

SYSTEM OVERVIEW

Preface: This document provides power data and system application information for the following equipment used in a NETSURE™ Power System.

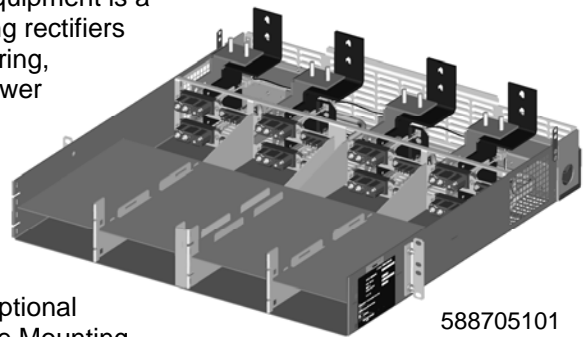
MODEL	SPEC. NO.	DESCRIPTION
PSS24/1000-23	588705100	8-Position Field-Expansion Module Mounting Assembly
PSS24/1000-23	588705101	8-Position Module Mounting Assembly
PSS24/2000-23	588705102	16-Position Module Mounting Assembly
PSS24/3000-23	588705103	24-Position Module Mounting Assembly
PSS24/4000-23	588705104	32-Position Module Mounting Assembly
R24-2500	1R242500	Rectifier Module (PCU)
C24/48-1500	1C24481500	DC-DC Converter Module

Description: A Module Mounting Assembly and Rectifier Modules (PCUs), when used in a NETSURE Power System equipped with a Meter-Control-Alarm (MCA) Assembly, comprise a +24V DC Power System designed to power a load while charging a negative grounded battery. This system is capable of operating in a batteryless installation or off battery for maintenance purposes. The system is designed for operation with the negative output grounded.

The NETSURE Power System utilizing this equipment is a complete integrated power system containing rectifiers (PCUs), converters, intelligent control, metering, monitoring, and distribution. A NETSURE Power System, utilizing this equipment, typically consists of...

- **Module Mounting Assembly**

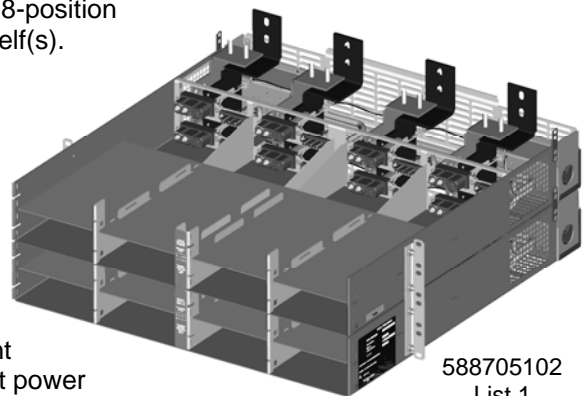
The system contains one or more Module Mounting Assembly(s), which houses Rectifier Modules (PCUs) and optional DC-DC Converter Modules. The Module Mounting Assembly consists of one (1) to four (4) 8-position factory assembled Module Mounting Shelf(s).



588705101
List 1

- **Rectifier Modules (PCUs)**

The system contains Rectifier Modules (PCUs), which provide load power, battery float current, and battery recharge current during normal operating conditions. The Rectifier Modules (PCUs) are a constant power design. This means that, within the normal operating ambient temperature range, the maximum output power available is a constant 2500W. Within this ambient



588705102
List 1

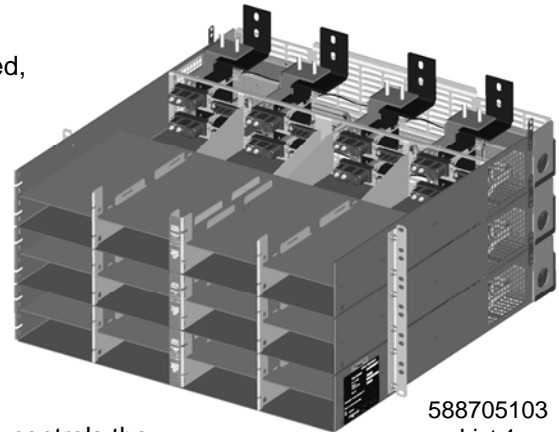
temperature range, the Rectifier Modules (PCUs) will operate in one of three modes, depending upon load demands. Transition between modes is completely automatic.

- **Constant Voltage Mode:** For any initial output voltage setting from 23.5 to 29.0 volts, output voltage remains constant regardless of load. This is the normal operating condition, in which loads are supplied and batteries are float charged. Rectifier Modules (PCUs) will operate in the Constant Voltage Mode unless load increases to the point where the product of load current and output voltage is approximately 2500W.
- **Constant Power Mode:** As load increases above approximately 2500W (non-adjustable), output current continues to increase, but output voltage decreases as required to maintain constant output power. Rectifier Modules (PCUs) will operate in the Constant Power Mode unless load continues to increase to the point where the current limit setting is reached.
- **Constant Current Mode:** If load increases above the current limit setting, output voltage decreases linearly to maintain output current at current limit.

Rectifier Modules (PCUs) will continue to operate in above-normal ambient temperatures, but at reduced power. Refer to [Paragraph 1.1.6](#) under SPECIFICATIONS.

- **DC-DC Converter Modules**

Where -48VDC load power is also required, DC-DC Converter Modules are available. The DC-DC Converter Modules can plug into up to four (4) of the module mounting positions in each 8-position shelf (when the shelf is equipped with a factory installed optional Converter Option Kit). These converters operate from the main +24V system bus to provide -48VDC load power.



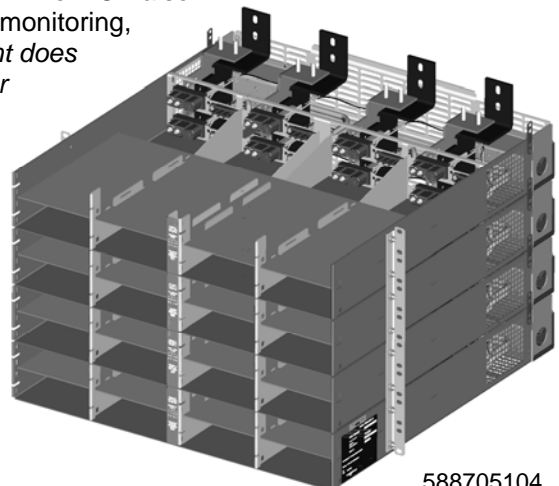
588705103
List 1

- **Meter-Control-Alarm (MCA) Assembly**

The system contains one MCA. The MCA controls the operation of the Rectifier Modules (PCUs). The MCA also provides power system control, metering, monitoring, and alarm functions. **Note:** This document does not describe the MCA. Refer to the Power System SAG (System Application Guide) for MCA information.

- **NETSURE™ Distribution**

Provides DC distribution through fuses and/or circuit breakers. **Note:** This document does not describe NETSURE Distribution. Refer to the Power System SAG (System Application Guide) for distribution information.



588705104
List 1

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
 Spec. No. 588705101 (Model PSS24/1000-23)
 Spec. No. 588705102 (Model PSS24/2000-23)
 Spec. No. 588705103 (Model PSS24/3000-23)
 Spec. No. 588705104 (Model PSS24/4000-23)

PD588705100
 PD588705101
 PD588705102
 PD588705103
 PD588705104

Issue AC, September 28, 2009

[Home](#)

Family:	NETSURE™
Spec. Nos.:	588705100, 588705101, 588705102, 588705103, 588705104
Model:	PSS24/1000-23, PSS24/2000-23, PSS24/3000-23, PSS24/4000-23
Rectifier Input Voltage	Nominal 208-240 volts AC, single phase, 50/60 Hz, with an operating range of 180 to 264 volts. Acceptable input frequency range is 47 to 65 Hz.
Rectifier Output Voltage:	+24 Volts DC
Converter Output Voltage:	-48 Volts DC
Rectifier Output Capacity:	
Rectifier Module (PCU):	87.7A @ +28.5VDC to 104.2A @ +24.0VDC, 2500 Watts
Module Mounting Assembly:	Varies - see individual List Descriptions
Optional DC-DC Converter	
Module Output Capacity:	
DC-DC Converter Module:	31 Amperes (1500W)
Module Mounting Assembly:	Varies - see individual List Descriptions
Agency Approval:	UL 60950 Recognized; CAN/CSA 22.2, No. 60950-00, NEBS
Framework Type:	For Mounting in a 23-Inch Wide Relay Rack
Mounting Width:	23 Inch (Relay Rack Mounting)
Mounting Depth:	22.34 Inches
Front Projection:	6.23 Inches, fixed
Mounting Height:	588705100 and 588705101: 3-1/2 Inches (2RU) 588705102: 7 Inches (4RU) 588705103: 10-1/2 Inches (6RU) 588705104: 14 Inches (8RU)
Access:	Front and Rear for Installation and Maintenance, Front for Operation
Control:	Microprocessor
Color:	Bright Zinc Plating (Spec. M500-53) Body, Textured Gray (Spec. M500-147) Faceplates
List Options:	8-Position Field-Expansion Module Mounting Assembly , 8-Position Module Mounting Assembly , 16-Position Module Mounting Assembly , 24-Position Module Mounting Assembly , 32-Position Module Mounting Assembly , Rectifier Modules (PCUs) , DC-DC Converter Modules
Accessory Options:	Module Mounting Position Blank Cover Panel , DC-DC Converter Option Kit , Battery Charge Temperature Compensation Probe for Single Probe Digital Compensation , Battery Charge Temperature Compensation Probe Concentrator for Multiple Probe Use (TXM) , Replacement Cables , Replacement Components , Wiring Notes , Wiring Illustrations
Environment:	
Module Mounting Assembly:	-40°C to +40°C (-40°F to +104°F)

PD588705100
PD588705101
PD588705102
PD588705103
PD588705104

Issue AC, September 28, 2009

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
Spec. No. 588705101 (Model PSS24/1000-23)
Spec. No. 588705102 (Model PSS24/2000-23)
Spec. No. 588705103 (Model PSS24/3000-23)
Spec. No. 588705104 (Model PSS24/4000-23)

Rectifier Module (PCU):

[-40°C to +75°C \(-40°F to +167°F\).](#)

Refer also to [Paragraph 1.1.6.](#)

Converter Module:

[-40°C to +80°C \(-40°F to +176°F\)](#)

[Home](#)

588705100, 588705101, 588705102, 588705103, 588705104

Module Mounting Assembly

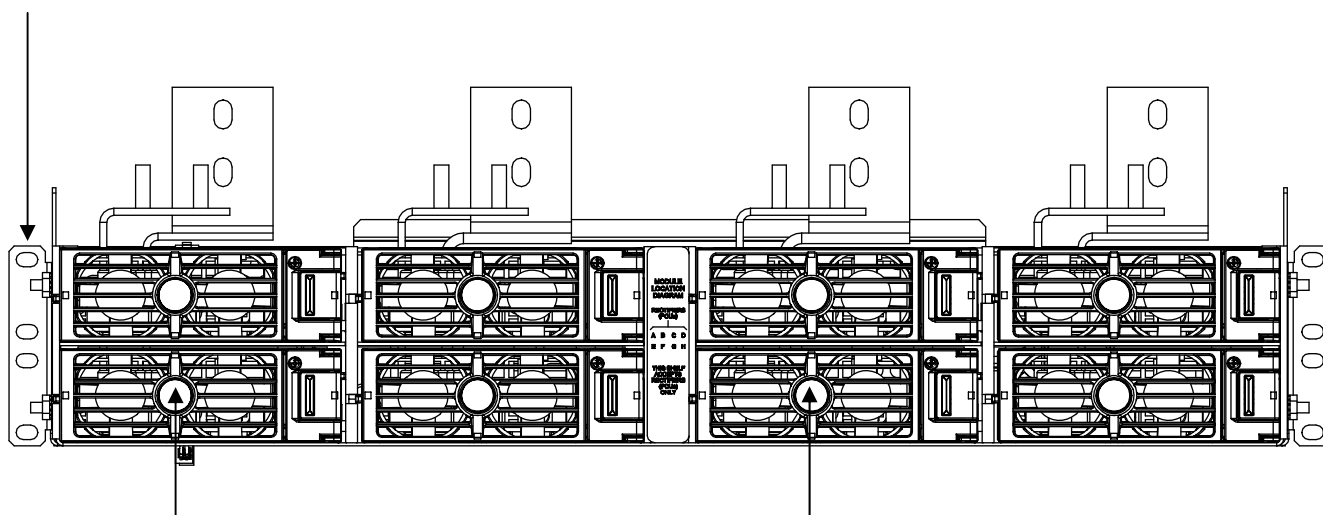
[588705100, List 1](#) (8-position, expansion)

[588705101, List 1](#) (8-position, shown)

[588705102, List 1](#) (16-position)

[588705103, List 1](#) (24-position)

[588705104, List 1](#) (32-position)



Rectifier Module (PCU)

[588705100, List 2](#)

[588705101, List 2](#)

[588705102, List 2](#)

[588705103, List 2](#)

[588705104, List 2](#)

Optional DC-DC Converter Module (requires Converter Option Kit)

[588705100, List 4](#)

[588705101, List 4](#)

[588705102, List 4](#)

[588705103, List 4](#)

[588705104, List 4](#)

OR

Rectifier Module (PCU)

[588705100, List 2](#)

[588705101, List 2](#)

[588705102, List 2](#)

[588705103, List 2](#)

[588705104, List 2](#)

See Also

[System Overview](#)

[Table of Contents](#)

[Ordering Information](#)

[List Descriptions](#)

[Accessory Descriptions](#)

[Specifications](#)

[Physical Size Information](#)

[Related Documentation](#)

TABLE OF CONTENTS

System Overview	Picture	Ordering Information		Specifications	Physical Size Information	Related Documentation
		List Descriptions	Accessory Descriptions			
<hr/>						
SYSTEM OVERVIEW.....		1				
588705100, 588705101, 588705102, 588705103, 588705104		5				
TABLE OF CONTENTS.....		6				
ORDERING INFORMATION.....		8				
List Options.....		8				
Accessory Options.....		9				
LIST DESCRIPTIONS.....		10				
588705100 List 1: Field Expansion Kit (8-Position Module Mounting Assembly).....		10				
588705101 List 1: 8-Position Module Mounting Assembly		11				
588705102 List 1: 16-Position Module Mounting Assembly		12				
588705103 List 1: 24-Position Module Mounting Assembly		13				
588705104 List 1: 32-Position Module Mounting Assembly		14				
588705100 List 2, 588705101 List 2, 588705102 List 2, 588705103 List 2, 588705104 List 2: Rectifier Module (PCU)		15				
588705100 List 4, 588705101 List 4, 588705102 List 4, 588705103 List 4, 588705104 List 4: DC- DC Converter Module		16				
ACCESSORY DESCRIPTIONS.....		17				
Module Mounting Position Blank Cover Panel (P/N 540959)		17				
DC-DC Converter Option Interface Component Kit (P/N 540806).....		17				
Battery Charge Temperature Compensation Probe for Single Probe Digital Compensation		18				
Battery Charge Temperature Compensation Probe Concentrator for Multiple Probe Use (TXM)		19				
Battery Temperature Probe Concentrator Kit (P/N 524570).....		19				
Analog Battery Temperature Probe (P/N 521262).....		19				
TXM Extension Cable (P/N 514153).....		19				
Replacement Cables		20				
Replacement Components		20				
Wiring Notes		21				
AC Input Branch Circuit Protection and Wire Size Selection		21				
Shelf Frame Ground Wire Size Selection		22				
DC Output Connections: +24VDC System Output		22				
DC Output Connections: -48VDC Subsystem Output.....		22				
External Alarms Wire Size Selection.....		22				
Wiring Illustrations		23				
AC Input and Frame Ground (for each 8-Position Module Mounting Shelf in the Module Mounting Assembly).....		23				
DC Output		24				
Alarm/Control to MCA		24				
SPECIFICATIONS.....		25				
1. Rectifier (PCU) Specifications		25				
1.1 DC Output Ratings		25				

1.2 AC Input Ratings	28
1.3 Environmental Ratings	30
1.4 Standard Features.....	32
2. DC-DC Converter Specifications.....	37
2.1 DC Output Ratings	37
2.2 DC Input Ratings	37
2.3 Environmental Ratings	38
2.4 Standard Features.....	39
PHYSICAL SIZE INFORMATION	41
Overall Dimensions	41
Module Mounting Assembly Spec. No. 588705100	41
Module Mounting Assembly Spec. No. 588705101	42
Module Mounting Assembly Spec. No. 588705102	43
Module Mounting Assembly Spec. No. 588705103	44
Module Mounting Assembly Spec. No. 588705104	45
Digital Battery Charge Temperature Compensation Probe (P/N 107021 and 106824).....	46
Analog Battery Temperature Probe (P/N 521262).....	46
RELATED DOCUMENTATION.....	47
REVISION RECORD.....	48

ORDERING INFORMATION

List Options

This equipment is used in a NETSURE Power System. Refer also to the Power System's documentation.

