

S7A V 8.50

Version History

© 2022 INCOSOL - Jürgen Stähler
INCOSOL - Jürgen Stähler

1.	What is new in V 8.50, build 102	5
1.1	Support for iFIX 2022 (6.8)	6
1.2	Re-arranged grid columns on TIA symbol grid	6
2.	What is new in V 8.50, build 101	7
2.1	New Setup	8
2.2	Support for iFIX secure mode introduced with iFIX version 6.5	8
2.3	Support for CIMPLICITY HMI versions 9.5 up to 11.5 (2022)	9
2.4	Symbol Editor with watch feature	9
2.5	OPC UA Server	10
2.6	Automatic iFIX block generation of TIA symbols	12
2.7	Extended data block diagnosis and client access monitoring	13
3.	Fixed defects in V 8.50, build 102	15
3.1	Offset addressing via iFIX DR block on analog TIA symbols	16
3.2	High CPU load caused by S7ADRV process	16
3.3	Power Tool failed to connect to background process	16
4.	Fixed defects in V 8.50, build 101	17
4.1	Lower case I/O addresses or OPC Item Ids	18
4.2	Import of version 8.10 CSV import files	18
4.3	Poll overrun counting	18
4.4	Fragmented polling on demand	18
4.5	Limitation of Slot number range	18
4.6	iFIX Register Element Offset	18
4.7	Control Tag addresses for symbolic (TIA) driver objects	19
4.8	Simulation mode	19
4.9	OPC UA Security Policy	19
4.10	Limitation of Cimplicity point name length	19
4.11	Software license and lower case computer name	19
5.	Known Issues	21
	Index	0

What is new in V 8.50, build 102

1 What is new in V 8.50, build 102

This topic and its sub-topics briefly describes all new features added to S7A version 8.50, build 102

The build 102 does not contain new main features but the following minor changes/improvements and some bug fixes (see topic [Fixed defects in V 8.50, build 102](#)^[6]).

Minor changes and improvements:

- Support for [iFIX 2022](#)^[6] (6.8)
- [Re-arranged grid columns](#)^[6] in TIA symbol grid.

1.1 Support for iFIX 2022 (6.8)

The S7A driver now supports the new iFIX version 2022 respectively 6.8 in both modes, means with or without access controls.

1.2 Re-arranged grid columns on TIA symbol grid

The columns of the TIA symbol grid have been re-arranged / re-sorted. Furthermore the two left-most columns 'Symbol' and 'Selected' are now 'pinned', means they are anchored to the left side of the grid. When the grid is scrolled horizontally these two columns will not be scrolled.

Symbol Selection		General properties							Current value
Filter: <input checked="" type="checkbox"/> HMI visible AND (<input checked="" type="checkbox"/> Blocks OR <input checked="" type="checkbox"/> Tags) <input type="button" value="Generate iFix Bloc..."/>		Symbol comment	TIA data type	DB No.	Access	HMI accessibility	HMI visible	<input type="checkbox"/> Display	
<input checked="" type="checkbox"/> Blocks	<input checked="" type="checkbox"/>		Block List						
<input checked="" type="checkbox"/> DB_HMI	<input checked="" type="checkbox"/>		Data Block	1					
Bit_0	<input checked="" type="checkbox"/>	Single Bit 0	S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_1	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_2	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_3	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_4	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_5	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_6	<input checked="" type="checkbox"/>		S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bit_7	<input checked="" type="checkbox"/>	Single Bit 0	S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
TenSignals	<input checked="" type="checkbox"/>	Ten Bits in an array	ARRAY [0..9] of S7_Bool		RW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

