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**OPERATING MANUAL  
MAGELLAN (RMX SERIES)  
RECTIFIER AND SHELF**

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# MAGELLAN (RMX SERIES) RECTIFIER AND SHELF

## OPERATING MANUAL

### 1.0 INTRODUCTION

The Magellan (RMX Series) rectifier and shelf is a complete power system for charging a 48V or 24V lead-acid battery or directly powering a load. See Figure 1. The rectifier produces up to 22.5 amperes at 54.4VDC (48V version) or 45 amperes at 27.2VDC (24V version). The 48V version is factory set to 54.4VDC output and the 24V version is factory set to 27.2VDC. AC input and DC output connections are at the rear of the shelf, behind a protective cover.

The rectifier is a pluggable, field-swappable unit; it is not hot-swappable, however. The rectifier and shelf incorporate slides to hold the rectifier, and the rectifier locks in the open position. The unit has single-wire active load sharing for automatic paralleling of two or more rectifiers.

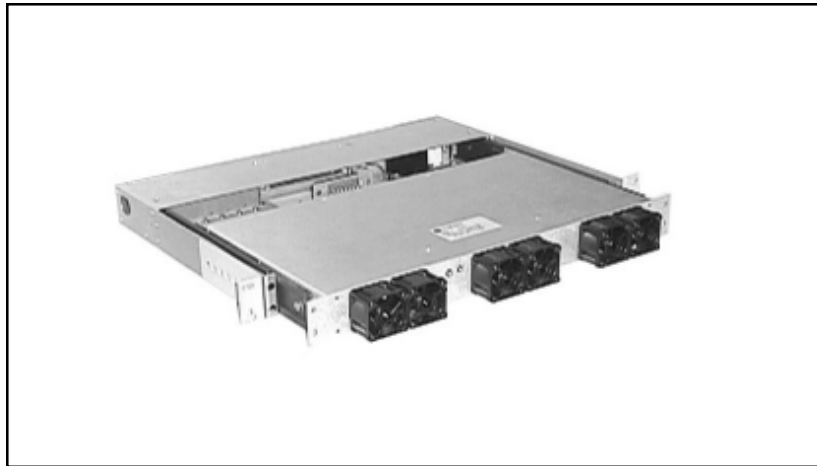
This rectifier system operates worldwide with an 85 to 265VAC input range at 47 to 63Hz. The rectifier has input power factor correction and a Class B EMI input filter. The output voltage is tightly regulated and precisely adjustable over a wide range of 44 to 58VDC or 22 to 29VDC by means of a front panel, 12-turn potentiometer. The unit also has a remote analog input which can be used to adjust the output voltage over the same range. Using an external power controller in conjunction with this input permits automatic battery voltage control of equalize and float voltages together with temperature-compensated charging. The rectifier can operate into a zero-voltage (dead) battery or short circuit without harm to the system. The output is floating with respect to frame or AC grounds.

A 9-pin interface subminiature D connector on the back of the shelf provides control and monitoring inputs and outputs. An enable input turns the entire shelf output off or on. Remote sensing connections provide precise regulation at the battery or point of load. Other control signals are AC power good, DC power good and analog voltage remote adjust input.