Order the following by the items Part Number as specified in the following table.

When viewing electronically, click on the *List #* to jump to the detailed description page.

List #	Part Number	Description	Mounting Positions (1U = 1-3/4")
1	58870510001	Field Expansion Kit. Provides one (1) 8-Position Module Mounting Assembly and components required for field installation in a Power System.	2RU
1	58870510101	One (1) 8-Position Module Mounting Assembly.	2RU
1	58870510201	One (1) 16-Position Module Mounting Assembly.	4RU
1	58870510301	One (1) 24-Position Module Mounting Assembly.	6RU
1	58870510401	One (1) 32-Position Module Mounting Assembly.	8RU
2	58870510002 58870510102 58870510202 58870510302 58870510402	Rectifier Module (PCU).	--
4	58870510004 58870510104 58870510204 58870510304 58870510404	DC-DC Converter Module.	--

Power Data Sheet
 Spec. No. 588705100 (Model PSS24/1000-23)
 Spec. No. 588705101 (Model PSS24/1000-23)
 Spec. No. 588705102 (Model PSS24/2000-23)
 Spec. No. 588705103 (Model PSS24/3000-23)
 Spec. No. 588705104 (Model PSS24/4000-23)

PD588705100
 PD588705101
 PD588705102
 PD588705103
 PD588705104

Issue AC, September 28, 2009

[Home](#)

Accessory Options

Order the following by the items Part Number as specified in the ACCESSORY DESCRIPTIONS section.

When viewing electronically, click on the *link* to jump to the detailed description page.

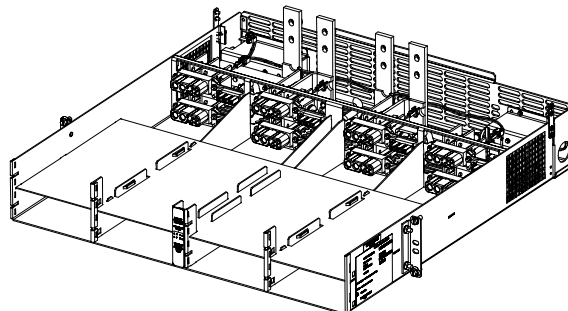
Description	Part Number
Module Mounting Position Blank Cover Panel	See ACCESSORY DESCRIPTIONS Section
DC-DC Converter Option Kit	
Battery Charge Temperature Compensation Probe for Single Probe Digital Compensation	
Battery Charge Temperature Compensation Probe Concentrator for Multiple Probe Use (TXM)	
Replacement Cables	
Replacement Components	
Wiring Notes Wiring Illustrations	

LIST DESCRIPTIONS

588705100 List 1: Field Expansion Kit (8-Position Module Mounting Assembly)

Features

- ◆ Provides one (1) 8-Position Module Mounting Assembly, and components required for field installation in an existing NETSURE Power System.
- ◆ Expands capacity of a NETSURE Power System equipped with a [588705101 List 1](#), [588705102 List 1](#), or [588705103 List 1](#).
- ◆ The assembly consists of one (1) 8-position Module Mounting Shelf. The shelf provides eight (8) module mounting positions (8 total for the assembly). Rectifier Modules (PCUs) can be installed in any of the eight (8) mounting positions. When a DC-DC Converter Option Kit is ordered, the four (4) middle mounting positions will accept either Rectifier Modules (PCUs) or DC-DC Converter Modules.
- ◆ The 8-position Module Mounting Shelf is equipped with individual Rectifier Module (PCU) AC input feeds (one branch circuit per module mounting position, eight feeds total).



Restrictions

Module Mounting Assembly maximum output current:

Module Configuration	+24VDC	-48VDC
(8) List 2 Rectifiers	800A	0A
(4) List 2 Rectifiers & (4) List 4 Converters	400A	125A

For field installation only.

Cannot be used with a Spec No. [588705104 List 1](#) Assembly.

Maximum of one (1) Module Mounting Expansion Assembly (588705100 List 1) per equipment bay.

When equipped with a DC-DC Converter Option Kit, the 8-position Module Mounting Shelf accepts a maximum of four (4) DC-DC Converter Modules.

Total Rectifier Module (PCU) output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

Ordering Notes

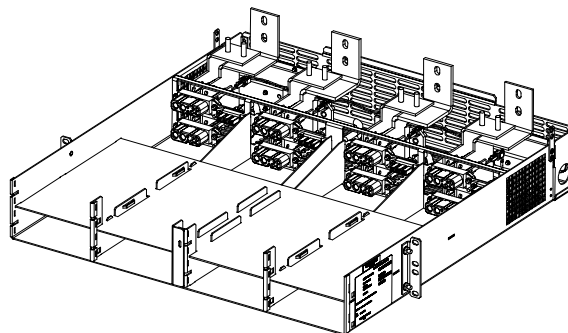
- 1) Order one (1) 588705100 List 1 per power system bay as required (see Restrictions above). Can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 2) Order Rectifier Modules (PCUs) per [List 2](#) as required. Rectifier Modules (PCUs) can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 3) To use DC-DC Converters in the 8-position Module Mounting Shelf, order one (1) DC-DC Converter Option Kit ([P/N 540806](#)) for the 8-position Module Mounting Shelf. The kit allows the middle four (4) module mounting positions to accept DC-DC Converter Modules or Rectifier Modules (PCUs). This option can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 4) Order DC-DC Converter Modules per [List 4](#) as required. Converter Modules can also be ordered from the System Application Guide (SAG) of the associated Power System.

- 5) Order one (1) Module Mounting Position Blank Cover ([P/N 540959](#)) for each empty module mounting position in the assembly. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 6) Refer also to "[ACCESSORY DESCRIPTIONS](#)" for other available accessories.

588705101 List 1: 8-Position Module Mounting Assembly

Features

- ◆ Provides one (1) 8-Position Module Mounting Assembly.
- ◆ The assembly consists of one (1) 8-position Module Mounting Shelf. The shelf provides eight (8) module mounting positions (8 total for the assembly). Rectifier Modules (PCUs) can be installed in any of the eight (8) mounting positions. When a DC-DC Converter Option Kit is ordered, the four (4) middle mounting positions accepts either Rectifier Modules (PCUs) or DC-DC Converter Modules.
- ◆ The 8-position Module Mounting Shelf is equipped with individual Rectifier Module (PCU) AC input feeds (one branch circuit per module mounting position, eight feeds total).



Restrictions

Module Mounting Assembly maximum output current:

Module Configuration	+24VDC	-48VDC
(8) List 2 Rectifiers	800A	0A
(4) List 2 Rectifiers & (4) List 4 Converters	400A	125A

Maximum of one (1) Module Mounting Assembly (588705101 List 1, 588705102 List 1, 588705103 List 1, or 588705104 List 1) per equipment bay.

When equipped with a DC-DC Converter Option Kit, the 8-position Module Mounting Shelf accepts a maximum of four (4) DC-DC Converter Modules.

Total Rectifier Module (PCU) output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

Ordering Notes

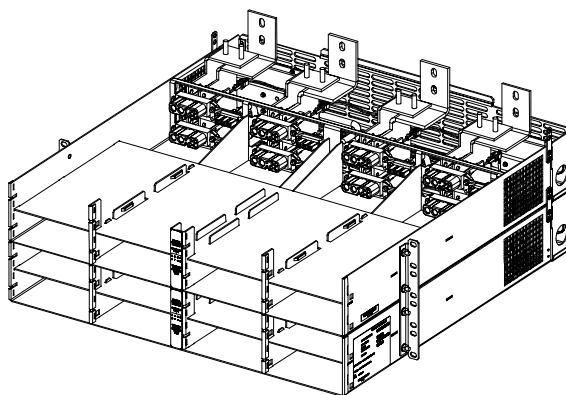
- 1) For eight (8) module mounting positions in a relay rack, order 588705101 List 1. If more than eight (8) module mounting positions are required, **do not** order multiples of 588705101 List 1; order [588705102 List 1](#), [588705103 List 1](#), or [588705104 List 1](#) instead.
- 2) Order Rectifier Modules (PCUs) per [List 2](#) as required. Rectifier Modules (PCUs) can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 3) To use DC-DC Converters in the 8-position Module Mounting Shelf, order one (1) DC-DC Converter Option Kit ([P/N 540806](#)) for the 8-position Module Mounting Shelf. The kit allows the middle four (4) module mounting positions to accept DC-DC Converter Modules. This option can also be ordered from the System Application Guide (SAG) of the associated Power System.

- 4) Order DC-DC Converter Modules per [List 4](#) as required. Converter Modules can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 5) Order one (1) Module Mounting Position Blank Cover ([P/N 540959](#)) for each empty module mounting position in the assembly. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 6) Refer also to "[ACCESSORY DESCRIPTIONS](#)" for other available accessories.

588705102 List 1: 16-Position Module Mounting Assembly

Features

- ◆ Provides one (1) 16-Position Module Mounting Assembly.
- ◆ The assembly consists of two (2) 8-position Module Mounting Shelves. Each shelf provides eight (8) module mounting positions (16 total for the assembly). Rectifier Modules (PCUs) can be installed in any of the eight (8) mounting positions per 8-position Module Mounting Shelf. When a DC-DC Converter Option Kit is ordered, the four (4) middle mounting positions of an 8-position Module Mounting Shelf accepts either Rectifier Modules (PCUs) or DC-DC Converter Modules.
- ◆ Each 8-position Module Mounting Shelf in the assembly is equipped with individual Rectifier Module (PCU) AC input feeds (one branch circuit per module mounting position, eight feeds total per shelf, sixteen feeds total per assembly).



Restrictions

Module Mounting Assembly maximum output current:

Module Configuration	+24VDC	-48VDC
(16) List 2 Rectifiers	1600A	0A
(8) List 2 Rectifiers & (8) List 4 Converters	800A	250A

Maximum of one (1) Module Mounting Assembly (588705101 List 1, 588705102 List 1, 588705103 List 1, or 588705104 List 1) per equipment bay.

When equipped with a DC-DC Converter Option Kit, each 8-position Module Mounting Shelf in the Module Mounting Assembly accepts a maximum of four (4) DC-DC Converter Modules (8 total for the assembly).

Total Rectifier Module (PCU) output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

Ordering Notes

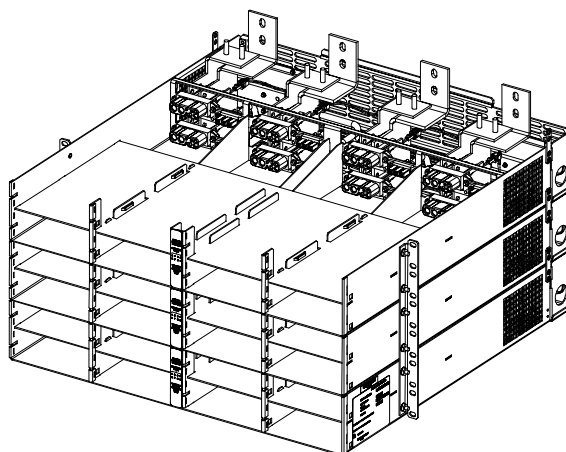
- 1) For sixteen (16) module mounting positions in a relay rack, order 588705102 List 1. If more than sixteen (16) module mounting positions are required, **do not** order multiples of 588705102 List 1; order [588705103 List 1](#) or [588705104 List 1](#) instead.
- 2) Order Rectifier Modules (PCUs) per [List 2](#) as required. Rectifier Modules (PCUs) can also be ordered from the System Application Guide (SAG) of the associated Power System.

- 3) To use DC-DC Converters in any 8-position Module Mounting Shelf in this Module Mounting Assembly, order one (1) DC-DC Converter Option Kit ([P/N 540806](#)) for each 8-position Module Mounting Shelf in which Converters are required. Each kit allows the middle four (4) module mounting positions in one 8-position Module Mounting Shelf to accept DC-DC Converter Modules. When more than one kit is ordered, kits will be factory installed starting in the bottom 8-position Module Mounting Shelf in the Module Mounting Assembly and working up. This option can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 4) Order DC-DC Converter Modules per [List 4](#) as required. Converter Modules can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 5) Order one (1) Module Mounting Position Blank Cover ([P/N 540959](#)) for each empty module mounting position in the assembly. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 6) Refer also to "[ACCESSORY DESCRIPTIONS](#)" for other available accessories.

588705103 List 1: 24-Position Module Mounting Assembly

Features

- ◆ Provides one (1) 24-Position Module Mounting Assembly.
- ◆ The assembly consists of three (3) 8-position Module Mounting Shelves. Each shelf provides eight (8) mounting positions (24 total for the assembly). Rectifier Modules (PCUs) can be installed in any of the eight (8) mounting positions per 8-position Module Mounting Shelf. When a DC-DC Converter Option Kit is ordered, the four (4) middle mounting positions of an 8-position Module Mounting Shelf accepts either Rectifier Modules (PCUs) or DC-DC Converter Modules.
- ◆ Each 8-position Module Mounting Shelf in the assembly is equipped with individual Rectifier Module (PCU) AC input feeds (one branch circuit per module mounting position, eight feeds total per shelf, twenty-four feeds total per assembly).



Restrictions

Module Mounting Assembly maximum output current:

Module Configuration	+24VDC	-48VDC
(20) List 2 Rectifiers & (4) List 4 Converters	2000A*	125A
(12) List 2 Rectifiers & (12) List 4 Converters	1200A	375A

* - Maximum bay rating of associated Power System

Maximum of one (1) Module Mounting Assembly (588705101 List 1, 588705102 List 1, 588705103 List 1, or 588705104 List 1) per equipment bay.

When equipped with a DC-DC Converter Option Kit, each 8-position Module Mounting Shelf in the Module Mounting Assembly accepts a maximum of four (4) DC-DC Converter Modules (12 total for the assembly).

