Siemens S7 Devices Legacy Connector

S7 300/400/1200/1500

> **Deprecated connector**
>
> The Siemens S7 Devices Legacy Connector is deprecated and has been replaced by the Siemens S7 Plus Devices Connector. Use Siemens S7 Plus for new channels.
>
> The legacy connector is still included in the product and keeps working in solutions that already use it. Starting with FrameworX 10.1.6, it is listed in **Devices / Protocols**, in the **New Channel** dialog and in **Solution / Import Tags** only when the solution already has a channel using it.

- Name: **Siemens**
- Version: 2.2.2.3
- Protocol: Proprietary
- Interface: TCP/IP
- Runtime: .NET 4.8 (Windows)
- Configuration:
  - Devices / Protocols

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Overview

Communication Driver Information	
Driver name	Siemens
Assembly Name	T.ProtocolDriver.Siemens
Assembly Version	2.2.2.3
Available for Linux	False
Devices supported	S7 300/400/1200/1500
Third-party libraries	AGL4DotNET.dll, AGLink40.dll and AGLink40_x64.dll.
Manufacturer	Siemens
Protocol	Proprietary over TCP/IP
PC Requirements	Ethernet port

> The Siemens communication driver is supported only in Windows Solutions.

Channel Configuration

Protocol Options

The Siemens connector exposes a Respect User Config Data Type option that controls how the driver resolves the data type for bit-addressable bytes.

RespectUserConfigDataType

A checkbox in the channel's Protocol Options. Controls whether the driver honors the user-configured Data Type on the Communication Point instead of overwriting it from the parsed address suffix.

- **Default:** `false` — driver overrides Data Type based on the parsed address suffix (back-compatible behavior).
- **When set to `true`:** driver keeps the Point's configured Data Type. Required for accurate bit extraction when reading a single bit from a byte whose other bits are also active.

Example — reading a single bit with Data Type = Byte

A read-only tag pointing to bit 0 of a byte (e.g. `DB1.DBB10.0`) can misreport its value when another bit of the same byte is set. To read it correctly:

1. Enable **Respect User Config Data Type** in the channel's Protocol Options.
2. On the Communication Point, set **Data Type** to `Byte`.

Field	Value
Address	`DB1.DBB10.0`
Data Type	`Byte`
Respect User Config Data Type (channel)	checked

With this configuration, when the PLC byte holds `0x80` (bit 7 ON, bit 0 OFF), the bit-0 tag correctly reads **FALSE**. Without it, the same tag would incorrectly read TRUE.

Node Configuration

Station Configuration

Station syntax: *<IP Address> ; <Rack>; <Slot>;<S7 Family>*

- <**IP Address**>: IP address of the slave device in the Siemens network
- <**Rack**>: Rack of the device
- <**Slot**>: Slot of the device
- <**S7 Family**>: Model of the device. The options are:

  300/400: Support for PLC Siemens S7-300 and S7-400 Series

  1200: Support for PLC Siemens S7-1200 and S7-1500 Series

Points Configuration

Address

The syntax for the Siemens communication points is: ***<Type><Format><Address>.<Bit or String Length>***

For DataBlock type: ***DB<DB Group>.<DB Format><Address>.<Bit or String Length>***

There is no separator between the register type and the format. The only separators are the dot after the **DB Group** number and the dot before the optional **Bit or String Length**.

Where:

- ***<Type>*** is the register type. Valid values are:
  - **M**=Flags
  - **T**=Timers
  - **C**=Counters
  - **I**=Inputs
  - **Q**=Outputs
  - **DB**=Data Blocks.
- ***<DB Group>*** is the group number of the configured Data Block type.
- ***<Address>*** is the device address.
- ***<Format>*** is the format to treat the value from or to the device. The valid tokens depend on the register type — Data Blocks require the DB-prefixed tokens, every other area requires the plain tokens. Do not mix the two sets:
  - For **M**, **T**, **C**, **I** and **Q**: **B**=Byte, **W**=Word, **DW**=Dword, **F**=Float, **ST**=String, **C**=Counter, **T**=Timer
  - For **DB**: **DBB**=Byte, **DBW**=Word, **DBDW**=Dword, **DBF**=Float, **DBSTR**=String, **DBST**=Short String
- ***<Bit or String Length>*** is the bit number. This parameter is optional. If you use the String type, it represents the String length.

