

VERSION 3.0

DATA CUT INCORPORATED



*NCTALK* provides communications with CNC controls, paper tape devices and other memory devices and floppy disks. Besides its extreme ease of use in performing data communications, *NCTALK* gives the user the ability to quickly and easily create custom communications protocols for his various machines. Beside the usual baud rate, data bits, parity, etc. parameters, *NCTALK* provides for various handshaking methods and parameters which can in some instances implement successful communications even when a cable is wired incorrectly.

*NCTALK* operates on any IBM<sup>®</sup> compatible PC with minimum 512K of memory running DOS 3.1 or higher (2.11 without utilities). At least one serial port is typically required for RS-232C communications.

### **NEW FEATURES IN VERSION 3**

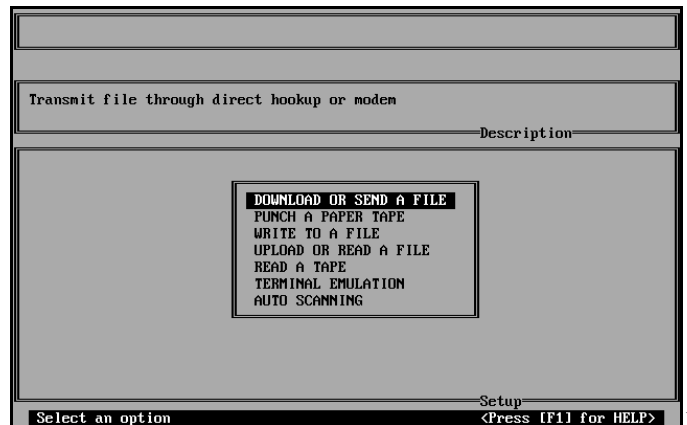
Version 3 of NCTALK adds a great deal of new functionality to NCTALK. New interrupt driven modes of operations provide for much less error prone communications at much greater transmission speeds. XMODEM and KERMIT file transfer methods have been added along with MODEM functions. Terminal emulations has been expanded to include ANSI-BBS, DEC VT52 and DEC VT-100. An AUTO scanning mode has been added which along with a command language feature now allows control of all communications to be performed on the shop floor.

would enter **b:install b** followed by **Enter**.

## For Floppy Disk systems:

*NCTALK* may be run off the installation disk as is.

run.



The different modes are described as follows:

- DOWNLOAD**      -    Download (send) a machine program file to the CNC control or other communications device. File may be sent in STANDARD (non-interrupt) mode, ASCII (interrupt driven)

control or other communications device through the computer keyboard. Emulations include DUMP, ANSI-BBS, DEC VT-52 and DEC VT-100.

**AUTO SCANNING** - Scan the input lines for data, and if data is detected on any line, read in the file automatically.

The various methods of making the menu selection are described if the [F1] key is pressed bringing up the HELP screen.

If DOWNLOAD or UPLOAD is selected, the following menu appears:

**DIRECT** - Non-interrupt driven ASCII file transfer

**ASCII** - Interrupt driven ASCII file transfer

**XMODEM** - XMODEM transfer of all file formats

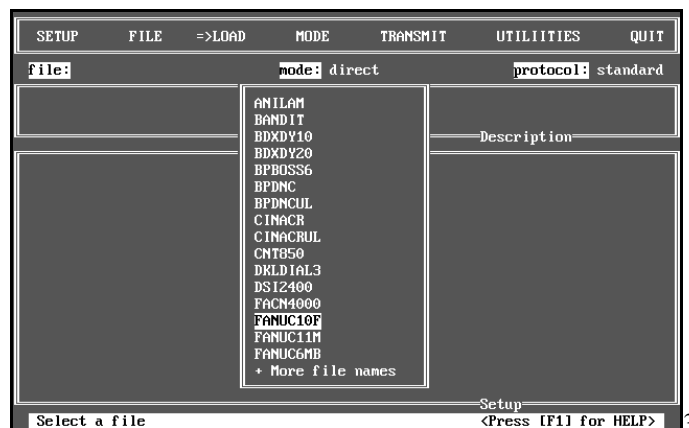
**KERMIT** - KERMIT transfer of all file formats

After selecting the task and mode from the menus, NCTALK will then ask for the name of the file to be transmitted from the computer or stored in the computer based on the selected task.

By pressing [F1], the HELP screen describes how to enter a file name.

A communications protocol may be selected prior to the start of the communications operation. A communications protocol is what tells NCTALK what parameters to use when performing the communications operation. The data parameters must match those of the other device (CNC control).

