

IB-11B035

DELTAMAX MOTION CONTROL SYSTEMS

MAY 1999

# CTC-DELTA

# SOFTWARE DRIVER

# INSTRUCTION BOOK

INDUSTRIAL INDEXING SYSTEMS, Inc.

Revision - 0  
Approved By:

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## 1.0 PURPOSE

The CTC-DELTA Software Driver links the IIS DeltaMax motion controller to Computer Technology Corporation's (CTC) Interact Software version 5.x. This link allows the Interact software, which runs on an IBM PC or CTC Powerstation, to communicate directly with the DeltaMax motion controllers using the RS232 port on both devices.

The CTC-DELTA Software Driver transfers 1 bit FLAGS and 32 bit INTEGERS from the Interact Software screen tools to and from the DeltaMax main memory. In this configuration the PC running the Interact Software is the master controlling the transfer.

The actual transfer details are transparent to the user of Interact Software and DeltaMax Macroprogramming Language.

## 2.0 IMPLEMENTATION

The CTC-DELTA Software Driver runs in conjunction with the User Device Interface (UDI) software module of the CTC Interact Software. The CTC-DELTA Software Driver is a terminate stay resident (TSR) communications driver that interfaces to the Interact UDI via shared memory. The operating system environment is MSDOS.

The CTC-DELTA Software Driver takes over the user specified communications port (COM1 or COM2) using interrupt driven routines. The user specified communications port and user specified software interrupt cannot be shared with other software while the CTC-DELTA Software Driver is running.

The driver is setup to complete 16 communication transactions per second using the standard DELTA packet protocol at 19200 BAUD.

## 3.0 STARTING THE CTC/DELTA DRIVER

The CTC-DELTA Software Driver must be started from the MSDOS prompt before the Interact Software is started. A small batch file can be used to start both software modules with the proper parameters passed to the CTC-DELTA Software Driver. This batch file can be started from the AUTOEXEC.BAT file for automatic startup.

The CTC-DELTA Software Driver should be stored on the root directory of the PC's hard drive.

### To start:

**c:>deltadv YY ZZ**     *where YY is the interrupt number in HEX (60-67)*  
                          *where ZZ+ is either COM1 or COM2*

*Driver will report "SUCCESSFULLY INSTALLED" or an error.*

### **\*\* NOTE \*\***

**OTHER DEVICE DRIVERS MAY USE INTERRUPT NUMBERS IN THE SAME 60-67 RANGE. INTERRUPT CONFLICTS CAN BE SOLVED BY CHOOSING A DIFFERENT INTERRUPT NUMBER FOR THE CTC-DELTA DRIVER.**

## 4.0 CONFIGURING THE CTC-DELTA DRIVER

Execute the following list of commands within Interact to configure the CTC-DELTA driver into a new application. Interact allows editing of all the driver parameters once the driver is installed. Characters shown in { } are the actual letters to type followed by ENTER. Do not type the { }.

- **Start Interact**
- **Pull down the File Menu and select either Open Application or New Application.** If a new application is selected enter the desired application name.
- **In the application browser double click on drivers used.**
- **From the drivers available list select User Device Interface.**
- **Click Add.**
- **In the name box type Delta.** This will be the name that is now used to reference the driver.
- **Click OK.**
- **In the application browser window double click on the Delta driver.**
- **Select the path and name deltadv.exe.**
- **From the User TSR tab input the TSR interrupt number.** This value has to match the value used to start the deltadv.exe from DOS.
- **From the Read and Write Block tabs Input the desired memory locations for the read and write blocks.** Because of the 32 bit values for the integers memory locations should have an address every 4. 0, 4, 8, 12 are examples of this. The flags are directly related to the number used in the macroprogram. Write values are values that are written to the DeltaMax controller. While read values are read from the controller.
- **Add station 0 to the station list in the Station List tab.** This value is used when addressing the memory or flag location. Delta\0:memory24 where the 0 represents the station number.
- **From the Write Buffering tab the wait for writes should not be selected and the write buffer size should be 10.**

This completes the initial configuration of the CTC-DELTA driver. The CTC-DELTA driver reference with the Interact software tools will be DELTA. The read, write, and station list must be configured for interact to validate reference when inputting tools.

## 5.0 USING THE CTC-DELTA DRIVER

The CTC-DELTA driver has two configurations when used in the Interact environment.

### 5.1 DELTA\0:MEMORYzzzz

This form indicates a 32 bit integer transfer to or from the DeltaMax memory space at address **zzzz**. This form is typically used for Interact analog tools. The 0 represents the station number.

The memory addressing scheme in the DeltaMax is byte (8 bit) oriented so the address for a 32 bit integer is every 4 bytes, i.e. **zzzz** = 0,4,8,12,16 etc. It is highly recommended that the DeltaMax memory space be organized to have all integer values that are assigned to be transferred to the Interact software be first in the memory space followed by the general use integers. This allows the user to add Interact integers without bumping the address of the previously assigned Interact integers.

For example:

! start of integers that get transferred to Interact software  
SPEED            integer ! memory address 0 (**zzzz** = 0)

DISTANCE integer ! memory address 4 (**zzzz** = 4)  
 RATE integer ! memory address 8 (**zzzz** = 8)  
 ! additional Interact integers get inserted at the end of this list  
 ! end of integers that get transferred to Interact

! beginning of integers NOT transferred to Interact  
 ..... integer  
 ..... integer

## 5.2 DELTA\0:FLAGzzz

This form indicates a 1 bit FLAG transfer to or from the DeltaMax flag or I/O space at FLAG number **zzz**. This form is typically used for Interact bit tools such as indicators and push buttons.

The flag number **zzz** is specified within the DeltaMax as an equate.

For example:

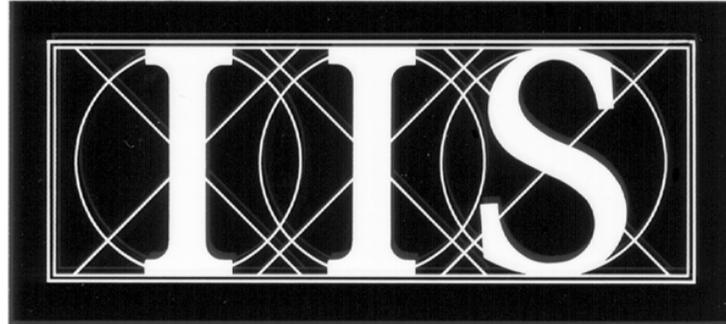
```
! start of Interact flags
STOP      equ          255    !flag number 255 (zzz = 255)
RUN       equ          254    !flag number 254 (zzz = 254)
! end of Interact flags
```

## 6.0 ERROR CODES

The CTC-DELTA Driver reports error codes to the Interact Application Manager. There are two types of errors reported by Interact. DRIVER errors are part of the Interact UDI software module (refer to Interact manual) and DEVICE errors, which in this case is the DeltaMax. The DEVICE error codes are as follows:

Error	Description
1H (0)	Busy with write operation, new write request ignored
2H (0)	Busy with read operation, new read request ignored
3H (0)	Receive buffer over run
4H (0)	Receive framing error
5H (0)	Receive break detect
6H (0)	Transmit buffer empty
7H (0)	Not used
8H (0)	Bad ACK/NAK response to a write request
9H (0)	Bad ACK/NAK response to a read request
AH (0)	Receive bad checksum
BH (0)	Receive header corrupt
CH (0)	Time out

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PRINTED IN USA  
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