Tech Note #55   Rev 1

Title: ORION Compatibility: /F Processor Option

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To prolong the useful life of our customers' capital equipment, ORMEC strategically implements programs that incorporate new technologies into our existing product families. The new "/F" processor option replaces processor options A through E. This option is faster than all previous options and though it has the same functionality, compatibility issues must be addressed when using components from previous systems.

The chart at the end of this document shows where compatibility issues could exist.

System Component Compatibility:

SYSTEM MODULE

All ORION controllers contain a System Module. This board contains the interface for the System Card (PCC-SYS) and other interfaces to allow connections to other devices and to display status information. This board contains PROM information (code) that is required to boot or start the system. Due to the change in processor option, this code must be different from code used by all previous processor options and therefore cannot be used with previous options (A thru E). The System Module can be manufactured to be compatible with the old or the new processor options but not both. The new System Module versions (ORN098 and ORN099) have blue labels on the handles to provide a visual indication that they are different from previous versions. They will only work in ORION controllers with the /F option.

SYSTEM CARD

This is the PCMCIA or PCMCIA compatible card (PCC-SYS) that contains user programs and MotionBASIC. This card also contains support files required to start the system at power-up. Several of these files must change to allow the new processor option to work properly. A simple upgrade operation is performed on the existing card to make it compatible with the new processor option. Once upgraded, it will be compatible with all ORION controllers with processor options /A thru /F. The modification to the card does NOT change any user files or MotionBASIC. During the boot up process, the System Module will display "SYS2.0" before the MotionBASIC version to show that the card is compatible with the ORION /F processor option.

ORION System Cards can be upgraded at the ORMEC factory. Also, it is possible for users to perform System Card upgrades in the field, provided you have the ability to connect to your ORION with the appropriate ORMEC Software.

- For MotionBASIC 3, using MotionPro software you can update the card with the PCC-SYS-2-Patch-MB3. Obtain the MotionBASIC 3 PCC-SYS patch download from the ORMEC website at www.ormec.com/Support/SupportLibrary/ORIONSoftwareLibrary.aspx. The download link is found under the **MotionPro** panel of the ORION Software section of the web page.
- For MotionBASIC 4 & 5, using MotionDesk software you can update the card with the Upgrade Director Utility and the file "PCC-SYS-2-Patch.exe". Obtain the MotionBASIC 4 & 5 PCC-SYS patch from the ORMEC website at www.ormec.com/Support/SupportLibrary/ORIONSoftwareLibrary.aspx.
The download link is found under the **MotionDesk** panel of the ORION Software section of the web page.

NOTE: The old PCC-SYS card will boot using the new ORION controller with /F processor option. This allows you to upgrade the card as described above. The update is REQUIRED even though the system appears to work. The error that occurs is very subtle and is associated with the CLEAR statement. Always use a card that displays "SYS2.0" during boot when using the ORION controller with /F processor option.

AXIS MODULE

There are two types of axis modules, ORN-DSP-Ax and ORN-SW-AM. The ORN-SW-AM axis module is compatible with all ORION controller processor options (A thru F). The ORN-DSP-Ax axis module requires a specific revision level or modification updates to be compatible with all processor options. ORN-DSP-Ax boards with a revision level of 1.1a and higher or boards that have a MOD246 label will work with all ORION controller processor options. Boards that do not meet these criteria must be updated at the factory to work with an ORION /F controller.

COMMUNICATION INTERFACES

The ORION controller supports a number of fieldbus communication devices and protocols. With the exception of three boards, all communication boards are compatible with the new ORION processor option.

Boards with compatibility issues:

ORN-DHA – To make the ORION Data Highway/Plus Adapter compatible with the /F option, a line in the application (user) code must be modified. This card used an address within the ORION controller that is not compatible with the new /F option. The user application code must be changed to define a new address rather than accept the default address. Find the old statement in your code and change it.

