



SM100F48PM-MF
SM100F48PM
SM100K48PM
100 AMP RECTIFIER
50-60 VDC OUTPUT

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Table of Contents

TABLE OF CONTENTS3

CONTACT INFORMATION5

PRODUCT INFORMATION.....5

WARNINGS.....6

CAUTIONS.....6

SECTION 1: GENERAL INFORMATION.....7

 1.1 GENERAL.....7

 1.2 SPECIFICATIONS7

 1.2.1 ELECTRICAL.....7

 1.2.2 MISCELLANEOUS7

 1.2.3 MECHANICAL DIMENSIONS: (See also Figure 1-1).....8

 1.3 STANDARD FEATURES9

 1.3.1 INDICATORS9

 1.3.2 INSERTION9

 1.3.3 SETTINGS9

 1.3.4 PWBs.....9

SECTION 2: FACTORY SETTINGS, TROUBLESHOOTING, & ADJUSTMENTS.....11

 2.1 GENERAL.....11

 2.2 FACTORY SETTINGS11

 2.3 ADJUSTMENTS11

 2.4 TROUBLESHOOTING.....11

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Contact Information

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Product Information

Please take a moment when the product is new to fill in this information.

First, locate the product information label. This is typically located on the upper front of the equipment frame, or on the rear of the frame. Fill in the part number, as it appears on the label, in the space below.

PART NUMBER	DATE CODE:
SERIAL NUMBER	ECN Level: 860 _ _ _ _ P

AGENCY APPROVALS:

Warnings

1. Electrical shock hazard. Do not attempt to remove, maintain, or install this equipment with power applied. Personnel that attempt to work on this equipment with the power applied may subject themselves or others to electrical shock that may cause serious injury or death.
2. The use of this equipment by unauthorized or untrained personnel should not be attempted. Personnel that work on this equipment without the proper training may subject themselves or others to electrical shock that may cause serious injury or death.
3. Do not attempt to work on this equipment if it is, or has been, exposed to a high moisture condition. It is recommended the equipment be returned to GE to be properly tested. Working on this equipment during a high moisture condition subjects the user to electrical shock that may cause serious injury or death.
4. Use of an attachment other than one approved by GE will void any and all warranties, implied or other, and will increase risk of fire, or may possibly cause electrical shock, injury, or death to personnel.
5. Do not operate this equipment if it has been dropped or otherwise damaged. Trying to operate this equipment if it has been damaged subjects yourself or others to electrical shock that may cause serious injury or death.
6. Before you proceed, ensure the input source is not live and the input circuit breaker(s)/fuse(s) has been tripped or removed. If these procedures have not been followed and the input/output power is live, serious personnel injury or death may occur.
7. A rack/shelf may contain several operating systems. If there is another system in the general area you want to install this system, be cautious of any exposed connectors or wires and, with permission, remove power to the other systems. Failure to take the necessary safety precautions subjects the installer or maintenance personnel to severe electrical shock that may cause serious injury or death.
8. This equipment may connect to lead-acid batteries. Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. **Wash hands after touching batteries.**

Cautions

1. Follow proper grounding instructions.
2. If connecting batteries, remove the battery-box-fuse or trip the circuit breaker. Check batteries and connections for proper polarity and power before connecting the batteries to the system.
3. To remove the circuit breakers or fuses, the DC and/or AC input to the system will need to be disconnected, thereby disabling the system output to the load(s). Take the necessary precautions and inform the plant engineer that the system output power to the loads will be disabled.
4. Before performing any maintenance, ensure AC or DC power is not applied to the system.
5. Fuse holders, fuses, and circuit breakers are not to be loaded to more than 80 percent of their ampere rating.

