Honeywell

High-Performance Process Manager Planning

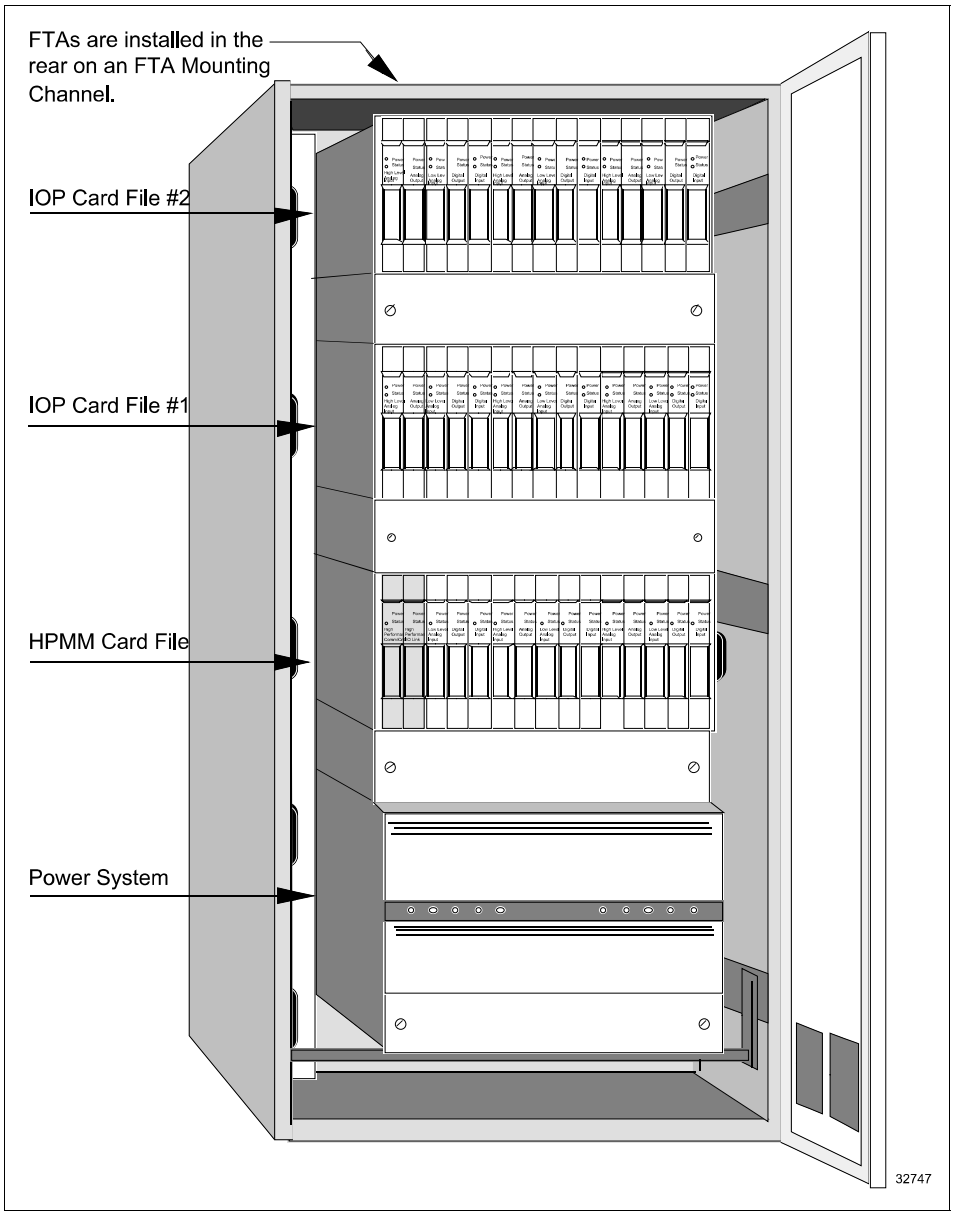
HP02-500

TotalPlant

Nonredundant HPM cabinet layout

Figure 2-1 is an illustration of a single High-Performance Process Manager cabinet containing a nonredundant High-Performance Process Manager Module (HPMM) with supporting assemblies. The HPMM cards (2) and the IOPs cards are installed in 15-Slot HPMM card files. IOP cards occupy the IOP card files.

Figure 2-1 Nonredundant HPMM Cabinet Layout



2.2 Card Files

Introduction

There are nine card file models. Three models are not CE Compliant and six models are CE Compliant. Table 2-1 lists the nine card file models. All models are also available with conformal coating (a model number with a prefix of MC, rather than MU).

Table 2-1 Card File Models

Card File Description	CE Compliant	Non-CE Compliant
Left 7-Slot HPMM or IOP	N/A	MU-HPFH01
Right 7-Slot HPMM or IOP	N/A	MU-HPFH11
15-Slot HPMM or IOP	N/A	MU-HPFX02
Left 7-Slot HPMM	MU-HPFH03	N/A
Right 7-Slot HPMM	MU-HPFH13	N/A
15-Slot HPMM	MU-HPFX03	N/A
Left 7-Slot IOP	MU-HPFI03	N/A
Right 7-Slot IOP	MU-HPFI13	N/A
15-Slot IOP	MU-HPFI23	N/A

Non-CE Compliant card file models

The non-CE Compliant card file models can be designated as an HPMM card file or an IOP card file by either installing an HPMM card set in the two left-most card slots or installing IOP cards.

CE Compliant card file models

Unlike the non-CE Compliant card file models, the CE Compliant card file models are designated either an HPMM card file or an IOP card file because even though their is no electrical difference in the backpanel, they differ mechanically. The addition of a ground plate and filtered IOP connectors in the two left-most slots prohibits the installation of an HPMM card set.

The card file is designated an IOP card file when the ground plate and filtered connectors are present.

The card file is designated an HPMM card file when the ground plate and filtered connectors are absent.

Conversion kit

A CE Compliant HPMM card file can be converted to an IOP card file with a model MU-ZPFI03 upgrade kit. The kit adds 2 filtered IOP adapter connectors to the two left-most card slots and a ground plate extension.

2.2.1 HPMM Card Files

Three types of HPM card files

There are three types of HPMM card files. The two left-most slots of each type are populated by the three assemblies that comprise the HPMM. The remaining slots accommodate IOPs.

If the card file is a non-CE Compliant card file, the two left-most slots of each type can also accommodate IOPs with no alterations. The card file is then designated an IOP card file.

