RS3™

Software Release Notes

Performance Series 1, Release 4.2

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Software Release Notes

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RS3™

Software Release Notes

About This Manual

This document provides information about Performance Series™ Version 1, Release 4.2 (P1 R4.2) software.

Section 1:	Lists Version P1 enhancements to RS3™.
Section 2:	Lists software and hardware requirements for Version P1, Release 4.x.
Section 3:	Lists system improvements, including corrected software discrepancies.
Section 4:	P1 R4.x changes to RS3 manuals.
Section 5:	Version P1 R3.4 changes to RS3 manuals.

Changes for This Release

This is a mandatory upgrade for Customers currently running systems with base software P1 R4.1. Track issue #0535 has now been corrected. Reference Table 2.39 and Table 3.1 for more information.

Changes for These Release Notes

These Release Notes supercede previous P1 R4 Release Notes, and cover all current releases of P1 R4 (R4.0, R4.1, and R4.2). References or requirements that pertain to all three releases are shown as P1 R4.x. References to a particular release are identified specifically, for example, P1 R4.2.

Major changes for these revised Release Notes include:

- New tables describing recent RS3 software and hardware releases, features, and compatibility (see Table 1.3 and Table 1.4).
- A new RS3 software term called PeerWay Image Designation. This has been added to more clearly identify RS3 software and hardware combinations that work together, and with the future DeltaV Operate for RS3 (See Definition of RS3 Software Terms).
- New tables describing compatible RS3 hardware for the new Peerway Image Designation terms (See Table 2.1, and Table 2.2).

Revision Level for This Manual

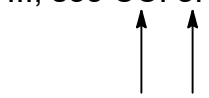
For This Software Version:	Refer to This Document:		
	Title	Date	Part Number
P1 R4.2	Software Release Notes	February 2002	12P23600102
P1 R4.0	Software Release Notes	May 2000	12P23600101
P1 R3.4	Software Release Notes	September 1999	12P21360101
P1 R3.2.2	Software Release Notes	August 1999	10P56870109
P1 R3.3	Software Release Notes	July 1999	10P56870108
P1 R3.2	Software Release Notes	September 1998	10P56870107
P1 R3.1	Software Release Notes	August 1998	10P56870106
P1 R3.0 Premier	Software Release Notes	August 1998	10P56870105
P1 R2.0 P1 R1.4	Software Release Notes	June 1998	10P56870104
P1 R1.2	Software Release Notes	January 1998 November 1997	10P56870103 10P56870102
P1 R1.1	Software Release Notes	October 1996	10P56870101
P1 R1.0	Software Release Notes	May 1996	1984-2828-0110

References to Other Manuals

References to other RS3 user manuals list the manual, chapter, and sometimes the section as shown below.

Sample Entries:

For ..., see CC: 3.



For ..., see CC: 1-1.

Abbreviations of Manual Titles

- **AL** = Alarm Messages
- **BA** = ABC Batch
- **BQ** = Batch Quick Reference Guide
- **CB** = ControlBlock Configuration
- **CC** = Console Configuration
- **CQ** = Configuration Quick Reference Guide
- **DT** = Disk and Tape Functions
- **IF** = Intelligent Fuzzy Logic Control Manual
- **IO** = I/O Block Configuration
- **IT** = Intelligent Tuner Manual
- **OP** = Operator's Guide
- **OV** = System Overview and Glossary
- **PW** = PeerWay Interfaces
- **RB** = Rosemount Basic Language
- **RI** = RNI Installation Guide
- **RR** = RNI Release Notes
- **RP** = RNI Programmer's Reference Manual
- **SP** = Site Preparation and Installation
- **SQ** = Service Quick Reference Guide
- **SV** = Service
- **TR** = Trend Resource Unit Manual

Reference Documents

Prerequisite Documents

You should be familiar with the information in the following documents before using this manual:

System Overview Manual and Glossary	1984-2640-21x0
Software Loading and Upgrade Procedure, Including Batch, Performance Series 1	12P23600201

Related Documents

You may find the following documents helpful when using this manual:

ABC Batch Quick Reference Guide	1984-2818-1104
ABC Batch Software Manual	1984-2654-21x1
Alarm Messages Manual	1984-2657-19x1
Configuration Quick Reference Guide	1984–2812–0808
Console Configuration Manual	1984-2643-21x0
ControlBlock Configuration Manual	1984-2646-21x0
I/O Block Configuration Manual	1984-2645-21x0
Operator's Guide	1984-2647-19x1
PeerWay Interfaces Manual	1984-2650-21x0
RNI Programmer's Reference Manual	1984–3356–04x1
RNI Installation Guide	1984–3357–03x1
RNI Software Release Notes	10P57483001
Rosemount Basic Language Manual	1984-2653-21x1
Service Manual, Volume 1	10P569802x1
Service Manual, Volume 2	10P569802x2
Service Quick Reference Guide	10P57000201
Site Preparation and Installation Manual	10P569902x1
Software Discrepancy Notes for Performance Series 1	12P23600301
User Manual Master Index	1984-2641-21x0

Contents

List of Figures

List of Tables

Section 1:
P1 Enhancements to RS3

The software version numbers of the subsystems for P1, Release 4.2 are as follows:

- Console (MTCC) P1.30
- System Manager Station (SMS) P1.30
- Coordinator Processor (CP) P1.15
- Controller Processor P1.19
- Supervisory Computer Interface P1.02
- RS3 Operator Station (ROS) 4.x (separate media)
- RS3 Network Interface (RNI) 4.x (separate media)

Table 1.1 describes new features of the P1 releases.

NOTE: In Table 1.1, the field labeled “For More Information” tells you where to find additional detail, either in these release notes, or in the reference manuals. A key to the manual abbreviations used in the table appears in the front of this document.

Table 1.2 is a summary of new hardware releases

Table 1.3 and Table 1.4 are new tables relating recent hardware and software releases and their compatibility.

NOTE: In Table 1.3 and Table 1.4, see Section 2 for more information or additional detail regarding compatible images and hardware.

New P1 Software Features

The following table lists new features and enhancements to P1.

Table 1.1. Summary of New Software Features in P1

Feature	Description	For More Information	When Added
CP5 Coordinator Processor	P1 R4.0 with CP5 Coordinator Processor supports mixing MPCII and MPC5 controllers within the same ControlFile. Improved Batch performance	--	P1 R4.0
ABC Batch Messaging supported	RS3 supports ABC Batch Messaging.	BA:2 and 4 BQ:6 RB:10	P1 R3.4 and ROS 3.2
CIO compatibility with MPC5	Contact I/O (CIO) is compatible with MPC5s.	RN:4	P1 R3.4
New MAI32	Introduction of the new MAI32 (10P58300005 – replaces 10P53190004).	SP:1 and 7 SV:6 SQ:7	P1 R3.4
New MAO16	Introduction of the new MAO16 (10P58080005 – replaces 10P54080004)	SP:7 SV:6 SQ:7	P1 R3.4
TIBs supported on MPC5	Temperature Input Blocks (TIBs) are now supported on the MPC5 Controller	RN:2	P1 R3.4
New pixel graphics card	Introduction of a new pixel graphics card (10P58900001)	SV:3 RN:2	P1 R3.4
MPC5 supported	A new CPU and more memory, giving greater I/O density and faster execution.	SP:4 SV:4	P1 R3.0
4 Meg NV Memory supported	Increased storage for configuration and images required for the MPC5 controller.	SP:4 SV:4	P1 R3.0
PLC Scaling with the MPC5 Controller	PLC input blocks can be scaled and trended. When using MPC5's, PLCB's can communicate at 19200 baud and allow 512 PLCB's.	RN:4	P1 R3.0
RBLC Baud Rate with the MPC5 Controller	When using MPC5's, RBLC can communicate at 19200 baud at baud rate setting 12.	RN:4	P1 R3.0

(continued on next page)

Table 1.1. Summary of New Software Features in P1 (continued)

Feature	Description	For More Information	When Added
Automatic backups	Capability has been added for automatic backups of plant and console configurations.	RN:4	P1 R1.2
Batch on SMS	Batch commands now available on System Manager Station (SMS).	RN:4	P1 R1.2
Master License Agreement	User must now confirm Master License Agreement to continue the restore operation of a program file or folder.	RN:4	P1 R1.2
Capture entire memory dump	Memory dumps have been expanded to include Controller memory dumps.	RN:4	P1 R1.2
FIC passthrough	Limited passthrough capability added for FIC.	--	P1 R1.2
HART passthrough extended	HART passthrough has been extended to blocks other than SIB and HOB. Passthrough now works with AIB and AOB (provided the hardware supports it).	--	P1 R1.2
HOB communication with non-Fisher devices	HOB communication with non-Fisher SMART devices has been enabled, via HART.	--	P1 R1.2
Link Editor capabilities	Trend, Trend display, Group display, and Report configurations are now supported. Some minor changes have been made to the Link Editor screen.	RN:4	P1 R1.2
New tape drive supported	Support for the Tandberg Tape drive.	RN:4	P1 R1.1
New hard disk supported	Support for the IBM DeskStar 540 hard drive.	--	P1 R1.1
Alarm Banner Enhancement	The format for standard and [EXCH] alarm list description has been modified to be more informative.	AL:1 OP:6	P1 R1.0
AMS passthrough support	Several code-level changes were made to allow the RS3 to pass through AMS (Asset Management Solutions) messages from the field to a computer running PERFORMANCE™ software, with RNI 2.2 or higher. The RS3 does not process this information.	--	P1 R1.0
Crash Dump Format	The crash dump format, which applies to crashes occurring in the console and in the CP/Controller is being expanded to include more system stack, more user stack and some registers.	--	P1 R1.0
Disk-only console	A modified version of the Engineering Console without a supporting tape or floppy drive. This is not the same as the System Manager Station (SMS).	DT:	P1 R1.0

(continued on next page)

Table 1.1. Summary of New Software Features in P1 (continued)

Feature	Description	For More Information	When Added
HART Command	The “Stop HART Comm” command must be executed anytime a third party HART valve product is being used	IO:8	P1 R1.0
Modbus	The new Modbus broadcast message will allow PLCBs to be configured with PLC=0 to designate a “broadcast” message. This will only apply to write messages and for this reason the user will not be allowed to configure the read option in this case. Whenever PLC=0 has been configured on a PLCB, a text field “Broadcast” will appear to inform the configurer what he has done. Broadcast messages of this kind will only apply to the protocols “Modbus/ASCII”, “Modbus/RTU” and “Modbus/RTU-2”.	--	P1 R1.0
PID Velocity Algorithm Option	The velocity option (vel) in the Options (Opt) field of a PID block is now valid for PI action.	CB:2	P1 R1.0
PLC Block Enhancement	Add new Read and Write Filter options that allows reading/writing a PLC block at a configurable rather than a default system time.	IO:9	P1 R1.0
Read Filter	See PLC Block Enhancement in this table.	--	P1 R1.0
Russian Console Enhancement	English and Cyrillic text can now be mixed in plant configurations. Callup buttons can now be programmed in either Cyrillic or Roman text.	CC:1	P1 R1.0
Smart Field Device Support	RS3 support for the following Smart field devices has been added: MicroMotion 9701 flow transmitter Rosemount 3095FT flow transmitter Rosemount 644 temperature transmitter Rosemount 3144 temperature transmitter Rosemount 3244 temperature transmitter Rosemount 3095 MV mutivariable transmitter Rosemount Analytical WC3000 oxygen analyzer	IO:8	P1 R1.0
System Manager Station	A new console is available to work with the NT-based RS3 Operator Station. It provides maintenance and troubleshooting functions on an RS3 system. (This is not the same as the disk-only console.)	CC:1	P1 R1.0
Write Filter	See PLC block enhancement in this table.	--	P1 R1.0

Summary of Recent Hardware Releases

Table 1.2 lists recently released hardware that operates in the P1 environment. This is not a complete list, but is provided as a guide to make you aware of newer hardware.

Table 1.2. Summary of Recent P1-Compatible Hardware

Part Number	Description	When Added
10P5736X022	CP5 Coordinator Processor	P1 R4.0
12P23040001	Seagate MEDALIST Pro (4.5 Gigabyte, narrow SCSI) disk drive	P1 R4.0
10P57070001	Circuit Card Assembly (PWA, loop power module for MAIO)	
10P57560001	Power supply (Phoenix, 7U/SMS mount, NRTL/C, CE approved)	
10P57010001	Power supply (Phoenix, #2941947, auto in/24 VDC)	
10P56450001	Power supply assembly (Condor GPC140, 7U mount)	
10P56450002	Power supply assembly (Condor GPC140, DIN mount)	
10P56450003	Power supply assembly (Condor GPC1X, Series 1 mount)	
10P56950001	Card cage, OI, notched for Z-leg console	
10P50841004	Circuit card assembly (PWA, keyboard video interface, remote keyboard)	
10P59270002	Combined circuit card assembly (Analog FIC with Smart daughterboard assembly, EMC compliant)	
10P56850001	Tandberg Tape Drive (Model 9245)	P1 R1.1
10P56650001	IBM DeskStar-540 Megabyte Hard Drive	P1 R1.1
Model # 6600SM	System Manager Station (SMS)	
--	Disk-only Console	P1 R1.1
Model # 6600RNS	RS3 Network Interface (RNI)	
10P58050001	Quantum Thunderbolt, 540 Megabyte Hard Drive	P1 R2.0
10P58570001	Quantum Fireball QM32100, 2.1 Gigabyte Hard Drive	P1 R2.0
10P57700005	MAI16, 16 Point Analog Input	P1 R3.0
10P57520007	MPC5 Controller Processor	P1 R3.0
1984-2347-0041	4 Megabyte NV Memory Card	P1 R3.0

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Table 1.2. Summary of Recent P1-Compatible Hardware (continued)

Part Number	Description	When Added
12P0238X012 12P0236X012 12P0239X012	Power Supply Unit: Single 1200 watt Power Module Housing (supports two (2) Power Modules) Fan Replacement Kit	P1 R3.0
10P58300005	MAI32, 32 Point Analog Input FIM	P1 R3.4
10P58080005	MAO16, 16 Point Analog Output FIM	P1 R3.4
10P58900001	Pixel Graphics Card	P1 R3.4
10P59150002	FIC 2 In / 1 Out Card	
12P25960002	Pulse FIC Card	

Summary of Recent Releases

Table 1.3 and Table 1.4 show recently released software and hardware.

Use these as a guide to understanding valid, compatible combinations, and to plan for the future DeltaV Operate for RS3 Operator Stations.

DeltaV Operate for RS3 lets you operate your RS3 from DeltaV consoles. DeltaV is Emerson Process Management's latest control system.

This is not a complete list, but is provided as a guide. Consult Section 2 for more specifics on any requirements.

Table 1.3. RS3 Base System Software Compatibility Matrix (English)

Base System Software Version	Available for Shipment	Features of this Release						
		CP5	MPC5	Contact I/O; TIBs On MPC5	Trend Resource Unit	Use With ROS Software Version	Supports ROS ABC Batch Messaging(4)	Compatible with Future DeltaV Operate for RS3
P1 R4.2	Yes	Yes(1)	Yes	Yes	Yes	ROS 4.x(1) or ROS 3.1.2(2)	Yes	Yes (3)
P1 R4.0	No	Yes(1)	Yes	Yes	Yes	ROS 4.x(1) or ROS 3.1.2(2)	Yes	Yes (3)
P1 R3.4	Yes	No	Yes	Yes	Yes	ROS 4.x(1) or ROS 3.1.2(2)	Yes	Yes (3)
P1 R3.2.X	No	No	Yes	No	No	ROS 3.2(1) or ROS 3.1.2(2)	No	No
V18 R4.4	Yes	No	No	No	Yes	ROS 3.1.2 Only	No	No

(1) P1 Images only on the PeerWay. Refer to Table 2.1 for compatible node/hardware combinations.

(2) Mix of P1 and V18 Images on the PeerWay. Refer to Table 2.2 for compatible node/hardware combinations.

(3) P1 Images only on the PeerWay, 68040 MTCC, and/or ROS 4.x with SMS. Refer to Table 2.1 for compatible node/hardware combinations.

(4) Available on ROS 3.2 Release and above.

Table 1.4. ROS Software Compatibility Matrix (English)						
		Features of this Release				
Base System Software Version	Available for Shipment	ROS System-Wide Tag License	ROS ABC Batch Messaging	Compatible with CF V18 Images	Use With Base System Software Version	Compatible with Future DeltaV Operate for RS3
ROS 4.0.1 with SP 1	Yes	Yes	Yes	No	P1 R3.4 and above(1)	Yes(2)
ROS 4.0	No	Yes	Yes	No	P1 R3.4 and above(1)	Yes(2)
ROS 3.2	Yes	No	Yes	No	P1 R2.0 and above(1)	No
ROS 3.1.2	Yes	No	No	Yes	V18 R4.4 or P1 R2.0 and above	No

(1) P1 Images only on the PeerWay.

(2) P1 Images only on the PeerWay, 68040 MTCC or SMS. Refer to Table 2.1 for compatible node/hardware combinations

Section 2:
P1 Software and Hardware Requirements

This section specifies the software and hardware requirements for RS3 P1 R4.x and provides information about the coexistence of RS3 software images to facilitate plant upgrades.

Definition of RS3 Software Terms

The following are definitions of RS3 software terms used in this document.

Software Image

A software image is an individual file that is loaded into one component of RS3 hardware. The image is the operating program for that component of hardware. Each image has a release designation that will appear on the appropriate status screen. Examples are P1.10 and 18.04 which refer to Performance Series Version 1 release or P1 release, and version 18 or V18 respectively. In these example, P1.10 would be referred to as a P1 image and 18.04 would be referred to as a V18 image.

Software Release

A software release is a collection of images that are provided together on a streaming tape.

A system is considered to be running a release of RS3 software if all images loaded into the RS3 system components are:

- contained in the release.
- combinations that have been tested together and work together as a set. The image combinations for a PeerWay or within a node have to be a supported combination for that release.

NOTE: The release designation of each individual image on a streaming tape does not always relate to the particular software release designation. For example, some of the images on a P1 R4.x software release tape have P1 in the image number. Others may have a V18 image number.

PeerWay Image Designation

A PeerWay Image Designation defines the collection of images running together on a PeerWay. This is a subset of the images contained within a software release.

A P1 PeerWay Image Designation is when all the images running together on a PeerWay are P1 images only, from the same Software Release. There can be no V18 images on the PeerWay with a P1 PeerWay Image Designation. Typically P1 images support the latest technology.

A P1/V18 Combined PeerWay Image Designation is when one or more of the images running together on a PeerWay is a V18 image from the same P1 R4.x Software Release. Typically a V18 image is necessary to support older RS3 hardware.

A V18 PeerWay Image Designation is when all the images running together on a PeerWay are V18 images only, from the same Software Release. The current software release for a V18 PeerWay Image Designation is V18 R4.4 (English).

To better understand the ramifications of the PeerWay Image Designation, refer to the RS3 Hardware Requirements for P1 R4.x.

RS3 Hardware Requirements for P1 R4.x

In order to understand the hardware requirements for P1 R4.x, it is important to understand the types of nodes and the images to be used within the various nodes at this software release.

The requirements for Software Release P1 R4.x have been split into the following two sections:

- RS3 Hardware Requirements for a P1 PeerWay Image Designation
- RS3 Hardware Requirements for a P1/V18 Combined PeerWay Image Designation

RS3 Hardware Requirements for P1 PeerWay Image Designation

If all the nodes on a PeerWay are running P1 R4.x software release with P1 images, that PeerWay is defined to have a P1 PeerWay Image Designation. Table 2.1 below lists the supported and compatible PeerWay Node Hardware Combinations for a P1 PeerWay Image Designation.

Table 2.1. Supported PeerWay Node Hardware Combinations for P1 PeerWay Image Designation

Consoles			ControlFiles[1]			
Future DeltaV Operate for RS3	**ROS**	**MTCC or SMS**	**Coordinator Processors**	**Memory**	**Controllers**	**Consult Tables for Boot ROM and Images**
Yes	ROS 4.0.1 with SP 1	68040	CP5	4 MB NV RAM	MPC5	Table 2.14 or Table 2.15, and Table 2.22
			CP5	4 MB NV RAM	MPC5 MPCII	Table 2.16 or Table 2.17, and Table 2.22
			CPIV+ or CPIV	4 MB NV RAM	MPC5	Table 2.18 or Table 2.19, and Table 2.22
			CPIV+ or CPIV	4 MB NV RAM or 2 MB NV RAM	MPCII	Table 2.20 or Table 2.21 and Table 2.29

[1] P1 Images only. Consult Table 2.14 to Table 2.22.

Notes:

- Other acceptable nodes not shown are HIA, SCI, RNI, VAX, and TRU. Consult Table 2.31 and Table 2.32.

As shown in Table 2.1 above, in order to have a P1 PeerWay Image Designation with P1 R4.x software release:

- Any CPI's or CPII's used with earlier releases of software will have to be upgraded to a minimum of CPIV, or to a minimum of CP5 if MPCII and MPC5 are to be combined within a ControlFile.
- Any Memory cards less than the 2 MB NV will also have to be upgraded to a minimum of 2 MB NV, or to a minimum of 4 MB NV if MPC5 controllers are to be used within the same ControlFile.
- Any controllers earlier than an MPCII will also be required to be updated to a minimum of MPCII.

The P1 R4.x software release with a P1 PeerWay Image Designation supports the latest:

- Coordinator Processor 5 (CP5)
- RS3 Operator Station (ROS) Version 4.x or higher.
- RS3 Network Interface (RNI) Version 4.x or higher,
- HIA, SCI, VAX, and TRU
- Future product DeltaV Operate for RS3

DeltaV Operate for RS3 lets you operate your RS3 from DeltaV consoles. On the DeltaV screen, you can see and manipulate data and information from RS3. DeltaV Operate for RS3 will allow current MTCC or ROS users to migrate to newer technology. When combined with DeltaV controllers, data from both RS3 and DeltaV equipment can be combined on the same process graphic on the DeltaV Operate for RS3 consoles.

For specifics about the correct images to use for a P1 PeerWay Image Designation, refer to the tables identified in Table 2.1 and the information under the heading “ControlFile Node Combinations Supported in P1 PeerWay Image Designation” later in this section.

RS3 Hardware Requirements for P1/V18 Combined PeerWay Image Designation

In order to support older RS3 hardware, if any node on a PeerWay is required to use a V18 image from the P1 R4.x software release with nodes running P1 images, that PeerWay is defined to have a P1/V18 Combined Image Designation. Table 2.2 below lists the supported and compatible PeerWay Node Hardware Combinations on a P1/V18 Combined PeerWay Image Designation.

Table 2.2. Supported Peerway Node Hardware Combinations for P1/V18 Combined PeerWay Image Designation

Consoles			ControlFiles[1]			
Future DeltaV Operate for RS3	**ROS**	**MTCC or SMS**	**Coordinator Processors**	**Memory**	**Controllers**	**Consult Tables for Boot ROM and Images**
No	ROS 3.1.2	68040	CPIV+ or CPIV	4 MB NV RAM	MPC5	Table 2.23 or Table 2.24, and Table 2.29
			CPIV+ or CPIV	4 MB NV RAM or 2 MB NV RAM	MPCII	Table 2.25 or Table 2.26, and Table 2.29
			CPIV+	2 MB NV RAM	MPCII MPC(I) CC MLC SSC MUX/PLC	Table 2.27 and Table 2.29
			CPII	2 MB NV RAM or 1 MB NV RAM or 1 MB Bubble or .5 MB Bubble	MPCII MPC(I) CC MLC SSC MUX/PLC	Table 2.28 and Table 2.29

[1] Mix of P1 and V18 Images. Consult Table 2.23 to Table 2.29.

Notes:

- Other acceptable nodes not shown are HIA, SCI, RNI, VAX, and TRU. Consult Table 2.31 and Table 2.32

NOTE: As shown in Table 2.2 above, the use of any V18 images from the P1 R.4.2 software release precludes the use of some the latest RS3 technology. For example,

- The new CP5 ***cannot*** be used with a P1/V18 Combined PeerWay Image Designation.
- The latest release of ROS 4.x ***cannot*** be used with a P1/V18 Combined PeerWay Image Designation.
- The future product DeltaV Operate for RS3 ***cannot*** be used with a P1/V18 Combined PeerWay Image Designation.

In order to take advantage of any of the above new technology, it will be necessary to upgrade the consoles and ControlFiles to the minimum shown in Table 2.1 for a P1 PeerWay Image Designation.

For specifics about the correct images to use for a P1/V18 Combined PeerWay Image Designation, refer to the tables identified in Table 2.2 and the information under the heading “ControlFile Node Combinations Supported in P1/V18 Combined PeerWay Image Designation” later in this section.

Unsupported Software

P1 R4.x software does ***not*** support the following node types:

- MiniConsoles
- Command Consoles, Basic and Enhanced
- 68000 MTCC consoles; see Upgrade Scenarios for Existing Consoles later in this section
- 68020 MTCC consoles; see Upgrade Scenarios for Existing Consoles later in this section
- Consoles that share hard drives and tape drives (only single tube MTCCs are supported); see Upgrade Scenarios for Existing Consoles later in this section
- Floppy drives on any console
- System Resource Units (SRUs). Previously with P1 software Releases, SRU's were not supported. However, with Software Release P1 R3.4 and above, SRU hardware is now supported (with trending functionality only) as a TRU (Trend Resource Unit).
- MPC(I) Controllers running MPC(I) images with CPIV. However, the MPC(I) can be upgraded to an MPCII.
- CPII running batch
- CPI Coordinator Processors
- Diogenes Interface (DIO)

Contact your Emerson Process Management sales or service representative for the available upgrade options.

Collecting Information for Upgrading Your System

The following describes how to collect information needed to upgrade a system to P1 R4.x.

General System Information

The following general information is useful in understanding the layout of an RS3 system. This information should be collected on all RS3 systems:

- A screen print of the Plant Status (PS) screen (or screens if the system is large). This will list all nodes on the RS3 PeerWay.

- A screen print of the Disk Directory PeerWay (DDP) screen (or screens if the system is large). This screen lists all consoles that have their own hard drives on the system (master nodes). Any consoles that are listed on the PS screen but not listed on the Disk Directory PeerWay screen are slave nodes. Slave nodes (consoles that share hard drives and tape drives with a master node) have to be upgraded.

Specific Component Information

Collect the following specific information to determine the upgrade requirements for the items listed:

Consoles

- A screen print of the first, second, and third page (the third page only applies to a password system) of the Configure Command Console (CCC) screens.
- The type of tape drive and hard drive on the console. With newer versions of software, the tape drive type can be determined from the second page of the CCC screen (see the CCC screen field definitions in the Console Configuration Manual). See Table 2.4 through Table 2.7 for more information on tape drives and hard drive requirements.

NOTE: For more information, reference Knowledge Base Article #AUS1-208-000119144549.

Use Table 2.4 through Table 2.11 in the Console section to determine if your current hardware will support P1 R4.x software.

ControlFiles

- A screen print of the ControlFile Status (CFS) screen.
- A screen print of the Field I/O Status (FS) screen for each controller in the ControlFile.

  NOTE: Some controllers, such as the MUX, RBLC, and PLC do not have FS screens.

- The size of the NV memory in the ControlFile. See Table 2.3 for NV memory card identification.

Table 2.3. Nonvolatile Memory Card Identification

Memory	Part Number	Comments
4 MB	1984-2347-0041	RAM; Required with CP5 Coordinator Processor and/or MPC5 controllers
2 MB	1984-2347-0021	RAM; Used with ABC Batch and CPIV; (Minimum Required for P1 PeerWay Image Designation)
1 MB	1984-2347-0011	RAM; Used only with CPII
1 MB	1984-1598-0001	Bubble Memory; Used only with CPII
0.5 MB	1984-1483-0001 1984-1224-000x	Bubble Memory; Used only with CPII

- Use Table 2.1 through Table 2.36 in this section to determine if your current hardware will support P1 R4.x software.

Supervisor Computer Interface (SCI)

Use Table 2.32 in the SCI section to determine if your current hardware will support P1 R4.x software.

Highway Interface Adapter (HIA)

Use Table 2.31 in the HIA section to determine if your current hardware will support P1 R4.x software.

RS3 Network Interface (RNI)

- A screen print of the Configure RNI (CRN) screen.

See the RNI section to determine if your current RNI software will work with P1 R4.x software.

RS3 Operator Station (ROS)

- The version number, displayed on the initial startup screen of the ROS station after reboot, or from the RS3DIAG screen.

See the ROS section to determine if your current ROS software will work with P1 R4.x software.

RS3 VAX Interface (VAX)

- A screen print of the VAX Status (VS) screen.

See the VAX section to determine if your current VAX interface software will work with P1 R4.x software.

Determining Upgrade Requirements

The following pages include compatibility charts that list detailed hardware and software requirements for P1 R4.x. If you are a current user who is upgrading to P1 R4.x, you need to make sure your system meets these requirements. If it does not, contact your Emerson Process Management sales or service representative.

The compatibility charts cover individual nodes on the PeerWay for each PeerWay Image Designation. Within each PeerWay Image Designation, if each node on the PeerWay meets the compatibility requirements of the applicable chart for that node type, then the combination of nodes is compatible for that PeerWay Image Designation.

Console Requirements

The MTCC or SMS console requirements are shown in Table 2.4 through Table 2.11. The MTCC or SMS console requirements are the same for both the P1 PeerWay Image Designation and P1/V18 Combined PeerWay Image Designation.

Table 2.4. P1 R4.x/68040 MTCC with Hard Drive and Tape Drive

Hard Drive	Tape Drives Supported	Minimum Processor Boot ROM	SCSI Board Support
Seagate ST34520N 4.5 Gigabyte	Tandberg 150 Meg Viper 2150S	10.10	SCSI Host Adapter
			SCSI Board 2
Quantum Thunderbolt, 540 Meg	Tandberg 150 Meg Viper 2150S	10.10	SCSI Host Adapter
			SCSI Board 2
IBM DeskStar 540, 540 Meg	Tandberg 150 Meg Viper 2150S	10.10	SCSI Host Adapter
			SCSI Board 2
Quantum LPS 270S, 270 Meg	Viper 2150S	10.08	SCSI Host Adapter
			SCSI Board 2
	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter

NOTE: The Boot ROM level XX.YY is the minimum required; a higher .YY number will also work. Reference Knowledge Base Article #AUS1-208-000119144549 and #AUS1-208-010815095232

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Table 2.4. P1 R4.x/68040 MTCC with Hard Drive and Tape Drive (continued)

Hard Drive	Tape Drives Supported	Minimum Processor Boot ROM	SCSI Board Support
Quantum LPS 170S, 170 Meg	Viper 2150S	10.08	SCSI Host Adapter
			SCSI Board 2
	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter
Quantum LPS 105S, 102 Meg	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter
Quantum Prodrive 80S, 84 Meg	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter
Quantum Q280, 80 Meg	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter
Quantum Q540, 40 Meg	Viper 2060S Scorpion 5945S Scorpion 5945C	10.08	SCSI Host Adapter

NOTE: The Boot ROM level XX.YY is the minimum required; a higher .YY number will also work. Reference Knowledge Base Article #AUS1-208-000119144549 and #AUS1-208-010815095232

Table 2.5. P1 R4.x/68040 MTCC Disk Only Console, No Tape Drive

Hard Drive	Minimum Processor Boot ROM	SCSI Board Support
Seagate ST34520N 4.5 Gigabyte	10.10	SCSI Host Adapter
		SCSI Board 2
Quantum QM32100, 2.1 Gigabyte	10.10	SCSI Host Adapter
		SCSI Board 2*
Quantum Thunderbolt, 540 Meg	10.10	SCSI Host Adapter
		SCSI Board 2
IBM DeskStar 540, 540 Meg	10.10	SCSI Host Adapter
		SCSI Board 2

NOTE: The Boot ROM level XX.YY is the minimum required; a higher .YY number will also work. Reference Knowledge Base Article #AUS1-208-000119144549 and #AUS1-208-010815095232

Table 2.6. P1 R4.x/68040 System Manager Station (SMS) with Hard Drive and Tape Drive

Hard Drive	Tape Drives Supported	Minimum Processor Boot ROM	SCSI Board Support
Seagate ST34520N 4.5 Gigabyte	Tandberg 150 Meg Viper 2150S	11.10	SCSI Host Adapter
			SCSI Board 2
Quantum Thunderbolt, 540 Meg	Tandberg 150 Meg Viper 2150S	11.10	SCSI Host Adapter
			SCSI Board 2
IBM DeskStar 540, 540 Meg	Tandberg 150 Meg Viper 2150S	11.10	SCSI Host Adapter
			SCSI Board 2

NOTE: The Boot ROM level XX.YY is the minimum required; a higher .YY number will also work.
Reference Knowledge Base Article #AUS1-208-000119144549 and #AUS1-208-010815095232

Table 2.7. P1 R4.x/68040 SMS Disk Only, No Tape Drive

Hard Drive	Minimum Processor Boot ROM	SCSI Board Support
Seagate ST34520N 4.5 Gigabyte	11.10	SCSI Host Adapter
		SCSI Board 2
Quantum QM32100, 2.1 Gigabyte	11.10	SCSI Host Adapter
		SCSI Board 2
Quantum Thunderbolt, 540 Meg	11.10	SCSI Host Adapter
		SCSI Board 2
IBM DeskStar 540, 540 Meg	11.10	SCSI Host Adapter
		SCSI Board 2

NOTE: The Boot ROM level XX.YY is the minimum required; a higher .YY number will also work.
Reference Knowledge Base Article #AUS1-208-000119144549 and #AUS1-208-010815095232

Table 2.8. P1 R4.x/68040 Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
10P55270010 (all revs)	1984-3204-1012 (Ver 10.12)	1984-2503-0001 or 10P58900001
10P55270010 (all revs)	1984-3204-1010 (Ver 10.10)	1984-2503-0001
1984-3202-0010 (rev F/H or newer)	1984-3204-1012 (Ver 10.12)	1984-2503-0001 or 10P58900001
1984-3202-0010 (all revs)	1984-3204-1010 (Ver 10.10)	1984-2503-0001

NOTE: The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Table 2.9. P1 R4.x/SMS Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
10P55270011 (all revs)	1984-3204-1112 (Ver 11.12)	1984-2503-0001 or 10P58900001
10P55270011 (all revs)	1984-3204-1110 (Ver 11.10)	1984-2503-0001

NOTE: The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Table 2.10. Hard Drive, Tape Drive, and SCSI Board Part Numbers

Description		Part Number
Hard Drives	Seagate ST34520N 4.5 Gigabyte	12P23040001
	Quantum QM32100, 2.1 Gigabyte	10P58570001
	Quantum Thunderbolt, 540 Meg	10P58050001
	IBM DeskStar 540, 540 Meg	10P5665000x
	Quantum LPS 270S, 270 Meg	10P52800002
	Quantum LPS 170S, 170 Meg	1984-3500-000x
	Quantum LPS 105S, 102 Meg	1984-3100-000x
	Quantum Prodrive 80S, 84 Meg	1984-2780-000x
	Quantum Q280, 80 Meg	1984-2307-000x
	Quantum Q540, 40 Meg	1984-1928-000x
Tape Drives	Tandberg 9245	10P5685000x
	Tandberg 5623 (superceded by 9245)	10P5685000x
	Viper 2150S	1984-3389-000x
	Viper 2160S	1984-3289-000x
	Scorpion 5945S	1984-1989-000x
	Scorpion 5945C	1984-1927-000x
SCSI Boards	SCSI Host Adapter	1984-1140-000x
	SCSI Board 2	1984-3301-0001

Drive Notes

- For Tandberg 5623 tape drives with a beige faceplate, it is necessary to initialize a tape every time the console is powered up. Failure to do so will result in unexpected tape operation errors.
- Hard drives larger than 970 megabytes installed on an RS3 system will only have 970 megabytes available for use on the RS3.

Table 2.11. P1 R4.x/Console Accessory Requirements

Keyboard Revisions		Option Description	Part Number
Device	**Boot ROM**		
Keyboard Interface (KBI)	4.02	Enhanced Operator/ Engineering Keyboard	10P5084x004 * 1984-3222-x004 1984-2889-x004
	3.7	Enhanced Operator/ Engineering Keyboard	1984-1978-0003
	1.4	Configure Keyboard	1984-1978-0001
Trackball Card Assembly (TB)	1.1	Trackball	10P5285000x 1984-2662-000x 1984-1975-000x
Display Panel (DISPPNL)	1.3	Display Panel on the Operator Keyboard	1984-1634-x00x 1984-2372-x0xx
Options Panel 1, 2, and 3 (OPTPNL1, OPTPNL2, and OPTPNL3)	1.1	Options Keyboard	1984-1632-x000 1984-2853-x00x

* CE compliant

NOTE: The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Upgrade Scenarios for Existing Consoles

Table 2.12 defines the terms for available RS3 console types.
Table 2.13 lists typical upgrade scenarios for successfully upgrading the various types of consoles to P1 R4.x.

Table 2.12. Definition of Terms

Console Type	Definition
MTCC	Multitube Command Console
SMS	System Manager Station
ECC	Enhanced Command Console
BCC	Basic Command Console
MC	MiniConsole
68040	A console using the 68040 processor board (10P5527001x or 1984-3202-001x). 68040 consoles are either MTCCs or SMS consoles.
68020	A console using the 68020 processor board (1984-1540-0009 or 1984-1161-0009). All 68020 consoles are MTCCs.
68000	A console using the 68000 processor board (1984-2759-0008, 1984-2137-0008, 1984-2122-0007, 1984-2120-0008, 1984-2107-0005, or 1984-1061-0005). These boards are used in MC, BCC, ECC, and 68000 MTCC consoles.
Pixel Graphics	A console using the pixel graphics board (1984-2503-0001 or 10P58900001). 68020 and 68040 consoles only use this video board.
Character Graphics	A console using the character graphics board (1984-1064-0001). This was an option only on 68000-based consoles (68000 MTCC, ECC, and BCC).
SCSI Master MTCC	An RS3 Multitube Command Console that has its own hard drive, and may have a tape drive. No other consoles share its SCSI bus.
SCSI Master MTCC and One Slave Node	Two RS3 MTCCs that share a disk drive and tape drive.
SCSI Master MTCC and Two Slave Nodes	Three RS3 MTCCs that share a disk drive and a tape drive.

Table 2.13. Typical Upgrade Scenarios

Console	Upgrade Scenario
68040 SCSI Master MTCC	Check that the boot ROM is 10.08 or higher. A new boot ROM set can be ordered.
68040 SCSI Master MTCC and One Slave Node	The slave console must be split from the master and made into a master node. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	Check the boot ROMs of both consoles to make sure they are at least 10.08 or higher. A new boot ROM set can be ordered.
68020 SCSI Master MTCC	The 68020 processor board must be replaced with a 68040 processor board. See 68020 to 68040 Console Upgrade Kit in Section 4.

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Table 2.13. Typical Upgrade Scenarios (continued)

Console	Upgrade Scenario
68020 SCSI Master MTCC and One Slave Node	The slave console must be split from the master and made into a master node. This requires a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	Both 68020 processor boards must be replaced with 68040 processor boards using a 68040 upgrade kit. See 68020 to 68040 Console Upgrade Kit in Section 4.
68020 SCSI Master MTCC and Two Slave Nodes	Both slave consoles must be split from the master and made into master nodes. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	All three 68020 processor boards must be replaced with 68040 processor boards. See 68020 to 68040 Console Upgrade Kit in Section 4.
68000 SCSI Master MTCC with Pixel Graphics	The 68000 processor board must be replaced with a 68040 processor board.
68000 SCSI Master MTCC and One Slave Node with Pixel Graphics	The slave console must be split from the master and made into a master node. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	Both 68000 processor boards must be replaced with 68040 processor boards.
68000 SCSI Master MTCC and Two Slave Nodes with Pixel Graphics	Both slave consoles must be split from the master and made into master nodes. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	All three 68000 processor boards must be replaced with 68040 processor boards.
68000 SCSI Master MTCC with Character Graphics	The 68000 processor board must be replaced with a 68040 processor board.
	The character graphics video processor board must be replaced with a pixel video processor board.
68000 SCSI Master MTCC and One Slave Node with Character Graphics	The slave console must be split from the master and made into a master node. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	Both 68000 processor boards must be replaced with 68040 processor boards.
	Both character graphics video processor boards must be replaced with a pixel video processor board.

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Table 2.13. Typical Upgrade Scenarios (continued)

Console	Upgrade Scenario
68000 SCSI Master MTCC and Two Slave Nodes with Character Graphics	Both slave consoles must be split from the master console and made into master nodes. This requires at least a hard drive to make a disk-only console, or a hard drive and tape drive. Kits are available to make this change. See Console Upgrades in Section 4.
	All three 68000 processor boards must be replaced with 68040 processor boards.
	All three character graphics video processor boards must be replaced with a pixel video processor board.
Any console with a floppy drive	Floppy drives are not supported in P1 R4.x software. There are two options for upgrading these consoles: 1) Remove the floppy drive and convert the console to a disk-only console. There is a kit available for this. OR 2) Replace with a tape drive. The side issue with this option is that the current tape drive that is available for purchase is not compatible with the hard drives that shipped with floppy consoles; so typically, the floppy drive is replaced with a tape drive and the hard drive is replaced with the current version. See Table 2.4 through Table 2.7 for details.
Enhanced Command Console (ECC)	There are no upgrade options. You must purchase a new 68040 MTCC console to replace this console.
Basic Command Console (BCC)	There are no upgrade options. You must purchase a new 68040 MTCC console to replace this console.
MiniConsole (MC)	There are no upgrade options. You must purchase a new 68040 MTCC console to replace this console.

Upgrade Kits

The following kits are available to assist with upgrading your RS3 system. For information on upgrade kits, contact your Emerson Process Management sales or service representative.

68040 OI Processor Boot ROM Upgrade kit
1984-3204-1012, Version 10.12

68020 to 68040 OI Processor Upgrade Kit
1984-2380-0005

MTCC Tape and Hard Disk Drive Upgrade Kits
(Refer to Section 4 of these Release Notes for part numbers)

ControlFile Node Combinations Supported in P1 PeerWay Image Designation

Table 2.14 through Table 2.22 show ControlFile node combinations supported in P1 R4.x for P1 PeerWay Image Designation requirements. Table 2.30 lists the part numbers for the CPs and controller processors.

Table 2.14. CP5 Batch Control Files with MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP5BA_P1 Batch CP	CP5	7.01	4MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.15. CP5 Standard Control Files with MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP5_P1 Standard CP	CP5	7.01	4MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.16. CP5 Batch Control Files with MPCII and MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP5BA_P1 Batch CP	CP5	7.01	4MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		
				$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.17. CP5 Standard Control Files with MPCII and MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP5_P1 Standard CP	CP5	7.01	4MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		
				$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.18. CPIV or CPIV+ Batch CP ControlFiles with MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP4BA_P1 Batch CP	CPIV or CPIV+	4.02	4 MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.19. CPIV or CPIV+ Standard CP ControlFiles with MPC5 Controllers Installed

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP4_P1 Standard CP	CPIV or CPIV+	4.02	4 MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.20. CPIV or CPIV+ Batch CP ControlFiles with MPCII Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4BA_P1 Batch CP	CPIV or CPIV+	4.02	4 MB NV Memory (Requires 1.17 NV Boot) or 2 MB NV Memory (Requires 1.15 NV Boot)	$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.21. CPIV or CPIV+ Standard CP ControlFiles with MPCII Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4_P1 Standard CP	CPIV or CPIV+	4.02	4 MB NV Memory (Requires 1.17 NV Boot) or 2 MB NV Memory (Requires 1.15 NV Boot)	$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

CPI and CPII ControlFile Requirements for P1 PeerWay Image Designation

CPI and CPII ControlFiles **are not supported** in P1 R4.x software release for P1 PeerWay Image Designation. CPI or CPII ControlFiles must be upgraded to a minimum CPIV ControlFiles or CPIV+ ControlFiles with MPCII controllers installed (see Table 2.20 and Table 2.21). Typically, the CPI's and CPII's are replaced with CPIV+'s and the bubble board is replaced with at least a 2 MB NV memory board to upgrade these ControlFiles. Check Table 2.20 orTable 2.21 for all other MPC2 requirements.

