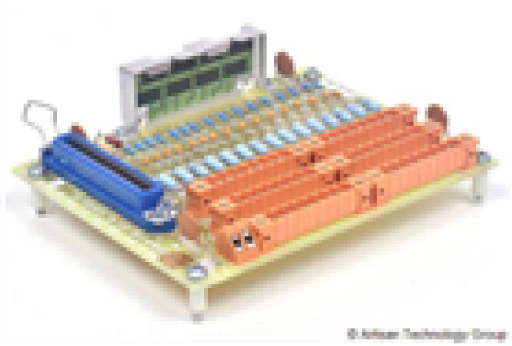
Honeywell MU-TAIH02

High Input Analog / STI Input Terminal Assembly



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HP02-500

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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

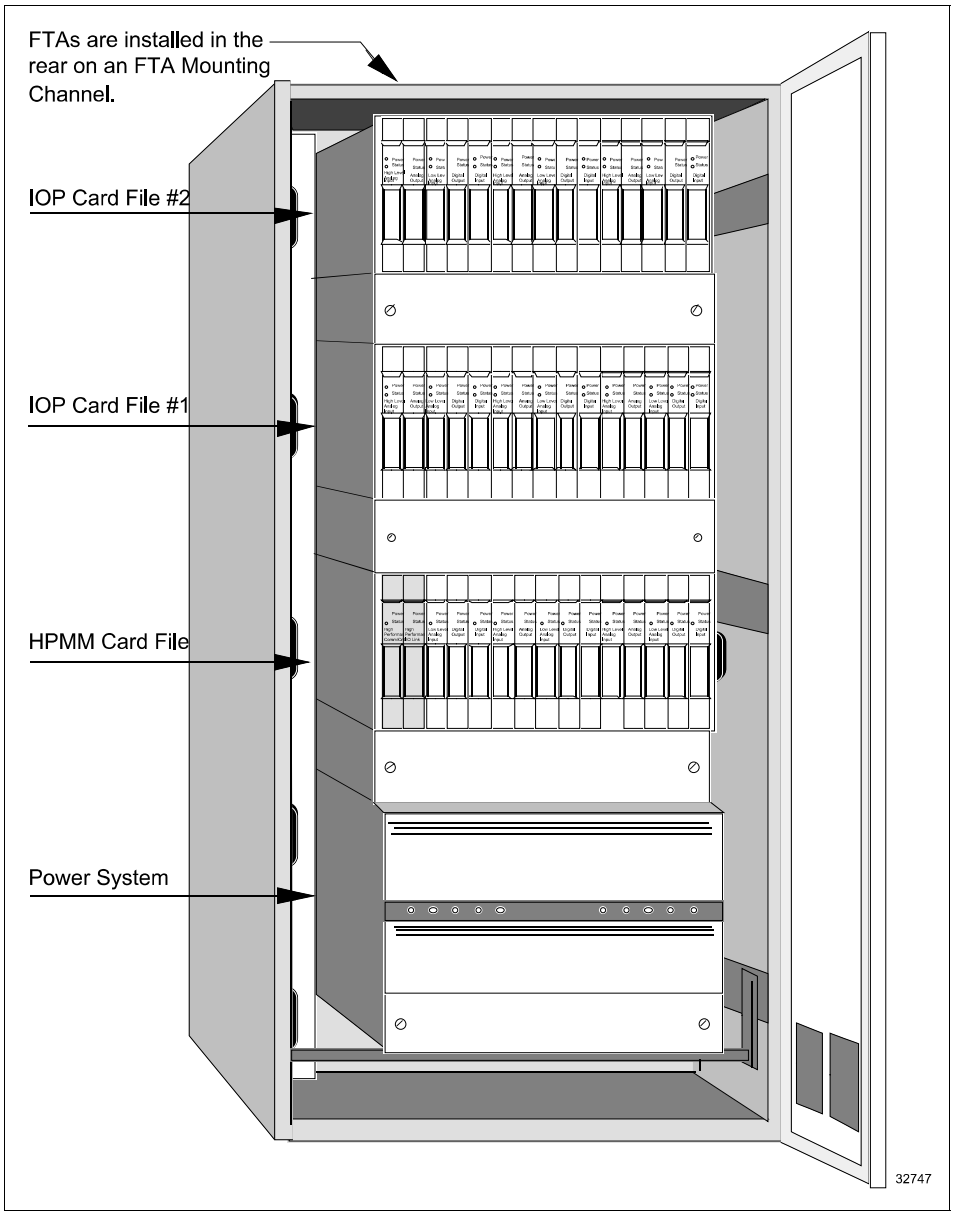
- High-Performance Process Manager Module (HPMM) card file
- Input/Output Processor (IOP) card file
- Input/Output Processor (IOP) card
- I/O Link Extender
- Field Termination Assembly (FTA)
- Power System

Continued on next page

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.