What is new in V 8.50, build 101

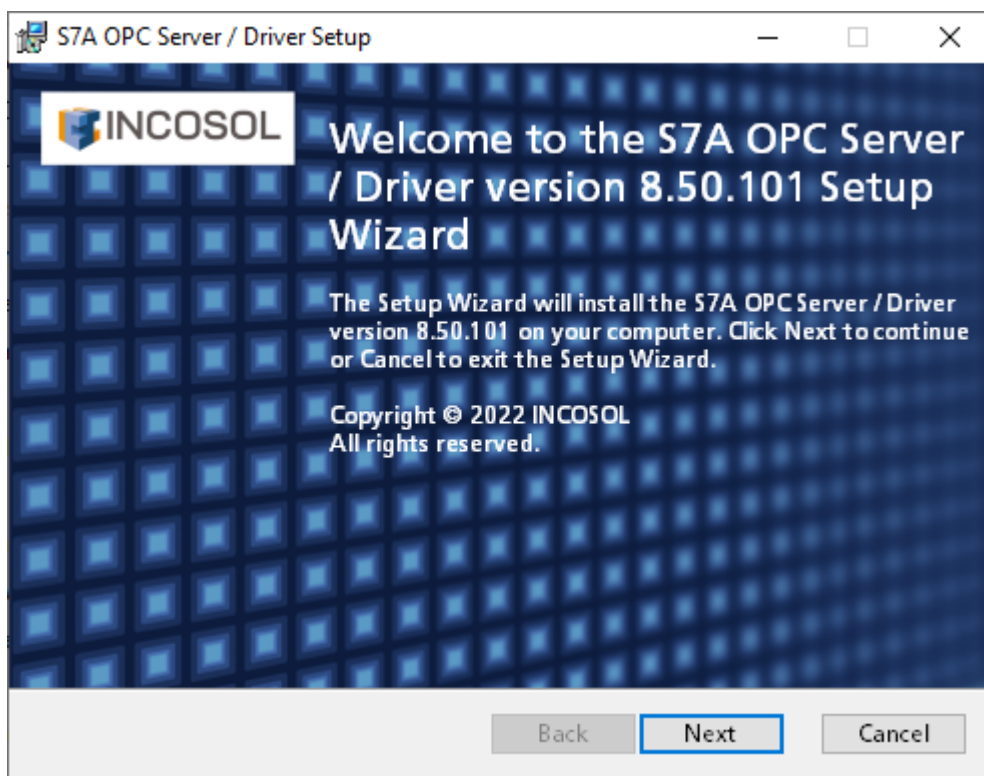
2 What is new in V 8.50, build 101

This topic and its sub-topics briefly describes all new features added to S7A version 8.50, build 101

The main new features are:

- New [setup](#)^[8] routine
- Support for [iFIX secure mode](#)^[8] introduced with iFIX version 6.5
- Support for [CIMPLICITY HMI](#)^[9] versions 9.5 up to 11.5 (2022)
- OPC [UA Server](#)^[10]
- [Symbol editor](#)^[9] for all communication ways with physical (classic) addressing
- iFIX [block generation](#)^[12] from TIA symbolic
- Extended data block [diagnosis and client access monitoring](#)^[13]

2.1 New Setup



The Setup of the S7A OPC Server has to be redesigned to address the additional requirements for the OPC UA Server installation.

2.2 Support for iFIX secure mode introduced with iFIX version 6.5

In iFIX version 6.5 GE introduced a new secure mode which even has influence on the S7A driver.

One aspect of this secure mode is that all iFIX processes (SCU, Workspace, WSACTask etc.) now runs with a reduced so-called Integrity Level *Medium*. on all former iFIX versions the program run on Integrity Level *High*.

For proper interoperability between the S7A driver and iFIX it was necessary to adapt/downgrade the integrity level of the S7A process (S7ADrv.exe) to the same *Medium* level as iFIX works on.

2.3 Support for CIMPLICITY HMI versions 9.5 up to 11.5 (2022)

The S7A driver now supports all CIMPLICITY HMI versions from 9.5 up to latest version 11.5, also know as CIMPLICITY 2022.

The native CIMPLICITY driver interface has been fully refactored with the goal of improving the performance and usability.

Now all control tags the S7A driver provides can be access by CIMPLICITY points. Furthermore all signal conditionig functions and options, the S7A driver provides, can be used in CIMPLICITY. E.g. S7 data and time data types now can be configured as CIMPLICITY text points in various, language specific display formats.