Total Rectifier Module (PCU) output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

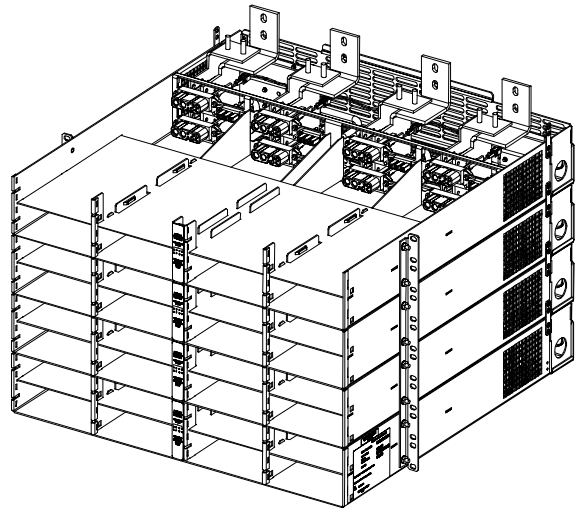
Ordering Notes

- 1) For twenty-four (24) module mounting positions in a relay rack, order 588705103 List 1. If more than twenty-four (24) module mounting positions are required, **do not** order multiples of 588705103 List 1; order [588705104 List 1](#) instead.
- 2) Order Rectifier Modules (PCUs) per [List 2](#) as required. Rectifier Modules (PCUs) can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 3) To use DC-DC Converters in any 8-position Module Mounting Shelf in this Module Mounting Assembly, order one (1) DC-DC Converter Option Kit ([P/N 540806](#)) for each 8-position Module Mounting Shelf in which Converters are required. Each kit allows the middle four (4) module mounting positions in one 8-position Module Mounting Shelf to accept DC-DC Converter Modules. When more than one kit is ordered, kits will be factory installed starting in the bottom 8-position Module Mounting Shelf in the Module Mounting Assembly and working up. This option can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 4) Order DC-DC Converter Modules per [List 4](#) as required. Converter Modules can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 5) Order one (1) Module Mounting Position Blank Cover ([P/N 540959](#)) for each empty module mounting position in the assembly. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 6) Refer also to "[ACCESSORY DESCRIPTIONS](#)" for other available accessories.

588705104 List 1: 32-Position Module Mounting Assembly

Features

- ◆ Provides one (1) 32-Position Module Mounting Assembly.
- ◆ The assembly consists of four (4) 8-position Module Mounting Shelves. Each shelf provides eight (8) module mounting positions (32 total for the assembly). Rectifier Modules (PCUs) can be installed in any of the eight (8) mounting positions per 8-position Module Mounting Shelf. When a DC-DC Converter Option Kit is ordered, the four (4) middle mounting positions of an 8-position Module Mounting Shelf accepts either Rectifier Modules (PCUs) or DC-DC Converter Modules.
- ◆ Each 8-position Module Mounting Shelf in the assembly is equipped with individual Rectifier Module (PCU) AC input feeds (one branch circuit per module mounting position, eight feeds total per shelf, thirty-two feeds total per assembly).



Restrictions

Module Mounting Assembly maximum output current:

Module Configuration	+24VDC	-48VDC
(20) List 2 Rectifiers & (12) List 4 Converters	2000A*	375A
(16) List 2 Rectifiers & (16) List 4 Converters	1600A	500A*

* - Maximum bay rating of associated Power System

Maximum of one (1) Module Mounting Assembly (588705101 List 1, 588705102 List 1, 588705103 List 1, or 588705104 List 1) per equipment bay.

When equipped with a DC-DC Converter Option Kit, each 8-position Module Mounting Shelf in the Module Mounting Assembly accepts a maximum of four (4) DC-DC Converter Modules (16 total for the assembly).

Total Rectifier Module (PCU) output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

Ordering Notes

- 1) For thirty-two (32) module mounting positions in a relay rack, order 588705104 List 1.
- 2) Order Rectifier Modules (PCUs) per [List 2](#) as required. Rectifier Modules (PCUs) can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 3) To use DC-DC Converters in any 8-position Module Mounting Shelf in this Module Mounting Assembly, order one (1) DC-DC Converter Option Kit ([P/N 540806](#)) for each 8-position Module Mounting Shelf in which Converters are required. Each kit allows the middle four (4) module mounting positions in one 8-position Module Mounting Shelf to accept DC-DC Converter Modules. When more than one kit is ordered, kits will be factory installed starting in the bottom 8-position Module Mounting Shelf in the Module Mounting Assembly and working up. This option can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 4) Order DC-DC Converter Modules per [List 4](#) as required. Converter Modules can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 5) Order one (1) Module Mounting Position Blank Cover ([P/N 540959](#)) for each empty module mounting position in the assembly. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 6) Refer also to "[ACCESSORY DESCRIPTIONS](#)" for other available accessories.

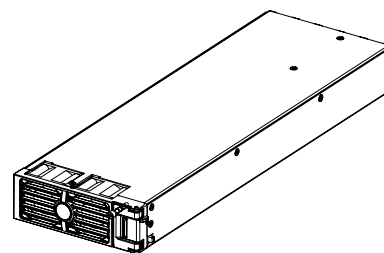
588705100 List 2, 588705101 List 2, 588705102 List 2, 588705103 List 2, 588705104 List 2: **Rectifier Module (PCU)**

Features

- ◆ Provides one (1) Model R24-2500 (+24V, 104.2A, 2500W), Spec. No. 1R242500, Rectifier Module (PCU).

Ordering Notes

- 1) Order as required.



PD588705100
PD588705101
PD588705102
PD588705103
PD588705104

Issue AC, September 28, 2009

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
Spec. No. 588705101 (Model PSS24/1000-23)
Spec. No. 588705102 (Model PSS24/2000-23)
Spec. No. 588705103 (Model PSS24/3000-23)
Spec. No. 588705104 (Model PSS24/4000-23)

[Home](#)

588705100 List 4, 588705101 List 4, 588705102 List 4, 588705103 List 4, 588705104 List 4:

DC-DC Converter Module

Features

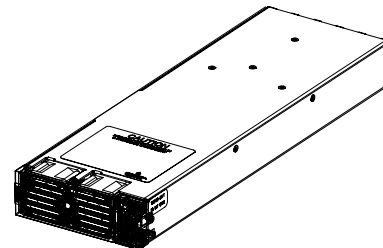
- ◆ Provides one (1) Model C24/48-1500 (-48V, 31A, 1500W), Spec. No. 1C24481500, DC-DC Converter Module.

Restrictions

Requires kit P/N [540806](#).

Ordering Notes

- 1) Order as required. Each 8-position Module Mounting Shelf in a Module Mounting Assembly holds up to four (4) DC-DC Converter Modules when equipped with a DC-DC Converter Option Kit.



ACCESSORY DESCRIPTIONS

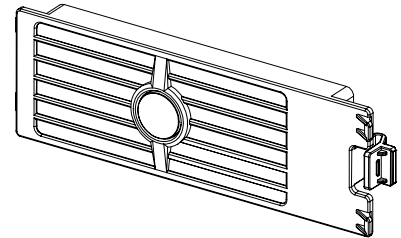
Module Mounting Position Blank Cover Panel (P/N 540959)

Features

- ◆ Covers one (1) unused module mounting position.

Ordering Notes

- 1) Order one (1) blank cover panel, **P/N 540959**, for each empty module mounting position in the system. Blank Covers can also be ordered from the System Application Guide (SAG) of the associated Power System.



DC-DC Converter Option Interface Component Kit (P/N 540806)

Features

- ◆ Provides components to add DC-DC Converter capability to one (1) 8-position Module Mounting Shelf. When installed, the four middle mounting positions in an 8-position Module Mounting Shelf accepts DC-DC Converters or Rectifier Modules (PCUs).
- ◆ Includes cables for connection of converter output to a dual voltage bus distribution panel assembly in a Distribution Cabinet of an associated Power System.

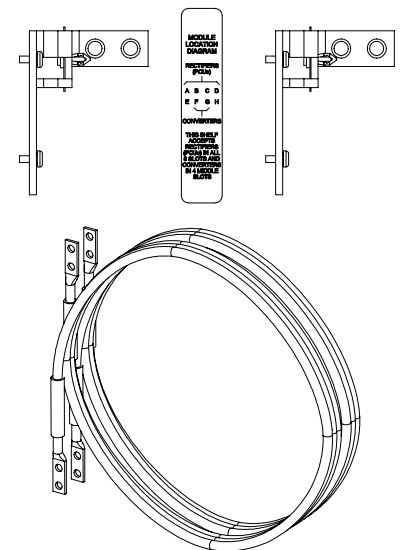
Restrictions

MUST be factory installed only.

Total rectifier output power available for customer loads is reduced by the input power of each DC-DC Converter Module installed.

Ordering Notes

- 1) Order one (1) kit, **P/N 540806**, for each 8-position Module Mounting Shelf in which DC-DC Converters are required. Note that some Module Mounting Assemblies consist of multiple 8-position Module Mounting Shelves. The kit permits the middle four (4) positions in an 8-position Module Mounting Shelf to accept DC-DC Converter Modules or Rectifier Modules (PCUs). The kit is factory installed within the 8-position Module Mounting Shelf. Multiple kits will be installed starting with bottom 8-position Module Mounting Shelf in the Module Mounting Assembly and working up. Kit can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 2) Order up to four (4) converter modules for each kit ordered.



Battery Charge Temperature Compensation Probe for Single Probe Digital Compensation

Features

- ◆ This system can be used with a Battery Charge Temperature Compensation Probe. This probe must be mounted near the battery to sense battery ambient temperature. The probe connects to and allows the MCA of the associated Power System to automatically increase or decrease the output voltage of the system to maintain battery float current as battery ambient temperature decreases or increases, respectively. Battery life can be extended when an optimum charge voltage to the battery with respect to temperature is maintained. Two probes are available. **Part No. 107021** has a 25-foot long cord. **Part No. 106824** has a 100 foot-long cord. See [Overall Dimensions, Digital Battery Charge Temperature Compensation Probe \(P/N 107021 and 106824\)](#) under PHYSICAL SIZE INFORMATION for a dimensional drawing.
- ◆ Allows Rectifier Module Battery Charge Temperature Compensation.
- ◆ For more features, see the [SPECIFICATIONS](#) section.
- ◆ **Temperature Curve:** Refer to [Figure 1](#).

Ordering Notes

- 1) Order one Battery Charge Temperature Compensation Probe per Power System, as required. Can also be ordered from the System Application Guide (SAG) of the associated Power System.

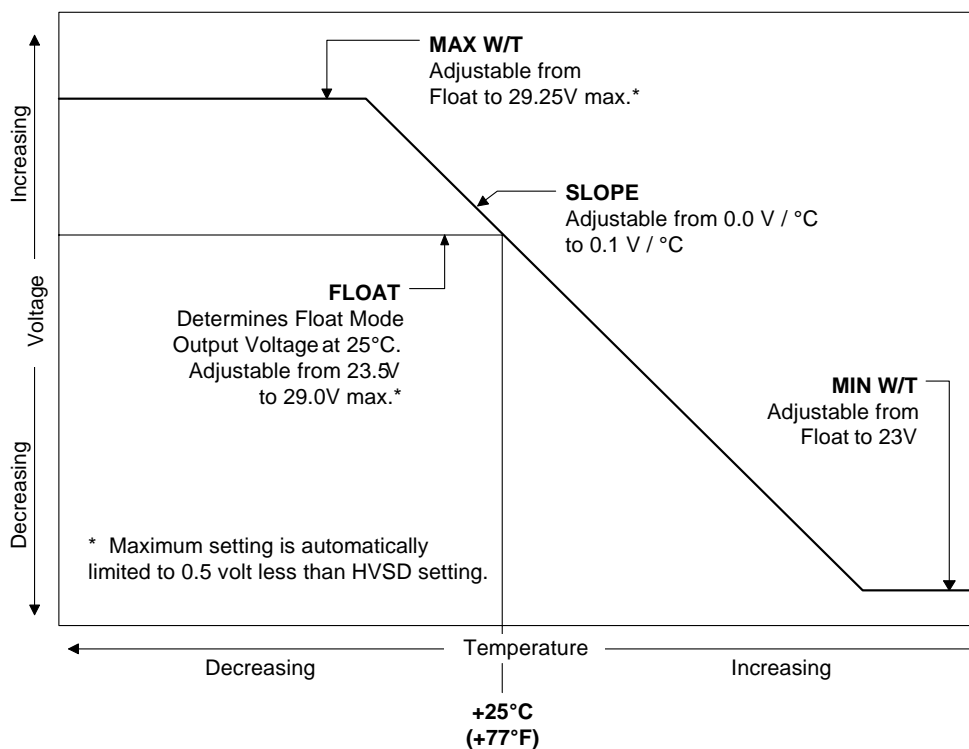


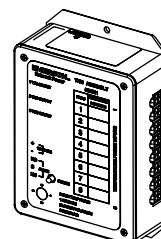
Figure 1
 Typical Float Charge Thermal Characteristics
 Using Optional Battery Charge Digital Temperature Compensation Probe
 (Indicated parameters are user-adjustable via the associated MCA.)

Battery Charge Temperature Compensation Probe Concentrator for Multiple Probe Use (TXM)

Battery Temperature Probe Concentrator Kit (P/N 524570)

Features

- ◆ The Battery Temperature Probe Concentrator (TXM) expands battery temperature monitoring capabilities by providing a means of monitoring up to eight (8) analog battery temperature probes. The TXM provides a digital output for connection to the associated Power System's MCA's battery temperature probe connector. The MCA can be programmed to compensate for the hottest probe reading, the average temperature of all connected probes, or the probe connected to the lowest numbered connector. The kit includes one TXM (P/N 521211) and one 25 ft. interface cable (P/N 521228) for connecting the TXM to the MCA.



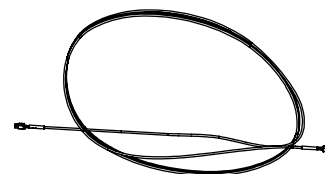
521211

Restrictions

Requires P/N 521262 analog probes. **Cannot** be used with digital probes (P/Ns 106824 and 107021).

Ordering Notes

- 1) Order one Battery Charge Temperature Compensation Probe Concentrator Kit (**P/N 524570**) per power system and up to eight (8) **P/N 521262** probes, as required. Can also be ordered from the System Application Guide (SAG) of the associated Power System.
- 2) Order extension cable **P/N 514153** as required. Can also be ordered from the System Application Guide (SAG) of the associated Power System.



521228

Analog Battery Temperature Probe (P/N 521262)

Features

- ◆ An analog probe designed to sense internal battery temperature. Mounts on the negative terminal of the battery; mounting hole clears 5/16" hardware. Includes 15 ft. cable with connector. See [Overall Dimensions, Analog Battery Temperature Probe \(P/N 521262\)](#) under PHYSICAL SIZE INFORMATION for a dimensional drawing.

Ordering Notes

- 1) See above Ordering Notes.

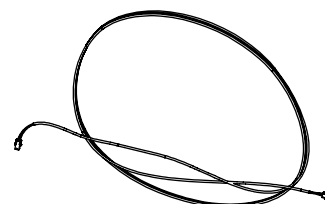
TXM Extension Cable (P/N 514153)

Features

- ◆ 25 ft. long cable. Can be used between a P/N 521262 Analog Battery Temperature Probe and the TXM; or to extend a P/N 521228 interface cable between the TXM and MCA.

Ordering Notes

- 1) See above Ordering Notes.



514153

PD588705100
PD588705101
PD588705102
PD588705103
PD588705104

Issue AC, September 28, 2009

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
Spec. No. 588705101 (Model PSS24/1000-23)
Spec. No. 588705102 (Model PSS24/2000-23)
Spec. No. 588705103 (Model PSS24/3000-23)
Spec. No. 588705104 (Model PSS24/4000-23)

[Home](#)

Replacement Cables

Ordering Notes

- 1) Refer to the System Application Guide (SAG) of the associated Power System for part numbers.

Replacement Components

Ordering Notes

- 1) **Rectifier Module (PCU):** Order via [List 2](#) or the Power System documentation.
- 2) **Rectifier Module Fan:** Part No. 32010156 (2 required per Rectifier Module).
- 3) **DC-DC Converter Module:** Order via [List 4](#) or the Power System documentation.
- 4) **DC-DC Converter Module Fan:** Part No. 534520 (2 required per Converter Module).

Wiring Notes

Refer also to the next section, [Wiring Illustrations](#).

AC Input Branch Circuit Protection and Wire Size Selection

Features

- ◆ Each 8-position Module Mounting Shelf in a Module Mounting Assembly contains rear mounted AC input terminal blocks and provides individual feeds to each Rectifier Module mounting position.

Restrictions

AC input terminal blocks are “tubular contact - screw compression” type and accept a wire size in the range of 10 to 24 AWG.

Ordering Notes

- 1) Refer to the following table.

THWN - 90°C Wire - Individual Feed Four Rectifiers (8 Current and 1 Ground Wire) per Conduit				
Input Voltage	Input Current	Overcurrent Protection ⁽¹⁾	30°C and 40°C Ambient Temperatures ⁽²⁾	
			Wire AWG ^{(2) (3)}	Conduit Size (in.)
208	14	20A	12	1/2
240	12	15A	14	1/2

¹ The AC input branch circuit protective device should be of the time-delay or high inrush type.

² Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310-16 for copper wire at **90°C** conductor temperature; operating in ambients of **30°C** and **40°C** was used. For other operating ambient temperatures, refer to the National Electrical Code. For operation in countries where the NEC is not recognized, follow applicable codes.

³ Equipment grounding conductors must be provided with the AC input conductors supplied to the shelf. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

Shelf Frame Ground Wire Size Selection

Features

- ◆ Two 10-32 X 3/4" frame ground studs with hardware are provided on the rear of each 8-position Module Mounting Shelf.

Restrictions

Recommended frame ground wire size is the same size as the AC input branch circuit wiring.

For relay rack grounding requirements, refer to the NEC, applicable local codes, and your specific site requirements.

DC Output Connections: +24VDC System Output

Features

- ◆ Busbars are provided within each Module Mounting Assembly for factory connection into a NETSURE Power System.

Ordering Notes

- 1) No wire size or lug recommendations are provided here. Shelf +24VDC output is connected via busbars to the distribution section of a NETSURE Power System.

DC Output Connections: -48VDC Subsystem Output

Features

- ◆ Busbars are provided within each Module Mounting Assembly for factory connection into a NETSURE Power System.

Ordering Notes

- 1) No wire size or lug recommendations are provided here. Shelf -48VDC output is connected via factory-installed cabling to the distribution section of a NETSURE Power System.

External Alarms Wire Size Selection

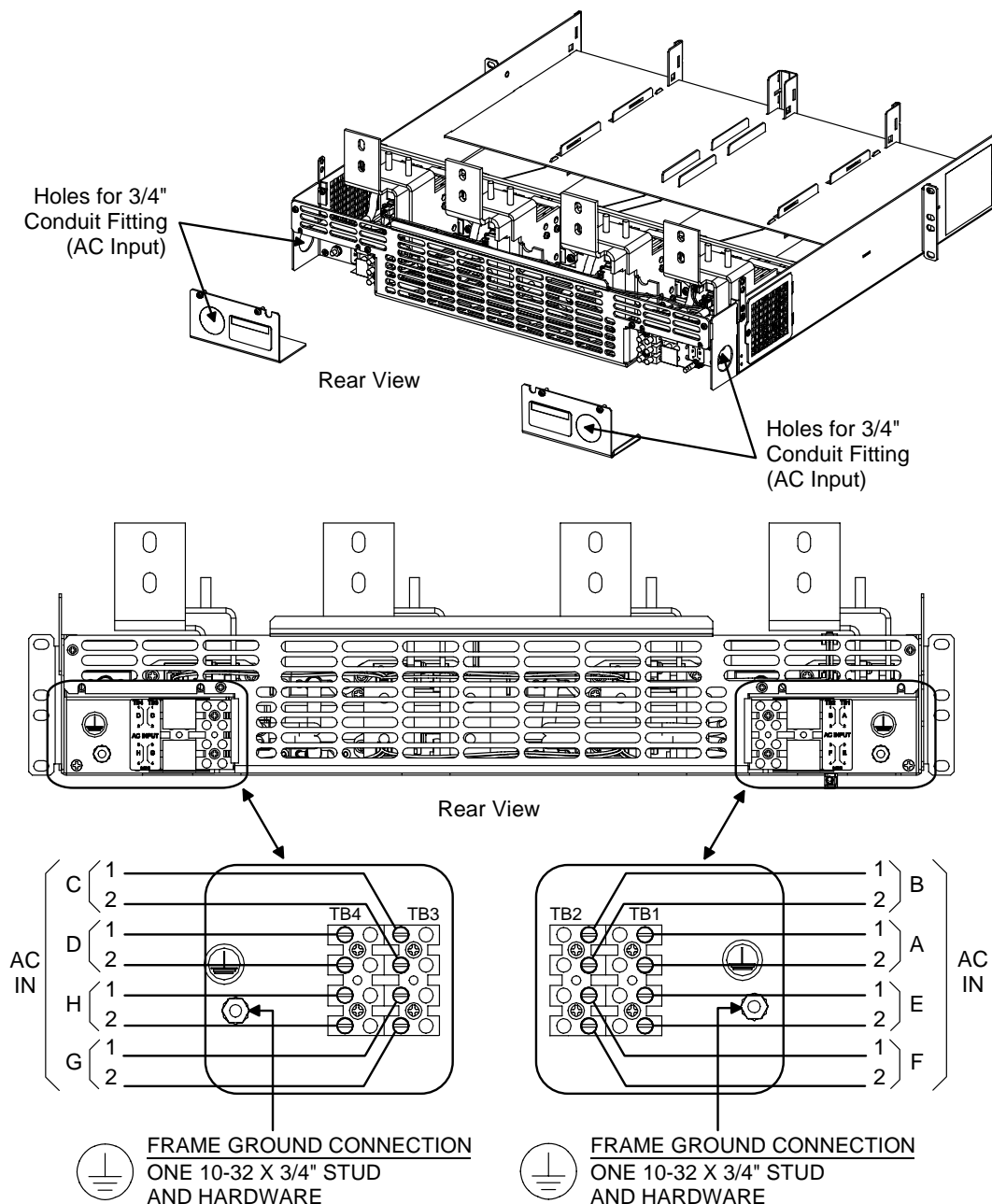
Ordering Notes

- 1) No wire size recommendations are provided here. Shelf external alarms are provided via the MCA of an associated NETSURE Power System.

Wiring Illustrations

AC Input and Frame Ground

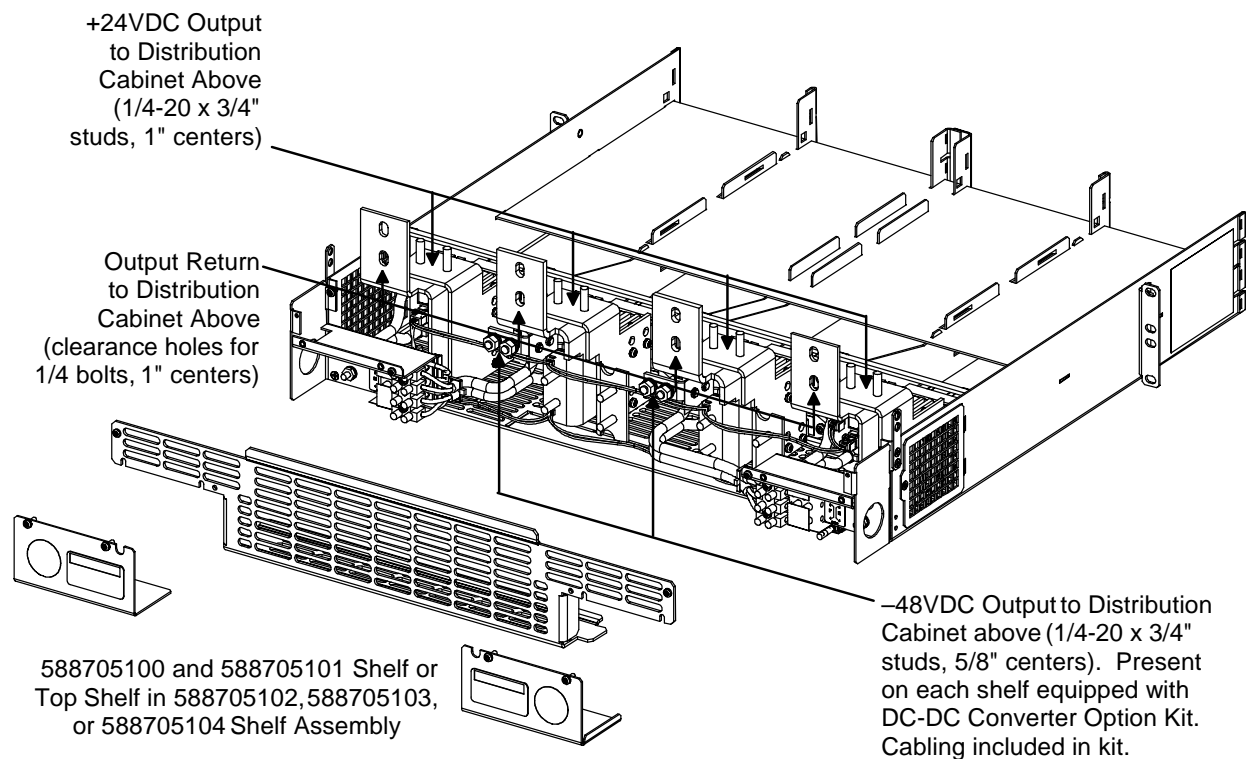
(for each 8-Position Module Mounting Shelf in the Module Mounting Assembly)



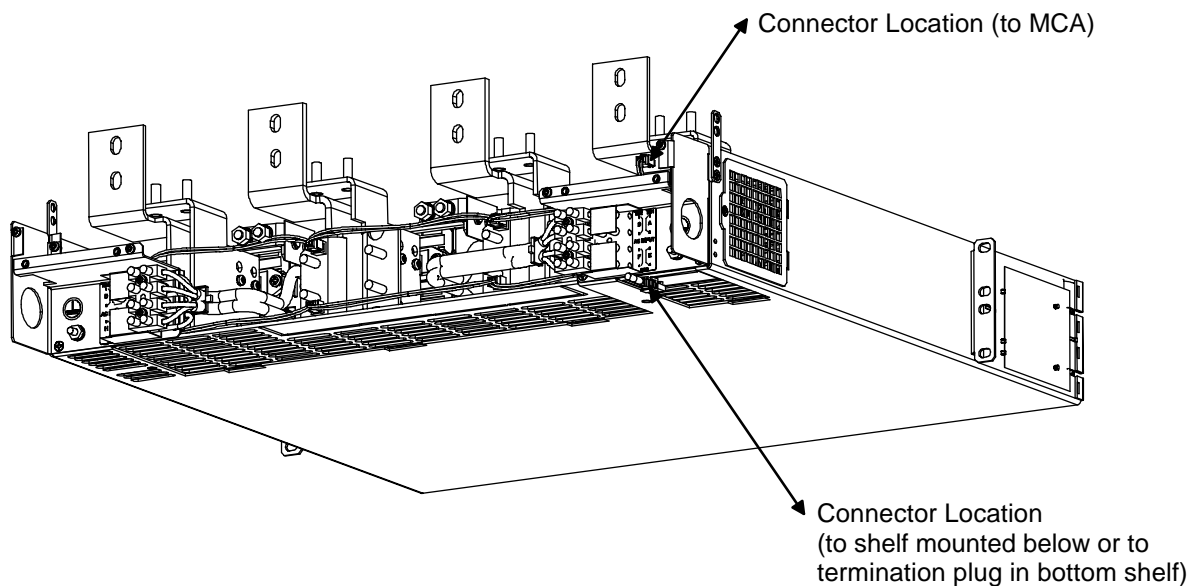
Note: Module mounting positions are lettered left to right as viewed from front of shelf, A-D in top row and E-H in bottom row.

Note: If mounting positions B, C, F, and G are intended for DC-DC Converter installation (Converter Option must be installed), AC input connections to these positions are not required.

DC Output



Alarm/Control to MCA



Control Bus Connections Between MCA and Shelves

SPECIFICATIONS

Note: All MCA references pertain to the Meter-Control-Alarm assembly located in the associated Power System. Refer to the separate System Application Guide (SAG) of the associated Power System for the following:

- MCA specifications and factory default settings.
- All external alarms.
- All external controls.
- Local status and alarm indicators other than those provided on the Rectifier Modules (PCUs) and DC-DC Converter Modules.

1. RECTIFIER (PCU) SPECIFICATIONS

1.1 DC Output Ratings

1.1.1 Voltage: Nominal +24 volts DC, Negative Ground.

(A) Without Battery Charge Temperature Compensation: Float voltage is adjustable from 23.50 to 28.50 volts DC. Test/equalize voltage is adjustable from 23.00 to 28.50 volts DC. The output voltage temperature coefficient does not exceed 0.01% per degree centigrade from -40°C to +65°C. Adjustment is made via the associated MCA. Refer to the separate Power System documentation for the factory setting.

(B) With Battery Charge Digital Temperature Compensation Probe or TXM (multiple probe concentrator module): With an optional battery charge digital temperature compensation probe or TXM installed, the MCA automatically increases or decreases the output voltage as battery ambient temperature decreases or increases, respectively. The float and test/equalize voltage range is the same as without battery charge temperature compensation. Refer to the separate Power System documentation for the factory setting. Using battery and equipment manufacturers' recommendations, the user selects the following temperature compensation curve parameters via the MCA. Refer to the Temperature Compensation Probe Curve (Figure 1) under ACCESSORY DESCRIPTIONS.

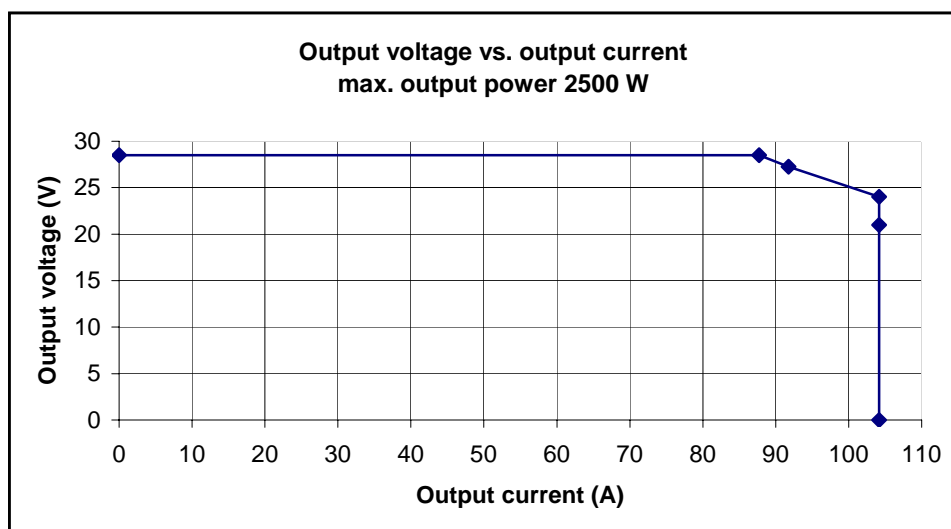
- (1)** The temperature compensation slope in volts/°C. Adjustable from zero to 100 millivolts/°C. Adjustment is made via the associated MCA. Refer to the separate Power System documentation for the factory setting.
- (2)** The maximum voltage limit in volts DC. Adjustable from float up to 28.5 volts DC, but automatically limited to 0.5 volt below the High Voltage Shutdown setting. Adjustment is made via the associated MCA. Refer to the separate Power System documentation for the factory setting.
- (3)** The minimum voltage limit in volts DC. Adjustable from float down to 24.00 volts DC, but automatically limited to 0.5 volt above the Low Voltage Disconnect Reconnect setting. Adjustment is made via the associated MCA. Refer to the separate Power System documentation for the factory setting.

1.1.2 Current (One Rectifier Module [PCU]): 87.7 Amperes at 28.5 VDC to 104.2 Amperes at 24.0 VDC.

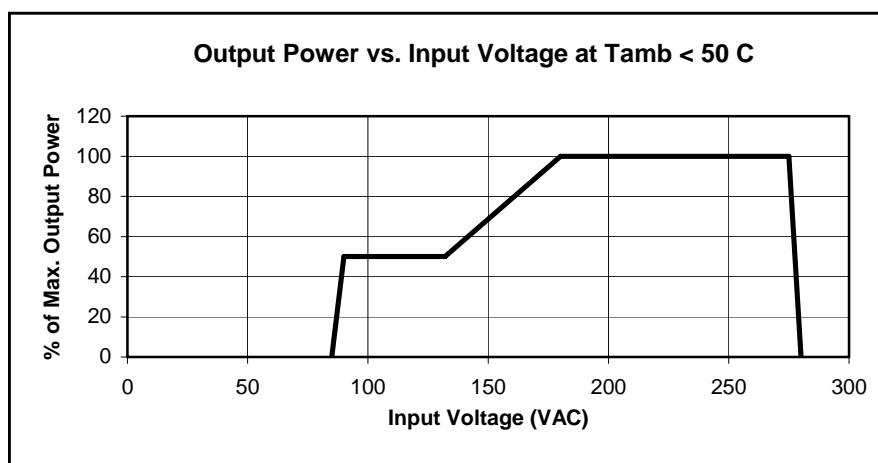
1.1.3 Power (One Rectifier Module [PCU]): 2500W @ $V_{out} \geq 24$ VDC.

1.1.4 Output Characteristics: The relationship between output voltage and current is summarized in the following table and depicted graphically in the following illustration.

Output Power	Output Current	Output Voltage
2500 W	87.7 A	28.5 VDC
2500 W	104.2 A	24.0 VDC

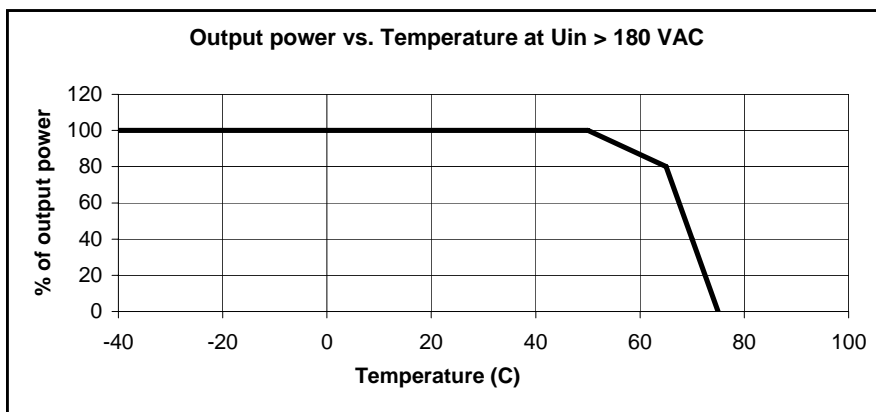


1.1.5 Power Derating Based on Input Voltage: The Rectifier Module can provide maximum rated power (2500W) as long as the input voltage is within the range of 180 to 275 VAC. From 180 VAC to 90 VAC, the Rectifier Module will continue to operate, but maximum power is reduced. The relationship between the output power and input voltage is illustrated below.



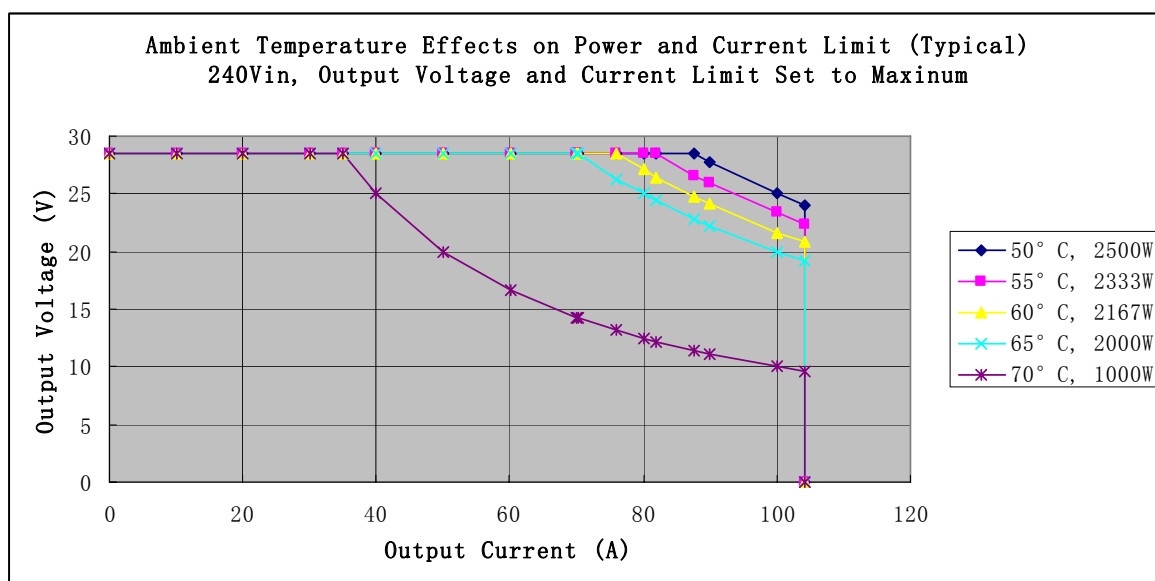
1.1.6 Power Derating Based on Temperature: Each Rectifier Module continuously monitors the ambient temperature surrounding the power conversion circuit. If this temperature for any reason (such as a high ambient temperature or failed fan) increases above approximately +50°C (+122°F), the Rectifier Module will not shut down. Rather, the Rectifier Module will limit its

maximum output power to maintain the temperature of the power conversion circuit within design parameters. Operation between +50°C (+122°F) and +65°C (149°F) will result in the output power being decreased by approximately 33 Watts/°C. Full power capability is restored when the temperature decreases to below approximately +50°C (+122°F). Refer to the following curves illustrating typical operating parameters.



Warning: The module is rated for continuous operation at full output power up to +50°C (+122°F). Operation between +50°C (+122°F) and +65°C (149°F) will result in output power decreasing by approximately 33 Watts/°C. Operation above +65°C (+149°F) is considered abnormal and should be used on a temporary¹ basis only.

¹ **Temporary Operation at Abnormal Temperature:** Temporary operation is defined as a period of not more than eight consecutive hours per day, and a total of not more than 15 days in a year. (This refers to a total of 120 hours in any given year, but no more than 15 occurrences in that one-year period.)



1.1.7 Regulation:

- (A) **Static:** Steady state regulation is $\pm 0.5\%$ as controlled within the Rectifier Module for any and all combinations of load from no load to full load, input voltage, and input frequency at a constant ambient temperature. The associated system Controller may provide increased regulation. Refer to the separate Power System or Controller documentation for system regulation specifications.
- (B) **Dynamic Load:** For any step load change within the range of 10% to 90% of full load (91.8A) within 50 microseconds, per Telcordia GR-947-CORE, the maximum voltage transient will not exceed $\pm 5\%$ of the initial steady state voltage within 250 microseconds. Recovery to within 1% of the initial steady state voltage does not exceed 4 milliseconds.
- (C) **Dynamic Line:** Any step change of the line voltage within the limits specified in Paragraph 1.2.1 shall not cause the output voltage to deviate outside the $\pm 0.5\%$ regulation band.

1.1.8 Filtering (with or without battery):

Typical readings were taken at nominal input voltage, nominal output voltage, 50% load, and 25°C (77°F) ambient.

- (A) **Voice Band Noise:** Complies with Telcordia GR-947-CORE.
 - (1) Typically 30 dBrn with C-message weighting. Does not exceed 32 dBrn C.
 - (2) Typically 0.6 millivolt psophometric. Does not exceed 1 millivolt psophometric.
- (B) **Wide Band Noise:** Complies with Telcordia GR-947-CORE.
 - (1) Typically 80 millivolts peak-to-peak. Does not exceed 250 millivolts peak-to-peak.
 - (2) Typically 6.3 millivolts rms. Does not exceed 50 millivolts rms.

1.2 AC Input Ratings

1.2.1 Voltage:

- (A) **Normal:** Nominal 208-240 volts AC, single phase, 50/60 Hz, with an operating range of 180 to 264 volts. Acceptable input frequency range is 47 to 65 Hz.
- (B) **Reduced Output:** The Rectifier Module will operate and provide reduced output power from 180 to 90 volts. Refer to Paragraph 1.1.5.
- (C) **Extended:** The Rectifier Module can operate safely to 275 volts AC.
- (D) **Safe Voltage:** The Rectifier Module can tolerate 300 volts AC without damage.

1.2.2 Harmonic Content:

Meets EN 61000-3-2.

1.2.3 Inrush Current:

Peak does not exceed 2 times the RMS input current at full load, nominal input voltage, and for any duration of AC input interrupts. Under the above conditions, standard AC distribution circuit breakers will not trip.

1.2.4 Typical Input Data: 50 Hz Input

(A) System output is initially adjusted to 27.24 volts DC as measured at the system sense point at 50% of full load and nominal input. "Percent of Full Load" refers to percent of 87.7 Amperes at 28.5 volts.

Number of Rectifier Modules (PCUs) Installed	Nominal Input Voltage	Percent of Full Load	Input Current (Amperes)	Input VA	Input Watts	Power Factor %	Efficiency %	Heat Dissipation BTU/Hr
1	208	0	0.2797	58.2335	22.0705	37.9	--	75.31
		25	3.373	699.7	694.102	99.2	86.18	327.34
		50	6.383	1325.11	1322.46	99.8	90.42	432.24
		75	9.535	1980.42	1978.44	99.9	90.85	617.36
		100	12.719	2636.65	2634.01	99.9	90.57	847.69
		110	13.65	2837.84	2832.16	99.8	90.38	929.30
		120	13.717	2849.02	2843.32	99.8	89.69	1000.40
	240	0	0.2962	71.1769	19.716	27.7	--	67.27
		25	2.942	704.315	692.341	98.3	86.30	323.60
		50	5.54	1322.95	1317.66	99.6	90.70	418.05
		75	8.255	1973.77	1969.82	99.8	91.21	590.74
		100	11.015	2627.08	2621.82	99.8	91.06	800.12
		110	11.84	2825.02	2819.37	99.8	90.77	887.98
		120	11.882	2835.05	2829.38	99.8	90.13	952.81

(B) **Typical Power Factor:** Greater than or equal to 99.6% for any load greater than or equal to 50% of rated full load at nominal line. Meets IEC 1000-3-2.

(C) **Typical Operating Efficiency:** 91.21% at best point, 90.57% at full load and nominal input voltage.

(D) **Maximum Input Current:** 15.43 amperes at 100% of full load with output adjusted to 28.5 volts DC as measured at the shelf output terminals, and input voltage of 180 volts.

1.2.5 Typical Input Data: 60 Hz Input

(A) System output is initially adjusted to 27.24 volts DC as measured at the system sense points at 50% of full load and nominal input. "Percent of Full Load" refers to percent of 87.7 Amperes at 28.5 volts.

Number of Rectifier Modules (PCUs) Installed	Nominal Input Voltage	Percent of Full Load	Input Current (Amperes)	Input VA	Input Watts	Power Factor %	Efficiency %	Heat Dissipation BTU/Hr
1	208	0	0.3166	65.9478	21.1692	32.1	--	72.23
		25	3.376	703.896	696.153	98.9	85.93	334.11
		50	6.406	1330.53	1327.87	99.8	90.18	445.11
		75	9.495	1973.06	1971.09	99.9	90.84	615.79
		100	12.683	2639.33	2636.69	99.9	90.57	848.46
		110	13.683	2839.22	2833.54	99.8	90.26	942.01
		120	13.69	2846.15	2840.46	99.8	89.74	994.54
	240	0	0.3433	82.4263	19.535	23.7	--	66.66
		25	2.956	708.258	691.259	97.6	86.51	318.16
		50	5.551	1327.8	1322.49	99.6	90.59	424.57
		75	8.288	1975.86	1971.91	99.8	91.15	595.74
		100	11.054	2625.33	2622.7	99.9	91.07	799.42
		110	11.885	2819.12	2816.3	99.9	90.95	869.93
		120	11.875	2827.44	2824.61	99.9	90.27	937.98

(B) **Typical Power Factor:** Greater than or equal to 99.6% for any load greater than or equal to 50% of rated full load at nominal line. Meets IEC 1000-3-2.

(C) **Typical Operating Efficiency:** 91.15% at best point, 90.57% at full load and nominal input voltage.

(D) **Maximum Input Current:** 15.43 amperes at 100% of full load with output adjusted to 28.5 volts DC as measured at the shelf output terminals, and input voltage of 180 volts.

1.3 Environmental Ratings

1.3.1 **Operating Ambient Temperature Range:** -40°C to +75°C (-40°F to +167°F). Refer to [Paragraph 1.1.6](#).

1.3.2 **Specification Compliant Temperature Range:** -20°C to +70°C (-4°F to +158°F). Refer to [Paragraph 1.1.6](#).

1.3.3 **Storage Ambient Temperature Range:** -40°C to +85°C (-40°F to +185°F).

1.3.4 **Humidity:** This Rectifier Module is capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

1.3.5 **Altitude:** This Rectifier Module is capable of operating in an altitude range of -200 feet to 10,000 feet. The maximum operating ambient temperature should be de-rated by 3°C per 1000 feet above 5000 feet.

1.3.6 Ventilation Requirements:

(A) Ventilation: The Rectifier Modules (PCUs) are fan cooled and utilize front to back forced ventilation. A Module Mounting Assembly must be mounted so ventilating openings are not blocked and temperature of the air entering the cabinet does not exceed the Operating Ambient Temperature Range stated above.

(B) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of Module Mounting Shelves, one above the other, in a relay rack. There is no spacing requirement between stacked Module Mounting Shelves of a single system.

1.3.7 Audible Noise (System): The audible noise at any point two feet from any vertical surface of a Rectifier Mounting Shelf (with Rectifier Modules installed and fans operating) does not exceed the following limits. The audible noise was measured with the fan control circuit enabled. A Sound Level Meter conforming to ANSI S1.4 was used.

(A) For One Rectifier Module:

- (1) 50dB-A maximum at less than 32°C ambient, half load or less.
- (2) 60dB-A maximum at less than 32°C ambient, full load.
- (3) 70dB-A maximum at greater than 32°C ambient, full load.

(B) For Eight Rectifier Modules:

- (1) 61dB-A maximum at less than 32°C ambient, half load or less.
- (2) 71dB-A maximum at less than 32°C ambient, full load.
- (3) 81dB-A maximum at greater than 32°C ambient, full load.

1.3.8 EMI/RFI Suppression: Rectifier Modules operating in a Module Mounting Shelf conform to the requirements of FCC rules Part 15, Subpart B, Class B for Radiated and Conducted emissions limits.

1.3.9 Surge Protection: Compliance with EN61000-4-5 Installation Class 4, and capable of withstanding surges per ANSI/IEEE C 62.41 1980 Category B3 across the input terminals.

Note: *This level of protection is a widely used standard for telecommunications power equipment. As with all such equipment, it is the end user's responsibility to provide an adequately sized Surge Suppression Device at the commercial power service entrance of the building that reduces all incoming surges to levels below the classes/categories stated for the equipment.*

1.3.10 Compliance Information:

(A) Safety Compliance: This unit meets the requirements of UL 60950-1, Standard for Information Technology Equipment, and is UL Recognized as a power supply for use in Telephone, Electronic Data Processing or Information Processing Equipment. This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

(B) The Rectifier Modules are RoHS 5/6 compliant.

1.3.11 NEBS Compliance: Compliance verified by a Nationally Recognized Testing Laboratory (NRTL) per GR-1089-CORE and GR-63-CORE. Contact Emerson Network Power for NEBS compliance reports.

In order to remain compliant during a fan failure condition, the backup battery connection must be utilized to provide sufficient power to the loads for up to eight (8) hours when the system is operated at greater than 50% output power. If no backup battery connection is used, the system must operate with a redundant module installed.

1.4 Standard Features

1.4.1 Type of Power Conversion Circuit: High frequency.

1.4.2 Float Charging Output Mode: In this mode of operation, system output voltage is constant and output current does not exceed the current limit setting and output power does not exceed 2500W. During normal operation, the battery is not required to furnish load current and remains in a fully charged condition.

The float voltage setting can be checked and/or adjusted without removing a Rectifier Module (PCU) or affecting the load. One adjustment changes the output of all Rectifier Modules (PCUs).

Note: *If the current demanded by the load exceeds the current limit setting of the system, the battery is required to furnish the difference in load current and begins discharging. If the demand by the load exceeds 2500W per rectifier (PCU), the battery is required to furnish the difference and begins discharging.*

Note: *If the system is used with a digital battery charge temperature compensation probe or TXM, the MCA automatically adjusts system output. This ensures proper voltage to the battery as battery ambient temperature fluctuates.*

1.4.3 Test/Equalize Charging Output Mode: This mode of operation is used if higher output voltage is required for equalizing the charge on all battery cells of a conventional flooded cell battery, or for recharging the battery following a commercial power failure.

If the installation site does not require system equalize mode of operation, the equalize feature can be used as a test feature. System equalize voltage can be adjusted to a test voltage value. Placing the system into the test/equalize mode causes system output voltage to increase or decrease to this test voltage value.

The test/equalize voltage setting can be checked and/or adjusted without removing a Rectifier Module (PCU) or affecting the load. One adjustment changes the output of all Rectifier Modules (PCUs).

Note: *If the system is used with a battery charge digital temperature compensation probe or TXM, typical equalize mode of operation is not used.*

1.4.4 Output Mode of Operation Selection: There are four methods of placing the system from the float mode to the test/equalize mode.

(A) Method 1 (Manual Test/Equalize): A user manually places the system into the test/equalize mode via the MCA interface. A user must manually return the system to the float mode via the MCA interface.

(B) Method 2 (Manually Initiated Timed Test/Equalize): A user manually places the system into the test/equalize mode via the MCA interface. The system automatically returns to the float mode after a preset programmable time period (1-99 hours, in increments of one hour).

(C) Method 3 (Automatic Test/Equalize):

THE AUTOMATIC EQUALIZE FEATURE IS INTENDED FOR USE ONLY WITH WET CELL BATTERIES. USING THIS FEATURE WITH VALVE REGULATED BATTERIES IS NOT RECOMMENDED.

This feature can be enabled or disabled by a user via the MCA. The default state is disabled.

The Automatic Equalize feature is a time based function that is controlled by a customer selectable multiplier and by the Battery On Discharge (BOD) alarm setpoint. The MCA's default setting is for a multiplier of zero, which disables the Automatic Equalize feature.

When the Automatic Equalize feature is enabled, if system voltage drops to less than the BOD alarm setpoint, the MCA initiates a timing cycle to measure the discharge time period. The MCA requires at least 15 minutes of continuous BOD alarm in order to prevent nuisance equalization cycles. When system voltage rises to above the BOD alarm setpoint, the MCA ends the discharge timing cycle and (assuming a minimum of 15 minutes has elapsed) places the Rectifier Modules (PCUs) into the equalize mode for a customer selectable multiple of the discharge time period (the discharge time period includes the initial 15 minutes).

The equalize time period can be set for 0 to 15 times the discharge time period, up to a maximum of 300 hours. A zero (0) setting disables the feature.

(D) Method 4 (External Test/Equalize): A user (or external equipment) places the system into the test/equalize mode by applying an external signal to the system. The system returns to the float mode when the external signal is removed. This method overrides the other three methods.

1.4.5 Input Protection:

- (A) Fusing:** The Rectifier Module contains double pole/neutral fusing (non user-replaceable). Customer is to provide AC input branch circuit protection.
- (B) Low Input Voltage:** The Rectifier Module shuts down and its protection indicator (yellow) illuminates if input voltage decreases below 85VAC. The Rectifier Module automatically restarts when the input voltage returns to within the normal operating range. A low input voltage condition does not trip the recommended input protection device.
- (C) High Input Voltage:** The Rectifier Module shuts down and its protection indicator (yellow) illuminates if input voltage increases above than 280VAC. The Rectifier Module automatically restarts when the input voltage returns to within the normal operating range.
- (D) Power Interruption:** Interruption and restoration of input power does not affect the proper operation of the controls, alarm signals, or visual indicators. On restoration of input power, the Rectifier Module automatically restarts without manual intervention and without operating protective devices, even if connected to a completely discharged battery string or capacitor bank.

1.4.6 Output Protection:

- (A) Current Limiting:** The maximum current delivered by the Rectifier Module can be programmed from 10% to 120% of full load rating via the controller. If communication to the controller is lost, the Rectifier Module default value is 100% of full load rating. Full load rating for Rectifier Modules is defined as the maximum current available over the entire output voltage range (87.7 A). The Rectifier Module can start when connected to a completely discharged battery or capacitor bank without operating Rectifier Module protective devices or needing any manual intervention.

(B) Fusing: The Rectifier Module contains an output fuse (non user-replaceable). Rectifier Module output power is lost and its fault indicator (red) illuminates if the output fuse opens. The Rectifier Module (PCU) can be plugged into or pulled out of a shelf while operating, without damage or opening the fuse.

(C) High Voltage Shutdown:

- (1) Internal:** If output voltage exceeds an adjustable preset value and the Rectifier Module (PCU) is delivering more than 10% of its rated current, the Rectifier Module (PCU) shuts down.

After approximately 3 seconds, the Rectifier Module (PCU) automatically restarts. If output voltage again exceeds the high voltage shutdown value within 5 minutes, the Rectifier Module (PCU) shuts down and locks out. Manual restart is then required (by turning AC power to the Rectifier Module off or by removing the Rectifier Module, waiting 5 seconds, then turning AC power to the Rectifier Module on or re-inserting the Rectifier Module). If the Rectifier Module (PCU) does not experience a high voltage condition within the 5-minute time-period, the restart circuit is reset.

If two or more Rectifier Modules (PCUs) are installed in a shelf, or if the shelf is paralleled with other Module Mounting Shelves, only the Rectifier Module (PCU) causing the high voltage condition shuts down.

The high voltage shutdown point can be checked and/or adjusted without removing a Rectifier Module (PCU). One adjustment changes the setting of all Rectifier Modules (PCUs).

Adjustable from 24.00 to 29.75 volts DC. Refer to the separate Power System documentation for the factory setting.

- (2) Remote:** See associated Power System documentation.
- (3) Backup:** If Rectifier Module (PCU) output voltage exceeds a second (non-adjustable) value of 31.0VDC \pm 0.5VDC, the Rectifier Module (PCU) shuts down and locks out regardless of load. Manual restart is then required [by turning AC power to the Rectifier Modules (PCUs) off then on, or by removing and re-inserting the Rectifier Modules (PCUs)].

1.4.7 Power Factor Correction Failure: If the power factor correction circuit fails and results in over/low DC bus voltage, the Rectifier Module shuts down and its protection indicator (yellow) illuminates.

1.4.8 DC/DC Converter Failure: If the DC/DC converter fails, the Rectifier Module shuts down and the fault indicator (red) illuminates.

1.4.9 Rectifier Module (PCU) Load Sharing (per Bay): The Rectifier Module shares load with other Rectifier Modules operating in parallel in one cabinet to within \pm 3.0A difference of average current of Rectifier Modules at 10%~100% load (max 28 rectifiers).

1.4.10 Startup Time: The Rectifier Module has two startup modes.

(A) Normal Startup:

- Start up time, defined as beginning at AC switch on and ending when full output power has been reached, consists of two time intervals, the delay period and the output voltage ramp up period.
- During the delay period the output voltage will be zero volt.

- Start up time (from AC on until full power): ≤ 5 seconds.
- Output voltage ramp up period, t : $50 \leq t \leq 150$ ms. (10% to 90% of full power)
- The rise time is retained with a DC load of 0.31 Ohm (+24.0VDC & 87.7A).
- The Rectifier Module will not suffer any damage, when subjected to repetitive AC switch on / switch off operations.

(B) Output Current Walk-In: Meets Telcordia GR-947-CORE, R3-19. Output current gradually increases after the Rectifier Module is switched on, or after AC service is supplied or restored.

- 1.4.11 Hot Swappable:** The Rectifier Module is designed to be plug-and-play. The Rectifier Module can be inserted or removed from a live DC power system with no damage. When the Rectifier Module is plugged into the system, the system output voltage will not be affected.
- 1.4.12 Cooling:** Each Rectifier Module contains two fans for forced convection cooling. The Rectifier Module shuts down and its fault indicator (red) flashes if either fan fails. Fan failure is detected and reported to controller. The fans are field replaceable.
- 1.4.13 Fan Control:** Fan speed is continuously variable. When input voltage is within normal range, the built-in processor adjusts fan speed according to the Rectifier Module's internal temperature and output power. For example, a higher temperature or output power increases the fan speed.
- 1.4.14 Communication Failure:** The protection indicator (yellow) will flash should communication between the Rectifier Module and associated system Controller fail. The failure information will be reported to the associated system Controller and the Controller will process the failure accordingly. During a communication failure, Rectifier Module output voltage will automatically default to the last set float voltage. The Rectifier Module will revert to normal operation once normal communication is restored.
- 1.4.15 Output Current Imbalance:**
- (A)** When the average current of all Rectifier Modules is greater than 20% of full rated current, and the difference between local Rectifier Module current and average current is greater than 16% of full rated current, the yellow protection indicator will illuminate.
- (B)** When the average current of all Rectifier Modules is greater than 10% of full rated current, and local Rectifier Module current is less than 1.5% of full rated current, then the red fault indicator will illuminate.
- 1.4.16 Paralleling:** This Rectifier Module may be connected in parallel with any Rectifier Module of the same polarity and adjusted to the same output voltage.
- 1.4.17 Monitoring Function:** The Rectifier Module has a built-in advanced DSP (Digital Signal Processor) that monitors and controls the operation of the Rectifier Module. The DSP also communicates with the associated system Controller in real time through the CAN bus. The following table lists the different commands and information exchanged between the Rectifier Module and the Controller.

Commands / signals that can be received by the Rectifier Module from the Controller.	Information gathered by the Controller from the Rectifier Module.
<ul style="list-style-type: none"> • Turn on/off • Current walk-in on/off • HVSD reset • Current limit adjustment • Voltage regulation 	<ul style="list-style-type: none"> • Input voltage • Output voltage • Output current • Current limit setting • Temperature • Over voltage setting • On/off status • Fault alarms, such as: HVSD Fan fail • Protection alarms, such as: Input voltage protection Inner DC bus voltage protection High temperature protection • Thermal derating • AC derating • AC fail • Imbalanced output current • Address • Code • Date • Software version • Hardware version

1.4.18 Dimensions and Weights: See "Overall Dimensions" under PHYSICAL SIZE INFORMATION.

1.4.19 Local Controls: None.

1.4.20 Local Status and Alarm Indicators: Refer to the "Operating Procedures" chapter in the Power System User Instructions (Section 6013) for a complete description.

(A) Power (Green)

(B) Protection (Yellow)

(C) Alarm (Red)

1.4.21 External Control Circuits: Provided via the associated MCA. Refer to the separate Power System documentation for a complete description of available external control circuits.

1.4.22 External Alarm Circuits: Provided via the associated MCA. Refer to the separate Power System documentation for a description of available external alarms.

1.4.23 Mounting: The Module Mounting Assemblies are designed for mounting in a 23 inch wide relay rack with 1 inch or 1-3/4 inch multiple drilling. Refer to "[Overall Dimensions, Module Mounting Assembly](#)" for dimensional illustration.

2. DC-DC CONVERTER SPECIFICATIONS

2.1 DC Output Ratings

2.1.1 Voltage: Nominal –48 volts DC, positive ground. Output voltage is adjustable from 47.5 to 52.5 volts DC if the associated system controller has the capability.

2.1.2 Nameplate Rating: 48 - 52 Vdc, 31.25 - 28.9 A, 1500W max. @ 50°C.
48 - 52 Vdc, 25 - 23 A, 1200W max. @ 65°C.

2.1.3 Regulation

(A) Static: Steady state output voltage remains within $\pm 1\%$ of the pre-adjusted voltage for any load current from no load to full load and over the specified input voltage range.

(B) Dynamic: For any load step change within the range of 20% to 100% of full rated current, the maximum voltage transient will not exceed 5% of the initial steady state voltage.

2.1.4 Filtering: With at least 10% of rated full load on the output (-20°C to +65°C).

(A) Voice band noise is less than 32 dBrnC (for more than one converter) or 40 dBrnC (for a single converter) when measured with a noise meter using 600 ohm bridged input and C-message weighting.

(B) Wide band noise does not exceed 250 millivolts peak to peak over the frequency range of 0 Hz to 100 MHz.

(C) Wide band noise does not exceed 50 millivolts rms over the frequency range of 0 Hz to 100 MHz (as measured with an HP3400A true rms voltmeter).

(D) Noise below –20°C is slightly higher.

2.2 DC Input Ratings

2.2.1 Voltage: Nominal 24 volts DC.

2.2.2 Nameplate Rating: 20.5 - 30 Vdc, 87 - 59 A.

2.2.3 Inrush Current: The peak value of the inrush current does not exceed 2 times the maximum steady-state RMS input current at 25°C and shall not trigger the unit's internal input fault protection device.

2.2.4 Filtering: Noise reflected back to the central office battery is less than 32 dBrnC.

2.2.5 Typical Input Data - When equipped with **one** DC-DC Converter Module.

(A) The output voltage of the DC-DC Converter Module is initially adjusted to 48 volts at 50% load and 24 volts DC input.

Input Voltage	Percent of Full Load	Input Current (Amps)	Efficiency (%)	Typical Heat Dissipation (BTU/Hr)
21 VDC	0	0.56	--	40.13
	25	19.56	91.2	123.34
	50	39.16	91.2	246.93
	75	59.76	89.6	445.33
	100	83.32	85.7	853.74
24 VDC	0	0.52	--	42.58
	25	17.28	90.4	135.85
	50	34.40	90.8	270.43
	75	52.52	89.3	460.19
	100	72.84	85.8	847.02
28 VDC	0	0.48	--	45.86
	25	15.04	89.0	158.06
	50	29.64	90.4	271.85
	75	45.28	88.7	488.84
	100	62.24	86.1	826.54

(B) **Maximum Current:** Input current is 83.32 amperes at full load (31.25 amperes) and 21 volts DC input.

2.3 Environmental Ratings

2.3.1 Specification Compliant Temperature Range: -20°C to +50°C (-4°F to +122°F).

2.3.2 Reduced Load Temperature Range: +50°C to +80°C (+122°F to +176°F).

2.3.3 Deviation to Noise Specs. Temperature Range: -40°C to -20°C (-40°F to -4°F).

2.3.4 Storage Ambient Temperature Range: -40°C to +85°C (-40°F to +185°F).

2.3.5 Humidity: This DC-DC Converter Module is capable of operating in an ambient relative humidity range of 0 to 95%, non-condensing.

2.3.6 Altitude: The maximum operating ambient temperature should be derated by 10°C at an elevation of 10,000 feet. For elevations between sea level and 10,000 feet, derate the maximum operating ambient temperature linearly.

2.3.7 Ventilation Requirements: Each DC-DC Converter Module is fan cooled, using front to back ventilation. The Module Mounting Assembly must be located such that ventilation openings are not blocked and temperature of the air entering the modules is not above or below the Operating Ambient Temperature Range stated in this document.

2.3.8 Audible Noise: With four Converter Modules installed and operating, the audible noise at any point 5 feet from any vertical surface of the equipment shelf does not exceed 68 dBA when measured with a sound level meter conforming to ANSI S1.4.