HPMM description

The High-Performance Process Manager Module (HPMM) is composed of two card assemblies that install in the two left-most slots in a 7-Slot or 15-Slot card file, and a UCN interface module that mounts and connects to the 50-pin connector that is directly below the left-most card.

The three HPMM assemblies are identified as follows:

- High-Performance Communications/Control (High-Performance Comm/Control) card
- High-Performance I/O Link Interface (High-Performance I/O Link) card
- High-Performance UCN Interface (HPM UCN Interface) module

The HPM UCN Interface module connects to the 50-pin connector below the High-Performance Comm/Control card.

Left 7-Slot HPMM card file description

The Left 7-Slot card file accepts the two HPMM cards and the HPM UCN Interface module that comprise the HPMM, and accommodates up to five IOP cards. The card slots are numbered 1 through 7, starting at the left-most position.

The High-Performance Comm/Control and High-Performance I/O Link cards occupy slots 1 and 2, while the HPM UCN Interface module mounts below slot 1 and connects to its 50-pin connector.

Slots 3 through 7 can accommodate IOP cards. The IOP card slots assume numerical I/O Link Interface addresses of 3 through 7 and binary I/O Link Interface addresses of 2 through 6.

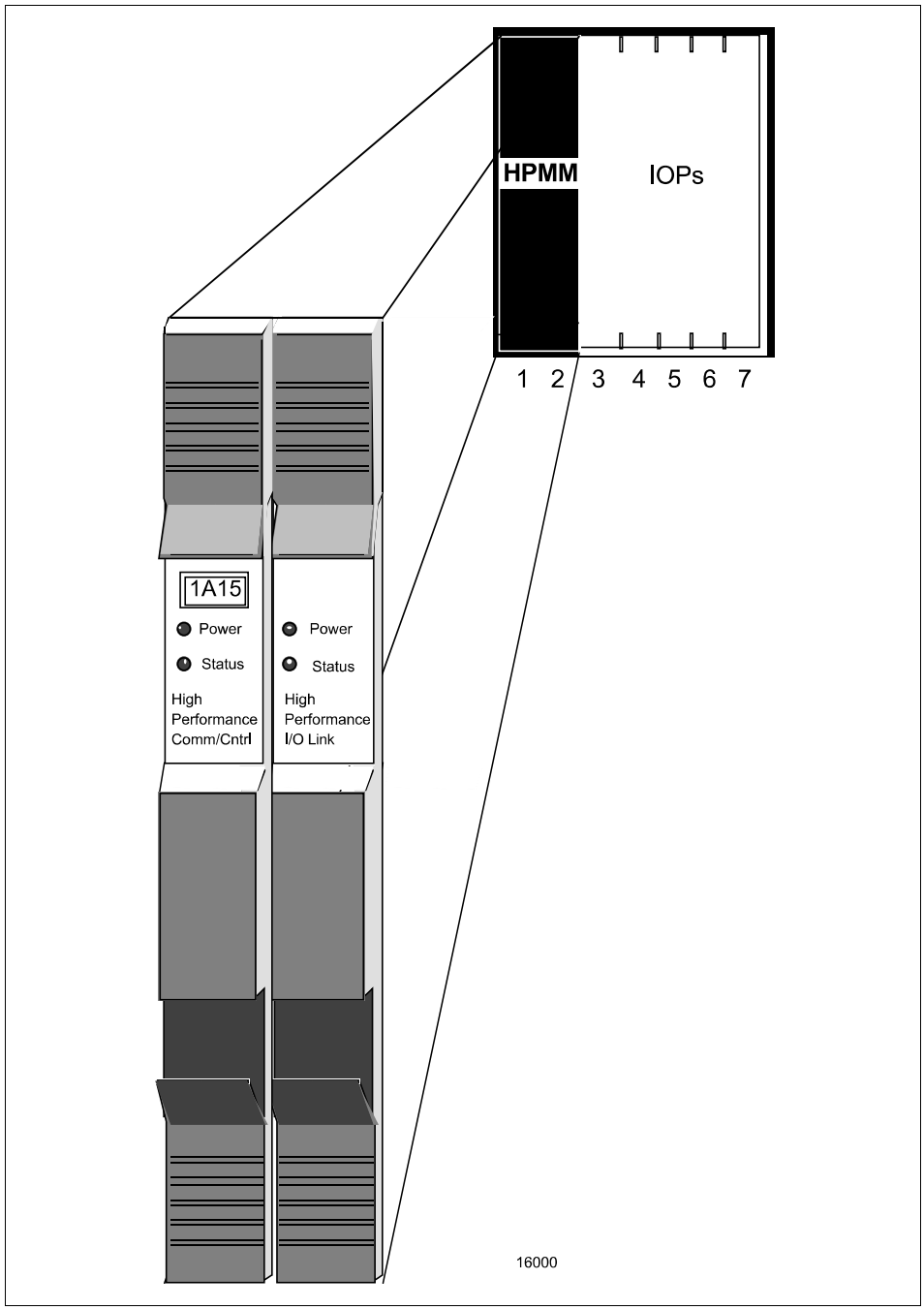
Continued on next page

2.2.1 HPMM Card Files, Continued

Left 7-Slot HPMM card file illustration

Figure 2-2 is an illustration of a Left 7-Slot HPMM card file and the two HPMM cards that occupy slots 1 and 2.

Figure 2-2 Left 7-Slot HPMM Card File



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2.2.1 HPMM Card Files, Continued

Right 7-Slot HPMM card file description

The description of the Right 7-Slot HPMM card file is identical to the Left 7-Slot HPMM card file, except the two HPMM cards and the UCN interface module occupy slots 9 and 10. The card slots are numbered 9 through 15.

Slots 11 through 15 accommodate IOP cards. The IOP card slots assume numerical I/O Link Interface addresses of 11 through 15 and binary I/O Link Interface addresses of 10 through 14.

