Siemens – S7 1200 – 1500
Symbolic addressing

Driver documentation

Connect
Ideas.
Shape
solutions.

Table of contents
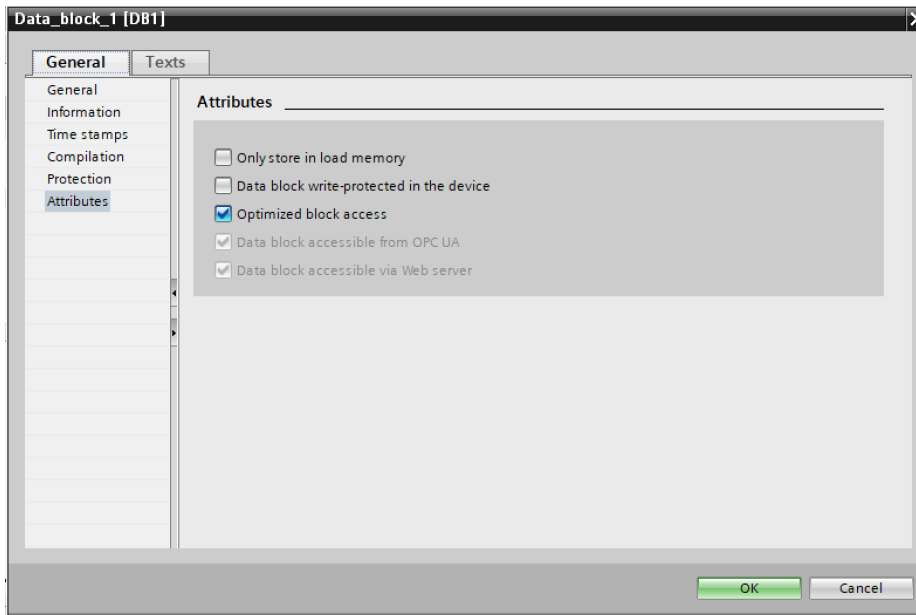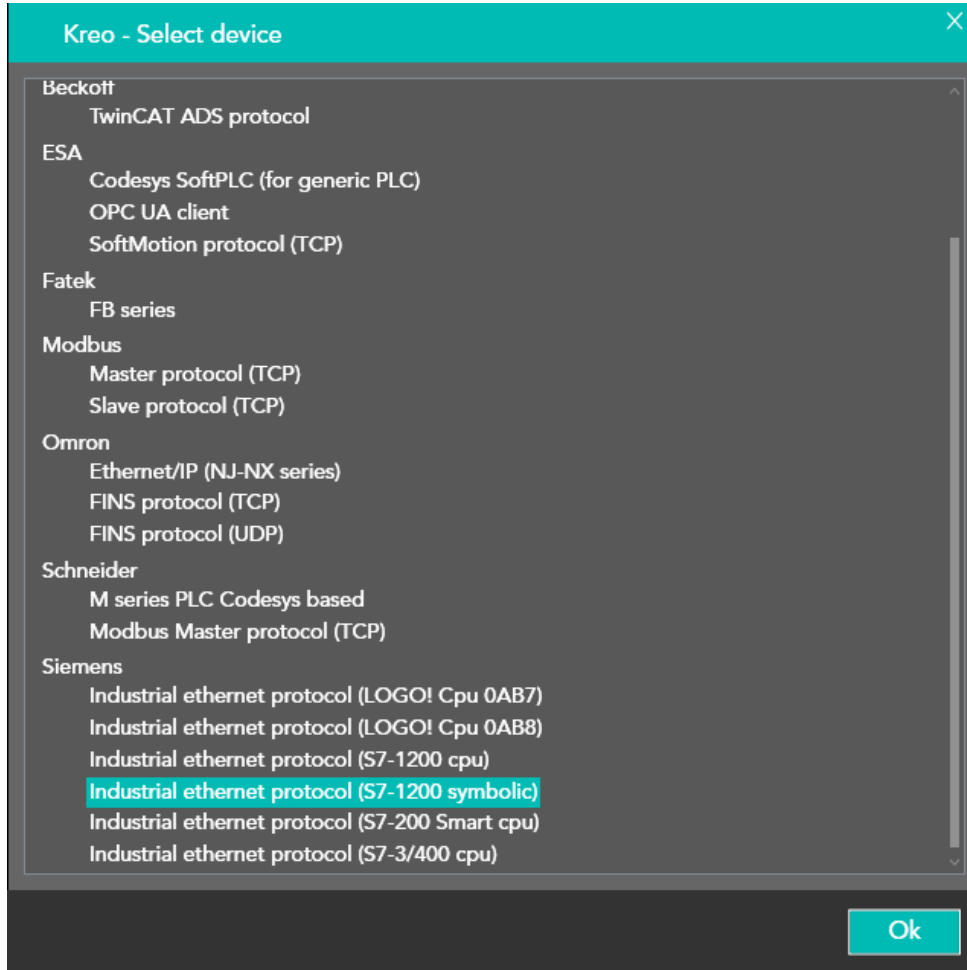
Document description