Old MotionBASIC statement	New MotionBASIC statement
DH.INIT ,sta **or** DH.INIT ,sta,,,&HD000	DH.INIT ,sta,,,&HD800

ORN-S908 – ORION S908 Adapter card is no longer supported. This board uses a large block of address space inside the controller which cannot be made available.

ORN-PFB – ORION Profibus Adapter interface is made compatible by updating the MBX (MotionBASIC Extension) that is being used. MBX-PFB v2.2.0 supports Profibus DP Slave and MBX-DPM v1.2.0 supports Profibus DP Master in the ORION with the /F processor option. If MotionDesk is available, you can update these extensions. Otherwise the extensions need to be updated at the ORMEC factory. Obtain the updated MBX from the ORMEC website at: www.ormec.com/Support/SupportLibrary/ORIONSoftwareLibrary.aspx. For a list of versions, select the subdirectory for either MotionBASIC Language Extensions (MBX) for MB5.x or MB4.x. Select the latest version (MBX540.exe for MB5 and MBX450.exe for MB4). When this file is executed on your computer it will install new files. Use the Upgrade Director in MotionDesk to update the PCC-SYS card in the ORION controller.

Installing MBX-DPM will automatically change the address for compatibility.

Installing MBX-PFB may not be enough to achieve compatibility if the program specified a non-compatible memory address on the PFB.INIT command line. If an address was specified, change it to &hD800 or remove any reference to the memory address. Removing the address reference will employ the new compatible default address provided by the MBX update.

VIDEO CARD

Video cards may have been installed in ORION controllers for a variety of reasons. This technique will not work in the ORION controller with /F processor option. Video capability is integrated into the processor unit. If video is required, an ORN-VIDCBL/F is needed.

ORION Processor Option Compatibility

Controller Option	System Module	System Card	Axis Module		Communication Interfaces								Video card
					Data Highway	S908	Profibus	GE Genius	3c509	NE2000	RS-232	RS-422	
ORN-x0/**A**	ORN004 or ORN043	PCC-SYS V1.0	ORN-DSP-Ax/yyyy	ORN-SW-AM/y	ORN-DHA	ORN-S908	ORN-PFB	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Standard card 640x480
ORN-x0/**B**	ORN004 or ORN043	PCC-SYS V1.0	ORN-DSP-Ax/yyyy	ORN-SW-AM/y	ORN-DHA	ORN-S908	ORN-PFB	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Standard card 640x480
ORN-x0/**C**	ORN004 or ORN043	PCC-SYS V1.0	ORN-DSP-Ax/yyyy	ORN-SW-AM/y	ORN-DHA	ORN-S908	ORN-PFB	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Standard card 640x480
ORN-x0/**D**	ORN004 or ORN043	PCC-SYS V1.0	ORN-DSP-Ax/yyyy	ORN-SW-AM/y	ORN-DHA	ORN-S908	ORN-PFB	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Standard card 640x480
ORN-x0/**E**	ORN004 or ORN043	PCC-SYS V1.0	ORN-DSP-Ax/yyyy	ORN-SW-AM/y	ORN-DHA	ORN-S908	ORN-PFB	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Standard card 640x480
ORN-x0/**F**	**ORN098**[1] or **ORN099**	**PCC-SYS**[2] **V2.0**	**ORN-DSP-Ax/yyyy**[3] **Rev. 1.1a or later**	ORN-SW-AM/y	**ORN-DHA**[4]	**Not Supported**	**ORN-PFB**[5]	ORN-GE1 ORN-GE2	ORN-E3C509	ORN-ENE2000	ORN-232	ORN-422	Integrated video use ORN-VIDCBL/F

Notes:

1 New model - previous models can be modified.

2 Files used during boot-up are changed. Previous cards must be updated. No changes are made to resident user files or MotionBASIC.

3 Requires specific modification level. Previous boards can be upgraded.

4 Requires modification to one line of user code to change address.

5 Requires new MBX and possibly a one line code change depending on user code.