



USBCNC

USB Disk Key reader for CNC Controls



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Introduction

This manual is intended to provide a description of the Calmotion USBCNC-UNIVERSAL disk key reader.

Requirements

The USBCNC device will work with a CNC control with a standard DB25 RS-232 serial connection to the control box for the purposes of input/output of CNC data. Typically, the CNC manufacturer refers this as read and punch tape functions. Access to an AC power wall outlet will be required to power the unit.



*This RJ45 connection is to be used only with a Calmotion RS-232 cable. Do not plug anything else into this connection, otherwise, the USBCNC or other equipment will be damaged!

Navigating the Menus

There are three buttons on the panel of the USBCNC device. Two round buttons bracket a square button in the center. The two round buttons are used to control the cursor in order to highlight options from a menu or file selection. The cursor is typically shown bracketing items with > and < symbols. The center button typically selects the options or files highlighted with the > and < symbols.

Main Menu

The following is the main menu displayed upon application of power. The outer round buttons are used to adjust the item to be selected either up or down. The center button is used to select the function that is highlighted with the > < symbols. The descriptions of each function are described later in the manual.

```
Select:>CNC to USB<
        USB to CNC
        DNC
v2.1    SETUP
```

CNC to USB Menu Selection

With this selection, CNC data can be sent directly to the USB disk key. The file name used to transmit CNC data is generated automatically*. Note: If a different name file name is desired, the file will need to be renamed later using a computer.

```
to USB: CNC16.TXT

        Start  Cancel
```

Shown in the above screen display, the file name CNC16.TXT has been automatically generated by the USBCNC control. Press the button under the **Start** option to prepare the USB to receive a file from the CNC. Press the button under the Cancel option to return to the main menu without creating a file.

**More about the Automatic File Name Selection: All files saved to the USB use a file name with the following structure: CNC####.TXT The number will be the next number in the sequence of the files found on the USB disk key. If the largest sequence numbered file name number found is CNC15.TXT, then the next file name created will be CNC16.TXT.*

USB to CNC Menu Selection

With this menu selection, a file on the USB disk key can be sent directly to the CNC. The first files shown on the display are files on the USB disk key in the root directory. (Note: Only files in the root directory are available for selection). Use the buttons on the right and the left to highlight a particular file. Press the center button to select the file desired.

```
CNC15 .TXT  
CNC16 .TXT  
>MOLD .TXT<  
TOOLS .TXT
```

Shown in this example screen above, the MOLD.TXT file is highlighted. Select the center key to prepare the file to be sent. A new screen will appear showing the file to be sent along with a Start and Cancel display. Before pressing the Start button, prepare the CNC control to receive a file. When the CNC is ready to accept a file, press the center button associated with the Start button on the screen. Press the right button to cancel this operation and return to the main menu.

```
to CNC: MOLD.TXT  
  
Start Cancel
```

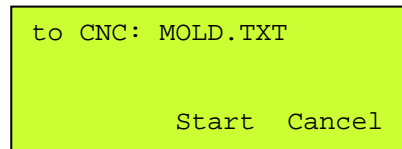
After pressing Start, the CNC should now receive the data file selected. In the example above, file data contained in MOLD.TXT will be sent to the CNC. When the transmission is complete, the display will return to the main menu. On some machines, the operator may have to press cancel to return to the main menu after transmission of a file.

DNC* Menu Selection

With DNC selection, a file on the USB disk key can be sent directly to the CNC while the control is in Automatic mode. This function provides a way to 'run' a program off the USB disk key. Upon selection of this function, a list of the files is shown on the USB disk key root directory. (Note: Only files in the root directory are available for selection). Use the buttons on the right and the left to highlight a particular file. Press the center button to select the file desired.

```
CNC15 .TXT  
CNC16 .TXT  
>MOLD .TXT<  
TOOLS .TXT
```

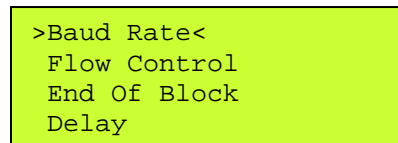
Shown in this example screen shot, the MOLD.TXT file is highlighted and selected. Before pressing the Start button, prepare the CNC for DNC or “drip feed operation”. When the CNC is ready to accept DNC of a file, press the center button that is associated with Start on the screen. Press the right button to cancel this operation and return to the main menu.



**DNC, Direct Numerical Control, may not be available on all CNCs. Check with the machine’s User Manual to determine if this is available on the CNC control.*

Setup Menu Selection

The Setup selection allows settings to be established for the RS-232 serial communication with the CNC. Highlight the parameter option from the list. Press the center button to select the highlighted option.



Baud Rate

Set the Baud Rate to communicate to the CNC with. The baud rate is the number of bits per second the RS-232 serial port will communicate. The available choices are:

- 1200
- 2400
- 4800
- 9600
- 19,200
- 38,400
- 57,600
- 115,200

Data/Parity/Stop

Set the number of Data, Parity and Stop bits used for serial communication. This setting is typically fixed on a CNC. Refer the CNC’s manual for the proper combination. The following choices are available:

7 data, Even parity and 1 stop bit
7 data, Even parity and 2 stop bit
7 data, no parity and 1 stop bit
7 data, no parity and 2 stop bit
8 data, no parity and 1 stop bit
8 data, no parity and 2 stop bit

Flow Control

Flow control sets the streaming method of data to and from the CNC. This is typically a fixed method. Refer to the CNC manual to determine which type is used by the CNC. Hardware flow control uses two RS-232 signals (CTS and RTS) to start and stop data transmission. Software flow control uses XON/XOFF characters to start and stop data transmission. Software flow control is the preferred and easiest method to implement. This method is recommended.

End of Block

End of block sets the format for end of block characters. The most common end of block is the carriage return/ line feed used by most PC computers. The next most common is the Teletype end of block, which is line feed/carriage return. This parameter value will be the end of block that is used when sending data to the CNC. When data is received from a CNC, a carriage return/line feed end of block is always used so the file can be viewed when using the USB disk on a computer.

Delay

Delay set a pause at the end of a block of data. Typically, this is set to 'no delay' to ensure the fastest data communication at the selected baud rate. Choose a delay if the CNC manufacturer requests a delay at the end of a block or if the CNC is losing blocks of data in the program. This feature is typically used for older CNC's with low communication and baud rate capability.

Start of Tx

This sets the character that will be sent prior to sending data in the selected file. The most common character used is the percent, %. Choose a setting as specified in the CNC manual.

End of Tx

This function sets the character that will be sent after sending data in the selected file. The most common character used is the percent, %. Choose the setting as specified by the CNC manual.