This document is dedicated to the programming and functionalities of the Siemens S7 1200 – 1500 PLC communication driver wit fully symbolic addressing.

The optimized Data Block can be managed with this driver.

Driver selection

Select Siemens – Industrial ethernet protocol (S7 – 1200 symbolic) in the Kreo HMI driver portfolio.

Communication parameters

The page below is displayed by double clicking over the HMI configuration.

IP address	Ip address of the HMI port
Subnet mask	Subnet mask of the HMI port
Ping timeout	The PING command is sent in order to test the connection stability

The page below is displayed by double clicking over the Siemens communication driver:
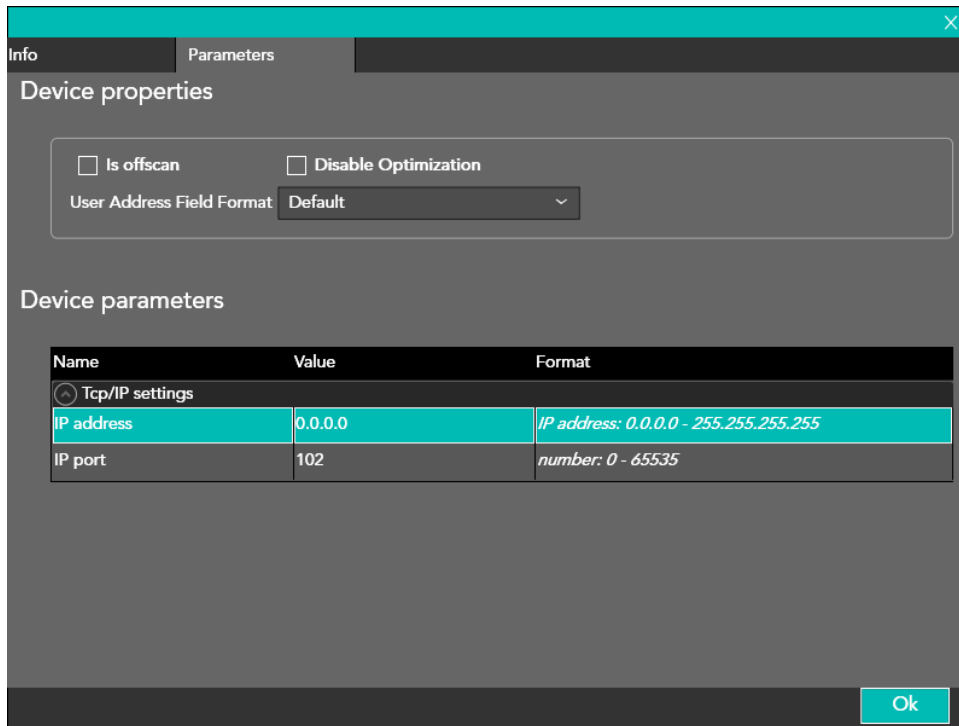
Is Offscan	The driver is defined in the project but will not be scheduled. In order to enable the driver it is mandatory to use the ST script function: TAG_SETOFFSCANDEV (device, state) TAG_SETOFFSCAN (Tag, state)
Disable the optimization	Disable the data optimization. Each tag will be refreshed with a separate communication message.
User address field format	Tag address format. The default format is defined in the driver description but the user can select the desired format (DECIMAL or HEXADECIMAL)
IP address	Ip address of the PLC port
IP port	Communication port The default value is 102

IsOffscan

Is offscan management can be used in case a specific machine module will be part of the Kreo HMI project but will not be physically connected.