I/O Requirements for P1 PeerWay Image Designation

Table 2.22 identifies the I/O requirements for P1 PeerWay Image Designation.

Table 2.22. I/O Requirements for P1 PeerWay Image Designation

Type	Description	Part Number	Minimum Required		Use the following FIC/FIM software image	Supported by Controller Images
			F-Rev	S-Rev		
AIO-R	Analog FIC	1984-2518-0001	1.X	1.6	$$AFIC1_6	$MPC2+_P1 $MPC5_P1
		1984-2518-0002 10P54440002 (EMC Compliant) 10P59150002 (EMC Compliant)	2.1	4.8	$$AFIC4_8	
AIO-RS	Analog FIC with Smart Daughterboard	1984-2519-0002 10P57240002 (EMC Compliant) 10P59270002 (EMC Compliant)	2.1	4.8	$$AFIC4_8	$MPC2+_P1 $MPC5_P1

* The minimum acceptable firmware is shown. A higher level firmware of 2.07 is shipping with newer pulse cards.

NOTES:

F-REV is the Boot ROM in the I/O card.
S-REV is the downloadable image stored on the I/O card's battery-backed memory or flash memory. This software can be upgraded, if required.

(continued on next page)

Table 2.22. I/O Requirements for P1 PeerWay Image Designation (continued)

Type	Description	Part Number	Minimum Required		Use the following FIC/FIM software image	Supported by Controller Images
			F-Rev	S-Rev		
CIO	Contact I/O	1984-1460-0003	3.1	N/A	---	$MPC2+_P1 $MPC5_P1
MAI	MAIO Input FIM	1984-4414-0001 1984-4414-1001	1.1	3.3	$$MAIO3_3	$MPC2+_P1 $MPC5_P1
		10P54040004 (EMC Approved)	4.1	3.3		
		10P57700005 (Replaces 10P54040004) (EMC Approved)	5.0	3.3		
MAI-HD	MAI High-Density (32 points)	10P53190004 (EMC Approved)	4.1	3.3	$$MAIO3_3	$MPC2+_P1 $MPC5_P1
		10P58300005 (Replaces 10P53190004) (EMC Approved)	5.1	3.3		
MAO	MAIO Output FIM	1984-4418-0001 1984-4418-0004	1.1	3.3	$$MAIO3_3	$MPC2+_P1 $MPC5_P1
		10P54080004 (EMC Approved)	4.1	3.3		
		10P58080005 (Replaces 10P54080004) (EMC Approved)	5.1	3.3		
MDIO	MDIO Low Side Switch	1984-4080-0001	1.1	3.4	$$DIO3_4	$MPC2+_P1 $MPC5_P1
		10P53520006 (EMC Approved)	6.6	4.0	$$DLH4_0	
	MDIO High Side Switch	10P53550006 (EMC Approved)	6.7	4.0		
PIOB	Pulse I/O	1984-2546-0001	1.15	N/A	---	$MPC2+_P1 $MPC5_P1
		1984-2546-0002 10P54470002 (EMC Compliant) 12P25960002 (EMC Compliant)	1.15*	N/A		
TIB	Temperature Input	1984-2731-0001	1.8	3.1	$$TFIC3_1	$MPC2+_P1 $MPC5_P1

* The minimum acceptable firmware is shown. A higher level firmware of 2.07 is shipping with newer pulse cards.

NOTES:

F-REV is the Boot ROM in the I/O card.
S-REV is the downloadable image stored on the I/O card's battery-backed memory or flash memory. This software can be upgraded, if required.

ControlFile Node Combinations Supported in P1/V18 Combined Peerway Image Designation

Table 2.23 through Table 2.29 show ControlFile node combinations supported in P1 R4.x for P1/V18 Combined PeerWay Image Designation requirements. Table 2.30 lists the part numbers for the CPs and controller processors.

Table 2.23. CPIV or CPIV+ Batch CP ControlFiles with MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4BA_P1 Batch CP	CPIV+ or CPIV	4.02	4 MB NV Memory (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.24. CPIV or CPIV+ Standard CP ControlFiles with MPC5 Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4_P1 Standard CP	CPIV+ or CPIV	4.02	4 MB NV RAM (Requires 1.17 NV Boot)	$MPC5_P1	MPC5+	MPC5	7.03
					PLC+		
					MUX+		
				$RBLC5_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.25. CPIV or CPIV+ Batch CP ControlFiles with MPCII Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4BA_P1 Batch CP	CPIV+ or CPIV	4.02	4 MB NV RAM (Requires 1.17 NV Boot) or 2 MB NV Memory (Requires 1.15 NV Boot)	$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.26. CPIV or CPIV+ Standard CP ControlFiles with MPCII Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
$CP4_P1 Standard CP	CPIV+ or CPIV	4.02	4 MB NV RAM (Requires 1.17 NV Boot) or 2 MB NV Memory (Requires 1.15 NV Boot)	$MPC2+_P1	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_P1	RBLC+		

NOTES:

- These ControlFiles run P1 software on all cards. Only the combination of hardware and software listed in the above table is supported
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

Table 2.27. CPIV+ ControlFile with MPCII and Standard Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
$CP4_18 Standard CP	CPIV+	4.02	2 MB NV Memory (Requires 1.15 NV Boot)	$MPC2+_18	MPC2+	MPCII	6.05
					PLC+		
					MUX+		
				$RBLC2_18	RBLC+		
				$$STDC_18	CC	CC	5.15
						MPC(I)(1)	5.15
						MPCII(2)	6.05
					MLC	MLC	5.15
					SSC	SSC	5.15
					MUX	MUX/PLC	5.15
						MPC(I)(3)	5.15
						MPCII(4)	6.06

(1) An MPC(I) controller jumpered to run the Contact Controller Image

(2) An MPCII controller jumpered to run the Contact Controller Image

(3) An MPC(I) controller jumpered to run the MUX Image

(4) An MPCII controller jumpered to run the MUX Image

NOTES:

- This table covers CPIV+ ControlFiles. A CPIV+ works with the MPCII or a mixture of the MPCII and standard controllers. The CPIV works only with MPCII processors.
- ControlFile nodes with a combination of CPIV+s, MPCII's and standard controllers use V18 images contained in the P1 R4.x software release. Only the combination of hardware and software listed in the above table is supported.
- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

General Hardware Upgrade Information

- MPC(I) controllers can only be used in the above table when they are either jumpered to run the Contact Controller or MUX image. MPC(I) controllers running MPC(I) images are not supported in CPIV+ ControlFiles in the P1 R4.x software release. All MPC(I) controllers running MPC(I) images must be upgraded to MPCII or MPC5 controllers.
- Rosemount Basic Language Controller (RBLC) image is only supported with MPCII or MPC5 controllers in the P1 R4.x software release. Any MPC(I) running RBLC image must be upgraded to an MPCII or MPC5.

Table 2.28. CPII ControlFile with MPCII and Standard Controllers

CP			NV Memory	Controller Image and Hardware to Support Image			
Image	**Hardware**	**Boot ROM**	**Size/Type**	**Controller Image File Name**	**Controller Image**	**Hardware**	**Boot ROM**
Max Config $$CPMAX18	CPII	2.70	2 MB NV RAM (Requires 1.15 NV Boot) or 1 MB NV RAM (Requires 1.15 NV Boot) or 1 MB Bubble or 0.5 MB Bubble	$$CPMAX18(1)	CC	CC	5.15
						MPC(I)(2)	5.15
						MPCII(3)	6.05
					MLC	MLC	5.15
					MUX	MUX/PLC	5.15
						MPC(I)(4)	5.15
						MPCII(5)	6.05
					SSC	SSC	5.15
				$$MPCA18	MPC	MPC(I)	5.17
						MPCII(6)	6.05
				$$MPCAS18	MPCAS	MPC(I)	5.21
						MPCII(6)	6.05

(1) These controller images are part of the $$CPMAX18 image. No additional controller images are needed.

(2) An MPC(I) controller jumpered to run the Contact Controller image

(3) An MPCII controller jumpered to run the Contact Controller image

(4) An MPC(I) controller jumpered to run the MUX image

(5) An MPCII controller jumpered to run the MUX image

(6) An MPCII controller jumpered to run an MPC(I) image

NOTES:

For an explanation of the various MPC(I) images, see Table 5.2 of the ”Software Loading and Upgrade Procedure, Including Batch” which accompanies these Release Notes.

- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- CPII ControlFile nodes use V18 images contained in the P1 R4.x software release. Only the combination of hardware and software listed in the above table is supported.
- The size of NV memory or bubble card required depends on the combination of images needed in the ControlFile. See the section Memory Allocations and Plant Program Space on page 2-34 and Table 2.32 to Table 2.36 to determine the size of NV memory card required.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

General Hardware Upgrade Information

- $$CPMAX18 is the only CPII image supplied with the P1 R4.x software release.
- A CPII ControlFile running batch, if it needs to continue to run batch after the upgrade to P1 R4.x, must have its hardware upgraded to Table 2.23 or Table 2.25.
- Rosemount Basic Language Controller (RBLC) image is only supported with MPCII or MPC5 controllers in the P1 R4.x software release. Any MPC(I) running RBLC image must be upgraded to an MPCII.
- With a CPII, the CPMAX CP image stores part of the controller configuration in the CP memory. A CPIV, CPIV+, or CP5 does not provide this functionality. The portion of the controller configuration that was stored in the CPII memory will now have to be placed back into the controller. Therefore, all controllers in a CPII ControlFile running CPMAX need at least 20% free space if the CPII is upgraded to a CPIV, CPIV+ or CP5. There should be a trial load of the Config on a test system before the plant upgrade to make sure the Config will fit.

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Table 2.28. CPII ControlFile with MPCII and Standard Controllers (continued)

Image	Hardware	Boot ROM	Size/Type	Controller Image File Name	Controller Image	Hardware	Boot ROM
				$$MPCAP18	MPCAP	MPC(I)	5.21
						MPCII(6)	6.05
				$$MPCAT18	MPCAT	MPC(I)	5.21
						MPCII(6)	6.05
				$$MPTUN18	MPTUN	MPC(I)	5.21
						MPCII(6)	6.05
				$$SMART18	MPC	MPC(I)	5.21
						MPCII(6)	6.05
				$$PLCM18	PLC	MUX/PLC	5.21
						MPC(I)	5.21
						MPCII(6)	6.05

(1) These controller images are part of the $$CPMAX18 image. No additional controller images are needed.

(2) An MPC(I) controller jumpered to run the Contact Controller image

(3) An MPCII controller jumpered to run the Contact Controller image

(4) An MPC(I) controller jumpered to run the MUX image

(5) An MPCII controller jumpered to run the MUX image

(6) An MPCII controller jumpered to run an MPC(I) image

NOTES:

For an explanation of the various MPC(I) images, see Table 5.2 of the ”Software Loading and Upgrade Procedure, Including Batch” which accompanies these Release Notes.

- Boot ROM level X.YY is the minimum required; a higher .YY number will also work.
- CPII ControlFile nodes use V18 images contained in the P1 R4.x software release. Only the combination of hardware and software listed in the above table is supported.
- The size of NV memory or bubble card required depends on the combination of images needed in the ControlFile. See the section Memory Allocations and Plant Program Space on page 2-34 and Table 2.32 to Table 2.36 to determine the size of NV memory card required.
- The NV boot level is listed as the BRAM field on the ControlFile Status (CFS) screen.

General Hardware Upgrade Information

- $$CPMAX18 is the only CPII image supplied with the P1 R4.x software release.
- A CPII ControlFile running batch, if it needs to continue to run batch after the upgrade to P1 R4.x, must have its hardware upgraded to Table 2.23 or Table 2.25.
- Rosemount Basic Language Controller (RBLC) image is only supported with MPCII or MPC5 controllers in the P1 R4.x software release. Any MPC(I) running RBLC image must be upgraded to an MPCII.
- With a CPII, the CPMAX CP image stores part of the controller configuration in the CP memory. A CPIV, CPIV+, or CP5 does not provide this functionality. The portion of the controller configuration that was stored in the CPII memory will now have to be placed back into the controller. Therefore, all controllers in a CPII ControlFile running CPMAX need at least 20% free space if the CPII is upgraded to a CPIV, CPIV+ or CP5. There should be a trial load of the Config on a test system before the plant upgrade to make sure the Config will fit.

CPI ControlFile Requirements for P1/V18 Combined PeerWay Image Designation

CPI ControlFiles **are not supported** in P1 R4.x software. CPI ControlFiles must be upgraded to a minimum CPIV ControlFiles or CPIV+ ControlFiles with MPCII controllers installed (see Table 2.25, Table 2.26 and Table 2.27). Typically, the CPI's are replaced with CPIV+'s and the bubble board is replaced with at least a 2 MB NV memory board to upgrade these ControlFiles. Check Table 2.25, Table 2.26 or Table 2.27 for all other controller requirements.

I/O Requirements for P1/V18 Combined PeerWay Image Designation

Table 2.29 identifies the I/O requirements for P1/V18 Combined PeerWay Image Designation.

Table 2.29. I/O Requirements for P1/V18 Combined PeerWay Image Designation

Type	Description	Part Number	Minimum Required		Use the following FIC/FIM software image	Supported by Controller Images
			F-Rev	S-Rev		
AI	MLC Input FIC	1984-1463-000x 1984-1394-000x 1984-1325-000x 1984-2412-000x	N/A	N/A	---	$$CPMAX18 $$STDC_18
AIO-R	Analog FIC	1984-2518-0001	1.X	1.6	$$AFIC1_6	$$MPCA18 $$MPCAS18 $$MPCAP18 $$MPCAT18 $$MPTUN18 $MPC2+_18 $MPC2+_P1 $MPC5_P1
		1984-2518-0002 10P54440002 (EMC Compliant) 10P59150002 (EMC Compliant)	2.1	4.8	$$AFIC4_8	
AIO-RS	Analog FIC with Smart Daughterboard	1984-2519-0002 10P57240002 (EMC Compliant) 10P59270002 (EMC Compliant)	2.1	4.8	$$AFIC4_8	$$MPCAS18 $MPC2+_18 $MPC2+_P1 $MPC5_P1
AO	MLC Output FIC	1984-1273-000x 1984-1490-000x 1984-1334-000x 1984-1469-000x 1984-1525-000x	3.1	N/A	---	$$CPMAX18 $$STDC_18

(1) Supports Contact FlexTerm (1984-1336-000x or 1984-1175-000x) that require the Contact Controller (CC) Image. A Contact FlexTerm can be cabled to a ControlFile MultiPurpose Controller (MPC(I), MPCII, or MPC5) jumpered to the CC image, or to a Contact Controller.

(2) Supports Contact Card Cage (1984-2576-0001) that require the MultiPurpose Controller images. A Contact Card Cage can be cabled only to a ControlFile MPC Controller (MPC(I), MPCII, or MPC5).

* The minimum acceptable firmware is shown. A higher level firmware of 2.07 is shipping with newer pulse cards.

NOTES:

- F-REV is the Boot ROM in the I/O card.
- S-REV is the downloadable image stored on the I/O card's battery-backed memory or flash memory. This software can be upgraded, if required

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Table 2.29. I/O Requirements for P1/V18 Combined PeerWay Image Designation (continued)

Type	Description	Part Number	Minimum Required		Use the following FIC/FIM software image	Supported by Controller Images
			F-Rev	S-Rev		
CIO	Contact I/O	1984-1460-0003	3.1	N/A	---	$$CPMAX18 $$STDC_18(1) $$MPCA18 $$MPCAS18 $$MPCAP18 $$MPCAT18 $MPC2+_18 $MPC2+_P1 $MPC5_P1(2)
		1984-1304-0001	1.X	N/A		$$CPMAX18 $$STDC_18
MAI	MAIO Input FIM	1984-4414-0001 1984-4414-1001	1.1	3.3	$$MAIO3_3	$MPC2+_18 $MPC2+_P1 $MPC5_P1
		10P54040004 (EMC Approved)	4.1	3.3		
		10P57700005 (Replaces 10P54040004) (EMC Approved)	5.0	3.3		
MAI-HD	MAI High-Density (32 points)	10P53190004 (EMC Approved)	4.1	3.3	$$MAIO3_3	$MPC2+_18 $MPC2+_P1 $MPC5_P1
		10P58300005 (Replaces 10P53190004) (EMC Approved)	5.1	3.3		

(1) Supports Contact FlexTerm (1984-1336-000x or 1984-1175-000x) that require the Contact Controller (CC) Image. A Contact FlexTerm can be cabled to a ControlFile MultiPurpose Controller (MPC(I), MPCII, or MPC5) jumpered to the CC image, or to a Contact Controller.

(2) Supports Contact Card Cage (1984-2576-0001) that require the MultiPurpose Controller images. A Contact Card Cage can be cabled only to a ControlFile MPC Controller (MPC(I), MPCII, or MPC5).

* The minimum acceptable firmware is shown. A higher level firmware of 2.07 is shipping with newer pulse cards.

NOTES:

- F-REV is the Boot ROM in the I/O card.
- S-REV is the downloadable image stored on the I/O card's battery-backed memory or flash memory. This software can be upgraded, if required

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Table 2.29. I/O Requirements for P1/V18 Combined PeerWay Image Designation (continued)

Type	Description	Part Number	Minimum Required		Use the following FIC/FIM software image	Supported by Controller Images
			F-Rev	S-Rev		
MAO	MAIO Output FIM	1984-4418-0001 1984-4418-0004	1.1	3.3	$$MAIO3_3	$MPC2+_18 $MPC2+_P1 $MPC5_P1
		10P54080004 (EMC Approved)	4.1	3.3		
		10P58080005 (Replaces 10P54080004) (EMC Approved)	5.1	3.3		
MDIO	MDIO Low Side Switch	1984-4080-0001	1.1	3.4	$$DIO3_4	$MPC2+_18 $MPC2+_P1 $MPC5_P1
		10P53520006 (EMC Approved)	6.6	4.0	$$DLH4_0	
	MDIO High Side Switch	10P53550006 (EMC Approved)	6.7	4.0		
PIOB	Pulse I/O	1984-2546-0001	1.15	N/A	---	$$MPCAP18 $MPC2+_18 $MPC2+_P1 $MPC5_P1
		1984-2546-0002 10P54470002 (EMC Compliant) 12P25960002 (EMC Compliant)	1.15*	N/A		
TIB	Temperature Input	1984-2731-0001	1.8	3.1	$$TFIC3_1	$$MPCAT18 $MPC2+_18 $MPC2+_P1 $MPC5_P1

(1) Supports Contact FlexTerm (1984-1336-000x or 1984-1175-000x) that require the Contact Controller (CC) Image. A Contact FlexTerm can be cabled to a ControlFile MultiPurpose Controller (MPC(I), MPCII, or MPC5) jumpered to the CC image, or to a Contact Controller.

(2) Supports Contact Card Cage (1984-2576-0001) that require the MultiPurpose Controller images. A Contact Card Cage can be cabled only to a ControlFile MPC Controller (MPC(I), MPCII, or MPC5).

* The minimum acceptable firmware is shown. A higher level firmware of 2.07 is shipping with newer pulse cards.

NOTES:

- F-REV is the Boot ROM in the I/O card.
- S-REV is the downloadable image stored on the I/O card's battery-backed memory or flash memory. This software can be upgraded, if required

Table 2.30. CP and Controller Processor Part Numbers

Description	Part Number
CC (Contact Controller)	1984-1445-0005 or 1984-1374-0005
CPI	1984-1448-0001 or 1984-1240-0001
CPII	1984-1594-0002
CPIV	1984-4064-0004
CPIV+	10P50870004 and 1984-4164-0004
CP5	10P5736X022
MLC (MultiLoop Controller)	1984-1439-0005 or 1984-1249-0005
MPC(I) (MultiPurpose Controller)	1984-2500-0005
MPCII (MultiPurpose Controller)	10P50400006 and 1984-4068-0006
MPC5 (MultiPurpose Controller)	10P57520007
MUX (Multiplexer Controller) or PLC	1984-1494-0001
SSC (Single Strategy Controller)	1984-1442-000x or 1984-1371-000x

Highway Interface Adapters (HIA) Requirements

Table 2.31. P1 R4.x/HIA Requirements

Software Image	Processor Board	OI NV Memory	Boot ROM
$$HIAPROG	68000 (Requires a 1 MB OI processor board) 10P57140008 1984-2759-0008 1984-2137-0008	OI Bubble 1984-1147-000x 1984-1167-000x	8.XX
		OI NV RAM 1984-1547-000x	8.72

NOTE: Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Supervisor Computer Interface (SCI) Requirements

Table 2.32. P1 R4.x/SCI Requirements

Software Image	Processor Board	OI NV Memory	Boot ROM
$$SCIPROG	68000 (Requires a 1 MB OI processor board) 10P57140008 1984-2759-0008 1984-2137-0008	OI Bubble 1984-1147-000x 1984-1167-000x	8.XX
		OI NV RAM 1984-1547-000x	8.72

NOTE: Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

RS3 Network Interface (RNI) Requirements

RNI software version 4.1 requires P1 R4.x or later software release, P1 PeerWay Image Designation only.

RNI software version 3.0 requires V18 R2.8 or later software.

RNI software version 3.0 is the minimum RNI software version that can run on P1 R4.x software release (either PeerWay Image Designation).

RS3 Operator Station (ROS) Requirements

Refer to Table 1.3 and Table 1.4 for information about the recent Base System software and ROS software releases.

From Table 2.1, for P1 PeerWay Image Designation, ROS 4.0.1 with SP1 is supported. This version supports ROS ABC Batch Messaging.

From Table 2.2, for P1/V18 Combined PeerWay Image Designation, ROS 3.1.2 is the only supported ROS release. This release does not support ROS ABC Batch Messaging.

RS3 VAX Interface (VAX) Requirements

If a RMT/host VAX interface is used, P1 R4.x requires VAX/VMS version V5.5-1 or higher. RMT/host has been verified on VMS release up to Open VMS VAX version 7.0.

Memory Allocations and Plant Program Space

Be sure to calculate available space for plant program images to be loaded before upgrading software. You may need to increase the size of the NV memory in the ControlFile before upgrading. Use Table 2.33 through Table 2.35, along with the worksheet (Table 2.36), to verify that enough space is available in the NV memory card.

Table 2.33. Available Free Space for CP and Controller Images

CP Type	Part Number	NV Memory Size			
		.5 MB	1 MB	2 MB	4 MB
CPII	1984-1594-000x	350K	863K	1886K	Not Supported
CPIV	1984-4064-000x	Not Supported	Not Supported	1338K	2938K
CPIV+	10P50870004 and 1984-4164-0004				
CP5	10P5736X022	Not Supported	Not Supported	Not Supported	2938K

Table 2.34. CP Image Size

Image	Memory Size
$CP4_P1	115K
$CP4BA_P1	440K
$CP4_18	113K
$$CPMAX18	199K
$CP5_P1	115K
$CP5BA_P1	440K

Table 2.35. Controller Image Size

Image	Memory Size		Image	Memory Size
$RBLC2_P1	139K		$$MPCAS18	88K
$MPC2+_P1	300K		$$MPCAP18	87K
$MPC5_P1	301K		$$MPCAT18	83K
$MPC2+_18	283K		$$MPTUN18	89K
$RBLC2_18	138K		$$PLCM18	88K
$RBLC5_P1	139K		$$SMART18	89K
$$MPCA18	88K		$$STDC_18	97K

Table 2.36. Free Space Worksheet

Line	Description	Memory Size	Memory Size
1	Free space for CP and Controller Images (from Table 2.33)		
2	Size of CP Image (from Table 2.34)		
3	Size of first Controller Image (from Table 2.35)		
4	Size of second Controller Image (from Table 2.35)		
5	Size of third Controller Image (from Table 2.35)		
6	Size of fourth Controller Image (from Table 2.35)		
7	Total image size (add lines 2 through 6)		
8	Remaining space (subtract line 7 from line 1)		

NOTES:

- If the number in line 8 is less than 30K, then the combination of images will not fit the current NV memory card and a larger one is required.
- If the number in line 8 is between 30K and 50K, then the combination of images may fit; it will have to be tried to be sure. If the combination does not fit, the RS3 will generate the alarm **DX: NOT ENOUGH ROOM IN NV MEM** located on the Disk Event List.
- If the number in line 8 is greater than 50K, then the combination will fit.

P1 R4.0 Software Image Versions

Table 2.37. P1 R4.0 Software Image Versions

Image	Version		Image	Version
ECCBOOT (English)	P1.30		$$MPCAS18	18.11
ECCBOOT (French)	P1.31		$$MPCAP18	18.11
ECCBOOT (German)	P1.32		$$MPCAT18	18.11
ECCBOOT (Russian)	P1.29		$$MPTUN18	18.11
SMSBOOT (English)	P1.30		$$PLCM18	18.10
SMSBOOT (French)	P1.31		$$SMART18	18.10
SMSBOOT (German)	P1.32		$$STDC_18	18.11
SMSBOOT (Russian)	P1.29		$MPC2+_18	18.11
$CP4_P1	P1.15		$RBLC2_18	18.10
$CP4BA_P1	P1.15		$$AFIC1_6	1.6
$CP5_P1	P1.15		$$AFIC4_8	4.8
$CP5BA_P1	P1.15		$$TFIC3_1	3.1
$RBLC2_P1	P1.17		$$DIO3_4 (DIO1)	3.4
$MPC2+_P1 (see Note 1)	P1.17		$$DLH4_0 (DIO2)	4.0
$RBLC5_P1	P1.17		$$MAIO3_3	3.3
$MPC5_P1 (see Note 1)	P1.17		$$HIAPROG	11.22
$CP4_18	18.14		$$SCIPROG	P1.02
$$CPMAX18	18.15		Process Graphics	18.01
$$MPCA18	18.11		Process Symbols	18.01

Note 1:

For the images identified, a discrepancy has been identified as Track Issue #0469. The Track Issue #0469 deals with the following: During a controller start or redundancy switchover, MultiPoint Input values may momentarily be read at the value of zero or the low cutoff value, generating process or hardware low value alarms. This condition will only exist for several seconds and the Hold Forward flag (HF) will be set to on. This HF flag can be used to detect the system error vs. the actual alarm condition.

(See KBA #AUS1-208-000824144155 for additional information on this issue.)

P1 R4.1 Software Image Versions

Table 2.38. P1 R4.1 Software Image Versions

Image	Version		Image	Version
$MPC2+_P1 (see Note 1)	P1.18			
$MPC5_P1 (see Note 1)	P1.18			

Note 1

This RS3 Base Software release is identical to P1 R4.0 except that Track issue #0469 has now been corrected. Only two images on the tape have changed, $MPC2+_P1 and $MPC5_P1.

Emerson Process Management has issued a safety notice dated April 24, 2001, for this Release. (See KBA #AUS1-247-010419112733).

For the images identified, a discrepancy has been identified as Track Issue #0535. The Track Issue #0535 deals with the following: The analog input values from the MultiPoint Analog Input (MAI) FIM connected to the Controller (MPC2 or MPC5) stops updating without any indication or alarm to the operator. This WILL occur when the MPC2 or MPC5 Controller(simplex or redundant) is loaded with image software version P1.18 and connected to any MAI FIM. The 'Hold Forward' (HF) flag, after 124.25 days of uninterrupted runtime, will be set and prevent the actual analog value from being used.

(See KBA# AUS1-247-010419112733 for additional information on this issue.)

P1 R4.2 Software Image Versions

Table 2.39. P1 R4.2 Software Image Versions

Image	Version		Image	Version
$MPC2+_P1 (see Note 1)	P1.19			
$MPC5_P1 (see Note 1)	P1.19			

Note 1

This is a mandatory upgrade for Customers currently running systems with base software P1 R4.1. For all other Customers this is information only.

This RS3 Base Software release is identical to P1 R4.1 except that Track issue #0535 has now been corrected. Only two images on the tape have changed, $MPC2+_P1 and $MPC5_P1.

Section 3:
System Improvements

This section describes improvements to the RS3 system, including corrected discrepancies.

Corrected Discrepancies

Table 3.1 lists discrepancies corrected for Release P1 R4.2.
Table 3.2 lists discrepancies corrected for Release P1 R4.1.
Table 3.3 lists discrepancies corrected for Release P1 R4.0.
Table 3.4 lists discrepancies corrected for Release P1 R3.4.
Table 3.5 lists discrepancies corrected for Release P1 R3.3.
Table 3.6 lists discrepancies corrected for Release P1 R3.2.
Table 3.7 lists discrepancies corrected in previous P1 releases

The ID column specifies the RS3 subsystem: (Batch, Controller, Console, Comm, CP, Documentation, I/O, or SMS), followed by a number used to track this change. The Rating column contains a two-character code. An *A* rating is most severe, a *D* rating is least severe.

NOTE: While the phrasing of some descriptions may seem to indicate a problem, all discrepancies listed have been verified and corrected.

Table 3.1. RS3 Corrected Software Discrepancies in P1, Release 4.2

ID	Description	Rating
Controller 0535	The analog input values from the Multipoint Analog Input (MAI) FIM connected to the Controller (MPC2 or MPC5) stops updating without any indication or alarm to the operator. This WILL occur when the MPC2 or MPC5 controller (single or redundant) is loaded with image software version P1.18 and connected to any MAI FIM. The ”Hold Forward” (HF) flag, after 124.25 days of uninterrupted runtime, will be set and prevent actual analog value from being used. See KBA # AUS1-247-010419112733 for additional information on this issue. **Fixed**	A1

Table 3.2. RS3 Corrected Software Discrepancies in P1, Release 4.1

ID	Description	Rating
Controller 0469	During a controller start or redundancy switchover, Multipoint Input values may momentarily be read at the value of zero or the low cutoff value, generating process or hardware low value alarms. This condition will only exist for several seconds and the Hold Forward flag will be set to on. This HF flag can be used to detect the system error vs. the actual alarm condition. **Fixed**	A1

Table 3.3. RS3 Corrected Software Discrepancies in P1, Release 4.0

ID	Description	Rating
Batch 805217 0168	The "Batch ID" source field for a recipe started with runrecipe, now indicates started by System instead of by Operator. **Fixed**	D4
Batch 801407	Batch Material Tables now correctly maintain High and Low limits on all properties when upgraded from V18 versions. **Fixed**	D3
Batch 800941	The Tape Descriptor is displayed on tape directory for the console when the tape is loaded. **Fixed**	D3
Batch 0255	Corrected case on Batch Working recipe where user could leave a parameter as "No Value" and system would inadvertently unlock the wrong recipe unit. **Fixed**	D4
Batch 805390	If a working recipe is killed while in static mode, the ABC log file is changed to a finished recipe rather than being left as a working recipe, **Fixed**	D4
Batch 805376/123	Corrected Material Table ASCII conversion when material type "RAW" is used. **Fixed**	D4
Batch 805482/126	If a Batch Control Recipe start is aborted, the working recipe is no longer created. **Fixed**	D4
Batch 805554/150	The Autodelete function is now called when the user attempts to edit an ABC Batch Working recipe, (no longer see the error "Could not create ~file). **Fixed**	D4
Batch 805259/167	SMS console now allows printing scripts from the RBL File screen. **Fixed**	D3
Console 805081	The screen title "FIC Detail" was changed to "Field I/O Detail". **Fixed**	D3
Console 804552	Graphic objects linked to an icon object now correctly shows the condition color change when the graphic is first displayed. **Fixed**	D4
Console 805539/116	Report objects can now be selected properly on Report Configuration screens. **Fixed**	D2
Console 805441/112	"M ON" DISC on a graphic correctly animates when the operator presses enter. **Fixed**	D4

(continued on next page)

Table 3.3. RS3 Corrected Software Discrepancies in P1, Release 4.0 (continued)

ID	Description	Rating
Console 805569/148	Disk Folder search criteria is now saved for use on the next search. **Fixed**	Enhance-ment
Controller 805466/165	Intermittent Controller crash. **Fixed**	D4
Controller 805144/169	Intermittent Controller crash. **Fixed**	D4
Controller 805543/170	Intermittent Controller crash. **Fixed**	D4
CP 800293	The batch print statement “print(4,“SCF^t%511.0d”,SCxF,1) no longer causes a CP crash. **Fixed**	D4

Table 3.4. RS3 Corrected Software Discrepancies in P1, Release 3.4

ID	Description	Rating
Batch 805523	Edited ABC Recipe in static may loose identity of Start_UR icons when recipe is returned to normal. **Fixed**	D2
Batch 805360	Pressing Fast/Slow buttons on the Batch Monitor Screen may halt the script execution. **Fixed**	D2
Controller 805571	MPC5 Redundancy intermittently fails and backup does not take over. **Fixed**	D2
PCL	PCL does not communicate with device. **Fixed**	D1

Table 3.5. RS3 Corrected Software Discrepancies in P1, Release 3.3

ID	Description	Rating
Batch 804967	Cannot put recipe into static twice. **Fixed**	D4
Batch 805554	Autodelete not called correctly when ABC Log folder space is required to modify working recipe. **Fixed**	D4

Table 3.6. RS3 Corrected Software Discrepancies in P1, Release 3.2

ID	Description	Rating
Batch 801577	Infrequently, align-on statements can fall through without aligning correctly with the appropriate comm-op icon. **Fixed**	D2
Batch 805071	A nuisance alarm is generated when a recipe is started and an old file is automatically deleted. **Fixed**	D3
Batch 152627	Using redundant virtual arrays as parameters in some instructions halts the script and floods the Batch log with error messages. **Fixed**	D4
Batch 152736	Recipe cannot validate 10 or more unit process icons in a series. **Fixed**	D4
Batch 152798	An unsuccessful array copy generates an incorrect return status. **Fixed**	D4
Batch 801892	Batch function Byte2Flag function does not work for blocks over =xx-100, but it does work for blocks =xx-01 to =xx-100. **Fixed**	D4
Batch 802538	If you put a recipe into static mode, then restart it, sometimes the next unit recipe to start will go into static, with no entry in the batch log. **Fixed**	D4
Batch 803936	If you try to do a search in an empty file, the console will crash. **Fixed**	D4
Batch 803959	If you put a working recipe into static mode and delete a link between two icons and then kill the recipe, the working recipe does not disappear. **Fixed**	D4
Batch 804052	If the CP crashes or is rebooted while chained out to a child script for the second time, a “fatal error” is generated and the task must be killed and restarted. **Fixed**	D4
Batch 804560	Changes to the unit or start script for a START-UR recipe will cause validation HALT or WARNING that is not cleared by updating the checksum. **Fixed**	D4
Batch 804661	With Batch Secondary disk off (or primary), creating a script on other disk then turning disk back on, doesn’t create redundant file on powered up disk **Fixed**	D4
Batch 804968	Put recipe into static, make changes to working recipe, then restart recipe but recipe STATIC red marker will not go away until you recall the recipe. **Fixed**	D4

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Table 3.6. RS3 Corrected Software Discrepancies in P1, Release 3.2 (continued)

ID	Description	Rating
Batch 805157	Some V17 ABC recipes do not upgrade, had to manually change header to get recipe to upgrade to P1 R3.2. **Fixed**	D4
Batch 805513	Recipes won't update in some cases unless there is at least one parameter in the Batch Operations Table **Fixed**	D4
Batch 805556	Console allows manually assigning same BAPU to two different recipes. **Fixed**	D4
CP 804964	If CF is changed from P1 R3 to V18 (or earlier P1), NV mem will stop backing up. **Fixed**	D4
Console 101302	Unexpected results from enabling the "Op Chg" field on the Console Configuration Screen **Fixed**	D3
Console 801118	When multiple reports are imbedded in another report (on the Report Generation screen), reports might not be displayed. **Fixed**	D3
Console 803561	Cyrillic consoles (P1 and V18) show only the first 8 characters (of a total of 16) of a PLCB's Flag Name field. **Fixed**	D3
Console 803725	Saving the CAB for the ControlFile only works once or twice. After that saving from any console on the PeerWay gives a Controller Got Bad Message. **Fixed**	D3
Console 803765	Tic Master cannot spread the slot width from the PeerWay Node screen. **Fixed**	D3
Console 804933	Block Out on scaled PLC blocks is in Green, instead of in red, like normal outputs. **Fixed**	D3
Console 805081	The screen title "FIC Detail" should be changed to "Field I/O Detail" When FIMs were developed the FIC status screen was changed to Field I/O, missed **Fixed**	D3
Console 101699	Batch monitor screen does not show the correct backup volume name **Fixed**	D4
Console 150871	Generating a report from a node that does not exist in another report crashes the console **Fixed**	D4
Console 801127	The block print utility can crash the console when the printer is offline. **Fixed**	D4

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Table 3.6. RS3 Corrected Software Discrepancies in P1, Release 3.2 (continued)

ID	Description	Rating
Console 801219	On the I/O block, you can change the device type even if your console does not own the plant unit for the I/O block. **Fixed**	D4
Console 801281	On the report Read/Scan screen, entering a new file locks the console. **Fixed**	D4
Console 801385	Consoles might reboot if a Controller Processor is disabled while and FIC Detail screen is displayed on the console. **Fixed**	D4
Console 802287	When the ABC Data Folder is configured to certain sizes, the folder can not be restored from a tape. **Fixed**	D4
Console 804552	When an object that is linked to an icon object has a condition color change, the object will appear when the graphic is first called up. **Fixed**	D4
Console 804753	Garbage characters appear in Russian ABC Batch Input window. **Fixed**	D4
Console 804857	Call up Area Name Configure screen and press EXCHANGE, console crashes. **Fixed**	D4
Console 804859	Link Editor will accept Incompatible addresses for source and destination. **Fixed**	D4
Console 804863	Link Editor on graphic changes ”=1a–1/H/b” to ”=10a–1/b”, drops the analog link. **Fixed**	D4
Console 804874	If a certain sequence of events is followed, a graphic can crash a console. **Fixed**	D4
Console 804914	Cannot create a floating point PLCB (DANIELS ASCII or RTU type PLC). **Fixed**	D4
Controller 805051	When putting a control block logic step in manual, you can no longer toggle the step output from a discrete faceplate in P1 R3.2. **Fixed**	D2
Controller 805484	Installed the $MPC5_P1 controller image (Program Rev 7.53) and the peerway performance deteriorated due to the number of sent thks from the ctrl file **Fixed**	D2
Controller 151611	You cannot kill an RBL Controller if you start it without assigning it a script name. **Fixed**	D4
Controller 805416	If a DIO FIM and a FIC/FIM supporting a smart device are on the same comm line and the smart device fails, point 7 of the dio can glitch. **Fixed**	D4

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Table 3.6. RS3 Corrected Software Discrepancies in P1, Release 3.2 (continued)

ID	Description	Rating
Documentation 800442	Trend file 0 is not adequately described in the user manuals. **Fixed**	D3
Documentation 801765	The Associated_Text_40 fields on the bottom banner line and the list banner get clipped at 21 characters on batch and RBL generated alarms & events. **Fixed**	D3
Documentation 803204	ControlBlock types P, I, PD, PID, TOT, TOTSP, ATPID, and LL have the wrong limits on Prop Band, Integ Time, Deriv Time, and Filter Time in CB manual. **Fixed**	D3
Documentation 101263	RIOB takeover generates a “VIB HARDWARE” alarm. **Fixed**	D4
Documentation 101365	RIOB transfer health does not agree with the hardware alarm. **Fixed**	D4
Documentation 102271	If the CP switch is turned OFF and the ON quickly, the CP may refuse to boot up. Wait for the red LED to come ON before throwing the switch again. **Fixed**	D4
Documentation 150515	PIOB with a duration function displays the wrong time when a high cutoff is active. **Fixed**	D4
Documentation 152187	A recipe may be lost if it is loaded to a task that is in use. **Fixed**	D4
Documentation 800742	If an RIOB goes bad before the primary MPAIO FIM recovers, the primary FIM does not automatically regain control. **Fixed**	D4
Documentation 801155	Documentation for the SCI field code 200 is incorrect in The PeerWay Manual, Chapter 1 SCI, Section 4 Field Codes. **Fixed**	D4
Documentation 801237	RBL Manual does not adequately explain how to assign a character string value to a vstringdim array. **Fixed**	D4
Documentation 801909	Batch Plant Unit Disown procedure not correct in ABC Batch manual. **Fixed**	D4
Documentation 802262	If you use more than 30 comm–op icons, the CP memory may be corrupted. **Fixed**	D4

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Table 3.6. RS3 Corrected Software Discrepancies in P1, Release 3.2 (continued)

ID	Description	Rating
Documen-tation 802478	ABC Batch manual does not clearly indicate that the Batch Config screen “Recipe Support Data” disk entry controls the VDIMs, tables and scripts. **Fixed**	D4
Documen-tation 802819	Data may be lost if a disk shutdown (DS) is not done before powering down a con-sole. **Fixed**	D4
Documen-tation 803972	MDIO online replacement documentation contains inconsistencies. Clarification is needed. **Fixed**	D4
Document ation 804039	When AMS is communicating with devices via pass through, the update rate of digital PVs to RS3 is affected. **Fixed**	D1
Document ation 804854	The PIOB ”Counter” function does not work in P1 R3.1, **Fixed**	D4
Document ation 805052	A discrepancy exists in the SV manual in reference to Controller/circuit card removal procedures. **Fixed**	D4
Document ation 805081	The screen title “FIC Detail” should be changed to “Field I/O Detail”. When FIMs were developed, the FIC status screen was changed to Field I/O, missed. **Fixed**	D3
Document ation 805094	P1 R3.2, UP:6–14 is incomplete. **Fixed**	D4
Document ation 805467	Deleting a Batch Plant Unit ownership from BAPU screen is confusing. Manual not correct either. **Fixed**	D4
Document ation 805513	Recipes won’t update in some cases unless there is at least one parameter in the Batch Operations Table **Fixed**	D4

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases

ID	Description	Fixed in Release Number
Batch 800498	Working recipe icon is wrong color after executing. **Fixed.**	1.0
Batch 800671	Duplicate child task started after power failure. **Fixed.**	1.0
Batch 800699	When you restart a Batch Working Recipe suspended in Static mode, the Recipe View menu receives a “Config” warning. **Fixed.**	1.0

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Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Batch 801057	**When writing a character string to a string variable, the string length might be prematurely terminated.** This problem is partially fixed to the extent that a shorter string can now be inserted within a longer string without causing the termination character to be added, as long as the length of the short string is correctly defined in the long string placement. The places defined in the destination string must match the length of the string in the source string: long$="1234567890" short$= "abc" long$ (4,6) =short$ results in long$ being: "1234abc890" If you try to put a shorter string in the number of places defined: long$="1234567890" short$="abc" long$ (4,7) =short$; "Note the 7 here." The resulting string for long$ will be: "1234abc" If you do a strlen ( ) function on long$, it will report 10 characters, but will print out (to a report) only the first 7 characters. If you try to insert a string that has a different number of places than the predefined length of the destination string, you may not get the results you expect. To avoid this problem, define both the length of the source string, and the position where the destination string will be inserted. long$="1234567890" short$="abc" position=4; "The position where the first character of the string should go." len=(strlen(short$)-1); "Subtract 1 because the place count begins at 0" long$ (position, (position+len)) =short$ Also, the full length of the destination string must be defined before you begin to add substrings within it. Example: (A "·" character is used in this example to represent a blank space.) shared string long$ long$ (4, 6) ="abc" You might expect long$ to be: "····abc" (4 spaces and 3 characters) However, it might print: "^4%.abc" The correct way to do this is to first define the string: shared string long$ long$="··········"; "Define string with 10 places (spaces or characters)." long$ (4,6)="abc" The long$ string will now be: "···abc····"; "3 spaces, 3 characters, 4 spaces." Do not try to append characters beyond the defined length of the destination string.	3.1
Batch 801066	The recipe information screens do not display all Batch configuration fields. **Fixed.**	1.0