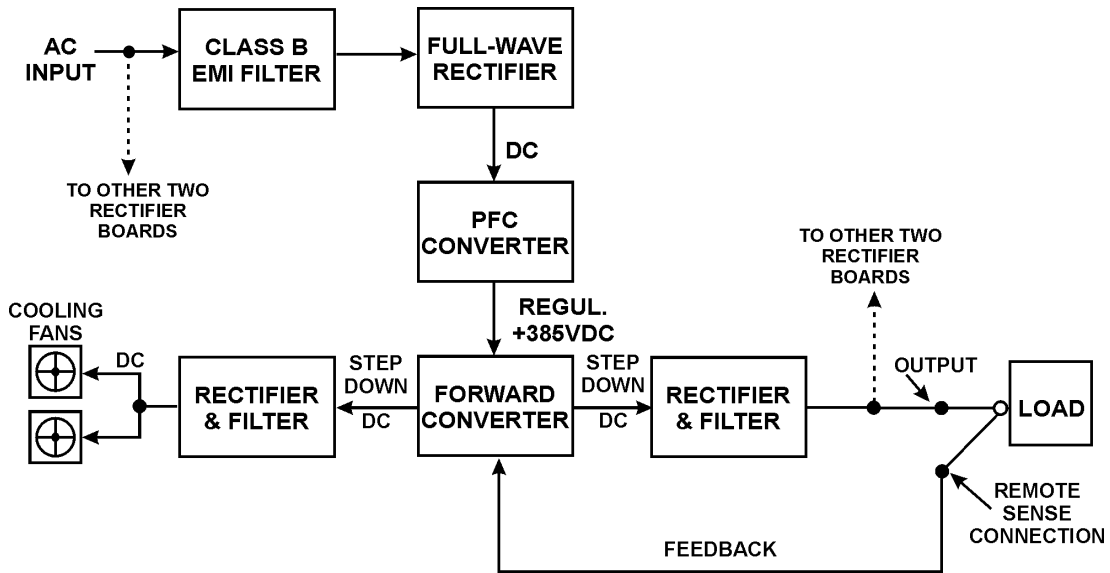
Front-panel green LEDs indicate AC power good and DC power good. The rectifier is safety agency certified and CE marked.

### 2.0 IMPORTANT FEATURES

The following is a summary of the important features of the Magellan rectifier



**Figure 1. Magellan Rectifier in Shelf.**



**Figure 2. Magellan Rectifier Board Block Diagram.**

and shelf:

- ◆ Field Swappable Rectifier
- ◆ Charges Batteries or Powers Loads Directly
- ◆ Constant Output Voltage
- ◆ Front Panel Output Voltage Adjustment
- ◆ Remote Analog Output Adjustment
- ◆ Wide Range Output Voltage Adjustment
- ◆ Output Overload Protected
- ◆ 48VDC and 24VDC Versions
- ◆ Low Profile: 1Mounting Position (1.72 inches or 43.7mm) High
- ◆ 19 or 23-Inch Rack Mounting
- ◆ High Power Density: 4.2 Watts/Cubic Inch
- ◆ Light Weight: 11.2 lbs.
- ◆ 86% Efficiency
- ◆ 0.99 Power Factor
- ◆ Class B EMI Input Filter
- ◆ Worldwide Input: 85-265 VAC at 47-63Hz
- ◆ Battery Temp. Compensated Charge Regulation\*
- ◆ Remote Sensing
- ◆ Active, Single-Wire Load Sharing
- ◆ LED Operating Indicators
- ◆ Control and Monitoring Interface Signals

\* With external power controller

### **3.0 PRODUCT LINE**

#### **3.1 Rectifier Models**

<b>MODEL</b>	<b>NOMINAL OUTPUT</b>	<b>FACTORY SET OUTPUT</b>	<b>MAX. OUTPUT CURRENT</b>
RMX48/22.5	48VDC	54.4V	22.5A
RMX24/45	24VDC	27.2V	45A

### **4.0 SAFETY WARNINGS**

- 4.1** This rectifier has hazardous external and internal voltages. It should be handled, tested and installed only by qualified technical persons who are trained in the use of power systems and are well aware of the hazards involved.
- 4.2** The input terminals are at hazardous voltage potentials. Do not touch this area when power is applied.

- 4.3 When operating this rectifier system, the frame ground terminal must be connected to safety ground by means of a three-wire AC power line to minimize electrical shock hazard and to ensure low EMI (electromagnetic interference).
- 4.4 The internal voltages are at hazardous potentials. Except for the rear safety cover, the rectifier top cover should not be removed. There are no user-serviceable components in this unit. Removing the cover of the rectifier will void the warranty.

## 5.0 WARRANTY

All products of UNIPOWER Telecom, a division of UNIPOWER Corporation, are warranted for two (2) years from date of shipment against defects in material and workmanship. This warranty does not extend to products which have been opened, altered or repaired by persons other than persons authorized by the manufacturer or to products which become defective due to acts of God, negligence or the failure of customer to fully follow instructions with respect to installation, application or maintenance. This warranty is extended directly by the manufacturer to the buyer and is the sole warranty applicable. EXCEPT FOR THE FOREGOING EXPRESS WARRANTY, THE MANUFACTURER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. As the sole and exclusive remedy under this warranty, the manufacturer, at its option, may repair or replace the non-conforming product or issue credit, provided the manufacturer's inspection establishes the existence of a defect. To exercise this remedy, the buyer must contact the manufacturer's Customer Service Department to obtain a Return Material Authorization number and shipping instructions. Products returned without prior authorization will be returned to buyer. All products returned for repair must be shipped freight prepaid to UNIP-OWER. If the buyer fails to fully comply with the foregoing, the buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property or any other incidental or consequential losses) shall be available to the buyer.

