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Subject: Use of Remote Axis Feature Codes

Application Note

1. Products supporting Remote Axis Feature Codes:

The Remote Axis Feature Codes enable the use of more axes with a digital communication daughter board. Currently this includes:

P290 – CAN Daughter Board

P291 – SERCOS Daughter Board

P186 – PCI208 SERCOS Interface (Future Product)

To use the Remote Axis Feature Codes the P186 must be fitted into a P180 (PCI208) and the P290 or P291 must be fitted into a P135 (MC206), P151 (Euro205x) or P170 (MC224) with system software V1.62 or higher. The Remote Axis Feature Codes are locked to a Motion Coordinator serial number and are stored in the Motion Coordinator.

2. Possible system configurations using Remote Axis Feature Codes:

By default each controller (P135, P151, P170 or P180) will allow the use of two remote axes for each digital interface card (P290, P291 or P186) fitted. To allow the use of further axes on any of the digital interface cards fitted, Remote Axis Feature Codes can be purchased. The available Remote Axis Feature Codes are:

P701 – (1) Remote Axis Feature Enable Code

P702 – (2) Remote Axes Feature Enable Code

P704 – (4) Remote Axes Feature Enable Code

P708 – (8) Remote Axes Feature Enable Code

P716 – (16) Remote Axes Feature Enable Code

The table in Appendix A at the end of this application note shows the possible system combinations for controlling either CAN or SERCOS drives.

3. Entering Remote Axis Feature Codes:

When Remote Axis Feature Codes are purchased they can either be entered by Trio, if the configuration of the system is known at the time of ordering, or codes can be purchased later and entered using Motion Perfect when the system is commissioned.

| Product Code | Feature Enable Code | Number of Additional Axes |
|--------------|---------------------|---------------------------|
| P701 | 12 | +1 |
| P702 | 13 | +2 |
| P704 | 14 | +4 |
| P708 | 15 | +8 |
| P716 | 16 | +16 |
| P701 | 17 | +1 |
| P702 | 18 | +2 |
| P704 | 19 | +4 |
| P708 | 20 | +8 |
| P716 | 21 | +16 |

Note, that in the table each product code has two possible Feature Enable Codes. This allows for further additions to be made after the initial purchase of codes. For example a P170 (MC224) is purchased along with a P291 (SERCOS Daughter Board) and a P701 and P702. This allows 5 axes to be controlled with the SERCOS Daughter Board (2 default axes allowed by P291 + 1 extra for P701 + 2 extra for P702 = 5 axes in total). If at a later date a further axis was required, i.e. 6 axes in total (4 additional axes), it would not be possible to achieve this with a P704 at this stage because the Remote Axis Feature Enable Codes are cumulative, adding a P704 would give 7 additional axes resulting in 9 axes in total (although only 8 axes can be used with a single P291). As there are two Feature Enable Codes that can be used for each Remote Axis Feature Enable Code it is possible to purchase another P701 for this system, giving the 1 extra axis required.

When purchasing a system, to allow greatest flexibility for future expansion always use the largest Remote Axis Feature Enable Code possible. For example, if 2 additional axes are required do not order 2 x P701 as this will prevent any further addition of a single axis, the smallest increment possible would be 2 extra axes. Instead, if 2 additional axes are required order 1 x P702. If in any

doubt, contact Trio sales with the system requirement and they will recommend the best configuration for your system.

When a Remote Axis Feature Enable Code is purchased the lowest available Feature Enable Code will be supplied. For example if a P701 is ordered for a new controller the Feature Enable Code number 12 will be supplied. If at a later date another single axis was to be added to this same controller another P701 could be ordered and Trio would supply Feature Enable Code number 17.

Motion Perfect can be used to enter the Remote Axis Feature Enable Code into the controller. If a Feature Enable Code 15 or less has been supplied then the Enable Controller Features dialog can be used in Motion Perfect. Enter the codes supplied and then use the Advanced... dialog to enable the feature for which the code has been supplied. Currently Motion Perfect doesn't support Feature Enable Codes above 15 so the command line must be used to enable these codes. At the command prompt type:

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>> FEATURE_ENABLE(16)
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In this case feature 16 is being entered, replace the number 16 with the required feature if it is different. When the <enter> key is pressed a prompt will be given to enter the password for that feature. Enter the password supplied, all characters are always in uppercase.

The FEATURE_ENABLE command can be used to find out which FECs are already installed. Type FEATURE_ENABLE followed by the <enter> key to see a list of the Enabled Features already installed.

Note that entering a Feature Enable Code a second time will Disable that feature. Each subsequent entry of a particular FEC will toggle the feature ON/OFF.

If the Remote Axis Feature Enable Codes are entered by Trio the product and the box will be labelled to show that the code or codes have been installed.

In the future full support for Remote Axis Feature Enable Codes will be included in Motion Perfect and on the Trio website to allow the purchase of these codes on-line.

Appendix A. Possible system combinations:

| Number of Axes | CAN Drives | SERCOS Drives |
|----------------|--|--|
| 2 | P135+P290 P151+P290 P170+P290 | P135+P291 P151+P291 P170+P291 P180+P186 |
| 3 | P135+P290+P701 P151+P290+P701 P170+P290+P701 | P135+P291+P701 P151+P291+P701 P170+P291+P701 P180+P186+P701 |
| 4 | P135+P290+P702 P151+P290+P702 P170+P290+P702 | P135+P291+P702 P151+P291+P702 P170+P291+P702 P180+P186+P702 |
| 5 | P170+2xP290+P701 | P135+P291+P701+P702 P151+P291+P701+P702 P170+P291+P701+P702 P180+P186+P701+P702 |
| 6 | P170+2xP290+P702 | P135+P291+P704 P170+P291+P704 P180+P186+P704 |
| 7 | P170+2xP290+P701+P702 | P170+P291+P701+P704 P180+P186+P701+P704 |
| 8 | P170+2xP290+P704 | P170+P291+P702+P704 P180+P186+P702+P704 |
| 9 | P170+3xP290+P701+P702 | P170+2xP291+P701+P704 |
| 10 | P170+3xP290+P704 | P170+2xP291+P702+P704 |
| 11 | P170+3xP290+P701+P704 | P170+2xP291+P701+P702+P704 |
| 12 | P170+3xP290+P702+P704 | P170+2xP291+P708 |
| 13 | P170+4xP290+P701+P704 | P170+2xP291+P701+P708 |
| 14 | P170+4xP290+P702+P704 | P170+2xP291+P702+P708 |
| 15 | P170+4xP290+P701+P702+P704 | P170+2xP291+P701+P702+P708 |
| 16 | P170+4xP290+P708 | P170+2xP291+P704+P708 |
| 17 | -- | P170+3xP291+P701+P702+P708 |
| 18 | -- | P170+3xP291+P704+P708 |
| 19 | -- | P170+3xP291+P701+P704+P708 |
| 20 | -- | P170+3xP291+P702+P704+P708 |
| 21 | -- | P170+3xP291+P701+P702+P704+P708 |
| 22 | -- | P170+3xP291+P716 |
| 23 | -- | P170+3xP291+P701+P716 |
| 24 | -- | P170+3xP291+P702+P716 |