

XCYBELEC Driver Manual

Cybelec DNC-20 Protocol Driver



DNC-20
Numeric Control



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 xcybelec.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 xcybelec.tlk driver is available in plain-C language for additional USD 299 if you own a license of TAS-HMITalk 8.04 or higher.

Refer to the following link to visit the xcybelec driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/28/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

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 attached 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.

2.2. Supported devices

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

CYBELEC DNC-20 Numeric Control Unit

3. Command list

3.1. 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.

Type of data handled by 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 precede 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.

3.2. 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.

Type of data handled by 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 precede 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.

3.3. 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.

Type of data handled by 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 precede 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.

3.4. 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.

Type of data handled by 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 precede 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.

3.5. 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.

Type of data handled by 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 precede 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 preceding 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.

3.6. 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.

Type of data handled by 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 precede 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.

3.7. 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.

Type of data handled by 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.

3.8. 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.

Type of data handled by 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 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 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.

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
- [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

4.2. Keywords list

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

"Control, CYBELEC, DNC20, Numeric, Unit".