

XMITSUFX Driver Manual

Mitsubishi PLC FX Series Protocol Driver



FX Series



CPKSoft Engineering

Process Monitoring and Industrial Automation Software

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1. Introduction

CPKSoft Engineering assumes no responsibility for any errors that may appear in this document. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

This driver is included with all unlimited licenses of TAS-HMITalk. It is not sold separately. It requires the TAS-HMITalk ActiveX to work, therefore it cannot be used as a stand-alone driver.

If you use this driver in your applications, you need to include the xmitsufx.tlk in the set of files that you distribute. This file must be located in the same folder where the hmitalk.ocx file is registered in order to be found by the activex when the applications are executed.

The source-code for the xmitsufx.tlk driver is available in plain-C language for additional USD 599 if you own a license of TAS-HMITalk 8.04 or higher.

Refer to the following link to visit the xmitsufx driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/66/PageIndex/1/Default.aspx>.

Visit this link if you want to see a complete list of drivers that are currently available for TAS-HMITak: <http://www.cpksoft.com/Drivers/tabid/55/Default.aspx>.

Also, refer to this link if you are interested in purchasing a license of the most recent version of TAS-HMITalk: <http://www.cpksoft.com/Products/tabid/54/Default.aspx>.

We welcome your comments about this document. You can reach us by e-mail at [contact @ cpksoft.com](mailto:contact@cpksoft.com).

2. Driver details

2.1. Driver overview

XMITSUFX driver allows you to connect to the MITSUBISHI programmable controllers, series FX, through an RS-422 to RS-232C interface unit. The recommended interface is the FX-232AW unit, although any standard 232/422 converter can be good to communicate with the PLC through the base unit programming connector.

Protocol specifications:

Transfer format: RS232C standard, asynchronous bi-directional (not simultaneously) Baud rate: 9600 bps Parity: Even Verification: Sum check Characters: ASCII, plus STX, ETX, ENQ, ACK and NAK.

Important note:

If you cannot communicate with your PLC, check after setting the `CommTxHoldRTSWhileTransmitting` and `CommTxHoldRTSWhileReceiving` properties both to On.

Inaccessible Areas:

The constant K setting of timer and counter coils in the program area are not accessible via the interface. Use data registers to store the setting if this function is desired.

File registers D1000 to D1999 are stored in the program memory area. Thus they are not accessible via this interface. Normally, their data has to be read to normal data registers before any process can be made anyway.

2.2. Supported devices

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

MITSUBISHI Programmable Controllers FX Series.

3. Command list

3.1. Read Words of type T, C or D

Description of this command:

Reads multiple current values of consecutive words of type T (Timers), C (Counters) or D (Data registers). The PLC can be in STOP or in RUN mode.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-32

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP6 parameter:

Determines the address of the first timer, counter or data register to be read. Valid addresses are:

- T0 to T255 for timers.
- C0 to C199 for counters.
- D0 to D511 for data registers.
- D8000 to D8255 for special data registers.

Important note:

Parameters P1 to P5 and P7 to P9 are not used.

Values that are returned:

Value in PointValue (0) = First word value (0-65535)
Value in PointValue (1) = Second word value (0-65535) .
Value in PointValue (DriverNumPoints-1) = Last word value (0-65535)

3.2. Read Bits of type X, Y, M, S, T or C

Description of this command:

Reads multiple current status of consecutive bits of type X, Y, M, S, T, C (Contacts and coils). Bits are read in groups of 8. The PLC can be in STOP or in RUN mode.

Type of data handled by this command:

Digital Input

Number of points accepted by this command:

1-256

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP6 parameter:

Determines the address of the first group of 8 bits to be read (contact or coil). Valid addresses are:

- X0 to X170 (in multiples of 10)
- Y0 to Y170 (in multiples of 10)
- M0 to M1016 (in multiples of 8)
- M8000 to M8248 (in multiples of 8)
- S0 to S992 (in multiples of 8)
- T0 to T248 (in multiples of 8)
- C0 to C248 (in multiples of 8)
- Z0 to Z170 (in multiples of 10, for PLS Y, PLF Y COIL, status of prev scan)
- U0 to U248 (in multiples of 8, for OUT T COIL)
- N0 to N1016 (in multiples of 8, for PLS M, PLF M COIL, status of prev scan)
- D0 to D248 (in multiples of 8, for OUT C COIL)
- V0 to V248 (in multiples of 8, for RST T COIL)
- E0 to E248 (in multiples of 8, for RST C COIL)

Important note:

Parameters P1 to P5 and P7 to P9 are not used.

Values that are returned:

Value in PointValue (0) = First bit status (0 or 1)

Value in PointValue (1) = Second bit status (0 or 1) .

Value in PointValue (DriverNumPoints-1) = Last bit status (0 or 1)

3.3. Write Words of type T, C or D

Description of this command:

Writes multiple values of consecutive words of type T (Timers), C (Counters) or D (Data registers). The PLC can be in STOP or in RUN mode.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1-32

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP6 parameter:

Determines the address of the first timer, counter or data register to be over-written. Valid addresses are:

- T0 to T255 for timers.

- C0 to C199 for counters.
- D0 to D511 for data registers.
- D8000 to D8255 for special data registers.

Important note:

Parameters P1 to P5 and P7 to P9 are not used.

Values that are sent:

Value in PointValue (0) = Value for first word (0-65535)

Value in PointValue (1) = Value for second word (0-65535) .

Value in PointValue (DriverNumPoints-1) = Value for last word (0-65535)

3.4. Write Bits of type X, Y, M, S, T or C

Description of this command:

Writes multiple status of consecutive bits of type X, Y, M, S, T, C (Contacts and coils). Bits are written in groups of 8. Address values must be a multiple of 8. The PLC can be in STOP or in RUN mode.

Type of data handled by this command:

Digital Output

Number of points accepted by this command:

1-256

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP6 parameter:

Determines the address of the first group of 8 bits to be over-written. Valid addresses are:

- X0 to X170 (in multiples of 10)
- Y0 to Y170 (in multiples of 10)
- M0 to M1016 (in multiples of 8)
- M8000 to M8248 (in multiples of 8)
- S0 to S992 (in multiples of 8)
- T0 to T248 (in multiples of 8)
- C0 to C248 (in multiples of 8)
- Z0 to Z170 (in multiples of 10, for PLS Y, PLF Y COIL, status of prev scan)
- U0 to U248 (in multiples of 8, for OUT T COIL)
- N0 to N1016 (in multiples of 8, for PLS M, PLF M COIL, status of prev scan)
- D0 to D248 (in multiples of 8, for OUT C COIL)
- V0 to V248 (in multiples of 8, for RST T COIL)
- E0 to E248 (in multiples of 8, for RST C COIL)

Important note:

Parameters P1 to P5 and P7 to P9 are not used.

Values that are sent:

Value in PointValue (0) = Status for first bit (0 or 1)

Value in PointValue (1) = Status for second bit (0 or 1) .

Value in PointValue (DriverNumPoints-1) = Status for last bit (0 or 1)

3.5. Force Individual Bit of type X, Y, M, S, T or C

Description of this command:

Forces one single bit of type X, Y, M, S, T or C to an ON or OFF state. The PLC can be in STOP or in RUN mode.

Type of data handled by this command:

Digital Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

1

Meaning of the DriverP6 parameter:

Determines the address of the bit to be over-written. Valid addresses are:

- X0 to X7, X10 to X17, ..., X170 to X177
- Y0 to Y7, Y10 to Y17, ..., Y170 to Y177
- M0 to M1023
- M8000 to M8255
- S0 to S999
- T0 to T255
- C0 to C255

Important note:

Parameters P1 to P5 and P7 to P9 are not used.

Values that are sent:

Value in PointValue (0) = Status for bit (0 or 1)

4. Appendices

4.1. Error messages

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

This list does not include some error messages that can be returned by the activex component while attempting to establish a connection.

- [1005] DRIVER (Internal): Invalid driver stage
- [1300] PROTOCOL (Timeout): No answer
- [1433] PROTOCOL (Format): Validation error in device response
- [2139] CONFIG (NumValues): Only one bit can be written with this command
- [2147] CONFIG (NumValues): Only one value can be read or written
- [2186] CONFIG (NumValues): Too many values (max=128)
- [2204] CONFIG (NumValues): Too many values (max=256)
- [2209] CONFIG (NumValues): Too many values (max=32)
- [2230] CONFIG (NumValues): Too many values (max=64)
- [3001] CONFIG (P0): Invalid command
- [3004] CONFIG (P0): Invalid command (2/3/4)
- [4017] CONFIG (P2): Invalid bit number
- [4018] CONFIG (P2): Invalid bit number (0-7)
- [4089] CONFIG (P2): Invalid read mode
- [4125] CONFIG (P2): Invalid write mode
- [6008] CONFIG (P6): Invalid Address

4.2. Keywords list

The following list shows a set of words directly related to this driver.

"Controllers, FX, MITSUBISHI, PLC, Programmable, Series, Series."