NCTALK is supplied with many communications protocols already created. You may modify any of these or create new ones from scratch. To load an existing protocol, simply select **LOAD** off of the main menu. The program will then ask for the name of the protocol and as the HELP screen will tell you, you may create a menu of the existing protocols by pressing [F5], thereby displaying a screen similar to this:



## SETUP for PUNCH

SETUP for WRITE

SETUP for RECEIVE

SETUP for READ

SETUP for TERMINAL

The **UTILITIES** main menu selection allows you to EDIT and RESEQUENCE the block numbering of a machine program file which is to be transmitted or has been received. These features allow *NCTALK* to function as a manual programming system, or to use its powerful screen editor to edit the tape file.

**AUTO ANSWER ON** - Turns auto answer on

**AUTO ANSWER OFF**- Turns auto answer off

The DOS operating system may also be accessed directly from the UTILITIES menu.  
After doing this, *NCTALK* is returned to by typing *EXIT*.



To start of marked text	Alt Y
To bottom edge of screen	Ctrl Pgdn
To bottom of file	Ctrl End
To end of line	End
To end of marked area	Alt E
To top edge of screen	Ctrl Pgup
To top of file	Ctrl Home

### ERROR CORRECTION COMMANDS

Backspace delete  
 Confirm change  
 Delete current character  
 Delete entire line  
 Delete marked text  
 Erase current line  
 Erase to start of line  
 Erase to end of line  
 Insert line  
 Insert character toggle

### EDITOR COMMAND

Backspace  
 Shift F5  
 Delete  
 Ctrl Backspace  
 Alt D  
 F5  
 Shift F6  
 F6  
 F9  
 Insert

Rubout	Backspace
Split line	Alt S
Undo (restore line)	Shift F4

## FILE HANDLING COMMANDS

<u>FUNCTION</u>	<u>EDITOR COMMAND</u>
Command toggle	Escape
Directory	Shift F9
DOS prompt	Ctrl D
Edit file in directory	Shift F10
Execute command	Ctrl enter
File	F3
Help	F1
Next window	Ctrl W
Page down	Pgdn
Page up	Pgup
Quit	F4
Save	F2
Split screen	Ctrl S
Switch files	F8

## FUNCTION

Copy marked text  
Mark a character  
Mark a line  
Mark a text block  
Move marked text  
Overlay text block  
Repeat current line  
Unmark  
Change/pat1/pat2/  
Rename

## EDITOR COMMAND

Alt Z  
Alt C  
Alt L  
Alt B  
Alt M  
Alt O  
Ctrl R  
Alt U  
c\xxxx\yyyy\  
rename x.x y.y

transmitted/received:

serial ports:      COM1, COM2, COM3 or COM4  
(COM3 & COM4 will not function in STANDARD mode)

parallel ports:    LPT1, LPT2 or LPT3  
(LPTn only functions in STANDARD mode)

- DELAY** - Select the number of milliseconds to delay between TRANSMITting or PUNCHing each line of the file. The range is from 0-5 seconds in increments of 10 milliseconds (.01 seconds).
- CPS** - Select maximum transmission speed in characters per second. If this speed is lower than the speed set by the BAUD rate parameter, the output will be padded with nulls in order to slow down to this speed.
- HANDSHAKE>** - Select the type of communications handshaking (XON/XOFF, hardware or both or none). If hardware handshaking or both is selected, a sub-menu prompts you to select the pin number(s) to be used when performing the handshaking:
- DSR (PIN 6)** - Use data set ready handshaking.
- CTS (PIN 5)** - Use clear to send handshaking.
- BOTH** - Use both data set ready and clear to send handshaking.
- ECHO** - Echo data on the screen as it is transmitted/received? YES or NO
- PROMPT >** - Select type of prompt used to enable data transmission:
- NONE** - Immediate output (input) upon selecting TRANSMIT, PUNCH or WRITE (RECEIVE or READ) from the menu.

- LEADER** - Select number of feet of blank punched tape is to be output at the beginning and end of the tape (NONE, 1 ft., 2 ft., etc.).
- REPEAT** - When set to YES, upon completion of a downloaded file, the program will wait for a resume transmission signal (XON or hardware handshake) and then will resend the file. This mode is to have the computer continuously download the control, for example, when the entire program will not fit in control memory and must be sent continuously in sections.
- STRINGS** - Select whether or not the machine tool requires special codes to initiate downloading or uploading from the computer (NO or YES). If special codes are required, selecting YES brings up the initial and final command lines which allow you to input the special codes.
- SAVE** - Save the current parameters either as the STANDARD protocol, with the same name as the post processor for the particular machine tool (in which case the protocol is automatically loaded when the post processor is used) or do not save the current parameters, but use them in this session only.