The address is a **single concatenated string** with this structure: `<Block><DBNumber>.<DataType><Address>.<BitOrStringLength>`. The `<DBNumber>` and the dot that follows it appear only for `DB` addresses. Examples:

- `MB0` — Flag (Merker) byte at address 0
- `MW0` — Flag (Merker) word at address 0
- `IB0` — Input byte at address 0
- `QB4` — Output byte at address 4
- `DB1.DBW0` — Data Block 1, Word at address 0
- `DB1.DBDW0` — Data Block 1, DWord at address 0
- `DB5.DBB10` — Data Block 5, Byte at address 10
- `DB1.DBF8` — Data Block 1, Float at address 8

- `DB1.DBB0.3` — Data Block 1, Byte at address 0, bit 3
- `DB1.DBSTR0.52` — Data Block 1, String at address 0, `STRING[50]` (52 total bytes, see below)
- Block prefixes: `M` (Flag/Merker), `T` (Timer), `C` (Counter), `I` (Input), `Q` (Output), `DB` (Data Block)
- Data types: `B` (ByteChar), `W` (WordShort), `DW` (DWordInteger), `F` (FloatSingle), `ST` (StringASCII), `C` (CounterShort), `T` (TimerShort) for non-DB areas; `DBB` (DB Byte), `DBW` (DB Word), `DBDW` (DB DWord), `DBF` (DB Float), `DBSTR` / `DBST` (DB String) for DB areas, always written immediately after the dot that follows the DB number

A DB address written without that dot (`DB1DW0`), or with a colon in place of it (`DB1:DW0`), is not the accepted form. A plain token used inside a DB area (`DB3.ST12.50`) is invalid as well — use `DB3.DBSTR12.50`.

String Layout (DBSTR / DB String)

When an address uses the `DBSTR` or `DBST` format token, the value on the PLC occupies **N+2 bytes**: a 2-byte header followed by N data bytes. The first header byte holds the declared maximum length, the second holds the current length, and the remaining N bytes hold the ASCII characters. This matches the Siemens S7 native `STRING` type. The length you write after the final dot is the **total** byte count, so for a `STRING[N]` you configure `N + 2`. For example, `DB1.DBSTR0.52` addresses a `STRING[50]` starting at byte offset 0, and `DB1.DBSTR16.26` addresses a `STRING[24]` starting at byte offset 16. Reserve those `N + 2` bytes in the Data Block when sizing memory.

> **Migration**
>
> Solutions built on prior driver versions that emitted raw N-byte string addresses are migrated automatically on first load with the 2.2.2.x driver. The driver re-resolves the layout at runtime; no user action is required and existing addresses continue to work without edits.

Error Code Reference

Hex	Decimal (signed)	Description
0x00000000	0	No error
0x00000001	1	No error, job still in process
0xFFF00000	-1048576	Function not implemented
0xFFF00001	-1048575	Parameter error when calling function
0xFFF00002	-1048574	Invalid device number
0xFFF00003	-1048573	Invalid PLC number
0xFFF00004	-1048572	Invalid parameter type
0xFFF00005	-1048571	Insufficient memory
0xFFF00006	-1048570	Device already opened
0xFFF00007	-1048569	Device not opened
0xFFF00008	-1048568	Job already removed
0xFFF00009	-1048567	Invalid job number
0xFFF0000A	-1048566	Function not supported
0xFFF0000B	-1048565	Adapter not initialized
0xFFF0000C	-1048564	No free connections available
0xFFF0000D	-1048563	Device not configured or not supported
0xFFF0000E	-1048562	Hardware not found
0xFFF0000F	-1048561	Error when reading parameters
0xFFF00010	-1048560	Error when writing parameters
0xFFF00011	-1048559	Demo period expired
0xFFF00012	-1048558	Wrong character in text. Conversion not possible
0xFFF00013	-1048557	Buffer is not long enough
0xFFF00014	-1048556	File not found
0xFFF00015	-1048555	Error when calling configuration program
0xFFF00016	-1048554	Error when loading DLL dynamically