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Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Batch 801106	The Master Recipe validation may hang with more than 10 warnings or errors. **Fixed.**	1.0
Batch 801183	When two batch operations are run in parallel, “Left CP Data Integrity” errors may be generated, up to a rate of 10 alarms per second. **Fixed.**	1.0
Batch 801337	All running recipes, while not downloading scripts or handling exceptions, do disk reads in a tight loop, and may cause PeerWay problems. **Fixed.**	1.0
Batch 801349	The Working Recipe screen displays two STATIC marks if the recipe is put into static while an icon is in the SCHEDULED state. **Fixed.**	1.0
Batch 801351	If a CP crashes before a Unit Recipe start is backed up to bubble memory, when the CP recovers, there is no way to restart the Unit Recipe. **Fixed.**	1.0
Batch 801365	A start unit recipe (start_UR) icon does not execute if it does not have a link to a subsequent icon. **Fixed.**	1.0
Batch 801404	The batch graphic input window on a graphic does not update or display new messages if the input is contained in a trap. **Fixed.**	1.0
Batch 801906	If the ABC Log Folder is full and an operator modifies a Working Recipe, the console may hang or crash and the recipe becomes inaccessible. **Fixed.**	1.0
Batch 802029	Recipe misses icons in Parallel Recipe execution under rare circumstances. **Fixed.**	1.0
Batch 802190	When a Batch Working Recipe screen is called up, occasionally only the top menu is displayed, and the rest of the screen is blank. **Fixed.**	1.0
Batch 803999	If you make changes to a Master Recipe, and then exit without saving, the changes are saved to a temporary file (~filename), which is not deleted. **Fixed.**	3.1
Batch 804107	Pressing “BEGIN Task” on the BAR: screen multiple times can crash the CP. **Fixed.**	3.1
Batch 804251	Creating ASCII from Master Recipe or Control Recipe without saving the changes can result in a corrupted recipe. **Fixed.**	3.1

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Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Batch 804551	**Checksum is incorrectly calculated after a script is saved (ctrl-w).** **NOTE:** The following information is applicable only to ABC Batch users who use the Validation "HALT" or "WARN" in any of the Batch Unit, Material or Operation Tables: In software versions V18 through P1 R2.0, in ABC Recipe scripts where you changed the symbol table (added or deleted shared or local variables) in the script, and then wrote the script out once (a single CTL–W), the checksum that is recorded with the script on the RBL File list may not be correct. This checksum is read into the Tables and used for recipe validation. In some cases, if you re-wrote the script (a second CTL–W), the script checksum may change, providing a different checksum. The different checksum could affect your recipes (HALT or WARN) if you re-wrote the scripts at different times. This has been fixed. Now, the first write of the script (CTL–W) will always give you the correct checksum. Any subsequent writes to the same script will not change the checksum. However, you may have some existing scripts that do not have the correct checksum. In order to verify that you have all the correct checksum values, you must write out all of your RBL scripts from a console updated to P1 R3.2 software. If the checksum for any of the scripts changes when you write them out (CTL–W), you must update the Batch Unit Table, Batch Material Table, and Batch Operation Table script checksum values for these scripts.	3.1
Batch 804673	If you write BAMT to ASCII and back to table, reports "unsuccessful", and deletes both the Primary and the Backup files from disk. **Fixed.**	3.1
Comm 800256	Error in V18 PeerWay Interface Manual for field codes 5 & 6, page 1–4–7: SCI cannot write to the block mode and output of I/O blocks. SCI can only write to the block mode and output of ControlBlocks. **Fixed.**	1.0
Comm 800356	SCI cannot read field codes higher than 1500. **Fixed.**	1.0
Comm 800857	On the SCI, saving the configuration and sending a message pair in quick succession might disable data transmission. **Fixed.**	1.0
Console 102845	In the tuning display operation, changing the scaling at the left of the faceplate does not change the alarm limit indication. **Fixed.**	1.0
Console 150430	If you join objects and try to grab one object and MOVE off screen to the left, the console may crash. **Fixed.**	3.1
Console 152623	If the alarm log is not enabled or not defined, a large number of "Illegal Volume/File Name Used" alarms are generated. **Fixed.**	1.0

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Console 152786	When viewing the Disk Directory Peerway screen, all drives are listed under the drive 1 position for several seconds. **Fixed.**	1.0
Console 152821	When configuring a console with a blank disk, the default size of the Console Program Folder is too small to boot the console software. **Fixed.**	1.0
Console 800182	Alarm Log Display screen crashes the console if 10–11 nodes are entered on the find, filter, and sort criteria areas **Fixed.**	3.1
Console 800672	Variables of 10 or more characters from SIB or VIB I/O block might cause the console to crash when a report is generated. **Fixed.**	1.0
Console 800804	Items defined in event list configuration are not readable when printed from a 68040 console. They print correctly from a 68020 console. **Fixed.**	1.0
Console 800976	If a block descriptor uses all 24 characters, the BLKDES graphic object does not display the descriptor. **Fixed.**	1.0
Console 801076	When creating a boot tape, the default “New Volume Name” can confuse Batch. **Fixed.**	1.0
Console 801107	Process graphics with complex layering of windows might crash during periods of high alarm activity. **Fixed.**	1.0
Console 801187	When the “Operator” is specified as the “Key Class for Reports” on the Console Configuration screen, the operator can delete batch scripts. **Fixed.**	3.1
Console 801226	On the Report Config Directory screen, the autoprint status is displayed as a garbage character instead of a “Y” or “N”. **Fixed.**	1.0
Console 801242	Russian consoles only: the SIB block alarms display garbage characters. **Fixed.**	1.0
Console 801260	When a graphic is upgraded from V15R5 to V18R2.2, link objects for discrete registers (for example, =1A–10/a) no longer animate in V18. **Fixed.**	1.0
Console 801310	On the 68040 console, block descriptors with 24 or more characters cause the console to crash. **Fixed.**	1.0

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Console 801323	Console crashed during printing of a report. No alarms appeared. **Fixed.**	1.0
Console 801362	If more than 32 consoles and SRUs are on linked PeerWays, a console might not be able to access a process graphic on a different node. **Fixed.**	1.0
Console 801375	One task undoes what another task had done so changes are not made. **Fixed**	1.0
Console 801376	Task neglected to restore rrow variable to its original value of zero, causing crash dumps. **Fixed.**	1.0
Console 801417	The console may crash if you press the arrow key on the numeric key pad and move the trackball at the same time. **Fixed.**	1.0
Console 801469	Problem with graphic in V17 AND V18 R2.1 French console: Duplicating portion of graphic to another location reboots the console. **Fixed.**	1.0
Console 801615	The loop power module status bits on the field IO status screen for MAIO are displayed in the alarm color whenever they are 1, even if meaningless. **Fixed.**	1.0
Console 802976	Console can be made to crash when using “Disk Virtual Controller” operation. **Fixed.**	3.1
Console 803245	Because the disk configure function on the SMS was under the impression that reports were still active on the SMS, it refused to proceed. **Fixed.**	1.2
Console 152623	If the alarm log is not enabled or not defined, a large number of “Illegal Volume/File Name Used” alarms are generated. **Fixed.**	1.2
Console 152648	The memory dump diagnostic operation does not save the address of overlays to disk. **Fixed.**	1.2
Console 802622	An operator can change the output option field on the HOB block config screen. This should be limited to a configuror. **Fixed.**	1.2
Console 803091	The console crashes when a large negative number is entered in the output of the SIB block. **Fixed.**	1.2

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Console 803914	On 68040 consoles, the bars and symbols on group displays and tuning displays start to disappear pixel by pixel. **Fixed.**	1.2
Console 804165	If you enter a date later than 2000 into an SIB or HOB Date field, “0000” is actually sent to the device and is displayed incorrectly in AMS. AMS displays 01/01/2000 as 00/00/00 **Fixed.**	2.0
Console 804905	Block operations from graphics are intermittently ignored. **Fixed.**	3.2
Controller 800542	When disabled and enabled, a controller might become stuck in standby mode when it comes back up. **Fixed.**	1.0
Controller 800573	In a ControlBlock, the ssm (seconds since midnight) time function can alter the values of subsequent time functions. **Fixed.**	1.0
Controller 800679	There is no error message when an SIB or VIB block is loaded to another card in the cage and the SIB or HOB tag field has an incorrect address. **Fixed.**	1.0
Controller 801113	If you change an HOB from digital to analog, you must execute the “Update xmtr variables” command to implement the change. **Fixed.**	1.0
Controller 801360	CB documentation omission: when controllers switch, the data valid flag changes to 0 for one scan cycle of the controller processor. **Fixed.**	1.0
Controller 801381	The HOB device status displays the the valve serial number instead of the final assembly number. Some users would prefer to see the assembly number. **Fixed.**	1.0
Controller 801382	RS3 does not allow the Fieldvue secondary master to communicate with the RS3. **Fixed.**	1.0
Controller 801387	System flags for block inputs A through O are interpreted as user flags. **Fixed.**	1.0
Controller 801388	A secondary master device may not be able to calibrate a smart output field device if the RS3 changes the HOB mode during an upload. **Fixed.**	1.0
Controller 801411	If an AOB, AIB, SIB, or HOB is configured with no IO hardware on a point greater than 8, a bad block alarm is generated, making the block useless. **Fixed.**	1.0

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Controller 801426	RS3 V18R2.3 cannot support some PLCs because RS3 asks for more coils than are configured in the PLC. **Fixed.**	1.0
Controller 801471	On HOB, when the HOB is switching back from digital to analog, the valve display does not automatically show the right control mode. **Fixed.**	1.0
Controller 801849	An upload of the information in a smart output device cannot be completed. **Fixed.**	1.0
Controller 802489	If an RS3 Operator Station is displaying a continuous link with a value of 0, and that link is unconfigured in the RS3 Command Console, the unconfigured link is still recognized as “normal” by the RS3 Operator Station. **Fixed.**	1.1
Controller 803041	If an HOB block gets an error on an MAO FIM, the tracking value passed to the block driving the HOB will be in error. Recovery will not be smooth. **Fixed.**	1.1
Controller 803047	Customer with HOBs configured by V18 software who is updating to fix the wrong variable problem in PCR 801380 must delete HOBS and reconfigure. **Fixed.**	1.1
Controller 803084	HOB tracking is invoked if HART communications are lost even though the rest of the loop is intact. **Fixed.**	1.1
Controller 800762	For a PLC+ on an MPC II with two ports configured, ModBus protocol, and RTU format, update time might slow significantly if one PLC is shut off. **Fixed.**	1.2
Controller 801691	Some smart I/O communication errors intermittently caused controller crashes. **Fixed.**	1.2
Controller 801732	When subscribed to a register and the register is unconfigured, no notification is sent from the RNI and the RS3 Operator Station View screen remains unchanged. **Fixed.**	1.2
Controller 802874	Function time(6) 4-digit display of YEAR shows 1900 instead of 2000 in block_step_logic or Batch. **Fixed.**	1.2
Controller 803376	When a smart output device reports a deviation alarm, the screens display a deviation alarm, but the block is not in alarm. **Fixed.**	1.2

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Controller 803394	Logic prolog ramp() malfunction with multiple ramp function on a single step. **Fixed.**	1.2
Controller 803401	When using a PLC write Mask other than FFFF, the PLC controller is turning on bits other than those turned on in the source link. **Fixed.**	1.2
Controller 803781	The HART Output Block (HOB) default values for Dead Time and Deviation Alarm are set to 0 at startup, which is incorrect. **Fixed.**	1.2
Controller 803815	If the HART address of a transmitter attached to a FIM is made non-zero from the RS3 console, HART communications stop. **Fixed.**	3.1
Controller 803826	Only 7 bytes are allocated for the additional status provided by HART command 48. As many as 25 can be provided, leading to overwriting data. **Fixed.**	1.2
Controller 803924	RS3 output block went to backtracking mode when Fieldvue valve reported a deviation alert. **Fixed.**	1.2
Controller 803925	RS3 interrupts a HART 275 when it is trying to calibrate a Fieldvue valve. Control mode gets changed to RSP. **Fixed.**	1.2
Controller 803926	Inadvertent download of default values to a Fieldvue valve causes the valve to go out of service. **Fixed.**	1.2
Controller 803961	If the primary controller is shut off and left in the Card Cage, communications to one or both ports to the PLC can be lost. **Fixed.**	3.1
Controller 804053	If AMS is attempting to communicate with a device via RS3 pass through, and any block on the FIC or FIM is configured without a device attached, AMS has difficulty communicating with any other device on that particular FIC or FIM. **Fixed.**	1.3
Controller 804065	If a FIC or FIM has a non-smart analog device attached, AMS attempts to scan or communicate with smart devices on that FIC or FIM, and is unable to see many of them. **Fixed.**	1.3
Controller 804366	Under a number of observed circumstances, digital comm can be lost for 1 or more SIBs on a particular FIM. **Fixed.**	1.4

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
Controller 804479	If SIB, AIB, HOB, AOB blocks are configured on addresses above 116 for a FIM, the controller will crash on an AMS I/O traversal. **Fixed.**	3.1
Controller 804250	HOB and DOB blocks do not evaluate immediately after their source comp block. They evaluate after “ALL” comp blocks have completed. Evaluation order was incorrect. **Fixed.**	3.1
Controller 804205	If AMS is uploading smart device parameters when a FIC redundant switch-over occurs, analog PV may spike and digital PV freeze. **Fixed.**	3.1
Controller 804316	An SIB Hardware: FIC Comm Error alarm occurs occasionally at RS3 when AMS alert monitor is polling multiple devices on a particular FIM. **Fixed.**	3.1
Controller 804384	ON/OFF button can cause controller crash with certain MOTOR/VALVE configs. **Fixed.**	3.1
CP 152818	Redundant controller processors do not always boot up on the first try. **Fixed.**	1.0
CP 803233	In rare cases, when the CP is doing a lot of tag searches, and some of the tags are longer than 8 characters, a race condition can occur in the CP. The race condition causes the CP to crash when running ROS 2.0. **Fixed.**	1.1
CP 804166	If Alarm condition CLEARED is substantially delayed sending to PeerWay (e.g. alarm burst), OCCUR gets sent instead. **Fixed.**	3.1
Documen-tation 800660	If the new ASCII file is smaller than the original file, the ASCII conversion is successful, but an alarm says it was unsuccessful. **Fixed.**	1.0
Documen-tation 801990	Process Unit Icons (multiple in main, illegal) swapping unit names. **Fixed.**	1.0
Documen-tation 802070	SCI may hang periodically every 2 to 3 days. **Fixed.**	1.0
I/O 152324	Transmitter 9739 hardware alarms can overwhelm the maintenance log. **Fixed.**	1.0
I/O 800487	Downloading an FIM program on a controller Serial communication line fails if the SIB block is configured and in alarm mode. **Fixed.**	1.0

(continued on next page)

Table 3.7. RS3 Corrected Software Discrepancies in Previous P1 Releases (continued)

ID	Description	Fixed in Release Number
I/O 801262	When a 4080 FIM is installed as a discrete I/O cold spare, sometimes it does not take over and start communicating with the controller. **Fixed.**	1.0
SMS 803261	When the SMS is configured to use an enhanced keyboard, the keyboard still behaves as if it is a configuror's keyboard. **Fixed.**	1.1

Section 4:
P1 R4.x Changes to RS3 manuals

This section describes changes to the following Version P1 manuals. These changes occurred after the last printing of these manuals, so they supplement or correct the Version P1 set.

Manual	RN Page Number
Service Manual	4-1
Site Preparation and Installation	4-13
I/O Block Configuration	4-13

SV — Pixel Board Upgrade

To upgrade the 68020 board (1984-1540-0009) use the instructions in the paragraph titled **68020 OI PROCESSOR EPROM UPGRADE**. For the 68040 board (1984-3202-0010 or 10P55270010) use the instructions in the paragraph titled **68040 OI PROCESSOR EPROM UPGRADE** 10P57801003 version instructions. Table 4.1 shows the kits for the two types of consoles.

NOTE: The 68020 processor board is not supported with P1.

Table 4.1. V18 and earlier/68020 Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
1984-1540-0009	1984-2172-0927 (Ver. 9.27*)	1984-1064-0001

* The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Table 4.2. P1 R4.x/68040 Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
1984-3202-0010 (all revs)	1984-3204-1010 (Ver 10.10*)	1984-2503-0001
1984-3202-0010 (rev F/H or newer)	1984-3204-1012 (Ver 10.12*)	1984-2503-0001 or 10P58900001

* The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Table 4.2. P1 R4.x/68040 Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
10P55270010 (all revs)	1984-3204-1010 (Ver. 10.10*)	1984-2503-0001
10P55270010 (all revs)	1984-3204-1012 (Ver 10.12*)	1984-2503-0001 or 10P58900001

* The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

Table 4.3. P1 R4.x/SMS Console Boot ROM and Graphics Card Requirements

OI Processor Board	Boot ROM	w/Graphics Card
10P55270011 (all revs)	1984-3204-1110 (Ver 11.10*)	1984-2503-0001
10P55270011 (all revs)	1984-3204-1112 (Ver 11.12*)	1984-2503-0001 or 10P58900001

* The Boot ROM level X.YY is the minimum required; a higher .YY number will also work.

NOTE: If the OI Processor board has a later version of the Boot ROM than those listed here, do not replace the Boot ROMs, as all later versions will support both boards. Each EPROM is labeled with the version (also called the revision level) number of the software. Only earlier versions than those listed here will have to be upgraded.

68020 OI Processor EPROM Upgrade

PURPOSE:

This procedure is intended to allow personnel with maintenance training and responsibility for RS3 Systems to add the necessary hardware to upgrade an existing 68020 OI Processor Board (P/N 1984-1540-0009) to the latest version Boot ROM.

NOTE: The 68020 processor board is not supported with P1.

NOTE: It is required that anti-static wrist straps are used whenever handling the circuit boards, that the boards are transported in anti-static bags or boxes, and that an anti-static work surface is used when removing and installing the EPROMs.

PROCEDURE:

1. Turn the system off. Pull the board to be upgraded out of the system.
2. Verify that the board is PWA 1984-1540-0009. (See Figure 4.1)

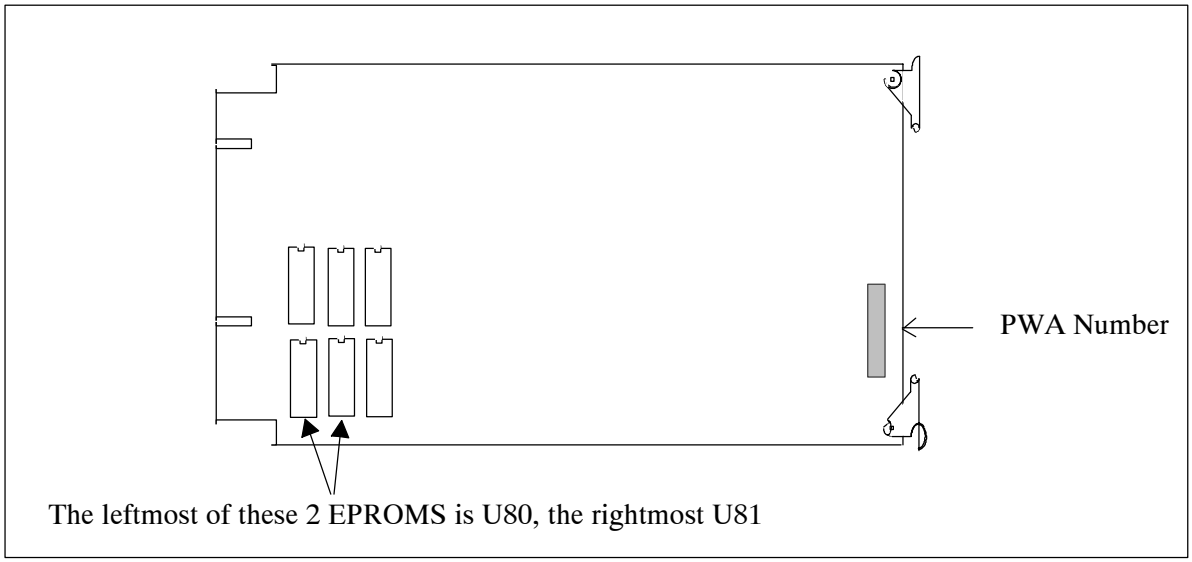


Figure 4.1. 68020 IO Processor Board

3. Verify that the revision level of the board is new enough to upgrade the EPROMs. The revision of the board must be revision B/C or newer.

NOTE: In order to classify as a newer revision board, both the letter before and after the '/' must be greater than the letters specified. For example if the revision must be newer than X/Z, then the letter before the '/' must be greater than X and the letter after the '/' must be greater than Z. Double letters such as AA qualify as greater than Z. If the board being upgraded does not meet the required revision level, then the board must be upgraded by Fisher-Rosemount Systems, Inc.

4. Using a small flat blade screwdriver, gently pry both of the old EPROMs (see figure 1) out of the sockets. Work the ends of the chip back and forth as the chip is being lifted from the sockets. Remove both components and set aside.
5. Prepare the new components for installation. One of the EPROM chips is labeled with a "1" and the other with a "0". The chip labeled with the "1" will go into location U80, and the chip labeled "0" will go into location U81.(See Figure 4.1)
6. The pins of the new EPROMs may not be formed to fit directly into the sockets. To form the pins, hold the chip by its ends. Press the chip up against a hard flat surface with the pins running adjacent to the surface. Firmly rotate the chip to bend the pins slightly toward the other set of pins. (See Figure 4.2).

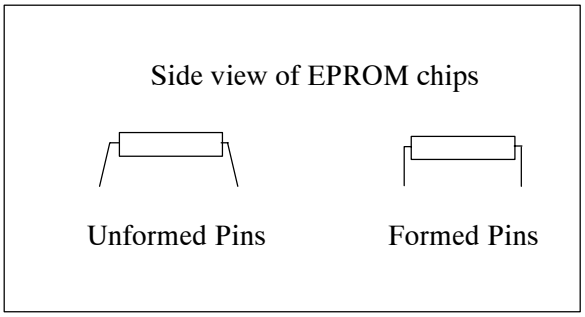


Figure 4.2. EPROM Pin Alignment

7. Once formed, position the chip directly over the socket WITH THE NOTCHED EDGE OF THE SOCKET LINING UP WITH THE NOTCHED EDGE OF THE CHIP.
8. Slowly lower the chip into the socket. If the pins are not lining up with the socket holes, reform the pins as needed. Lower the chip onto the socket. When all of the pins are started into the socket holes, press the chip down firmly onto the socket.
9. Repeat steps 4-6 to install the other EPROM chip.
10. Return the Assembly board to its original location.

68040 OI Processor EPROM Upgrade

PURPOSE:

This procedure is intended to allow personnel with maintenance training and responsibility for RS3 Systems to add the necessary hardware to upgrade an existing 68040 OI Processor Board (P/N 1984-3202-0010 or 10P55270010) to the latest version Boot ROM.

NOTE: It is required that anti-static wrist straps are used whenever handling the circuit boards, that the boards are transported in anti-static bags or boxes, and that an anti-static work surface is used when removing and installing the EPROMS.

PROCEDURE:

1. Turn the system off. Pull the board to be upgraded out of the system.
2. Verify that the board is PWA 1984-3202-0010 or 10P55270010. (See Figure 4.3)

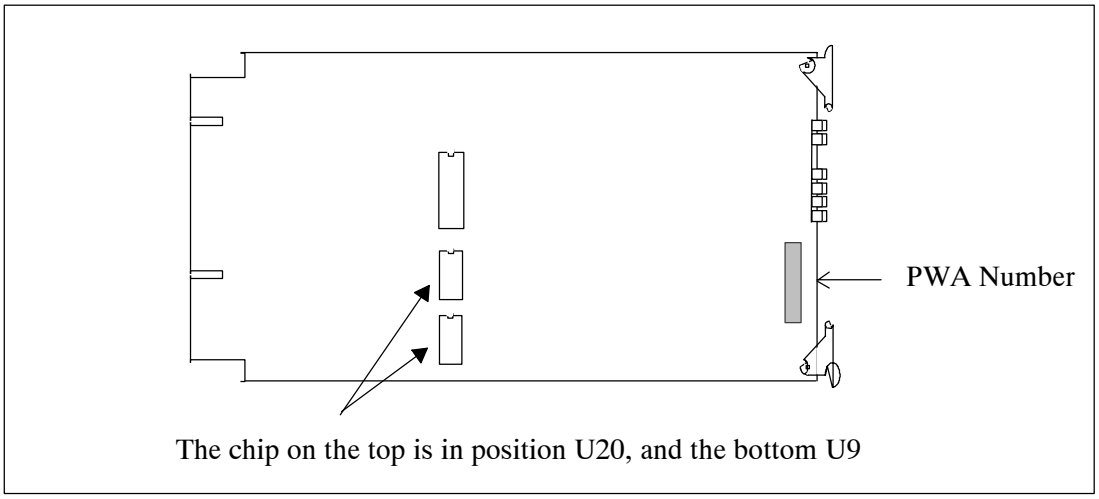


Figure 4.3. 68040 IO Processor Board

3. Verify that the revision level of the board is new enough to upgrade the EPROMS. If the board is the 1984-3202-0010, then the revision of the board must be revision F/H or newer. If the board is the 10P55270010, then all revisions of the boards are ready to be upgraded.

NOTE: In order to classify as a newer revision board, both the letter before and after the '/' must be greater than the letters specified. For example, if the revision must be newer than X/Z, then the letter before the '/' must be greater than X and the letter after the '/' must be greater than Z. Double letters such as AA qualify as greater than Z. If the board being upgraded does not meet the required revision level, then the board must be upgraded by Fisher-Rosemount Systems, Inc.

4. Using a small flat blade screwdriver, gently pry both of the old EPROMS (see figure 1) out of the sockets. Work the ends of the chip back and forth as the chip is being lifted from the sockets. Remove both components and set aside.
5. Prepare the new components for installation. One of the EPROM chips is labeled with a "1" and the other with a "0". The chip labeled with the "1" will go into location U9, and the chip labeled "0" will go into location U20.(See Figure 4.3)
6. The pins of the new EPROMS may not be formed to fit directly into the sockets. To form the pins, hold the chip by its ends. Press the chip up against a hard flat surface with the pins running adjacent to the surface. Firmly rotate the chip to bend the pins slightly toward the other set of pins. (See Figure 4.4).

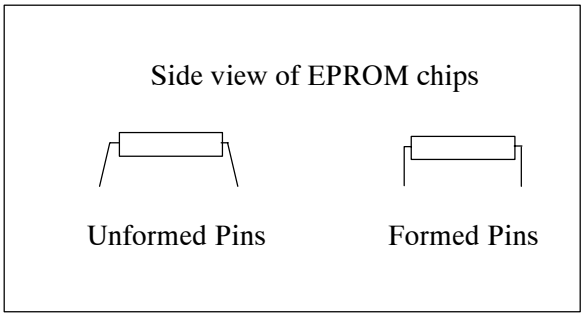


Figure 4.4. EPROM Pin Alignment

7. Once formed, position the chip directly over the socket WITH THE NOTCHED EDGE OF THE SOCKET LINING UP WITH THE NOTCHED EDGE OF THE CHIP.
8. Slowly lower the chip into the socket. If the pins are not lining up with the socket holes, reform the pins as needed. Lower the chip onto the socket. When all of the pins are started into the socket holes, press the chip down firmly onto the socket.
9. Repeat steps 4-6 to install the other EPROM chip.
10. Return the Assembly board to its original location.

Console Upgrades — 4.5 GB Disk

Upgrade Instructions for Consoles —0017, —0018

Upgrade Consoles

Table 4.4 shows the consoles that can be upgraded.

Table 4.4. Consoles Upgrade Kit 1984-3045

Dash Numbers	Description
-0001, -0002, -0003, -0004, -0005, -0006, -0007, -0008, -0010, -0012, -0014, - 0016	Obsolete
-0017	Tape drive, 4.5GB hard disk, cables, mounting can
-0018	Tape drive, 4.5GB hard disk, cables, W/O mounting can
-0019	4.5GB hard disk only, cables, mounting can
-0020	4.5GB hard disk, cables, W/O mounting can

Description:

The upgrade kit (1984-3045-0017 or 1984-3045-0018) includes the necessary hardware, Table 4.5, to add a tape drive and hard disk to an existing console. With one of these kits a dual tube can be split into two singles or with two of these kits a triple tube can be split into three singles.

Table 4.5. Parts List

F/N	-0017 Qty.	-0018 Qty.	-0019 Qty.	-0020 Qty.	Part Number	Description
4	1	1			10P56909902	Cable Assy. Multitude Mem. Pwr. cable 52”
4			1	1	10P56840001	Cable Assy. Multitude Mem. Pwr. cable 52”
5	1	1	1	1	10P57159902	Cable Assy. multitude SCSI, 50 POS STD
5			1	1	1984–1895–9909	Cable Assy. Disk Only, 50 POS
6	8	8	4	4	G5007700100001	Washer, metal flat, No. 6 chromated
7	4	4	4	4	G5011204050301	Screw, PHM Steel, 6–32 x 5/16, locking
8	8	8	4	4	G500860011	Washer, N–Met Nylon, shoulder
9	4	4	4	4	G515820001	Clamp. cable
10	3	3	3	3	G123350003	Clamp Tie, black, 4
11	6	6	6	6	G500180001	Clamp for 1” wide 26–30 AWG flat cable
12	1	1	1	1	1984–3045–xxxx	Drawing, upgrade kit, add hard disk and tape, or disk only
13	1	1			G115330009	Tab
14	1	1			G103680003	Washer, Bossard BN595
14	4	4			55P0796X001	Screw, PAN washer head steel, M3 x 10
15	2		1		1984–2761–0001	Enclosure double wide memory mounting can
17	1	1			10P56850001	Tape, streaming drive, Tandberg
18	1	1	1	1	12P23040001	Narrow SCSI hard disk, Seagate Medalist Pro
19			4	4	G121000001	Resistor network, 220/330 ohm, 1w 5%
20	1	1	1	1	D8S0068X012	Kit documentation for SCSI hard disk drive

Minimum firmware requirements:

Boot ROM 68040=V10.10 (MTCC) OR V11.10 (SMS) is the minimum software requirements: P1 R3.2

CAUTION

Prior to working inside an electronics cabinet, be sure you are wearing a static grounding strap (1984-2718-0001). Insure that the strap is properly grounded to the chassis.

Upgrade

Use the following instructions to upgrade the -0017 and -0018 control consoles:

1 Power down the cabinet.

2 Remove screws on the drive mounting can brackets for the new hard disk location. Slide mounting cans out of the mounting brackets.

3 Carefully remove power and SCSI cables from the rear of the existing drive. If the existing drive is mounted in a small mounting can, remove the drive from the mounting can. If the drive is mounted in a wide mounting can, mount the second drive as explained in Step 4.

4 Mount the tape drives in one wide mounting can (p/n 1984-2761-0001), as shown in Figure 4.5. Mount the hard disks in the other wide mounting can as shown in Figure 4.6.

5 Table 4.6 and Table 4.7 show the connections for cables 10P57159902 (SCSI) and 10P56909902 (power) respectively. No more than two drives can be connected to a single card cage and one must be a hard disk. Dual and triple OI card cage installations should be handled as follows: (See KBA BUR1-109-981016142624 for more information.)

- Dual card cage configuration to two singles:

  Each card cage will now have its own set of drives and connection cables. the cables should be connected as shown in Table 4.6 and Table 4.7.

- Triple card cage configuration to three singles:

  Each card cage will now have its own set of drives and connection cables. The cables should be connected as shown in Table 4.6 and Table 4.7.

Upgrade Instructions for Disk Only Consoles —0019, —0020

Description:

The upgrade kit (1984-3045-0019 or 1984-3045-0020) includes the necessary hardware, Table 4.5, to add a hard disk to an existing console. With one of these kits a dual tube can be split into two singles or with two of these kits a triple tube can be split into three singles.

Minimum firmware requirements:

BOOT ROM 68040=V10.10 (MTCC) OR V11.10 (SMS). Minimum software requirements: P1 R3.2

CAUTION

Prior to working inside an electronics cabinet, be sure you are wearing a static grounding strap (1984-2718-0001). Insure that the strap is properly grounded to the chassis.

Upgrade

Use the following instructions to upgrade the -0019 and -0020 control consoles:

1 Power cabinet down.

2 Remove screws on the drive mounting can brackets for both the hard disk and tape drive. Slide mounting cans out of the mounting brackets.

3 Carefully remove power and SCSI cables from the rear of both the hard disk and tape drive. If the existing drives are mounted in small mounting cans, remove the hard disk and tape drive from the mounting cans. If the drives are in wide mounting cans, mount the second set of drives as explained in step 4.

4 Mount the hard drive in one wide mounting can (P/N 1984-2761-0001) as shown in Figure 4.6.

5 Table 4.6 and Table 4.7 show the connections for SCSI cable and SCSI power cable.

6 Reinstall mounting cans in cabinet and tie wrap wiring as necessary. Attempt to keep SCSI cable as far as possible from the power cables. Do not tie wrap the SCSI cable.

7 Ensure onboard SCSI bus termination exists.

SCSI board 2 (1984-3301-0001)

Jumper HD 3 to 1—2.

0l SCSI host adaptor (1984-1140-000x)

1 Install 4 SCSI terminator resistors (F/N 19) in the 4 socket locations as shown. A mark (DOT, BAR) at one end of the resistor network indicates Pin1. See Figure 4.7 for details.

2 This board is now 1984-1140-0003. Change the part number label to 1984-1140-0003.

Table 4.6. Connector Table 1

SCSI Signal (10P57159902)(Hard Disk and Tape Drive)		
Connector Ref.	Destination Ref.	Term Ref.
P137	Card Cage	J088
P138	Hard Disk	J1
P134	Tape Drive	----------
SCSI Signal (1984-1895-9909)(Hard Disk Only)		
Connector Ref.	Destination Ref.	Term Ref.
P136	Card cage	J088
P138	Hard Disk	J1

Table 4.7. Connector Table II

SCSI (10P56909902)	
Connector	Destination
P982	Tape drive, main board on bottom or floppy disk drive
P980	Tab F/N 13 (Oper already installed) or floppy disk drive bracket
P978	Motherboard on CCI (J920)
P977	Motherboard (same) J933
P979	Leave hanging
P983	Disk drive
P984	Tie-wrapped back against cable, not used

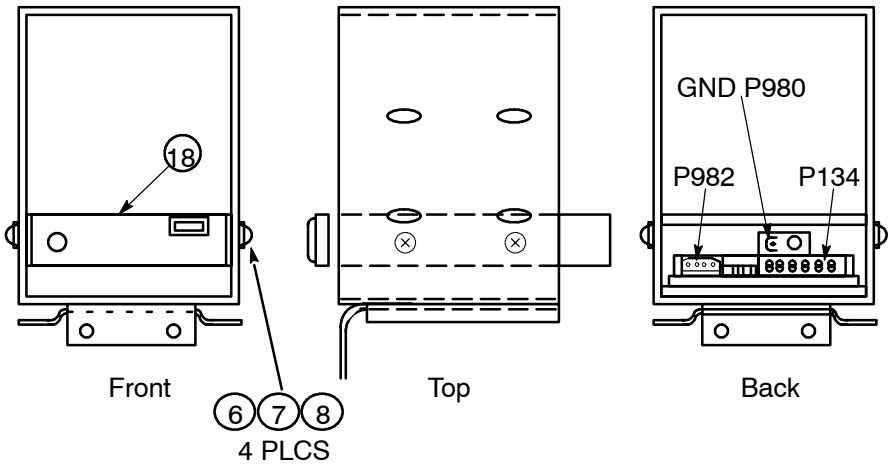


Figure 4.5. Tape Drive Mounting in Can

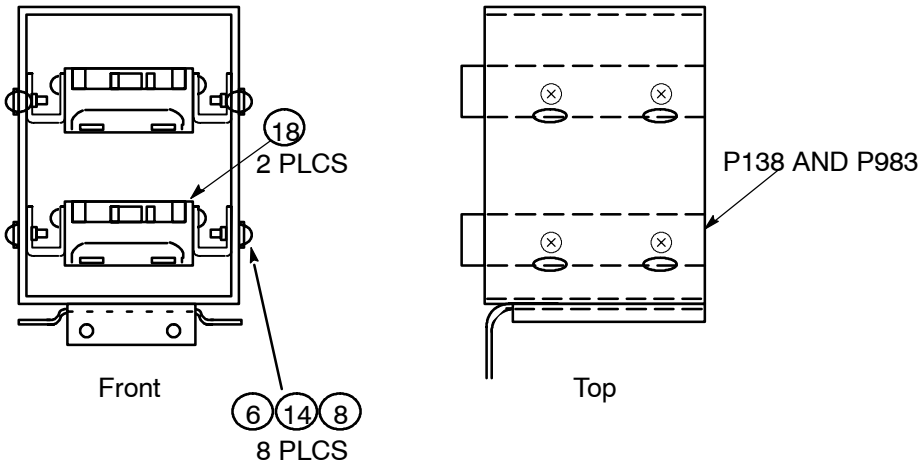


Figure 4.6. Hard Disk Mounting in Can

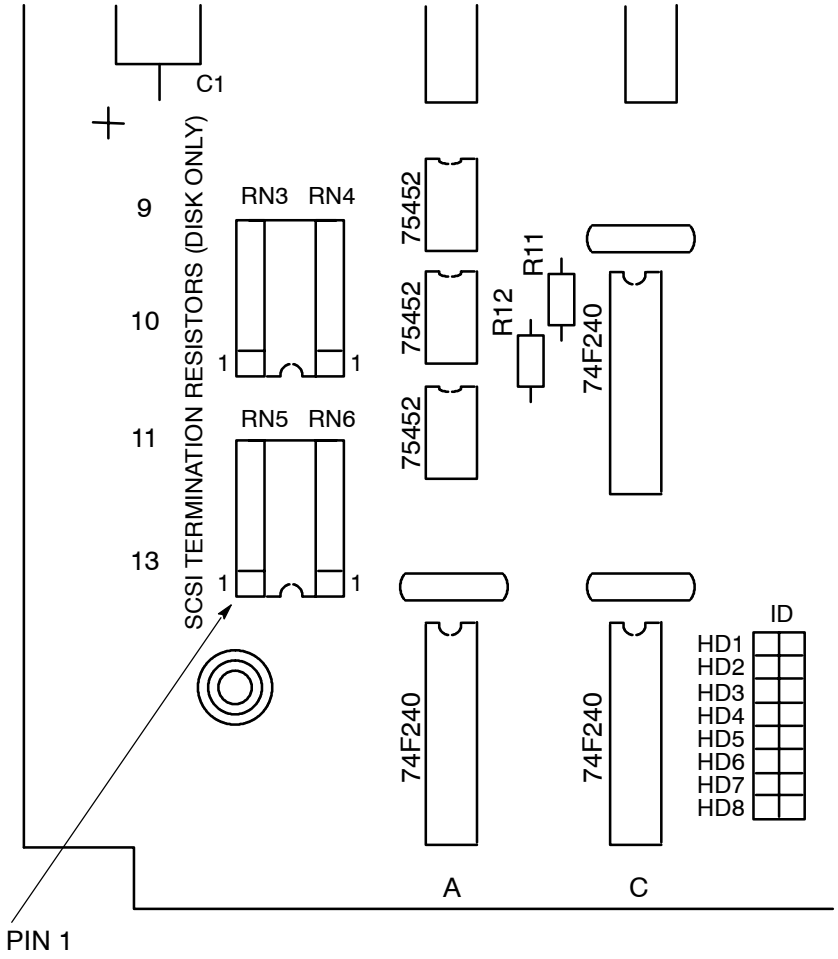


Figure 4.7. SCSI Termination Resistors

68020 to 68040 Console Upgrade Kit (1984-2380-0005)

Description:

OI Processor 68040 (10P55270010) performs 68020 or 68000 OI processor functions but has more memory and is enhanced for increased performance.

Replacing an older OI Processor with this card requires pixel graphics and may require new software. See Software Loading and Upgrade Procedure, Including Batch, Section 6.0 documentation.

Monitor Upgrades

The following monitor changes have been implemented.

SV — MTCC/SMS CRTs

The color CRT monitor that can be used with the Multitube Command Console or System Manager is the 21-inch ViewSonic P220F.

The unit operates on either 115 or 220 VAC nominal, 50 or 60 Hz. It is compatible with both consoles, and has common cable connections. Setup and controls are described in the manual which accompanies the unit.

SV — ROS CRTs:

The color CRT monitor that can be used with the RS3 Operator Station (ROS) is the 21–inch Dell P1110 (ivory) or Dell P1130 (slate).

The unit operates on either 115 or 220 VAC nominal, 50 or 60 Hz. It is compatible with the ROS, and has common cable connections. Setup and controls are described in the manual which accompanies the unit.

SP — ROS CRTs:

The color CRT monitor that can be used with the RS3 Operator Station (ROS) is the 21–inch Dell P1110 (ivory) or Dell P1130 (slate).

The unit operates on either 115 or 220 VAC nominal, 50 or 60 Hz. It is compatible with the ROS, and has common cable connections. Setup and controls are described in the manual which accompanies the unit.

IO — Redundancy Display

Corrected redundancy scheme. Was 7/1 corrected to 3/1.

Figure 4.8 shows that the FIC in slot A3 is not being backed up by a redundant FIC.

```
                          I/O BLOCK CONFIGURATION          18-Jan-92 11:58:59

   Address=2AA401               Device Type AIB

   Block Tag⇒                   Block Type  ⇒RIOB          Mode      → AUTO
                                                          Auto Lock ⇒ no
   Redundancy Scheme  >3/1

Cage Line        A1      A2      A3      A4      A5      A6      A7      A8

Backup         ⇒ YES   ⇒ YES   ⇒ NO

Health           GOOD    GOOD

Xfer Health                              GOOD

Backup Status    READY   READY   FREE    R-4     FREE    FREE    FREE    FREE

Reset Backup of Line 2 (press enter)

Force Backup on Number    >0 (none)


Alarm Priority ⇒0           Plant Unit ⇒0
                              FIC Type AIO  Rev 2.1   HW Alarm Code 0
                                                                  CONFIG 1
```

Figure 4.8. RIOB Configuration Screen — Backing UP FICs

Section 5:
Version P1 R3.4 Changes to RS3 Manuals

This section describes changes to the following Version P1 manuals. These changes occurred after the last printing of these manuals, so they supplement or correct the Version P1 set.

This section also describes changes made since the 1998 printing of the following hardware manuals.

Alarm Messages Manual Changes

Changes to the *Alarm Messages Manual* (AL) are a result of:

- Additional information on alarm generation
- New disk-only console released with P1 R1.1

The following information describes the changes to this manual.

