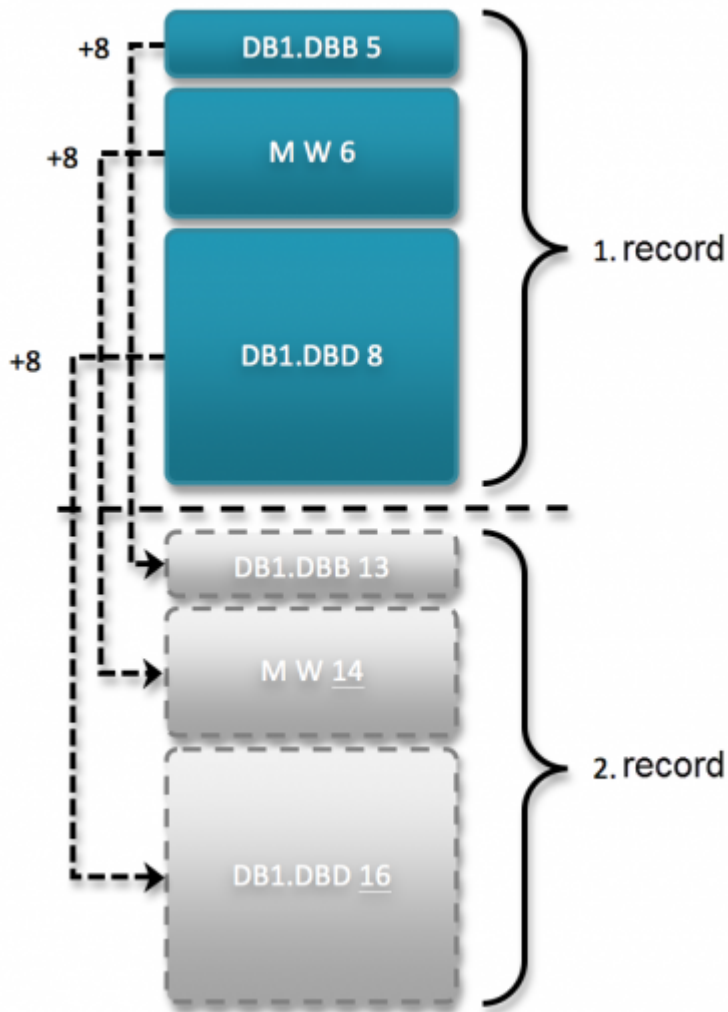
If this option is selected, all configured variables are read each time one of the configured triggers is raised, while the values of the acquired record are always read by the same addresses.



Stack and Ring-oriented Data Management

These types of data management support setting **number of records (per read operation)**. The data is stored consecutively in memory or in the PLC following an equal pattern and the S7-FileLogger reads this scheme using the defined variables.

Explanation to Byte Offset:



The chart shows what and how much is read when the option **Number of records** is set to the value **two** and also the option **data byte offset** is set to the value **8**.

Once you make use of the **data byte offset** setting you exhaust the full potential of these two options. The S7-FileLogger allows you to read 1-n records that are, for example, stored consecutively in the PLC memory. The best part is that this function is not limited to one data area, but is also applicable to several different data areas.

The example shown here consists of three variables with two variables addressing a data block and one variable addressing a flag. Through the settings of the option “number of records (per read operation)” the S7-FileLogger here reads, as just described, two records per read operation. In this case, however, by setting the “data byte offset”, the S7-FileLogger is always adding eight bytes (“data byte offset” = 8), conjecturing from the previously read record, and uses this offset to read the next value from the PLC. Thus, you are able to read a stack or a ring of same-structured data from your PLC with a single transaction without being forced to configure all variables again or even divide a single record in its components afterwards.