2.4 Symbol Editor with watch feature

Valid	Type	Symbol Name	Device	Physical Address	Memory Area	Data Type	DB No.	Byte Index	Bit	Signal Cond.	Option	Current Value
		Contains: ▾		Contains: ▾								
✓	Analog	HUGO	S7_D11	DB100.DBW 0	Datablock (DB)	Int	100	0		NONE		17562
✓	Analog	EGON	S7_D11	DB100.DBW 2	Datablock (DB)	Int	100	2		NONE		20972
✓	Analog	OTTO	S7_D11	DB100.DBW 4UIEXP1	Datablock (DB)	Word	100	4		EXP1		5033
✓	Analog	KARL	S7_D11	DB100.DBW 6ULIN,0,100	Datablock (DB)	Word	100	6		LIN		32
✓	Digital	INA	S7_D11	DB100.DBX 10.0	Datablock (DB)	Bool	100	10	0			True
✓	Digital	EVA	S7_D11	DB100.DBX 10.1	Datablock (DB)	Bool	100	10	1			True
✓	String	JÜRGEN	S7_D11	DB100.DBS 118 10.SPAC...	Datablock (DB)	String[10]	100	118			SPACEFILL	Jürgen
✓	String	THE_TIME_OF_DAY	S7_D11	DB100.DBS 12 10.TOD_24H	Datablock (DB)	String[10]	100	12			TOD_24H	12:34:56
✓	String	A_DATE	S7_D11	DB100.DBS 20 12.DATE_...	Datablock (DB)	String[12]	100	20			DATE_GER	14.02.2022
✓	String	A_DATE_AND_TIME	S7_D11	DB100.DBS 22 20.DT_GM...	Datablock (DB)	String[20]	100	22			DT_GMP_DE	14-Mrz-2022 12:34:56
✓	String	A_TIME_SPAN	S7_D11	DB100.DBS 16 20.TIME_L...	Datablock (DB)	String[20]	100	16			TIME_LEN	1D 2H 3M 4S 500MS

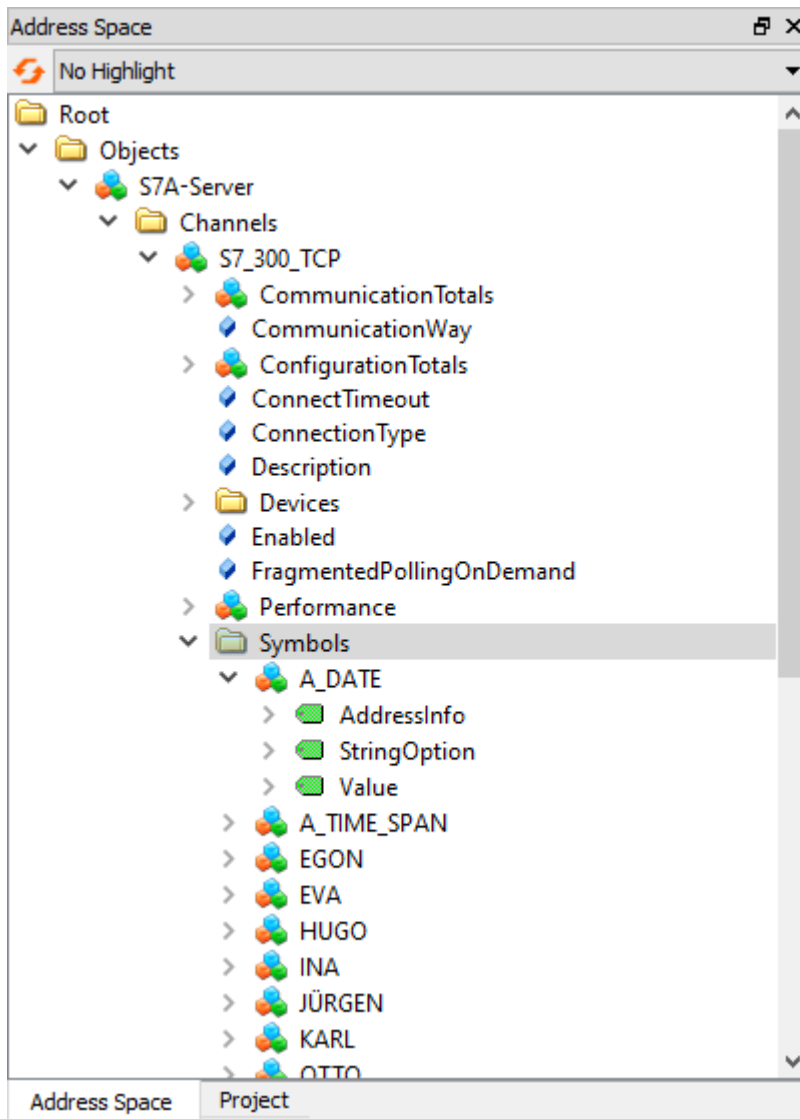
The driver now allows to define symbols for I/O addresses of communication ways with physical addressing (e.g. S7 300/400/1500 TCP Absolute).

These symbols can be used as iFIX I/O addresses or OPC Item Ids as an alternative to the physical I/O address. Means, a symbolic name and I/O address are interchangeable.