2.3.9 EMI/RFI Suppression: Converter Modules operating in a Module Mounting Shelf conform to the requirements of FCC rules Part 15, Subpart B, Class B for Radiated and Conducted emissions limits.

2.3.10 Filtering: Noise reflected back to the central office battery is within the parameters set forth in Telcordia Technical Reference TR-TSY-000009, paragraph 5.0, using test measurements in Telcordia Technical Reference PUB 43802, pages 5 and 6.

2.3.11 Compliance Information:

(A) Safety Compliance: This unit meets the requirements of UL 1950, Standard for Information Technology Equipment, and is UL Recognized as a power supply for use in Telephone, Electronic Data Processing or Information Processing Equipment. This unit meets the requirements of CSA 22.2, No. 950 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

(B) The Converter Modules are RoHS 5/6 compliant.

2.4 Standard Features

2.4.1 Type of Power Conversion Circuit: High Frequency

2.4.2 Input Protection:

(A) Fusing: A 100-ampere non-user replaceable fuse is located in the positive input lead of each DC-DC Converter Module.

(B) Low Input Voltage Inhibit: Operation of each DC-DC Converter Module will inhibit if the input voltage drops to within the range of 19.25 to 20.5 volts. While operation is inhibited, each DC-DC Converter Modules will draw no more than 15mA. Operation will automatically resume after the input voltage returns to within normal operating limits.

2.4.3 Output Protection:

(A) Overvoltage Protection: Operation of a DC-DC Converter Module will automatically shut down and lock out if the output voltage of the module exceeds 115% to 125% of the nominal voltage. Manual restart is necessary after the overvoltage condition is corrected.

(B) Overcurrent Protection: When the output current of a DC-DC Converter Module increases to a preset overcurrent value between 102.5% and 115% of rated full load, the output voltage of the module will automatically decrease to limit current to this value. The output will recover to within specified limits when the overload condition is removed.

(C) Over Temperature Protection: The operation of a DC-DC Converter Module will automatically shut down and lock out if the internal temperature of the module exceeds a predetermined value. Operation will automatically resume after the over-temperature condition is corrected.

2.4.4 Series Paralleling Output FET: A series paralleling output FET is provided in each DC-DC Converter Module. This allows the Modules to be paralleled for redundancy.

2.4.5 Hot Swappable: The Converter Module is designed to be plug-and-play. The Converter Module can be inserted or removed from a live DC power system with no damage. When the Converter Module is plugged into the system, the sub-system output voltage will not be affected.

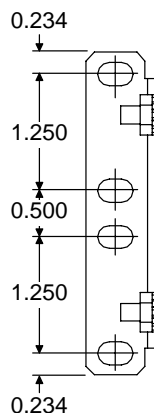
2.4.6 Cooling: Each Converter Module contains two fans for forced convection cooling. The Converter Module shuts down and its fault indicator (red) flashes if either fan fails. Fan failure is detected and reported to controller. The fans are field replaceable.

- 2.4.7 Fan Control:** Fan speed is continuously variable. When input voltage is within normal range, the built-in processor adjusts fan speed according to the Converter Module's output power. For example, a higher output power increases the fan speed.
- 2.4.8 Communication Failure:** The protection indicator (yellow) will flash should communication between the Converter Module and associated system Controller fail. The failure information will be reported to the associated system Controller and the Controller will process the failure accordingly. During a communication failure, the Converter Module output voltage will automatically adjust to 48.00VDC. The Converter Module will revert to normal operation once normal communication is restored.
- 2.4.9 Dimensions and Weights:** See "Overall Dimensions" under PHYSICAL SIZE INFORMATION.
- 2.4.10 Local Controls:** None.
- 2.4.11 Local Status and Alarm Indicators:** Refer to the "Operating Procedures" chapter in the Power System User Instructions (Section 6013) for a complete description.
- (A) Power (Green)
 - (B) Protection (Yellow)
 - (C) Alarm (Red)
- 2.4.12 External Alarm Circuits:** Provided via the associated Power System. Refer to the separate Power System documentation for a description of available external alarms.
- 2.4.13 Mounting:** The Module Mounting Assemblies are designed for mounting in a 23 inch wide relay rack with 1 inch or 1-3/4 inch multiple drilling. Refer to "[Overall Dimensions, Module Mounting Assembly](#)" for dimensional illustration.

PHYSICAL SIZE INFORMATION

Overall Dimensions

Module Mounting Assembly Spec. No. 588705100

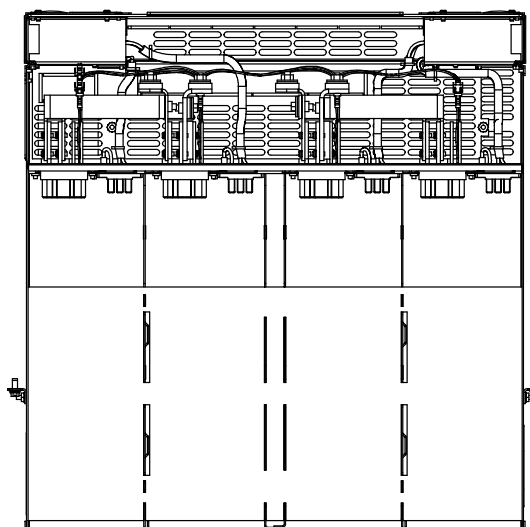


**Mounting
Angle Detail**

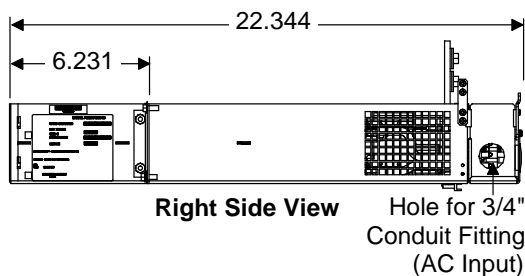
Notes:

1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

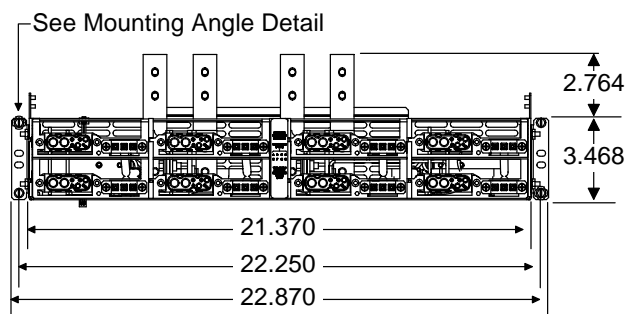
	Net	Shipping
588705100 Assy.:	26	
Rectifier Module:	6.4	
Converter Module:	5.5	
3. Finish:
 - Shelf and Module Bodies:
Bright Zinc Plating (M500-53)
 - Module Faceplates:
Textured Gray (M500-147)



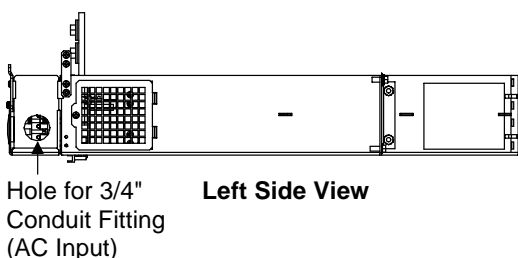
Top View



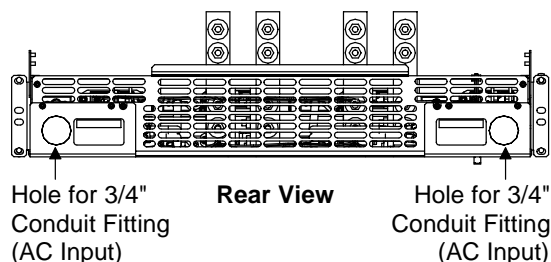
Right Side View



Front View



Left Side View



Rear View

PD588705100
 PD588705101
 PD588705102
 PD588705103
 PD588705104

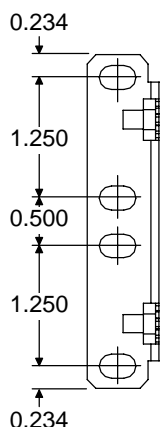
Issue AC, September 28, 2009

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
 Spec. No. 588705101 (Model PSS24/1000-23)
 Spec. No. 588705102 (Model PSS24/2000-23)
 Spec. No. 588705103 (Model PSS24/3000-23)
 Spec. No. 588705104 (Model PSS24/4000-23)

[Home](#)

Module Mounting Assembly Spec. No. 588705101

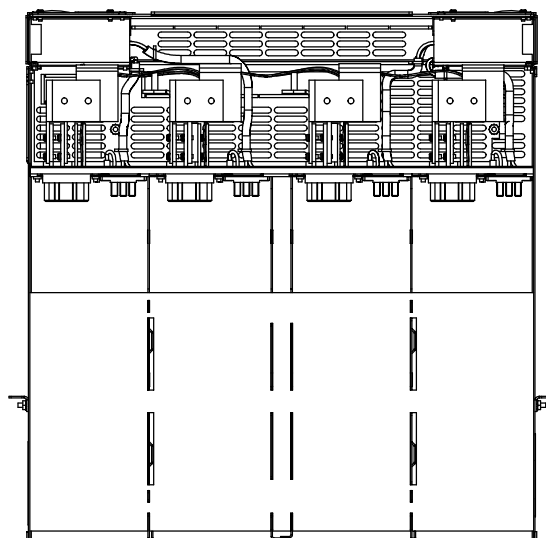


**Mounting
 Angle Detail**

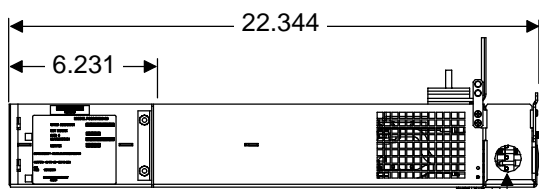
Notes:

1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

	Net	Shipping
588705101 Assy.:	26	
Rectifier Module:	6.4	
Converter Module:	5.5	
3. Finish:
 Shelf and Module Bodies:
 Bright Zinc Plating (M500-53)
 Module Faceplates:
 Textured Gray (M500-147)

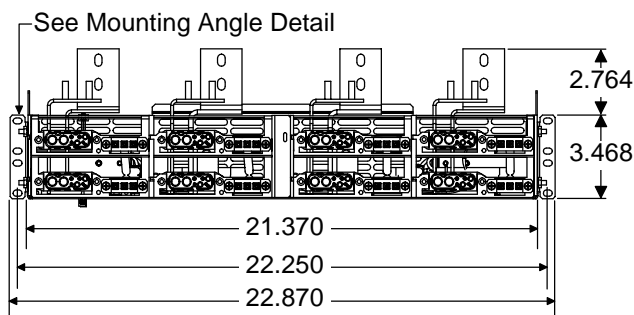


Top View

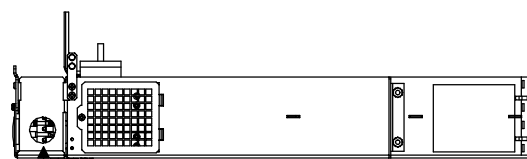


Right Side View

Hole for 3/4"
 Conduit Fitting
 (AC Input)

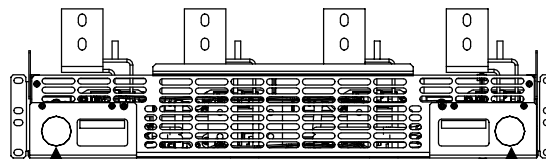


Front View



Left Side View

Hole for 3/4"
 Conduit Fitting
 (AC Input)

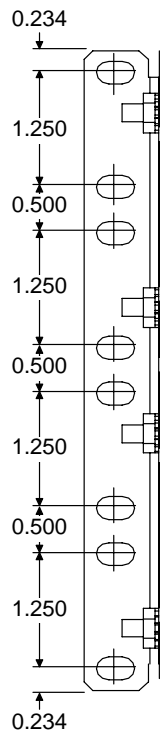


Rear View

Hole for 3/4"
 Conduit Fitting
 (AC Input)

Hole for 3/4"
 Conduit Fitting
 (AC Input)

Module Mounting Assembly Spec. No. 588705102

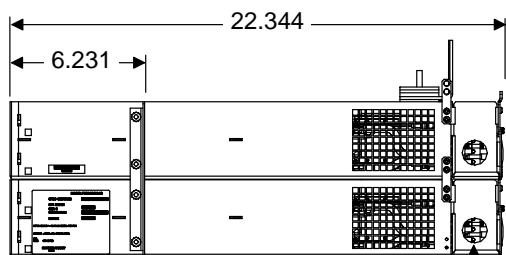


**Mounting
 Angle Detail**

Notes:

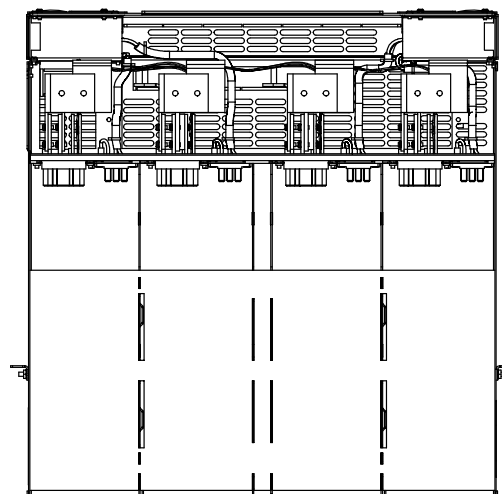
1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

	Net	Shipping
588705102 Assy.:	50	
Rectifier Module:	6.4	
Converter Module:	5.5	
3. Finish:
 Shelf and Module Bodies:
 Bright Zinc Plating (M500-53)
 Module Faceplates:
 Textured Gray (M500-147)

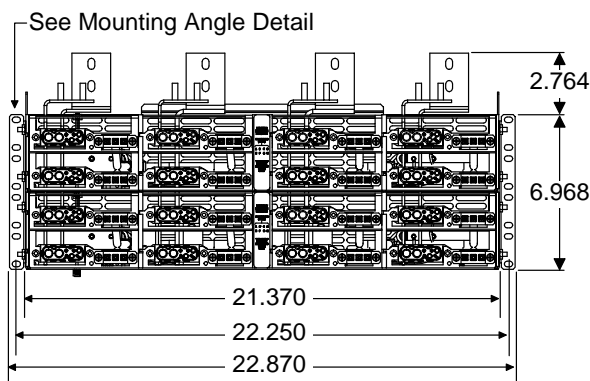


Right Side View

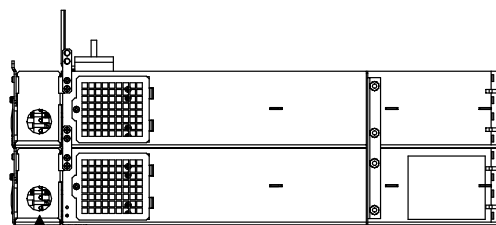
Hole for 3/4"
 Conduit Fitting
 (AC Input)



Top View

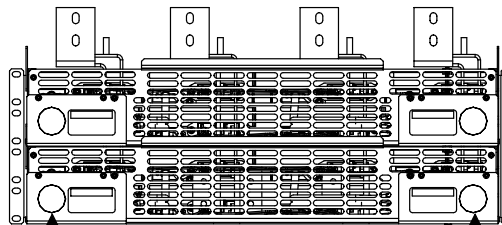


Front View



Hole for 3/4"
 Conduit Fitting
 (AC Input)