## 6.0 UNPACKING AND INSPECTION

- 6.1 This Magellan Series Rectifier System was carefully tested, inspected and packaged for shipment from our factory. Upon receipt of the unit it should be carefully unpacked and inspected for any damage in shipment.
- 6.2 If there is evidence of damage, do not attempt to test the unit. The freight carrier should be notified immediately and a claim for the cost of the rectifier system should be filed with the carrier for direct reimbursement. Be sure to include the model and serial number of the damaged unit in all correspondence with the freight carrier. Also save the shipping carton

and packing material as evidence of damage for the freight carrier's inspection.

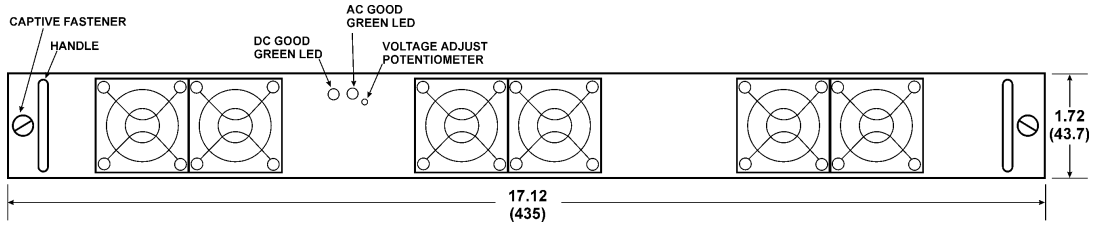
- 6.3 UNIPOWER Telecom will cooperate fully in case of any shipping damage investigation.
- 6.4 Always save the packing materials for later use in shipping the unit. Never ship the rectifier system without proper packing.

## 7.0 DESCRIPTION OF OPERATION

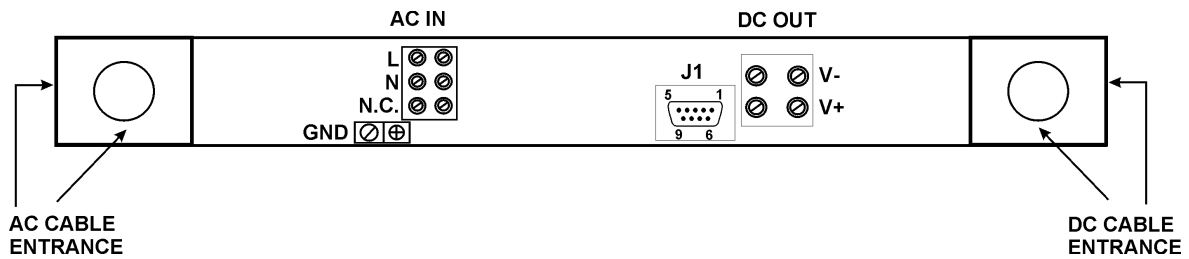
- 7.1 **Block Diagram.** A simplified diagram of a Magellan Rectifier board is shown in Figure 2. The complete rectifier consists of three parallel-connected rectifier circuit boards. The three boards are identical, each having a Class B EMI filter, a full-wave rectifier and power factor correction (PFC) converter, a forward power converter and output rectifier and filter. The power converter also has an output that drives two DC ball bearing cooling fans. The PFC converter operates at 45kHz and the power converter switches at 150kHz. The output of the PFC converter is a regulated DC voltage at approximately +385V. This voltage is then converted down to either 54.4 or 27.2VDC, depending on the model. The output of the converter goes to a rectifier and filter to the rectifier output. Feedback from the remote sense leads back to the forward converter pulse-width modulator regulates the output voltage and keeps it constant.
- 7.2 **Power Factor Correction.** This high-frequency converter circuit, switching at 45kHz, achieves a power factor of 0.99 by forcing the AC input current into a sinusoidal waveform, in phase with the input voltage. The input current is a smooth sine wave of much lower amplitude than the normal series of high-amplitude, input current pulses that are present in a unit without power factor correction. The result is lower RMS input current for a given output power level.
- 7.3 **Cooling Fans.** Another output from each forward converter is rectified, filtered and used to power the two DC ball bearing cooling fans for each rectifier board.
- 7.4 **Interface Signals.** The rectifier incorporates a number of interface control and supervisory signals which operate off internal circuits and are brought to the outside. These include remote enable, which enables or inhibits the unit, and a current share connection which permits operating



