Industrial communication solutions for Windows

XNAIS Driver Manual

NAIS Matsushita MEWTOCOL-COM Protocol Driver

Contents

XNAIS technical specifications

General information

XNAIS driver allows you to connect to PANASONIC NAIS MATSUSHITA PLCs which support the OPEN MEWTOCOL-COM protocol to communicate with a PC.
<MEWTOCOL Format>
  - Master/Slave communication(Half duplex communication)*4
  - ASCII strings (One frame is up to 118 characters.)*5
  - 19200 bps (or 9600 bps *1 *3)
  - 8 bit data length (or 7 bit *2 *3)
  - 1 stop bit fixed *3
  - Odd parity fixed *3
  - Cr (Carriage Return) fixed *3
  - (*1) Dip switch configurable, located next to programming port for FP1, FPM, FP3, FP10SH. For FP0 it is software configurable. The default for FP0 is 9600bps.
  - (*2) Configurable in PLC system register through the programming software (NPST-GR/FPsoft) using the programming port.
  - (*3) Configurable in PLC system register through the programming software (NPST-GR/FPsoft) using the secondary port.
  - (*4) If you want the PLC to send some alarm signals or any other signals while the PLC is a slave use the FP3 CCU module when it's one to one communications or FP3 MEWNET-W. When it's one to N communication, it is duplex communications and has MEWTOCOL-DAT which will allow the PLC to send some command to a master station (computer typically).
  - (*5) If you need to send or receive more than 118 characters in one frame, use the delimiter so that you can ask the PLC to keep sending the continuous data. The other way is that you can keep sending 118 character frame repeatedly as one frame.
<MEWTOCOL Capabilities> Here is a list of what this protocol can do.
  - Read one bit ON/OFF info. (Input, Output, Timer, Counter, Internal relay)
  - Read 16 block bits ON/OFF info. (Input, Output, Internal relay)
  - Read multiple word unit data value (DT, FL, LD)
  - Read multiple Timer/Counter preset value
  - Read multiple Timer/Counter elapsed value
  - Set one bit ON/OFF (Output, Internal relay)
  - Set multiple word unit data value (DT, FL, LD)
  - Set multiple Timer/Counter preset value
  - Set multiple Timer/Counter elapsed value
<Applicable ports and Modules>
  - FP1 -------- Programming port   (RS422) Secondary port (RS232C), configurable by PLC through software
  - FPM ------- Programming port   (RS232C) Secondary port (RS232C), configurable by PLC through software
  - FP3 -------- Programming port   (RS422)
  - FP10SH --   Programming port   (RS232C) Secondary port (RS232C), configurable by PLC through software
  - FP3/FP10SH modules --Computer Communication Unit(AFP3462) (RS232C) Computer Communication Net Unit (AFP3463) (RS485) Remote Slave Unit (AFP3741, AFP3743) (RS422 port) MEWNET-H (AFP3700) (RS232C, and through the network) MEWNET-W (AFP3720) (Through the network) MEWNET-P (AFP3710) (Through the network) Modbus Unit (AFP3492, AFP3413) (RS232C, RS485)
<Recommended Format>
  - RS232C
  - 19200 bps (or 9600 bps *1*3)
  - 8 bit data length (or 7 bit *2*3)
  - 1 stop bit fixed *3
  - Odd parity fixed *3
  - Cr (Carriage Return) fixed *3

- (*1) Dip switch selectable, located next to programming port.
- (*2) Configurable in PLC system register through the programming software(NPST-GR) using the programming port.
- (*3) Configurable in PLC system register through the programming software(NPST-GR) using the secondary port.

<MEWTOCOL Procedure> Computer sends a COMMAND to PLC as an ASCII string. Then the PLC automatically returns the RESPONSE based on the COMMAND. PLC mode (RUN/PROG)does not effect the response. Input information shall be returned as all "0" in PROG mode.

Command list

Read one bit ON/OFF info

Description of this command:
Reads the contents (ON/OFF) stored in one element of type Input, Output, Timer, Counter and Internal or Link relay.
Methods used to run this command:
Digital Input (ReadBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
0
Meaning of the DriverP2 parameter:
Indicates the type of bit:
- 0 = Input (X)
- 1 = Output (Y)
- 2 = Internal relay (R)
- 3 = Link relay (L)
- 4 = Timer (T)
- 5 = Counter (C)
Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the contact number:
- Must be a 4-digit number
- First 3 digits are decimal digits (0-9)
- Last digit is an hexadecimal digit (0-F)
- Examples: 0003, 104F, 024E, 0047, etc.
Values that are returned:
Value in PointValue (0) = The requested bit value (0=OFF/1=ON)

Read 16 block bits ON/OFF info

Description of this command:
Reads the contents (ON/OFF) stored in several consecutive Inputs (X), Outputs (Y), Internal Relays (R) or Link Relays (L).
Methods used to run this command:
Digital Input (ReadBooleanValues)
Number of points accepted by this command:
1-432
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
1
Meaning of the DriverP2 parameter:
Indicates the type of bits:
- 0 = Inputs (X)
- 1 = Outputs (Y)

- 2 = Internal relays (R)
- 3 = Link relays (L)

Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)

Meaning of the DriverP6 parameter:
Indicates the starting data address:
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0500, 0186, 0020, etc.