AL: Section 1 (Reading Alarm and Event Messages)

Description: *The following subsection was added after "Alarm Banner" on page 1-2.*

The Alarm Banner and Methods of Alarm Generation

An alarm can be generated by two methods but not all information that appears in the alarm list will be the same. Alarms can be generated from specifications on the CB Continuous Diagram page. The first alarm listed in Figure 1.1A is an example of a banner created by this method. When the CB Discrete Diagram (see Figure 1.2B) is used to create logic step generated alarms, the alarm banner does not have enough space to show units. The second alarm listed in Figure 1.1A is an example of a banner created by this method.

```
                          CLEARED PROCESS ALARMS            8-Oct-98  12:30:38

                                                            OCCUR     PRINT
  Occur         Source              Description                          Summ
                    08-Oct-98
12:23:18.065  :Agitator 155/A  Block_Descriptor          100.14   UNITS     AOK
12:12:09.070  :Agitator 155/a  Block_Descriptor          FORWARD  100.14    AOK
                                   * END *




          Active 0             Unack 0             Unprint 2
12:56:08 :=1DA103              NONE Hardware: Comm Timeout                HM  U
```

Figure 1.1A. Alarm Banner List

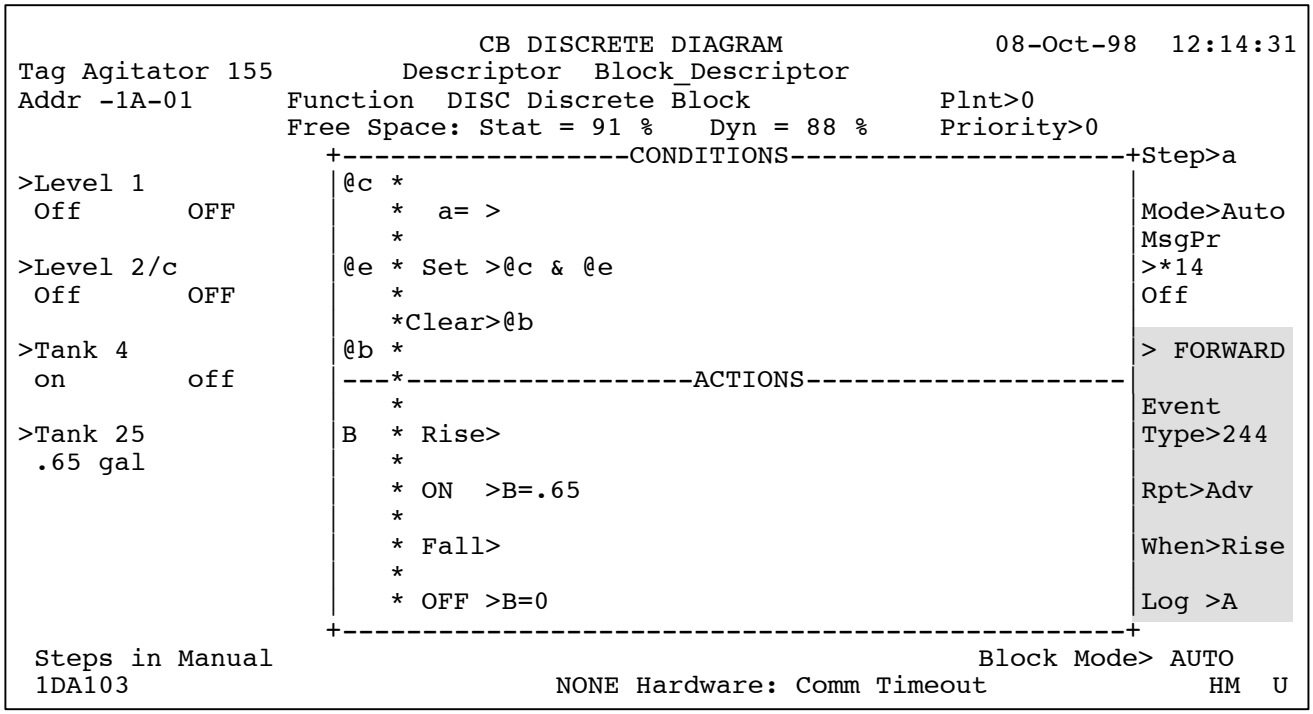


Figure 1.2B. CB Discrete Diagram

AL: Section 2 (Smart Device Alarm Messages)

Description: *Table 2.4 on page 2-4 was changed to read as follows.*

Table 2.4. Transmitter Status Error Messages Generated by the Transmitter

Message		Description
Xmtr Failure	1000 0000	A hardware error or failure has been detected. See the Diagnostic Status field on the Transmitter Status screen.
Xmtr Config Changed	0100 0000	A write or set command has been executed.
Cold Start	0010 0000	Power has been turned off and then on, reinstalling the setup information.
More Status Available	0001 0000	More status information is available than can be returned in an Upload Xmtr Config command. See the Diagnostic Status field on the Transmitter Status screen.
Fixed Current Mode	0000 1000	Primary variable current readings are held at the requested value. The digital PV is still valid.
Output Current Saturated	0000 0100	Primary variable is reading above 20 mA or below 4 mA.
Non PV out of Limits	0000 0010	A Non-Primary variable value is out of the transmitter limits.
PV Out of Xmtr Limits	0000 0001	Primary variable is out of the transmitter operating limits.

Description: *Table 2.5 on page 2-5 was changed to read as follows.*

Table 2.5. Output Device Status Message Descriptions

Code		Description
Field Device Malfunction	1000 0000	Field device malfunction; Cleared by field device self-test.
Field Device Configuration Changed	0100 0000	Configuration has been changed by the user. Cleared by user command and RESET.
Cold Start	0010 0000	Reset sequence executed; on power-up
More Status Available	0001 0000	More status information is available than can be returned in an Upload Xmtr Config command. See the Diagnostic Status field on the Transmitter Status screen.
No Response to Analog Input	0000 1000	Rev 5 device and higher gets set when device doesn't respond to analog current.
Analog Input Current Saturated	0000 0100	Analog input saturated. Indicates the 4–20mA variable exceeds the user-configured lower or upper limit or cutoff values. This error clears automatically when variable is within operating limits.
Internal Sensor Out of Limits	0000 0010	A field device internal sensor exceeds its operating limits. This error is cleared automatically when all sensors are within operating limits.
Variable Out of Range	0000 0001	An active measured variable exceeds its user-configured range.

AL: Sections 3 and 4 (Alarm Messages in Alphabetical and Numerical Order)

AL: Chapters 3 and 4

Description: *Add the following alarm information where appropriate.*

Alarm 112 results in the redundant CP restarting.

No.	Message	Description	List	Alarm Area
112	NV Mem Backup Reset	The CP program was restarted to overcome the problem where the backup was stuck on one Controller Processor.	S	ControlFile

Alarm 419 will occur normally on all disk-only consoles.

419	No Tape or Floppy Disk Drive Found	Occurs when the RS3 cannot detect the presence of a tape or floppy drive. You should check your cable connections. This error may also occur when a disk-only (040) console is the only storage media present. In this case, the error is merely a verification of that hardware.	S	Disk

775	Start Memory Dump cont: <nn>	A manually initiated memory dump of Controller Processor <nn> has been started.	D	Disk
776	Finish Memory Dump cont: <nn>	A manually initiated memory dump of Controller Processor <nn> has been completed. The memory dump takes about twenty minutes.	D	Disk
777	Kill Memory Dump cont: <nn>	The manually initiated memory dump of Controller Processor <nn> has been killed.	D	Disk
801	Auto Plant Config Backup File Not Found	The $$BACKUP file was not found at the time a backup was to be performed.	D	Console
811	Controller Image Checksum Test Failed	The MPC5 controller image checksum test failed. The controller will be reset and the image reloaded from NV memory.	H	ControlFile

Console Configuration Manual Changes

Changes to the *Console Configuration Manual* (CC) are a result of:

- Support for the Tandberg TDC 3660 tape drive released with P1 R1.1
- Addition of automatic backup capability with the P1 R1.2 release
- Batch support on SMS released with the P1 R1.2
- Link Editor changes released with P1 R1.2
- Support of ABC Batch Messaging (ABM) released with P1 R3.3

The following information describes the changes to this manual.

CC: Chapter 2 (Configuring Operating Characteristics)

CC-2: Section 1

Description: *Add "Automatic backup functions" to the list of topics, following "Configuring 16-character block tags" on page 2-1-1.*

- Automatic backup functions

CC-2: Section 1, Figures 2.1.5, 2.1.6, and 2.1.7

Description: *Replace Console Configuration screen examples.* The Console Configuration screens have added fields for the automatic backup function, and other fields have shifted as a result. The screens in their current form are shown following.

NOTE: Not all occurrences of the Console Configuration screen displays are shown in these Release Notes; however, the same changes apply to all instances of these displays.

❑ **To call up:**

- Type **CCC** [ENTER] at the command line.
- [PAGE AHEAD] from Command Console Menu.

❑ **To access other screens:**

- [PAGE AHEAD] to see Page 2 of the Console Configuration screen.
- [PAGE BACK] to see Menu Command Console Screen.

```
                          CONSOLE CONFIGURATION       05-Nov-97  11:31:28

This is Node 28    SMS                  Date      05-Nov-97 Time 11:31:28
Prgm Revision     P1.09 PX ENG 68040 SMS
Boot Revision     11.10                Peerway # >2   Slot width  30
Last Restarted    04-Nov-97  15:32:57
Logs: Batch >Enable    Maint >Enable   Time Correction  >.00 Sec/day
 Alarm >Disable  Op Chg >Enable   Host >Disable

Key Click             >yes            Keyclass for Ignore Interlock >SUPER
Mark Key              >no
                                      Keyclass for Loop Tuning >SUPER
Speaker Volume        >Med
Alarm Speaker         >yes            Keyclass for Reports >OPER
Grp Blk ID for Oper   >Descriptors      Printer/Modem Config
Tags or Addresses     >Tags
PID Proportional      >Band             Printer >Fujitsu     L/Pg >66
Tape Auto Load        >no
   Configuration File                 Baud >4800      Print Node >28
 Name Update          >yes            Autodial >no    FF >yes  >Reset
 Volume Name :  540meg
  File Name  :  $TR-CNFG

                                                              CONFIG 1
```

Figure 2.1.5 Console Configuration Screen for the SMS—Page 1

❑ **To call up:**

- Type **CCC** [ENTER] at the command line.
- [PAGE AHEAD] from Command Console Menu.

❑ **To access other screens:**

- [PAGE AHEAD] to see Page 2 of the Console Configuration screen.
- [PAGE BACK] to see Menu Command Console Screen.

```
                          CONSOLE CONFIGURATION        03-Nov-97  12:07:37

This is Node 32 MTCC                    Date ⇒03-Nov-97  Time ⇒12:08:36
Prgm Revision    P1.09 PX ENG 68040 MTCC
Boot Revision    10.10                  Peerway # >2   Slot width>30
Last Restarted   31-Oct-97  09:02:47
Logs: Batch >Disable  Maint > Disable   Time Correction  >.00 Sec/day
 Alarm >Disable  Op Chg >Disable  Host >Disable
ASCII Keyboard           >Configuror    Reboot Menu >13
Key Click                >yes           Keyclass for Ignore Interlock >SUPER
Mark Key                 >no
Graphics Menu Key        >no            Keyclass for Loop Tuning >SUPER
Speaker Volume           >Med
Alarm Speaker            >yes           Keyclass for Reports >OPER
Grp Blk ID for Oper      >Descriptors     ┌── Printer/Modem Config ──────┐
Tags or Addresses        >Tags            │                              │
PID Proportional         >Gain            │ Printer >Fujitsu   L/Pg >66  │
Tape Auto Load           >no              │                              │
  ┌── Configuration File ──────┐          │ Baud >4800      Print Node >28
  │ Name Update          >yes  │          │ Autodial  >no   FF >yes  >Reset
  │ Volume Name :  TMP         │          │                              │
  │ File Name   :  GRP-WDAY1   │          └──────────────────────────────┘
  └────────────────────────────┘

                                                                  CONFIG 1
```

Figure 2.1.6 Console Configuration Screen for the MTCC—Page 1

❑ **To access other screens:**

- [PAGE AHEAD] to see Page 3 of the Console Configuration Screen.
- [PAGE BACK] to see Page 1 of the Console Configuration Screen.

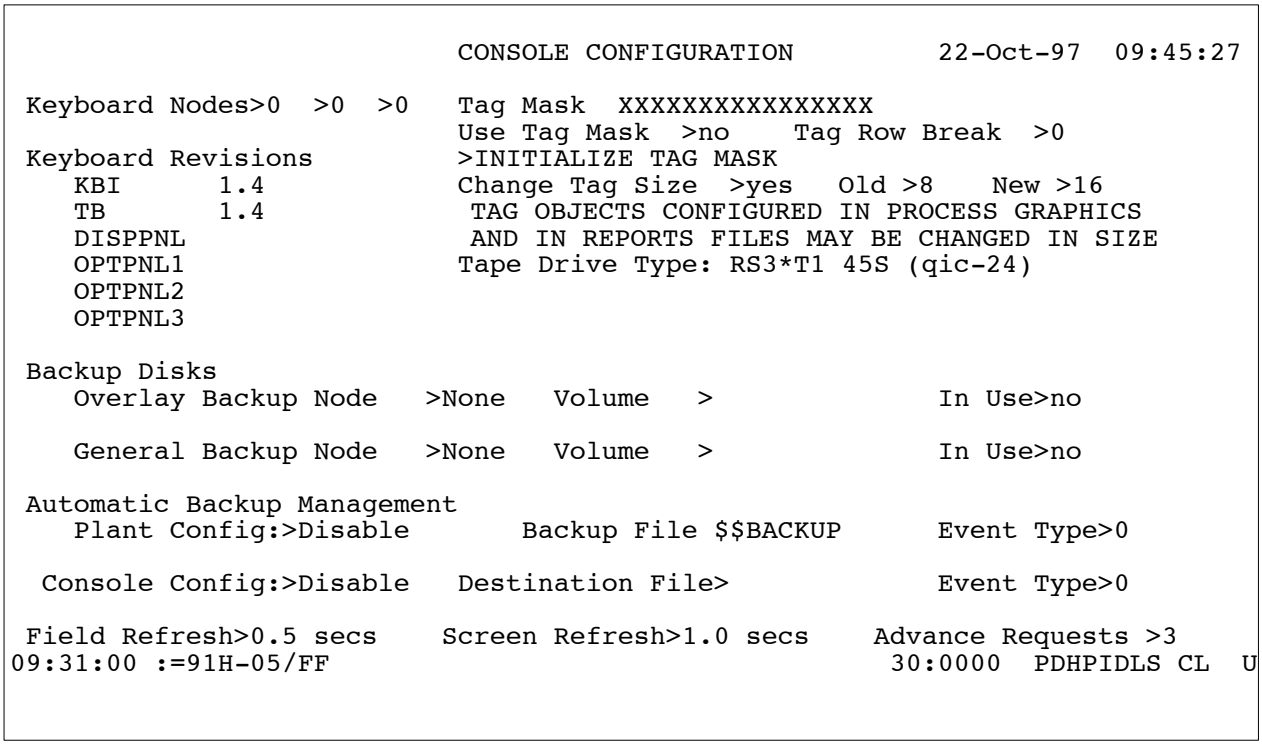


Figure 2.1.7 Console Configuration Screen—Page 2

CC-2: Section 1, Table 2.1.2 (Console Configuration Screen Fields)

Description: *Add information regarding the new and modified Console Configuration screen fields.*

Field	Description
Automatic Backup Management	Displays the options for automatic backup of the plant configuration and console configuration.

Change Tag Size Old *and* New	Determines whether tag objects should change size in process graphics and reports. This feature is useful when upgrading from an earlier version console software. For more information on changing tag size, see the Software Upgrade Procedure. Note that the “Old” and “New” fields appear only if the value of “Change Tag Size” is “yes”. Also, the two lines immediately below this field stating that “TAG OBJECTS CONFIGURED IN PROCESS GRAPHICS AND IN REPORTS FILES MAY BE CHANGED IN SIZE” only appear if Change Tag Size is set to yes.

Console Config	Controls automatic console configuration backup. • **Console Config:** field toggles between Enable and Disable. • **Destination File** field must be configured by the user before the automatic console configuration operation can be enabled. • **Event Type** field requires selection of an event number from 0 to 240, to trigger the automatic console configuration backup. See page 2–1–28 for more information on automatic console configuration backup.

Logs: Batch Alarm Maint Op Chg Host	Specifies whether or not the particular log is enabled or disabled. Press [ENTER] to change the entry. **Batch** = Batch log **Alarm** = Alarm log **Maint** = Smart transmitter maintenance log **Op Chg** = Operator change log **Host** = ABC batch messaging **Note**: Do not change the Host field to "Enable" mode unless you are using the ABC Batch Messaging function to send Batch messages to the RS3 Operator Station Journal. See the *ROS Getting Started Manual* for more information.

Plant Config	Controls automatic plant configuration backup. • **Plant Config:** field toggles between Enable and Disable. • **Backup File** field always specifies $$BACKUP as the backup file. The $$BACKUP file must exist before the automatic plant configuration operation can be enabled. • **Event Type** field requires selection of an event type number from 0 to 240, to trigger automatic plant configuration backup. See page 2–1–28 for more information.

CC-2: Section 2, Table 2.1.2, (Console Configuration Screen Fields)

Description: *Add new tape drive type (Tandberg) to this table as shown.*

Field	Description
Tape Drive Type	Displays the tape drive on a console acting as a Master Node. Possible displays are: • RS3*T1 45S (Scorpion qic–24 format) • RS3*T2 60S (Viper 2060S qic–24 format) • RS3*T3 150S (Viper 2150S qic–150 format) • RS3*T4 TDC 3660 (Tandberg 3660 qic–150 format) For more information about tape drive types and specifications, see DT:1.

CC-2: Section 1, starting on page 2-1-28

Description: *Add text supporting the automatic backup functions, as shown below.*

Automatic Backup Functions

You can elect to have RS3 automatically backup your console configuration and/or your plant configuration through the Console Configuration screen display or command line options.

Automatic Console Configuration Backup

Automatic console configuration backup assures you that the console configuration will be backed up automatically in accordance with a user-established event trigger; and frees you from having to perform the operation manually.

Automatic console configuration backup triggers the Disk Console Save operation (Disk Activity screen), on an event basis. You can enable and disable automatic console configuration backup by toggling between Enable/Disable on the Console Config field on the Console Configuration display (see Figure 2.1.6), or by using the ECB (Enable Console Config Backup) and DCB (Disable Console Config Backup) command line options, respectively.

Before enabling this function, you need to configure a destination filename in the Destination File field and select an event type in the Event Type field. Event type field numbers are from 0 to 240, and the event selected triggers the automatic backup. Messages are displayed if the destination filename is not configured or the event type entered is not valid.

When the specified event occurs, a 15-second countdown warning message is displayed on the Disk Activity screen. After 15 seconds, the Disk Console Save operation is executed internally, saving console configurations of all types. During the save operation, an in-progress message is displayed on the Disk Activity screen. You cannot execute another operation until this operation completes.

If another operation is currently in progress, the console configuration backup operation is not executed immediately, but is stored in a queue and executed upon the completion of the current operation.

Note that this capability is automatically turned off upon power up or reset until the user saves the console configuration with different field settings for this capability.

Automatic Plant Configuration Backup

Automatic plant configuration backup assures you that the plant configuration will be backed up automatically, in accordance with the backup plant config file and a user-established event trigger; and frees you from performing the backup manually.

You can backup groups of nodes within various PeerWays in the system into destination files with a specific destination filename, all within one save operation. You can also maintain multiple revisions of a particular plant configuration.

Automatic plant configuration backup triggers the Disk Cont Save or Backup operation (Disk Activity screen). You can enable or disable Automatic Plant Configuration Backup by toggling between Enable/Disable on the Plant Config field on the Console Configuration display (see Figure 2.1.6), or by using the EPB (Enable Plant Config Backup) and DPB (Disable Plant Config Backup) command line options, respectively.

The Backup File field always specifies $$BACKUP as the backup file. Before you enable the automatic plant config backup operation, you must create a backup plant config file, using the BackUp Plant Config (BUP) command line option. See DT: Chapter 2, Section 4 for more information.

If you have not created a backup plant config file before enabling automatic plant configuration backup, a banner message will be displayed. Note that you cannot modify the backup plant config file while the backup plant configuration capability is enabled.

You will also need to select an event type in the Event Type field. Event type numbers are from 0 to 240, and the event selected triggers the automatic backup. If the event type entered is not valid, a banner message will be displayed.

When the specified event occurs, a 15-second countdown warning message is displayed on the Disk Activity screen. After 15 seconds, the Disk Cont Save or Backup operation is executed internally, in conjunction with the backup plant config file. During the backup operation, an in-progress message is displayed on the Disk Activity screen; you cannot execute another operation until this operation completes.

If another operation is currently in progress, the plant configuration backup operation is not executed immediately, but is stored in a queue and executed upon the completion of the current operation.

You can abort the plant configuration backup while it is in progress, using an APB (Abort Plant Config Backup) command line option. The operation will terminate when the current node being backed up has completed.

You can also manually execute the Disk Cont Save or Backup operation from the Disk Activity screen display using a backup plant config file.

Note that the automatic plant configuration backup capability is automatically turned off upon power up or reset until the user saves the console configuration with different field settings for this capability.

Customizing the Plant Configuration Backup

You can customize the backup of plant configurations using the BackUp Plant Config (BUP) command line option, which displays the Backup Plant Config screen.

Within the Backup Plant Config screen, you can:

- Select/deselect particular nodes to be backed up (from 1 to 992)
- Specify the first five characters for the destination file(s)
- Enter a maximum revision letter (from A to Z)
- Write the backup plant configuration file to disk.

For more information, refer to the Disk and Tape Manual, DT: 2-4.

CC-2: New Section (Link Editor)

Description: *Replace the information in CC-3: Section 3, pages 3-3-9 through 3-3-12 with the following, and move it to CC-2:*

Link Editor

The Link Editor allows you to change the addresses of links within various files to allow them to transfer configurations from one address range to another.

There are two cases where this is often required:

- If the node number is re-addressed to another node number for some reason (including being moved to a different Peerway Number).
- If a configuration or range of blocks for a section of the plant is copied to another area. For example, if two boiler configurations are similar, once the first configuration is completed, the second configuration may be copied from the first.

The Link Edit function allows the following operations for file configurations:

- Moving or copying from one ControlFile to another ControlFile
  Example: move =3 to =31 or move =3 to =294
- Moving or copying from one controller to another controller
  Example: move =3A to =3B or move =3A to =31A
- Moving an address range within a controller
  Example: move range of =3AA101,=3AA832 to starting address =3BA101 or move =3A-1,5 to starting at address =31A-10 to =31A-14

You can change the following configurations on the Link Editor screen:

- Graphic files in the Process Graphics folder
- Report configuration files in the Report Configuration folder
- Group Display configurations in Console Configuration files
- Trend configurations in Console Configuration files
- Trend Display configurations in Console Configuration files

NOTE:

- When blocks are copied using the Plant Configuration “Disk Load Transfer”, remember to change any duplicate tags.
- The Link Editor changes only references to block links in the configuration. It has no effect on actual block links in the specified controllers.
- You cannot change the range of an I/O card cage.

  Example: Address Range =1CA120,130
  New Address =2CA101 will not work

Modifying a Configuration File

The Link Editor allows you to update the addresses within a configuration file. The file is modified to reflect the new addresses for the address range that is modified for all functions.

NOTE: Always make a copy of your original file, and work from the copy.

You must be careful when loading the Console Configuration modified file. The suggested procedure is to load in this order:

1. Load the full Console Configuration for the desired file on the Disk Activity screen.
2. Save the Console Configuration using the “All” function on the Disk Activity screen.
3. Verify that the “Configuration File” on the lower left corner of the “Configure Command Console” screen is updated so that the console will load the correct file the next time the console is rebooted.

Modifying Other RS3 File Types

Other RS3 file types within the system cannot be changed using the Link Editor, however each can be modified in another manner:

- Plant Configuration

  Modified using ”Disk Load Transfer” function on the Disk Activity screen, or using the PC-based Control Studio application.
- Batch Tasks

Modified using ”Batch Load Transfer” function on the Disk Activity screen.

- RBL Files

  Modified using the search and replace function within each individual RBL script. (Set the “Tags or Addresses” field on the Configure Command Console screen to “Addresses”.)

  RBL files may also be modified using the PC-based Batch Studio application.

Calling Up the Link Editor Screen

❑ **To call up the Link Editor screen (Figure 2.7.1), type:**

L E

or

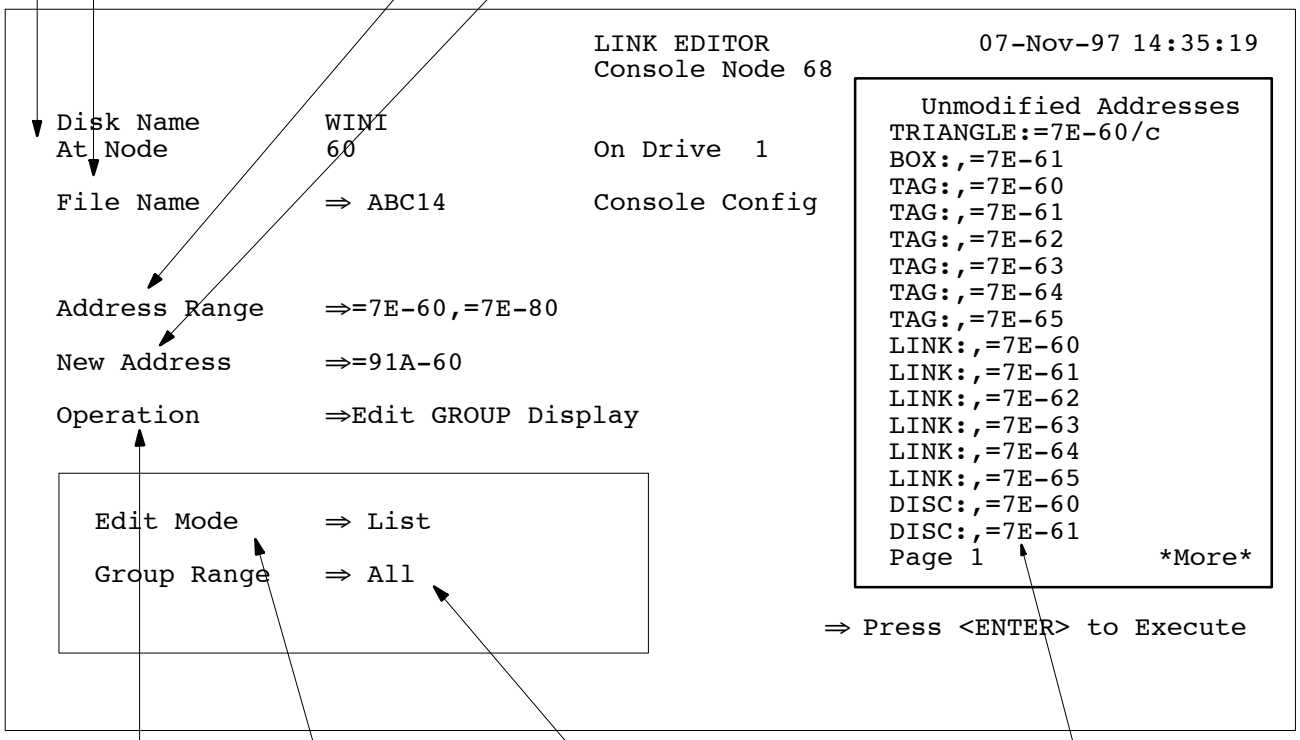
L E (*node*) [:] (*drive*)

At Node. You cannot change to a different node using this screen.

File Name. Name of the file used to modify block link references.

Address Range. Current address range of links to be edited or listed. You can specify a range by PeerWay node and controller processor card numbers.

New Address. New address range of links after editing. You can specify a range by PeerWay node and controller processor card numbers.



Operation. Use Next Option and press [SELECT] to choose the operation:

- Edit TREND Display
- Edit Graphic Display
- Edit Report Program
- Edit GROUP Display
- Edit TREND File

Modified addresses reappear in this window when you do a “List” after a “Modify”.

Edit Mode. The Link Editor has two modes:

Modify	Changes the address of the “Address Range” field as specified in the “New Address” field.
List	Display the block links used in the configuration in the “Unmodified Addresses” window on the right.

Group Range or **Trend File.** This field is displayed if you have selected “Edit GROUP Display”, “Edit TREND Display”, or “Edit TREND File” as the operation. The field defaults to “All”; you can change it to a range.

Figure 2.7.1 Link Editor Screen

Procedure: Editing Link Addresses

❑ **To edit link addresses:**

Step	Operation	Description
1	Action:	Call up the Link Editor screen. Type: **L E**
2	Action: Comments:	Select the operation in the “Operation” field. Scroll through the available operations with the [NEXT OPTION] key. The operations are Edit TREND File Edit TREND Display Edit Graphic Display Edit Report Program Edit GROUP Display The operation selected determines which folder appears in the “Source File” field (either the Process Graphics, Console Config, or Report Config folder). It also determines whether a “Group Range” or “Trend File” field appears on the screen.
3	Action:	Enter the name of a file in the “File Name” field or press [NEXT OPTION] to choose a file from the available filenames in the folder.

❑ **To edit link addresses:**

Step	Operation	Description
	Comments:	To call up the file, press [SELECT] on the “File Name” field.
4	Action: Comments:	Enter the current link address range for the file in the “Address Range” field. The address range consists of the PeerWay node and controller processor card numbers. Use the format: =1A (where 1 is the PeerWay node and A is the controller processor card.) The address range must match the actual address range used by the file.
5	Action: Comments:	Enter the new link address range for the file in the “New Address” field. The address range consists of the PeerWay node and controller processor card numbers. Use the format: =1B (where 1 is the PeerWay node and B is the controller processor card.) **Note:** All addresses that fall inside the source Address Range will be modified by the addition of an offset that corresponds to the difference between the New Address base address and the source Address Range base address.
6	Action:	In the “Edit Mode” field select either “List or Modify”. Press the [NEXT OPTION] key to toggle between the two modes. Modify Changes the address of the “Address Range” field as specified in the “New Address” field. List List the block links used in the configuration in the “Unmodified Addresses” window on the right.
7	Action:	If you selected “Edit GROUP Display” or “Edit TREND Display” as the operation, enter a range the “Group Range” field. If you selected “Edit TREND File” as the operation, enter a range in the “Trend File” field. “All” is the default range.

❑ **To edit link addresses:**

Step	Operation	Description
8	Action:	Cursor to the “Press <ENTER>” field and press [ENTER] to execute the mode specified in the “Edit Mode” field.

	Comments:	The operation is complete when the following message appears:
		`File is updated with new Address`
		If you have performed a Modify operation, the “Unmodified Addresses” box shows only the addresses that were not modified. The modified addresss will appear on the list again after you do a List operation.
		Note: When modifying the file, the Edit operation will not do anything if the file does not contain any addresses that fall in the specified Address Range. The following message is displayed:
		`No update: Address is out of range`

CC: Chapter 4 (Reports)

Section 4 (Configuring a Report)

Description: *the description of the “Active ?” field was changed to include information on reports configured to print based on time (page 4-4-3).*

Table 4.4.1. Report Configuration Screen Fields

Field	Description	Allowable Entries
Active ?	Determines whether or not the “Generate on alarm/event from” field is active. It also determines whether or not a report is configured to print based on time.	yes, no

Description: *Figure 4.4.19 was modified to include a current screen display (page 4-4-25).*

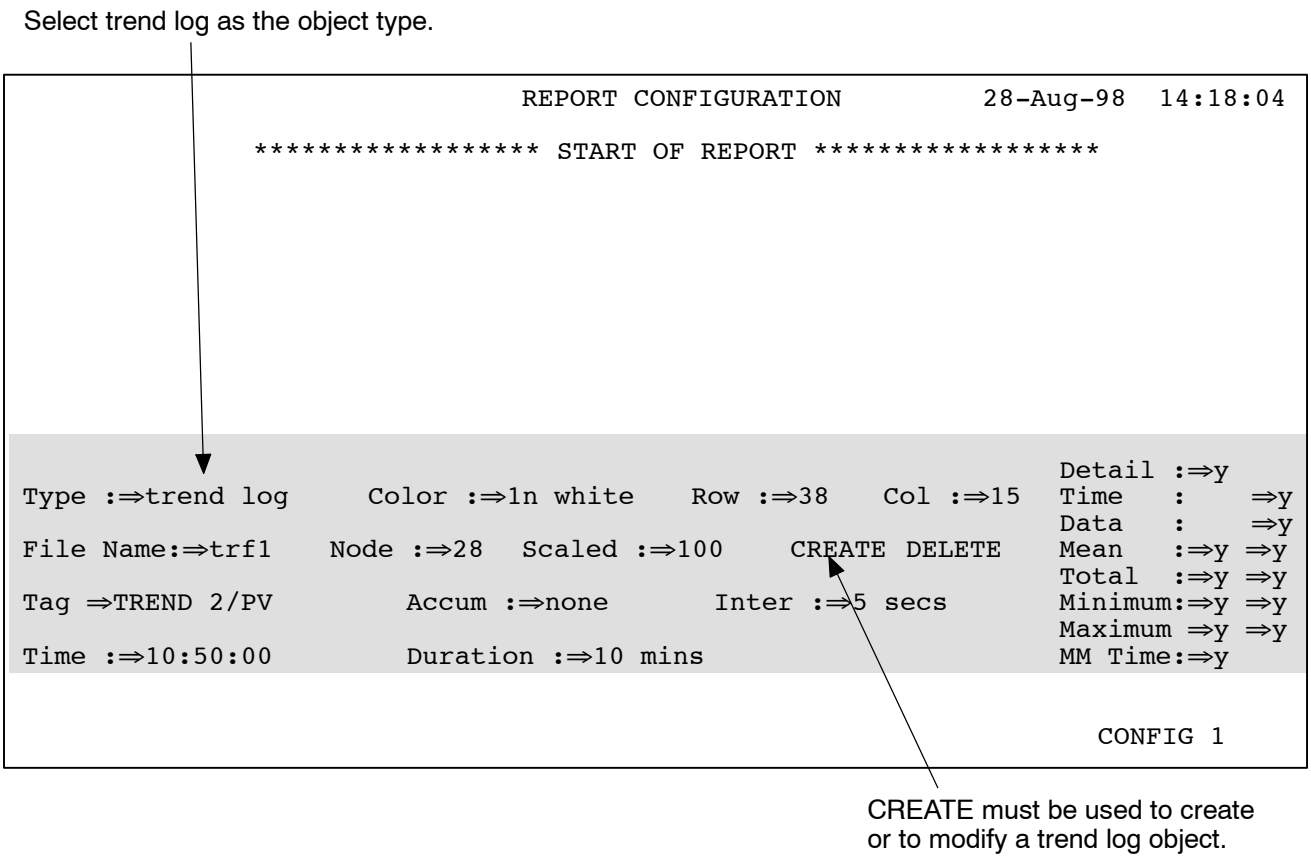


Figure 4.4.19. Report Configuration Screen with Trend Log Object

Description: *The "Trend Node" field was changed to "Node" and the description of the Time field in Table 4.4.4 was modified (page 4-4-29).*

Table 4.4.4. Trend Log Field Description (continued)

Field	Description
Node	Node on which the trend file resides.
Time	The beginning time of the trend log data that is included in the report. The time can be entered in the following ways: **NOTE:** You can enter a maximum of eight characters. When you specify a relative value for day or time, you will not be able to specify seconds and you may be limited as to the number of characters available to specify minutes. -DD/HH:MM:SS — specifies a start time relative to the day or the generation of the report–for example, -2/10:15 specifies that the report includes trend log data starting 2 days, 10 hours, and 15 minutes before the generation of the report. HH:MM:SS — specifies at time—for example, 16:00:00 specifies that the report includes trend log data starting at 4 P.M. -HH:MM:SS — specifies an amount of time prior to generation of the report—for example, -8:00:00 specifies that the report includes trend log data starting 8 hours before the report generation time. block variable — specifies a number of seconds previous to the report generation time—for example, a block variable with a value of 120 specifies that the report includes trend log data starting 120 seconds before the report generation time.

Description: *The following sentence was added at the end of the first paragraph under the heading "How to Generate a Report Based on Time and Date" and Figure 4.4.27 was modified to include an additional step on setting the "Active ?" field on page 4-4-38.*

Reports configured to print based on time must have the "Active ?" field in the Report Configuration screen set to "yes."

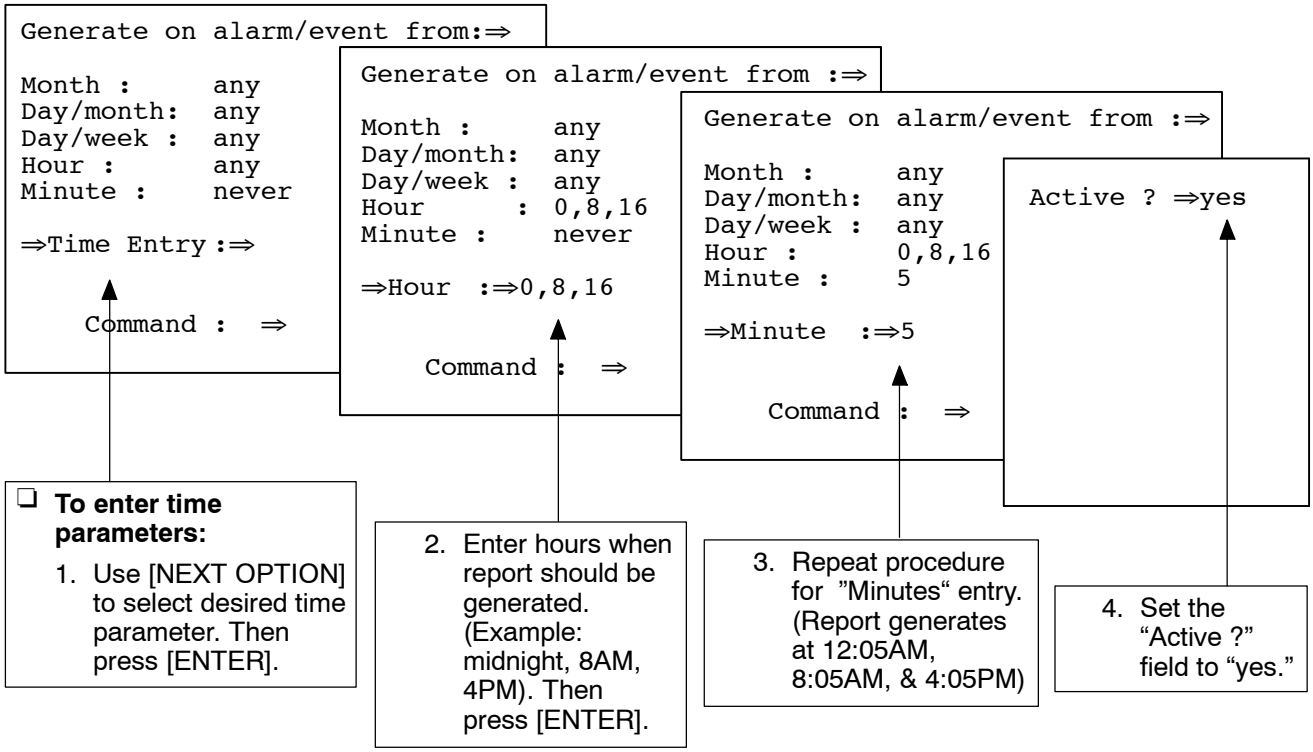


Figure 4.4.27. Generating a Report Based on Time

CC: Chapter 5 (Trending)

Section 2 (Configuring Trend Files)

Description: *Additional information on Trend File 0 was added to Table 5.2.1 (page 5-2-3).*

Table 5.2.1. Trend File Setup Screen Fields

File No.	Number of the trend file. **NOTE:** Trend File 0 is not written to disk. It stores real-time data only, and no history data is available. **NOTE:** Trend file 0 is a trend file in RAM only. It is not saved on disk. With trend file 0,there is no control over time duration; frequency (60 data bits) controls duration. For example, if the frequency is every minute, the duration is one hour. Your sample rate is 60.	Display only

CC: Chapter 6 (Alarm Management)

Section 3 (Separating and sorting Alarms at a Console)

Description: *The field "Flush Block Cache" was added to Figure 6.3.2 and to Table 6.3.3 (pages 6-3-9 and 6-3-10).*

❑ **To call up:**

- **A L C** [ENTER] at the command line

❑ **To access other screens:**

- [PAGE AHEAD] to see Event List Configuration
- [PAGE BACK] to see Automatic Alarm Deletion

❑ **To change an entry:**

1. Cursor to the field, type in the new entry, and press [ENTER]. New entries are displayed in a contrasting color.
2. The changes do not take effect until you initialize all the lists. When you have made all the changes to the screen that you want, initialize the list by cursoring to the "Initialize Lists" field and pressing [ENTER].

NOTE: This will clear all alarm and event lists.

```
                        ALARM LIST CONFIGURATION     01-Aug-96   11:44:24
                           +---Print---+
  List Type          Size   Trigger   Node
    ↓
  Hardware           ⇒200   ⇒50       ⇒32      Flush Block Cache

  Process            ⇒200   ⇒100      ⇒20      External Alarm   ⇒NC

  Batch              ⇒200   ⇒50       ⇒20      Backup Printer Node⇒20

  System Status      ⇒100   ⇒50       ⇒32      Restore Primary Printer Nodes

  Disk Events        ⇒50    ⇒25       ⇒32      Alarm Print⇒Normal

  Operator Log       ⇒100   ⇒50       ⇒32      Last Initialize Time
                                                28-Oct-95  07:11:38
  Suppressed         2860     **       **


         Total Entries (All Lists, including Events)    3850

         ⇒Initialize Lists (press ENTER)
   WARNING: This will Clear ALL Alarm and Event Lists
FULL                                                          CONFIG  1
```

The difference between the "Total Entries" size and the sum of the configured alarm type list and event list sizes is automatically reserved for the suppressed alarm lists.

Shows the maximum number of alarms and events that can be stored in console RAM.

Figure 6.3.2. Alarm List Configuration Screen

Table 6.3.3. Alarm List Configuration Screen Fields

Field	Description
Flush Block Cache	Clears the block cache, to ensure information stored in console's cache is up to date. Useful on larger systems after configuration changes.

CC: Chapter 8 (Commands)

CC-8: Section 2

Description: *Update this chapter to include the new command line entries for the automatic backup functions, as shown below.*

Table 8.2.1 (SMS Commands that Call Up Screens)

Screen Called Up	Entry	Command Line Text
Plant Configuration Backup		
Backup Plant Config	**BUP** [ENTER]	BackUp Plant Config

Table 8.2.2 (SMS Commands that Perform Operations)

Operation Performed	Entry	Command Line Text
Alarms and Events		
Alarm view toggle (toggles between focused and full)	**AVT** [ENTER]	Alarm View Toggle
Silence console horn	**SH** [ENTER]	Silence Horn

Operation Performed	Entry	Command Line Text
Console		
Abort backup	**AB** [ENTER]	Abort Backup:
Abort tape restore	**ATR** [ENTER]	Abort Tape Restore:
Disable console config backup	**DCB** [ENTER]	Disable Console Cfg Backup
Enable console config backup	**ECB** [ENTER]	Enable Console Cfg Backup

Operation Performed	Entry	Command Line Text
Plant Configuration		
Abort plant config backup	**APB** [ENTER]	Abort Plant Cfg Backup

Operation Performed	Entry	Command Line Text
Disable plant config backup	**DPB** [ENTER]	Disable Plant Cfg Backup
Enable plant config backup	**EPB** [ENTER]	Enable Plant Cfg Backup

CC-8: Section 3

Table 8.3.1 (MTCC Commands that Call Up Screens)

Screen Called Up	Entry	Command Line Text
Plant Configuration Backup		
Backup Plant Config	**BUP** [ENTER]	BackUp Plant Config

Table 8.3.2 (MTCC Commands that Perform Operations)

Operation Performed	Entry	Command Line Text
Alarms and Events		
Alarm view toggle (toggles between focused and full)	**AVT** [ENTER]	Alarm View Toggle
Silence horn	**SH** [ENTER]	Silence Horn

Operation Performed	Entry	Command Line Text
Console		
Abort backup	**AB** [ENTER]	Abort Backup:
Abort tape restore	**ATR** [ENTER]	Abort Tape Restore:
Disable console config backup	**DCB** [ENTER]	Disable Console Cfg Backup
Enable console config backup	**ECB** [ENTER]	Enable Console Cfg Backup

Plant Configuration		
Abort plant config backup	**APB** [ENTER]	Abort Plant Cfg Backup
Disable plant config backup	**DPB** [ENTER]	Disable Plant Cfg Backup
Enable plant config backup	**EPB** [ENTER]	Enable Plant Cfg Backup

Configuration Quick Reference Guide Changes

Changes to the *Configuration Quick Reference Guide* (CQ) reflect the changes documented in the Console Configuration manual that are a result of:

- Addition of automatic backup capability released with P1 R1.2
- Release of the MPC5 Controller Processor released with P1 R3.0

The following information describes the changes to this manual.