Furthermore the symbolic names configured by the Symbol Editor are the node base for the OPC UA server.

As an additional feature the Symbol Editor provides a watch function which allows to facilitate the monitoring of the current value online from the PLC.

2.5 OPC UA Server



The S7A driver is now a full functioning OPC UA Server. This functionality is not available in the base license but a license option.

All physical communication ways (via symbol editor) as well as the two symbolic communication ways for S7-1200/1500 series and SIMOTION controllers can provide its data as OPC UA nodes.

Furthermore most of the driver's, channel's, device's and data block's configuration, runtime, performance and diagnostics properties are browsable and readable from OPC UA clients.

Server / OPC UA Base Settings

TCP Port:

48030

Network Address:

DESKTOP-QQAKSBS

Logical Host Name:

desktop-qqaksbs

Organization Name:

INCOSOL

Instance Name:

S7AUAServer

Endpoint URL:

opc.tcp://DESKTOP-QQAKSBS:48030/

Application URI:

urn:desktop-qqaksbs:INCOSOL:S7AUAServer

Application Name:

S7AUAServer@DESKTOP-QQAKSBS

Server / OPC UA Security Settings

Allow communication with no security (None):

ON

|||

!

Allow secure communication with data privacy (SignAndEncrypt):

ON

|||

Allow secure communication without data privacy (SignOnly):

ON

|||

OPC UA Server Security Policies / (Encryption modes)

Basic256Sha256 (Mandatory, always ON):

ON

|||

Aes128-Sha256-RsaOaep (Recommended - Fastest):

|||

OFF

Basic256 (Not recommended):

|||

OFF

!

Basic128Rsa15 (Not recommended):

|||

OFF

!

Save

Save and Restart

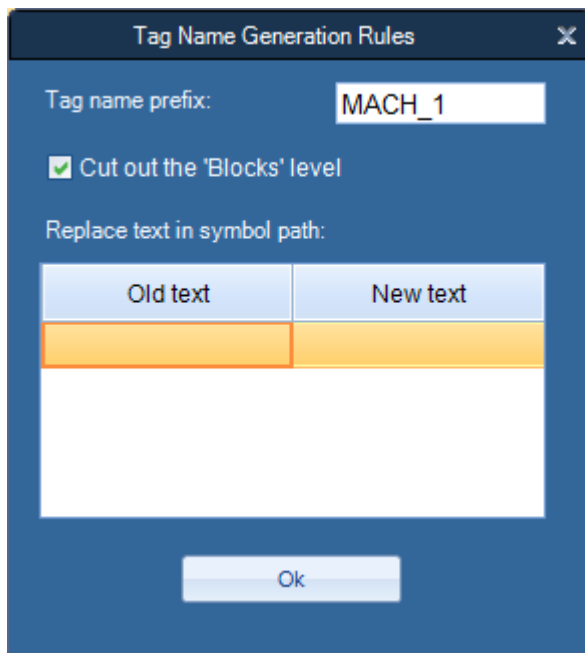
The configuration of the OPC UA Server and the entire certificate management (even the request from a GDS) is integrated in the S7A Power Tool.

