TRIO
MOTION|TECHNOLOGY

Doc No.:	**AN-243**
Version:	**1.0**
Date:	**26 March 2009**
Subject:	**Registration on the MC464**

APPLICATION NOTE

1. Registration on MC464

The registration on the MC464 is more flexible than on previous controllers. Digital axis can have up to 8 registration events assigned and Flex Axis up to 2 (8 in the future for the first axis). The following chapters list the commands required, more informationon the existing commands can be found in the Trio Technical Reference Manual v6.7 and newer.

To arm registration with a digital axis you need to use the REGIST(64 +) or REGIST(32+).

To arm registration with a Flex Axis you need to assign the registration channel (or use defaults) and arm using the REGIST(1) to REGIST(17 options).

1.1. Commands

1.1.1. REGIST(mode) [1]

1 - Absolute position when Z Mark rising edge

2 - Absolute position when Z Mark falling edge

3 - Absolute position when R Input rising edge

4 - Absolute position when R Input falling edge

5 - Reserved

6 - R Input rising into REG_POS & Z Mark rising into REG_POSB.

7 - R Input rising into REG_POS & Z Mark falling into REG_POSB.

8 - R Input falling into REG_POS & Z Mark rising into REG_POSB

9 - R Input falling into REG_POS & Z Mark falling into REG_POSB

10 - RA Input rising into REG_POS & RB1 Input rising into REG_POSB.

11 - RA Input rising into REG_POS & RB Input falling into REG_POSB.

12 - RA Input falling into REG_POS & RB Input rising into REG_POSB.

13 - RA Input falling into REG_POS & RB Input falling into REG_POSB

14 - Absolute position when ZB Mark rising edge

15 - Absolute position when ZB Mark falling edge

16 - Absolute position when RB Input rising edge

17 - Absolute position when RB Input falling edge

32 +(channel) Rising edge

64 +(channel) Falling edge

+128 10usec filter

+256 Windowing active

+768 Exclusive windowing active

1.1.2. REG_INPUTS

Used to assign the registration inputs to an axis on the P874/ P879

Bits	Function
3:0	Input select for registration channel A 0000 = Flex Axis Input 0 0001 = Flex Axis Input 1 0010 = Flex Axis Input 2 0011 = Flex Axis Input 3 0100 = Flex Axis Input 4 0101 = Flex Axis Input 5 0110 = Flex Axis Input 6 0111 = Flex Axis Input 7
7:4	Input select for registration channel B 0000 = Flex Axis Input 0 0001 = Flex Axis Input 1 0010 = Flex Axis Input 2 0011 = Flex Axis Input 3 0100 = Flex Axis Input 4 0101 = Flex Axis Input 5 0110 = Flex Axis Input 6 0111 = Flex Axis Input 7

The default channels assignment is set out as below.

Axis	Channel A	Channel B
0	0	4
1	1	5
2	2	6
3	3	7
4	4	0
5	5	1
6	6	2
7	7	3

1.1.3. MARK

True when registration event occurs[1]

1.1.4. MARKB

True when second registration event occurs[1]

1.1.5. R_MARK(channel)

True when the registration event occurs on specified channel

1.1.6. REG_POS

Position at which registration event occurs[1]

1.1.7. REG_POSB

Position at which second registration event occurs[1]

1.1.8. R_REGPOS(channel)

Position at which registration event occurs on a specified channel

1.1.9. REGISTSPEED[1]

Speed at the time of the registration event

1.1.10. REGISTSPEEDB[1]

Speed at the time of the second registration event

1.1.11. R_REGISTSPEED(channel)

Speed at the time of the registration event on the specified channel

1.1.12. REGIST_CONTROL[1]

Read or set the low level bit pattern in the control register

1.1.13. OPEN_WIN[1]

First position of the window which will be used in the registration event

1.1.14. CLOSE_WIN[1]

Second position of the window which will be used in the registration event

1.1.15. DRIVE_CONTROL

Write-only axis parameter for Flex Axis

Bit 8: sets the PS output

Axis(0) - PS4
Axis(1) – PS5
Axis(2) – PS6
Axis(3) – PS7

1.1.16. DRIVE_STATUS

Read-only axis parameter for Flex Axis

Bit 0: MARK
Bit 1: MARKB
Bit 2: Registration selected channel A current value
Bit 3: Registration selected channel B current value

2. Registration Options

Up to 2 registration channels can be assigned per axis on the Flex Axis modules.

Up to 7 registration events can be armed per axis on a Digital axis.

The Z mark can be used for registration for its own axis.

3. Current Limitations

Only 2 registration channels can be assigned to the first axis, in the future up to 8 will be assignable to this axis.

You can only assign Digital axis registration inputs to the axis on the same module. In the future all Digital axis registration inputs can be assigned to any digital axis.

Windowing is only configurable per axis, so you cannot have 2 registration events armed on one axis with different windows.

The PSwitch output on the Flex Axis has not yet been implemented.

4. Examples

4.1. Digital axis examples

4.1.1. Flexible channel (6) rising

```
REGIST(32+6)
```

4.1.2. Flexible channel (4) falling

```
REGIST(64+4)
```

4.1.3. Flexible channel (6) rising and windowing

```
OPEN_WIN=180
CLOSE_WIN=270
REGIST(32+6+256)
```

4.1.4. Flexible channel (3) falling and filter

```
REGIST(64+3+128)
```

4.1.5. Dual, Z and flexible channel (4)

Note: may require additional setup depending on digital drive network

```
REGIST(1)
REGIST(32+4)
```

4.2. Flex Axis examples

Once the registration inputs have been assigned the REGIST command works as per any controller.

4.2.1. Assigning channel to an axis

REG_INPUTS AXIS(0)= $40 'Assigns registration input 0 and 4 to axis 0

4.2.2. Arming 2 registration inputs

REGIST(3) 'Arms registration A as rising edge

REGIST(17) 'Arms registration B as a falling edge

5. References

Further information can be found in the following documents.

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[1] Trio Technical Reference Manual version 6.7