Honeywell

# High-Performance Process Manager Planning

HP02-500

TotalPlant

# Section 2 – HPM Description

## 2.1 Overview

**Section contents**

The topics covered in this section are:



**HPM major assemblies**

The High-Performance Process Manager subsystem (HPM) consists of major assemblies described in the following subsections. The major High-Performance Process Manager assemblies are

- High-Performance Process Manager Module (HPMM) card file
- Input/Output Processor (IOP) card file
- Input/Output Processor (IOP) card
- I/O Link Extender
- Field Termination Assembly (FTA)
- Power System

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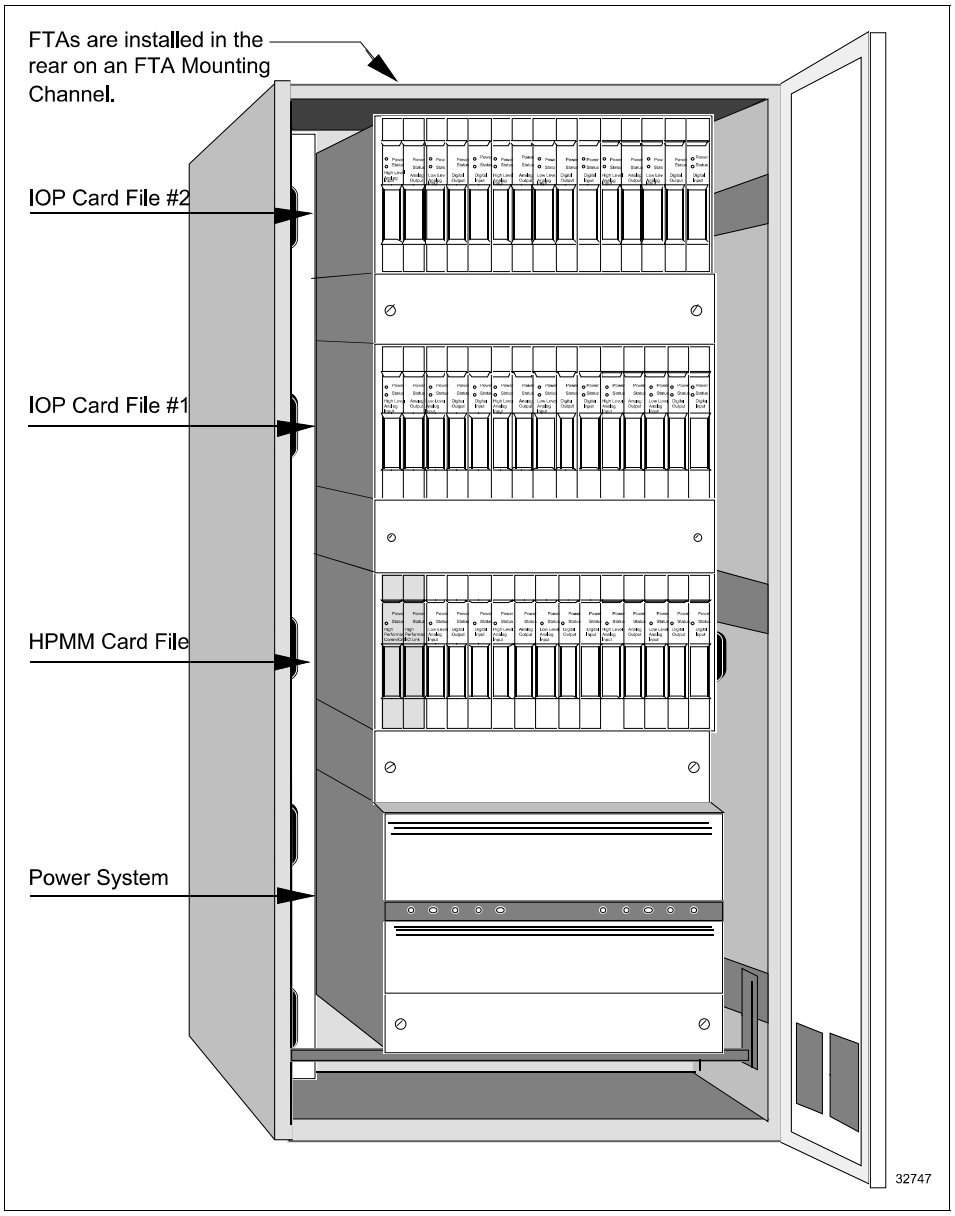
**Nonredundant HPM cabinet layout**

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.

