

APPENDIX

# 1

**REFERENCE**



## ATYPE

#	Description
0	No axis daughter board fitted *
1	Stepper Axis *
2	Servo Axis *
3	Encoder Reference Axis *
4	Stepper with internal feedback into encoder registers *
5	Resolver Axis
6	Voltage output
7	Absolute SSI Servo
8	CAN daughter board
9	Remote CAN axis
10	PSWITCH Axis
11	Remote DriveLink axis
12	Reserved
13	Embedded axis
14	Encoder Output
15	Reserved
16	Remote SERCOS speed axis
17	Remote SERCOS position axis
18	Remote CanOpen position axis *
19	Remote CanOpen speed axis *
20	Reserved
21	Remote User Specific CAN axis

\* Only these ATYPE's are currently relevant on the PCI 208 *Motion Coordinator*

## COMMSTYPE

#	Description
26	P184 4 Axis DAC Module in expansion slot
27	P185 8 Axis DAC Module in expansion slot
24	SERCOS Module in expansion slot

## AXISSTATUS / ERRORMASK

Bit	Description:	Value:
0	Unused	1
1	Following error warning range	2
2	Communications error to remote drive	4
3	Remote drive error	8
4	In forward limit	16
5	In reverse limit	32
6	Datuming	64
7	Feedhold	128
8	Following error exceeds limit	256
9	In forward software limit	512
10	In reverse software limit	1024
11	Cancelling move	2048
12	Encoder power supply overload	4096
13	Set on SSI axis after initialisation	8192

## CONTROL

Controller	CONTROL system parameter
<i>Motion Coordinator MC202</i>	202
<i>Motion Coordinator Euro205</i>	205
<i>Motion Coordinator MC206</i>	206
<i>Motion Coordinator PCI 208</i>	208
<i>Motion Coordinator MC216</i>	216
<i>Motion Coordinator MC224</i>	224

## Communications Ports

Chan	Device:-
0	Port 0 - Motion Perfect / Command Line
1	Unused on PCI 208
2	Unused on PCI 208
3	Unused on PCI 208
4	Unused on PCI 208
5	<i>Motion Perfect</i> user channel
6	<i>Motion Perfect</i> user channel
7	<i>Motion Perfect</i> user channel
8	Used for <i>Motion Perfect</i> internal operations
9	Used for <i>Motion Perfect</i> internal operations
10	Unused on PCI 208

## MTYPE

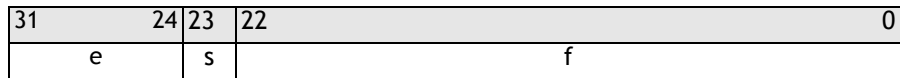
MTYPE	Move Type
0	Idle (No move)
1	MOVE
2	MOVEABS
3	MHELICAL
4	MOVECIRC
5	MOVEMODIFY
10	FORWARD
11	REVERSE
12	DATUMING
13	CAM
14	Forward Jog
15	Reverse Jog
20	CAMBOX
21	CONNECT
22	MOVELINK

## Data Formats and Floating-Point Operations

The TMS320C3x processor used by the *Motion Coordinator* features several different data types. In the *Motion Coordinator* we use two main formats. The following descriptions are taken directly from the TI documentation.

### Single-Precision Floating Point Format

In the single precision format, the floating-point number is represented by an 8-bit exponent field (e) and a twos complement 24-bit mantissa field (man) with and implied significant non-sign bit.



Operations are performed with an implied binary point between bits 23 and 22. When the implied most significant non-sign bit is made explicit, it is located to the immediate left of the binary point.

The floating point number 'x' is given by:

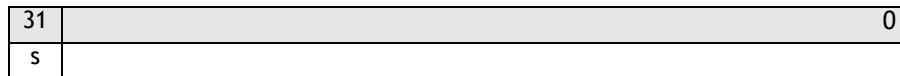
$$\begin{aligned}
 x = & \quad 01.f \times 2^e & \quad \text{if } s=0 \\
 & \quad 10.f \times 2^e & \quad \text{if } s=1 \\
 & \quad 0 & \quad \text{if } e=-128
 \end{aligned}$$

The following examples illustrate the range and precision if the single-precision floating-point format:

Most Positive:	$x = (2 - 2^{-23}) \times 2^{127} = 3.4028234 \times 10^{38}$
Least Positive:	$x = 1 \times 2^{-127} = 5.8774717 \times 10^{-39}$
Least Negative:	$x = (-1 - 2^{-23}) \times 2^{-127} = -5.8774724 \times 10^{-39}$
Most Negative:	$x = -2 \times 2^{127} = -3.4028236 \times 10^{38}$

### Single-Precision Integer Format

In the single precision integer format, the integer is represented in twos complement notation.



The range of an integer x, represented in the single-precision integer format, is:

$$-2^{31} \leq x \leq 2^{31} - 1$$

## Product Codes

Processors	
P180	PCI 208

Options -	
P181	Breakout board
P187	2.5 m Breakout cable
P182	Additional stepper axis
P183	Additional servo axis
P315	Can 16 I/O expansion module
P325	Can analog 8 input module

Plug-in Option Modules	
P184	4 Axis DAC module
P185	8 Axis DAC module