Industrial communication solutions for Windows

XCYBELEC Driver Manual

Cybelec DNC-20 Protocol Driver

Contents

XCYBELEC technical specifications

General information

XCYBELEC driver was designed to connect NCE with Cybelec DNC 20 numeric control devices (and any other DNC equipment supporting the same IBM BISYNC protocol).

It allows you to read and write machine parameters, pieces data or any other information from/to the DNC internal memory.

Requires a free RS-232 port in your PC to get connected to the device's RS-232 port.

DNC CONFIGURATION ---------------------------------

Before attempting to communicate with the NCE, be sure you have the following settings for the DISPLAY MACHINE PARAMETERS menu and the TRANSFER Rs232 menu.

DISPLAY MACHINE PARAMETERS (menu 6, parameter 60)

60 Baud rate: 300/600/1200/2400/4800/9600 Data transmission: 8 Parity: leave empty (means NONE) Stop bits: 1.0 Protocol: 0 (Cybelec standard for PC) BCC: leave empty (means WITH BCC)

Important note: During the developing of this driver, it was discovered that
some DNC devices were still using parity None even when the parity field was set to Odd. Besides, be sure your driver settings are matching the actual baud-rate used by the atached DNCs.

TRANSFER Rs232 (menu 2)

DATA LINK: 1 PC<>DNC: 0 DIR.: 0 CHOICE: leave empty

Important note:
The front-panel key should NOT be left in position number 3 while you are trying to communicate with the DNC device.

Command list

Create File with Machine Parameters from DNC

Description of this command:
Reads the machine parameters information from the DNC memory and stores the returned information in a specified file.

Methods used to run this command:
Analog Input

Number of points accepted by this command:
1

Meaning of the DriverP0 parameter:
Indicates the address of the destination. It must match the station number defined in the DNC unit you want to communicate with. Possible destinations are 32 to 128. Usually, first destination number used is 49, which corresponds to the character '1' in the ASCII table.

Meaning of the DriverP1 parameter:
Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is usually used, which corresponds to the character '0' in the ASCII table.

Meaning of the DriverP2 parameter:
0

Meaning of the DriverP4 parameter:
Indicates how many synchronism characters must preceed every message sent to the DNC to recover access to the line in case of problems. Can range from 0 to 20 and depends on the electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.

Meaning of the DriverP5 parameter:
Indicates how many synchronism characters must be appended at the end of each message sent. Can range from 0 to 20. A value of 0 is commonly used.

Meaning of the DriverP6 parameter:
Indicates the name of the file where the incoming information is to be stored. The name must include the full path specification.

Values that are returned:

Value in PointValue (0) = A counter of how many times a piece was successfully read using this record.

Send File with Machine Parameters to DNC

Description of this command:

Sends a specified file containing a new set of machine parameters to the DNC memory.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Indicates the address of the destination. It must match the station number defined in the DNC unit you want to communicate with. Possible destinations are 32 to 128. Usually, first destination number used is 49, which corresponds to the character '1' in the ASCII table.

Meaning of the DriverP1 parameter:

Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is usually used, which corresponds to the character '0' in the ASCII table.

Meaning of the DriverP2 parameter:

0

Meaning of the DriverP4 parameter:

Indicates how many synchronism characters must preceed every message sent to the DNC to recover access to the line in case of problems. Can range from 0 to 20 and depends on the electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.

Meaning of the DriverP5 parameter:

Indicates how many synchronism characters must be appended at the end of each message sent. Can range from 0 to 20. A value of 0 is commonly used.

Meaning of the DriverP6 parameter:

Indicates the name of the file with the information to be sent. The name must include the full path specification.

Create File with Piece Information from DNC

Description of this command:

Reads information of a piece from the DNC memory and stores it in a specified file.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Indicates the address of the destination. It must match the station number defined in the DNC unit you want to communicate with. Possible destinations are 32 to 128. Usually, first destination number used is 49, which corresponds to the character '1' in the ASCII table.