A NOT CONNECTED and ONSCAN device will reduce dramatically the performance of the page refresh due to the communication timeout.

Disable Optimization:

This option can be used in order to identify wich of the data displayed on a specific page is causing the communication error.
The value will not be displayed but a series of ????? will let the user identify the faulty tag to be fixed.

Tag definition

The Tag addressing is totally symbolic.

Memory area

AREA	TIPO	DIM.	R/W	DESCRIZIONE
Variable	Bit Byte,Char Sint,Usint Int,Uint Word Dint,Udint Dword Real LInt,ULInt LWord Lreal Date Time TOD String WString	1 8 8 16 16 32 32 32 64 64 64 32 32 32 8 16	R/W	Read / write the data with the predefined format.
Timer (IEC)	IN (Bool) Q (Bool) PT (Time) ET (Time)	1 1 32 32	R/W	Timer IEC. The time base is 1ms.
Counter (IEC)	CU (Bool) CD (Bool) R (Bool) LD (Bool) QU (Bool) QD (Bool)	1 1 1 1 1 1	R/W	Read / write all the timer state

Counter (IEC)	PV (SInt) CV (SInt) PV (USInt) CV (USInt) PV (Int)	8 8 8 8 16	R/W	Read / write the Counter with the defined format

	CV (Int)	16		
	PV (UInt)	16		
	CV (UInt)	16		
	PV (DInt)	32		
	CV (DInt)	32		
	PV (UDInt)	32		
	CV (UDInt)	32		

- The user can import data structure via the Kreo utility

- Each Tag in Kreo will have the same name and format of the Tag defined in Tia Portal

- The array can be accessed if having the same size in both Kreo and Tia Portal

Tag importing
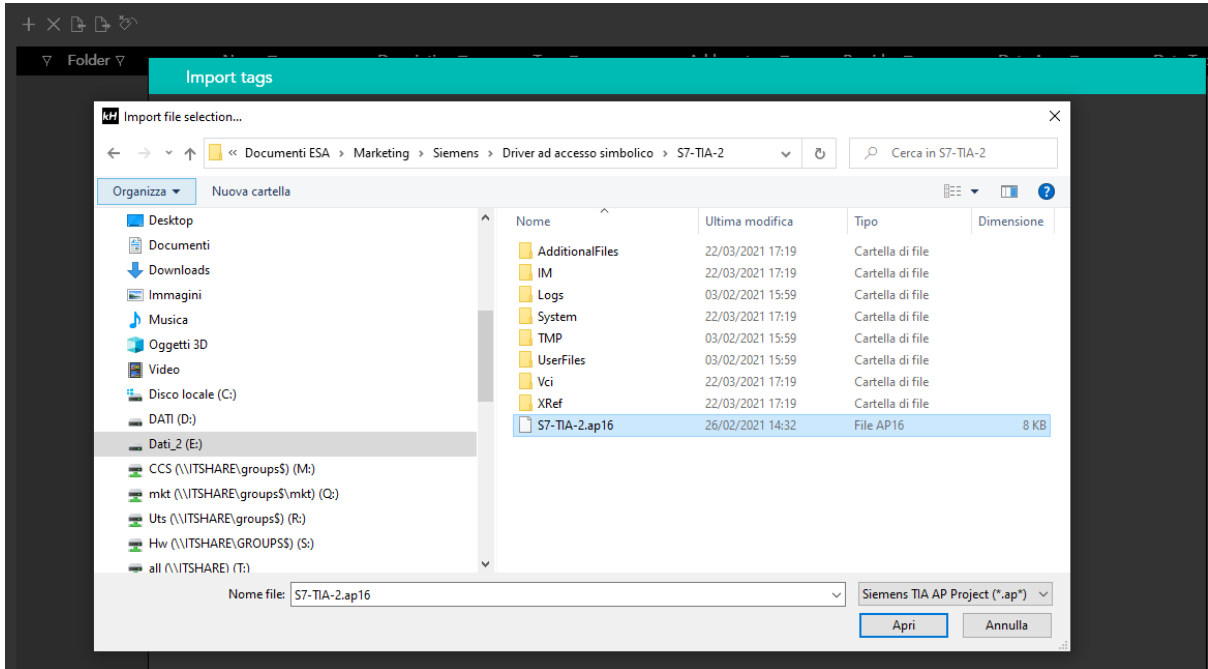
Select the TIA Portal project file (extension .ap*).