CQ: Chapter 1 (Screens/Operator Interface)

Description: *The following information was added to the items listed under "Trend File Configuration Screen (TFC)" on page 1-37.*

- Trend file 0 is a trend file in RAM only. It is not saved on disk. With trend file 0, there is no control over time duration; frequency (60 data bits) controls duration. For example, if the frequency is every minute, the duration is one hour. Your sample rate is 60.

CQ: Chapter 2 (ControlBlocks)

Description: *The G input on page 2-44 was corrected to read as follows.*

G Close timer counts time between output of a Close command (step b) and Confirm Close (**@h**).

CQ: Chapter 5 (MTCC Commands)

MTCC Commands that Call Up Screens,
Alphabetical List of MTCC Screen Callup Commands,
MTCC Commands that Perform Operations, and
Alphabetical List of MTCC Operation Commands

Description: *Update these tables to include the new command line entries for the automatic backup functions (refer to the changes for the Console Configuration Manual, Chapter 8, Section 3).*

CQ: Chapter 6 (SMS Commands)

Description: *The paragraphs under "Using SMS Commands" on page 6-2 were changed to read as follows.*

This section contains tables listing commands that can be entered from the command line at the top of the System Manager Station (SMS) screen. You can access these commands by typing the indicated letters, or by repeatedly pressing [NEXT OPTION] and [PREV OPTION].

The first two tables list SMS commands that call up screens; the commands are organized by primary function in the first table, and alphabetically by command in the second table.

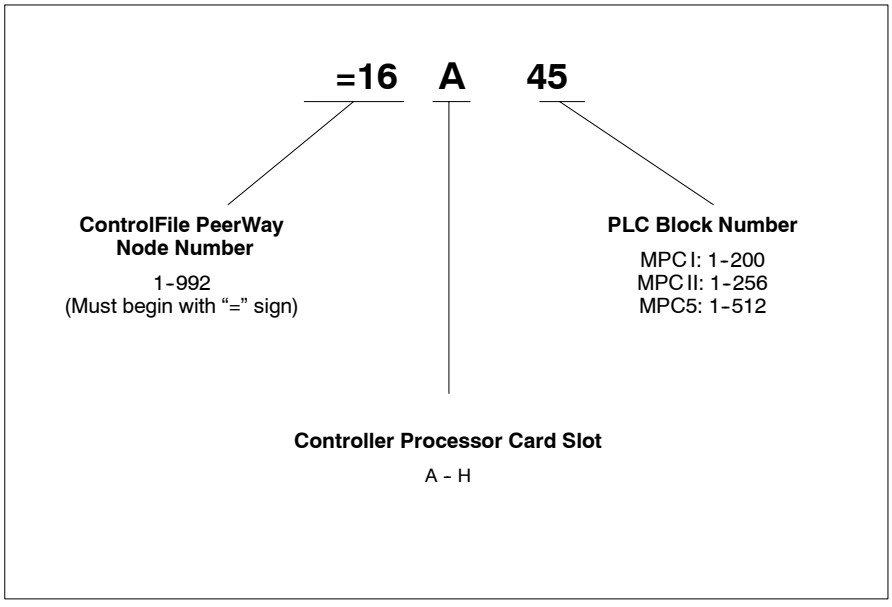
The third and fourth tables list the SMS commands that perform operations; the commands are organized by primary function in the first of these two tables, and alphabetically in the second.

Description: *Update the following tables to include the new command line entries for the automatic backup functions (refer to the changes for the Console Configuration Manual, Chapter 8, Section 2).*

SMS Commands that Call Up Screens,
Alphabetical List of SMS Screen Callup Commands,
SMS Commands that Perform Operations, and
Alphabetical List of SMS Operation Commands

CQ: Chapter 7 (Addressing)

Description: *The figure on page 7-18 was updated to include the MPC5 Controller Processor.*



PLC FlexTerm Addressing

ControlBlock Configuration Manual Changes

Changes to the *ControlBlock Configuration Manual* (CB) are a result of:

- Introduction of the MPC5 Controller Processor with the P1 R3.0 release
- Allowable entries for the Prop Band field
- The values for the TOT function input and output registers

The following information describes the changes to this manual.

CB: Chapter 1 (Introduction to ControlBlocks)

CB-1: Section 1 (what is a ControlBlock?)

Description: *The first bulleted item and Figure 1.1.3 on page 1-1-4 were modified to include the MPC5.*

- Up to 126 blocks for an MPCII or an MPC5

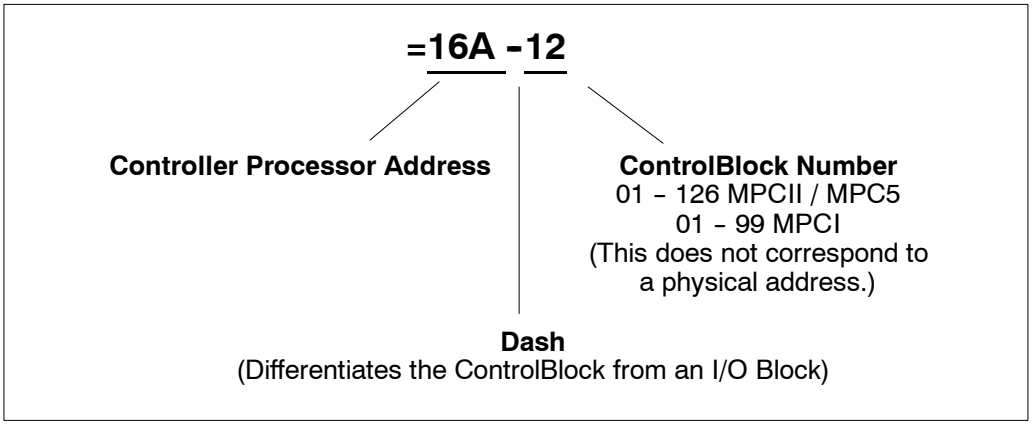


Figure 1.1.3. ControlBlock Addressing

CB: Chapter 2 (Configuring ControlBlock Functions)

CB-2: Section 2 (Configuring PID Functions)

Description: *The allowable entries were changed for the Prop Band field in Table 2.2.5 on page 2-2-16.*

Table 2.2.5. P, I, and D Configuration Fields on Continuous Faceplate Screen

Field	Access Level	Description	Allowable Entries
Prop Band (or Cont Gain)	Supr	Proportional Band or Controller Gain. The field that appears depends on the "PID Proportional" field on the Console Configuration screen. (See CC: 1.) (Prop Band of 100) = (Controller Gain of 1) Appears when you configure proportional control or a combination that includes proportional control.	PV, LS, RS, FF, E to O, .000001 to 999999 **Default=100. (Band) 1. (Gain)**

CB-2: Section 3 (Configuring Other ControlBlock Continuous Functions)

Description: *The values for the TOT function input and output registers on page 2-3-51 were changed to read as follows.*

The Stack Totalizer (TOT) function is an integrator with an output that resets to zero when it reaches a high limit or a reset indication. The TOT function input and output registers contain the following values:

- A input register Current PV value
- Q input register Current accumulated total
- B output register Previous Q value
- C input register Previous B value
- D output register Previous C value

CB: Chapter 3 (Configuring Block Links)

CB-3: Section 4 (Configuration Constraints)

Description: *Table 3.4.1 was modified to include information of the MPC5 Controller Processor (page 3-4-1).*

Table 3.4.1. Links Available for Components

Component	Number of Available Links
MPC5 Controller Processor:	
Within Controller Processor	Unlimited
Into and out of Controller Processor	80

Description: *The first paragraph on page 3-4-3 was modified to include the MPC5 Controller Processor.*

Forty links are available for each MPC Controller Processor. Eighty links are available into and out of each MPCII or MPC5 Controller Processor. The ControlFile Status screen displays the number of remaining links for Controller Processors. For information about the ControlFile Status screen, see “Viewing the Number of ControlFile Links Available” later in this section.

Description: *Table 3.4.2 was modified to include information of the MPC5 Controller Processor (page 3-4-15).*

Table 3.4.2. ControlFile Status Screen Fields

Field	Access Level	Description	Allowable Entries
Jumper Code	Conf	Indicates the MPC functionality and the image selection for which the jumpers are configured when using an MPCII. Displayed in the format x_y_z, where: x = 0 for 12 MHz MPC functionality, or 1 for 16 MHz MPC functionality y = 0–7 for the Image Select jumpers (HD6 – HD8) z = 0–7 for the MPC2 or MPC5 Sub-image Select jumpers (HD4, HD5, and HD9) For more information about jumpers, see SV: 4.	Display only

CB: Chapter 6 (Logic Steps)

CB-6: Section 4 (Logic Statement Functions)

Description: *The following note was added after the first paragraph on page 6-4-30.*

NOTE: The inhibit function does not work on MPCI controllers.

CB: Chapter 9 (Data Compression)

CB-9: Section 3 (Configuring Compressors in a Data Compression Block)

Description: *The following note was added after the paragraph on page 9-3-1.*

NOTE: Do not perform engineering units (EU) conversion for Data Compression block (DCB) inputs on the Continuous Links screen. Instead, set EU conversion on the register that the DCB input is linked to. The DCB will then operate with a scaled value, and that value in the source block will also be scaled.

Disk and Tape Functions Manual Changes

Changes to the *Disk and Tape Functions Manual* (DT) are a result of:

- Introduction of the 2.1 GB hard disk.
- Additional information on tape drive location labels
- Introduction of the Tandberg TDC 3660 tape drive with the P1 R1.1 release
- Introduction of the MPC5 Controller Processor with the P1 R3.0 release
- Introduction of ABC Batch Messaging with the P1 R3.4 release
- Automatic backup functionality added
- Master License Agreement
- Device error message changes

The following information describes the changes to this manual.

DT: Chapter 1 (Media & Screens)

DT-1: Section 1 (Disk and Tape Media)

Description: *Information on the 2.1 GB hard disk was added to Table 1.1.1 on page 1-1-2.*

Table 1.1.1. Media Capacity

Media Type	Unformatted	Initialized	Total Files
Hard Disk	2.1 GB	970 MB	N/A

Description: *One sentence was added to the paragraph under "Tapes" on page 1-1-4.*

The following two sections describe precautions for handling and storing tape media. The third section describes how to locate tape drives.

Description: *The following subject was added before "How Are Media Organized?" on page 1-1-5.*

Tape Drive Locations

Figure 1.1.0 through Figure 1.1.0B illustrate the placement of tape drive labels on system equipment. The presence of this label indicates that a tape drive is located behind that door.

Figure 1.1.0 shows the label on the system cabinet. The symbol on the door handle indicates the access location to the tape drive.

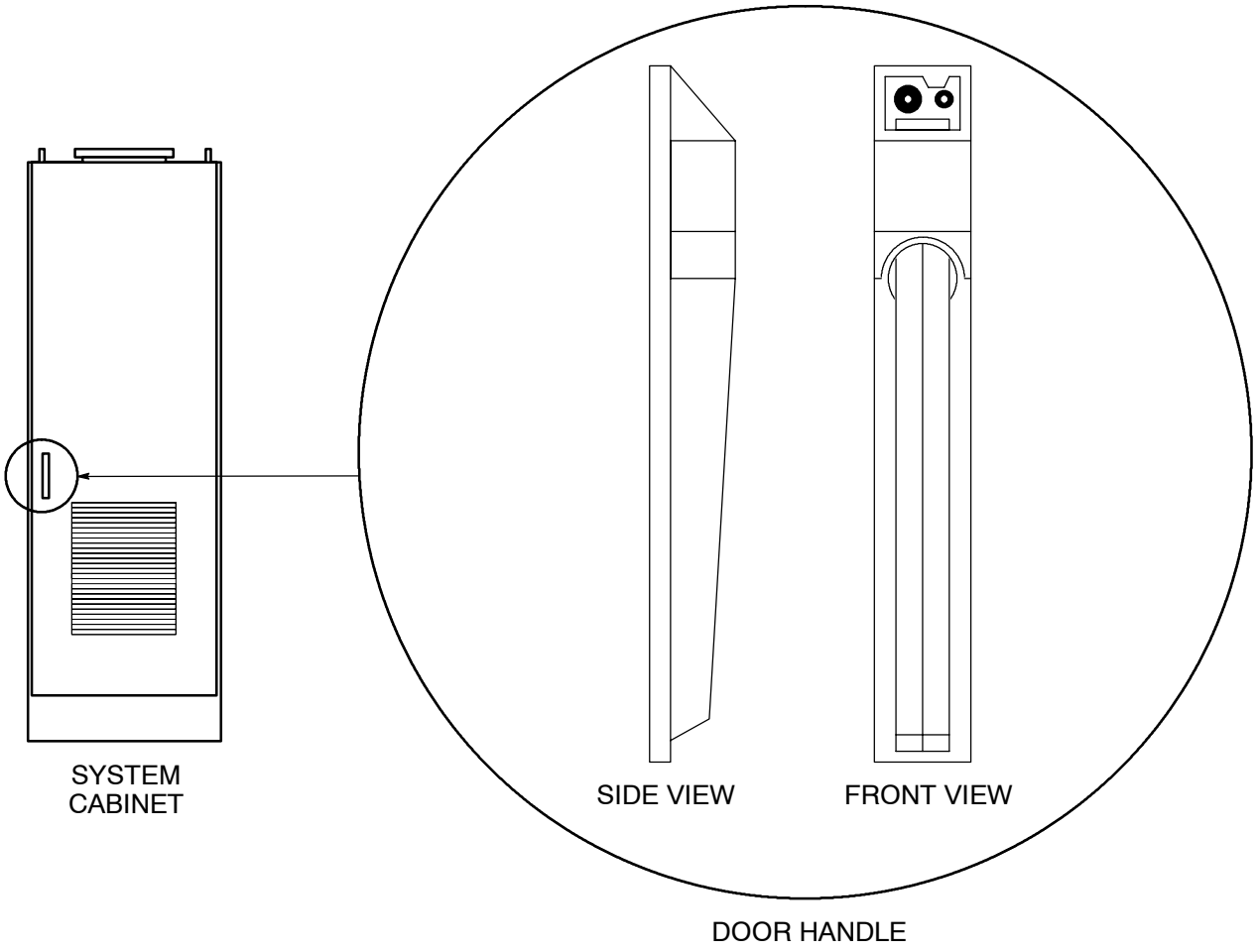


Figure 1.1.0. Tape Drive Location Label on the System Cabinet

Figure 1.1.0A shows the label on the operator console and System Manager Station (SMS) enclosure. The door on which the tape symbol is located indicates which door provides access to the tape drive.

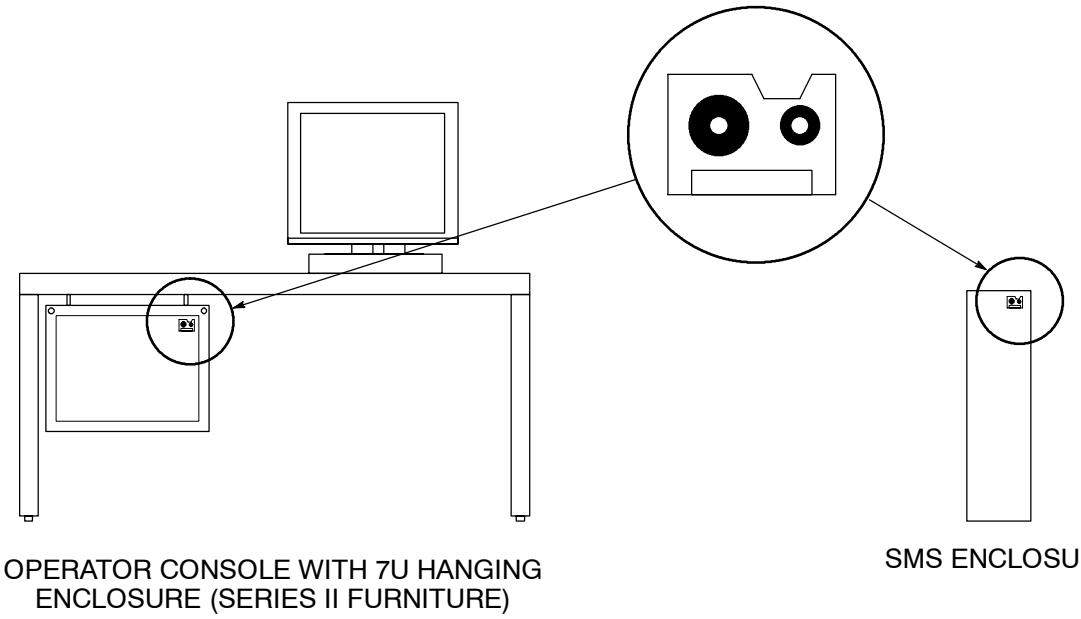


Figure 1.1.0A. Tape Drive Location Labels on the Operator Console and SMS Enclosure

Figure 1.1.0B shows the label on the Electronic Console (EC) and tower. The door on which the tape symbol is located indicates which door provides access to the tape drive.

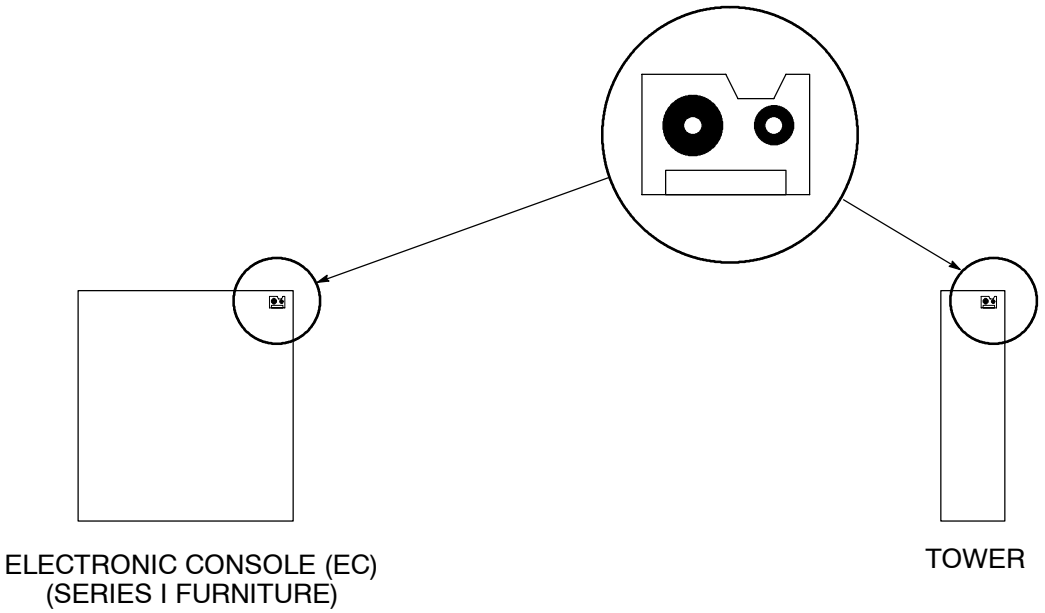


Figure 1.1.0B. Tape Drive Location Labels on the Electronic Console and Tower

DT-1: Section 1, Table 1.1.2 (Console Hard Drive Compatibility Matrix)

Description: *The Tandberg Tape Drive was added to Table 1.1.6. Also, the capacity of the tape drives and the notes were changed.*

Table 1.1.6. Tape Drives and Recommended Cartridges

FRSI Part Number for Cartridge	MTCC or SMS CCC Screen Displays	Tape Drive	Cartridge Type	Format	Capacity
1984-1954-0001	RS3*T1 45S	Scorpion	DC300XLP	qic-24	33.5 MB
1984-1954-0001	RS3*T2 60S	Viper 2060S	DC300XLP(1)	qic-24	33.5 MB
1984-1954-0002	RS3*T2 60S	Viper 2060S	DC600A(1)	qic-24	60 MB
1984-1954-0003	RS3*T3 150S	Viper 2150S	DC6150(2)	qic-150	131 MB
1984-1954-0003	RS3*T4 TDC 3660	Tandberg 3660	DC6150(2)	qic-150	125 MB

(1) If a DC600A or DC300XLP data cartridge (qic-24 formatted) is attempted to be used in a Viper 2150S for write operations (Backup, Tape Init or Create Boot Tape), the disk alarm "Tape Write Protected" will be generated even though the tape cartridge is not write protected.

(2) If a DC6150 data cartridge (qic-150 formatted) is attempted to be used in a Viper 2060S for a "Tape Load" operation, the disk alarm "Uninitialized Tape in Drive" will be generated even though the tape cartridge is initialized.

NOTES

1. You can read lower capacity cartridge types other than those specified for a given tape drive. You will not be able to write to a lower capacity cartridge type other than those specified for a given tape drive.

   In order to read or write to a higher capacity cartridge type other than those specified for a given tape drive, the cartridge must be initialized on that tape drive first. The capacity and format of the cartridge type will be that of the highest capacity and corresponding format specified for that tape drive.

2. A typical 'Tape Load' operation with 1000 files (131MB) of data in the tape cartridge takes about 33 minutes.

DT-1: Section 2 (Directory Screens)

Description: *Information on the MPC5 was added to the last two paragraphs under the heading "Operating Program Files" on page 1-2-18.*

The Plant Program folder also contains operating programs for the different functions that can be performed by the Controller Processors. (MPCI, MPCII, and MPC5).

Table 1.2.2 lists the basic operating program files for use with the CP-II and CP-IV Coordinator Processors. Table 1.2.3 lists the basic operating program files for use with the MPCI, MPCII, and MPC5 Controller Processors.

Description: *Information on MPC5 program files was added to Table1.2.3 on page 1-2-19.*

Table 1.2.3. Controller Processor Program Files

File Name	Description/Function	Controller Type
$MP2+_P1	Multi-purpose Contact, Analog, Smart, Pulse, Temp, ATC, PLC, MUX	MPCII
$RBLC2_P1	Rosemount Basic Language (RBL) Controller	MPCII
$MPC5_P1	Multi-purpose Contact, Analog, Smart, Pulse, Temp, ATC, PLC, MUX	MPC5
$RBLC5_P1	Rosemount Basic Language (RBL) Controller	MPC5

Description: *Additional information on a plant configuration file was added to pages 1-2-21 and 2-5-16.*

There are two parts to RS3 Plant Configuration, dynamic data and static data. Dynamic data includes setpoints, *ENTRY numbers and *VALUE numbers. Static data includes blocks, links, and loop tuning parameters. An exact duplicate of the Controller's plant configuration is copied to the NV Memory every 10 seconds during normal operation. This is the entire configuration, including setpoints.

Plant Configurations can be saved on the console hard disk. This copy of the plant configuration WILL NOT INCLUDE DYNAMIC DATA, INCLUDING SETPOINTS. Since conditions in a Plant are continuously changing, this prevents loading obsolete dynamic data into the system. When a plant configuration saved to the console is restored to a ControlFile, all *VALUE and *ENTRY values will be set to zero.

The memory in the Controller is volatile, so if the Controller is disabled, the configuration is gone *from the Controller, but not from the NV Memory*. The NV Memory utilizes non-volatile battery backup memory. All plant configurations from the Controllers are retained even if the board is removed from the ControlFile. Loss of setpoint data can only occur under a specific set of circumstances. If the Controller is disabled and the NV Memory backup batteries are disabled, then the plant configuration will be lost. If the Controller is left active or the NV Memory is operational, the plant configuration will be retained in the system.

DT-1: Section 3 (Disk Activity Screens)

Description: *Information on the "Mode" and "Backup Pattern" fields was added to Figure 1-3-1 on page 1-3-1.*

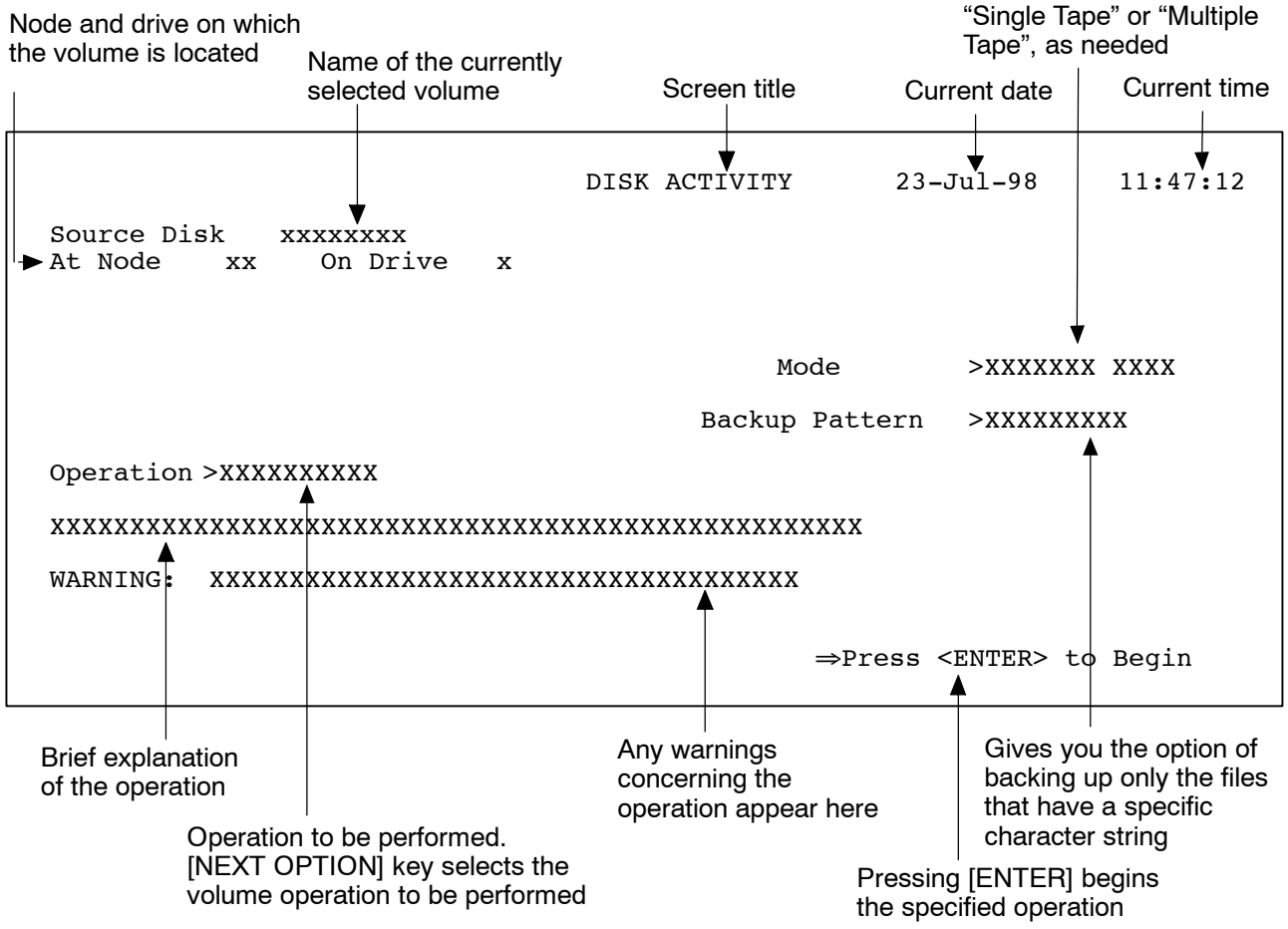


Figure 1.3.1. Disk Activity Screen Common Fields

DT: Chapter 2 (Procedures)

DT-2: Section 4 (Saving)

Description: *The Console Configuration screen in Figure 2.1.5 was changed to include the 'Host' field for ABC Batch Messaging (page 2-1-12).*

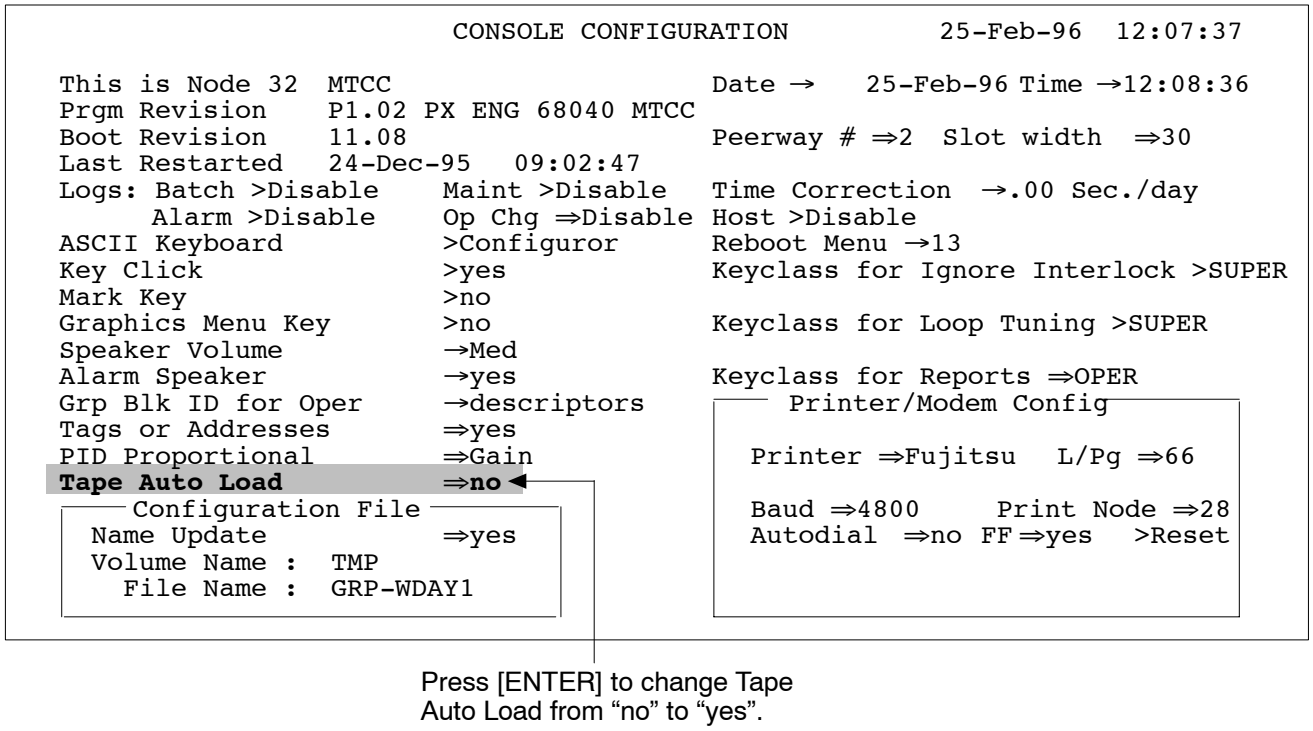


Figure 2.1.5. Console Configuration Screen: Tape Auto Load

Description: *The subsection "Loading the FIC Program Image to the FIC" on page 2-3-10 was changed to "Loading the FIC/FIM Program Image to the FIC/FIM" and the information included under this title was changed to read as follows.*

The Disk Load Program or Script disk operation loads the FIC/FIM program image to the FIC/FIM.

The FIC/FIM program image is stored in the Plant Program folder. The FIC/FIM program image files that can be loaded with this procedure include $$AFIC, $$TFIC, $$DIO, and $$MAIO.

Figure 2.3.2A shows the FIC program image being loaded to the FICs.

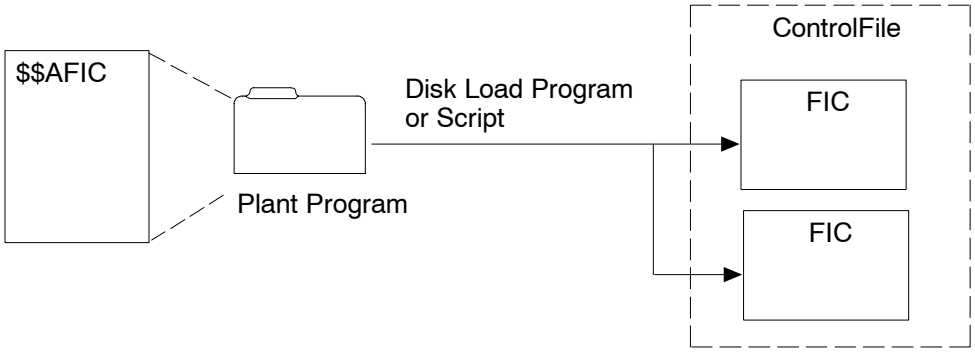


Figure 2.3.2A. Loading the $$AFIC Plant Program File

To load a FIC/FIM program image to an FIC/FIM, the console you are at must own the ControlFile node on which the FICs or FIMs are located.

❑ **To call up the Plant Status screen to check node ownership, type:**

PS [ENTER]

Owned nodes are backlighted. For information about changing the node ownership, see CC: 2. For more information on FIC/FIM addressing, see OV: 4.

NOTE: Some FICs/FIMs require that a FIC/FIM program resides on the card in order to operate. For these FICs/FIMs, you must load the program software to the FIC/FIM in the following situations:

- Upon initial card installation
- Whenever the software program is changed
- When a different image is to be supported

Figure 2.3.3 shows a sample Disk Activity screen that loads the FIC image file to FICs =30AD1 through =30AD8 residing at Controller Processor =30AD.

Perform Procedure 2.3.4 to load FIC/FIM program image files.

Procedure 2.3.4. Disk Load Program or Script to FIC/FIM

Step	Operation	Description
1	Action:	**CAUTION** **The Disk Load Program operation may affect the plant control scheme.** Call up the Disk Directory PeerWay screen by typing: **DDP** [ENTER]
	Response:	The Disk Directory PeerWay screen appears.
2	Action:	Cursor to the disk volume name or location containing the FIC/FIM program, and press [SELECT].
	Response:	The Disk Directory screen appears.
3	Action:	Cursor to the Plant Program folder name, and press [SELECT].
	Response:	The Plant Prog Directory screen appears.
4	Action:	Cursor to the name of the file to be loaded ($$AFIC), and press [ENTER].
	Response:	The Disk Activity screen appears.
5	Action:	Cursor to the “Operation” field on the Disk Activity screen. Press the [NEXT OPTION] button repeatedly until the following message appears above the “Operation” field: `Disk Load Program or Script` Press [ENTER].
	Response:	The “Disk Load Program or Script” then appears in the “Operation” field. The “Download to FIC Card(s)” field appears, indicating that the proper file was selected.
6	Action:	Cursor to the “FIC Addr Range” field. Enter the address of the FIC to which the program is to be loaded. For example, 33AA1, 33AA2 specifies that the FIC program is to be loaded to FICs located at 33AA1 and 33AA2. Press [ENTER].
7	Action:	Cursor to the “Press <ENTER> to Begin” field, and press [ENTER].
	Response:	While the operation is in progress this field reads: `Disk Operation in Progress` The operation is complete when the “Press <ENTER> to Begin” field reappears.
	Comments:	The operation may take several minutes to complete. To load all FICs attached to a Controller Processor takes about $1^1/_2$ minutes. If several Controller Processors are being loaded, they are loaded in alphanumeric order.

(continued on next page)

Procedure 2.3.4. Disk Load Program or Script to FIC/FIM

Step	Operation	Description
8	Action:	To verify that the Disk Load Program operation was successful, call up the Disk Event List screen by typing: **DEL** [ENTER]
	Response:	The Field I/O Status screen appears and shows the following entry for each FIC: `FIC Program Load to 30AE Successful`
9	Action:	To verify that the FIC accepted the new program image, check the Field I/O Status screen by typing: **FS [=address]** [ENTER]
	Response:	The Field I/O Status screen appears. Verify that it displays the I/O information in green and shows an S-REV (FIC software revision level). If the I/O information is displayed in purple or "non-boot" appears on the screen, you must download the program image to that FIC address again.

DT-2: Page 2-4-1

Description: *Add Procedure 2.4.2a to the list of save operations.*

Procedure 2.4.2a. Save Plant Configuration Automatically . 2-4-x

DT-2: Page 2-4-2

Description: *Add the following as the last paragraph on this page:*

"You can also enable an automatic save/backup of the console configuration from the Console Configuration screen or from the command line (see CC:2-1 for more information)."

DT-2: Page 2-4-6

Description: *Add the following as the last paragraph on this page:*

"You can also enable an automatic save/backup of the plant configuration from the Console Configuration screen or from the command line (see page 2-4-10 and CC:2-1 for more information)."

DT-2: Page 2-4-7, Figure 2.4.2 (Disk Activity Screen: Disk Controller Save or Backup)

Description: *The name of this screen has been changed to "Disk Controller Save or Backup." In addition, the following lines on this screen have been modified:*

- Address Range
- Operation
- Will SAVE …

Replace the existing figure with the modified figure as shown following.

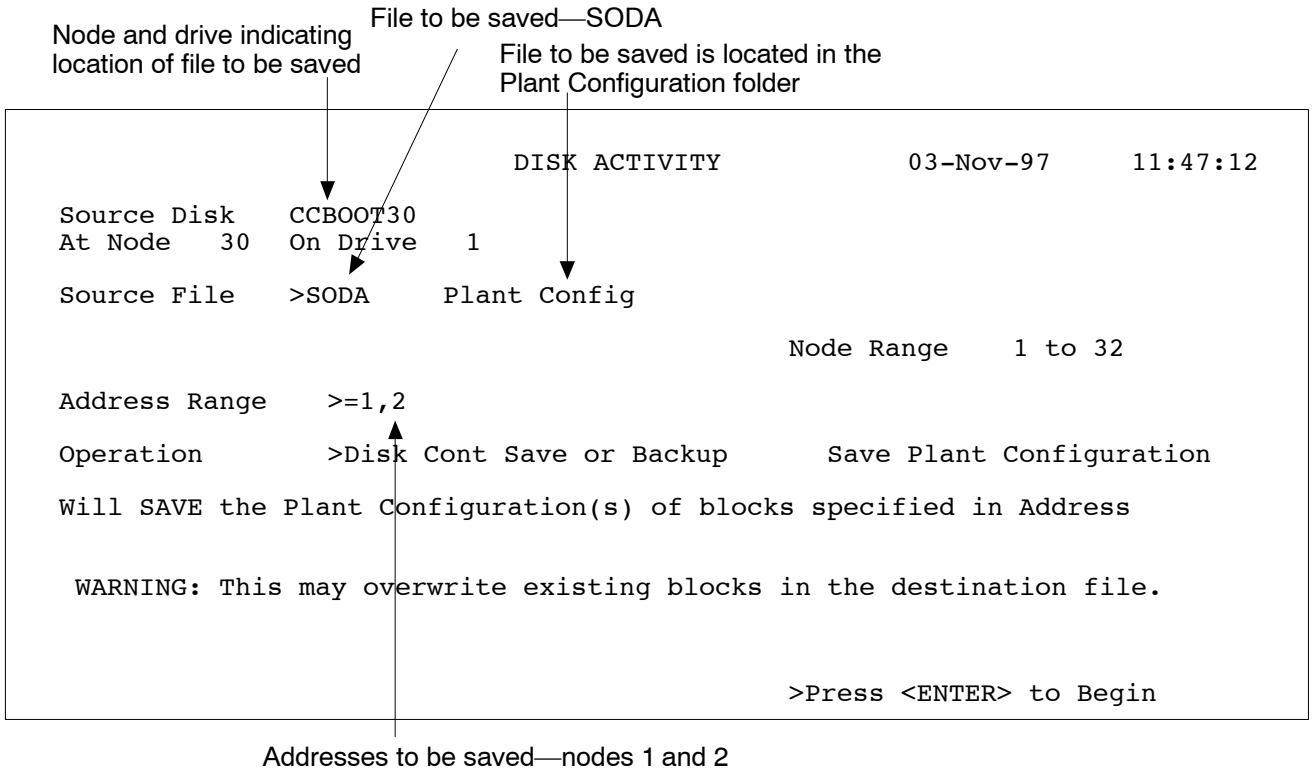


Figure 2.4.2 Disk Activity Screen: Disk Controller Save or Backup

DT-2: Page 2-4-8, Procedure 2.4.2 (Disk Controller Save or Backup)

Description: *Update steps 5, 7, and 9 of this procedure to reflect the screen name change to "Disk Controller Save or Backup."*

In step 5, add information to the "Response" block. In step 7, modify information in the "Action" block and add a second Note that explains how you can specify subsets within the node range. In step 9, modify information in the "Action" block. The modified steps 5, 7, and 9 are shown following.

Step	Operation	Description
5	Action:	**CAUTION** **The Disk Controller Save or Backup operation may overwrite existing blocks in the file.** Cursor to the Operation field on the Disk Activity screen. Press the [NEXT OPTION] key repeatedly until the following message appears above the Operation field: `Disk Cont Save or Backup` Press [ENTER].
	Response:	The "Disk Cont Save or Backup" message appears in the Operation field, and a "Save Plant Configuration" message appears to the right of the Operation field.

7	Action:	**CAUTION** **To minimize PeerWay traffic and disk usage, it is recommended that you save the plant configuration only for a minimum number of node(s).** Cursor to the "Address Range" field. Enter the address or range of addresses to be saved. For example, =1,2 specifies that the plant configuration is to be saved for nodes 1 and 2. Press [ENTER].
	Response:	The address range appears in the "Address Range" field.
	Comments:	**NOTE:** The default addresses are 1 through 32 (all addresses on the PeerWay). **NOTE:** You can specify subsets to be saved within the overall node range by listing the subsets on this line, separated by semicolons (for example, within node range 1 to 32, you could specify subsets =1,6;=10,15;=22–30).

9	Action:	To verify that the Disk Cont Save or Backup operation was successful, call up the Disk Event List screen by typing: **DEL** [ENTER]

	Response:	The Disk Event List screen appears and the entry reads:
		`DS: X blk(s) Saved`
		`DS: Low address =XXXXX`
		`DS: High address =XXXXX`
		`DS: Disk file name: 'file name'`

DT-2: Page 2-4-x (following Procedure 2.4.2 on page 2-4-9)

Description: *Add new information to this section regarding the procedure for saving a plant configuration automatically. The new information, shown following, includes:*

- *Text description of the new capability*
- *Figure showing the new BackUp Plant Config screen*
- *Table describing the BackUp Plant Config screen fields*
- *Table describing the Backup Plant Configuration procedure.*

Saving a Plant Configuration Automatically

You can enable an automatic save/backup of the plant configuration from the Console Configuration screen (see CC: Chapter 2, Section 1 for more information) or from the command line option EPB (Enable Plant Backup).

Automatic plant configuration backup can be customized using the BackUp Plant Config screen, shown in Figure 2.4.3. This screen is called up by the BUP (Backup Plant Config) command line option.

The initial BackUp Plant Config screen can be scrolled to display the remaining PeerWay node numbers through 992. You can scroll as needed to select the desired node numbers to be backed up. (Note that only those nodes containing Control Files connected to ControlBlocks and/or I/O Blocks will be backed up.)

From the Backup Plant Config screen display, you can also:

- Specify the first five characters for the destination file(s)
- Enter a maximum revision letter (from A to Z)
- Write the backup plant configuration file to disk.

An initial PeerWay number (based on the lowest node selected) and revision letter (starting with A) is automatically appended to the destination filename. The filename notation takes the form:

xxxxxppr

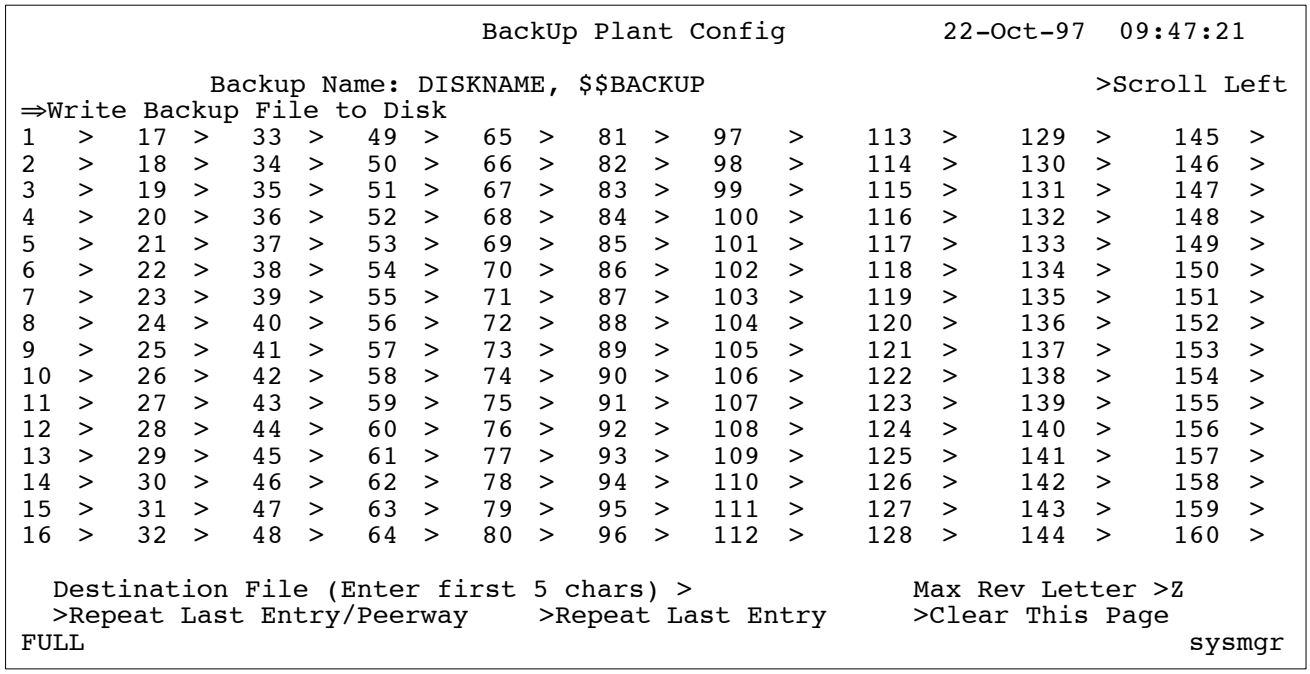
where:

xxxxx	=	user-specified first 5 characters
pp	=	PeerWay number (01 – 32)
r	=	revision letter (A – Z)

Depending on how many different PeerWay nodes you select, up to 32 individual destination files may be created during the backup. Only a set of nodes within an individual PeerWay can be saved into a specific plant configuration destination file during plant configuration backup.

The revision letter capability allows you to maintain up to 26 revisions of a particular plant configuration, starting with A. The revision letter within the destination filename field of the Backup Plant Config file will be automatically updated to the next revision letter after each backup operation has completed.

The Repeat Last Entry/PeerWay option allows you to repeat the last node entry (whether the node was selected or deselected) for the current PeerWay's remaining nodes or for the next PeerWay's nodes.



BackUp Plant Config Screen

BackUp Plant Config Screen Fields

Field	Description
Backup Name	Specifies the name of the backup file, $$BACKUP.
Scroll Left Scroll Right	Scrolls one column when you cursor to this field and press [ENTER].
Write Backup File to Disk	Writes this backup file to disk, in the Plant Config folder, when you cursor to this field and press [ENTER]. User does not need to perform this operation to save a file to disk. Any time a change is made to the plant configuration and the user attempts to leave the BackUp Plant Config screen, the user is prompted to save the file.
node numbers	Lists the nodes that can be selected to be backed up by cursoring to the node and pressing [ENTER].
Destination File	Specifies the name of the file where the initial plant configuration will be saved. User enters the first 5 characters of the filename; remainder is assigned by RS3.
Max Rev Letter	Specifies the maximum number of revisions to be saved (user-specified).
Repeat Last Entry/Peerway	Repeats last node entry, whether the action was to select or deselect a node, for the current PeerWay's remaining nodes or for the next PeerWay's nodes, when you cursor to this field and press [ENTER].
Repeat Last Entry	Repeats last node entry for the next node entry, when you cursor to this field and press [ENTER].
Clear This Page	Removes asterisk from all nodes (1 – 992) when you cursor to this field and press [ENTER].

Backup Plant Configuration Procedure

Step	Operation	Description
1	Action:	Call up the Backup Plant Config screen by typing: **BUP** [ENTER]
	Response:	The Backup Plant Config screen appears.
2	Action:	Cursor to the Destination File field; enter the first 5 characters for the destination file(s) and press [ENTER]. Note that this will overwrite an existing file that has the same name.
	Response:	The initial destination filename will be displayed.
3	Action:	Cursor to the Max Rev Letter field; enter a letter from A through Z, representing the number of revision levels you want to store, and press [ENTER].
	Response:	The maximum revision letter will be displayed.
4	Action:	Cursor to the node fields and press [ENTER] on each node number you want to back up.
	Response:	An asterisk will appear for each node selected.
5	Action:	Cursor to the Write Backup File to Disk field and press [ENTER].
	Response:	This backup configuration is saved to disk with the filename $$BACKUP, in the Plant Config folder.
6	Action:	Call up the Console Configuration screen by typing CCC [ENTER].
	Response:	The Console Configuration screen (first page) appears.
7	Action:	Go to the second page of the Console Configuration screen by pressing [PAGE].
	Response:	Second page of Console Configuration screen appears.
8	Action:	Cursor to the Plant Config field and press [ENTER].
	Response:	“Enable” appears in the Plant Config field.
9	Action:	Cursor to the Plant Config Event Type field, enter an event type from 0–240, and press [ENTER].
	Response:	The event type appears in the Event Type field.
10	Action:	Set up a corresponding event to trigger the automatic plant configuration backup operation.
	Response:	Next time this event occurs, it will trigger an automatic plant configuration backup.

DT-2: Section 7 (Restoring)

Description: *Add the following new screen, Master License Agreement, after Figure 2.7.1:*

```
                                DISK ACTIVITY          15-APR-97   10:59:49


Source Disk    v19beta                                Destination Disk DEMO-1
At Node   134 On Drive 2                              At Node   134 On Drive 1


   License Information:

   In order to use the RS3 software, you must first confirm
   the existence of a license agreement. If there is a Master
   License Agreement (MLA) in place between FRSI and your
   organization for a Licensed Facility, review the enclosed
   License Certificate and hit CONFIRM to accept or CANCEL.
   If not, and if use of the program is not governed by a Beta
   Test Agreement, review the applicable license agreement
   and hit CONFIRM to accept or CANCEL.

   >CONFIRM                >CANCEL
```

Disk Activity Screen: Master License Agreement

DT-2: Procedure 2.7.1, Restore Tape Files to Disk

Description: *Add folder types to step 5, as shown following.*

Step	Operation	Description
5	Action:	Cursor to the “Folder Type” field. Press the [NEXT OPTION] key repeatedly until the name of the folder type to be restored appears above the “Folder Type” field. Press [ENTER].
	Response:	The folder or name(s) to be restored appears in the Folder Type field.
	Comments:	**NOTE:** “All” is the default condition. The Folder Type options are: • All • Program Folders • Non-Program Folders • Plant Configuration • Plant Program • Trend Data • Console Program File • Console Configuration • Report Configuration • Reports • Process Graphics • Process Symbols • PeerWay I/F Configuration • PeerWay I/F Program • RBL Files • Log Files • Batch Tasks • SRU Configuration • SRU Data • ABC Data • ABC Log • ASCII Files

Description: *Add statement about the Master License Agreement to step 7, as follows:*

7	Action:	Cursor to the “Press <ENTER> to Begin” field, and press [ENTER].
	Response:	The Master License Agreement is displayed. Select <CONFIRM> to continue the restore operation. While the operation is in progress this field reads: `Tape Operation in Progress`
	Comments:	The operation is complete when the “Press <ENTER> to Begin” field reappears. The operation takes several minutes to complete.

Description: *Add the following new screen, Master License Agreement, after Figure 2.7.2:*

```
                                DISK ACTIVITY          15-APR-97   10:59:49


Source Disk    v19beta                              Destination Disk DEMO-1
At Node   134 On Drive 2                           At Node   134 On Drive 1


  License Information:

  In order to use the RS3 software, you must first confirm
  the existence of a license agreement. If there is a Master
  License Agreement (MLA) in place between FRSI and your
  organization for a Licensed Facility, review the enclosed
  License Certificate and hit CONFIRM to accept or CANCEL.
  If not, and if use of the program is not governed by a Beta
  Test Agreement, review the applicable license agreement
  and hit CONFIRM to accept or CANCEL.

  >CONFIRM                >CANCEL
```

Disk Activity Screen: Master License Agreement

DT-2: Procedure 2.7.2, Disk File Restore from Tape

Description: *Add statement about the Master License Agreement to Step 8, as follows:*

8	Action:	Cursor to the “Press <ENTER> to Begin” field, and press [ENTER].
	Response:	The Master License Agreement is displayed. Select <CONFIRM> to continue the restore operation. While the operation is in progress, this field reads: `Disk Operation in Progress`
	Comments:	The operation is complete when the “Press <ENTER> to Begin” field reappears. The operation takes several minutes to complete.

DT: Chapter 3 (Theory of Operations)

DT-3: Section 2 (Booting)

Description: *The bulleted items listed under the second paragraph on page 3-2-4 were modified to describe the differences in conditions for the NV Memory card and the Bubble Memory card.*

- For the NV Memory card (1984–1547–000x), the HD5 jumper must be set to enable the PeerWay boot. For more information about these jumpers, see SV: 3-7.
- For the Bubble memory card (1984–1167–000x), the HD19 jumper must be set to enable the PeerWay boot. For more information about these jumpers, see SV: 3-7.
- For the NV Memory card (1984–1547–000x), the battery jumpers (HD1 and HD2) must be on.
- For the NV Memory and Bubble Memory cards, the boot console must own the device node. Node ownership is configured on the Plant Status screen; see the *Console Configuration Manual* (CC:2).

DT-3: Section 4 (Saving)

Description: *The following note was added to page 3-4-3.*

NOTE: When you save Controller information to a Plant Configuration file on the hard disk, only static data is saved. Dynamic data, including setpoints, is not saved,

DT: Chapter 4 (Hints)

DT-4: Section 1 (Operation Problems)

Description: *Update Tables 4.1.1 and 4.1.2 to reflect current information. Replace the existing tables with those shown following.*

Tables 4.1.1. Device Error Messages for the Hard Disk

Message	Meaning	Action
Hardware Error	A non-recoverable hardware failure in the hard drive has been detected.	Check the SCSI board and cable; replace the hard drive unit if necessary.
Medium Error	The hard disk probably has bad magnetic medium.	Replace the hard drive unit.
Drive Not Ready	The hard drive cannot be accessed at the present time; the hard drive may be doing a recalibration.	Try the disk activity later.

Table 4.1.2. Device Error Messages for the Tape Drive

Message	Meaning	Action
End of Tape Encountered or End of Data Encountered	The end of the tape / end of data was encountered during a WRITE to the tape drive. *or* A tape cartridge is not installed in the tape drive.	Use a new tape cartridge. *or* Insert a tape cartridge in the tape drive.
Tape Unloaded or Not in Drive	A tape cartridge has been unloaded or is not installed in the drive.	Load / Insert a tape cartridge in the drive.
Reached Medium End of Tape /Data	The tape drive has encountered the end of tape / data.	Use a new tape cartridge.
Hardware Error	A non-recoverable hardware failure has been detected in the tape or hard drive.	Check the SCSI board and cable; replace the tape drive unit, if necessary.
Tape May Have Been Changed	The tape cartridge was changed prior to the current operation.	Reload the tape from the Disk Directory PeerWay screen.
Tape Retries Occurred (Check Medium)	An non-recoverable data error has been encountered in the tape medium.	Use a new tape cartridge.
Write Attempted before End of Data	Tape write operation Incomplete.	Retry the tape operation.
Tape Write Protected or Wrong Type	The cartridge installed in the tape drive is write-protected.	Remove the tape cartridge and change the protection switch position.

I/O Block Configuration Manual Changes

Changes to the *I/O Block Configuration Manual* (IO) are a result of additional information concerning:

- Additional information on configuring a Pulse Input/Output Block (PIOB)
- Additional information on configuring redundant input/output blocks
- HART errors returned in the Stat field
- Stat field errors with SIB and HOB blocks
- PLC scaling
- MPC5 Controller Processor released with P1 R3.0

The following information describes the changes to this manual.

IO: Chapter 3 (Pulse Blocks)

IO-3: Section 2 (Configuring a Pulse Input/Output Block (PIOB))

Description: *A note was added to the description of the "High Cutoff (sec)" field in Table 3.2.5 on page 3-2-12.*

Table 3.2.5. Pulse Input PIOB Fields to Measure Pulse Duration

Field	Description	Allowable Entries
High Cutoff (sec)	Specifies a maximum value for the duration and maximum value of the block output. If an input duration reaches the "High Cutoff" value, the output remains at the "High Cutoff" value and flag i is set. **NOTE:** Set the cutoff at or above the frame duration (the time from rise-to-rise or fall-to-fall).	0–1000 seconds **Default = 500**

Description: *Two notes were added after the first paragraph of the subsection "Target Count Provided by a ControlBlock" on page 3-2-13. Figure 3.2.11 was also modified to give more information on target count supplied by a ControlBlock.*

NOTE: Make sure that the source block high limit for the target count is above the maximum count.

NOTE: The "Source HF" field on the PIOB must be set to "no".

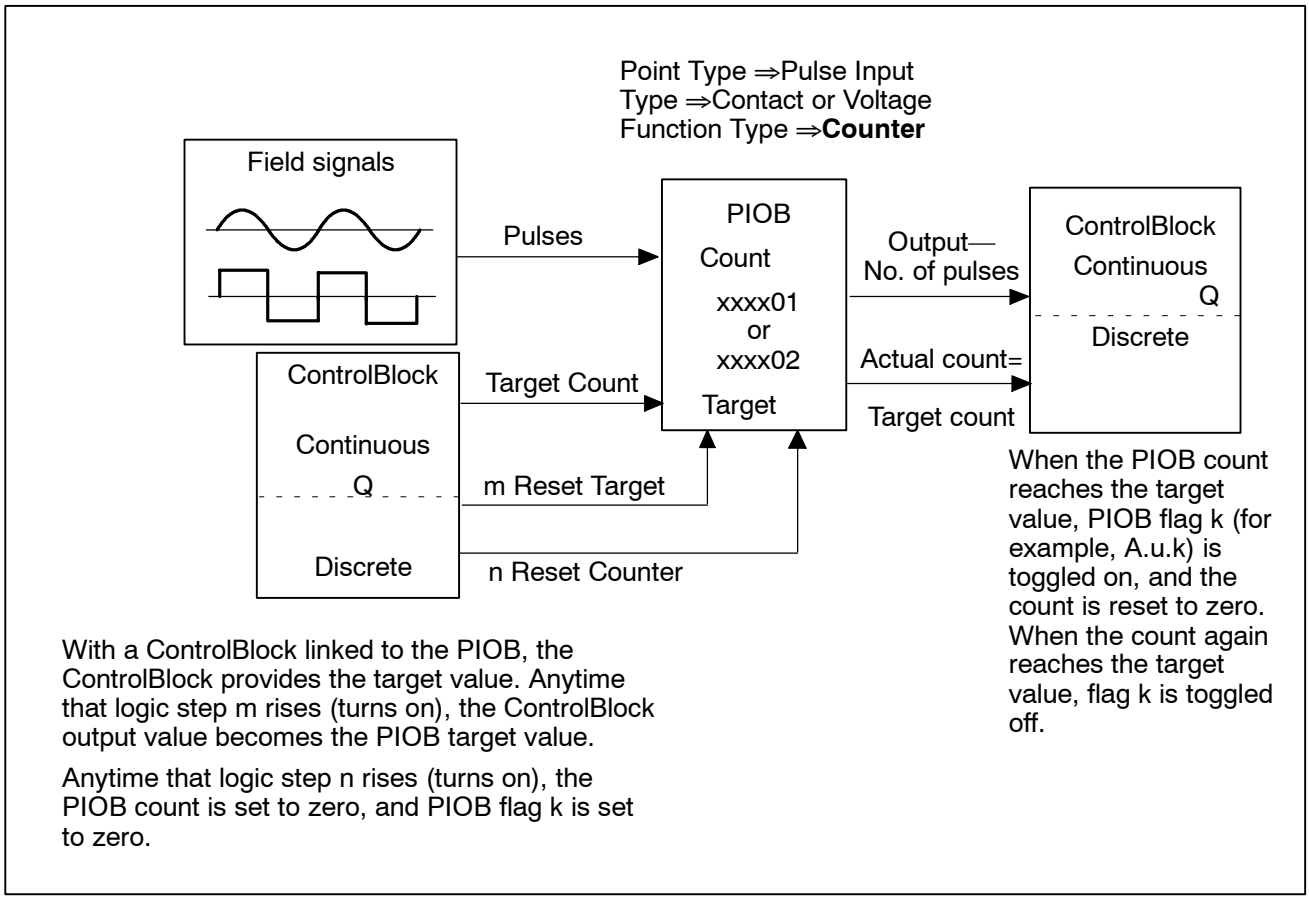


Figure 3.2.11. Configuring a PIOB to Count Pulse Inputs—Target Count Supplied by a ControlBlock

Description: *A note was added to the description of the Source HF field in Table 3.2.6 on page 3-2-15.*

Table 3.2.6. Pulse Input PIOB Fields to Count Pulses—Target Count Provided by ControlBlock

Field	Description	Allowable Entries
Source HF	Selects the hold forward flag option for the source. "Yes" = The hold forward flag from the source is taken into account. "No" = The hold forward flag from the source is ignored. **NOTE:** If the Source HF field is set to "yes" and the Source ControlBlock HF flag is set, the PIOB counter and load counter will ignore user flag m.	**yes**, no

Description: *The Source HF field was added to Table 3.2.13 on page 3-2-35.*

Table 3.2.13. PIOB Fields for a Loader Application with a Binary Output

Field	Description	Allowable Entries
Source HF	Selects the hold forward flag option for the source. "Yes" = The hold forward flag from the source is taken into account. "No" = The hold forward flag from the source is ignored. **NOTE:** If the Source HF field is set to "yes" and the Source ControlBlock HF flag is set, the PIOB counter and load counter will ignore user flag m.	**yes**, no

IO: Chapter 5 (Configuring Redundant Input/Output Blocks)

IO-5: Section 1 (Configuring a Redundant Input/Output Block)

Description: *The following paragraph was added after the note on page 5-1-1.*

When you have Value Input Blocks (VIBs) configured on a Field Interface Card (FIC) and the RIOB takes over, all of the VIBs will generate the alarm "VIB Hardware: Outside Block Range." This alarm will also be active when you configure the VIB until the VIB is given a source Smart Transmitter Input Block (SIB) tag.

Description: *The following note was added after the first note on page 5-1-2. Three more bulleted items were also added to this page.*

NOTE: Make sure you configure RIOB blocks before connecting the field I/O. Failure to configure a block before communication is established with the I/O can result in improper operation of FIMs. Deleting a RIOB will disrupt operation of the I/O on the primary FIM if redundant FIMs are present.

- With 7/1 redundancy, the health of both transfer cards is displayed. With 3/1 redundancy, only the health of the one transfer card associated with the group of four FICs is displayed.
- Configuring an RIOB must be on point 1 and on an even line.
- Configuring a 7/1 RIOB must be on line 8. Configuring a 3/1 RIOB must be on line 4 or line 8.

Description: *The redundancy scheme in Figure 5.1.3 on page 5-1-7 was changed from "7/1" to "3/1".*

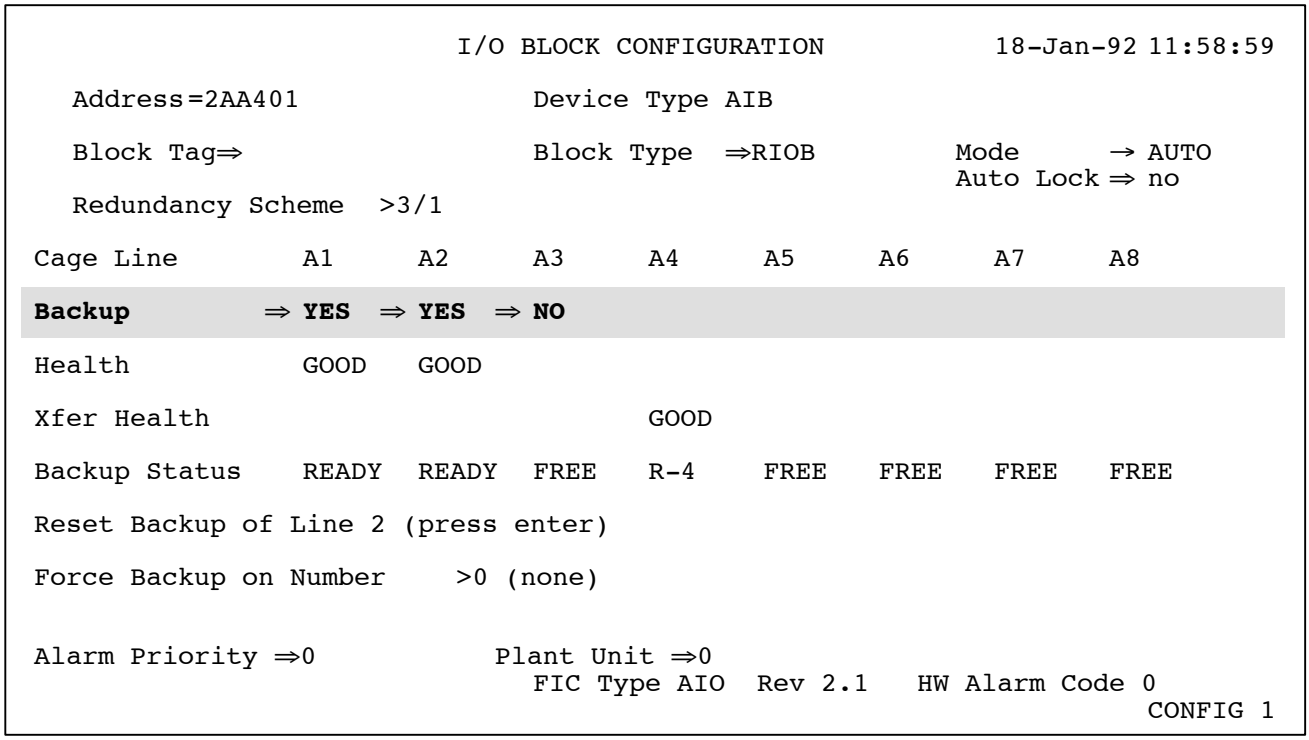


Figure 5.1.3. RIOB Configuration Screen—Backing Up FICs

IO-5: Section 3 (Hints for Configuring RIOBs)

Description: *The following paragraph was added under the configuration tip "Configuring the RIOB mode" on page 5-3-2.*

Configuring an RIOB must be on point 1 and on an even line. Configuring a 7/1 RIOB must be on line 8. Configuring a 3/1 RIOB must be on line 4 or on line 8.

IO: Chapter 8 (Configuring Smart Blocks)

IO-8: Section 1 (Configuring SIBs and VIBs)

Description: *The following paragraphs and Table 8.1.1 were added under the subsection "Using Digital PV" on page 8-1-8.*

FIMs have only one HART modem for communication with the 1–32 HART devices. As more devices are added to a FIM, the interval of time between digital PV updates increases. Table 8.1.1 lists approximate update rates on an MAI FIM that has 16 attached devices.

Table 8.1.1. Example of Digital PV Update Rates

Activity	Digital PV Update Rate from Each Device
No AMS activity	Every 15 seconds
AMS PV scan (periodic)	Every 20 seconds
AMS reading device configuration parameters	Every 30 seconds

Digital PV is not recommended for process control because sampling is slow and sampling time is variable.

Description: *Add the following note to the description of the "Stat" field in Tables 8.1.3 (page 8-1-26) and 8.1.11 (page 8-1-48).*

NOTE: This field may return valid HART errors that do not refer to the particular block where they appear, but to a smart block existing on the same comm line.

Description: *The following note was added after the first paragraph on page 8-1-33 under the heading "How to Change the Transmitter Address".*

NOTE: Starting with software releases P1 R3.0 and 18R4, the transmitter address cannot be changed.

IO-8: Section 2 (HART Output Block)

Description: *Add the following note to the description of the "Stat" field in Tables 8.2.2 (page 8-2-16) and 8.2.5 (page 8-2-27).*

NOTE: This field may return valid HART errors that do not refer to the particular block where they appear, but to a smart block existing on the same comm line.

Description: *Figure 8.2.2 on page 8-2-3 was modified to include MPC5s.*

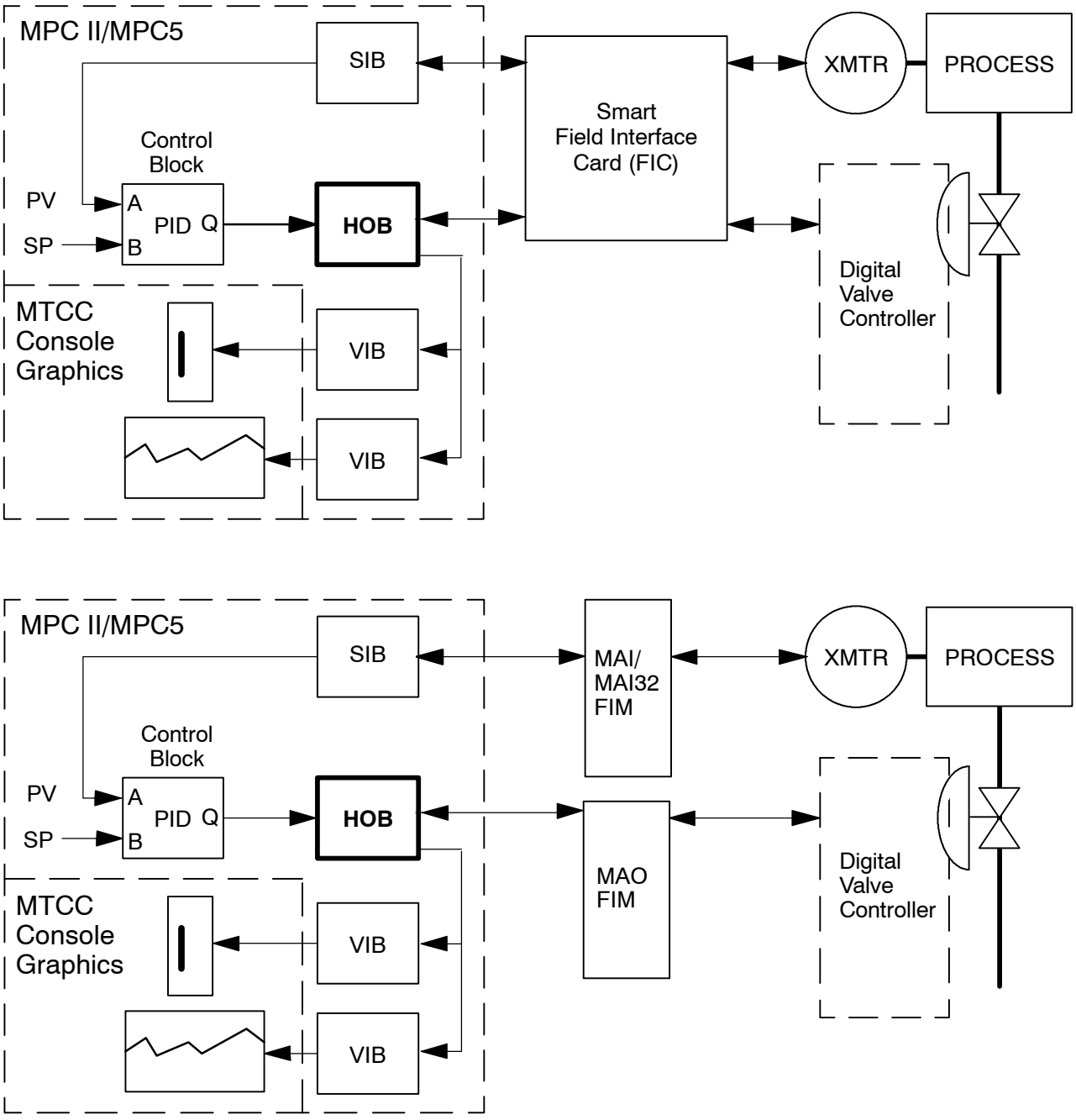


Figure 8.2.2. How an HOB Functions with a Smart FIC or Multipoint Hardware in a Control Loop

Description: *The following subject was added to the bottom of page 8-2-20.*

Using the Transmitter (Device) Log to View HOB Entries

The HOB writes information to the Transmitter (Device) Log, just like the Smart Input Block. See Section 8–1 for information on viewing the Transmitter Log.

IO: Chapter 9 (Configuring PLC Blocks)

IO-9: Section 1 (What is a PLC Interface?)

Description: *Changes to the second sentence to include the part number for the MPC5 MultiPurpose Controller card under this topic (page 9-1-2).*

PLC Interface Hardware

The Controller Processor can be a PLC Processor card (1984-1494-000x) or a MultiPurpose Controller card (10P57520007, 1984-2500-000x or 1984-4068-0006).

Description: *Changes to the list of data types are a result of four new items being added plus some additional changes to the descriptions of other data types under this topic (page 9-1-4).*

PLC Interface Software

- Signed integer, scaled (S INT Scale)
- Three digit binary coded decimal (BCD) value (BCD3)
- Three digit BCD value, scaled (BCD3 Scale)
- Unsigned integer, scaled (U INT Scale)
- Four digit BCD value (BCD4)
- Four digit BCD value, scaled (BCD4 Scale)

IO-9: Section 2 (Communicating with the PLC)

Description: *Add the following paragraph to the bottom of page 9-2-1.*

Use Table 2.2.1 to identify the appropriate code for your type of PLC. Take this code number to Table 2.2.2 to identify the PLC address to be entered in the PLC Word Address field. For example, if the function code for a Square D device is 5, code 5 in Table 2.2.2 would tell you that your entry in the PLC Word Address field would begin with a “0” and is followed by the address of the register you want to access.

Description: *Add the following information to the second paragraph and change Figure 9.2.1 under this topic (page 9-2-4).*

PLC Block Addressing

For an MPC5, the maximum number of blocks per controller is 512.

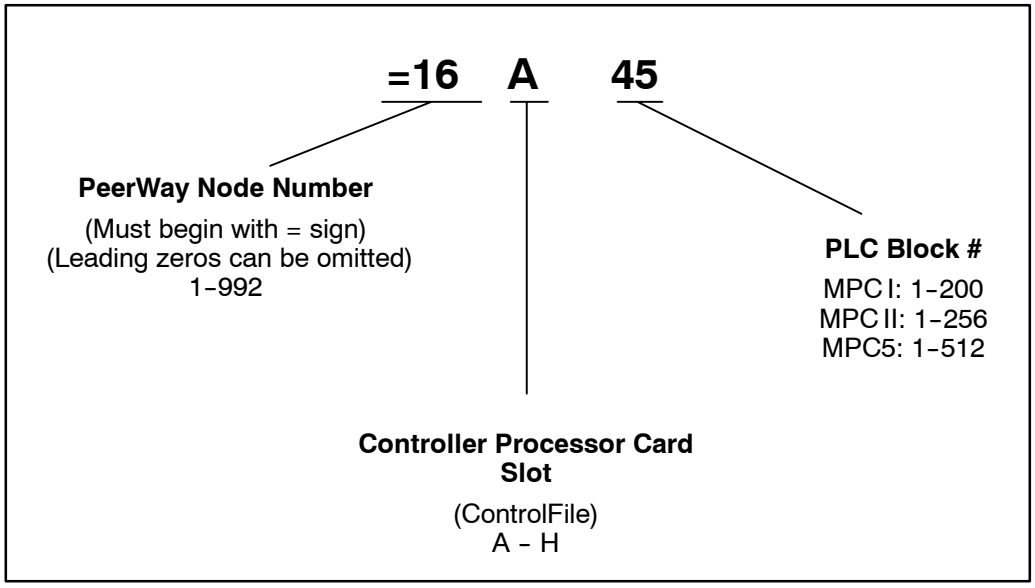


Figure 9.2.1 PLC Addressing Scheme

Description: *The fifth bulleted item under "Module Switch Requirements" was modified to include the baud rate for the MPC5 (page 9-2-8).*

- Recommended baud rate of 9600 (19200 for the MPC5)

Description: *Corrected decimal value in third row of Table 9.2.4 (page 9-2-9).*

Table 9.2.4 Station Numbers Octal-Decimal Conversion Chart

Octal	Decimal	Octal	Decimal
02	02	22	18

Description: *Add an additional baud rate and note to Table 9.2.5 for the MPC5 (page 9-2-13).*

Table 9.2.5 PLC Configuration Screens

Field	Description	Allowable Entries*
Baud Rate	Communication rate between the port and the PLCs to which it is connected.	1200, 2400, 4800, 9600, 19200**

** The 19200 baud rate is supported only on the MPC5.

IO-9: Section 3 (Configuring a PLC)

Description: *Add the following paragraph under this topic (page 9-3-1).*

PLC Block Applications

In addition, you can configure scaling on a PLCB on the four PLCBs that allow scaling. The four PLCBs that allow scaling are S INT Scale, U INT Scale, BCD3 Scale, and BCD4 Scale. You can also configure alarms based on individual coil values in a Flags data type.

Description: *A note was added after the fourth bullet and the more information was added to the end of the section under this topic (page 9-3-11).*

Configuring an I/O Block to Read a PLC Register Address

> **NOTE:** The “Write” field appears just below the “Source Addr” field after a source address has been entered.

Figure 9.3.3A is an example of a controlled PLC flag read. The 16 PLC coils starting at address 1 will be read from the PLC during controller scans when the =1G-01/A register is at 100% of scale. The 16 PLC coils starting at address 1 will not be read from the PLC when =1G-01/A register is at 0% of scale. This allows the controller configuration to control when this PLC register is read. The =1G-01/A register needs to have a value of 100% of scale for a minimum of two seconds for the controller to read the value from the PLC.

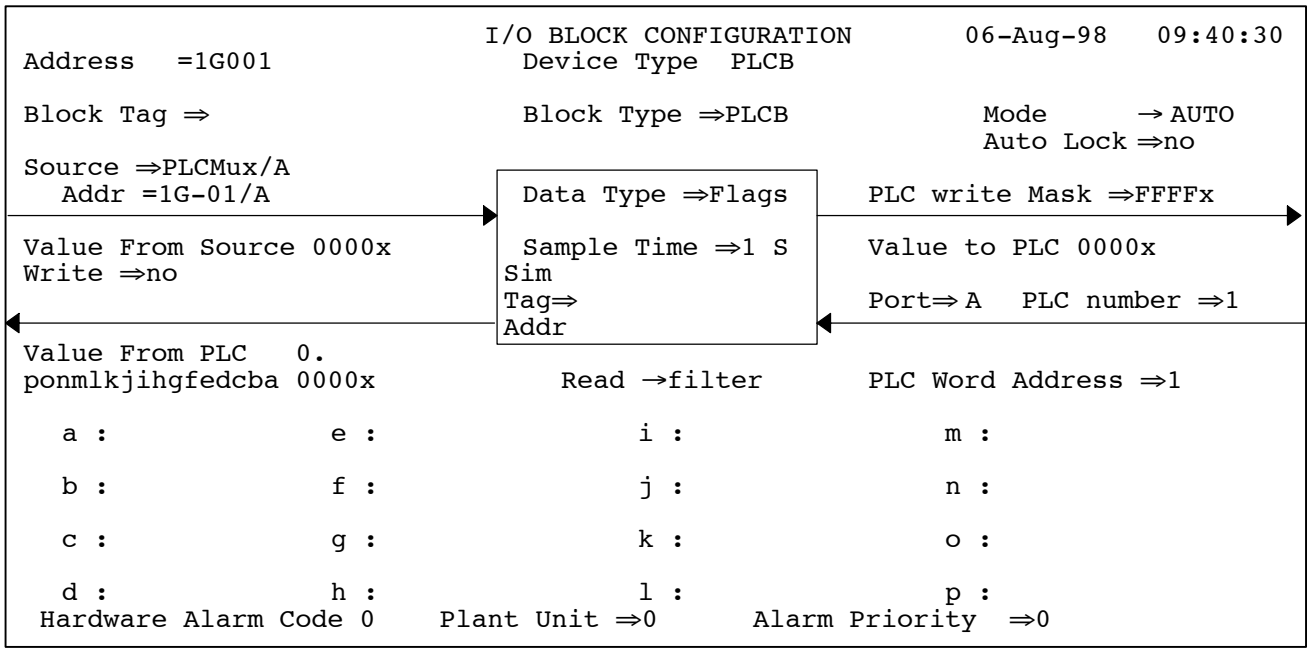


Figure 9.3.3A. Controlled PLC Flag Read

Figure 9.3.3B is an example of a controlled PLC flag read and write. The 16 PLC coils starting at address 33 will be written to and read from the PLC during controller scans when the =1G-01/C register is at 100% of scale. The data written to the PLC will be the user flags of register =1G-01/C.u.a to =1G-01/C.u.p. The data read will be available to any block link to this PLCB block. The 16 PLC coils starting at address 33 will not be written to or read from the PLC when =1G-01/C register is at 0% of scale. This allows the controller configuration to control when this PLC register is written to. The =1G-01/C register needs to have a value of 100% of scale for a minimum of two seconds for the controller to write and read the value from the PLC.

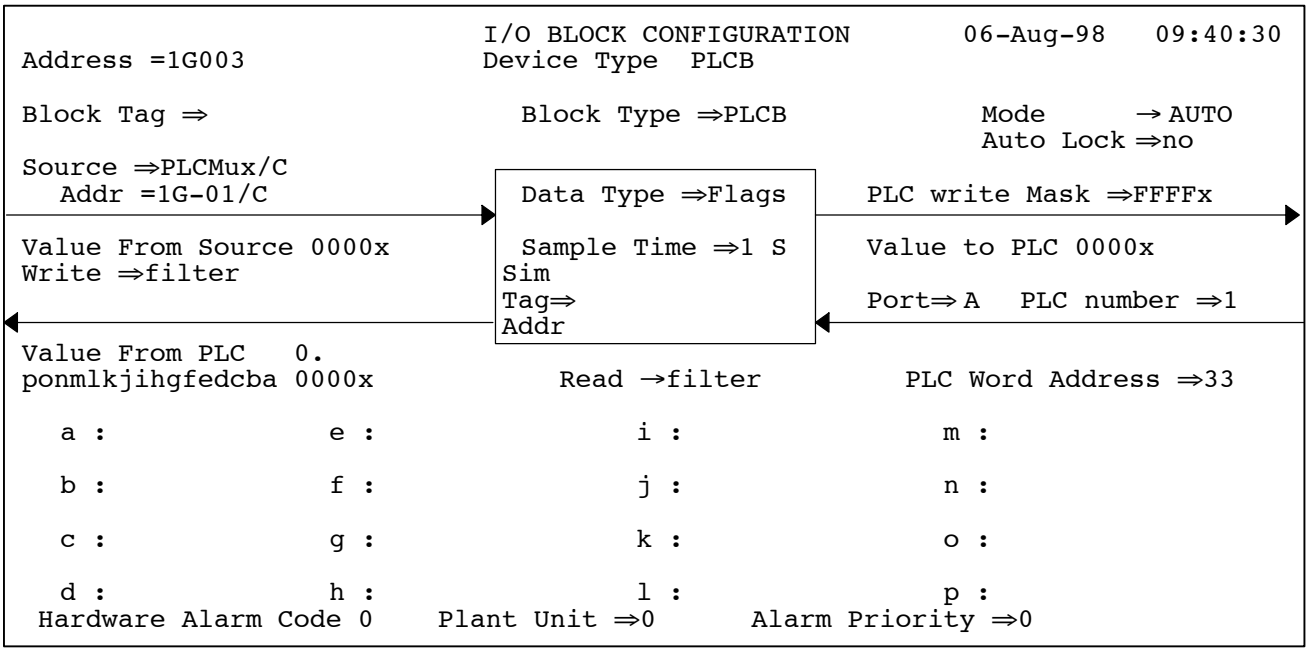


Figure 9.3.3B. Controlled PLC Flag Read and Write

Figure 9.3.3C is an example of a controlled PLC register read. The PLC register at address 40004 will be read from the PLC during controller scans when user flag p of =1G-01/D is on (=1G-01/D.u.p). The PLC register at address 40004 will not be read from the PLC when user flag p of =1G-01/D is off. This allows the controller configuration to control when this PLC register is read. The user flag p of =1G-01/D needs to be on for a minimum of two seconds for the controller to read the value from the PLC.

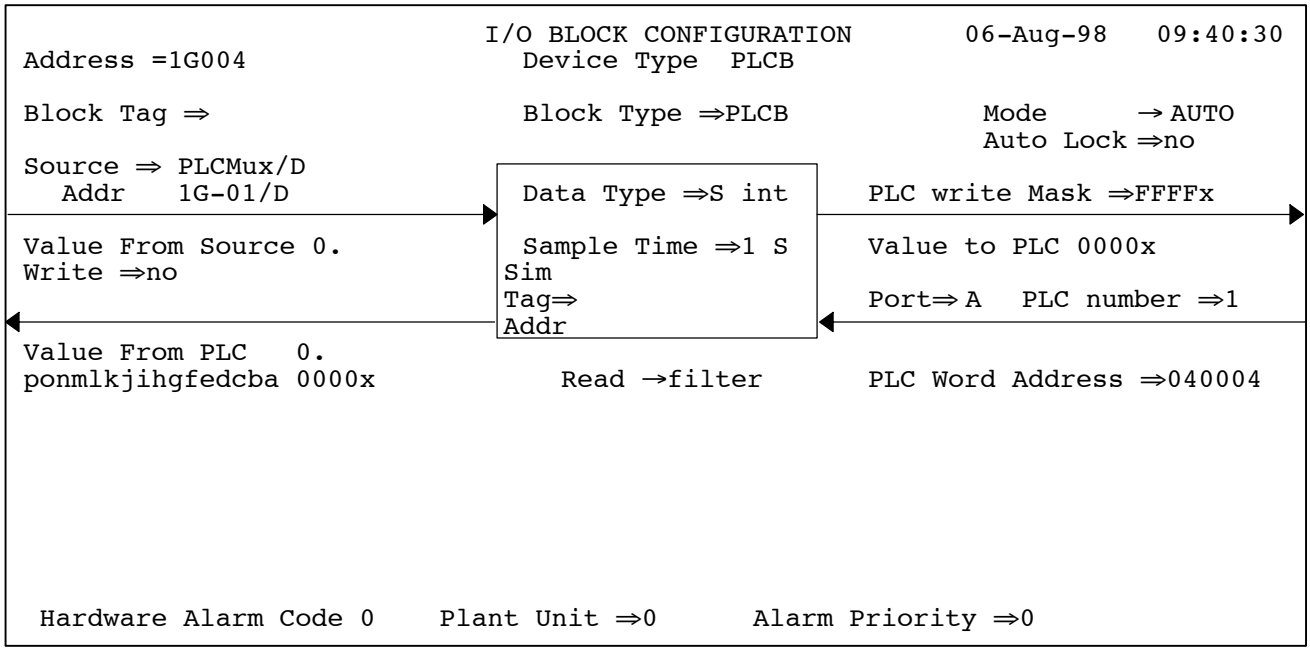


Figure 9.3.3C. Controlled PLC Register Read

Figure 9.3.3D is an example of a controlled PLC register read and write. The value of =1G-01/F will be written to the PLC register address 40005 and the value will be read during controller scans when user flag p of =1G-01/F is on (=1G-01/F.u.p). The PLC register at address 40006 will not be written to or read from the PLC when user flag p of =1G-01/F is off. This allows the controller configuration to control when this PLC register is written to and read from. The user flag p of =1G-01/F needs to be on for a minimum of two seconds for the controller to write and read the value to and from the PLC.