2.6 Automatic iFIX block generation of TIA symbols

General properties										iFix Auto Gen. Properties			
Symbol	TIA data type	DB No.	Selected	Symbol comment	Status	Gen.	Block type	Tag Name	Description	I/O Address	Scan time	On scan	Enable output
DB_HMI	Block List	1	<input checked="" type="checkbox"/>										
Bit_0	ST_Bool		<input checked="" type="checkbox"/>	Single Bit 0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DR	Blocks_DB_HMI_Bit_0	Single Bit 0	TIA_D11.Blocks.DB_HMI.Bit_0		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bit_1	ST_Bool		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DR	Blocks_DB_HMI_Bit_1		TIA_D11.Blocks.DB_HMI.Bit_1		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bit_2	ST_Bool		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DI	Blocks_DB_HMI_Bit_2		TIA_D11.TIA_DB1.Blocks.DB_HMI.Bit_2	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bit_3	ST_Bool		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DA	Blocks_DB_HMI_Bit_3		TIA_D11.TIA_DB1.Blocks.DB_HMI.Bit_3	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bit_4	ST_Bool		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DO	Blocks_DB_HMI_Bit_4_XXX	Eigene Beschreibung	TIA_D11.Blocks.DB_HMI.Bit_4		<input type="checkbox"/>	<input type="checkbox"/>
Bit_5	ST_Bool		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Bit_6	ST_Bool		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Bit_7	ST_Bool		<input type="checkbox"/>	Single Bit 0		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
TenSignals	ARRAY [0, ...]		<input type="checkbox"/>	Ten Bits in an array		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Byte_0	ST_Byte		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AA	Blocks_DB_HMI_Byte_0		TIA_D11.TIA_DB1.Blocks.DB_HMI.Byte_0	1	<input type="checkbox"/>	<input type="checkbox"/>
Byte_1	ST_Byte		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
UShort_1	ST_UShort		<input type="checkbox"/>	Unsigned short int (8 Bit)		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Word_0	ST_Word		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AI	Blocks_DB_HMI_Word_0		TIA_D11.Blocks.DB_HMI.Word_0	1	<input type="checkbox"/>	<input type="checkbox"/>
Word_1	ST_Word		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Int_0	ST_Int		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AO	Blocks_DB_HMI_Int_0		TIA_D11.Blocks.DB_HMI.Int_0	1	<input type="checkbox"/>	<input type="checkbox"/>
Int_1	ST_Int		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
DWord_0	ST_DWord		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AA	Blocks_DB_HMI_DWord_0		TIA_D11.Blocks.DB_HMI.DWord_0	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DWord_1	ST_DWord		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
DInt_0	ST_DInt		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AI	Blocks_DB_HMI_DInt_0		TIA_D11.Blocks.DB_HMI.DInt_0	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DInt_1	ST_DInt		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Lint_0	ST_Lint		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
Lint_1	ST_Lint		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
LWord_0	ST_LWord		<input type="checkbox"/>			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>

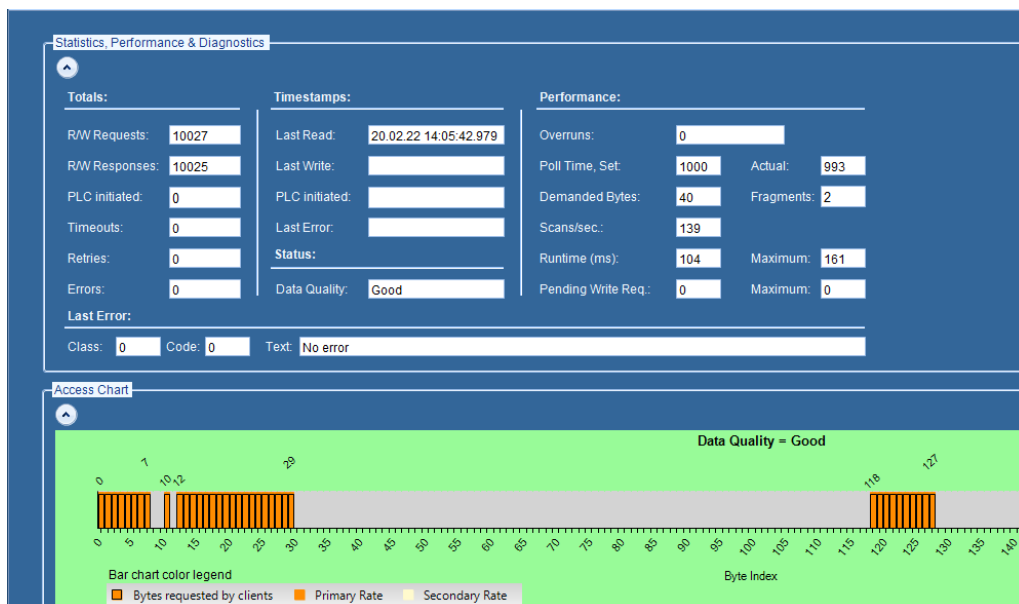
The symbol selection tree in the Power Tool's TIA data block configuration dialog has been extended by addition columns which allows to directly configure and generate iFIX database blocks from within the Power Tool. The following data block fields can be configured by this way:

- Block Types DI, DA, DO, DR, AI, AA, AO, AR and TX
- *Tag Name* can be generated automatically, derived from the TIA symbol path or can be entered individually
- *Tag Description* can be generated automatically, derived from the TIA symbol comment or can be entered individually
- *I/O Address*, derived from S7A device name and TIA symbol path
- *Startup mode On Scan or Off Scan*
- *Scan Time*
- *Enable Output Option*
- *Signal Conditioning*
- *Hardware Option*
- *EGU Low Limit and High Limit*



The automatic iFIX tag name generation can be controlled by various options.