The data structures are completely imported in Kreo.
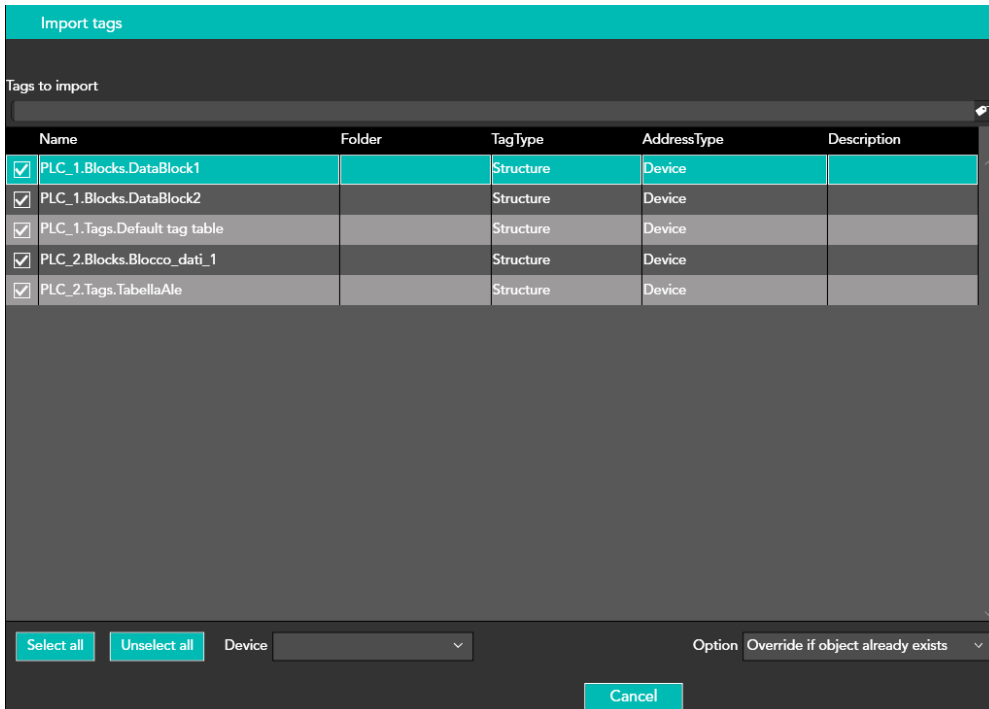
Once the importing procedure is completed the structures will be available in the Kreo Tag list.

Mapping of the Tag in the object property

The user has to enter inside the data structure and select the element to be associated to the object property.

