

Industrial communication solutions for Windows

XFINSTCP Driver Manual

Omron SYSMAC FINS over TCP Ethernet Protocol Driver

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XFINSTCP technical specifications

General information

XFINSTCP driver allows you to connect to the OMRON SYSMAC CS/CJ Series and SYSMAC Ethernet Units that use the FINS protocol commands over UDP/TCP through an ethernet port. This driver does not support slave-initiated communications. All communications are always initiated by the host PC. Standard PLC IP port is 9600.

Command list

Memory Area Read

Description of this command:

Reads the contents of the specified number of consecutive memory area items starting from the specified address.

Methods used to run this command:

Analog Input (ReadNumericValues) / Digital Input (ReadBooleanValues)

Number of points accepted by this command:

1-500

Meaning of the DriverP0 parameter:

Identifies the Destination Network Address. Specifies the number of the Network where the destination node is located:

- 0=Local network
- 1=Destination network number 1
- 2=Destination network number 2

...

- 127=Destination network number 127

Meaning of the DriverP1 parameter:

Identifies the Destination Node Address. Specifies the number of the Node where the command is being sent. This node number is the address used for FINS, and is different from the IP address used for Ethernet:

- 0=Local PC Unit
- 1=Destination node number 1
- 2=Destination node number 2

...

- 126=Destination node number 126
- 127=Broadcasting

Meaning of the DriverP2 parameter:

Identifies the Destination Unit Address. Specifies the number of the Unit at the destination node:

- 0=PC (CPU Unit)
- 16=CPU Bus Unit #0
- 17=CPU Bus Unit #1

...

- 31=CPU Bus Unit #15
- 225=Inner board
- 254=Unit connected to network

Meaning of the DriverP3 parameter:

Identifies the Source Network Address. Specifies the number of the Network where the source node is located:

- 0=Local network
- 1=Source network number 1
- 2=Source network number 2

...

- 127=Source network number 127

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Meaning of the DriverP4 parameter:

Identifies the Source Node Address. Specifies the local node number:

- 239=Local PC Unit
- 1=Source node number 1
- 2=Source node number 2

...

- 126=Source node number 126

Meaning of the DriverP5 parameter:

Identifies the Source Unit Address. Specifies the number of the Unit at the source node:

- 0=PC (CPU Unit)
- 16=CPU Bus Unit #0
- 17=CPU Bus Unit #1

...

- 31=CPU Bus Unit #15
- 225=Inner board
- 254=Unit connected to network

Meaning of the DriverP6 parameter:

Identifies the Memory Area Code to be read. (See tables for CS/CJ/CV below).

Meaning of the DriverP7 parameter:

Identifies the starting Memory Address to be read. (See tables for CS/CJ/CV below).

Meaning of the DriverP8 parameter:

Indicates if values must be treated as unsigned integers or as signed integers:

- 0 = Treat values as unsigned integers
- 1 = Treat values as signed integers

Values that are returned:

Value in PointValue (0) = First item value read (0-65535)

Value in PointValue (1) = Second item value read (0-65535)

...

Value in PointValue (n-1) = Last item value read (0-65535)

NOTE ABOUT DIGITAL INPUTS:

When DriverDataType is set to Digital Input, values returned are forced to 0 if value received was <= 0, or to 1 if value received was > 0, regardless of the memory Area Code or Item Data Type being read.

MEMORY ADDRESS TABLE FOR CS/CJ MODE:

Available data types that can be read. Set the Memory Area Code in DriverP6 and the Memory Address in DriverP7.

Important note: Ethernet units can handle only word data and individual bits cannot be addressed.

- CIO (Bit area): Memory Area Code (P6) = B0h, Memory Address (P7) = 0000 to 6143
- HR (Bit area): Memory Area Code (P6) = B2h, Memory Address (P7) = 000 to 511
- A (Bit area): Memory Area Code (P6) = B3h, Memory Address (P7) = 448 to A959
- DM (DM area): Memory Area Code (P6) = 82h, Memory Address (P7) = 00000 to 32767
- Bank 0 to Bank 12 (EM area): Memory Area Code (P6) = A0h to ACh, Memory Address (P7) = 00000 to 32765
- Current Bank (EM area): Memory Area Code (P6) = 98h, Memory Address (P7) = 00000 to 32765

MEMORY ADDRESS TABLE FOR CV MODE:

Available data types that can be read. Set the Memory Area Code in DriverP6 and the Memory Address in DriverP7.