SECTION 1: GENERAL INFORMATION

1.1 GENERAL.

The Rectifier Module is a (-)50-60VDC adjustable output (typically set to -54.48VDC @ 100 Amp), microcontrolled, switch-mode rectifier. The rectifier is fully regulated, and its DC isolated output is designed to charge batteries while supplying power to telecommunication equipment. The rectifier module can operate as a self-contained unit, but is designed to be part of a system controlled by a digital controller through an I²C bus. The SM100F48PM and SM100F48PM-MF rectifier operates from a 208/240VAC source. The SM100K48PM rectifier operates from a 380/480 VAC source. The rectifiers are "hot" insertable. The communications to the microcontroller of the rectifier will remain functional during an AC OFF condition, providing DC Bus power is present.

1.2 SPECIFICATIONS

This section is provided to detail the specific input and output power required and provided by the rectifier.

1.2.1 ELECTRICAL

A. INPUT for the SM100F48PM rectifier:

- | | |
|-----------------|---|
| 1. Voltage | 176-265VAC, single phase (240VAC nominal) |
| 2. Frequency | 47-63Hz |
| 3. Current | 26 AAC typical, 32 AAC max @ 100% load. |
| 4. Power Factor | >98% for 50-100% loads |

B. INPUT for the SM100K48PM rectifier:

- | | |
|-----------------|---|
| 1. Voltage | 320-530VAC, single phase (480VAC nominal) |
| 2. Frequency | 47-63Hz |
| 3. Current | 13 AAC typical, 22 AAC max @ 100% load. |
| 4. Power Factor | >98% for 50-100% loads |

C. OUTPUT for SM100F48PM rectifier and SM100K48PM rectifier:

- | | |
|------------|----------------|
| 1. Voltage | 54.48VDC* |
| 2. Current | 100ADC maximum |

***Note:** The float voltage is adjustable from 50-60VDC. The factory setting is given.

1.2.2 MISCELLANEOUS

- | | |
|---------------------|---|
| A. Size | See rectifier drawing (Fig 1-1) |
| B. Weight | Approximately 20 lbs. |
| C. Temperature: | |
| Nominal | 0°C to +50°C, from sea level to 4800 feet. |
| Hardened* | -40 to +65°C, from sea level to 4800 feet. |
| Storage | -40 to +85°C, from sea level to 4800 feet. |
| | *Hardened refers to the worst-case temperature operation and the system is de-rated to 80%. |
| D. Heat Dissipation | 2,712 BTU/HR per rectifier |
| E. Cooling | 2 front to rear variable speed fans |
| F. Humidity | 95% non-condensing, maximum |
| G. Shock | This equipment, in its shipping container, withstands shock developed during shipping without physical damage or degradation of the electrical performance. |

H. Vibration This equipment, in its shipping container, withstands vibration encountered in shipping without physical damage or degradation of the electrical performance.