Structure

ByteArray
Word
Dword
Real
LReal
Byte
String
Char
SInt
USInt
Int
UInt
DInt
UDInt
Date
Time
TimeDay
IEC_COUNTER
    PV
    CV
IEC_DCOUNTER
    PV
    CV
IEC_SCOUNTER
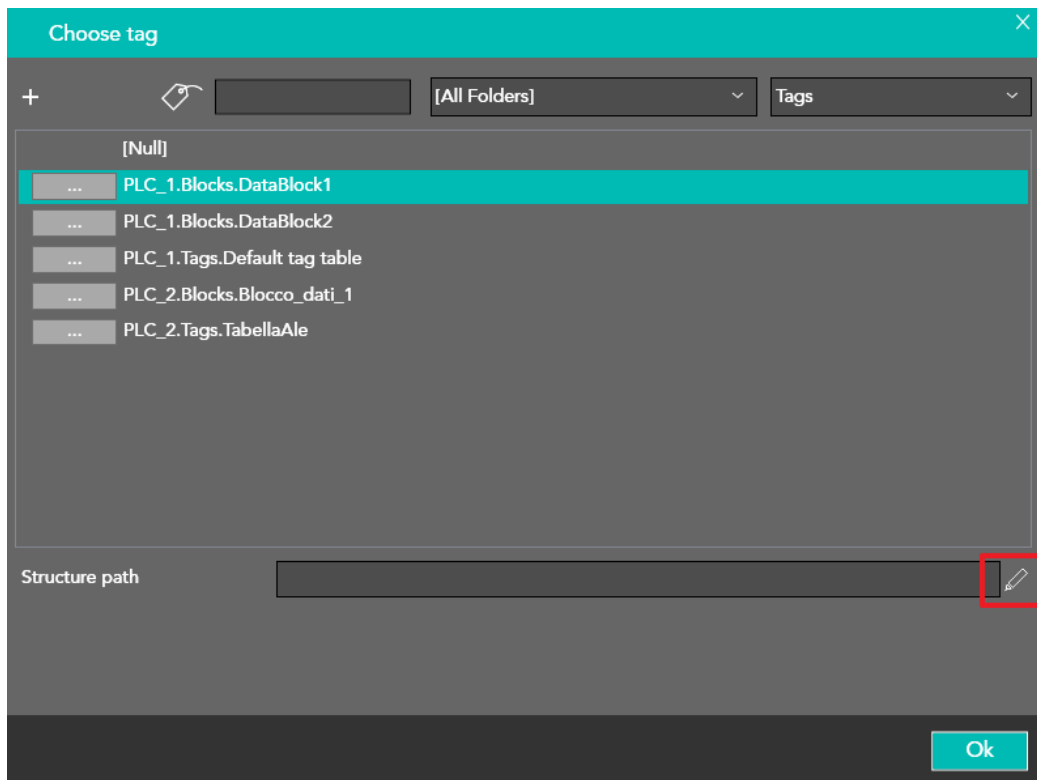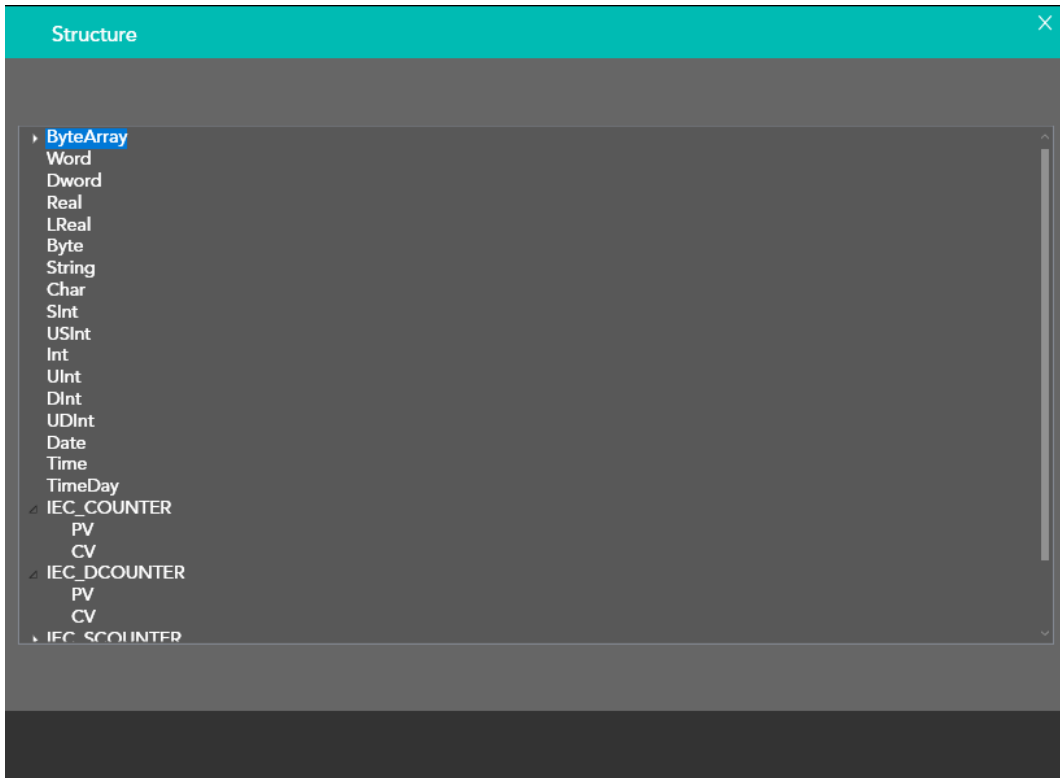
Error codes

CODICE	DESCRIZIONE
PING ERROR	The PING command is not accepted
DEVICE OFFLINE	The device is not connected
FUNCTION ERROR	Internal error of a driver function
PROTOCOL ERROR	The reply from the controller is not correct
READ/WRITE ERROR	Read / Write error

The code below gives a detailed description of the error and is displayed after the Error code.