PUNCHing each line of the file. The range is from 0-5 seconds in increments of 10 milliseconds (.01 seconds).

**ECHO** - Echo data on the screen as it is transmitted/received? YES or NO

**PROMPT >** - Select type of prompt used to enable data transmission:

**NONE** - Immediate output (input) upon selecting TRANSMIT, PUNCH or WRITE (RECEIVE or READ) from the menu.

**XON** - Wait for an XON prompt to be received before transmitting data (transmission may be forced by typing CTRL Q). If receiving data, send XON until data is received.

**CR** - Wait for an XON prompt to be received before transmitting data (transmission may be forced by typing CTRL Q). If receiving data, send XON until data is received.

**CODE** - Select the format (EIA or ASCII) for data transmission/ reception when punching or reading tape.)

**TIMEOUT** - Automatically close file if no data is received (either in RECEIVE or READ modes) in 'n' seconds (DISABLED or ENABLED).





If *PROTOCOL.SYS* consisted of the above text, the protocols *port1.cpl*, *port2.cpl*, *port3.cpl* and *port4.cpl* would automatically be loaded by *NCTALK*. In this example, *port1.cpl* would have *COM1* as the selected port, *port2.cpl* would have *COM2* and so on.

One RECEIVE is selected, *NCTALK* scans all setup ports and as soon as data is detected on any port, it locks onto the port and reads the entire file in. The file name assigned is *Rn\_xxxxx*, where *n* is the port number (1-4) and *xxxxx* is a sequence number which is bumped each time a new file is read in.

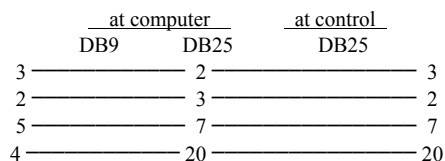
After the file is completely read in, *NCTALK* reads the file for commands. Commands begin with the characters *#@* followed by any of the following:

- |                          |   |
|--------------------------|---|
| <b>DONE</b>              | - Immediately terminate command interpretation                          |
| <b>WAIT <i>s</i></b>     | - Pause for <i>s</i> seconds. If <i>s</i> = 0, wait for line to go high |
| <b>LINE HIGH</b>         | - Wait for line to go high  |
| <b>LINE LOW</b>          | - Wait for line to go low   |
| <b>LOAD <i>fname</i></b> | - Load the file <i>fname</i> from the computer to the control           |
| <b>FILE <i>fname</i></b> | - Rename the file sent to the computer to <i>fname</i>                  |
| <b>PORT <i>n</i></b>     | - Directs LOAD output to this port ( <i>n</i> = 1, 2, 3, 4)             |

NAME	DESCRIPTION	ABBRV	DB25	DB9
AA	- Protective ground	---	---	1 ---
BA	- Transmitted data	--- TX	---	2 --- 3
BB	- Received data	--- RX	---	3 --- 2
CA	- Request to send	--- RTS	---	4 --- 7
CB	- Clear to send	--- CTS	---	5 --- 8
CC	- Data set ready	--- DSR	---	6 --- 6
AB	- Signal ground	--- SG	---	7 --- 5
CF	- Data signal detector	--- CF	---	8 --- 1
CD	- Data terminal ready	--- DTR	---	20 --- 4
CE	- Ring indicator	--- RI	---	22 --- 9

In normal communications between the machine controller and the computer, the 'CE' (ring indicator) is not used.

In some cases, in order to support software (XON/XOFF) handshaking at the machine controller, pins 'CA' (request to send) and 'CB' (clear to send) are jumpered together. In addition, pins 'CC' (data set ready), 'CF' (data signal detector) and 'CD' (data terminal ready) are jumpered together.



Some controls require pins 4-5 and/or 6-8-20 to be jumpered for XON/XOFF handshaking

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Machine Control parameters:

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NOTES:

This configuration is commonly found on late model controllers. This should only be used as a reference. Refer to the manuals and/or dealer for more information concerning your machine and control.