Meaning of the DriverP7 parameter:
Indicates the ending data address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0501, 0187, 0021, etc.

Values that are returned:
Value in PointValue (0) = Bit 0 of first data word returned
Value in PointValue (1) = Bit 1 of first data word returned
Value in PointValue (2) = Bit 2 of first data word returned
- ...
Value in PointValue (16) = Bit 0 of second data word returned
- ...

Read multiple word unit data value

Description of this command:
Reads the contents stored in words of type DT, FL or LD.

Methods used to run this command:
Analog Input (ReadNumericValues)

Number of points accepted by this command:
1-27

Meaning of the DriverP0 parameter:
PLC station number (1-32)

Meaning of the DriverP1 parameter:
0

Meaning of the DriverP2 parameter:
Indicates the word type:
- 0 = (DT)
- 1 = (FL) (Available for FP3/FP10)
- 2 = (LD) (Available for FP3/FP10)

Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)

Meaning of the DriverP6 parameter:
Indicates the starting word address:
- Must be a 5-digit number
- All digits are decimal digits (0-9)
- Examples: 00500, 00186, 00020, etc.

Meaning of the DriverP7 parameter:
Indicates the ending word address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 5-digit number
- All digits are decimal digits (0-9)
- Examples: 00501, 00187, 00021, etc.

Values that are returned:
Value in PointValue (0) = First word returned
Value in PointValue (1) = Second word returned
- ...

Read multiple Timer/Counter preset value

Description of this command:
Reads the contents stored in timer/counter preset values.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-27
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
1
Meaning of the DriverP2 parameter:
3
Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the starting timer address:
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0500, 0186, 0020, etc.
Meaning of the DriverP7 parameter:
Indicates the ending timer address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0501, 0187, 0021, etc.
Values that are returned:
Value in PointValue (0) = First timer returned
Value in PointValue (1) = Second timer returned
- ...

Read multiple Timer/Counter elapsed value

Description of this command:
Reads the contents stored in timer/counter elapsed values.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-27
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
2
Meaning of the DriverP2 parameter:
3
Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the starting timer address:
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0500, 0186, 0020, etc.
Meaning of the DriverP7 parameter:
Indicates the ending timer address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 4-digit number

- All digits are decimal digits (0-9)
- Examples: 0501, 0187, 0021, etc.

Values that are returned:
Value in PointValue (0) = First timer returned
Value in PointValue (1) = Second timer returned
- ...

Set one bit ON/OFF info

Description of this command:
Sets the contents (ON/OFF) stored in one element of type Output or Internal relay.
Methods used to run this command:
Digital Output (WriteBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
0
Meaning of the DriverP2 parameter:
Indicates the type of bit:
- 1 = Output (Y)
- 2 = Internal relay (R)
Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the contact number:
- Must be a 4-digit number
- First 3 digits are decimal digits (0-9)
- Last digit is an hexadecimal digit (0-F)
- Examples: 0003, 104F, 024E, 0047, etc.
Values that are sent:
Value in PointValue (0) = The new bit value (0=OFF/1=ON)

Set multiple word unit data value

Description of this command:
Sets the contents stored in words of type DT, FL or LD.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1-27
Meaning of the DriverP0 parameter:
PLC station number (1-32)
Meaning of the DriverP1 parameter:
0
Meaning of the DriverP2 parameter:
Indicates the word type:
- 0 = (DT)
- 1 = (FL) (Available for FP3/FP10)
- 2 = (LD) (Available for FP3/FP10)
Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the starting word address:
- Must be a 5-digit number
- All digits are decimal digits (0-9)
- Examples: 00500, 00186, 00020, etc.

Meaning of the DriverP7 parameter:
Indicates the ending word address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 5-digit number
- All digits are decimal digits (0-9)
- Examples: 00501, 00187, 00021, etc.

Values that are sent:
Value in PointValue (0) = First word value
Value in PointValue (1) = Second word value
- ...

Set multiple Timer/Counter preset value

Description of this command:
Set the contents stored in timer/counter preset values.

Methods used to run this command:
Analog Output (WriteNumericValues)

Number of points accepted by this command:
1-27

Meaning of the DriverP0 parameter:
PLC station number (1-32)

Meaning of the DriverP1 parameter:
1

Meaning of the DriverP2 parameter:
3

Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:
0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)

Meaning of the DriverP6 parameter:
Indicates the starting timer address:
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0500, 0186, 0020, etc.

Meaning of the DriverP7 parameter:
Indicates the ending timer address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0501, 0187, 0021, etc.

Values that are sent:
Value in PointValue (0) = First timer value
Value in PointValue (1) = Second timer value
- ...

Set multiple Timer/Counter elapsed value

Description of this command:
Sets the contents stored in timer/counter elapsed values.

Methods used to run this command:
Analog Output (WriteNumericValues)

Number of points accepted by this command:
1-27

Meaning of the DriverP0 parameter:
PLC station number (1-32)

Meaning of the DriverP1 parameter:
2

Meaning of the DriverP2 parameter:
3

Meaning of the DriverP3 parameter:
Indicates if the BCC must be ignored:

0 = Use BCC
1 = Ignore BCC (two asterisks '**' will substitute it)
Meaning of the DriverP6 parameter:
Indicates the starting timer address:
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0500, 0186, 0020, etc.
Meaning of the DriverP7 parameter:
Indicates the ending timer address:
- Must be equal or greater than the starting data address and return enough values as requested in DriverNumPoints
- Must be a 4-digit number
- All digits are decimal digits (0-9)
- Examples: 0501, 0187, 0021, etc.
Values that are sent:
Value in PointValue (0) = First timer value
Value in PointValue (1) = Second timer value
- ...

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
[1010] DRIVER (Internal): Error calculating elapsed milliseconds
[1201] DRIVER (System): Error closing %s
[1202] DRIVER (System): Error creating %s
[1208] DRIVER (System): Error seeking end of %s
[1210] DRIVER (System): Error writing to %s
[1214] DRIVER (System): Error deleting %s
[1300] PROTOCOL (Timeout): No answer
[1313] PROTOCOL (Timeout): No answer from meter after retrying with a Start Communications message
[1332] PROTOCOL (Remote): Invalid date received
[1333] PROTOCOL (Remote): Couldn't decode received date
[1334] PROTOCOL (Remote): Invalid time received
[1338] PROTOCOL (Remote): Couldn't decode reference date
[1421] PROTOCOL (Format): Negative acknowledge received from device
[1429] PROTOCOL (Format): Unknown response
[1433] PROTOCOL (Format): Validation error in device response
[2138] CONFIG (NumValues): Only one bit can be requested
[2151] CONFIG (NumValues): Too many bits requested (max=432)
[2170] CONFIG (NumValues): Too many timers requested (max=27)
[2171] CONFIG (NumValues): Too many timers requested (max=7)
[2277] CONFIG (NumValues): Too many words requested (max=27)
[3025] CONFIG (P0): Invalid device address (1-32)
[3509] CONFIG (P1): Invalid command (0 only)
[3510] CONFIG (P1): Invalid command (0 or 1 only)
[3512] CONFIG (P1): Invalid command (0 to 2 only)
[4020] CONFIG (P2): Invalid bit type (0 to 3 only)
[4021] CONFIG (P2): Invalid bit type (0 to 5 only)
[4022] CONFIG (P2): Invalid bit type (1 or 2 only)
[6000] CONFIG (P6): Address length must be 4
[6034] CONFIG (P6): Starting address length must be 4
[6035] CONFIG (P6): Starting address length must be 5
[6501] CONFIG (P7): Ending address length must be 4
[6502] CONFIG (P7): Ending address length must be 5
[6504] CONFIG (P7): Must be empty
[8019] CONFIG (Remote): Address error
[8031] CONFIG (Remote): BCC error
[8035] CONFIG (Remote): Busy error

[8082] CONFIG (Remote): Data error
[8109] CONFIG (Remote): Device returned unknown error
[8143] CONFIG (Remote): Format error
[8147] CONFIG (Remote): Frame error
[8214] CONFIG (Remote): Missing data error
[8239] CONFIG (Remote): Not supported error
[8258] CONFIG (Remote): Parameter error
[8265] CONFIG (Remote): PLC mode error
[8273] CONFIG (Remote): Procedure error
[8363] CONFIG (Remote): Wack error

Supported devices

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

PANASONIC NAIS MATSUSHITA FP0 PLC Series
PANASONIC NAIS MATSUSHITA FP1 PLC Series
PANASONIC NAIS MATSUSHITA FP2 PLC Series
PANASONIC NAIS MATSUSHITA FP2SH PLC Series
PANASONIC NAIS MATSUSHITA FP3 PLC Series
PANASONIC NAIS MATSUSHITA FP10SH PLC Series
PANASONIC NAIS MATSUSHITA FP-SIGMA PLC Series
PANASONIC NAIS MATSUSHITA FP-X PLC Series