0xFFF00017	-1048553	Could not create file
0xFFF50000	-720896	No free job buffer available
0xFFF50001	-720895	Invalid packet
0xFFF50002	-720894	No connection to PLC
0xFFF50003	-720893	Connection closed
0xFFF50004	-720892	Timeout
0xFFF50005	-720891	Invalid context
0xFFF50006	-720890	PLC memory error
0xFFF50007	-720889	Invalid operating state
0xFFF50008	-720888	Invalid address on PLC
0xFFF50009	-720887	Invalid mode
0xFFF5000A	-720886	No data available e.g. DB is missing
0xFFF5000B	-720885	Priority class associated to OB does not exist
0xFFF5000C	-720884	Empty blocklist
0xFFF5000D	-720883	Block size error
0xFFF5000E	-720882	Invalid block number
0xFFF5000F	-720881	Protection level of function not sufficient
0xFFF50010	-720880	Unknown SSL-ID (e.g. access to CP instead of PLC)
0xFFF50011	-720879	Unknown SSL-index (e.g. access to CP instead of PLC)
0xFFF50012	-720878	Information currently not ascertainable
0xFFF50013	-720877	Unknown error message from PLC (please report!)
0xFFF50014	-720876	Hardware error e.g. not available periphery
0xFFF50015	-720875	Object access not allowed
0xFFF50016	-720874	Context not supported
0xFFF50017	-720873	Type (data type) not supported
0xFFF50018	-720872	Internal error, please report
0xFFF50019	-720871	Error rebooting PLC
0xFFF5001A	-720870	Error restarting PLC
0xFFF5001B	-720869	Connection end received
0xFFF5001C	-720868	PLC not found
0xFFF5001D	-720867	Too many data for this version of ACCON-AGLink
0xFFF5001E	-720866	PLC does not support this function
0xFFF5001F	-720865	Wrong Password
0xFFF50020	-720864	Connection already legitimated
0xFFF50021	-720863	Legitimation already released
0xFFF50022	-720862	Password not neccessary
0xFFF50023	-720861	At least one variable address invalid
0xFFF50024	-720860	Job does not exist
0xFFF50025	-720859	Invalid job state
0xFFF50026	-720858	Invalid cycle time
0xFFF50027	-720857	No more cyclic job possible

0xFFF50028	-720856	Function not posible for this job (invalid state)
0xFFF50029	-720855	Function abort (overload)
0xFFF5002A	-720854	No data for this variable
0xFFF5002B	-720853	Wrong time format
0xFFF5002C	-720852	Unknown PI name
0xFFF5002D	-720851	File transfer canceled by NCK
0xFFF5002E	-720850	Response too large for PDU size
0xFFF5002F	-720849	No H-PLC found
0xFFF50030	-720848	Data not changed
0xFFF30000	-852968	Error when reading device information
0xFFF30001	-852967	Error when reading bus parameters
0xFFF30002	-852966	Error when writing bus parameters
0xFFF30003	-852965	No resources available on device
0xFFF30004	-852964	Invalid device
0xFFF30005	-852963	Adapter not found
0xFFF30006	-852962	Needed device driver not found
0xFFF20000	-917504	The desired adapter address already exists
0xFFF20001	-917503	Invalid HSA (smaller than biggest active participant)
0xFFF20002	-917502	Adapter is not in the logical ring
0xFFF20004	-917500	Received package has wrong content
0xFFF20006	-917498	Unknown error number from adapter
0xFFF20007	-917497	Unknown error number from device driver
0xFFF20008	-917496	Communications adapter has been removed
0xFFF20009	-917495	Modem has been removed
0xFFF2000A	-917494	No directly connected PLC found
0xFFF20313	-916717	Invalid speed on MPI bus
0xFFF20314	-916716	Address is bigger than HSA
0xFFF20315	-916715	The desired adapter address already exists
0xFFF2031A	-916710	No other active bus participants found
0xFFF2031C	-916708	Bus is jammed
0xFFF2031D	-916707	Bus is jammed
0xFFF2031E	-916706	Automatic detection of bus profile doesn't work, missing bus parameter telegram
0xFFF20337	-916681	Legitimation missing
0xFFF10000	-983040	COM-Port already used
0xFFF10001	-983039	Modem not found
0xFFF10002	-983038	Modem not onhook
0xFFF10003	-983037	Modem not offhook
0xFFF10004	-983036	Error in basic initialisation
0xFFF10005	-983035	Error in Initstring 1
0xFFF10006	-983034	Error in Initstring 2
0xFFF10007	-983033	Error in Initstring 3