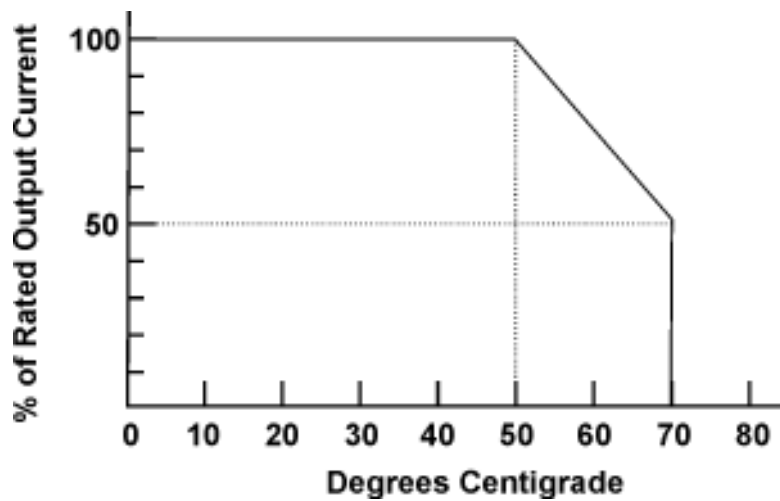




**Figure 3. Front Panel of Magellan Rectifier Module**



**Figure 4. Rear Shelf Input & Output Connections (Protective Cover Removed)**



**Figure 5. Rated Output Current vs. Ambient Temperature**

**SAFETY STANDARDS** ..... UL1950, CSA22.2-950, EN60-950

**STATUS INDICATORS**

AC Good ..... Green LED and Logic LO Output  
DC Good ..... Green LED and Logic LO Output

**ENVIRONMENTAL**

Operating Temp. Range ..... 0°C to +70°C  
Output Current Derating ..... 2.5%/°C, 50°C to 70°C  
Storage Temp. Range ..... -40°C to + 85°C  
Humidity ..... 0% to 95%, Non-Condensing  
ESD ..... Bellcore GR-1089-Core and EN61000-4-2  
MTBF ..... >250,000 Hours  
Cooling ..... Internal DC Ball Bearing Fans

**PHYSICAL SPECIFICATIONS**

Case Material, Rectifier Module ..... Aluminum  
Shelf ..... Steel  
Finish ..... Powder Coat Gray  
Dimensions, Inches (mm)  
Rectifier ..... 1.72 H x 17.12 W x 12.50 D  
(44 x 435 x 318)  
Rectifier in 19" Shelf ..... 1.72 H x 17.12 W x 13.75 D  
(44 x 435 x 349)  
Weight ..... 11.20 lbs (5.08 kg.)