Meaning of the DriverP1 parameter:

Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is usually used, which corresponds to the character '0' in the ASCII table.

Meaning of the DriverP2 parameter:

1

Meaning of the DriverP3 parameter:

Indicates the piece number to be read.

Meaning of the DriverP4 parameter:

Indicates how many synchronism characters must preceed every message sent to the DNC to recover access to the line in case of problems. Can range from 0 to 20 and depends on the electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.

Meaning of the DriverP5 parameter:

Indicates how many synchronism characters must be appended at the end of each message sent. Can range from 0 to 20. A value of 0 is commonly used.

Meaning of the DriverP6 parameter:

Indicates the name of the file where the incoming information is to be stored. The name must include the full path specification.

Values that are returned:
Value in PointValue (0) = A counter of how many times a piece was successfully read using this record.

Send File with Piece Information to DNC

Description of this command:
Sends a specified file containing a piece description to the DNC memory. The file is assumed to have a valid format where a piece is fully described according to what the DNC unit is expecting.
Methods used to run this command:
Digital Output
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
Indicates the address of the destination. It must match the station number defined in the DNC unit you want to communicate with. Possible destinations are 32 to 128. Usually, first destination number used is 49, which corresponds to the character '1' in the ASCII table.
Meaning of the DriverP1 parameter:
Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is usually used, which corresponds to the character '0' in the ASCII table.
Meaning of the DriverP2 parameter:
1
Meaning of the DriverP4 parameter:
Indicates how many synchronism characters must preceed every message sent to the DNC to recover access to the line in case of problems. Can range from 0 to 20 and depends on the electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.
Meaning of the DriverP5 parameter:
Indicates how many synchronism characters must be appended at the end of each message sent. Can range from 0 to 20. A value of 0 is commonly used.
Meaning of the DriverP6 parameter:
Indicates the name of the file with the information to be sent. The name must include the full path specification.

Create File with Any Information from DNC

Description of this command:
Reads any information of the DNC memory and stores it in a specified file. The file contents are assumed to be manipulated by some user-implemented mechanism.
Methods used to run this command:
Analog Input
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
Indicates the address of the destination. It must match the station number defined in the DNC unit you want to communicate with. Possible destinations are 32 to 128. Usually, first destination number used is 49, which corresponds to the character '1' in the ASCII table.
Meaning of the DriverP1 parameter:
Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is usually used, which corresponds to the character '0' in the ASCII table.
Meaning of the DriverP2 parameter:
2
Meaning of the DriverP4 parameter:
Indicates how many synchronism characters must preceed every message sent to the DNC to recover access to the line in case of problems. Can range from 0 to 20 and depends on the electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.
Meaning of the DriverP5 parameter:
Indicates how many synchronism characters must be appended at the end of each message sent. Can range from 0 to 20. A value of 0 is commonly used.
Meaning of the DriverP6 parameter:
Indicates the name of the file where the incoming information is to be stored plus a string indicating the information to be read as it should be passed to the DNC unit. The name must include the full path specification. The string with the asking command must be separated with a ';' character from the preceeding filename. Example: C:\\PRODUCTS\\PRODUCT.001;T3? will

request the transmission of product page 3 and will store it in a file named
C:\\PRODUCTS\\PRODUCT.001

Values that are returned:
Value in PointValue (0) = A counter of how many times the information was successfully read
using this record.

Send File Contents as Any Information to DNC

Description of this command:
Sends the contents of a specified file as any information to the DNC memory. The file contents are
assumed to be created or manipulated by some user-implemented mechanism. The type of
information being sent is specified in the file itself. Refer to your DNC manual to get information on
what kind of information can be sent and what how it should be formatted.

Methods used to run this command:
Digital Output

Number of points accepted by this command:
1

Meaning of the DriverP0 parameter:
Indicates the address of the destination. It must match the station number defined in the DNC unit
you want to communicate with. Possible destinations are 32 to 128. Usually, first destination
number used is 49, which corresponds to the character '1' in the ASCII table.

Meaning of the DriverP1 parameter:
Indicates the address of the source (the PC). Valid source addresses are 32 to 128. Source 48 is
usually used, which corresponds to the character '0' in the ASCII table.

Meaning of the DriverP2 parameter:
2

Meaning of the DriverP4 parameter:
Indicates how many synchronism characters must preceed every message sent to the DNC to
recover access to the line in case of problems. Can range from 0 to 20 and depends on the
electrical condition of the line (disturbance, long distance, etc.). A value of 3 is commonly used.

Meaning of the DriverP5 parameter:
Indicates how many synchronism characters must be appended at the end of each message sent.
Can range from 0 to 20. A value of 0 is commonly used.

Meaning of the DriverP6 parameter:
Indicates the name of the file with the information to be sent. The name must include the full path
specification.

Read Data from File

Description of this command:
Reads any data available in files containing machine parameters, pieces information, etc., and
places it in consecutive channels belonging to the calling record.

Methods used to run this command:
Analog Input

Number of points accepted by this command:
1-250

Meaning of the DriverP0 parameter:
Indicates the first element to be written within the file. The amount of consecutive elements
affected is taken from the HMITalk1.DriverNumPoints property. Elements in the file are numbered
starting from 0 and each element is supposed to be delimited with commas. The meaning of each
element or piece of information depends on what the affected file is representing. Refer to your
DNC manual for a description of each possible element.

Meaning of the DriverP2 parameter:
3

Meaning of the DriverP6 parameter:
Indicates the name of the file where the incoming information is to be stored. The name must
include the full path specification.

Write Data to File

Description of this command:
Writes new data to files containing machine parameters, pieces information, etc., updating only the selected elements within the file with values coming from consecutive channels belonging to the calling record.

Methods used to run this command:
Analog Output

Number of points accepted by this command:
1-250

Meaning of the DriverP0 parameter:
Indicates the first element to be written within the file. The amount of consecutive elements affected is taken from the HMITalk1.DriverNumPoints property. Elements in the file are numbered starting from 0 and each element is suppossed to be delimited with commas. The meaning of each element or piece of information depends on what the affected file is representing. Refer to your DNC manual for a description of each possible element.

Meaning of the DriverP2 parameter:
3

Meaning of the DriverP6 parameter:
Indicates the name of the file whose information is to be manipulated. The name must include the full path specification.

Important note:
This command requires that the file exists prior to the making of any modification. Do not use this command to create the file from scratch. It is recommended that you create the file using any of the 'Create File with...' commands provided in this driver.

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
[1201] DRIVER (System): Error closing %s
[1202] DRIVER (System): Error creating %s
[1204] DRIVER (System): Error opening %s
[1207] DRIVER (System): Error reading %s
[1208] DRIVER (System): Error seeking end of %s
[1209] DRIVER (System): Error seeking next position in %s
[1210] DRIVER (System): Error writing to %s
[1213] DRIVER (System): Invalid size (cannot be zero)
[1300] PROTOCOL (Timeout): No answer
[1417] PROTOCOL (Format): Many consecutive BCC errors where received
[2001] CONFIG (DataType): Analog outputs are not supported by this driver
[2002] CONFIG (DataType): Digital inputs are not supported by this driver
[3032] CONFIG (P0): Invalid device address (32-127)
[3046] CONFIG (P0): Invalid starting element (must be a positive number)
[3572] CONFIG (P1): Invalid source address (32 to 127)
[4036] CONFIG (P2): Invalid command (0=MP/1=piece/2=general)
[4045] CONFIG (P2): Invalid command (3=Read file)
[5020] CONFIG (P4): Invalid number of header SYNC characters (0 to 20)
[5510] CONFIG (P5): Invalid number of footer DC1 characters (0 to 20)
[8185] CONFIG (Remote): Inquire message was not acknowledged by the DNC

Supported devices

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

CYBELEC DNC-20 Numeric Control Unit