CODICE	DESCRIZIONE
0x00000001	No error, job still in process
0xFFF00000	Function not implemented
0xFFF00001	Parameter error when calling function
0xFFF00002	Invalid device number
0xFFF00003	Invalid PLC number
0xFFF00004	Invalid parameter type
0xFFF00005	Insufficient memory
0xFFF00006	Device already opened
0xFFF00007	Device not opened
0xFFF00008	Job removed
0xFFF00009	Invalid job number
0xFFF0000A	Function not supported
0xFFF0000B	Adapter not initialized
0xFFF0000C	No free connections available
0xFFF0000D	Device not configured or not supported
0xFFF0000E	Hardware not found
0xFFF0000F	Error when reading parameters
0xFFF00010	Error when writing parameters
0xFFF00011	Demo period expired
0xFFF00012	Wrong character in text. Conversion not possible
0xFFF00013	Buffer is not long enough
0xFFF00014	File not found
0xFFF00015	Error when calling configuration program
0xFFF00016	Error when loading DLL dynamically
0xFFF00017	Could not create file
0xFFF00018	Notification type already in use
0xFFF00019	Running job already removed
0xFFF0001A	Job already removed
0xFFF0001B	Error when reading WLD file
0xFFF0001C	Error when writing WLD file
0xFFF0001D	Invalid structure in WLD file
0xFFF0001E	Multiple blocks in WLD file

0xFFF0001F	Function is not reentrant
0xFFF00020	Function removed for code size reduction
0xFFF00021	Because of parameter changes (in the moment) not applicable
0xFFF50000	No free job buffer available
0xFFF50001	Invalid packet
0xFFF50002	No connection to PLC
0xFFF50003	Connection closed
0xFFF50004	Timeout
0xFFF50005	Invalid context
0xFFF50006	PLC memory error
0xFFF50007	Invalid operating state
0xFFF50008	Invalid address on PLC
0xFFF50009	Invalid mode
0xFFF5000A	No data available e.g. DB is missing
0xFFF5000B	Priority class associated to OB does not exist
0xFFF5000C	Empty blocklist
0xFFF5000D	Block size error
0xFFF5000E	Invalid block number
0xFFF5000F	Protection level of function not sufficient
0xFFF50010	Unknown SSL-ID (e.g. access to CP instead of PLC)
0xFFF50011	Unknown SSL-index (e.g. access to CP instead of PLC)
0xFFF50012	Information currently not ascertainable
0xFFF50013	Unknown error message from PLC (please report!)
0xFFF50014	Hardware error e.g. not available periphery
0xFFF50015	Object access not allowed
0xFFF50016	Context not supported
0xFFF50017	Type (data type) not supported
0xFFF50018	Internal error, please report
0xFFF50019	Error rebooting PLC
0xFFF5001A	Error restarting PLC
0xFFF5001B	Connection end received
0xFFF5001C	PLC not found
0xFFF5001D	Too many data for this version of ACCON-AGLink
0xFFF5001E	PLC does not support this function
0xFFF5001F	Wrong Password
0xFFF50020	Connection already legitimated
0xFFF50021	Legitimation already released
0xFFF50022	Password not neccessary
0xFFF50023	At least one variable address invalid
0xFFF50024	Job does not exist
0xFFF50025	Invalid job state
0xFFF50026	Invalid cycle time
0xFFF50027	No more cyclic job possible
0xFFF50028	Function not posible for this job (invalid state)
0xFFF50029	Function abort (overload)
0xFFF5002A	No data for this variable