Stack Settings	Description
Number of records per read operation	Number of records to be read (defined variables are start addresses)

Stack Settings	Description
Manual data byte offset	<p>0 = always read the same address ranges</p> <p>> 0 = buffer between the records or possibly unneeded byte values between the records. If this option is not selected, the maximum defined address variable is used the operand type adds this value. Example: maximum address variable DB1.DBB 10</p> <p>second read operation start address DB1.DBB 21</p> <p>this is true for each defined operand type</p>

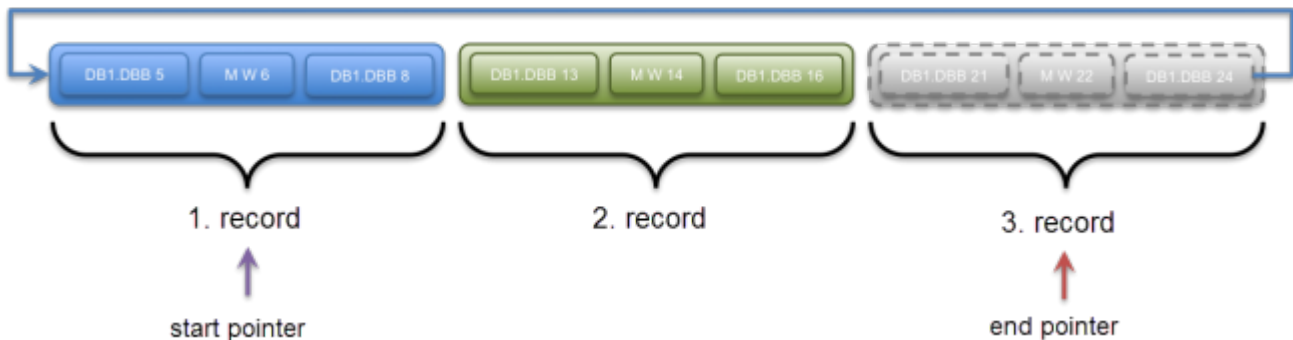
Each trigger raises logging.

Ring Settings	Description
Number of records	maximum number of records in the defined buffer to be read (defined variables are start addresses)
Manual data byte offset	<p>0 = always read the same address ranges</p> <p>> 0 = buffer between the records or possibly unneeded byte values between the records.</p>

Triggers are not relevant here. Data is read cyclically if the value of the end pointer is not equal to value of the start pointer.

Functionality:

After a record has been read, the S7-FileLogger sets the value of the start pointer to the position of the last record read. In return, the PLC must always make the end pointer show to the position of the record to be written next, while the values of all records collected from different addresses, beginning with the start address of the defined variables, are read. The addresses of all further records are thereby detected either automatically or by the defined manual data byte offset. The principle of this data storage is also referred to as a FIFO (First-In-First-Out).



Trigger

General
Data
Trigger

+ Add - Remove

☒ Settings
☒ always.
☐ never.

☒ Settings
☒ Controls logging
☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Intervaltrigger

Interval: 00:00:01 = 1000 ms.



The rider **Trigger** itself is divided into an overview of the defined triggers and the configuration of a trigger selected in the overview.

Overview of Triggers

+ Add - Remove

☒ Intervaltrigger
 always.
 never.

☒ New Trigger 1
 always.
 never.

Button	Description
Add	Define new trigger
Remove	Delete selected trigger
Checkbox next to Name	set : is used for logging
Symbol	description
 always.	Indicates when the trigger is started
	Indicates when the trigger is stopped
Click on Trigger	Settings of the trigger are shown

Settings of the Trigger

☒ Intervaltrigger

☒ Controls logging
☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Intervaltrigger

Interval: 00:00:01 = 1000 ms.

The following basic functions are given for all triggers:

Setting	Description	
Controls logging	<input checked="" type="checkbox"/>	creates a record
	<input type="checkbox"/>	is , for example, used to control other triggers

Setting	Description
Controls the creation of the log file	Through this trigger the generating of a new output file is enforced. If the same names exist they are numbered e.g.: file name: Extruder1200 date format: {Year}.{Month}.{Day} current file name: Extruder1200_2016.11.02.csv next file name: Extruder1200_2016.11.02 (1).csv Hint: If active, data logging occurs only after the trigger has been raised.
Starts :	Time of activation of the trigger. Here all defined triggers are displayed
Runs :	running time of the trigger, adjustable in milliseconds
Runs max:	running time of the trigger, adjustable in the number of runs. After activation of the trigger it will be executed n-times
Stops :	Time upon which the trigger becomes invalid. Here all defined triggers are displayed
Type:	type of trigger
Interval:	time interval in which trigger conditions are checked

It is possible to link triggers with each other. Thus, a trigger can raise another, even if it is not currently active, e.g. because the term has expired.

+ Add - Remove

☐ intervall trigger

always.
 never.

☒ New Trigger 1

always.
 never.