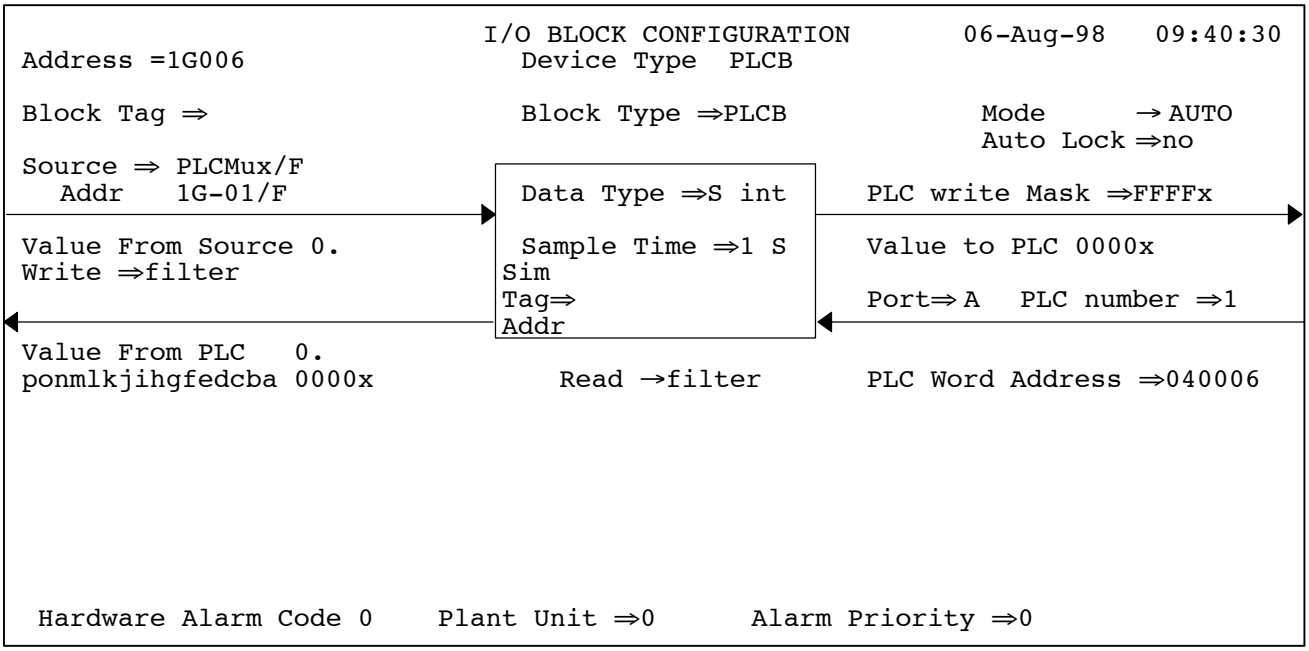


Figure 9.3.3D. Controlled PLC Register Read and Write

Description: *Changes to Table 9.3.9 are a result of additional block configuration fields and allowable entries being added under this topic (pages 9-3-14 and 9-3-15).*

Configuring an I/O Block to Read a PLC Register Address

Table 9.3.9. PLCB I/O Block Configuration Fields

Field	Access Level	Description	Allowable Entries[1]
Block Type	CONF	Type of input/output block.	**NONE**, AIB, CIB, AOB, COB DIB, DOB, ADS, PLCB, MIB, SIB, RIOB, VIB, PIOB, TIB, HOB
Mode	SUPV	Current block mode: If “AUTO”, the block function drives the block output. If “SIMULATE”, a ControlBlock simulates the PLC address register and the block functions drive the block output. If “FAIL”, a PLC device is not connected to or communicating with the PLCB.	**AUTO**, SIMULATE, FAIL

Table 9.3.9. PLCB I/O Block Configuration Fields (continued)

Field	Access Level	Description	Allowable Entries(1)
Data Type	CONF	Type of word that is being read from or written to the PLC.	**Flags**, BCD3, BCD4, S Int, U Int, S Int Scale, U Int Scale, BCD3 Scale, BCD4 Scale, Float(2) For more information, see Table 9.3.12
Block Out	NA	The value displayed is the block output scaled according to the engineering scaling values.	Display only
PLC Zero(3)	CONF	Enter the number received from the PLC when the measured quantity is at its minimum in-range value.	See Table 9.3.x **Default = 0**
PLC Max(3)	CONF	Enter the number received from the PLC when the measured quantity is at its maximum in-range value.	See Table 9.3.x **Default = 1**
Eng Zero(3)	CONF	Value to be displayed when the PLC provides a number equal to the value entered in the PLC Zero field.	Max = 999999 Min = –999999 **Default = .00**
Eng Max(3)	CONF	Value to be displayed when the PLC provides a number equal to the value entered in the PLC Max field.	Max = 999999 Min = –999999 **Default = 100.00**
Eng Units(3)	CONF	Engineering units assigned with the block output.	Maximum of 8 characters
Hardware Alarm Code	NA	Indicates a hardware fault. For information on alarm messages, see the *Alarm Messages Manual*.	Display only
(3) Displayed only for scaled PLCBs.			

Description: *New sections on scaling PLC blocks and types of PLC scaling are to be added after "Linking I/O Block Bit Data to a ControlBlock" (page 9-3-16).*

Scaling PLC Blocks

Scaling can only be applied when "Normal" or "Filter" (anything but "no") is selected in the "Read" field and one of the scaled data types is selected. You can set engineering scaling on PLC input registers.

1. Put the block in AUTO mode.
2. Make sure the Data Type field is set to BCD3 Scale, BCD4 Scale, U Int Scale, or S Int Scale.
3. Type in the appropriate units in the Eng Units field.
4. Set the Eng Zero and Eng Max values (see Figure 9.3.x).

NOTE: Make sure to verify the scaling of the values in the PLC registers, and match them to your scaling in the PLCB. Otherwise, erroneous values will result.

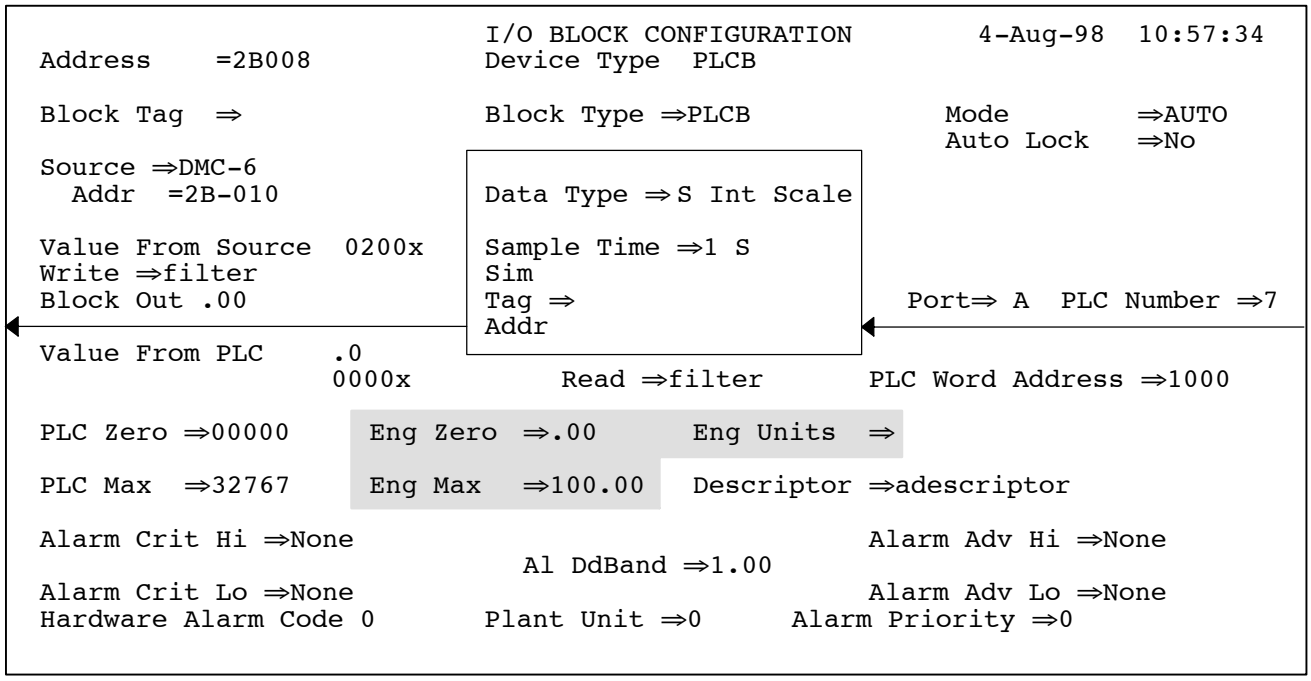


Figure 9.3.x PLCB I/O Block Configuration Screen

Limits on the entries to the PLC Zero and PLC Max fields depend on the data types (see Table 9.3.9A).

Table 9.3.9A PLC Zero and PLC Max Entry Limits

Data Types	BCD3 Scale	BCD4 Scale	S int Scale	U int Scale
Range for PLC Zero and PLC Max	0 to 999	0 to 9999	-32768 to 32767	0 to 65535

Types of PLC Scaling

The incoming value from the PLC must be scaled in the PLC Zero and PLC Max fields. The number to enter depends on what is being measured and the resolution of the A/D converter in the PLC that provides the number. This scaling converts the incoming PLC reading to an internal 0 or 1 similar to what is used with 4–20 mA transmitters. For such transmitters, scaling is unnecessary since it is known that 4 mA represents the minimum and 20 mA represents the maximum value. The default values for PLC Zero and PLC Max are 0 and 1 respectively.

Standard engineering scaling is also available. The default values are 0 and 100. Alarms are configured with this scaling just as in the AIB block. The default alarm value is “none” and the default dead band is 1.00. If the scaling is changed, the alarm and dead band numbers automatically change to match the new scaling. Engineering Units and the Descriptor also work as with the AIB block.

Description: *Additional information was added after Figure 9.3.11 under this topic (page 9-3-23).*

Configuring an I/O Block to Write a PLC Register Address

Figure 9.3.11A is an example of a controlled PLC flag write. The 16 PLC coils starting at address 17 will be written to the PLC during controller scans when the =1G-01/B register is at 100% of scale. The data written to the PLC will be the user flags of register =1G-01/B.u.a to =1G-01/B.u.p. The 16 PLC coils starting at address 17 will not be written to the PLC when =1G-01/B register is at 0% of scale. This allows the controller configuration to control when this PLC register is written to. The =1G-01/B register needs to have a value of 100% of scale for a minimum of two seconds for the controller to write the value to the PLC.

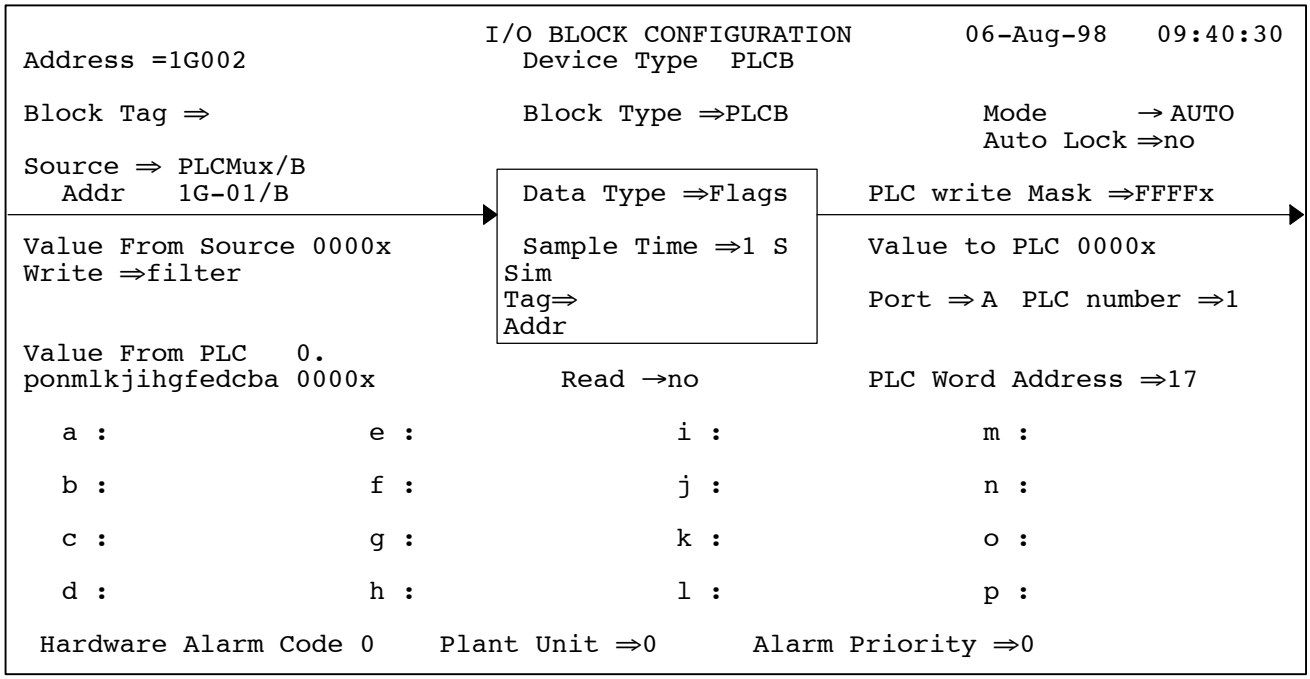


Figure 9.3.11A. Controlled PLC Flag Write

Figure 9.3.11B is an example of a controlled PLC register write. The value of =1G-01/E will be written to the PLC register address 40005 during controller scans when user flag p of =1G-01/E is on (=1G-01/E.u.p). The PLC register at address 40005 will not be written to the PLC when user flag p of =1G-01/E is off. This allows the controller configuration to control when this PLC register is written to. The user flag p of =1G-01/E needs to be on for a minimum of two seconds for the controller to write the value to the PLC.

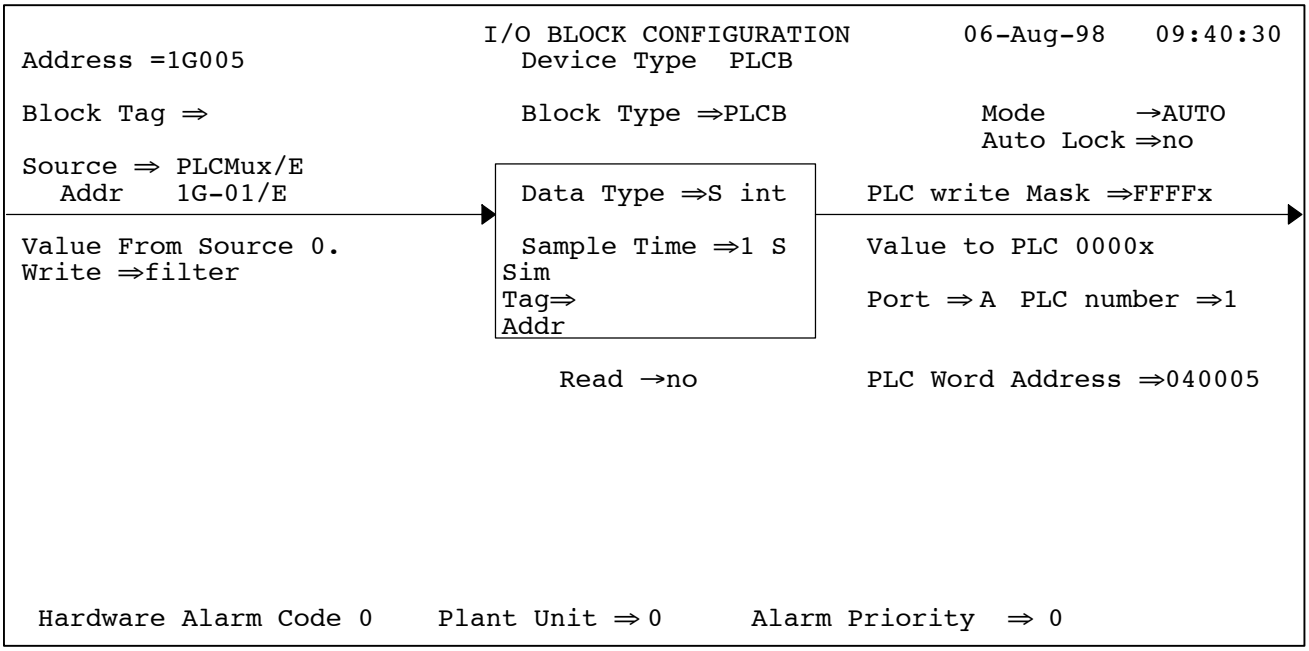


Figure 9.3.11B. Controlled PLC Register Write

Description: *Changes to Table 9.3.11 are a result of additional data type fields and Figure 9.3.12 was modified under this topic (page 9-3-24).*

Configuring an I/O Block to Write a PLC Register Address

Table 9.3.11 Data Types

Field	Description	Value from Source
S INT and S INT Scale	Will accept an integer between -32768 and 32767 as an analog value.	Block Output (Q)
U INT and U INT Scale	Will accept an integer between 0 and 65535 as an analog value.	Block Output (Q)
BCD3 and BCD3 Scale	Will accept an integer between 0 and 999 as an analog value.	Block Output (Q)
BCD4 and BCD4 Scale	Will accept an integer between 0 and 9999 as an analog value.	Block Output (Q)

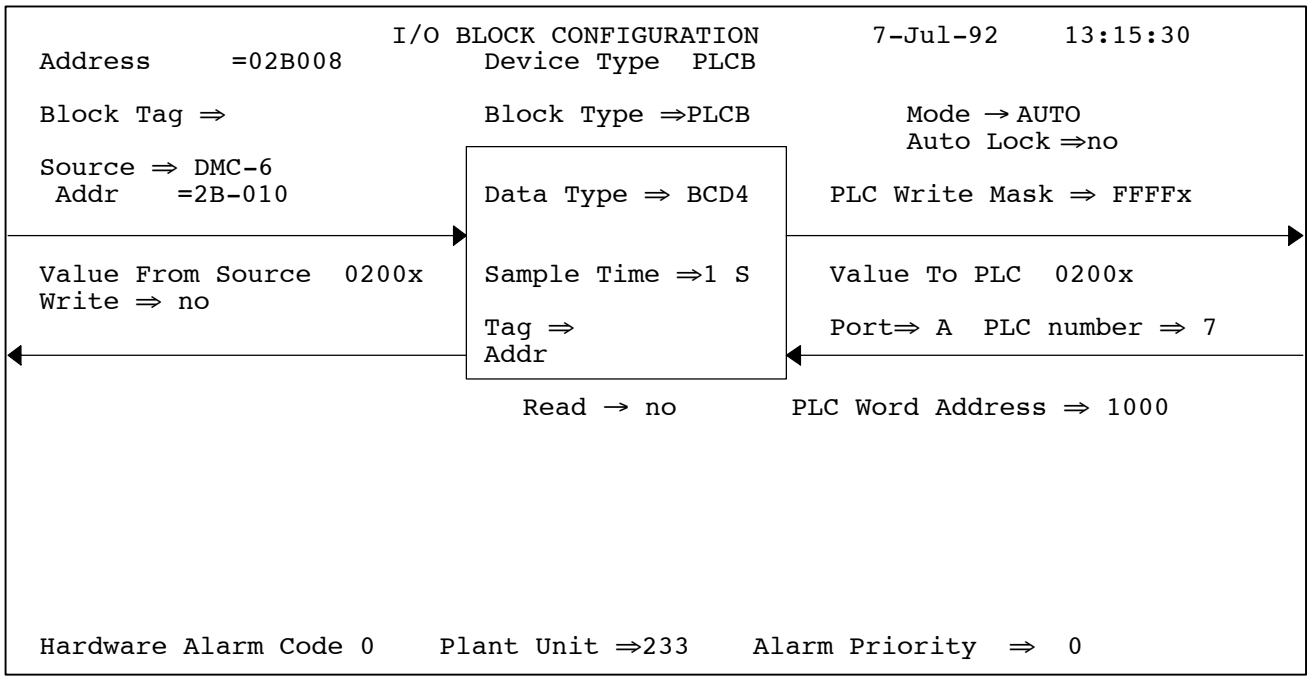


Figure 9.3.12 PLCB I/O Block Configuration Screen (Data Type Other Than Flags

Description: *Changes were made to Figure 9.3.13 under this topic (page 9-3-27).*

Masking Within the I/O Block

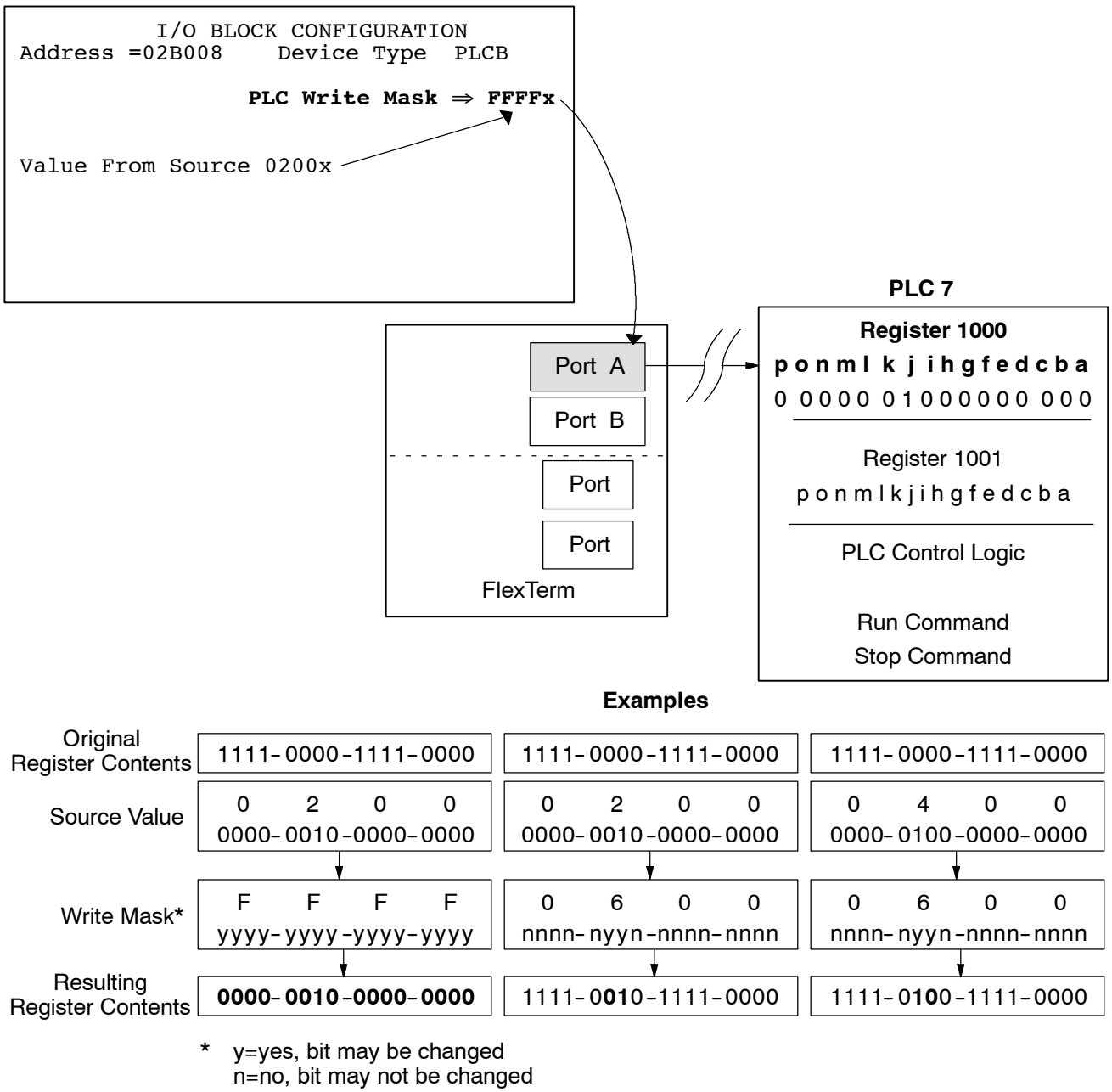


Figure 9.3.13. Using the Write Mask

Description: *The following note was added under the first bullet under this topic (page 9-5-9).*

Jumpers on Controller Board

> **NOTE:** MPC5's do not have jumpers HD21 through HD24.

Description: *A change was made to the second paragraph with a bullet under this topic (page 9-5-9) and the reference to the Service Manual was corrected.*

Jumpers on FICs

- Jumpers HD2A and HD2B should be in the TERM (Terminal) position when one of the cables described on page 9-5-7 is used or for any other cable which swaps pins 2 and 3. Jumpers HD2A and HD2B should be in the MOD (Modem) position for any cable which does not swap pins 2 and 3.

For additional FIC jumper information, see SV: 5-1.

Description: *A change was made to the "Enter" column under the first paragraph under this topic (page 9-5-13).*

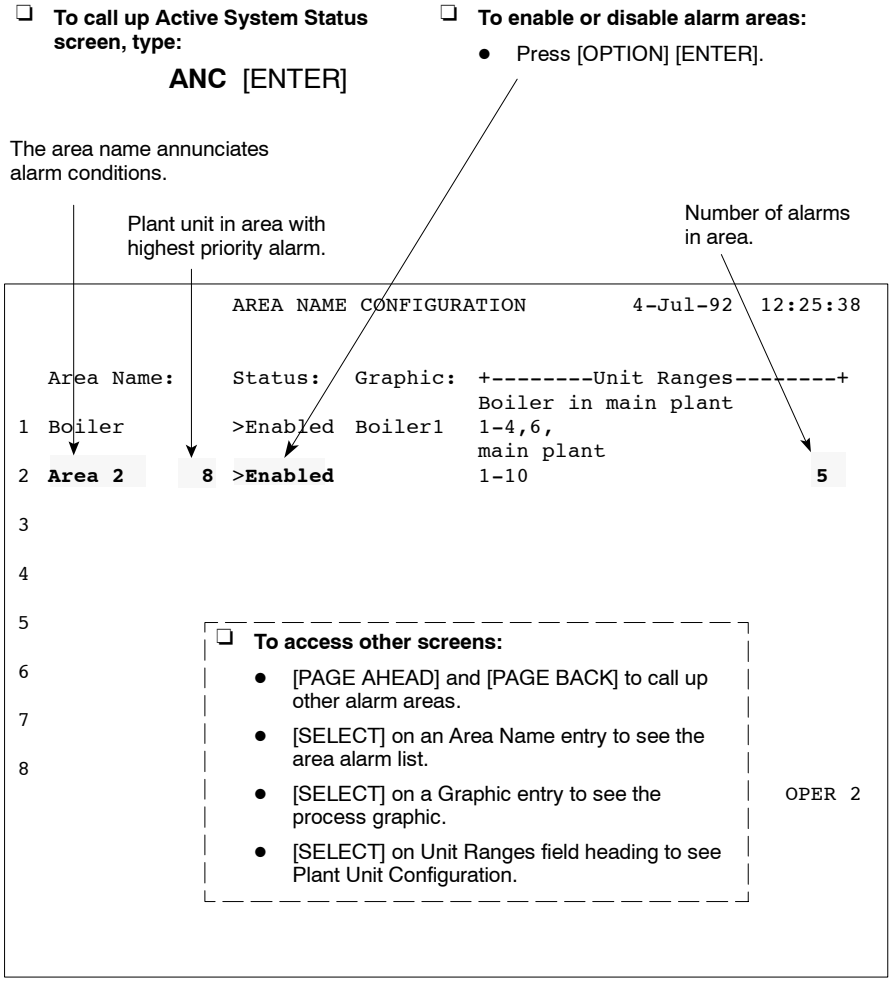
PLC-2 Example

Field	Enter . . .
PLC Number	29 (decimal equivalent of 35 octal)

Operator's Guide Changes

OP: Chapter 6 (Alarms)

Description: *The instruction "To enable or disable alarm areas:" in the illustration on page 6-16 was changed from "Press [Select]" to "Press [OPTION] [ENTER}."*



Enabling and Disabling Alarm Areas

OP: Appendix A (Responding to System Faults)

Description: *The following note was added after step 1 on page A-2.*

NOTE: The Disk shutdown (DS) command should always be performed before powering down the console. This will purge the cache and prevent possible loss of data.

PeerWay Interfaces Changes

Changes to the *PeerWay Interfaces* (PW) are a result of additional information concerning:

- Introduction of the MPC5 Controller Processor with the P1 R3.0 release
- A change in the field of the Contact Input Block (CIB) used with code 0200

The following information describes the changes to this manual.

PW: Chapter 1 (SCI)

PW-1: Section 3 (Message Formats)

Description: *The change to Table 1.3.35 on page 1-3-43 is to correct the binary format for 34—message type 34.*

Figure 1.3.35. Read Table Data *Reply* Message--Message Type 34

Binary Format	ASCII Format	Field	Definition
2 d	2 d	Type	34—message type 34.

Description: *Changes to Table 1.3.61 on page 1-3-75 include information for the MPC5 Controller Processor.*

Figure 1.3.61. ControlFile Status *Reply* Message--Message Type 73

Format	Field	Definition
2 d	Card Type	"Card Type" field value. 99=None 06=SMART 12=MPCAP 01=MLC 07=RBLC 13=MPCAT 02=CC 08=MPC 14=MPC2 03=SSC 09=ATMLC 15=MPC5 04=MUX 10=MPTUN 05=PLC 11=MPCAS

PW-1: Section 4 (Field Codes)

Description: *Changes to Table 1.4.5 on page 1-4-10 show a change in the field used with code 0200.*

Table 1.4.5. CIB (Contact Input Block) Field Codes

Code	BinaryFormat	ASCII Format	Field	Return Status	Description
0200	4 b*	8 m	Filtered State		Block output value.

PW: Chapter 3 (Highway Interface Adapter (HIA))

PW-3: Section 1 (Highway interface Adapter)

Description: *Changes to Figure 3.1.2 on page 3-1-2 and the first paragraph on page 3-1-4 were made to include the part number for the current NV memory card.*

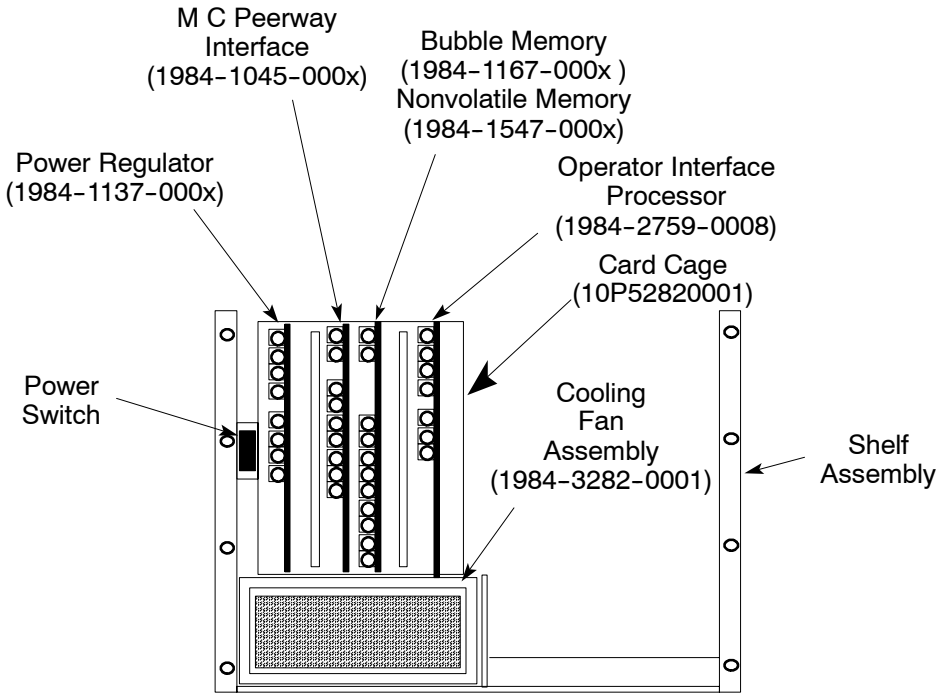


Figure 3.1.2. Single HIA (Front View)

The internal/external clock jumpers on the Nonvolatile Memory Card (1984-1167-000x or 1984-1547-000x) determine the source of the HIA clock synchronization. For jumper locations and positioning, see Figure 3.1.4.

System Overview and Glossary Changes

Changes to the *System Overview and Glossary* (OV) are a result of additional information concerning:

- FIM redundancy
- Introduction of the MPC5 Controller Processor with the P1 R3.0 release

The following information describes the changes to this manual.

OV: Chapter 3 (Hardware Components)

Description: *The following note was added before the last paragraph on page 3-19.*

NOTE: If the primary FIM fails and the secondary FIM takes over but then fails, the redundant FIM should be replaced first. If this is not done but redundant controllers are configured, it may take 5–30 seconds to regain normal operation via a redundant controller switch. If redundant controllers are not available, replacing both FIMs or moving one FIM to the redundant slot will restore normal operation. If necessary, rebooting the controller will also restore normal operation.

Description: *Figure 3.9 was modified to be generic for all controllers (page 3-20).*

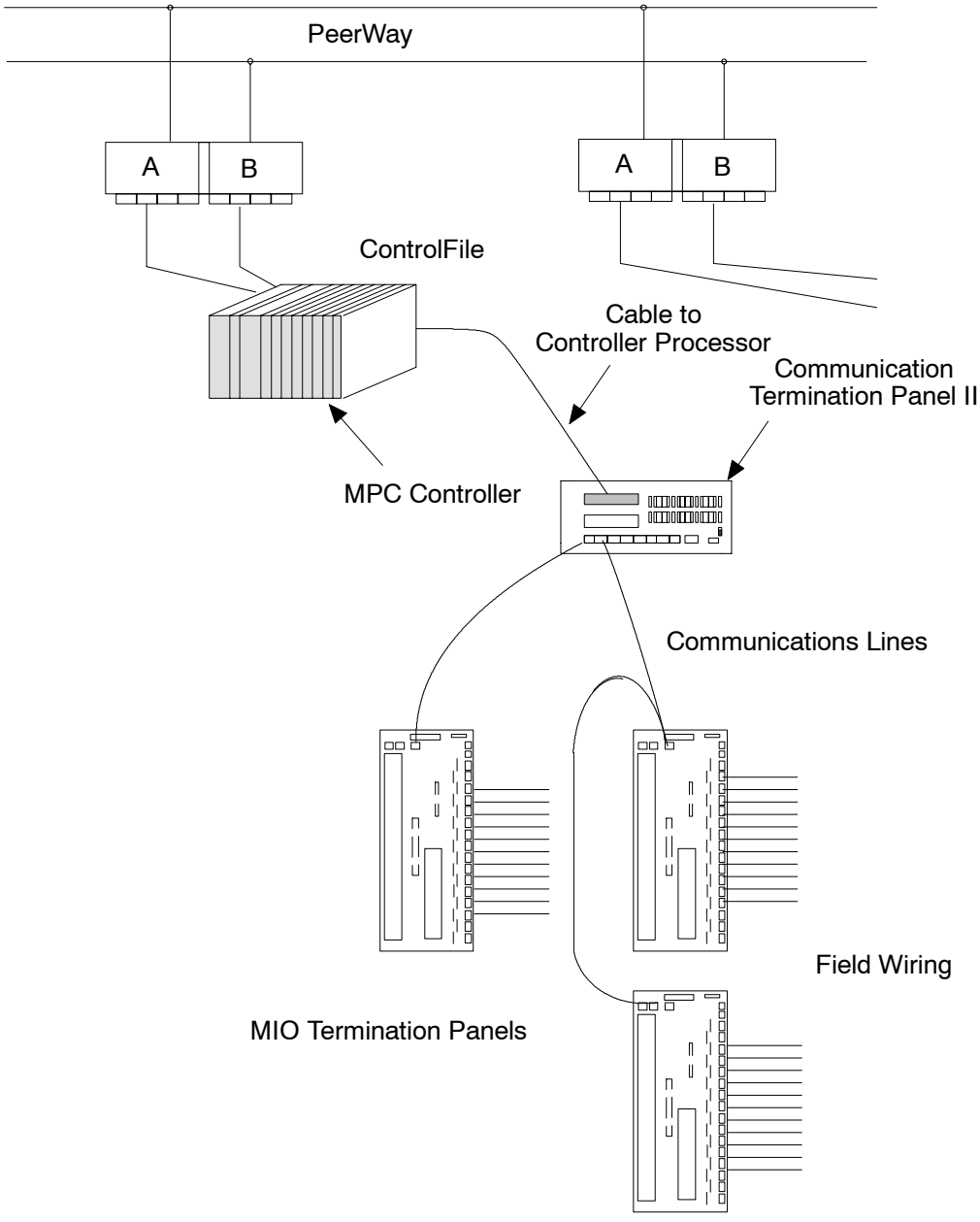


Figure 3.9. Typical MIO Cabling

Description: *The definitions of "kill" on page G-16 were modified to read as follows.*

kill

1) To delete the controller configuration.

2) To stop and end a *batch* task or recipe.

Service Manual, Volume 1 Changes

Changes to the *Service Manual* (SV), Volume 1 are a result of additional information concerning:

- The SCSI card boot ROM
- Using the Coordinator Processor enable/disable switch
- The MPC5 I/O communication baud rate

The following information describes the changes to this manual.

SV: Chapter 3 (Consoles)

SV-3: Section 7 (OI Card Cage)

Description: *Changes to Table 3.7.19 on page 3-7-10 were incorporated to clarify information on the boot ROM version of SCSI card 1984-3301-000x.*

Table 3.7.19. SCSI Card Parts Replacement

Part Number	Replaces	Characteristics
1984-3301-000x	1984-1140-0001 **NOTE:** You cannot mix -3301 and -1140 boards in a Multitube console.	Requires OI 68040 Processor with a minimum boot ROM of 10.08. **NOTE:** See the Software Release Notes for the current boot ROM to be used with your version of software.
1984-1140-0004	1984-1140-0001	Cannot be used with a -3301 board in a Multitube console.
1984-1140-0001	Itself only	Cannot be used with a -3301 board in a Multitube console.

Description: *The part number for the new graphics card was added to the first sentence on page 3-7-39.*

The Pixel Graphics Video Generator (10P58900001 or 1984–2503–0001) generates color video signals for the command console CRT.

SV: Chapter 4 (ControlFiles)

SV-4: Section 2 (ControlFile Support Section)

Description: *The following note was added to the bottom of page 4-2-29 under the heading "CP LEDs, Test Points, and Enable/Disable Switch".*

NOTE: If the CP switch is disabled and then quickly enabled, the CP may refuse to boot up. Wait for the red LED to come on before throwing the switch again.

SV-4: Section 3 (Controller Processors)

Description: *The following note was added to page 4-3-13.*

NOTE: With the MPC5, the I/O communication baud rate is set by software instead of by a hardware jumper (as done by the MPC II and MPC). The baud rate is set automatically when either the PLC+ or MUX+ image is selected.

Description: *The following note was added after the first bulleted paragraph on page 4-3-36.*

> **NOTE:** Before removing the primary CP card, first disable the Nonvolatile Memory card and the secondary CP card. For more information on removing and installing cards, see SV: 9-1.

Service Manual, Volume 2 Changes

Changes to the *Service Manual* (SV), Volume 2 are a result of additional information concerning:

- FIC redundancy
- FIM redundancy
- Loop power
- MAIO16 Termination Panel
- Introduction of a new MAI32 FIM with the P1 R3.4 release
- Changing a detail screen name from “FIC Detail” to “Field I/O Detail”
- Analog FIM bits

The following information describes the changes to this manual.

SV: Chapter 5 (Serial and Analog I/O)

SV-5: Section 1 (Analog Card Cage)

Description: *The first paragraph on page 5-1-29 was changed to clarify the information on FIC redundancy.*

When a primary FIC with redundancy fails, the redundant FIC takes over. The failed FIC lights its red LED or flashes its green LED. Replace the failed FIC and determine that the new FIC has its green LED on and that the Field I/O Status screen (previously the FIC Status screen) shows no error for the FIC. The “Health” field of the primary FIC will still show “Bad”.

SV: Chapter 6 (Multipoint I/O)

SV-6: Section 1 (Multipoint I/O Installation and System Wiring)

Description: *The following note was added after the second paragraph on page 6-1-1 to clarify information on FIM replacement.*

NOTE: If the primary FIM fails and the secondary FIM takes over but then fails, the redundant FIM should be replaced first. If this is not done but redundant controllers are configured, it may take 5–30 seconds to regain normal operation via a redundant controller switch. If redundant controllers are not available, replacing both FIMs or moving one FIM to the redundant slot will restore normal operation. If necessary, rebooting the controller will also restore normal operation.

SV-6: Section 4 (Multipoint Analog I/O (MAIO))

Description: *The following caution was added before the note on the bottom of 6-4-1 to give more information on Loop Power Modules.*

CAUTION

Loop power can be supplied from an external source or from a Loop Power Module (LPM). The LPM produces up to 380 mA of DC current at 25.0 to 25.5 VDC. Externally supplied loop power must fall in the range 23–29 VDC. Because it might range outside the limit, do not use standard RS3 DC power.

Description: *The third paragraph on page 6-4-4 was changed and a new figure was added to show the latest MAIO16 Termination Panel.*

Figure 6.4.1 shows the original panel used with the 1984–4398–0001 LPM and the 10P54040004 or 10P540800004 LPM. Figure 6.4.1A shows the panel used with the 10P5707001 LPM and the 10P57700005 or 10P58080005 FIMs. Table 6.4.2 lists the figure callouts.

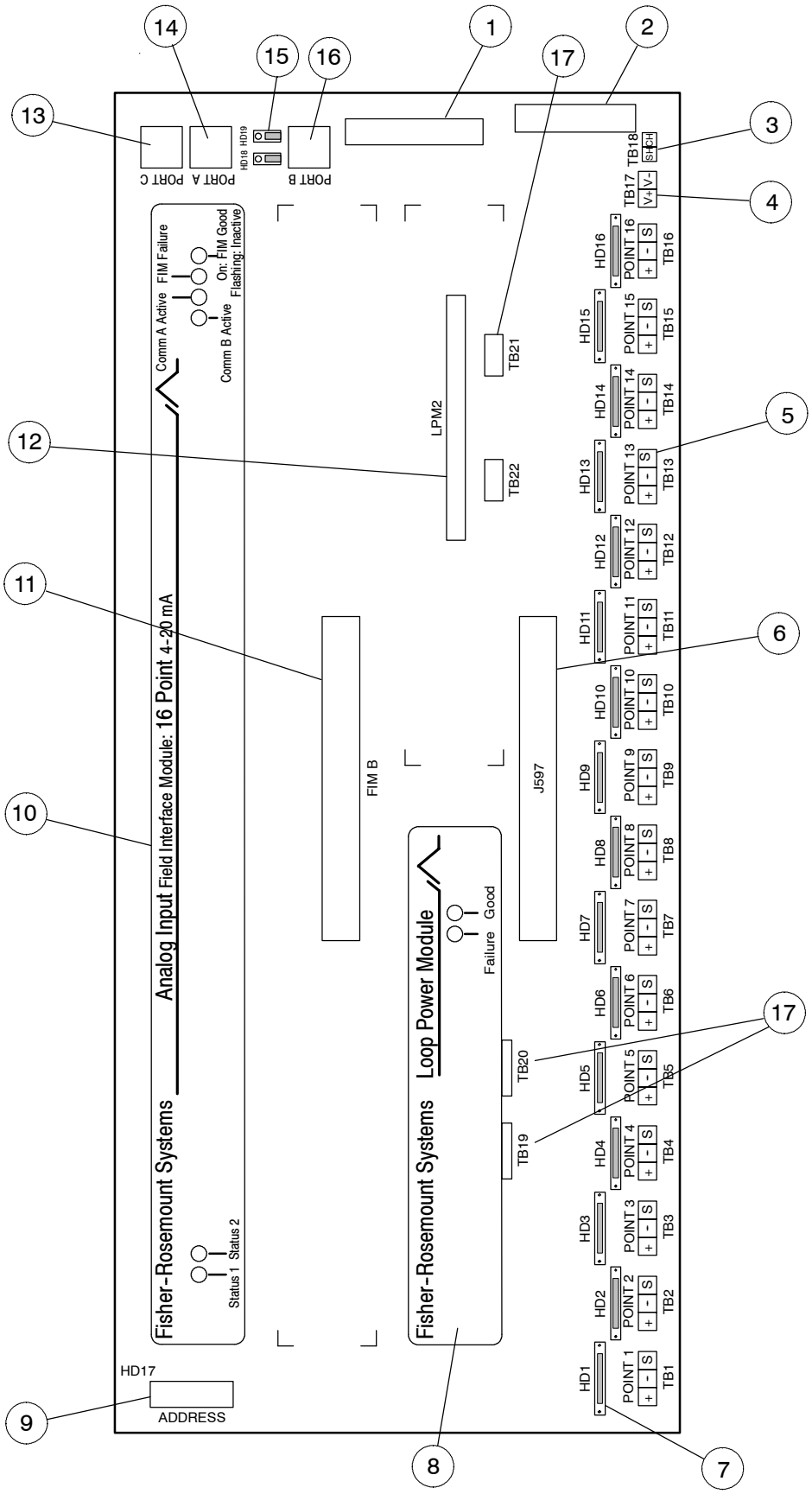


Figure 6.4.1A. MAIO16 Termination Panel – 10P57070001 LPM and 10P57700005 or 10P58080005 FIM

Description: *Table 6.4.7 on page 6-4-35 was modified for the new MAI32 FIM*

.

Table 6.4.7. MAI32 Termination Panel Jumpers

Jumper	Position	Effect
HDL01–HDL16 HDR01–HDR16 Point Type	Full left	System-powered input point
	Full right	Self-powered input point
HD33 ADDRESS	One jumper A–C at 1–2	Cage address for Left Group of points L01–L16 (A is recommended)
	One jumper B–D at 1–2	Cage address for Right Group of points R01–R16 (B is recommended)
	P at 1–2	Required for correct parity*
HD34 LOOP PWR DETECT	ENABLE	Enables detection of loop power loss
	DISABLE	Disables detection of loop power loss
TB21 Shield Grounding	SH and CH connected	All field wiring shields are connected to panel chassis ground
	SH and CH open	All field wiring shields are connected together and are floating with respect to panel chassis ground
	SH connected to external ground	All field wiring shields are connected together and are connected to the external ground point

* Not required for MAI32 FIM 10P58300005.

Description: *Clarification and the part numbers for the new MAIO16 and MAI32 FIMs were added to page 6-4-42 (including Table 6.4.10).*

MAIO FIMs

Multipoint Analog FIMs are available for 16-point input or output and for 32-point input.

There are three types of 16-point input FIMs:

- MAIO16 Field Interface Module (FIM) CE Approved – Redundant:
  4–20 mA Input 16 Point — 10P54040004 or 10P57700005
- MAIO Field Interface Module (FIM) – Redundant:
  4–20 mA Input — 1984–4414–1001
- MAIO Field Interface Module (FIM) – Nonredundant:
  4–20 mA Input — 1984–4414–0001
  (FIM redundancy not supported)

There are two types of 16-point output FIMs:

- MAIO16 Field Interface Module (FIM) CE Approved:
  4–20 mA Output 16 Point 10P54080004 or 10P58080005
- MAIO Field Interface Module (FIM):
  4–20 mA Output 1984–4418–0001

There is one 32-point input FIM:

- MAI32 Field Interface Module (FIM) CE Approved:
  4–20 mA Input 32 Points 10P53190004 or 10P58300005

Table 6.4.10. MAIO FIM Parts Replacement

Part Number	Replaces	Comments
10P57700005	10P54040004 1984–4414–0001 1984–4414–1001	All cases
1984–4414–100x	1984–4414–0001	All cases
10P58080005	10P54080004 1984–4418–000x	All cases
10P58300005	10P53190004	All cases

Description: *The part number for the 16-point Input FIM on page 6-4-44 was corrected to read as follows.*

- MAIO Field Interface Module (FIM):
  4–20 mA Input 1984–4414–1001

Description: *A new part number for the 16-point Output FIM was added on page 6-4-46.*

- MAIO16 Field Interface Module (FIM) CE Approved:
  4–20 mA Output 16 Point 10P54080004 or 10P58080005

Description: *The part number for the new MAI32 FIM was added to page 6-4-48.*

- MAI32 Field Interface Module (FIM) CE Approved:
  4–20 mA Input 32 Points 10P53190004 or 10P58300005

Description: *The part number for the new MAIO Output FIM was added to page 6-6-10.*

One MAIO Termination Panel (1984-4383-0002) and an MAIO FIM can support up to16 points on 8 dual-channel barriers. Use an MAIO Input FIM (10P54040004 or 10P57700005) for inputs or an MAIO Output FIM (10P54080004 or 10P58080005) for outputs. Use Marshaling Panel Cable 1984-4298-xxxx.

Description: *The part number for the new MAO Output FIM was added to page 6-6-25.*

Two FIMs are available:

- MAI16 4-20 mA Input 10P54040004 or 10P57700005
- MAO16 4-20 mA Output 10P54080004 or 10P58080005

SV: Chapter 8 (Calibration)

SV-8: Section 1 (Calibrating Serial I/O Field Interface Cards)

Description: *The first part number in the third row of Table 8.1.1 on page 8-1-1 was corrected. The part number was changed from 10P54440002 to 10P57240002.*

Table 8.1.1. Serial I/O Field Interface Cards

FIC	Characteristics
1984-2480-000x	Two input/one output (4-20 mA) FIC, no redundancy
10P59150002 or 10P54440002 or 1984-2518-000x	Two input/one output (4-20 mA) FIC, redundancy
10P59270002 or 10P57240002 or 1984-2519-000x	Assembly: Two input/one output (4-20 mA) FIC, redundancy combined with Smart Transmitter Interface Daughterboard (P/N 10P5450000x)

SV-8: Section 6 (Calibrating Multipoint Analog I/O (MAIO) Output and Input Points)

Description: *Step 1 on page 8-6-5 was modified to read as follows.*

1. Remove the redundant Field Interface Module (FIM) from service by unplugging it (if a redundant FIM is installed). The RS3 will then generate the alarm “RIOB Hardware: Comm Timeout”.

SV: Chapter 10 (Troubleshooting)

SV-10: Section 3 (Troubleshooting Consoles)

Description: *The following note was added on page 10-3-15*

NOTE: Once a memory snap has started, do not attempt any other action until it is complete. Otherwise, the node may crash.

Description: *Figure 10.3.3. on page 10-3-17 was updated to show the current fields being displayed in the Memory View screen.*

❑ **To call up:**
- [M] [V] [ENTER] at the command line

❑ **To access other screens:**
- [PAGE AHEAD] and [PAGE BACK] to see more memory data

```
                                  Memory View              07-Oct-98   11:47:12

View      >byte                                          >Read ⇒Memory   >Hex

Node>136    Addr  >0000000000             Refresh Rate>1 sec


000: 00 CC 66 66 00 FF 00 00 00 40 E7 12 00 00 66 F0      ..ff.....@....f.
010: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
020: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
030: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
040: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
050: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
060: 00 00 67 1E 00 00 67 46 00 00 67 64 00 00 67 82      ..g...gF..gd..g.
070: 00 00 67 A0 00 50 B5 DA 00 40 E1 84 00 40 E7 12      ..g..P...@...@.
080: 00 00 6F 56 00 00 6F 56 00 00 67 1E 00 00 67 1E      ..oV..oV..g...g.
090: 00 00 67 1E 00 00 67 1E 00 00 67 1E 00 00 67 1E      ..g...g...g...g.
0A0: 00 00 67 1E 00 00 67 1E 00 00 66 EC 00 00 64 00      ..g...g...f...d.
0B0: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
0C0: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
0D0: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
0E0: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
0F0: 00 40 e7 12 00 40 E7 12 00 40 E7 12 00 40 E7 12      .@...@...@...@..
                                                                   CONFIG 4
```

Figure 10.3.3. Memory View Screen

Description: *Additional information was added to the Node field description and a Refresh Rate field was added to Table 10.3.3. on page 10-3-18 to reflect changes made to the Memory View screen.*

Table 10.3.3. Memory View Screen Field Description

Field	Description
Node	Specifies the node number of the source of the memory data for the primary CP or the Controller Processors in slots A–H. For example: When Node 136 is entered, the memory of the primary CP for Node 136 is read. When Node =136A is entered, the memory of the Controller Processor in slot A of Node 136 is read. NOTE: With a redundant pair of controllers, only the memory of the primary Controller Processor can be read.
Refresh Rate	Specifies the amount of time that the information will be updated. A specific value or “never” can be entered.

SV-10: Section 5 (Troubleshooting Input/Output)

Description: *The first paragraph on page 10-5-2 was changed to reflect the new name for the status screen. The name changed from “FIC Status” to “Field I/O Status”.*

When a primary Field Interface Card (FIC) with redundancy fails, the redundant FIC takes over. The failed FIC lights its red LED or flashes its green LED. Replace the failed FIC and determine that the new FIC has its green LED lighted and that the Field I/O Status screen (previously the FIC Status screen) shows no error for the FIC. The “Health” field of the primary FIC will still show “Bad”.

Description: *Information on Analog FIM Bits for bits 0, 1, and 2 was changed on page 10-5-15.*

Table 10.5.8. FIC/FIM Status Bits

Status for:	Status Bits	Bit	Description
Analog FIM Bits:	xxxx x1xx	2	MAI16 and MAO16: Loop Power Module status bits: 0 for Loop Power Module A. 1 for Loop Power Module B. MAI32: Not used.
	xxxx xx1x	1	Set to 0 when the Loop Power is good. Set to 1 when the Loop Power is bad.
	xxxx xxx1	0	MAI16 and MAO16: Set to 0 when the Loop Power Module is present. Set to 1 when the Loop Power Module is absent. MAI32: Set to 0 when the Loop Power Detect jumper is in the ENABLE position. Set to 1 when the Loop Power Detect jumper is in the DISABLE position.

Description: *Changes to pages 10-5-18 and 10-5-19 are result of a change in the name of a detail screen. The name changed from "FIC Detail" to "Field I/O Detail".*

Field I/O Detail Screen (FIC Detail Screen)

The FIeld I/O Detail screen (previously the FIC Detail screen) displays information about the blocks that are associated with an individual FIC or FIM. This screen is for display purposes only. To call up the Field I/O Detail screen, cursor to the desired FIC or FIM and press [SELECT] from the Field I/O Status screen (previously the FIC Status screen).

To view the Field I/O Detail screen for a FIC or FIM, cursor to the desired card and press [SELECT]. If any I/O Block is in alarm, the associated FIC or FIM will be in a corresponding color.

Figure 10.5.2 shows the Field I/O Detail screen. Table 10.5.9 describes the Field I/O Detail screen fields.

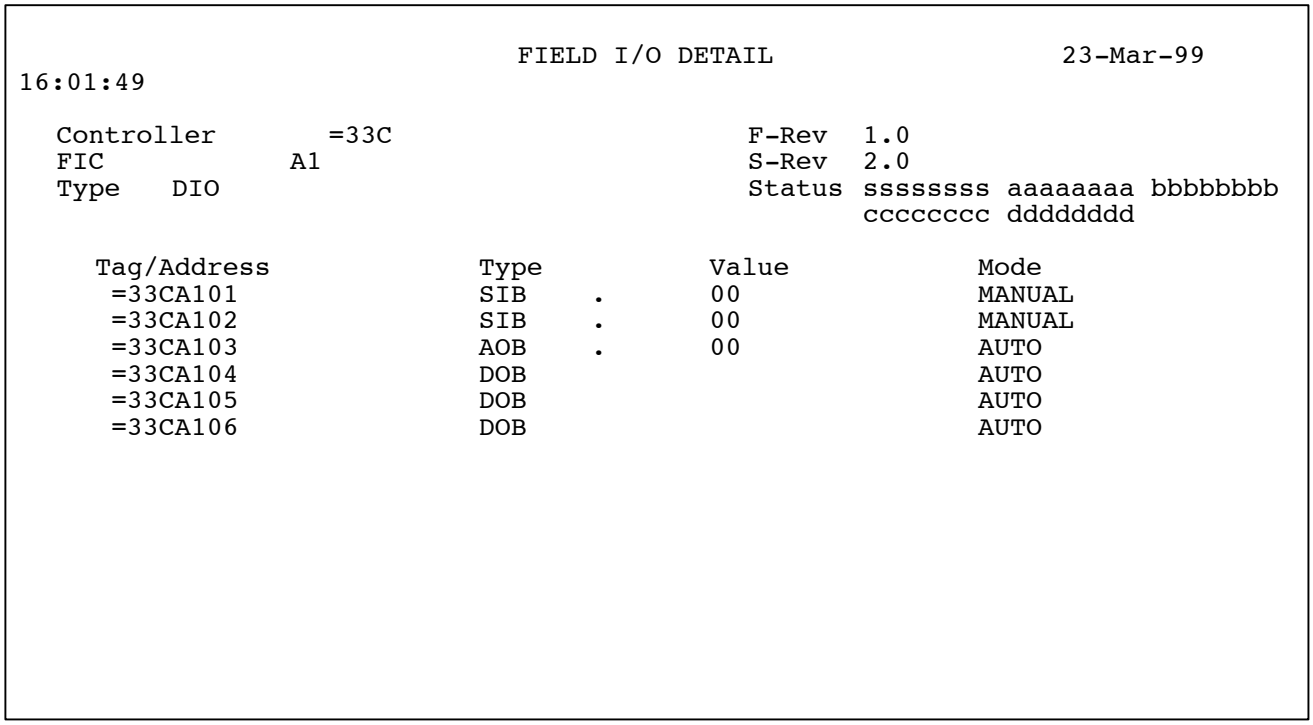


Figure 10.5.2. Field I/O Detail Screen

Table 10.5.9. Field I/O Detail Screen Fields

Field	Description of Displayed Information
Controller	Address of the Controller Processor associated with the particular FICs. None is displayed if no Controller Processor has been assigned.
Type	Configured type of FIC: analog I/O (AIO), contact I/O (CIO), redundant analog I/O (AIO-R), redundant AIO with Smart daughterboard (AIO-RS), discrete I/O (DIO). When the type is changed, this is displayed in the corresponding alarm color.
FIC	Slot number of the FIC within the Controller Processor.
F-Rev	Revision level and firmware of the FIC.
S-Rev	Revision level of the FIC software.
Status	Displays the status of the FIC.
Tag/Address	Tag or address of the FICs residing in the Controller Processor.
Type	Type of block on the FIC.
Value	Output value of the block.
Mode	Mode of the FIC: AUTO, MANUAL, or SIMULATE.

Service Quick Reference Guide Changes

Changes to the *Service Quick Reference Guide* (SQ) are a result of additional information concerning:

- Changing of the status and detail screen names from “FIC Status” to “Field I/O Status” and “FIC Detail” to “Field I/O Detail”
- Introduction of a new MAI32 FIM with the P1 R3.4 release

The following information describes the changes to this manual.

SQ: Chapter 1 (Troubleshooting)

Description: *Changes to the first paragraph on page 1-39 are a result of a change in the name of a status screen. The name changed from “FIC Status” to “Field I/O Status”.*

Restoring Redundant FICs

When a primary FIC with redundancy fails, the redundant FIC takes over. The failed FIC lights its red LED or flashes its green LED. Replace the failed FIC and determine that the new FIC has its green LED lighted and that the Field I/O Status screen (previously the FIC Status screen) shows no error for the FIC. The “Health” field of the primary FIC will still show “Bad”.

Description: *Changes to page 1-52 are a result of a change in the name of a detail screen. The name changed from “FIC Detail” to “Field I/O Detail”.*

Field I/O Detail Screen

The Field I/O Detail screen (previously the FIC Detail screen) displays information about the blocks that are associated with an individual FIC or FIM. This screen is for display purposes only. To call up the Field I/O Detail screen, cursor to the desired FIC or FIM and press [SELECT] from the Field I/O Status screen (previously the FIC Status screen). To view the Field I/O Detail screen for a FIC or FIM, cursor to the desired card and press [SELECT]. If any I/O Block is in alarm the associated FIC or FIM will be in a corresponding color. There are five groups of status bits. The first is the same as for the Field I/O Status screen. The next four are for points 1–4, 5–8, 9–12, and 13–16.

Field I/O Detail Screen Fields

Field	Description of Displayed Information
Controller	Address of the Controller Processor associated with the particular FICs. None is displayed if no Controller Processor has been assigned.
Type	Configured type of FIC: analog I/O (AIO), contact I/O (CIO), redundant analog I/O (AIO-R), redundant AIO with Smart daughter board (AIO-RS), discrete I/O (DIO).
FIC	Slot number of the FIC within the Controller Processor.
F-Rev	Revision level and firmware of the FIC.
S-Rev	Revision level of the FIC software.
Status	Displays the status of the FIC.
Tag/Address	Tag or address of the FICs residing in the Controller Processor.
Type	Type of block on the FIC.
Value	Output value of the block.
Mode	Mode of the FIC: AUTO, MANUAL, or SIMULATE.

SQ: Chapter 5 (Consoles)

Description: *The part number for the new graphics card was added to page 5-48.*

Pixel Graphics Video Generator 10P58900001
. 1984-2503-0001

SQ: Chapter 6 (ControlFiles)

Description: *An Image Functionality table for the MPC5 was added to page 6-25.*

Controller Processor:
MPC5 . . . . . 10P57520007

MPC5 Image Functionality Jumpers

Image Functionality	HD4	HD5	HD9
MPC+	1–2	1–2	1–2
PLC+	1–2	1–2	2–3
MUX+	1–2	2–3	1–2

With the MPC5, the I/O communication baud rate is set by software instead of by a hardware jumper (as done by the MPC II and MPC). The baud rate is set automatically when either the PLC+ or MUX+ image is selected.

SQ: Chapter 7 (Input/Output)

Description: *The part number for the new MAO16 was added to page 7-61.*

MAIO Output FIM
MAO16 (EMC Approved) ..... 10P54080004 or 10P58080005
MAO 1984-4418-0001

MAIO FIM Parts Replacement

Part No	Replaces	Comments
10P58080005	10P54080004 1984-4418-000x	All cases.

Description: *The part number for the new MAI32 was added to page 7-63.*

MAI32 Input FIM (EMC Approved) ..... 10P53190004 or 10P58300005

Site Preparation and Installation Manual Changes

Changes to the *Site Preparation and Installation Manual* (SP) are a result of additional information concerning:

- Introduction of a new MAI32 FIM with the P1 R3.4 release
- FIM replacement and redundancy
- MAI32 termination panel jumpers
- Power supply redundancy

The following information describes the changes to this manual.

SP: Chapter 1 (Preliminary Planning)

SP-1: Section 2 (Power Requirements)

Description: *A new paragraph was added to the bottom of page 1-2-7 under the heading "AC Power" to include more information on System Power Supply Units.*

System Power Supply Units are switching power supplies that normally do not require any additional line conditioning. These power supply units are regulated to a nominal 26 VDC. Each unit has the mains supply terminations built directly into its housing. See Section 1-4 in the *Service Manual* for additional specifications of the System Power Supply Unit.

Description: *The second item on page 1-2-9 under the heading "AC Power Consumption" was modified to include power supply modules.*

2. Finding the number of AC/DC power supplies or the number of power supply modules, whichever is applicable.

Description: *An addition to Table 1.2.1 on page 1-2-11 was made to show information on the MAI 32-point Input Termination Panel with FIM 10P58300005.*

Component	Nominal Current at 30 VDC Amps	Nominal Current at 24 VDC Amps	Heat Output Watts (BTU/hr)
Consoles and PeerWay Interfaces			
MAI 32-point Input Termination Panel (10P5349xxxx) with FIM 10P58300005	.10	.11	5 (17)

Description: *Information under the heading "Finding the Number of Power supplies Required" on page 1-2-12 was changed to read as follows.*

AC/DC Power Supplies

To determine the number of AC/DC Power Supplies needed to power the DC bus:

1. Add the DC current requirements of all equipment that will be fed from the DC bus.
2. Add an allowance for equipment expansion.
3. Divide the total current by 18 amps to determine the number of power supplies required to supply the load. This is an empirical number that will permit sufficient capacity to handle inrush current at startup. The 18 amps may be reduced to provide extra capacity if the user expects future expansion of the system:

   $$\text{Power Supplies Needed} = \frac{\text{Total DC Load Current}}{\text{18 Amps per Power Supply}}$$

4. Round up the resulting number to the next higher whole number to find the number of power supplies needed.

Many sites add one extra supply as an on-line standby. This provides N+1 redundancy coverage should one supply fail.

The limit is ten AC/DC Power Supplies on one bus. One additional power supply may be added for redundancy. The power supply is rated for a maximum DC output of 22 amps. Normal design loads each supply at about 10 to 18 amps. The crest factor (peak current divided by average current) is approximately 1.3. The power factor is about .90 lagging.

System Power Supply Units

To determine the number of System Power Supply Units needed to power the DC bus:

1. Calculate the total DC current load.
2. Divide the DC load by 43 (43 amps is the rated output for each of the power supply modules when they are connected on a DC bus).
3. Round up to the next whole number.
4. Add one for redundancy.

   NOTE: If the DC bus is in a redundant bus configuration, do not add anything for redundancy.

5. Divide the number of power supply modules, including any redundant modules, by two.

$$\text{Number of Housings Needed} = \frac{\text{Number of Power Supply Modules}}{2}$$

6. Round up the resulting number to the next higher whole number to find the number of power supplies needed.

The limit is four power supply modules on one bus; one additional module may be added for redundancy. For example, a DC Distribution Bus configured as an A/B Bus and a load that requires four power supply modules will require three System Power Supply Unit housings. The third housing is added to meet redundancy requirements. The A/B Bus configuration is considered one bus. For additional information, see “Non-redundant Bus Configuration” on page 1-2-20.

Description: *Information under the heading “Power Supply Redundancy” on page 1-2-14 was added.*

Two types of power supplies can be used with the RS3 system:

- AC/DC Power Supplies
- System Power Supply Units

Because of differences in output voltages, the DC output for a System Power Supply Unit cannot be connected to the same DC Distribution Bus (Bus A or Bus B) as an AC/DC Power Supply. However, if either of the redundant bus type configurations described below is used, one power supply type can be used on the Bus A while the other type can be connected on the Bus B.

AC/DC Power Supplies are ferroresonant. Their outputs are diode isolated and can be connected in parallel to the same DC Distribution Bus. The nominal output of a AC/DC Power Supply is 30 volts. The non-battery backup version weighs about 25 kg (55 lb) while the version with a backup battery weighs about 31.75 kg (70 lb).

A System Power Supply Unit consist of a housing where the mains supply voltage wiring terminates and can contain up to two removable switch-mode power supply modules per housing. Because these units have no battery backup capability, there must always be one additional power supply module on a bus to serve as a backup operation beyond what is needed to supply the load. Each power supply module is diode isolated so it can be connected in parallel with any of the other modules and share the load. Each power supply module acts as a backup to the others. The voltage output for each module is about 26V. The housing weighs about 5.7 kg (12.5 lb) and each power supply module weights about 3.8 kg (8.4 lb). For additional information on System Power Supply Unit specifications, see SV: 1-3.

A System Power Supply Unit has about four times the power density of AC/DC Power Supply assemblies. For example, if you needed a total of 2400 watts, two 1200-watt power supply modules would use about one-fourth the mounting space required by four 600-watt AC/DC Power Supplies.

NOTE: Because of differing output voltages, AC/DC Power Supplies cannot be mixed on a DC Distribution Bus with System Power Supply Units. However, one power supply type may be used on Bus A and the other used on Bus B in either of the redundant bus type configurations.

Description: *The information under the heading "System Power Supply Units" on pages 1-2-19 and 1-2-20 was changed to read as follows:*

The RS3 Millennium Package (RMP) was designed to have a redundant power supply without a battery backup. Therefore, it must have a minimum of two power supply modules, where one module is a backup.

Each power supply module must be powered from an independent mains supply circuit. An alternative to using an extra power supply module is using the Bus B as a separate bus, redundant to the Bus A.

NOTE: If you supply redundant power, you must ensure that the power supply module outputs are diode isolated. Your power supply source(s) must contain over-current protection. Each source must be individually protected.

Non-redundant Bus Configuration

A standard, non-redundant, DC power distribution system consists of one or more System Power Supply Units feeding one or more DC Distribution Bus assemblies. Figure 1.2.7 shows a standard A/B Bus operation.

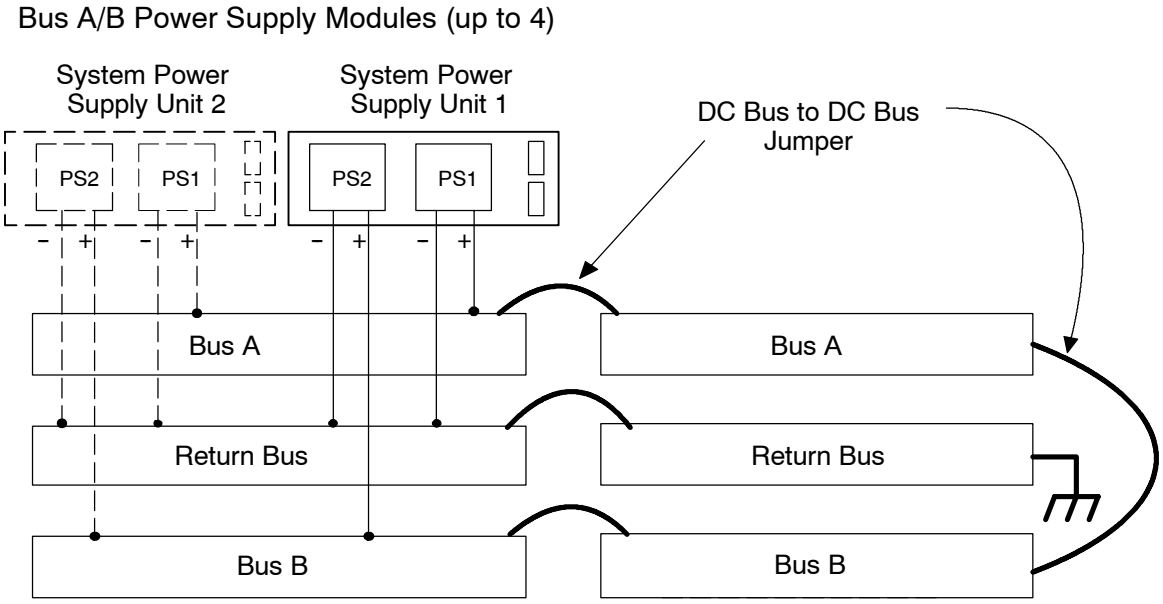


Figure 1.2.7. Standard DC Power Distribution for System Power Supply Units

A DC Distribution Bus should have not less than two and no more than five power supply modules wired to it. This requires the use of 1–3 System Power Supply Units. There must always be one power supply module more than required to supply the load. The additional module is redundant and serves as a backup in case one of the other modules fails. This is referred to as N+1 redundancy.

Although a power supply module has a maximum output rating of 46 amperes when operating singly, the RS3 system requires redundancy, either with a power supply, a bus, or both. When outputs are wired in parallel to form a bus, the maximum output rating of each power supply module is 43 amperes. If the power supply modules are loaded beyond the maximum rating, they will enter a cyclic on-off mode at about a 1 Hz rate. When more than one module is connected to the same DC Distribution Bus, they load-share within 10 percent of each other. This tolerance reduces the maximum planned loading for each power supply module to 43 amperes. Reducing the output rating of the modules helps prevent any of them from unnecessarily entering an over-current condition, especially during power-up.

The maximum planned load for an A/B Bus configuration is 172 amperes. This requires four power supply modules plus one more for redundancy. The fifth module delivers the required load if one of the other modules fails. Table 1.2.3 shows the maximum loads that can be supplied with various numbers of power supply modules used with a DC bus configuration.

This configuration is a good solution when powering devices that cannot accept a separate redundant power input. It requires fewer power supply modules than the redundant bus or redundant bus/redundant power supply configurations.

NOTE: If a single System Power Supply Unit (two power supply modules) is used, the configuration should be the standard A/B distribution shown in Figure 1.2.7. Buses A and B are jumpered together and operate in a series.

Redundant Bus Configuration

A redundant bus configuration is beneficial when redundancy at the DC Distribution Bus level is desired. All Fisher-Rosemount manufactured devices powered from the DC distribution panel have redundant DC input capability. If either Bus A or Bus B fails, the remaining bus ensures that power will continue to be supplied to the devices.

Bus B Power Provided by the User:

Figure 1.2.8 represents a redundant DC power distribution configuration. Note that Bus A and Bus B are not connected together. In this configuration, each of the two buses must be capable of providing the full load, independent of each other. One or more power supply

modules (with two or more located in the same or a separate housing) are connected to Bus A to supply the load. There must be power supplies connected to Bus B that are capable of supplying the same load and at the same voltage. When only one power supply is needed on each bus, the system must be wired for a single non-redundant bus. See “Non-redundant Bus Configuration” for more information.

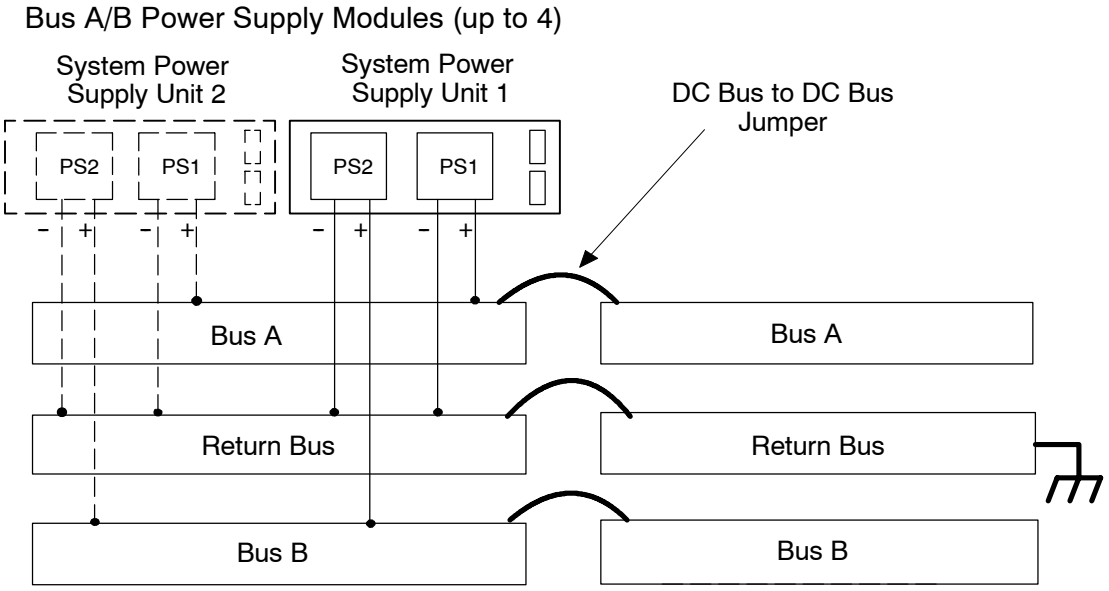


Figure 1.2.8. Redundant DC Power Distribution System for System Power Supply Units

It is not necessary that each bus (A and B) have a separate redundant power supply module. Normally, bus redundancy eliminates that need. A minimum of two and a maximum of four power supply modules are needed on Bus A. An equivalent supply must be provided on Bus B for redundant bus distribution. Buses A and B using the System Power Supply Unit are rated at 18–26 VDC.

All DC power source inputs must be individually isolated from each other by using output diode isolation to prevent a back-drive condition into a power supply that has lower output voltage. Output diode isolation has been built into the power supply modules.

Power supply modules have over-current and over-temperature protection. When you provide power supplies for Bus B, we recommend an output rating of 24–26 volts. you must provide over-current protection for the power sources placed on Bus B. Base the amount of over-current protection on the total loading for which Bus A power supplies are sized. When you supply redundant power on Bus B, ensure that the power supply modules are diode isolated to prevent them from being driven in the reverse direction. User-supplied power source(s) must contain over-current protection and each source must be individually protected. Here are three case examples:

Case 1: Two power supply modules on Bus A require the same source capacity used on Bus B; therefore, Bus B must be protected for the same loading (86 amperes) as Bus A. It does not matter how many over-current devices (for multiple sources) are used as long as the input to Bus B is protected for a maximum load of 86 amperes. Simply stated, the concept is: make the Bus B loading and over-current protection equivalent to Bus A.

Case 2: Three power supply modules on Bus A require equivalent sources on Bus B that have over-current protection for a total load of not more than 129 amperes. This concept is the same as in Case 1.

Case 3: Four power supply modules on Bus A require equivalent sources on Bus B that have over-current protection for a total load of not more than 172 amperes. Again, this concept is the same as in Case 1.

Bus B Power Provided by the Factory:

When Fisher-Rosemount supplies all System Power Supply Units for buses A and B, the same number of power supply modules are on both buses. Four power supply modules (two full System Power Supply Units) on each bus is the maximum load allowed in the redundant bus configuration (see Figure 1.2.8). See “Redundant Bus/Redundant Power Supply Configuration” below for more information on adding power supplies to each bus for additional redundancy.

Redundant Bus/Redundant Power Supply Configuration

Each bus (A and B) requires a separate redundant power supply module in redundant bus/redundant power supply configurations (see Figure 1.2.8A). Therefore, each bus requires a minimum of two power supply modules and a maximum of five power supply modules. (This would be a redundant bus/redundant power supply configuration with N+1 redundancy.) Maximum bus loading requires four planned power supply modules to supply the load plus one additional module as a redundant module for that bus. Each bus must be configured as such. This provides extra redundancy and permits a maximum of 172 amperes DC loading. To ensure safe operation, this load and number of power supplies on each bus must not be exceeded.

This is a legitimate configuration but is inefficient in the use of power supplies. This configuration is likely to be used for applications where extra redundancy is required. One of the two previously described configurations will normally be more desirable to use.

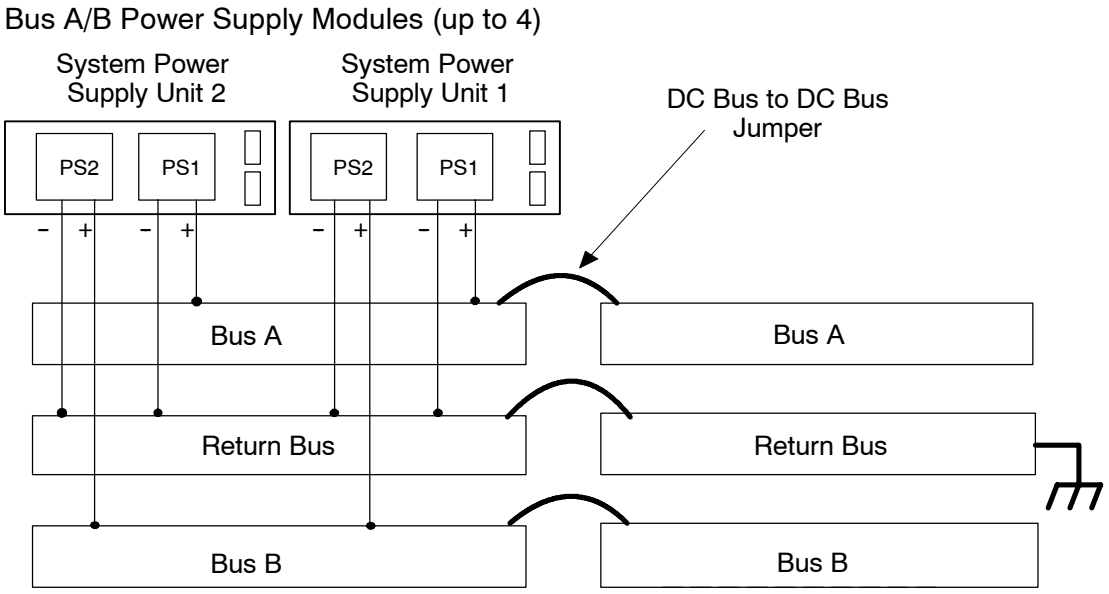


Figure 1.2.8A. Redundant Bus/Redundant Power Supply Configuration for System Power Supply Units

The DC bus configuration ratings in Table 1.2.3 are as close to a DC bus-rated load as can be achieved. The values are in multiples of 43 amps; 43 amps is the rated output of a power supply module when operating in parallel with others. Note that the maximum load that can be planned for any one of the three configurations is 172 amps.

Table 1.2.3. DC Bus Configuration Ratings

Number of Power Supply Modules per DC Bus	Non-Redundant Bus Maximum Load* (Amps)	Redundant Bus Maximum Load (Amps)	Redundant Bus with Redundant Power Supply Modules Maximum Load (Amps)
1	N/A	43	N/A
2	43	86	43
3	86	129	86
4	129	172	129
5	172	N/A	172

* In a non-redundant bus configuration, the series connecting Bus A to Bus B results in one DC bus.

SP-1: Section 3 (Power Requirements)

Description: *Additional information was added to the first paragraph on page 1-3-5 under the heading "Grounding Separate System Components".*

Separate system cabinet groups in a common area can be daisy chained together using a 35mm^2 (2 AWG) intercabinet grounding conductor, and connected to the grounding electrode system through a single grounding electrode conductor (Figure 1.3.2). Alternatively, each cabinet group can have its own grounding electrode conductor to the grounding electrode system. Multiple grounding electrode conductors can attach at the same point on the grounding electrode system, or to different points. Use caution when planning and implementing multiple separate supplemental conductors to ground the equipment to the grounding electrode system. It can result in additional noise from impedance coupling. If a daisy chain connection results in a grounding connection of more than 61 meters (200 feet), a direct connection to the grounding electrode system should be considered for the cabinet group at the end of the daisy chain.

SP: Chapter 7 (Multipoint I/O)

SP-7: Section 1 (Multipoint I/O Installation and System Wiring)

Description: *The following note was added after the third paragraph on page 7-1-1.*

NOTE: If the primary FIM fails and the secondary FIM takes over but then fails, the redundant FIM should be replaced first. If this is not done but redundant controllers are configured, it may take 5–30 seconds to regain normal operation via a redundant controller switch. If redundant controllers are not available, replacing both FIMs or moving one FIM to the redundant slot will restore normal operation. If necessary, rebooting the controller will also restore normal operation.

Description: *The two subsections on pages 7-1-6 and 7-1-7 under "Multipoint I/O FIM Redundancy and Online Replacement" were rewritten to read as follows.*

Multipoint I/O FIM Online Replacement

The online replacement operation is provided when one FIM and one communication line is used. The FIM can be installed in either the "A" or the "B" socket. The other socket is available for an online replacement. The redundancy jumper(s) must be set to normal to allow the online replacement operation.

If the FIM fails in any way, a good FIM can be plugged into the empty socket. Normally, the failed FIM red LED goes ON. The new FIM takes over from the installed FIM in a few seconds. The failed FIM can be removed for repair as soon as the new FIM green LED goes ON and the yellow "Comm Active" LED (see note below) flashes.

NOTE: The label for a discrete FIM is marked “Comm Active”. Current labels for analog FIMs are marked “Comm A” and “Comm B”. Older labels for analog FIMs were marked “Port A” and “Port B”.

NOTE: The new FIM may be left in service in that socket; the failed FIM should be removed immediately. The empty socket will provide for another online replacement. Do not leave two FIMs plugged into an online replacement style panel.

Multipoint I/O FIM Redundancy

Full FIM redundancy is provided when two FIMs are used. Two communication lines are required, one for an odd numbered slot and one for the next even numbered slot. The primary FIM is in the “FIM A” socket and the redundant FIM is in the “FIM B” socket. The redundancy jumper(s) must be set at redundant to allow redundant operation. A Redundant I/O Block (RIOB) must be configured to control operations.

Analog FIM redundancy requires that the jumpers at HD18 and HD19 on the Analog Termination Panel be set to the “R” position while discrete FIM redundancy requires that the jumpers at HD2 on the Discrete Termination Panel be removed.

The odd numbered slot address must be wired to FIM A, the “primary” FIM. The even numbered slot must be wired to FIM B, the “secondary” FIM.

Primary (A) FIM Failure: If the primary FIM fails, the secondary FIM takes over and assumes the duties of the primary. Normally the failed FIM red LED goes ON and the green LED flashes. The failed FIM should be removed and replaced. As soon as the new FIM A powers up, it assumes the duties of the primary FIM and FIM B returns to secondary operation.

Secondary (B) FIM Failure: If the secondary FIM (B) fails, the primary FIM (A) continues to operate. Normally, the failed FIM red LED goes ON and the green LED flashes. The failed FIM B should be removed and replaced. As soon as the new FIM B powers up, it resumes the duties of secondary FIM.

SP-7: Section 3 (Multipoint Analog I/O (MAIO))

Description: *New part numbers for the MAIO16 and MAI32 FIMs were added on page 7-3-1.*

MAIO16 FIMs	
4–20 mA Output	10P54080004 or 10P58080005
MAI32 FIM	
4–20 mA (32 Input Points)	10P53190004 or 10P58300005

Description: *The new part number for the MAIO16 FIM was added on page 7-3-2.*

- MAIO16 Field Interface Module (FIM):
  4–20 mA Output 16 Point — 10P54080004 or 10P58080005

Description: *The new part number for the MAI32 FIM was added on page 7-3-27.*

- MAI32 Field Interface Module (FIM) — 10P53190004 or 10P58300005

Description: *Information on the new MAI32 FIM was added to Table 7.3.11 on page 7-3-38.*

Table 7.3.11. MAI32 Termination Panel Jumpers

Jumper	Position	Effect
HDL01–HDL 16 HDR01–HDR 16 Point Type	Full left	System-powered input point
	Full right	Self-powered input point
HD33 ADDRESS	One jumper A–C at 1–2	Cage address for Left Group of points L01–L16 (A is recommended)
	One jumper B–D at 1–2	Cage address for Right Group of points R01–R16 (B is recommended)
	P at 1–2	Required for correct parity*
HD34 LOOP PWR DETECT	ENABLE	Enables detection of loop power loss
	DISABLE	Disables detection of loop power loss
TB21 Shield Grounding	SH and CH connected	All field wiring shields are connected to panel chassis ground
	SH and CH open	All field wiring shields are connected together and are floating with respect to panel chassis ground
	SH connected to external ground	All field wiring shields are connected together and are connected to the external ground point

* Not required for MAI32 FIM 10P58300005.

SP-7: Section 5 (Intrinsic Safety (IS))

Description: *The new part number for the MAO16 FIM was added on page 7-5-18.*

Two FIMs are available:

- MAI16 4–20 mA Input 10P54040004 or 10P57700005
- MAO16 4–20 mA Output 10P54080004 or 10P58080005

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Software Release Notes

Index

Numbers

A

B

C

D

E

F

H

I

J

K

L

M

O

P

R

S

T

U

V

W