2	3	2
5	7	7
4	20	20

Jump pins 4-5 and 6-8-20 at the plotter

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#### Plotter Switch Settings:

Baud B1	=	0
B2	=	1
B3	=	0
B4	=	1
A4-A3	=	optional
MET-US	=	US
D-Y	=	D
Parity S1	=	0
S2	=	0

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#### NOTES:

The communication parameters are normally set during installation of the system. See Configuring The System in the Installation section of the manual.

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Digitizer switch settings:

Switch A	Switch B	Switch C
1 = ON	1 = OFF	1 = OFF
2 = OFF	2 = ON	2 = ON
3 = ON	3 = OFF	3 = OFF
4 = ON	4 = ON	4 = OFF
5 = ON	5 = OFF	5 = OFF
6 = ON	6 = OFF	6 = OFF
7 = ON	7 = ON	7 = ON
8 = OFF	8 = ON	8 = OFF

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NOTES:

The communication parameters are normally set during installation of the system. See Configuring The System in the Installation section of the manual.

This tablet must be initialized prior to use. To initialize tablet for use, position the tablet crosshair over 'P4' and press the yellow button on the digitizer's mouse.

	DB9	DB25	DB25	
3	————	2	————	3
2	————	3	————	2
5	————	7	————	7
4	————	20	————	20

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Digitizer switch settings:

<u>Switch A</u>	<u>Switch B</u>	<u>Switch C</u>
1 = ON	1 = ON	1 = ON
2 = OFF	2 = ON	2 = OFF
3 = ON	3 = ON	3 = OFF
4 = ON	4 = ON	4 = OFF
5 = OFF	5 = OFF	
6 = ON	6 = OFF	
7 = OFF	7 = ON	
8 = ON	8 = ON	

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NOTES:

The communication parameters are normally set during installation of the system. See Configuring The System in the Installation section of the manual.

3	DB7	2	DB23	3
2		3		2
5		7		7
4		20		20

Jump 5-6-8-20 at the punch/reader for XON/XOFF handshaking.

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Device settings:

The DSI punch/readers contain internal and external switches for selecting the configuration. Refer to your manual for the location and setting of these switches.

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NOTES:

3	DB2	2	DB2S	3
2		3		2
5		7		7
4		20		20

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### Device settings:

The GNT punch/readers contain internal and external switches for selecting the configuration. Refer to your manual for the location and setting of these switches.

Dip switches 1, 2 and 8 should be set to OFF (located on the bottom of the tape punch).

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### NOTES:



3	2	3
2	3	2
6	6	5
5	7	7

Jump 5-6-8-20 at the box for XON/XOFF handshaking.

GRECO box parameters:

Channel #0 protocol selection: 47# n#

Channel #1 protocol selection: 48# n#

Where:

- n = 0 No protocol
- n = 1 XON/XOFF handshaking (recommended)
- n = 3 Bridgeport DNC Loader
- n = 4 Bridgeport Easy-Link
- n = 6 Heidenhain controls
- n = 7 serial (RS-232) Punch/Readers
- n = 10 Fanuc controls

NOTES:

To READ in a file, enter 1# and the file name.

To TRANSMIT a file, enter 2# and the file number.

To list the directory, enter 5# and step through by striking the # key.

3	2	3
2	3	2
5	7	7

Jump pins 4-5 and 6-8-20 at the machine control for NO handshaking

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Machine Control parameters:

Set the following communications parameters at the machine:

AUX 2772 - EVEN parity  
AUX 2782 - 300 baud  
AUX 2790 - NO handshaking

Set the following to allow the control to transmit or receive data:

AUX 2700 - output data (to computer)  
AUX 2701 - read in data (from computer)

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NOTES:

	at computer		at control
	DB9	DB25	DB25
3	_____	2	_____ 3
2	_____	3	_____ 2
5	_____	7	_____ 7

Jump pins 5-8-20, 10-16-23 and 15-17-24 at the machine control

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Machine Control parameters:

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NOTES:

The specified baud rate is for use with the O2 POP BOARD. Other baud rates can be used if the O5 POP board is installed.

<u>at computer</u>		<u>at control</u>	
DB9	DB25	DB25	
3	2	6	
2	3	8	
5	7	7	

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Machine Control parameters:

The baud rate is selectable on the ERS card. Refer to the Bridgeport Technical Bulletin supplied with the card.

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NOTES:

If a transmitted program does not load into the control, check the program and remove any percent (%) signs at the beginning or an E or dollar (\$) sign at the end.

EOF READ output string: ^Z

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CABLE parameters:

Refer to Bridgeport Technical Bulletins supplied with the DNC Loader for pin connections.