☒ New Trigger 2

always.
 never.

☒ New Trigger 3

always.
 never.

☒ New Trigger 3
☒ Controls logging

Starts: <always>
☐ Runs: <always>
Stops: <never>
Type: Intervaltrigger
Interval: 00:00:01 = 1000 ms.

The stop trigger immediately terminates the currently running trigger even if it is still valid.

Trigger options

- Manual trigger
- Interval trigger
- Conditional / edge trigger
- Value change trigger
- Boolean trigger

Manual Trigger

Channels

+ Add - Remove

PLC_1

192.168.0.80

By clicking on the **flash** the trigger for the selected channel is raised.

Interval Trigger

Cyclic triggering according to a set interval.

☒ Intervaltrigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Intervaltrigger

Interval: 00:00:01 = 1000 ms.

Conditional / Edge Trigger

Cyclically checks the value at the address set according to a set interval and starts logging when the value becomes either

equal to, greater, greater or equal, less than, less or equal.

Since V2.0.10.0: Option "not" added. Trigger raises when the negative result of the condition(s) is TRUE (see examples).

Logging is triggered once each time at the transition to the defined area (edge treatment).

☒ Conditional-/ Slope trigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Conditional/Slope Trigger

Interval: 00:00:01 = 1000 ms.

Verifies: DB1.DBX 1.0 ... on changes and raises if it is ...

☐ ... not ...

... equals to: 0

... within the range: ☐ greater ☐ equals 0 becomes.

☐ lower ☐ equals 0 becomes.

Samples:

Trigger shall be raised when the value at the address DB1.DBD 30 becomes higher than or equal to 100 and lower than or equal to 200.

Configuration:

☒ Sampletrigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Conditional/Slope Trigger

Interval: 00:00:01 = 1000 ms.

Verifies: DB1.DBD 30 ... on changes and raises if it is ...

☒ ... not ...

... equals to: 0

... within the range: ☒ greater ☒ equals 100 becomes.

☒ lower ☒ equals 200 becomes.

Behavior:

Old value	New value	Trigger state
99	100	triggered
100	180	not triggered
300	180	triggered

Trigger shall not be triggered if the value at the address DB1.DBD 30 becomes higher than or equal to 100 and less than or equal to 200.

Configuration:

☒ Sampletrigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Conditional/Slope Trigger

Interval: 00:00:01 = 1000 ms.

Verifies: DB1.DBD 30 ... on changes and raises if it is ...

☒ ... not ...

... equals to: 0

... within the range: ☐ greater ☐ equals 100 becomes.

☐ lower ☐ equals 200 becomes.

Behavior:

old value	new value	Triggerstate
99	100	not triggered
100	80	triggered
180	280	triggered

Value Change Trigger

Cyclic testing for change of value at the set address.

☒ Value change trigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Value Change Trigger

Interval: 00:00:01 = 1000 ms.

Verifies: DB1.DBX 1.0 ...

Boolean Trigger

Cyclic testing of a boolean value to **true** and **false** according to a set interval with the possibility to ☒ automatically reset the state (the logger inverts).

As long as the check is true the trigger raises.

Due to the automatic inversion of the S7-FileLogger the PLC can e.g. determine if the data was fetched and a new record can be written.

☒ Boolean trigger

☒ Controls logging

☐ Controls file creation

Starts: <always>

☐ Runs: 00:00:00 = 0 ms after start.

☐ Runs max: 1 times.

Stops: <never>

Type: Boolean Trigger

Interval: 00:00:01 = 1000 ms.

Verifies: DB1.DBX 1.0 ... on changes and raises if it is ...

... in state: ☒ True ☐ False ☐ that the Logger inverts.

Application scenario

- Collect data every 10 seconds
- Every second an error condition shall be checked
 - If an error has occurred , then ...
 - log for 20 seconds every 500ms
 - after 20 seconds log every 10 seconds

To solve the problem:

- Set an interval trigger with the name “Every 10 seconds”
- Set the interval to 10 seconds (10000ms)

The screenshot shows the 'Trigger' tab of the S7-FileLogger configuration window. The 'All 10 seconds' trigger is selected. The configuration is as follows:

- General:**
 - ☒ All 10 seconds
 - ☒ Error on Trigger 1 second
 - ☒ Trigger all 500ms after error
- Controls logging:**
 - ☒ Controls logging
 - Starts:** <always>
 - Runs:** 00:00:00 = 0 ms after start.
 - Stops:** <never>
 - Type:** Intervaltrigger
 - Interval:** 00:00:10 = 10000 ms.

- Create a conditional / edge trigger with the name “error trigger 1 second”
- Set the interval to 1000ms
- Fill in the address being read, here **DB1.DBB 100**
- Set the condition, here **value equal 1**

The screenshot shows the 'Trigger' tab of the S7-FileLogger configuration window. The 'Error on Trigger 1 second' trigger is selected. The configuration is as follows:

- General:**
 - ☒ All 10 seconds
 - ☒ Error on Trigger 1 second
 - ☒ Trigger all 500ms after error
- Controls logging:**
 - ☒ Controls logging
 - Starts through:** All 10 seconds
 - Runs:** 00:00:00 = 0 ms after start.
 - Stops:** <never>
 - Type:** Conditional/Slope Trigger
 - Interval:** 00:00:01 = 1000 ms.
 - Address:** DB1.DBB 100
 - Condition:** ... equals to: 1
 - Range:**
 - ☐ greater
 - ☐ equals
 - ☐ lower
 - Value:** 0 becomes.

- Create a new interval trigger with the name “Trigger all 500ms after error”
- Set **Starts with:** to **error trigger 1 second**
- Set **Runs:** to **20s**
- Set the interval to **500ms**

General Data Trigger

+ Add - Remove

☒ All 10 seconds
▶ always.
■ never.

☒ Error on Trigger 1 second
▶ through 'All 10 seconds'.
■ never.

☒ Trigger all 500ms after error
▶ through 'Error on Trigger 1 second'.
■ never.

☒ Trigger all 500ms after error

☒ Controls logging

Starts through: Error on Trigger 1 second

☒ Runs: 00:00:20 = 20000 ms after start.

Stops: <never>

Type: Intervaltrigger

Interval: 00:00:00 = 500 ms.

Channel Monitoring

Records: all records currently detected

Events: the events that occurred

Records

Once you have completed the channel configuration, you can start the logging. Regardless of the selected logging mode (e.g. simulation), each detected record is displayed in real-time in this tab. In contrast to the log file, in this view the last recorded data is always in the first row of the table.

	Time Stamp	db1000.dbb0
	14:18:07.034	32

If a record has been recorded it is displayed in the table according to your set configuration up with formatted values. In this case each record always at least contains the timestamp at which it was read. All further columns in this view are displayed according to your configured variables.

Again, it should be noted that "inactive" variables are not included in the log file and in the record view.

Events

If a logging was carried out or is currently carried out, you can see the actions of the S7-FileLogger carried out here and their outcome in the tab **Events**.

If you have problems with the logging, usually you can detect a hint on the problem here.

	Time Stamp	Type	Source	Message	Event ID	Variable
	22.01.2015 14:1...	Information	Observer	Stopped.	0	
▶	22.01.2015 14:1...	Information	Observer	Started.	0	


Column	Description
Timestamp	time of the event specified in day.month.year hour:minute:second
Type	type of event such as information errors, ...
Source	Event trigger, information about from which functional part of the S7-FileLogger the event originates
Message	brief explanation of the event
Event ID	program internal event number to identify the venue and type of event

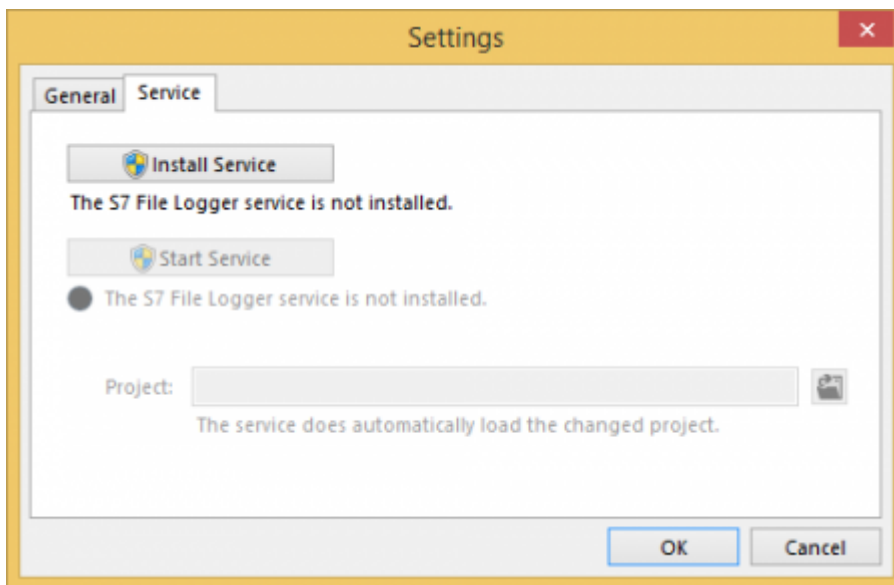
Column	Description
Variable	if a variable has triggered the event, it will be enrolled here

Operating as a Service

Install the Service

To install S7-FileLogger as a service proceed as follows:

- Open the settings dialog 
- Select the tab "Service"



- Click "Install Service", the S7-FileLogger is registered as a service. Required admin rights are requested via a login dialog.
- Choose the S7-FileLogger project (*.fgg) which you want to use in "service mode".
- All channels with hooks "Autostart" are processed to service operation, all others remain unaffected.
- After successful installation you can start / stop the service.

The service automatically registers changes to the selected project. With reassignment of a project the service will automatically restart.

In "Service" mode the S7-FileLogger generates entries in the EventLog of the system. These can be found at:

Event Logs → Windows Protocols → Applications → S7-FileLogger

In the target directory of the log files .err files are created additionally. These include possible errors and notifications that occur during the logging.

Events that are logged:

- selected / modified project file
- channels that are monitored
- status of the service (started / stopped)
- error in the project file e.g. "Project does not contain a channel", "File does not exist", ...

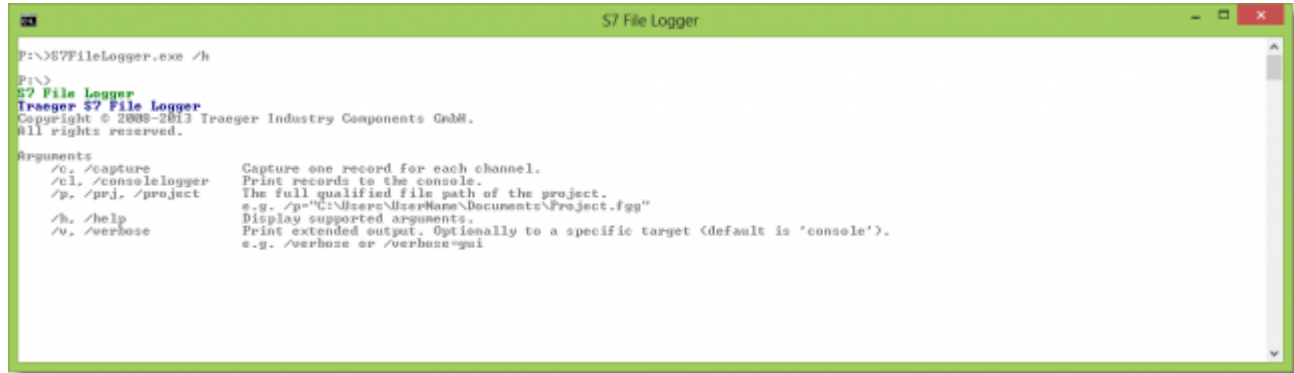
Uninstall Service

If the service is started, the “Service” dialog shows “Uninstall service”.

If this button is still displayed after clicking it, it may be useful to perform a restart of the computer.

Command Line Interface

The S7-FileLogger additionally offers the support for execution via a command line or via a batch script.



Application Scenarios

Through this interface, automated logging runs, which can be manually triggered when the system starts or via batch file are imaginable.

Links to Parameters

This way you can always create a shortcut for the S7-FileLogger and also use the same parameters in its properties that are available in the command line.

Command Line Parameters

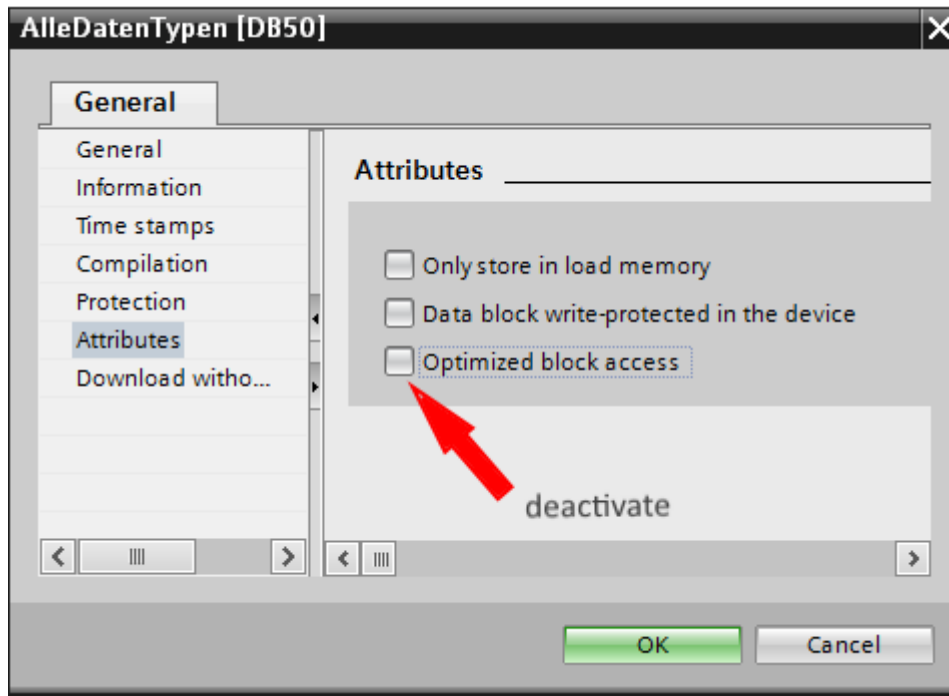
The arguments provided in the command line based interface of the S7-FileLogger are, as described in the integrated help, to use as follows:

Argument	Description
/c /capture	If this argument is stated, the S7-FileLogger creates exactly one record per configured channel and closes itself again.
/cl /console logger	If this argument is stated, the S7-FileLogger additionally depicts the records collected in the command line.
/p, /prj /project	This argument is the only mandatory argument. Along with this switch you state the full file path to the S7-FileLogger project that the S7-FileLogger shall use. This would look e.g. like this: /p="C:\folder\Projekt.fgg"
/help	If this argument is stated, the S7-FileLogger issues a brief summary of the supported arguments. If this argument is stated, the S7-FileLogger provides additional information in the command line.
/v /verbose	Alternatively, you can request a short feedback after the detection of a record as a graphical dialog by stating "/verbose=gui".

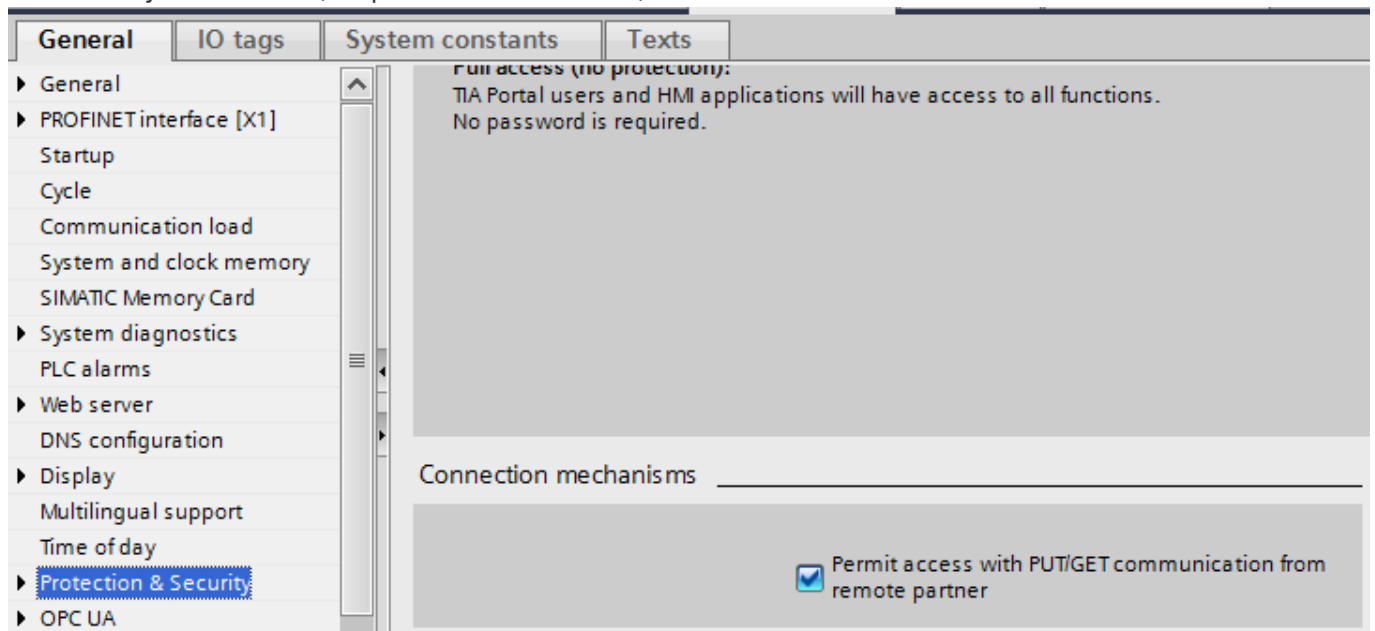
Settings S7-1200/S7-1500/Logo

S7-1200/1500

The optimized block access needs to be deactivated in the data block attributes for access to the S7-1500 and S7-1200.

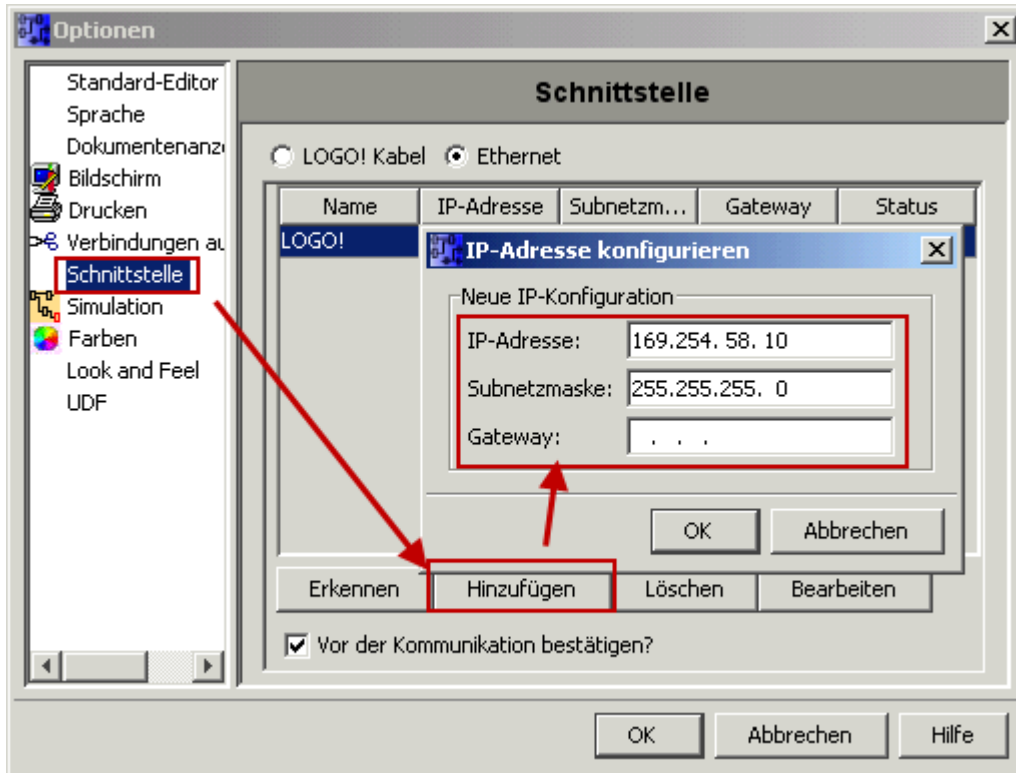


In the S7-1500 must be enabled in the communication setting in addition to the PUT / GET access . How this works you see here (snapshot from TIA Portal) .