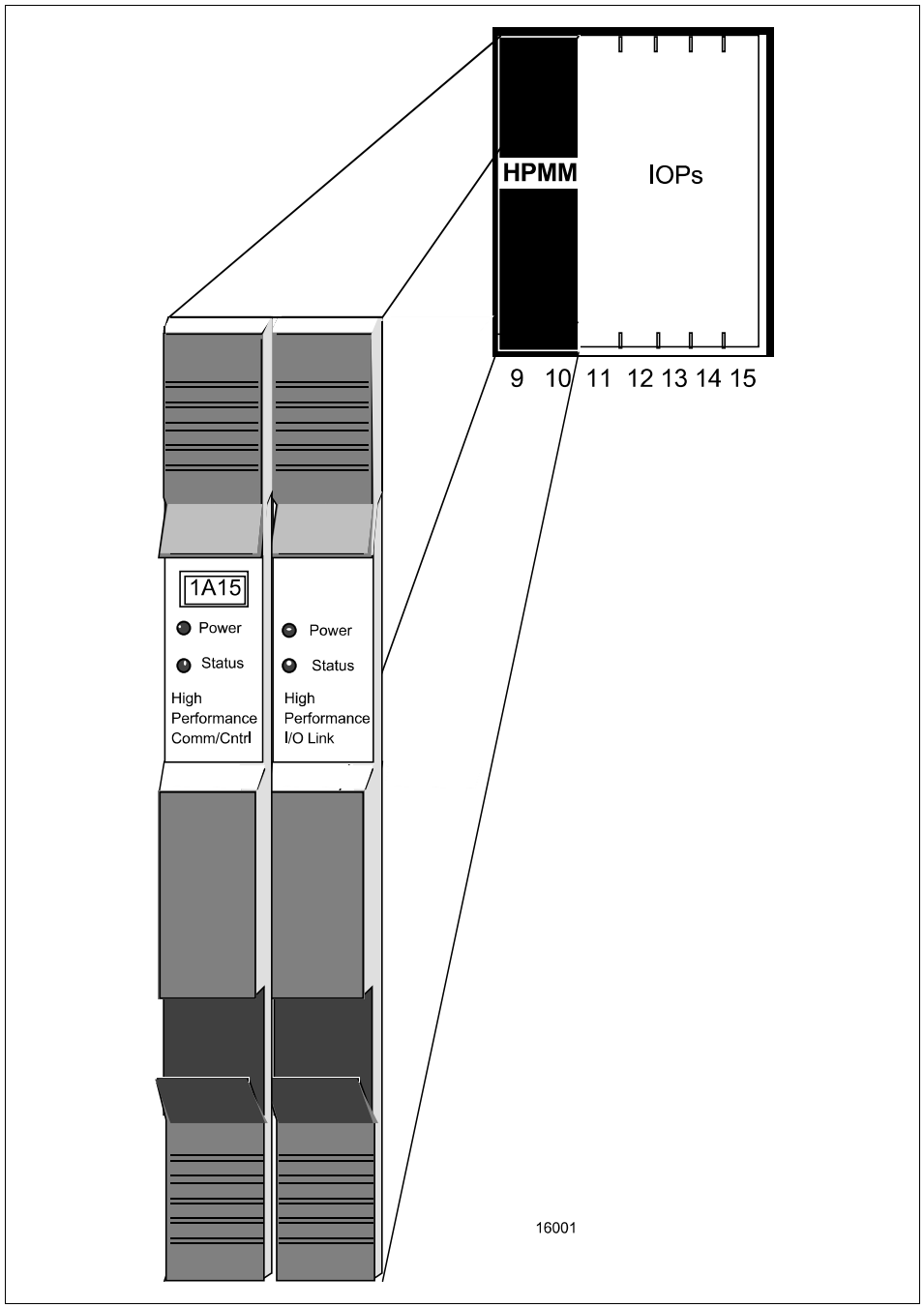
Continued on next page

2.2.1 HPMM Card Files, Continued

Right 7-Slot HPMM card file illustration

Figure 2-3 is an illustration of a Right 7-Slot HPMM card file and the two HPMM cards that occupy slots 9 and 10.

Figure 2-3 Right 7-Slot HPMM Card File



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2.2.1 HPMM Card Files, Continued

15-Slot HPMM card file description

The 15-Slot card file accepts the two HPMM cards and the UCN interface module that comprise the HPMM, and accommodates up to thirteen IOP cards. The card slots are numbered 1 through 15, starting at the left-most position.

The High-Performance Comm/Control and High-Performance I/O Link cards occupy slots 1 and 2, while the HPM UCN Interface module mounts below slot 1 in its 50-pin connector.

Slots 3 through 15 can accommodate IOP cards. The IOP card slots assume numerical I/O Link Interface addresses of 3 through 15 and binary I/O Link Interface addresses of 2 through 14.

When populated with the HPMM cards, the card file is designated a 15-Slot HPMM card file.

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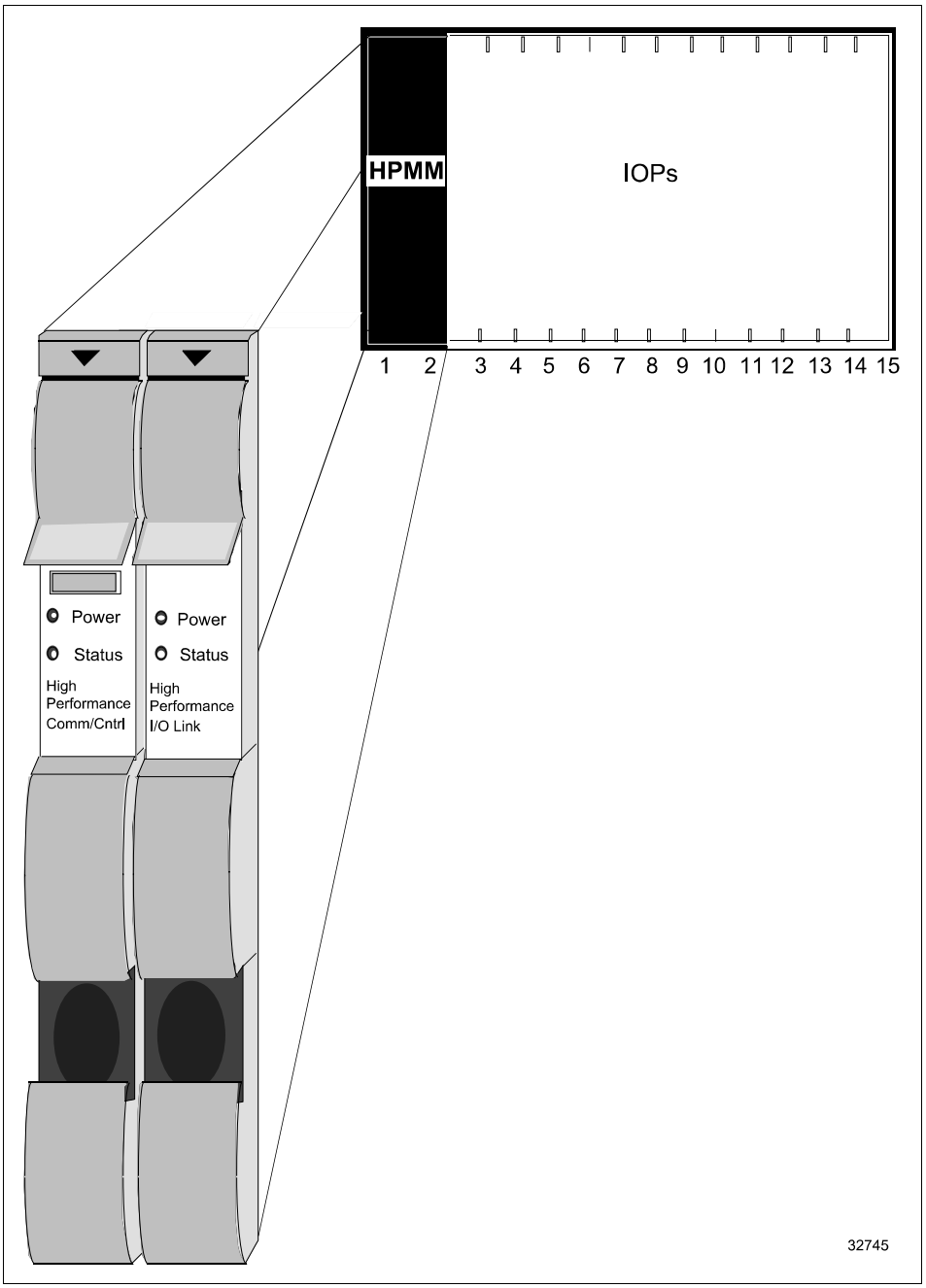
2.2.1 HPMM Card Files, Continued

15-Slot HPMM card file illustration

Figure 2-4 is an illustration of a 15-Slot HPMM card file and the two HPMM cards that occupy slots 1 and 2.

Figure 2-4 15-Slot HPMM Card File



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2.2.1 HPMM Card Files, Continued

7-Slot HPMM card file usage

The two types of 7-Slot HPMM card files are intended to be used in a small HPM subsystem.

When the subsystem consists of nonredundant HPMMs, a Left 7-Slot HPMM card file must be installed. For a subsystem that requires redundant HPMMs, Left and Right 7-Slot HPMM card files are installed. Both card files are assigned the same the same I/O Link Interface address. There is no slot 8 because the card file slots are numbered 1 through 7 and 9 through 15.

15-Slot HPMM card file usage

The 15-Slot HPMM card file is intended for use in a larger HPM subsystem, either with nonredundant or redundant HPMMs. Unlike the 7-Slot HPMM card file, there is no “loss” of a card slot.

HPMM functionality

The HPMM provides the following functions:

- Communications with the Local Control Network (LCN) Network Interface Module (NIM) through the Universal Control Network (UCN)
- A Communications processor (Motorola 68LC040)
- Communications through the I/O Link Interface with Input/Output Processors (IOPs) and I/O Link Extenders
- A Control processor (Motorola 68040)
- Separate and shared memory for the Communications and Control processors
- An I/O Link processor (Intel 80C32) with SRAM
- HPMM redundancy control

2.2.2 Input/Output Processor (IOP) Card Files

IOP card file descriptions

The 7-Slot and 15-Slot IOP card files are electrically identical to the HPMM card files, except that an HPMM card set is not installed in the card file. IOPs can be installed in the two left-most card slots.

Non-CE Compliant card files

Non-CE Compliant HPMM and IOP card files differ only in the application. Electrically and mechanically, their backpanels are the same. The card file model numbers are the same.

CE Compliant card files

CE Compliant HPMM and IOP card files differ mechanically. IOP card files have filtered IOP connectors and connector ground plates. Electrically, their backpanels are the same. The card file model numbers are different.

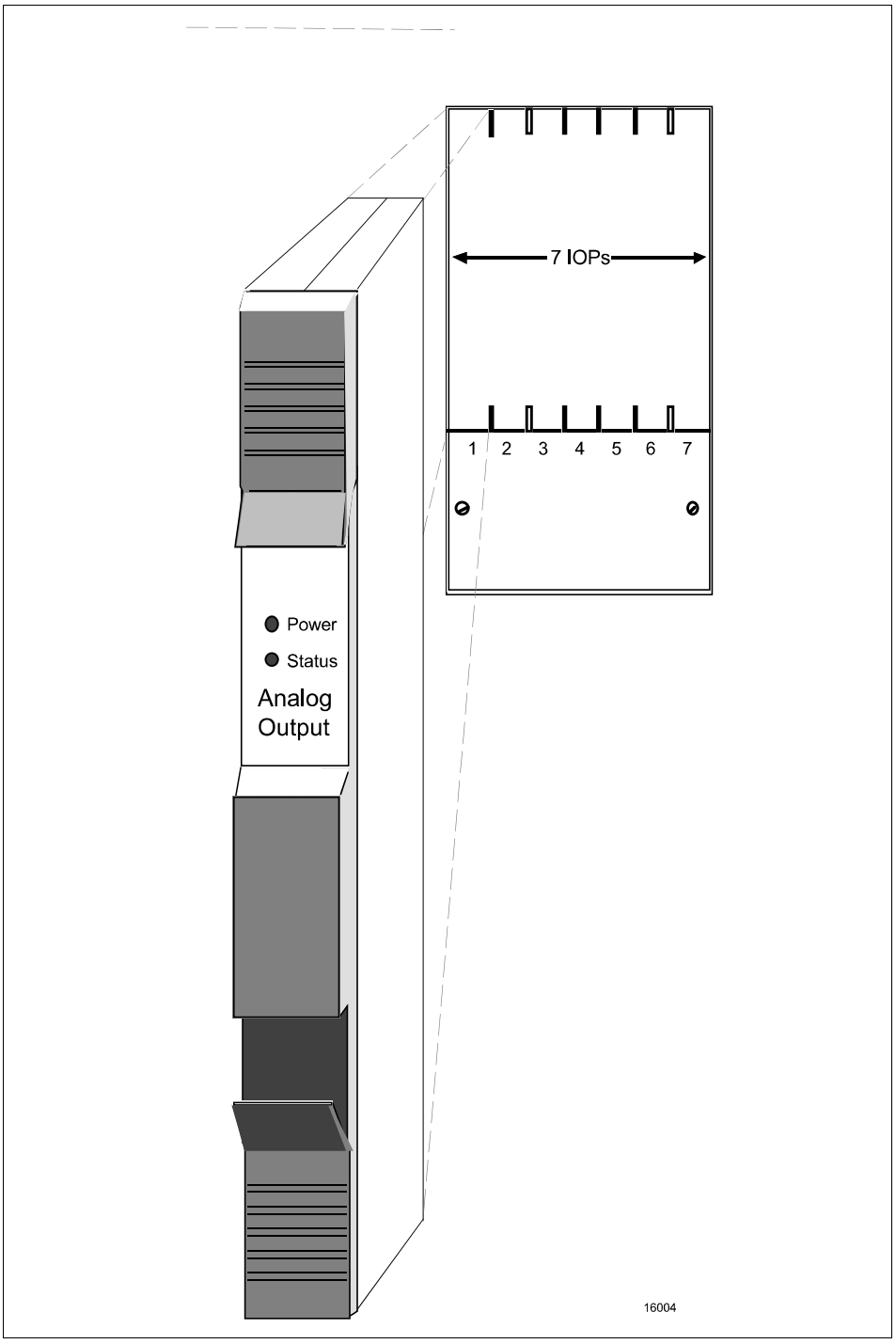
Continued on next page

2.2.2 Input/Output Processor (IOP) Card Files, Continued

Left 7-Slot IOP card file

Figure 2-5 illustrates a Left 7-Slot IOP card file.

Figure 2-5 Left 7-Slot IOP Card File



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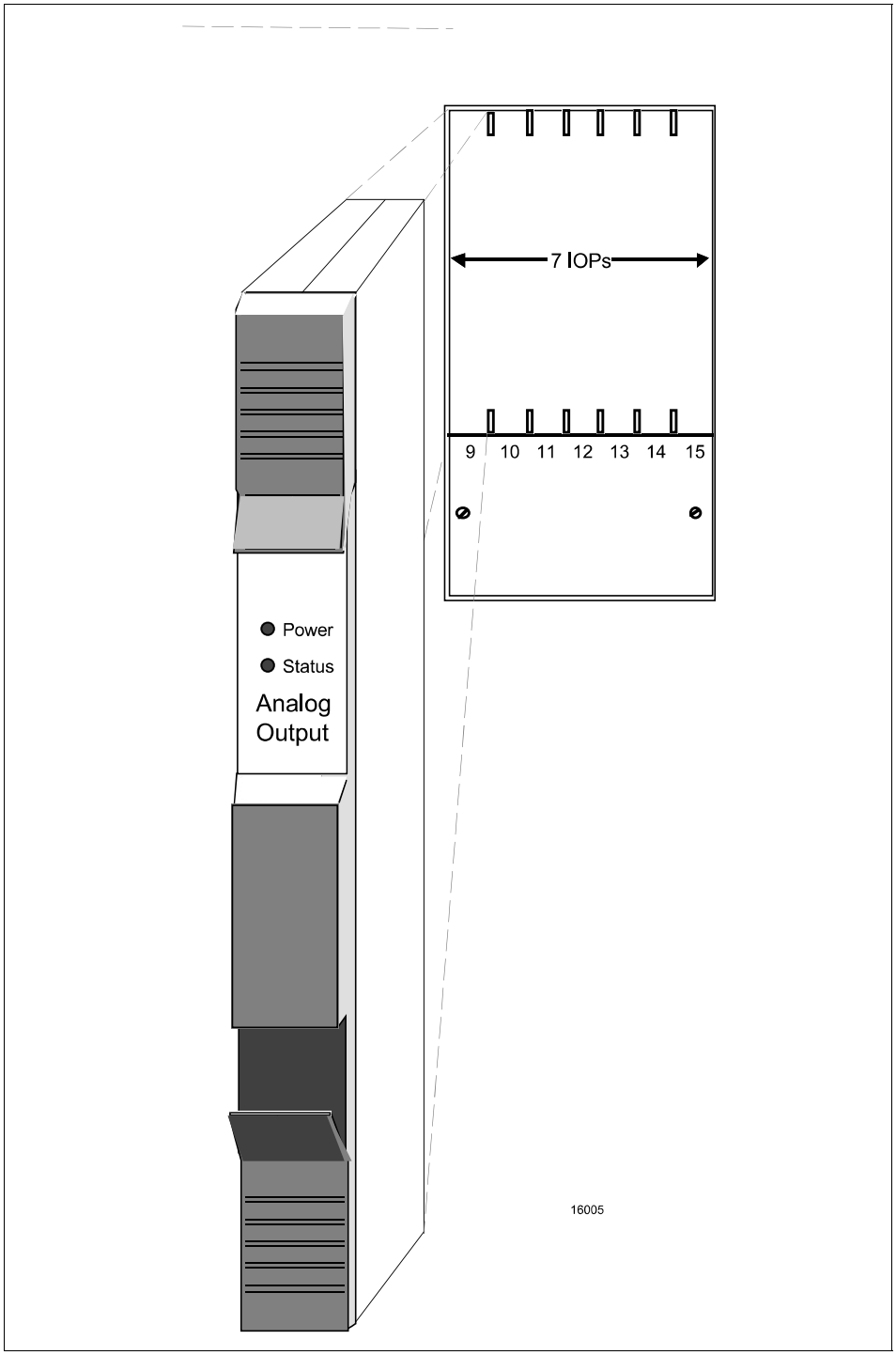
2.2.2 Input/Output Processor (IOP) Card Files, Continued

Right 7-Slot IOP card file

Figure 2-6 illustrates a Left 7-Slot IOP card file.

Figure 2-6 Right 7-Slot IOP Card File



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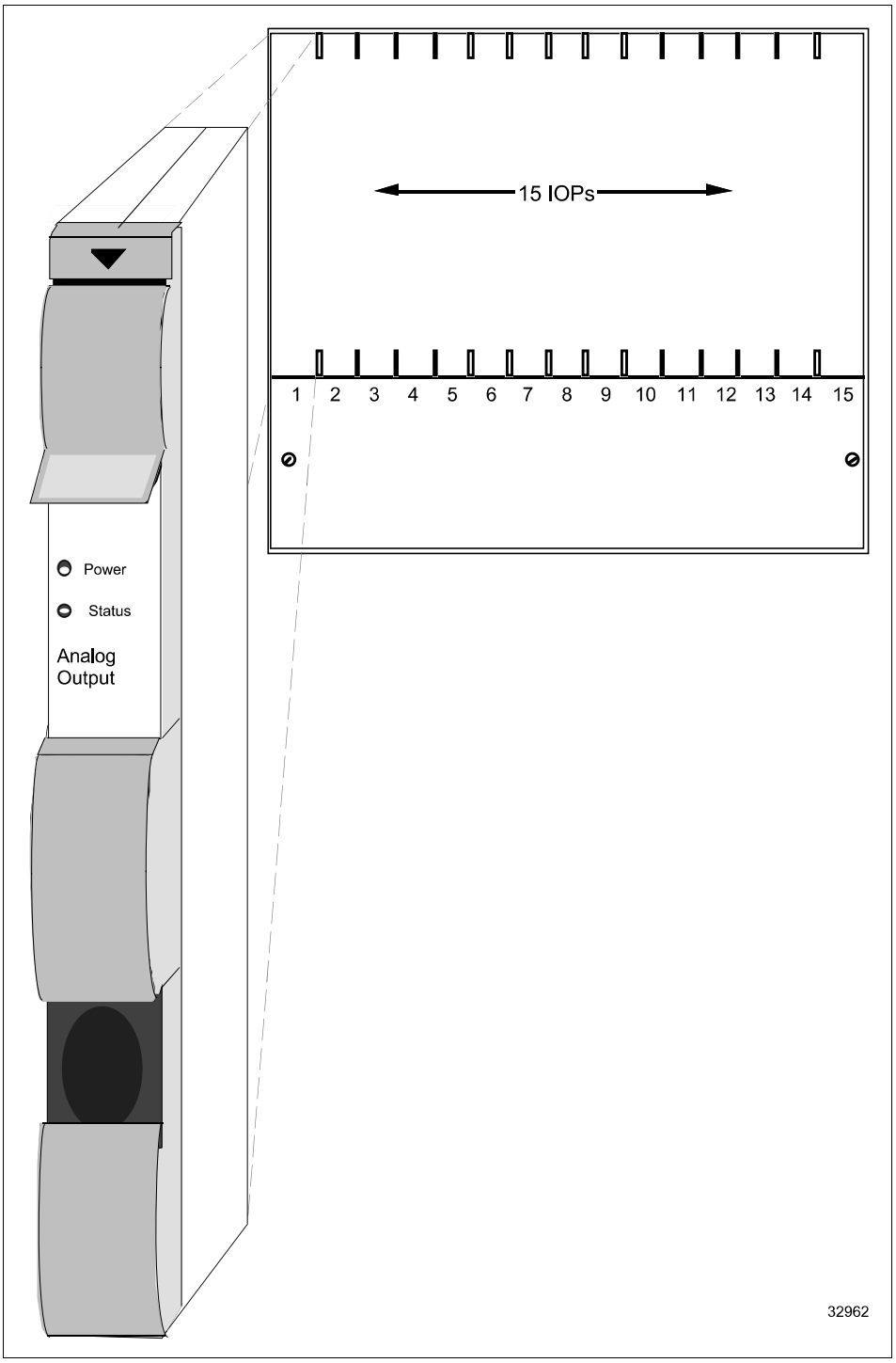
2.2.2 Input/Output Processor (IOP) Card Files, Continued

15-Slot IOP card file

Figure 2-7 illustrates a 15-Slot IOP card file.

Figure 2-7 15-Slot IOP Card File



2.3 Input/Output Processor (IOP) Cards

Types of Input/Output Processors (IOPs)

There are thirteen types of Input/Output Processor (IOP) card assemblies. Some IOP card types interface with more than one type of Field Termination Assembly (FTA). The functional types of IOPs are

- High Level Analog Input (HLAI)
- Low Level Analog Input (LLAI)
- Low Level Analog Multiplexer (LLMux)
- Remote Hardened Low Level Analog Multiplexer (RHMUX)
- Digital Input (DI)
- Analog Output (AO)
- Digital Output (DO)
- Smart Transmitter Interface (STI)
- Smart Transmitter Interface Multivariable (STIM)
- Pulse Input (PI)
- Digital Input Sequence of Events (DISOE)
- Serial Device Interface (SDI)
- Serial Interface (SI)

Card file configurations

Additional IOP card file slots can be added to any High-Performance Process Manager subsystem. Each IOP card file accommodates up to 7 or 15 IOPs as illustrated in Figures 2-5 through 2-7. A total of eight 15-Slot card files or 7-Slot card file pairs (Left and Right), including HPMM card files, can exist in a High-Performance Process Manager subsystem. However, the limit is eight because each 15-Slot card file and pair of 7-Slot card files must be assigned an I/O Link Interface address between 0 and 7.

IOP card files can be installed at remote locations with the use of fiber optic I/O Link Extenders, as well as locally in the cabinet or cabinet complex containing the HPMM card file(s).

A total of 40 primary IOPs, 40 secondary (redundant) IOPs, and 3 I/O Link Extenders (a maximum of 8 I/O Link Extender cards) can exist in a single High-Performance Process Manager subsystem.

2.3.1 IOP Redundancy

IOP redundancy

The HPM subsystem supports IOP redundancy for the following types of IOPs:

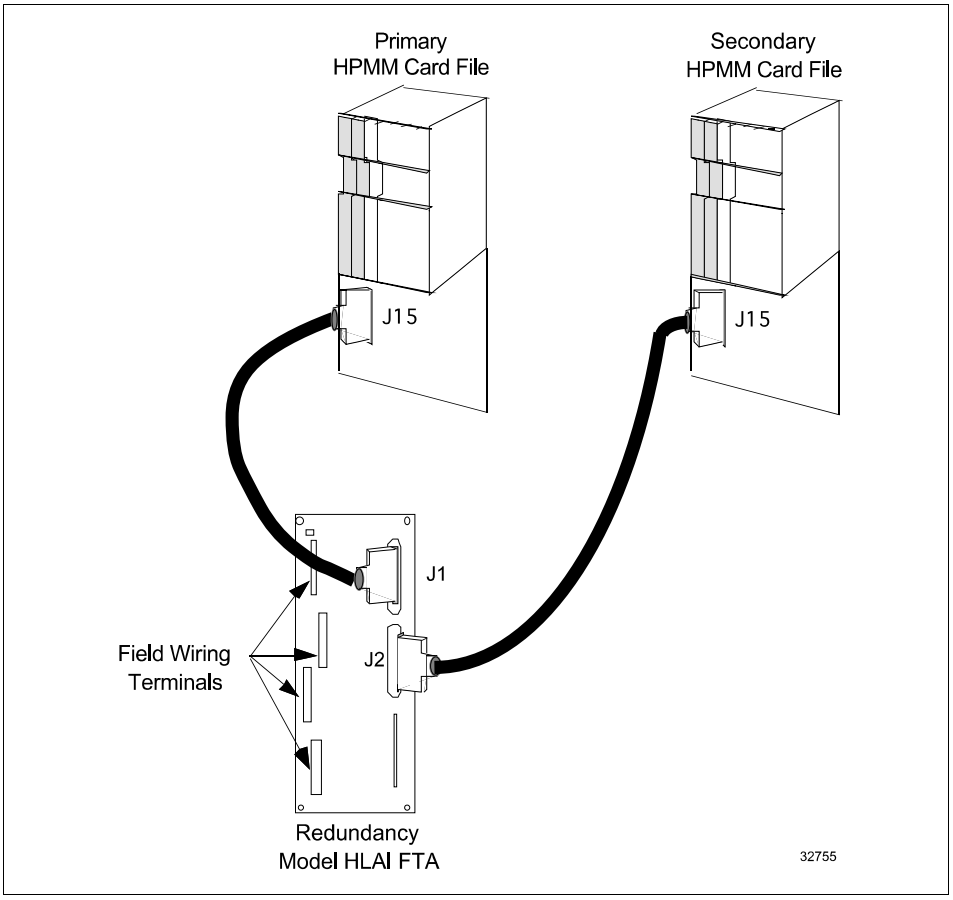
- High Level Analog Input (HLAI)
- Smart Transmitter Interface (STI or STIM)
- Analog Output (AO)
- Digital Input (DI)
- Digital Input Sequence of Events (DISOE)
- Digital Output (DO)

Presently, not all Digital Input and Digital Output IOP models support redundancy.

Redundant HLAI IOPs

A pair of IOPs can be connected in a redundant configuration with both IOPs connected by separate cables to the same FTA. Figure 2-8 illustrates an HLAI FTA that interfaces with a pair of HLAI IOPs that are installed in separate card files.

Figure 2-8 HLAI FTA with Redundant HLAI IOPs



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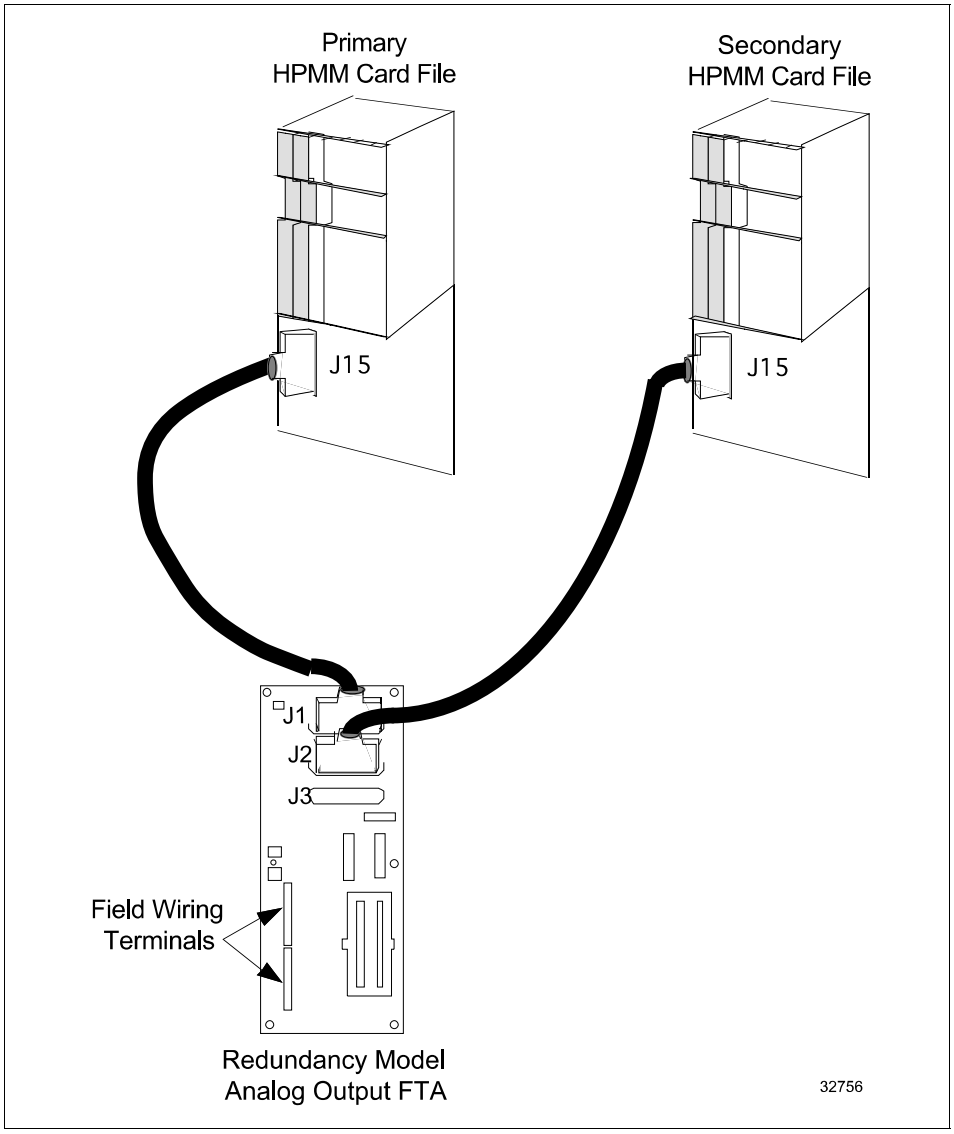
Redundant AO IOPs

Output type FTAs can also interface with two IOPs with separate cables, and an automatic selector switch on the FTA selects which IOP's output drives the field wiring terminal connectors on the FTA. Figure 2-9 is an illustration of an Analog Output (AO) FTA interface with two Analog Output IOPs.

Figure 2-9 Analog Output FTA with Redundant Analog Output IOPs



2.4 I/O Link Extender (Fiber Optic Link)

Introduction

The I/O Link Extender provides the ability to locate 7-Slot or 15-Slot IOP card files and associated FTAs up to 8 kilometers (5 miles) from the HPMM(s). Two types of I/O Link Extenders and their associated fiber optic couplers are available, the "Standard" I/O Link Extender that provides up to a 1.3 kilometer (4000 feet) link, and the "Long Distance" I/O Link Extender which provides up to an 8 kilometers (5 miles) link. The connection is made using a pair of fiber optic transmission cables, driven and terminated by a fiber optic coupler that mates with the connector located directly below the card file slot in which the I/O Link Extender card is installed.

Features

An I/O Link Extender consists of two pairs I/O Link Extender cards, one for Link A and one for Link B, and associated fiber optic couplers at each end of the fiber optic link. The I/O Link Extender cards and their fiber optic couplers occupy two slots in an HPMM or IOP card file.

Remote card files

Every remote card file, or complex of IOP card files, requires two I/O Link Extender cards and two fiber optic couplers, one for Link A and one for Link B.

Fiber optic cable length

The maximum fiber optic cable length is dependent upon the number of splices and quality of the cable (dB loss per meter of cable). This maximum can be between 0.98 and 1.3 kilometers for the Standard I/O Link Extender and 8 kilometers for the Long Distance I/O Link Extender.

I/O Link Extender planning

I/O Link Extender planning can be found in Section 11 in this manual.

Standard I/O Link Extender

Each Standard I/O Link Extender card has an associated fiber optic coupler that can drive up to three pair of fiber optic cables. Each cable pair is terminated by a fiber optic coupler that terminates one fiber optic pair.

The Standard I/O Link Extender card will drive and terminate Link A or Link B, depending upon the card file number and slot number number. If the card file number and slot number number are both odd or both even, the card will drive Link A. If the card file number and slot number number are not both odd or both even, the card will drive Link B.

Two Standard I/O Link Extender cards, connecting up to six remote card files, can be installed in a HPMM card file, but the maximum number of primary IOPs is still 40 (plus 40 redundant IOPs).

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Conformally coated model list, continued

Table 6-3 Conformally Coated Assembly Model Numbers, Continued

Model Number	Non CE Compliant Part Number	CE Compliant Part Number	Description
Standard FTAs, continued			
MC-TDOY23	80366189-150	80366189-175	240 Vac/125 Vdc Relay Digital Output with comp term
MC-TDOY63	80366185-150	80366185-175	240 Vac/125 Vdc Relay Digital Output with screw term
MC-TDPR02	51304425-150	51304425-175	Digital Input Power Distribution Assembly
MC-TLPA02	51304467-150	51309204-175	Power Adapter
MC-TPIX12	51304084-150	51304084-175	Pulse Input with compression terminals
MC-TPIX52	51304084-250	51304084-275	Pulse Input with screw terminals
MC-TSDM02	51303932-252	N/A	Serial Device Interface—Manual/Auto Station
MC-TSDT02	51303932-251	N/A	Serial Device Interface—Toledo Weigh Cell
MC-TSDU02	51303932-253	N/A	Serial Device Interface—UDC 6000 Modbus
MC-TSIA12	51303932-453	51303932-478	Serial Interface—Allen-Bradley
MC-TSIM12	51303932-451	51303932-476	Serial Interface—Modbus EIA-232
Galvanically Isolated FTAs			
MC-GRMT01	N/A	51404106-175	RHMUX Analog Input with local CJR, screw term
MC-GRPA01	N/A	51304724-175	RHMUX GI/IS Power Adapter with compression term
MC-TRPA01	N/A	51304722-175	RHMUX GI/NI Power Adapter with compression term
MC-GAIH12	51304636-150	N/A	High Level Analog Input with compression terminals
MC-GAIH13	51304718-150	51304718-175	High Level Analog Input/STI with compression term
MC-GAIH14	51304730-150	51304730-175	High Level Analog Input/STI with compression term
MC-GAIH22	51304748-150	51304748-175	High Level Analog Input with compression terminals
MC-GAIH82	51304636-350	N/A	High Level Analog Input with crimp terminals
MC-GAIH83	51304718-350	51304718-375	High Level Analog Input/STI with crimp terminals
MC-GAIH84	51304730-350	51304730-375	High Level Analog Input/STI with crimp terminals
MC-GAIH92	51304748-350	51304748-375	High Level Analog Input with crimp terminals
MC-GAOX02	51304638-150	51304638-175	Nonredundant Analog Output with compression term

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Conformally coated FTAs, continued

Table 7-5 Field Termination Assemblies—Conformally Coated, Continued

FTA Type	Model Number	Non-CE Compliant Part Number	CE Compliant Part Number
3-30 Vdc SS DO	MC-TDOD53	51304650-250	N/A
3-30 Vdc SS DO	MC-TDOD54	N/A	51309153-275
31-200 Vac SS DO	MC-TDOD22	51304428-150	N/A
31-200 Vac SS DO	MC-TDOD23	N/A	51309154-175
31-200 Vac SS DO	MC-TDOD62	51304428-250	N/A
31-200 Vac SS DO	MC-TDOD63	N/A	51309154-275
120/240 Vac SS DO	MC-TDOA12	51304408-150	N/A
120/240 Vac SS DO	MC-TDOA13	51304648-150	51304648-175
120/240 Vac SS DO	MC-TDOA52	51304408-250	N/A
120/240 Vac SS DO	MC-TDOA53	51304648-250	51304648-275
120 Vac/125 Vdc Relay DO	MC-TDOR12	51304443-150	51309148-175
120 Vac/125 Vdc Relay DO	MC-TDOR52	51304443-250	51309148-275
240 Vac/125 Vdc Relay DO	MC-TDOR22	51304427-150	51309150-175
240 Vac/125 Vdc Relay DO	MC-TDOR62	51304427-250	51309150-275
240 Vac/125 Vdc Relay DO	MC TDOY23	80366189-150	80366189-175
240 Vac/125 Vdc Relay DO	MC TDOY63	80366185-150	80366185-175
PI	MC-TPIX12	51304084-150	51304084-175
PI	MC-TPIX52	51304084-250	51304084-275
SDI—Toledo	MC-TSDT02	51303932-251	N/A
SDI—Manual/Auto	MC-TSDM02	51303932-252	N/A
SDI—Toledo	MC-TSDU02	51303932-253	N/A
SI—Modbus	MC-TSIM12	51303932-451	51303932-476
SI—Allen-Bradley	MC-TSIA12	51303932-453	51303932-478
Power Adapter	MC-TLPA02	51304467-150	51309204-175

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