

IB-11B025

MOTION CONTROL SYSTEMS, MSC SERIES

MARCH 2000

CTC-MSC SOFTWARE DRIVER

INSTRUCTION BOOK

INDUSTRIAL INDEXING SYSTEMS, Inc.

Revision - B
Approved By:

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1.0 PURPOSE

The CTC-MSC Software Driver links the IIS MSC Family of motion controllers to Computer Technology Corporation's (CTC) Interact Software version 4.x and version 5.x. This link allows the Interact software, which runs on an IBM PC or CTC Powerstation, to communicate directly with the MSC Family of motion controllers using the RS232 port on both devices.

The CTC-MSC Software Driver transfers 1 bit FLAGS and 32 bit INTEGERS from the Interact Software screen tools to and from the MSC 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 MSC Macroprogramming Language.

2.0 IMPLEMENTATION

The CTC-MSC Software Driver runs in conjunction with the User Device Interface (UDI) software module of the CTC Interact Software. The CTC-MSC 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-MSC 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-MSC Software Driver is running.

The driver is setup to complete 8 communication transactions per second using the standard MSC packet protocol at 9600 BAUD.

3.0 STARTING THE CTC/MSC DRIVER

The CTC-MSC 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-MSC Software Driver. This batch file can be started from the AUTOEXEC.BAT file for automatic startup.

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

To start:

```
c:>drvXXX YY ZZZZ BBBB  where XXX is driver revision (i.e. 107)  
                        where YY is the interrupt number in HEX (60-67)  
                        where ZZZZ is either COM1 or COM2  
                        where BBBB is optional BAUD rate of 19200 or 38400
```

Driver will report "SUCCESSFULLY INSTALLED" or an error.

```
c:>\interact\am\am  starts Interact software
```

3.0 STARTING THE CTC/MSC DRIVER (cont'd)

Starting with CTC-MSC Software Driver REV 1.07, an optional BAUD rate parameter has been added to the command line startup of the driver. If a BAUD rate parameter is not present, the driver defaults to 9600 BAUD. The optional BAUD rate parameter has two valid values: 19200 & 38400. If the 19200 or 38400 BAUD options are chosen, the MSC-250 or MSC-850/32 must be configured using the MODE(SW1) to match the driver BAUD rate.

**** 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-MSC DRIVER.

4.0 CONFIGURING THE CTC-MSC DRIVER

Execute the following list of commands within Interact to configure the CTC-MSC 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 { }.

c:>\interact\am\am	<i>starts the Interact software</i>
SELECT APPL.	
MAKE NEW APL.	
Type in {APPL. NAME}	Name for Interact application program
APPL. SETTINGS	
DRIVERS USED	List shows all drivers available
RENAME DRIVER	Rename driver for convenience, not required
UDI	
Type {MSC}	Rename driver to be called MSC

This completes the initial configuration of the CTC-MSC driver. The CTC-MSC driver reference with the Interact software tools will be MSC.

5.0 USING THE CTC-MSC DRIVER

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

MSC0:MEMORYzzzz This form indicates a 32-bit integer transfer to or from the MSC memory space at address **zzzz**. This form is typically used for Interact analog tools.

The memory addressing scheme in the MSC 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 MSC 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.

5.0 USING THE CTC-MSC DRIVER (cont'd)

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
```

MSC0:FLAGzzz This form indicates a 1 bit FLAG transfer to or from the MSC 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 MSC 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
```

5.2 In addition to using the above driver configurations when specifying Interact Software tools the CTC-MSC Driver requires that all memory and flag references be listed in the driver's read and write block lists. To access these lists from the main menu:

```
DRIVER SETUP
EDIT DATA BLOCKS
EDIT READ BLOCKS
  Enter all read references, memory & flags
  ACCEPT
EDIT WRITE BLOCKS
  Enter all write references, memory & flags
  ACCEPT
```

**** NOTE ****

THE DEFAULT SETTING FOR STATION NUMBER IS 0.

6.0 ERROR CODES

The CTC-MSC 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 MSC. 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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