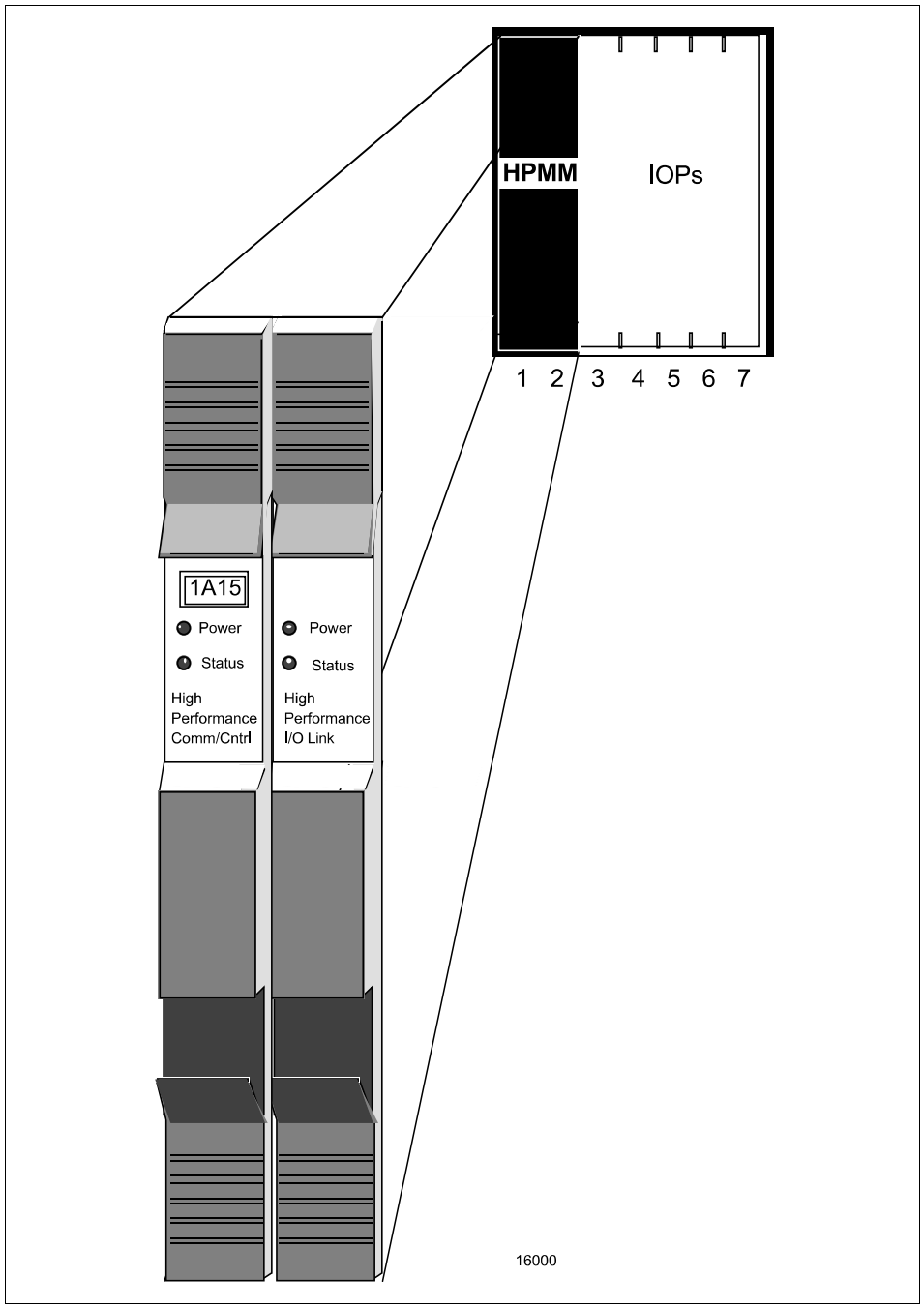
Continued on next page

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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Assembly 24 Vdc power usage, continued

Table 3-1 HPM Assembly 24 Vdc Power Usage, Continued

Description	Model Number	Channels	Assembly Current (Milliamps)
SDI FTA—Toledo Scale Cell	MU-TSDT02	1	65
SDI FTA—Manual/Auto Station	MU-TSDM02	1	65
SDI FTA—UDC6000	MU-TSDU02	1	65
Manual/Auto Station	MU-MASX02	N/A	800
SI FTA—Allen-Bradley	MU-TSIA12	1	65
SI FTA—Modbus	MU-TSIM12	1	65
Power Adapter (LLMux, SDI, SI FTAs)	MU-TLPA02	2	360
Galvanically Isolated HLAI FTA	MU-GAIH12/82	16	1200
Galvanically Isolated HLAI/STI FTA	MU-GAIH13/83	16	1200
Galvanically Isolated HLAI/STI FTA	MU-GAIH14/84	16	1200
Galvanically Isolated HLAI FTA	MU-GAIH22/92	16	1200
Galvanically Isolated AO FTA	MU-GAOX02/72	8	440
Galvanically Isolated AO FTA	MU-GAOX12/82	8	440
Galvanically Isolated 24 Vdc DI FTA	MU-GDID12/82	32	800
Galvanically Isolated 24 Vdc DI FTA	MU-GDID13/83	32	800
Galvanically Isolated 24 Vdc DO FTA	MU-GDOD12/82	16	1800
Galvanically Isolated 24 Vdc DO FTA	MU-GDOL12/82	16	1800
Combiner Panel	MU-GLFD02	N/A	0
Marshalling Panel	MU-GMAR02	N/A	0
Galvanic Isolation Power Distribution Assembly	MU-GPRD02	N/A	160
Long Distance I/O Link Extender Cards/Couplers	MU-ILDX02	N/A	300
Long Distance I/O Link Extender Cards/Couplers	MU-ILDX03	N/A	300
Standard I/O Link Extender Cards/Couplers	MU-IOLM02	N/A	196
Standard I/O Link Extender Cards/Couplers	MU-IOLX02	N/A	190
Analog Output Standby Manual with case	MU-SMAC02	4	250
Analog Output Standby Manual - Digital	51401926-100	8	2200
Digital Output Standby Manual with case	MU-SMDC02	16	70
Digital Output Standby Manual without case	MU-SMDX02	16	100