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Machine Control parameters:

Refer to Bridgeport Technical Bulletins supplied with the DNC Loader for instructions in setting up and usage.

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NOTES:

Nulls are required at every EOB when transmitting to the device. The correct delay times are as follows:

- 1200 baud - 4 nulls required - set delay to 400
- 2400 baud - 8 nulls required - set delay to 800
- 4800 baud - 12 nulls required - set delay to 1200
- 9600 baud - 16 nulls required - set delay to 1600

	<u>at computer</u>	<u>at control</u>
	DB9	DB25
3	—————	2 ————— 3
2	—————	3 ————— 2
7	—————	4 ————— 5
8	—————	5 ————— 4
5	—————	7 ————— 7
1	—————	8 ————— 8

Jump 6-8-20 at the control and DB25 connector

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Machine Control parameters:

Device	=	LINE	Protocol	=	1
Data rate	=	9600 LDR count		=	120
Data bits	=	8	Add Rtn	=	NO
Stop bits	=	1	Form Feed	=	NO
Parity	=	NONE			

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NOTES:

This protocol is for downloading from the machine control to the Datacut GRAFX II system. See Cincinnati Mills - (UPLOAD) for the appropriate uploading parameters.

3	2	3
2	3	2
7	4	5
8	5	4
5	7	7
1	8	8

Jump 6-8-20 at the control and DB25 connector

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Machine Control parameters:

Device	=	LINE	Protocol	=	1
Data rate	=	9600 LDR count		=	0
Data bits	=	7	Add Rtrn	=	NO
Stop bits	=	2	Form Feed	=	NO
Parity	=	NONE			

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NOTES:

This protocol is for uploading from the machine control to the Datacut GRAFX II system.  
See Cincinnati Mills - (DOWNLOAD) for the appropriate downloading parameters.

3	DB7	2	DB25	3
2		3		2
5		7		7

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Machine Control parameters:

Use mode select and set dial to 14 for output or 15 for input.

Press V or T for RS-232 mode.

Press 6 for 2400 baud.

Format 601 02 mode 16.

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NOTES:



	<u>at computer</u>		<u>at control</u>	
	DB9		DB25	
3	_____	2	_____	3
2	_____	3	_____	2
5	_____	7	_____	7

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Machine Control parameters:

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NOTES:

	at computer		at control
	DB9	DB25	DB25
3	_____	2	_____
2	_____	3	_____
5	_____	7	_____

Jump 4-5 and 6-8-20 at the control for XON/XOFF handshaking.

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Machine Control parameters:

set parameter 311 to 10110111 for 1200 baud  
 set parameter 312 to 10110111 for 1200 baud  
 set parameter 340 to 2 for the input device  
 set parameter 341 to 2 for the output device  
 select SET and set parity to EVEN, data format to ISO (ASCII)

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NOTES:

To read in a program, enter the EDIT mode. Then got to PROGRAM mode and enter the program number. Press the PUNCH key to read in the program.

<u>at computer</u>		<u>at control</u>	
DB9	DB25	DB25	
3	2	3	3
2	3	2	2
5	7	7	7

Jump 4-5 and 6-8-20 at the control for XON/XOFF handshaking.

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Machine Control parameters:

set parameter 8000 (PWE) in SETTING mode to 1

set parameter 0000 to 0001010

set parameter 5110 to 1 for the device type

set parameter 5111 to 2 for the stop bits

set parameter 5112 to 9 for 2400 baud

in the HANDY settings: set PUNCH CODE to 0 (ISO/ASCII)

set INPUT DEVICE to 1

set OUTPUT device to 1

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NOTES:

<u>at computer</u>		<u>at control</u>	
DB9	DB25	DB25	
3	2	3	3
2	3	2	2
5	7	7	7

Jump 4-5 and 6-8-20 at the control for handshaking.

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Machine Control parameters:

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NOTES:

	at computer		at control
	DB9	DB25	DB25
3	—————	2	————— 3
2	—————	3	————— 2
5	—————	7	————— 7

Jump 4-5 at the control for XON/XOFF handshaking.

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Machine Control parameters:

set THUMBWHEEL inside tape reader to 1 to modify settings  
 set parameter 6002, bit #7 for ISO (ASCII)  
 set parameter 6003 to 0001001  
 set parameter 6022, bits #0 and #1 to 1 for ISO (ASCII)  
 set parameter 6026 to 00111000 for 2400 baud  
 set parameter 6028 to 00111000 for 2400 baud  
 reset THUMBWHEEL to 0

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NOTES: