3.4.1 Typical 24 Vdc Power Draw Calculations

Overview

Two examples of +24 Vdc power requirement calculations are illustrated in subsections 3.3 and 3.4. The Single Power System Example assumes a single cabinet with a dedicated Power System. The Dual Power System Example assumes a dual cabinet complex with each cabinet having a dedicated separate Power System.

Power calculation procedure

The calculations are based on the power requirements of the assemblies listed in Table 3-1. The current requirements are based on the typical maximum, assuming all channels are in use. Use the following steps to calculate the number of each type of IOP and associated FTA that an individual Power System must support.

1. Determine the number of channels needed for each type of IOP and associated FTA. Divide the total number by the number of channels that are available in the IOP. For example, using Table 3-1, if 256 High Level Analog Input (HLAI) IOP channels are needed, 16 IOPs and FTAs are required (256 channels ÷ 16 channels per IOP = 16 IOPs and 16 FTAs).
2. Multiply the number of IOPs by the current requirement for the type of IOP. For example, 16 model MU-PAIH02 HLAI IOPs require 2928 mA (16 HLAI IOPs x 183 mA = 2928 mA or 2.928 A). The current requirement is added to the **Total Module Current** for the Power System.
3. Multiply the number of FTAs by the current requirement for the type of FTA. For example, 16 model MU-TAIH12/52 HLAI FTAs require 5120 mA (16 HLAI FTAs x 320 mA = 5120 mA or 5.12 A). The current requirement is added to the **Total Module Current** for the Power System.
4. If redundant IOPs are required in the same Power System, double the IOP type count. For example, 16 redundant HLAI channels, A and B, require two IOPs (16 channels ÷ 16 channels per IOP x 2 = 2 IOPs). When the redundant IOPs reside in separate Power Systems, half the IOP power requirement is added to each Power System's Module Current power requirement (IOP A and IOP B).
5. To determine the **Total Module Current**, add together the total current for both the IOPs and their associated FTAs. For example, using Table 3-1, 256 HLAI channels require 2928 mA of IOP current and 5120 mA of FTA current (256 HLAI channels = 2928 mA+ 5120 mA = 8048 mA or 8.048 A).

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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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Assembly 24 Vdc power usage, continued

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

Description	Model Number	Channels	Assembly Current (Milliamps)
PI IOP Card	MU-PPIX02	8	208
SDI IOP Card	MU-PSDX02	2	70
SI IOP Card	MU-PSIM11	2	70
LLAI FTA	MU-TAIL02	8	350
LLAI FTA	MU-TAIL03	8	350
LLMux—RTD FTA	MU-TAMR02	16	185
LLMux—RTD FTA	MU-TAMR03	16	185
LLMux—TC/Local CJR FTA	MU-TAMT02	16	185
LLMux—TC/Local CJR FTA	MU-TAMT03	16	185
LLMux—TC/Remote CJR FTA	MU-TAMT12	16	185
LLMux—TC/Remote CJR FTA	MU-TAMT13	16	185
RHMUX—TC/Local CJR FTA (ISPA or NIPA provides power to FTA)	MC-GRMT01	16	0
RHMUX GI/IS Power Adapter (ISPA)	MU-GRPA01	32 *	300
RHMUX GI/NI Power Adapter (NIPA)	MU-TRPA01	32 *	575
HLAI/STI FTA	MU-TAIH02	16	320
HLAI FTA	MU-TAIH03	16	320
HLAI/STI FTA	MU-TAIH12/52	16	320
HLAI FTA	MU-TAIH13/53	16	320
HLAI/STI FTA	MU-TAIH22/62	16	320
HLAI FTA	MU-TAIH23	16	320
STI FTA	MU-TSTX03	16	320
STI FTA	MU-TSTX13/53	16	320

* An RHMUX Power Adapter provides the interface between one RHMUX IOP and one or two RHMUX FTAs. Each RHMUX FTA has 16 input channels providing a total of 32 inputs for the RHMUX subsystem.

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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)
AO FTA	MU-TAOX02	8	160
AO FTA	MU-TAOX12/52	8	171
AO FTA	MU-TAOY22/52	16	324
AO FTA	MU-TAOY23/53	16	324
24 Vdc DI FTA	MU-TDID12/52	32	408
24 Vdc DI FTA	MU-TDID72	32	410
24 Vdc Power Distribution Assembly	MU-TDPR02	12	200
24 Vdc DI FTA	MU-TDIY22/62	32	196
120 Vdc DI FTA	MU-TDIA12/52	32	192
120 Vdc DI FTA	MU-TDIA72	32	200
240 Vdc DI FTA	MU-TDIA22/62	32	192
24 Vdc Nonisolated DO FTA	MU-TDON12/52	16	0
24 Vdc Isolated DO FTA	MU-TDOY22/62	32	004
3-30 Vdc Solid-State DO FTA	MU-TDOD12/52	16	160
3-30 Vdc Solid-State DO FTA	MU-TDOD13/53	16	160
3-30 Vdc Solid-State DO FTA	MU-TDOD14/54	16	160
31-200 Vdc Solid-State DO FTA	MU-TDOD22/62	16	160
5-200 Vdc Solid-State DO FTA	MU-TDOD23/63	16	160
24-240 Vac Solid-State DO FTA	MU-TDOA12/52	16	160
120/240 Vac Solid-State DO FTA	MU-TDOA13/53	16	160
120 Vac/125 Vdc Relay DO FTA	MU-TDOR12/52	16	470
240 Vac/125 Vac Relay DO FTA	MU-TDOR22/62	16	470
240 Vac/125 Vac Relay DO FTA	MU-TDOY23/63	16	228
PI FTA	MU-TPIX12/52	8	136

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