Standard FTAs, continued

Table 4-1 Standard FTAs and Associated Assemblies, Continued

Model Number	Description	Terminal Type	Channels	Mounting Size
MU-TSIM12	Serial Interface—Modbus RTU	C/DB-25	1	A
MU-TDPR01	Digital Input Power Distribution Assembly—16 outputs	S	N/A	A
MU-TDPR02	Digital Input Power Distribution Assembly—12 outputs	S	N/A	A
MU-TLPA02	Power Adapter (supports LLMux, SDI, and SI)	C	2	A

Galvanically Isolated FTAs

For Galvanically Isolated FTAs, the terminal connector types are compression (C) and crimp pin (CP). The Marshalling Panel has nonremovable screw (S) terminals.

Table 4-2 Galvanically Isolated FTAs and Associated Assemblies

Model Number	Description	Terminal Type	Channels	Mounting Size
MC-GRMT01	Remote Hardened Low Level Analog Input Multiplexer TC with Local CJR	S	16	Non Standard
MU-TRPA01 *	Remote Hardened Non-Incendive Power Adapter	C	2	B
MU-GRPA01 *	Remote Intrinsically Safe Power Adapter	C	2	A
MU-GAIH12	High Level Analog Input	C	16	B
MU-GAIH82	High Level Analog Input	CP	16	B
MU-GAIH13	High Level Analog Input/Smart Transmitter Interface	C	16	B
MU-GAIH83	High Level Analog Input/Smart Transmitter Interface	CP	16	B
MU-GAIH14	High Level Analog Input/Smart Transmitter Interface (High drive)	C	16	B
MU-GAIH84	High Level Analog Input/Smart Transmitter Interface (High drive)	CP	16	B
MU-GAIH22	High Level Analog Input (Auxiliary receiver output)	C	16	B
MU-GAIH92	High Level Analog Input (Auxiliary receiver output)	CP	16	B

* The RHMUX Power Adapter receives +24 V power through the cable that interfaces with the RHMUX IOP, not the GI Power Distribution Assembly (MU-GPDR02). The Power Adapter provides the interface between one RHMUX IOP and two RHMUX FTAs.

Continued on next page

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

Approved Division 2 area equipment, continued

Table 5-2 HPM Equipment Approved for Use in Division 2 Areas, Continued

Model Number	Description
Standard FTA Components, continued	
MU-TDON12	24 Vdc Nonisolated Digital Output with compress terminals
MU-TDON52	24 Vdc Nonisolated Digital Output with screw terminals
MU-TDOY22	24 Vdc Isolated Digital Output with compression terminals
MU-TDOY62	24 Vdc Isolated Digital Output with screw terminals
MU-TDPR02	Digital Input Power Distribution Assembly
MU-TLPA02	Power Adapter (LLMux, SDI, SI)
MU-TPIX12	Pulse Input with compression terminals
MU-TPIX52	Pulse Input with screw terminals
MU-TSDM02	Serial Device Interface—Manual/Auto Station
MU-TSDT02	Serial Device Interface—Toledo Weigh Cell
MU-TSIM12	Serial Interface—Modbus EIA-232
MU-TSTX03	Smart Transmitter Interface with compression term
MU-TSTX13	Smart Transmitter Interface with compression term
MU-TSTX53	Smart Transmitter Interface with screw terminals

Continued on next page

Nonconformally coated FTAs, continued

Table 7-4 Field Termination Assemblies—Nonconformally Coated, Continued

FTA Type	Model Number	Non-CE Compliant Part Number	CE Compliant Part Number
SDI—Toledo	MU-TSDT02	51303932-201	N/A
SDI—Manual/Auto	MU-TSDM02	51303932-202	N/A
SDI—Toledo	MU-TSDU02	51303932-203	N/A
SI—Modbus	MU-TSIM12	51303932-401	51303932-426
SI—Allen-Bradley	MU-TSIA12	51303932-403	51303932-428
Power Adapter	MU-TLPA02	51304467-100	51309204-125
DI Power Dist Assembly	MU-TDPR02	51304425-100	51304425-125
GI Power Dist Assembly	MU-GPRD02	51304644-100	51304644-125
GI HLAI/STI	MU-GAIH13	51304718-100	51304718-125
GI HLAI/STI	MU-GAIH14	51304730-100	51304730-125
GI HLAI/STI	MU-GAIH83	51304718-300	51304718-325
GI HLAI/STI	MU-GAIH84	51304730-300	51304730-325
GI HLAI	MU-GAIH12	51304636-100	N/A
GI HLAI	MU-GAIH22	51304748-100	51304748-125
GI HLAI	MU-GAIH82	51304636-300	N/A
GI HLAI	MU-GAIH92	51304748-300	51304748-325
GI AO	MU-GAOX02	51304638-100	51304638-125
GI AO	MU-GAOX12	51304638-500	51304638-525
GI AO	MU-GAOX72	51304638-300	51304638-325
GI AO	MU-GAOX82	51304638-700	51304638-725
GI 24 Vdc DI	MU-GDID12	51304640-100	51304640-125
GI 24 Vdc DI	MU-GDID13	51304728-100	51304728-125
GI 24 Vdc DI	MU-GDID82	51304640-300	51304640-325
GI 24 Vdc DI	MU-GDID83	51304728-300	51304728-325

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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.

Continued on next page

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.

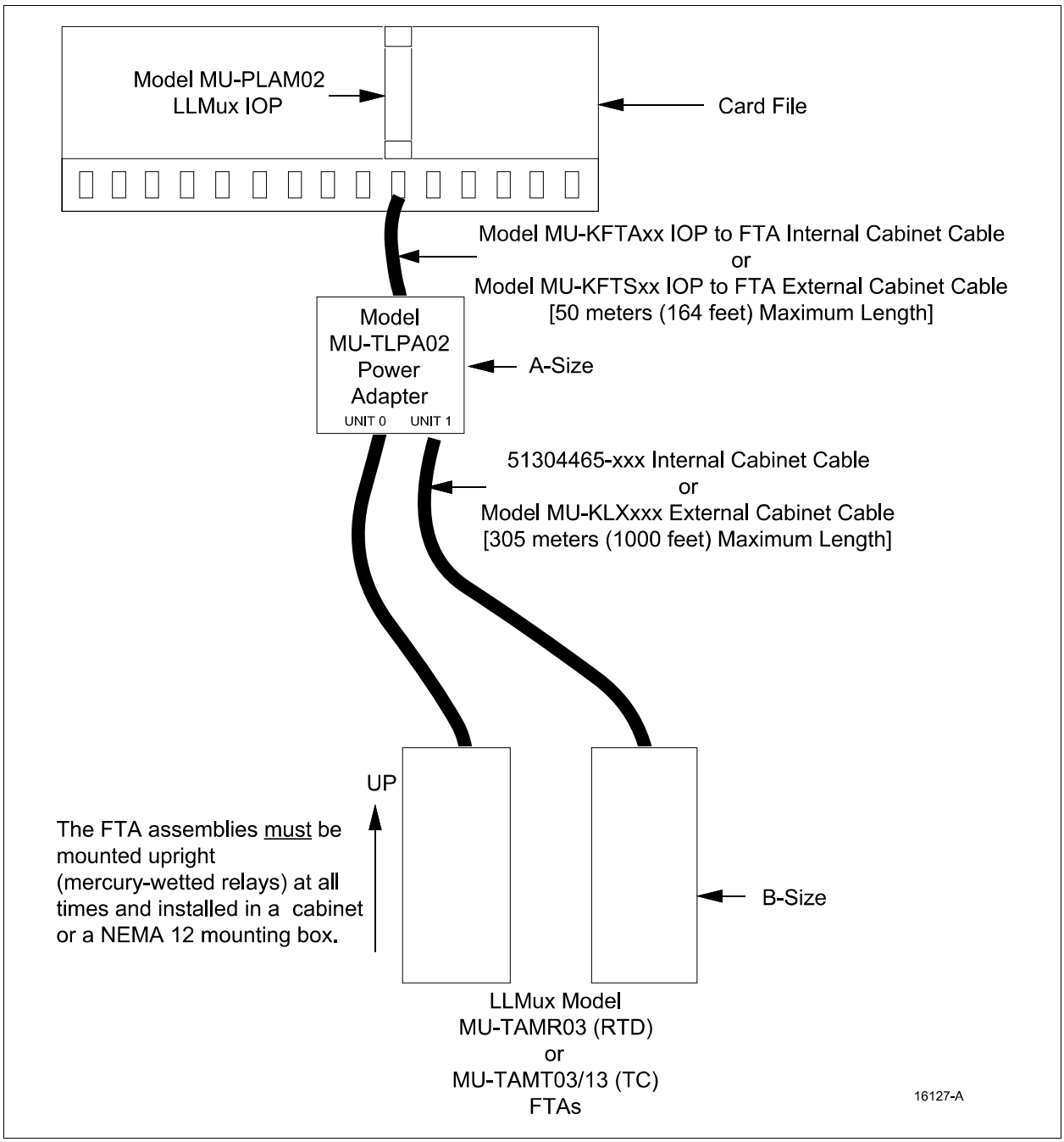
16 LLMux FTA channels

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.

Continued on next page

CE Compliant LLMux configuration

Figure 12-1 LLMux Configuration Interconnections – CE Compliant



Section 13 – Serial Device Interface Planning

13.1 Overview

Section contents

The topics covered in this section are:

13.2 Serial Device Interface Configurations

Overview

There are three models of the Serial Device Interface (SDI) FTA, MU-TSDT02, MU-TSDM02, and MU-TSDU02. All the FTA models interface with the model MU-PSDX02 Serial Device Interface IOP. One or two Serial Device Interface FTAs can communicate with a single model MU-PSDX02 Serial Device Interface IOP through the model MU-TLPA02 Power Adapter.

FTA plug-in module determines application

All models of the Serial Device Interface use the same Serial Device Interface FTA assembly. The firmware that is resident in the FTA's plug-in module, M1, determines the selected serial communications interface type (EIA-232 or EIA-422/485) and the interface application. The FTA is assigned a unique FTA model number depending upon the user's application.

EIA-232 and EIA-422/485 interfaces

The Serial Device Interface FTA has both EIA-232 (RS-232) and EIA-422/485 (RS-422/485) asynchronous serial communications interfaces, one of which is active depending on the FTA model number, using either a DB-25 or a 5-terminal compression terminal connector, respectively. The model MU-TSDT02 FTA supports the EIA-232 interface, and the model MU-TSDM02 and MU-TSDU02 FTAs support the EIA-422/485 interface.

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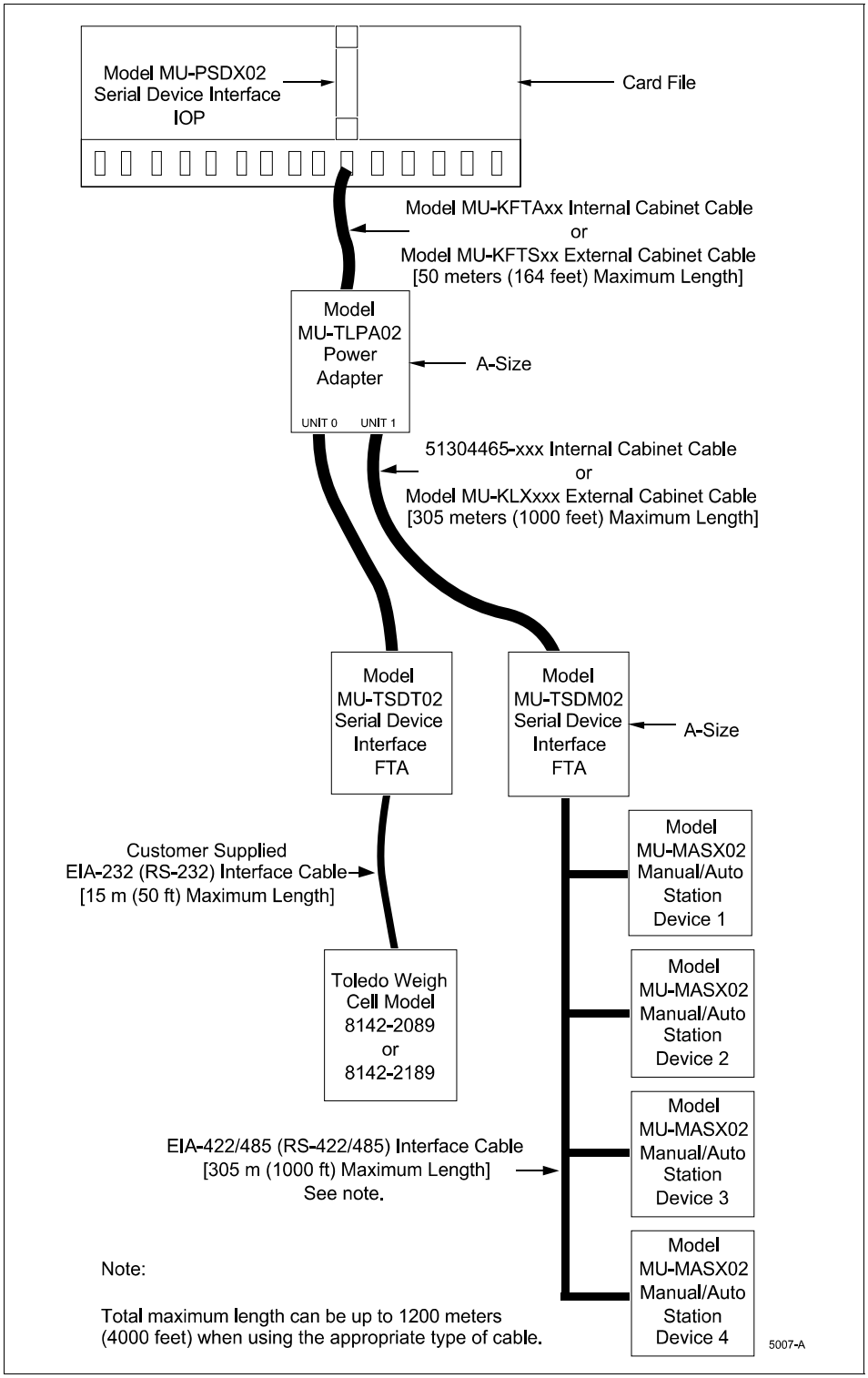
13.2 Serial Device Interface Configurations, Continued

SDI interface configuration

Figure 13-1 illustrates a typical Serial Device Interface configuration.

Figure 13-1 Serial Device Interface Interconnections



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14.2 Serial Interface Configurations, Continued

Introduction

The model MU-TSIM12 or MU-TSIA12 Serial Interface (SI) FTA communicates with the model MU-PSIM11 Serial Interface IOP through the model MU-TLPA02 Power Adapter.

FTA plug-in module determines application

The firmware that is resident in the FTA's plug-in module, M1, identifies it as a Serial Interface FTA and determines the selected serial communications interface type (EIA-232 or EIA-422/485) and the interface application. The FTA is assigned a unique model number depending upon the application.

EIA-232 and EIA-422/485 interfaces

The Serial Interface FTA has both EIA-232 (RS-232) and EIA-422/485 (RS-422/485) asynchronous serial communications interfaces, one of which is active depending on the software-selected application, using either a DB-25 or a 5-terminal compression-type connector, respectively.

The EIA-232 cable is limited to a distance of 15 meters (50 feet). The cable must be supplied by the user and terminate in a DB-25 connector.

ATTENTION

ATTENTION—The EIA-232 interface is a point-to-point interface on which only one serial device can be connected. The EIA-422/485 interface is configured as a multidrop interface on which up to fifteen serial devices can be connected.

Modbus protocol device

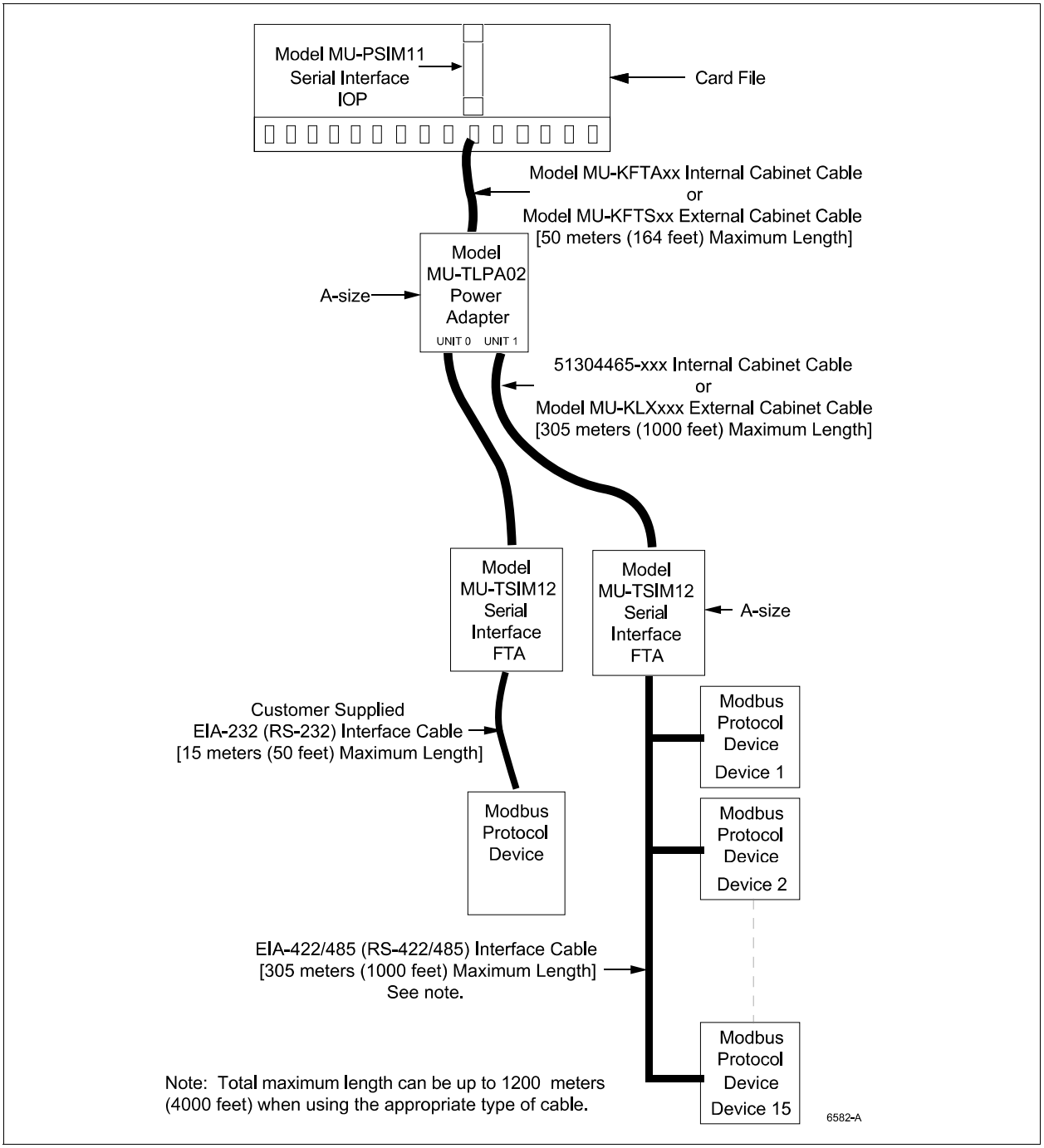
A Modbus protocol device that interfaces with the Serial Interface FTA must qualify as compatible though Honeywell's Multivendor Interface Program.

Continued on next page

Model MU-TSIM12 FTA Modbus EIA-232 and EIA-422/485 interfaces

Figure 14-1 illustrates the model MU-TSIM12 Serial Interface FTA to Modbus device EIA-232 and EIA-422/485 interfaces.

Figure 14-1 Serial Interface FTA to Modbus Device EIA-232 and EIA-422/485 Interconnections



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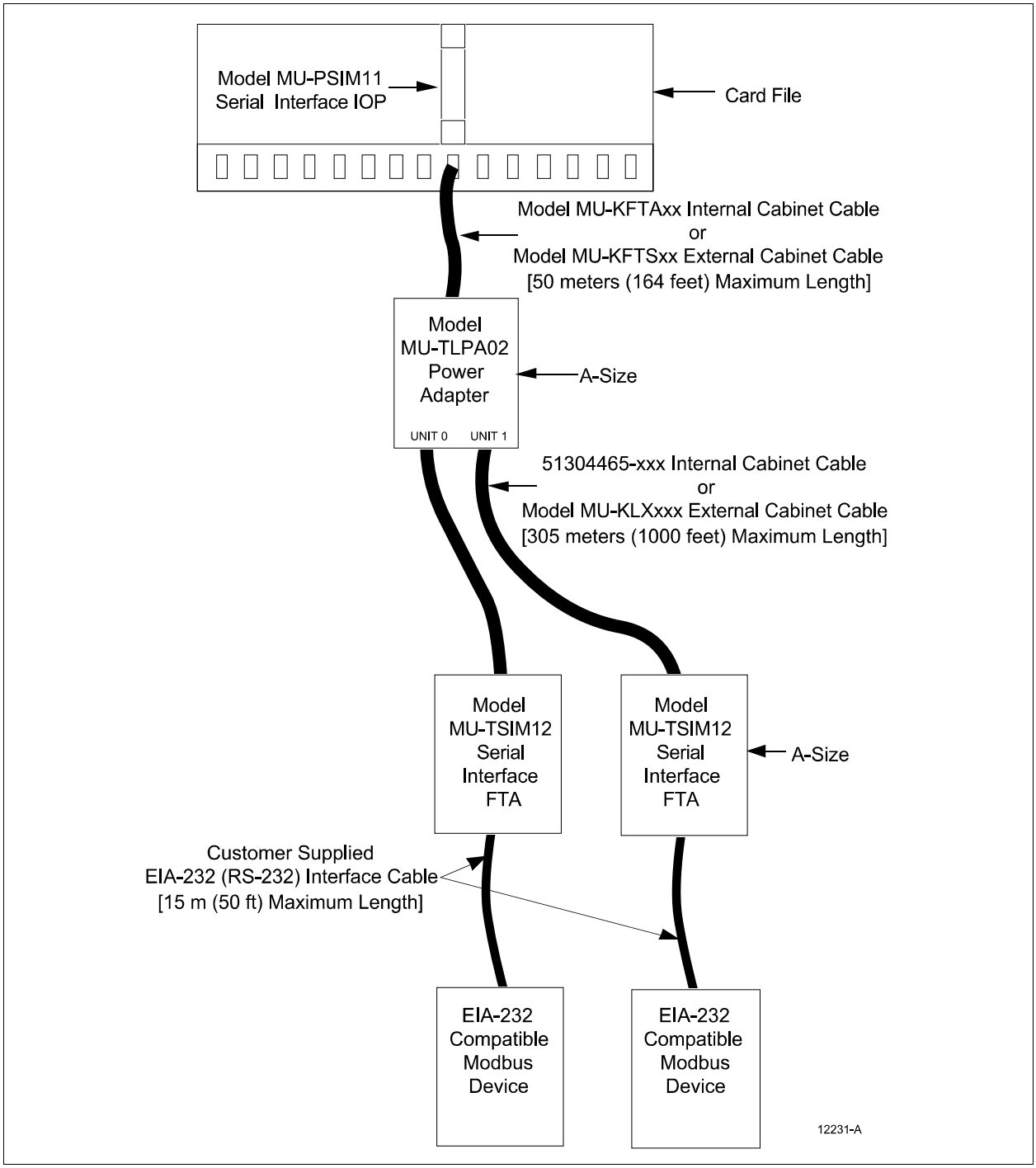
Model MU-TSIM12 FTA Modbus EIA-422/485 interface

Figure 14-2 illustrates the model MU-TSIM12 Serial Interface FTA to Modbus device EIA-422/485 interface.

Figure 14-2 Serial Interface FTA to Modbus Device EIA-422/485 Interconnections



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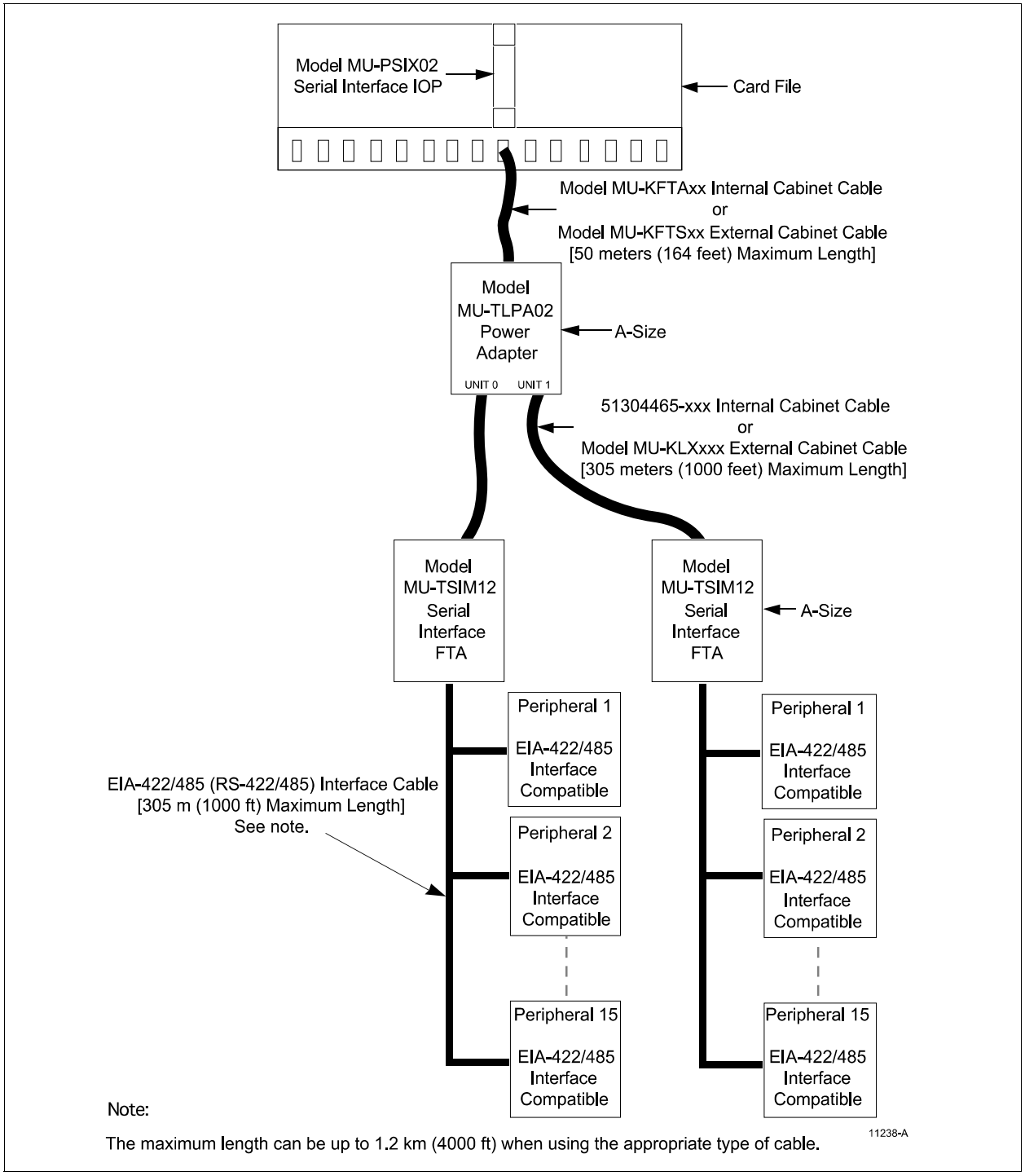
Model MU-TSIM12 FTA peripheral device EIA-422/485 interface