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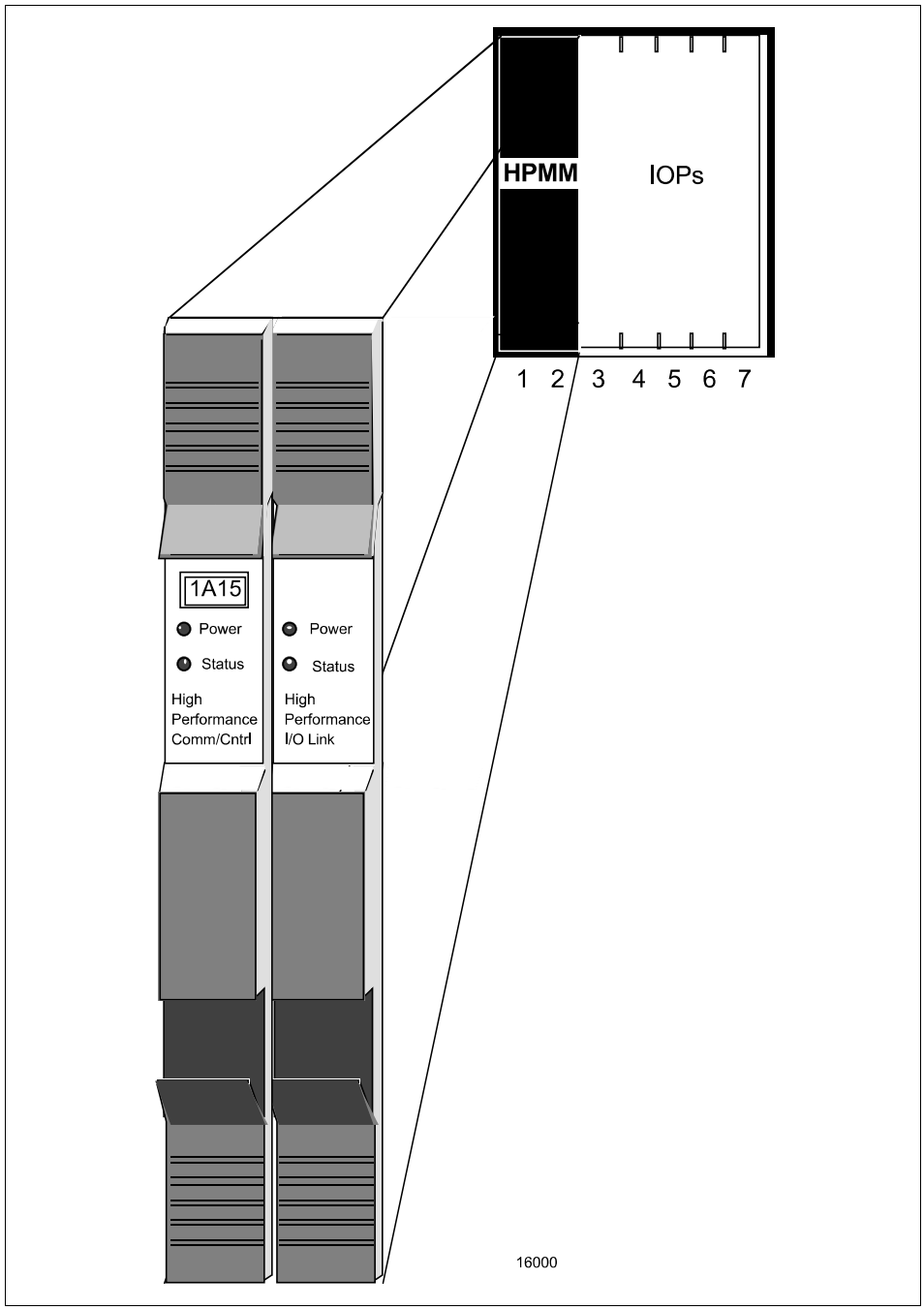
## 2.2.1 HPMM Card Files, Continued

**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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## 3.4.1 Typical 24 Vdc Power Draw Calculations, Continued

**Assembly 24 Vdc power usage**

Table 3-1 is a list of the power usage for High-Performance Process Manager assemblies.

Table 3-1 HPM Assembly 24 Vdc Power Usage

| Description | Model Number | Channels | Assembly Current (Milliamps) |
|---|---|---|---|
| Left 7-Slot Card File—Slots 1-7, non-CE Compliant | MU-HPFH01 | N/A | 0 |
| Left 7-Slot HPMM Card File—Slots 1-7, CE Compliant | MU-HPFH03 | N/A | 0 |
| Right 7-Slot Card File—Slots 9-15, non-CE Compliant | MU-HPFH11 | N/A | 0 |
| Right 7-Slot HPMM Card File—Slots 9-15, CE Compliant | MU-HPFH13 | N/A | 0 |
| 15-Slot Card File—Slots 1-15, non-CE Compliant | MU-HPFX02 | N/A | 0 |
| 15-Slot HPMM Card File—Slots 1-15, CE Compliant | MU-HPFX03 | N/A | 0 |
| Left 7-Slot IOP Card File—Slots 1-7, CE Compliant | MU-HPFI03 | N/A | 0 |
| Right 7-Slot IOP Card File—Slots 9-15, CE Compliant | MU-HPFI13 | N/A | 0 |
| 15-Slot IOP Card File—Slots 1-15, CE Compliant | MU-HPFI23 | N/A | 0 |
| IOP Card File | MU-IOFX02 | N/A | 0 |
| Nonredundant HPMM Card Set | MU-HPMS01 | N/A | 1375 |
| Redundant HPMM Card Set | MU-HPMR01 | N/A | 2700 |
| LLAI IOP Card | MU-PAIL02 | 8 | 58 |
| LLMux IOP Card | MU-PLAM02 | 16 | 70 |
| RHMUX IOP Card (requires an IS or NI Power Adapter) | MU-PRHM01 | 32 | 100 |
| HLAI IOP Card | MU-PAIH02 | 16 | 183 |
| HLAI IOP Card | MU-PAIH03 | 16 | 155 |
| STI IOP Card | MU-PSTX02 | 16 | 100 |
| STIM IOP Card | MU-PSTX03 | 16 | 100 |
| AO IOP Card | MU-PAOX02 | 8 | 100 |
| AO IOP Card | MU-PAOX03 | 8 | 100 |
| AO IOP Card | MU-PAOY22 | 16 | 112 |
| DI IOP Card | MU-PDIX02 | 32 | 90 |
| DI IOP Card | MU-PDIY22 | 32 | 89 |
| DISOE IOP Card | MU-PDIS11 | 32 | 210 |
| DISOE IOP Card | MU-PDIS12 | 32 | 210 |
| DO IOP Card | MU-PDOX02 | 16 | 64 |
| DO IOP Card | MU-PDOY22 | 32 | 98 |

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## 5.3 Mounting and Operating the HPM in a Division 2 Location, Continued

**Approved Division 2 area equipment**

Table 5-2 lists the High-Performance Process Manager equipment that is approved for operation in Division 2 areas.

Table 5-2 HPM Equipment Approved for Use in a Division 2 Area

| Model Number | Description |
|---|---|
| **IOPs** | |
| MU-PAIH03 | High Level Analog Input (HLAI) |
| MU-PAIL02 | Low level Analog Input (LLAI) |
| MU-PAOX03 | Analog Output (AO) |
| MU-PAOY22 | Analog Output (AO) |
| MU-PDIS12 | Digital Input Sequence of Events (DI) |
| MU-PDIX02 | Digital Input (DI) |
| MU-PDIY22 | Digital Input (DI) |
| MU-PDOX02 | Digital Output (DO) |
| MU-PDOY22 | Digital Output (DO) |
| MU-PLAM02 | Low Level Multiplexer (LLMux) |
| MU-PRHM01 | Remote Hardened Low Level Multiplexer (RHMUX) |
| MU-PPIX02 | Pulse Input (PI) |
| MU-PSDX02 | Serial Device Interface (SDI) |
| MU-PSIM11 | Serial Interface (SI) |
| MU-PSTX03 | Smart Transmitter Interface (STIM) |

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**Nonconformally coated IOPs**

Table 7-2 lists the model numbers of the CE Compliant and non-CE Compliant IOP cards that are not conformally coated. Model numbers and part numbers identify the assemblies.

Table 7-2 IOPs—Nonconformally Coated

| IOP Type | Model Number | Non-CE Compliant Part Number | CE Compliant Part Number |
|---|---|---|---|
| LLAI | MU-PAIL02 | N/A | 51304481-100 |
| LLMux | MU-PLAM02 | N/A | 51304362-100 |
| RHMUX | MU-PRHM01 | N/A | 51404109-125 |
| HLAI | MU-PAIH03 | N/A | 51304754-100 |
| STIM | MU-PSTX03 | N/A | 51304516-200 |
| AO | MU-PAOX03 | 51304672-100 | 51309152-125 |
| AO | MU-PAOY22 | N/A | 80363969-100 |
| DI | MU-PDIX02 | N/A | 51304485-100 |
| DI | MU-PDIY22 | N/A | 80363972-100 |
| DISOE | MU-PDIS12 | 51402625-125 | N/A |
| DO | MU-PDOX02 | N/A | 51304487-100 |
| DO | MU-PDOY22 | N/A | 80363975-100 |
| PI | MU-PPIX02 | N/A | 51304386-100 |
| SDI | MU-PSDX02 | N/A | 51304362-200 |
| SI | MU-PSIM11 | N/A | 51304362-300 |

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## 12.2 LLMux Version

### 12.2.1 LLMux Configurations

**CE Compliance**

All models of the Low Level Analog Input Multiplexer (LLMux) Field Termination Assemblies (FTAs), the Power Adapter, and its IOP can be used in a CE Compliant application. However, they must be used with the model MU-KFTSxx IOP to FTA cable and the IOP must be installed in a CE Compliant card file. Table 12-1 lists FTA, Power Adapter, and IOP model and part numbers.

Table 12-1 LLMux Assembles

| Model Number | Description | Part Number |
|---|---|---|
| MU-TAMR03 | LLMux RTD FTA | 51309218-125 |
| MC-TAMR03 | LLMux RTD FTA – Conformally Coated | 51309218-175 |
| MU-TAMT03 | LLMux TC FTA | 51309223-125 |
| MC-TAMT03 | LLMux TC FTA – Conformally Coated | 51309223-175 |
| MU-TAMT13 | LLMux TC FTA with Remote CJR | 51309213-125 |
| MC-TAMT13 | LLMux TC FTA with Remote CJR – Conformally Coated | 51309213-175 |
| MU-TLPA02 | Power Adapter | 51309204-125 |
| MC-TLPA02 | Power Adapter – Conformally Coated | 51309204-175 |
| MU-PLAM02 | LLMux IOP | 51304362-100 |
| MC-PLAM02 | LLMux IOP – Conformally Coated | 51304362-150 |

**Compatibility**

The LLMux assemblies are compatible only with each other. The assemblies are not compatible with the RHMUX assemblies that are discussed in subsection 12.3.

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## 12.2.1 LLMux Configurations, Continued

**Non-CE Compliance**

The FTAs and the Power Adapter can also be used for a non-CE Compliant applications.

**Conformal coating**

The LLMux FTA, Power Adapter, and IOP assemblies are available with conformal coating. See Table 12-1.

**Power Adapter**

A CE Compliant version of the model MU-TLPA02 Power Adapter (part number 51309204-125 or 51309204-175 ) must be used with the LLMux FTA models for CE Compliant applications.

**Description**

Figure 12-1 illustrates a Low Level Analog Input Multiplexer (LLMux) configuration.

In Figure 12-1, the LLMux FTA, model MU-TAMR03 or MU-TAMT03/13, communicates with a model MU-PLAM02 LLMux IOP through the model MU-TLPA02 Power Adapter. This can be a non-CE Compliant or CE-Compliant application depending upon the model of the card file that is used.

**Two types of LLMux FTAs**

The LLMux FTAs that connect to the Power Adapter can be either of two types of FTAs; the model MU-TAMT03/13 Thermocouple (TC) FTA or the model MU-TAMR03 Resistive Temperature Device (RTD) FTA. The combination of the FTA mother board and the daughter board determines the type of FTA.

The two LLMux FTAs that connect to the Power Adapter can be the same type, or different types.

**Two thermocouple LLMux FTAs**

There are two versions of the Thermocouple LLMux FTA. The model MU-TAMT03 FTA has a single local Cold Junction Reference (CJR) interface, while the model MU-TAMT13 FTA has a remote CJR interface. This allows the CJR to be located up to 50 meters (164 feet) from the FTA with the use of appropriate cabling.

**16 LLMux FTA channels**

Each type of LLMux FTA has 16 channels that accept low level analog inputs. Two LLMux FTAs connected to a Power Adapter provide 32 channel inputs to the LLMux IOP. This concept causes the LLMux to be known also as the 32 point LLMux.

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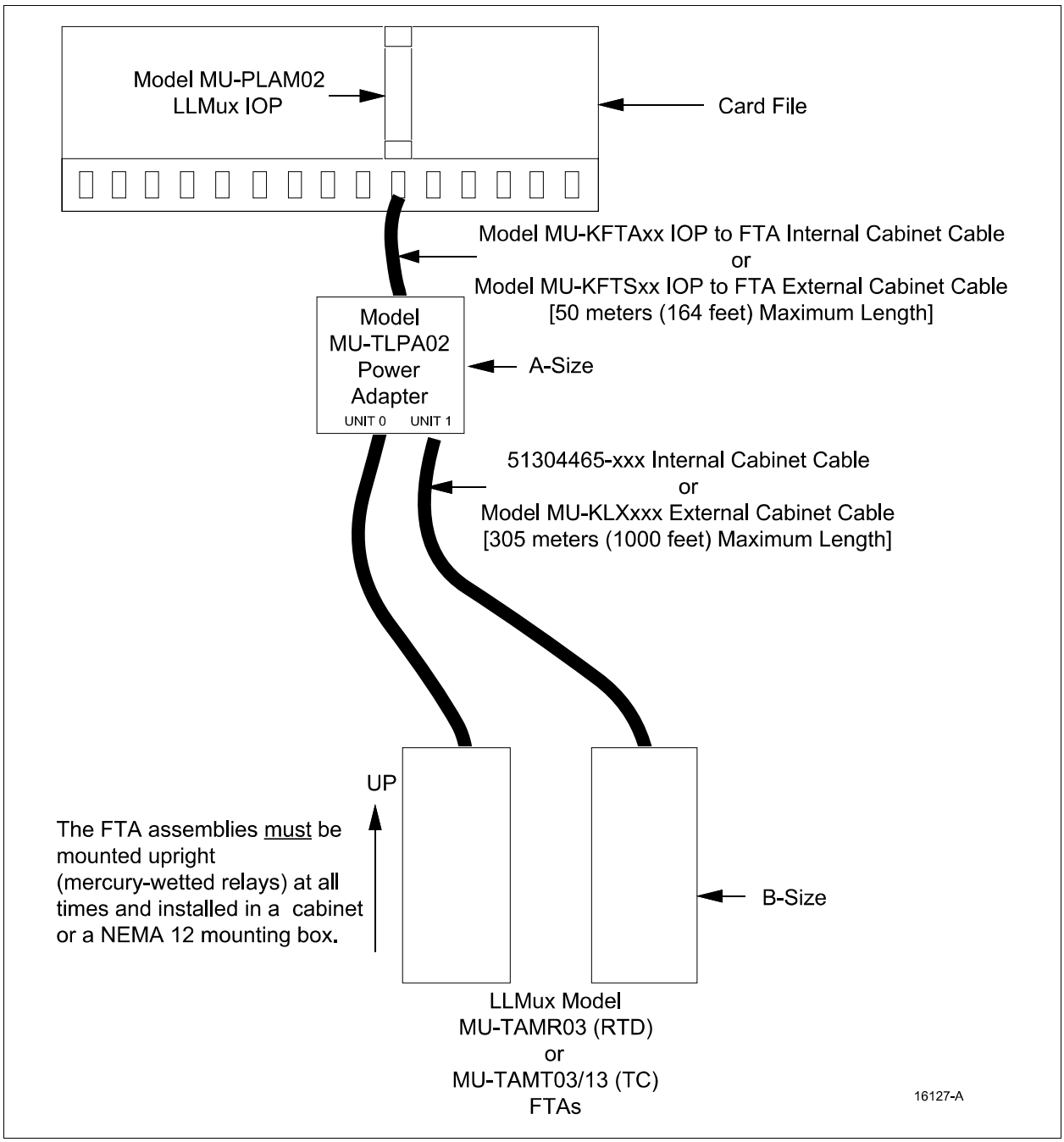
**CE Compliant LLMux configuration**

Figure 12-1 LLMux Configuration Interconnections – CE Compliant



## N, O



## P, Q



## R