Left Side View

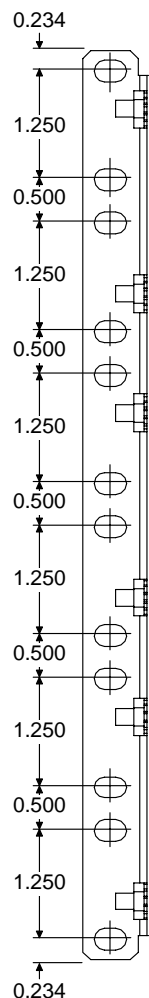


Hole for 3/4"
 Conduit Fitting
 (AC Input)

Rear View

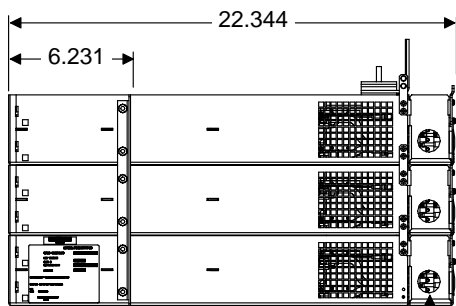
Hole for 3/4"
 Conduit Fitting
 (AC Input)

Module Mounting Assembly Spec. No. 588705103



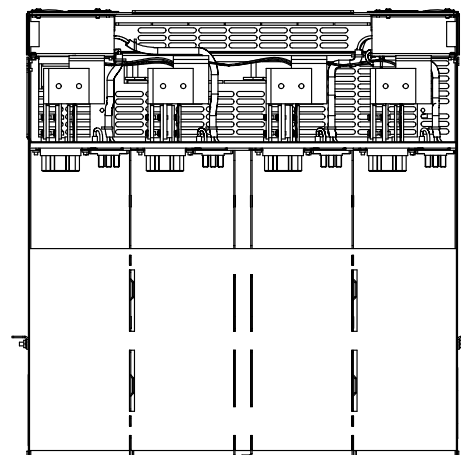
1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

	<u>Net</u>	<u>Shipping</u>
588705103 Assy.:	74	
Rectifier Module:	6.4	
Converter Module:	5.5	
3. Finish:
 - Shelf and Module Bodies:
 - Bright Zinc Plating (M500-53)
 - Module Faceplates:
 - Textured Gray (M500-147)

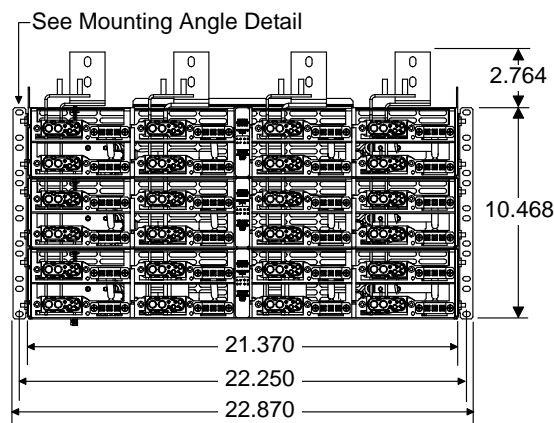


Right Side View

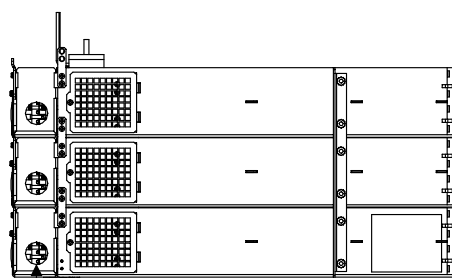
Hole for 3/4"
Conduit Fitting
(AC Input)



Top View

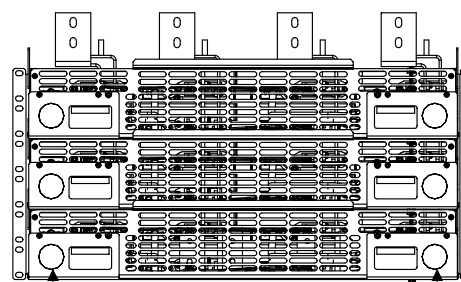


Front View



Left Side View

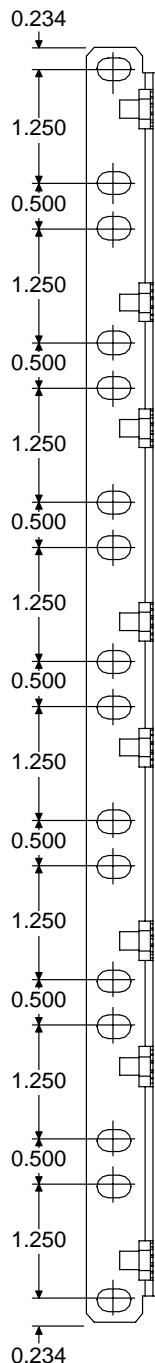
Hole for 3/4"
Conduit Fitting
(AC Input)



Rear View

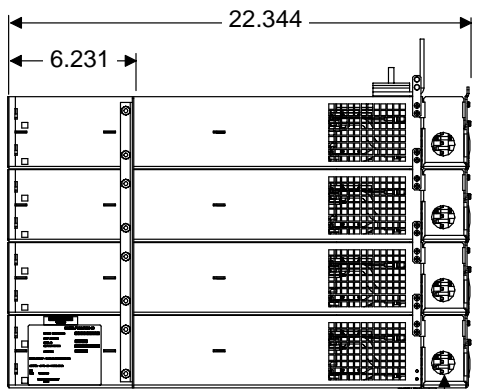
Hole for 3/4"
Conduit Fitting
(AC Input)

Hole for 3/4"
Conduit Fitting
(AC Input)

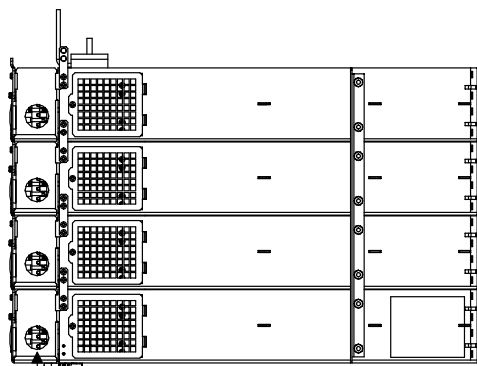


1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

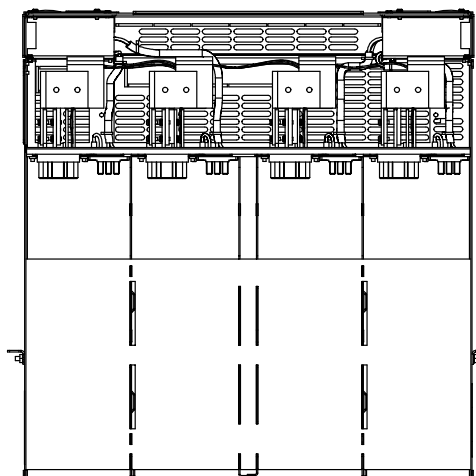
	<u>Net</u>	<u>Shipping</u>
588705104 Assy.:	98	
Rectifier Module:	6.4	
Converter Module:	5.5	
3. Finish:
 - Shelf and Module Bodies:
 - Bright Zinc Plating (M500-53)
 - Module Faceplates:
 - Textured Gray (M500-147)



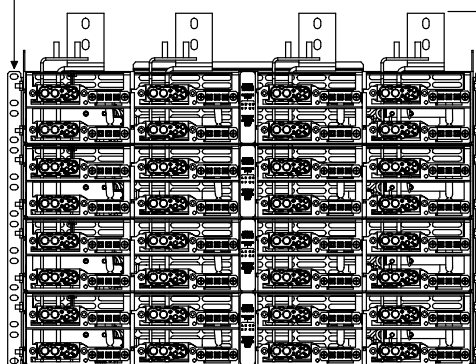
Right Side View Hole for 3/4"
Conduit Fitting
(AC Input)



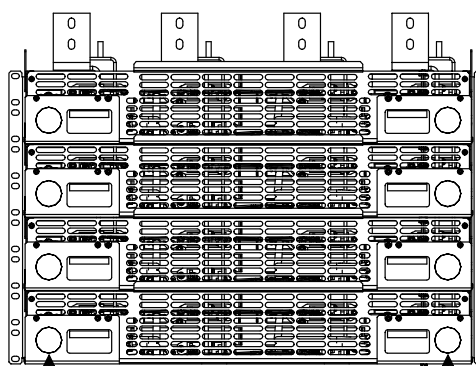
Hole for 3/4" Conduit Fitting (AC Input)



Top View

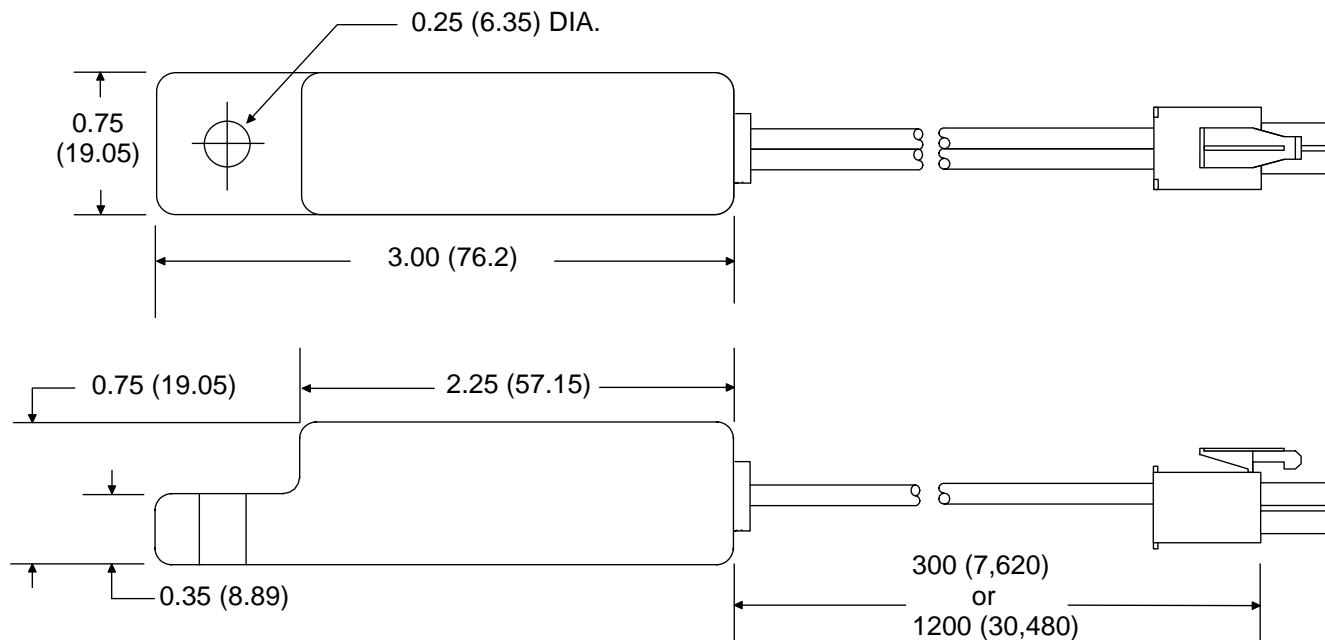


Front View



Hole for 3/4" Conduit Fitting (AC Input) **Rear View** Hole for 3/4" Conduit Fitting (AC Input)

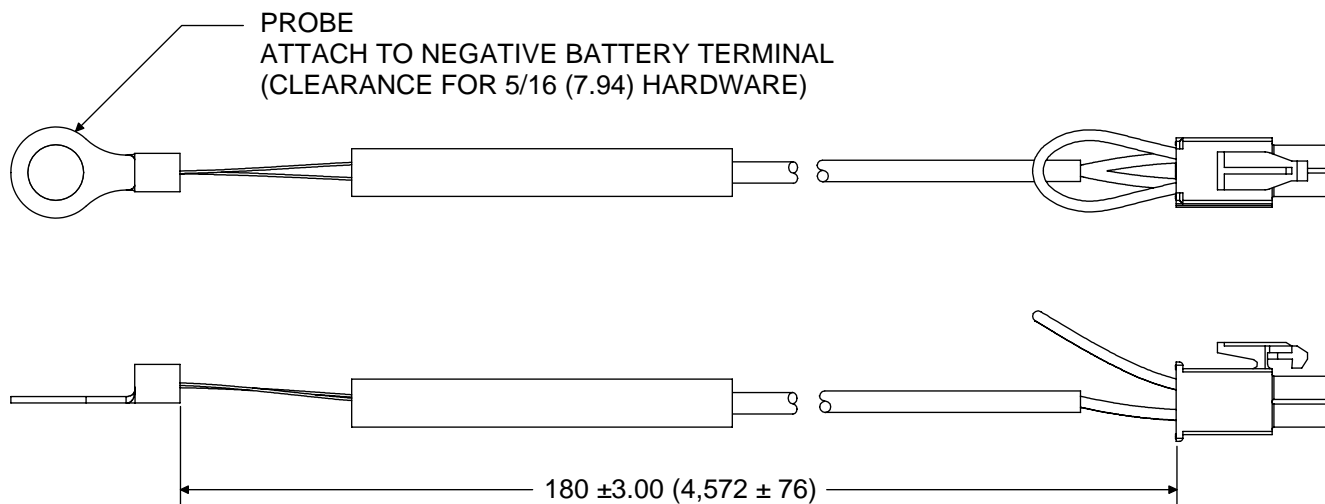
Digital Battery Charge Temperature Compensation Probe (P/N 107021 and 106824)



Part No. 107021 (25 foot)
 Part No. 106824 (100 foot)

Note: All dimensions are in inches and (millimeters).

Analog Battery Temperature Probe (P/N 521262)



NOTE: All dimensions are in inches and (millimeters).

Power Data Sheet
Spec. No. 588705100 (Model PSS24/1000-23)
Spec. No. 588705101 (Model PSS24/1000-23)
Spec. No. 588705102 (Model PSS24/2000-23)
Spec. No. 588705103 (Model PSS24/3000-23)
Spec. No. 588705104 (Model PSS24/4000-23)

PD588705100
PD588705101
PD588705102
PD588705103
PD588705104

Issue AC, September 28, 2009

[Home](#)

RELATED DOCUMENTATION

**Spec. Nos. 588705100, 588705101, 588705102, 588705103,
and 588705104 Module Mounting Assemblies**

Schematic Diagram: SD588705100/SD588705101/SD588705102/SD588705103/SD588705104

Wiring Diagram: T588705100/T588705101/T588705102/T588705103/T588705104

Spec. No. 581126000 NETSURE Power System

System Application Guide: SAG581126000

System Installation Instructions: Section 6012

System User Instructions: Section 6013

Color MCA Menu Tree: Section 6022

PD588705100
PD588705101
PD588705102
PD588705103
PD588705104

Issue AC, September 28, 2009

Power Data Sheet

Spec. No. 588705100 (Model PSS24/1000-23)
Spec. No. 588705101 (Model PSS24/1000-23)
Spec. No. 588705102 (Model PSS24/2000-23)
Spec. No. 588705103 (Model PSS24/3000-23)
Spec. No. 588705104 (Model PSS24/4000-23)

[Home](#)

REVISION RECORD

Issue	Change Number (ECO)	Description of Change	Date	Approved
AA	LLP211093	New	06/30/08	John Jasko
AB	LLP212232	Updated heat dissipation values in Paragraph 2.2.5.	04/22/09	John Jasko
AC	LLP212882	Fan Failure statement added for NEBS.	09/28/09	John Jasko John Jasko Oct 12, 2009 Oral Lyons Oct 12, 2009

Emerson Network Power, Energy Systems, North America, Inc.
1122 F Street / Lorain, Ohio 44052-2293 / (440) 288-1122

In Canada:

Emerson Network Power Canada
363 Sovereign Road / London, Ontario N6M 1A3 / 800-265-9243

In Mexico:

Emerson Network Power de Mexico, S.A. de C.V.
Apartado Postal 77001 / Mexico 10 D.F., MX 11200 / (52) 55-9140-6750