Important note: Ethernet units can handle only word data and individual bits cannot be addressed.

- CIO (Bit area): Memory Area Code (P6) = 80h, Memory Address (P7) = 0000 to 6143
- DM (DM area): Memory Area Code (P6) = 82h, Memory Address (P7) = 00000 to 32767
- Bank 0 to Bank 7 (EM area): Memory Area Code (P6) = 90h to 97h, Memory Address (P7) = 00000 to 32765
- Current Bank (EM area): Memory Area Code (P6) = 98h, Memory Address (P7) = 00000 to 32765

Memory Area Write

Description of this command:

Writes the contents of the specified number of consecutive memory area items starting at the specified address.

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Methods used to run this command:

Analog Output (WriteNumericValues) / Digital Output (WriteBooleanValues)

Number of points accepted by this command:

1-500

Meaning of the DriverP0 parameter:

Identifies the Destination Network Address. Specifies the number of the Network where the destination node is located:

- 0=Local network
- 1=Destination network number 1
- 2=Destination network number 2
- ...
- 127=Destination network number 127

Meaning of the DriverP1 parameter:

Identifies the Destination Node Address. Specifies the number of the Node where the command is being sent. This node number is the address used for FINS, and is different from the IP address used for Ethernet:

- 0=Local PC Unit
- 1=Destination node number 1
- 2=Destination node number 2
- ...
- 126=Destination node number 126
- 127=Broadcasting

Meaning of the DriverP2 parameter:

Identifies the Destination Unit Address. Specifies the number of the Unit at the destination node:

- 0=PC (CPU Unit)
- 16=CPU Bus Unit #0
- 17=CPU Bus Unit #1

- ...
- 31=CPU Bus Unit #15
- 225=Inner board
- 254=Unit connected to network

Meaning of the DriverP3 parameter:

Identifies the Source Network Address. Specifies the number of the Network where the source node is located:

- 0=Local network
- 1=Source network number 1
- 2=Source network number 2

- ...
- 127=Source network number 127

Meaning of the DriverP4 parameter:

Identifies the Source Node Address. Specifies the local node number:

- 239=Local PC Unit
- 1=Source node number 1
- 2=Source node number 2

- ...
- 126=Source node number 126

Meaning of the DriverP5 parameter:

Identifies the Source Unit Address. Specifies the number of the Unit at the source node:

- 0=PC (CPU Unit)
- 16=CPU Bus Unit #0
- 17=CPU Bus Unit #1

- ...
- 31=CPU Bus Unit #15
- 225=Inner board
- 254=Unit connected to network

Meaning of the DriverP6 parameter:

Identifies the Memory Area Code to be read. (See tables for CS/CJ/CV below).

Meaning of the DriverP7 parameter:

Identifies the starting Memory Address to be written. (See tables for CS/CJ/CV below).

Meaning of the DriverP8 parameter:

Indicates if values must be treated as unsigned integers or as signed integers:

- 0 = Treat values as unsigned integers

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- 1 = Treat values as signed integers

Values that are sent:

Value in PointValue (0) = First item value to be sent (0-65535)

Value in PointValue (1) = Second item value to be sent (0-65535)

...

Value in PointValue (n-1) = Last item value to be sent (0-65535)

NOTE ABOUT DIGITAL OUTPUTS:

When DriverDataType is set to Digital Output, values sent are forced to 0 if value was originally <= 0, or to 1 if value was originally > 0, regardless of the memory Area Code or Item Data Type to be written.

MEMORY ADDRESS TABLE FOR CS/CJ MODE:

Available data types that can be written. Set the Memory Area Code in DriverP6 and the Memory Address in DriverP7.