2.7 Extended data block diagnosis and client access monitoring



The Power Tool now provides a tool which allows the monitoring of the client access to the data byte of a single driver data block. A bar chart, shown on the new expandable panel 'Access Chart' in the Power Tool's data block dialog visualizes the access state of all bytes of the data block with different colors and thus provides a direct view of the current 'occupancy' of the data block by the clients (iFIX, OPC etc.).

Fixed defects in V 8.50, build 102

3 Fixed defects in V 8.50, build 102

The following topics describe all defects which have been fixed in build 102.

3.1 Offset addressing via iFIX DR block on analog TIA symbols

The indexed addressing (F_x) via iFIX DR block of a bit within an analog TIA symbol value failed. Only the first bit's value was read no matter which offset was defined in the iFIX data link.

3.2 High CPU load caused by S7ADRV process

On large S7A configuration with multiple symbolic TIA channels and devices the S7A driver background process S7ADrv.exe could cause a high CPU load of more than 50%.

3.3 Power Tool failed to connect to background process

After the driver was installed as a service the S7A Power Tool and all other clients which run on integrity level 'Medium' failed to connect to the background process (S7ADrv.exe service). After a restart of the computer or a restart of the S7A Driver service the issue disappeared.

Fixed defects in V 8.50, build 101

4 Fixed defects in V 8.50, build 101

The following topics describe all defects which have been fixed in build 101.

4.1 Lower case I/O addresses or OPC Item Ids

The I/O address portion (the part right to the colon) of an iFIX I/O address or an OPC Item Id now accept lower case characters for the memory area and data type specifier. Example: 'D11:db100.dbw0' now is a valid I/O address.

4.2 Import of version 8.10 CSV import files

- The import of a CSV configuration file exported by version 81.0 failed due to an invalid or missing symbol filter expression string value (CSV file property **TCPTIASymbolFilterExpr**) in the channel portion of a symbolic TIA channel.
- The import of a CSV configuration file exported by version 81.0 failed due to an invalid or missing TIA project file time stamp value (CSV file property **TCPTIAProjectTSSaved**) in the channel portion of a symbolic TIA channel. The driver now tolerates such missing property values.
- CSV import failed when the CSV file was modified and save in MS Excel. Now the driver accepts CSV files which were modified and saved by Excel.
- The Channel property **TCPMaxGap** has been added to achieve compatibility with CSV files generated with version 8.10.

4.3 Poll overrun counting

The detection of the polling overruns counted much more overruns than actually occurred.

4.4 Fragmented polling on demand

The 'S7-300/400/1500 TCP/IP Absolute' communication way channel feature '**Fragmented polling on demand**' now works properly.

4.5 Limitation of Slot number range

The **Slot** number field in the TCP/IP device settings dialog was limited to a range between 0 and 10. The upper limit has been extended to 64.

4.6 iFIX Register Element Offset

The **iFIX Register Offset is Element Offset** channel setting failed in S7A 8.50 RC14. This option is working properly now.

4.7 Control Tag addresses for symbolic (TIA) driver objects

All control tag addresses (e.g. !Mode:<device name>) with driver objects (Channel, Device or Data Block) of symbolic communication ways (TIA and SIMOTION) failed and were rejected by the S7ADrv.

4.8 Simulation mode

In simulation mode of symbolic communication ways (TIA and SIMOTION) the data quality 'BAD' was returned to the clients (iFIX or OPC). Now the driver returns the proper data quality 'GOOD'.

4.9 OPC UA Security Policy

Setting the OPC UA Security Policy 'None' on or off via the Power Tool's OPC UA options dialog had no effect on the OPC UA Server.

4.10 Limitation of Cimplicity point name length

The length of a CIMPLICITY point address was limited to 32 characters, which is too less for symbolic addresses for TIA or SIMOTION communication ways. The address length has been extended to 296 characters.

4.11 Software license and lower case computer name

Under certain circumstances the comparison of the computer name against the name encoded in the software license file failed when the computer name contained lower case characters.

Known Issues

5 Known Issues

The following issues or functional restrictions are still pending and are going to be address by the next version or build.

- The TCP port number of the EDA GRPC server is not configurable. Currently it is solely changeable in the S7ADIDW.exe.config file.
- The EDA GRPC Server's log files are stored in the installation folder but not in the program data path (where the other S7A program store their log files).
- The change of the user interface language does not work when S7A is installed as a service and Power Tool is started with integrity level 'Medium'.