0xFFF5002B	Wrong time format
0xFFF5002C	Unknown PI name
0xFFF5002D	File transfer canceled by NCK
0xFFF5002E	Response too large for PDU size
0xFFF5002F	No H-PLC found
0xFFF50030	Data not changed
0xFFF50031	Received data is corrupt
0xFFF50032	The requested parameter has the wrong size or type
0xFFF50033	The parameter has a wrong value
0xFFF50034	The parameter is not changeable
0xFFF50035	The parameter is read only
0xFFF50036	The variable definition contains the wrong size
0xFFF50037	Array index does not exist
0xFFF50038	PARA does not exist
0xFFF50039	Error during disconnect
0xFFF5003A	Transfer and execute to NCK was aborted
0xFFF30000	Error when reading device information
0xFFF30001	Error when reading bus parameters
0xFFF30002	Error when writing bus parameters
0xFFF30003	No resources available on device
0xFFF30004	Invalid device
0xFFF30005	Adapter not found
0xFFF30006	Needed device driver not found
0xFFF40000	Error in layer4
0xFFF40001	No send buffers available
0xFFF20000	The desired adapter address already exists
0xFFF20001	Invalid HSA (smaller than biggest active participant)
0xFFF20002	Adapter is not in the logical ring
0xFFF20004	Received package has wrong content
0xFFF20006	Unknown error number from adapter
0xFFF20007	Unknown error number from device driver
0xFFF20008	Communications adapter has been removed
0xFFF20009	Modem has been removed
0xFFF2000A	No directly connected PLC found
0xFFF20313	Invalid speed on MPI bus
0xFFF20314	Address is bigger than HSA
0xFFF20315	The desired adapter address already exists
0xFFF2031A	No other active bus participants found
0xFFF2031C	Bus is jammed
0xFFF2031D	Bus is jammed
0xFFF2031E	Automatic detection of bus profile doesn't work, missing bus parameter telegram
0xFFF20337	Legitimation missing
0xFFF24000	PCAP library not found
0xFFF24001	PCAP function in library not found
0xFFF24002	No PCAP adapter found

0xFFF24003	Specified PCAP adapter not found
0xFFF24004	Error compiling filter expression
0xFFF24005	Error setting filter expression
0xFFF24006	Error in pcap_open_live
0xFFF24007	Error in pcap_sendpacket
0xFFF24008	Error in pcap_dispatch
0xFFF24009	Error in pcap_next_ex
0xFFF2400A	Required helper library not found
0xFFF2400B	Helper library function not found
0xFFF2400C	Error in helper library function call
0xFFF2400D	Not enough memory
0xFFF2400E	You selected not supported adapter hardware
0xFFF10000	COM-Port already used
0xFFF10001	Modem not found
0xFFF10002	Modem not onhook
0xFFF10003	Modem not offhook
0xFFF10004	Error in basic initialisation
0xFFF10005	Error in Initstring 1
0xFFF10006	Error in Initstring 2
0xFFF10007	Error in Initstring 3
0xFFF10008	Error in Initstring 4
0xFFF10009	Error in dialtype sequence
0xFFF1000A	Error in dialtone sequence
0xFFF1000B	Error in autoanswer sequence
0xFFF1000C	Modem has been removed
0xFFF1000D	Connection could not be established
0xFFF1000E	Login denied. Unknown user.
0xFFF1000F	Login denied. Wrong password.
0xFFF10010	Login denied. Callback number defined in adapter.
0xFFF10011	Error while dialing
0xFFF80000	Function not allowed
0xFFF80001	Invalid project handle
0xFFF80002	Error opening project
0xFFF80003	Error creating program instance of project
0xFFF80004	Error closing project
0xFFF80005	No resp. no more programs found
0xFFF80006	Program not found
0xFFF80007	At least one of the specified parameters is invalid
0xFFF80008	Runtime has expired (demo version)
0xFFF8000A	No resp. invalid data specified
0xFFF8000B	The program selected has no symbol table
0xFFF8000C	Symbol table already opened
0xFFF8000D	No resp. no more symbol entry found
0xFFF8000E	Error reading symbol entry
0xFFF8000F	Symbol not found
0xFFF80010	Operand not found