Important note: Ethernet units can handle only word data and individual bits cannot be addressed.

- CIO (Bit area): Memory Area Code (P6) = B0h, Memory Address (P7) = 0000 to 6143

- HR (Bit area): Memory Area Code (P6) = B2h, Memory Address (P7) = 000 to 511

- A (Bit area): Memory Area Code (P6) = B3h, Memory Address (P7) = 448 to A959

- DM (DM area): Memory Area Code (P6) = 82h, Memory Address (P7) = 00000 to 32767

- Bank 0 to Bank 12 (EM area): Memory Area Code (P6) = A0h to ACh, Memory Address (P7) = 00000 to 32765

- Current Bank (EM area): Memory Area Code (P6) = 98h, Memory Address (P7) = 00000 to 32765

MEMORY ADDRESS TABLE FOR CV MODE:

Available data types that can be written. Set the Memory Area Code in DriverP6 and the Memory Address in DriverP7.

Important note: Ethernet units can handle only word data and individual bits cannot be addressed.

- CIO (Bit area): Memory Area Code (P6) = 80h, Memory Address (P7) = 0000 to 6143

- DM (DM area): Memory Area Code (P6) = 82h, Memory Address (P7) = 00000 to 32767

- Bank 0 to Bank 7 (EM area): Memory Area Code (P6) = 90h to 97h, Memory Address (P7) = 00000 to 32765

- Current Bank (EM area): Memory Area Code (P6) = 98h, Memory Address (P7) = 00000 to 32765

Error messages

The following list shows the possible error messages that can be returned by the driver during a failed communication in the 'Status' property.

[1005] DRIVER (Internal): Invalid driver stage
[1300] PROTOCOL (Timeout): No answer
[1314] PROTOCOL (Remote): Illegal source address error
[1315] PROTOCOL (Remote): Illegal SID error
[3055] CONFIG (P0): Invalid destination network address
[3593] CONFIG (P1): Invalid destination node address
[4155] CONFIG (P2): Invalid destination unit address
[4599] CONFIG (P3): Invalid source network address
[5045] CONFIG (P4): Invalid source node address
[5520] CONFIG (P5): Invalid source unit address
[8348] CONFIG (Remote): Unknown error code
[8405] CONFIG (Remote): Local node error: Local node not in network
[8406] CONFIG (Remote): Local node error: Token timeout
[8407] CONFIG (Remote): Retries failed
[8408] CONFIG (Remote): Too many send frames
[8409] CONFIG (Remote): Node address range error
[8410] CONFIG (Remote): Node address duplication
[8411] CONFIG (Remote): Destination node error: Destination node not in network
[8412] CONFIG (Remote): Destination node error: Unit missing
[8413] CONFIG (Remote): Destination node error: Third node missing
[8414] CONFIG (Remote): Destination node error: Destination node busy
[8415] CONFIG (Remote): Destination node error: Response timeout