1.2.3 MECHANICAL DIMENSIONS: (See also Figure 1-1)

Depth: 15.84 Inches
 Height: 10.47 Inches
 Width: 5.21 Inches

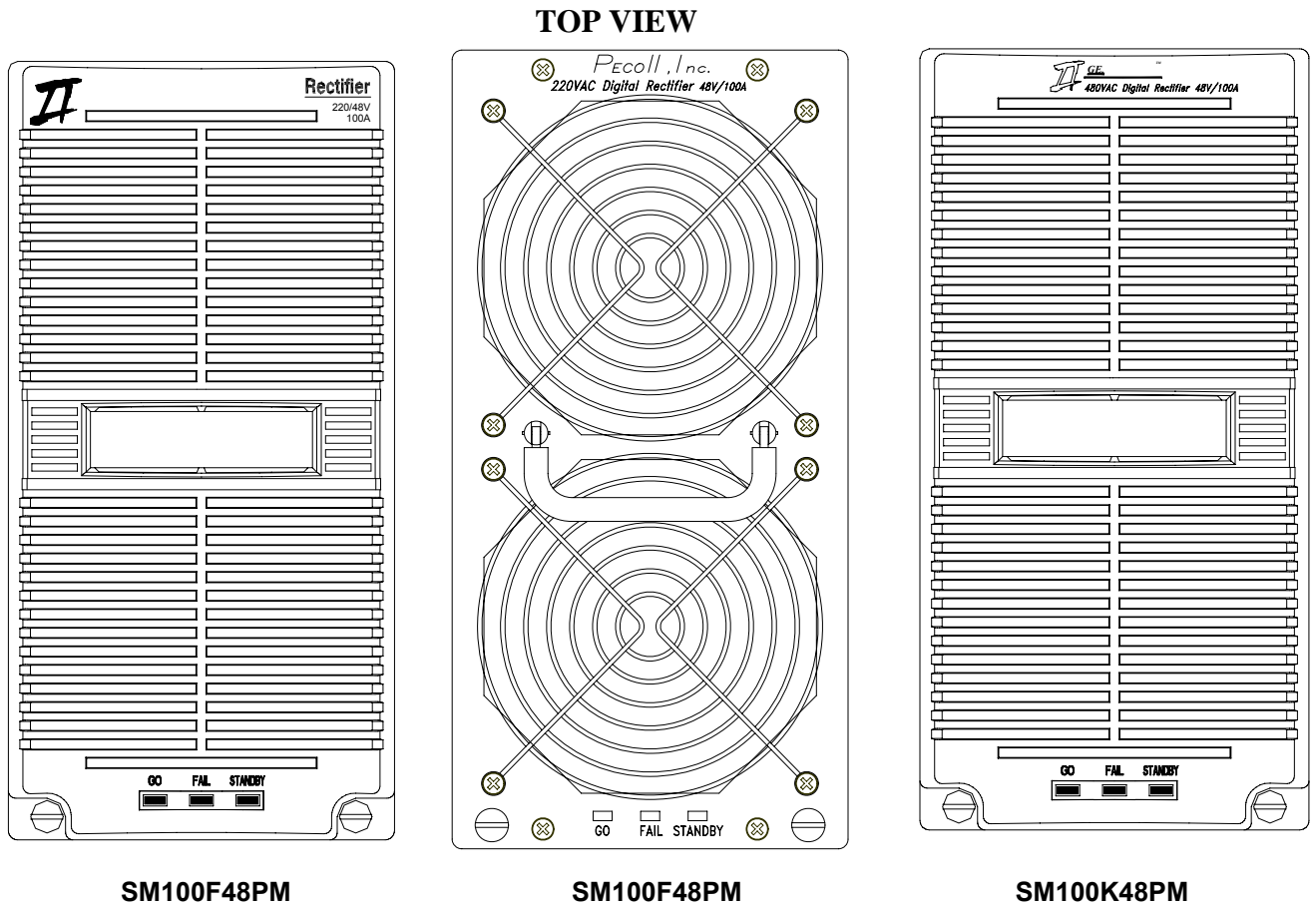
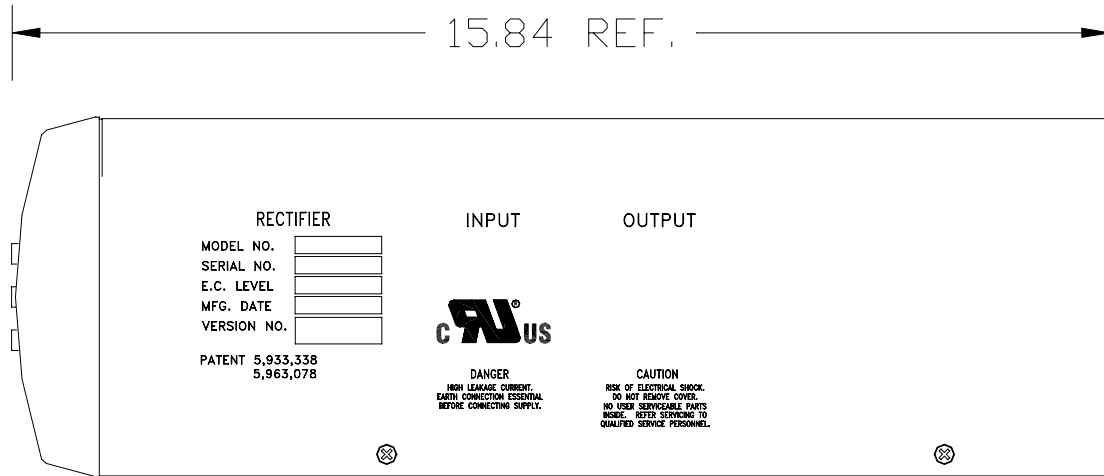