0xFFF80011	Invalid symbol
0xFFF80012	Invalid operand
0xFFF80013	Invalid filter string
0xFFF80014	Data block (DB) not present
0xFFF80015	Error reading DB block data
0xFFF80016	Error parsing DB block data
0xFFF80017	An opened DB is already present
0xFFF80018	No opened DB present
0xFFF80019	No resp. no more DB component found
0xFFF8001A	Specified DB component not found
0xFFF8001B	Specified DB component is invalid
0xFFF8001C	Specified DB component not matching
0xFFF8001E	Invalid constant
0xFFF8001F	Invalid constant size or format
0xFFF80020	Object type initialization failed
0xFFF80021	Invalid version of message configuration
0xFFF80022	Error opening message configuration
0xFFF80023	Error closing message configuration
0xFFF80024	No resp. no more message entry found
0xFFF80025	No resp. no more language found
0xFFF80026	Database access error
0xFFF80027	Invalid signal number
0xFFF80028	Invalid add. value specification
0xFFF80029	Add. value number invalid
0xFFF8002A	Element type of add. value invalid
0xFFF8002B	Add. value data length invalid
0xFFF8002C	Format specification missing
0xFFF8002D	Format specification invalid
0xFFF8002E	No resp. no more text library found
0xFFF8002F	No resp. no more text library entry found
0xFFF80030	Not enough memory
0xFFF80031	Block type invalid
0xFFF80032	Listing handle invalid
0xFFF80033	Block not present
0xFFF80034	Error reading block data
0xFFF80035	Error parsing block data
0xFFF80036	No resp. no more declaration found
0xFFF80037	No resp. no more attributes found
0xFFF80038	Writing CPU list failed
0xFFF90000	Read error
0xFFF90001	Write error
0xFFF90002	Read error (variable content, type)
0xFFF90003	Wrong PLC type
0xFFF90064	Internal assert wrong
0xFFFA0000	Not applicable
0xFFFA0001	Access invalid element

0xFFFA0002	Access buffer too small
0xFFFA0003	Access buffer invalid S5TIME value
0xFFFA0004	Access buffer invalid S5TIME base
0xFFFA0005	Access buffer invalid S7 COUNTER value
0xFFFA0006	Path missing expanded index
0xFFFA0007	Path invalid
0xFFFA0008	Path end reached
0xFFFA0009	Path unknown field
0xFFFA000A	Unknown child
0xFFFA000B	Array is no value type
0xFFFA000C	Array index missing
0xFFFA000D	Array index invalid
0xFFFA000E	Array index not allowed
0xFFFA000F	Array range not allowed
0xFFFA0010	Array range invalid
0xFFFA0011	UDT has no base type
0xFFFA0012	Unknown error code
0xFFFA0013	Wrong symbol ID
0xFFFA0014	Item access denied
0xFFFA0015	Read only item
0xFFFA0016	Partial errors
0xFFFA0017	Not an instance
0xFFFA0018	Wrong symbol ID path
0xFFFA0019	Symbolic wrong area
0xFFFA001A	Wrong value range
0xFFFA001B	PLC cant deliver
0xFFFA001C	PLC object does not exists
0xFFFA001D	PLC type info missing
0xFFFA0050	Invalid datablock
0xFFFA0051	Datablock is optimized
0xFFFA0052	Invalid Tag
0xFFFA0053	Start address too big
0xFFFA0054	Not allowed symbolic access
0xFFFA006E	File read error
0xFFFA0074	Project file not found
0xFFFA0075	Project file unsupported extension
0xFFFA0076	Project folder missing
0xFFFA00FD	Invalid agl version
0xFFFA00FE	Invalid filter
0xFFFA00FF	Invalid node
0xFFFA0100	Invalid flags
0xFFFA0101	Invalid alarm ID
0xFFFA0102	Invalid alarm LCID
0xFFFA0103	No alarms found
0xFFFA0104	Invalid alarmtext
0xFFFA0105	Invalid alarmtext index

0xFFFA0106	Invalid LCID
0xFFFA0107	DB not found
0xFFFA0108	No alarm subscription active
0xFFFA0109	Already open
0xFFFA010A	Not open
0xFFFA010B	Must be word aligned
0xFFFA010C	Password required
0xFFFA0190	Internal communication error
0xFFFA0191	Internal communication error 0
0xFFFA0193	Internal communication error 2
0xFFFA0194	Write bool range needs modulo 8 start and count
0xFFFA0195	Wrong read type
0xFFFA0196	PLC auto detect failed
0xFFFA0197	Only single values allowed

Connect
ideas.
shape
solutions.