0xFFF10008	-983032	Error in Initstring 4
0xFFF10009	-983031	Error in dialtype sequence
0xFFF1000A	-983030	Error in dialtone sequence
0xFFF1000B	-983029	Error in autoanswer sequence
0xFFF1000C	-983028	Modem has been removed
0xFFF1000D	-983027	Connection could not be established
0xFFF1000E	-983026	Login denied. Unknown user.
0xFFF1000F	-983025	Login denied. Wrong password.
0xFFF10010	-983024	Login denied. Callback number defined in adapter.
0xFFF10011	-983023	Error while dialing
0xFFF80000	-524288	Function not allowed
0xFFF80001	-524287	Invalid project handle
0xFFF80002	-524286	Error opening project
0xFFF80003	-524285	Error creating program instance of project
0xFFF80004	-524284	Error closing project
0xFFF80005	-524283	No resp. no more programs found
0xFFF80006	-524282	Program not found
0xFFF80007	-524281	At least one of the specified parameters is invalid
0xFFF80008	-524280	Runtime has expired (demo version)
0xFFF8000A	-524278	No resp. invalid data specified
0xFFF8000B	-524277	The program selected has no symbol table
0xFFF8000C	-524276	Symbol table already opened
0xFFF8000D	-524275	No resp. no more symbol entry found
0xFFF8000E	-524274	Error reading symbol entry
0xFFF8000F	-524273	Symbol not found
0xFFF80010	-524272	Operand not found
0xFFF80011	-524271	Invalid symbol
0xFFF80012	-524270	Invalid operand
0xFFF80013	-524269	Invalid filter string
0xFFF80014	-524268	Data block (DB) not present
0xFFF80015	-524267	Error reading DB block data
0xFFF80016	-524266	Error parsing DB block data
0xFFF80017	-524265	An opened DB is already present
0xFFF80018	-524264	No opened DB present
0xFFF80019	-524263	No resp. no more DB component found
0xFFF8001A	-524262	Specified DB component not found
0xFFF8001B	-524261	Specified DB component is invalid
0xFFF8001C	-524260	Specified DB component not matching
0xFFF8001E	-524258	Invalid constant
0xFFF8001F	-524257	Invalid constant size or format
0xFFF80020	-524256	Object type initialization failed

0xFFF80021	-524255	Invalid version of message configuration
0xFFF80022	-524254	Error opening message configuration
0xFFF80023	-524253	Error closing message configuration
0xFFF80024	-524252	No resp. no more message entry found
0xFFF80025	-524251	No resp. no more language found
0xFFF80026	-524250	Database access error
0xFFF80027	-524249	Invalid signal number
0xFFF80028	-524248	Invalid add. value specification
0xFFF80029	-524247	Add. value number invalid
0xFFF8002A	-524246	Element type of add. value invalid
0xFFF8002B	-524245	Add. value data length invalid
0xFFF8002C	-524244	Format specification missing
0xFFF8002D	-524243	Format specification invalid
0xFFF8002E	-524242	No resp. no more text library found
0xFFF8002F	-524241	No resp. no more text library entry found

Driver Revision History

Siemens Revision History	
Version	**Notes**
2.2.2.3	The legacy Siemens S7 connector is deprecated in favour of Siemens S7 Plus: it keeps working in solutions that already use it, but is no longer offered for new channels or for multiplatform (.NET 10) solutions; a new channel option keeps the DataType chosen on the point instead of deriving it from the address, so a point set to Byte reads bit 0 correctly when bit 7 is on; TIA Portal XML import rewritten with correct offsets for arrays, nested structures and more data types, plus import of PLC tag tables (inputs, outputs and memory) and a clear message when the TIA Openness helper is not available; the address editor offers DBSTR, keeps DB string addresses when reopened, repairs malformed ones and explains that string length is N+2; TCP ports above 255 are accepted.
2.2.2.2	Documented the Siemens S7 native `STRING` (DBSTR / DBST) N+2 byte layout (2-byte header + N data bytes). Added automatic legacy address migration: solutions built on prior driver versions that emitted raw N-byte string addresses are re-resolved at runtime on first load; existing addresses continue to work without edits.
2.2.2.1	Added optional XML properties `AllowConfigDataType` (attribute on `<Address>`) and `RespectUserConfigDataType` (root element). Enables the user-configured Data Type on the Communication Point to drive the runtime read path. Default behavior is opt-in / back-compatible.
2.2.2.0	Initial release on new documentation standards.

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