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[8416] CONFIG (Remote): Controller error: Communications controller error
[8417] CONFIG (Remote): Controller error: CPU Unit error
[8418] CONFIG (Remote): Controller error: Controller error
[8419] CONFIG (Remote): Controller error: Unit number error
[8420] CONFIG (Remote): Service unsupported: Undefined command
[8421] CONFIG (Remote): Service unsupported: Not supported by model/version
[8422] CONFIG (Remote): Routing table error: Destination address setting error
[8423] CONFIG (Remote): Routing table error: No routing tables
[8424] CONFIG (Remote): Routing table error: Routing table error
[8425] CONFIG (Remote): Routing table error: Too many relays
[8426] CONFIG (Remote): Command format error: Command too long
[8427] CONFIG (Remote): Command format error: Command too short
[8428] CONFIG (Remote): Command format error: Elements data don't match
[8429] CONFIG (Remote): Command format error: An incorrect format was used
[8430] CONFIG (Remote): Command format error: Header error
[8431] CONFIG (Remote): Parameter error: Area classification missing
[8432] CONFIG (Remote): Parameter error: Access size error
[8433] CONFIG (Remote): Parameter error: Address range error
[8434] CONFIG (Remote): Parameter error: Address range exceeded
[8435] CONFIG (Remote): Parameter error: Program missing
[8436] CONFIG (Remote): Parameter error: Relational error
[8437] CONFIG (Remote): Parameter error: Duplicate data access
[8438] CONFIG (Remote): Parameter error: Response too long
[8439] CONFIG (Remote): Parameter error: Parameter error
[8440] CONFIG (Remote): Read not possible: The program area is protected
[8441] CONFIG (Remote): Read not possible: Table missing
[8442] CONFIG (Remote): Read not possible: Data missing
[8443] CONFIG (Remote): Read not possible: Program missing
[8444] CONFIG (Remote): Read not possible: File missing
[8445] CONFIG (Remote): Read not possible: Data mismatch
[8446] CONFIG (Remote): Write not possible: The specified area is read-only
[8447] CONFIG (Remote): Write not possible: Protected
[8448] CONFIG (Remote): Write not possible: Cannot register
[8449] CONFIG (Remote): Write not possible: Program missing
[8450] CONFIG (Remote): Write not possible: File missing
[8451] CONFIG (Remote): Write not possible: File name already exists
[8452] CONFIG (Remote): Write not possible: Cannot change
[8453] CONFIG (Remote): Not executable in current mode: Not possible during execution
[8454] CONFIG (Remote): Not executable in current mode: Not possible while running
[8455] CONFIG (Remote): Not executable in current mode: Wrong PLC mode (PROGRAM)
[8456] CONFIG (Remote): Not executable in current mode: Wrong PLC mode (DEBUG)
[8457] CONFIG (Remote): Not executable in current mode: Wrong PLC mode (MONITOR)
[8458] CONFIG (Remote): Not executable in current mode: Wrong PLC mode (RUN)
[8459] CONFIG (Remote): Not executable in current mode: Specified node not polling node
[8460] CONFIG (Remote): Not executable in current mode: Step cannot be executed
[8461] CONFIG (Remote): No such device: File device missing
[8462] CONFIG (Remote): No such device: Memory missing
[8463] CONFIG (Remote): No such device: Clock missing
[8464] CONFIG (Remote): Cannot start/stop: Table missing
[8465] CONFIG (Remote): Unit error: Memory error
[8466] CONFIG (Remote): Unit error: I/O setting error
[8467] CONFIG (Remote): Unit error: Too many I/O points
[8468] CONFIG (Remote): Unit error: CPU bus error
[8469] CONFIG (Remote): Unit error: I/O duplication
[8470] CONFIG (Remote): Unit error: I/O bus error
[8471] CONFIG (Remote): Unit error: SYSMAC BUS/2 error
[8472] CONFIG (Remote): Unit error: CPU Bus Unit error
[8473] CONFIG (Remote): Unit error: SYSMAC BUS No. duplication
[8474] CONFIG (Remote): Unit error: Memory error
[8475] CONFIG (Remote): Unit error: SYSMAC BUS terminator missing
[8476] CONFIG (Remote): Command error: No protection
[8477] CONFIG (Remote): Command error: Incorrect password

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[8478] CONFIG (Remote): Command error: The specified area is protected
[8479] CONFIG (Remote): Command error: Service already executing
[8480] CONFIG (Remote): Command error: Service stopped
[8481] CONFIG (Remote): Command error: No execution right
[8482] CONFIG (Remote): Command error: Settings not complete
[8483] CONFIG (Remote): Command error: Necessary items not set
[8484] CONFIG (Remote): Command error: Number already defined
[8485] CONFIG (Remote): Command error: Error will not clear
[8486] CONFIG (Remote): Access right error: No access right
[8487] CONFIG (Remote): Abort: Service aborted

Supported devices

This driver can communicate with these devices, but is not necessarily limited to this list:

OMRON SYSMAC CS/CJ Series
OMRON SYSMAC CS1W-ETN01 10Base-5 Ethernet Units
OMRON SYSMAC CS1W-ETN11 10Base-T Ethernet Units
OMRON SYSMAC CJ1W-ETN11 10Base-T Ethernet Units

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