Figure 14-3 illustrates the model MU-TSIM12 Serial Interface FTA to peripheral device EIA-422/485 interface.

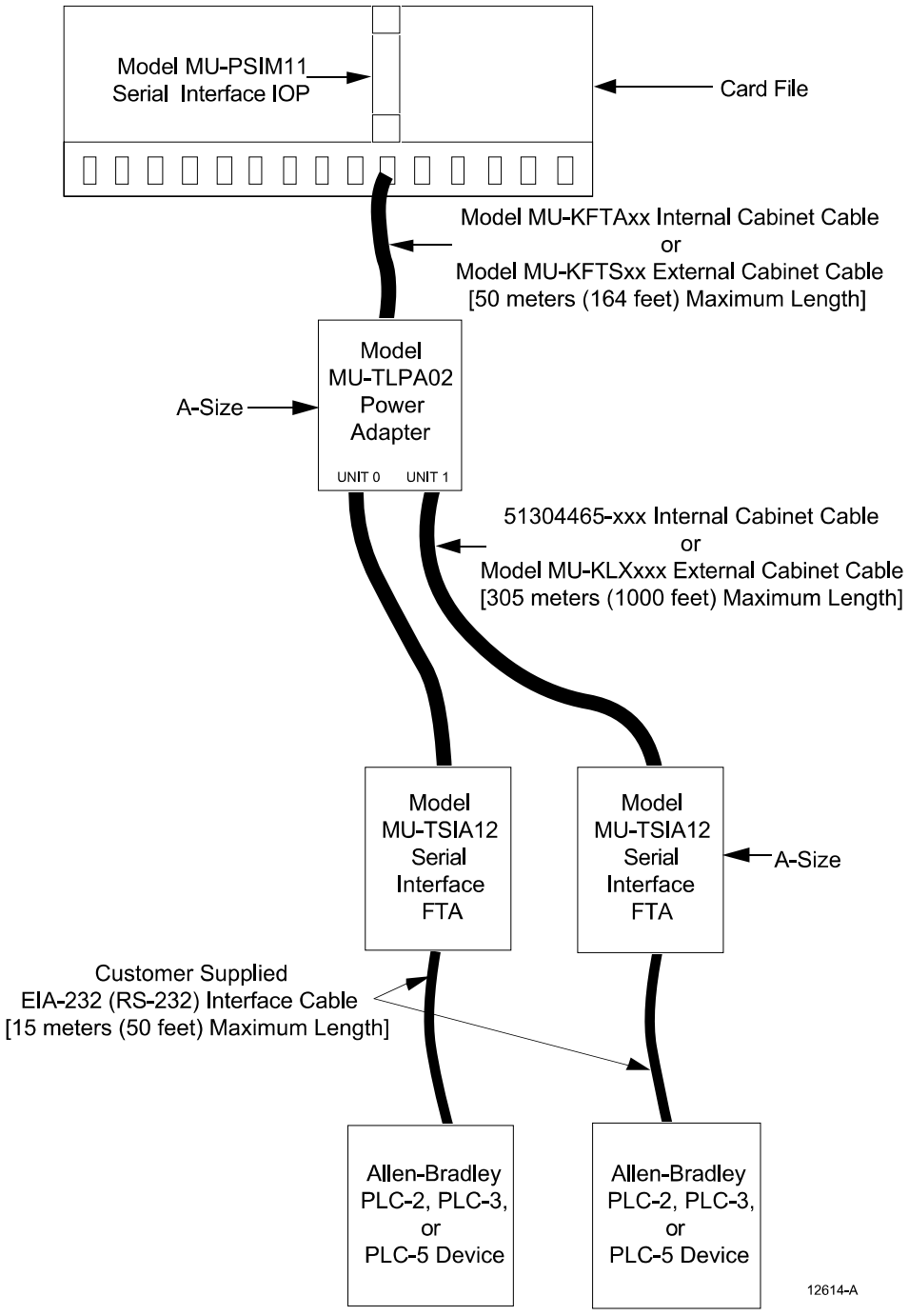
Figure 14-3 Serial Interface FTA to Peripheral Device EIA-422/485 Interconnections



Model MU-TSIA12 FTA Allen-Bradley EIA-232 interface

Figure 14-4 illustrates the model MU-TSIA12 Serial Interface FTA to Allen-Bradley device EIA-232 interface.

Figure 14-4 Serial Interface FTA to Allen-Bradley Device EIA-232 Interconnections



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