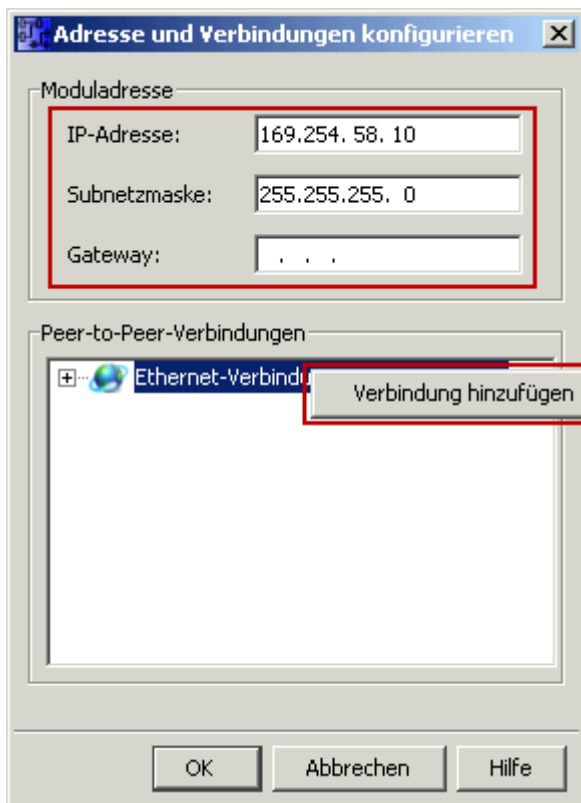


LOGO!

1. Use the Logo Soft Comfort the IP address of a logo! PLCs:



2. Configure PLCs so that connections from an HMI device accepted the Logo!. To do so, go to "Tools- > Ethernet Connections" and then add a new connection.



3. Double-click on the newly created connection to access the properties.

Verbindung1(Server)

☐ Clientverbindung: fordert Datenübertragung zwischen lokalem PC und dezentraler SPS an

☒ Server-Verbindung: antwortet auf Verbindungsanforderungen dezentraler Clients

Eigenschaften lokaler Verbindungen (Server)

TSAP 02.00

☒ Mit Operator Panel (OP) verbinden

☒ Alle Verbindungsanforderungen akzeptieren.

Nur diese Verbindung: . . .

Dezentrale Eigenschaften (Client)

TSAP 02.00

Keep Alive (Verbindungskontrolle)

☐ Keep-Alive-Funktion für diese Verbindung aktivieren

Keep-Alive-Intervall: 0 Sekunden

OK Abbrechen Hilfe

Select:

1. Server Connection
2. Local TSAP: 02:00 - 02:00 decentralized TSAP
3. accept all connections.

You can access DB1, inputs , outputs, flags , counters and timers with IP -S7 -LINK . Now put on " Tools- > VM parameter map " the variables that are to be transferred to the DB1.

WinCC (TIA-Portal) Variablentabelle

Standard-Variablentabelle				
Name	Datentyp	Verbindung	...	Adresse
Ein-/Ausschaltverzögerung	Word	Verbindung_1	...	VW 0
<Hinzufügen>				

LOGO!Soft Comfort

The screenshot shows the LOGO!Soft Comfort interface. At the top, a ladder logic diagram is visible with a block labeled 'B002'. Below it, the 'Konfiguration des variablen Speichers' (Configuration of variable memory) dialog box is open. The dialog box contains a table for 'Parameter-VM-Zuordnung' (Parameter-VM assignment) with the following data:

ID	Block	Parameter	Typ	Adresse
1	B002 [Ein-/Ausschaltverzögerung]	Aktualwert	Word	0
2				

Red boxes in the image highlight the 'Ein-/Ausschaltverzögerung' block in the ladder logic, the 'B002 [Ein-/Ausschaltverzögerung]' entry in the table, and the 'Word' type and '0' address in the table.

Please note when accessing the LOGO!

Rack 0

Slot 0

The test button in the connection delivers a timeout error because it cannot find the requested data. The deposited data in the data block can be called nevertheless.

Versionshistory

Terms of Use

Terms of the software

The conditions for the use of the software S7 FileLogger are described in license conditions at the end of this manual. The unique license key is proof of your legal purchase and use of the S7-FileLogger on your

computer. This was given in electronic form.

Technical support (Support)

If you have any problems with the installation or use of the Program, and can solve neither the manual nor the installation using the program, please contact the Traeger Industry Components GmbH at the address <http://www.traeger.de>. Or send send us your request by e-mail to the address support@traeger.de.

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