Figure 1-1: Rectifier Front (Typical View)

1.3 STANDARD FEATURES

1.3.1 INDICATORS

Each rectifier module is equipped with the following indicators:

Fail: The red Fail indicator will illuminate whenever the rectifier fails to have an output due to a fault condition internal to the rectifier. This includes:

- A. Rectifier output voltage exceeds the high voltage shutdown point.
- B. A loss of AC input voltage.
- C. Any failure condition that disables the rectifier output.
- D. Over-temperature

The Fail indicator will flash if the rectifier has lost communication with the digital controller, if there is a rectifier fan fail, if there is a loss of the calibration tables, or if there is a fault in the rectifier oring diode.

Standby: The amber Standby will illuminate when the rectifier is operating but there is no output, such as when the rectifier is initializing or during an over-temperature shutdown condition.

Go: The green Go indicator will illuminate when the rectifier is providing an output within the established parameters.

1.3.2 INSERTION

Caution: Before installing a rectifier module, ensure it is rated for the proper input voltage of the system (220 or 480VAC). The connectors on the back of the rectifier modules are different for both voltages and will not fit into an incorrect shelf.

Each modular rectifier is equipped with an orring diode in the ungrounded output lead, enabling it to be hot inserted, meaning the rectifier can be removed or installed without shutting off the system's input power. Refer to the manual the rectifier is used with for specific instructions on installation and removal.

1.3.3 SETTINGS

The following settings are adjustable on the rectifier:

- A. Float setpoint
- B. Equalize setpoint
- C. High voltage shutdown setpoint
- D. Rectifier current limit setpoint

All settings are provided via the digital controller and stored in each rectifier module, with default values being loaded at the factory. The rectifiers will return to the default settings should the digital controller fail.

1.3.4 PWBs

Located inside of the rectifier are 6 PWBs that facilitate its operation: the rectifier boost power board, the boost control board, the rectifier chop power board, the rectifier chop primary control board, the rectifier chop secondary control board, and the rectifier fan control board.

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SECTION 2: FACTORY SETTINGS, TROUBLESHOOTING, & ADJUSTMENTS

2.1 GENERAL

After removal and replacement of any rectifier, it is not necessary to make any adjustments to the system. The rectifier will be shipped with factory default settings; however, when it is installed in a shelf, the digital controller will take over and it will assume the settings of the last rectifier.

2.2 FACTORY SETTINGS

The following (Table 2-1) are the factory settings:

Table 2-1: Factory Settings

Description	Set Point
Float Voltage	54.48VDC
Equalize Voltage	55.00VDC
High Voltage Shutdown	58.00VDC
Current Limit	110A

2.3 ADJUSTMENTS

Rectifier adjustments such as float voltage, equalize voltage, low voltage disconnect, etc. are made via a digital controller located in the power system the rectifiers are being utilized in. Refer to the system manual that the rectifier is installed in for instructions on making adjustments.

2.4 TROUBLESHOOTING

Whenever a malfunction occurs, first look for the obvious fault. Try to find out whether it is caused by the system or by its environment (e.g. temperature, humidity, or load). In addition, there may be other situations such as:

- A. Input voltage is missing/not at the correct level
- B. Input or output connections are not securely fastened.
- C. Connectors are not secure.

Always check these external factors before concluding that the rectifier is faulty. If, for instance, the unit stops due to overheating it may be overloaded, the ambient temperature may be too high, the ventilation slots could be blocked, or a cooling fan may be out of order.

The rectifier can be interrogated via controller for the status of the following:

- Input Voltage
- Output Voltage
- Output Current
- Rectifier Internal Temperature
- Rectifier Fan Speed
- Rectifier Status (Normal/Fail)
- Rectifier Mode (Run/Standby)

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