**NOTE:** 1. Voltage set at factory.

## 10.0 DESCRIPTION OF FEATURES & OPTIONS

FEATURE / OPTION	DESCRIPTION
<b>Power Factor Correction</b>	The input current is a sine wave in-phase with the input voltage to give a power factor of 0.99. Input current total harmonic distortion is less than 5%.
<b>Wide Range AC Input</b>	The AC input range is continuous from 85 to 265VAC, 47-63Hz, for worldwide operation.
<b>EMI Input Filter</b>	This filter suppresses conducted noise from the rectifier back onto the AC line. The filter meets FCC20780 part 15J Curve B and EN55022 Curve B.
<b>Inrush Current Limiting</b>	When the rectifier is turned on from a cold start, the initial input current is limited to a peak value of 30 amperes.
<b>Wide Range Output Voltage Adjustment</b>	For a 48V unit the adjustment range is 44V to 58V. Factory voltage setting is 54.4VDC. For a 24V model the adjustment range is 22V to 29V. Factory voltage setting is 27.2VDC. The adjustment is made from the front panel by means of a 12-turn potentiometer or from the input to the remote adjust terminal.
<b>Remote Output Adjust</b>	This input is used to remotely adjust the rectifier output voltage. An analog voltage from 0 to +5V controls approximately 44-58V output for a 48V rectifier or 22-29V output for a 24V rectifier. This input can be controlled externally by a power control system to precisely control battery charging.
<b>Thermal Protection</b>	If the output power converter overheats, the rectifier will automatically shut down. The DC Good LED also turns off. After a few minutes the rectifier will cool and automatically start up again.
<b>Current Sharing</b>	The Magellan current share pin can be used to current share with another Magellan rectifier of the same output voltage. A single-wire connection provides this. The rectifiers current share with an accuracy of 10% of their full load output current for total loads of 50% to 100%.
<b>Overvoltage Protection</b>	The output is protected from overvoltage due to fault conditions in the rectifier. Overvoltage protection is set at approximately 59V for the 48V version and 29V for the 24V version. The result is a latched shutdown of the rectifier. It is reset by cycling the AC input off for about 10 seconds and then back on.
<b>No Load Operation</b>	The rectifier output can be operated down to zero load while maintaining output regulation.

FEATURE / OPTION	DESCRIPTION
<b>Pluggable Connector</b>	A pluggable connector on the back of the rectifier and mating connector on the shelf permit field swapping of the rectifier. The rectifier is not hot-swappable, however.
<b>Output Protection</b>	Output current limiting protects the output of the rectifier from damage due to a dead battery or other short circuit condition. This protection is continuous, without damage, and recovery is automatic when the overload is removed. Current limiting begins at about 105% of rated output current.
<b>LED Indicators</b>	The AC Good indicator is a green LED, showing that input AC is present and that the PFC converter and internal control supply are operating. The DC Good indicator is a green LED showing that the output voltage is present and within operating range, and the fans are operating.
<b>Control and Monitoring Signals</b>	For detailed description of Remote Enable, Current Share, Remote Sense, Remote Adjust, AC Good and DC Good signals see Section 15, Description of Control and Supervisory Signals.

## 11.0 SAFETY AND INDUSTRY STANDARDS

11.1 The Magellan rectifier and shelf meet the following safety certifications:

STANDARD	AGENCY
UL1950	UL
CSA22.2-950	CUL
EN60-950	DEMKO

11.2 The Magellan rectifier and shelf are CE marked to indicate conformance to the European Union's Low Voltage Directive.

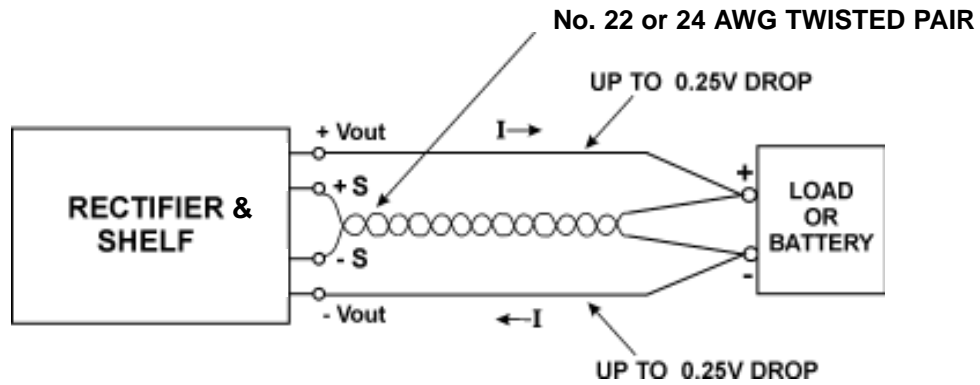
11.3 Input conducted EMI meets FCC20780 part 15J Curve B and EN55022 Curve B.

11.4 Input fast transient specifications meet EN61000-4-4 Level 3, and input surges, line-to-line, meet EN61000-4-5 Level 2.

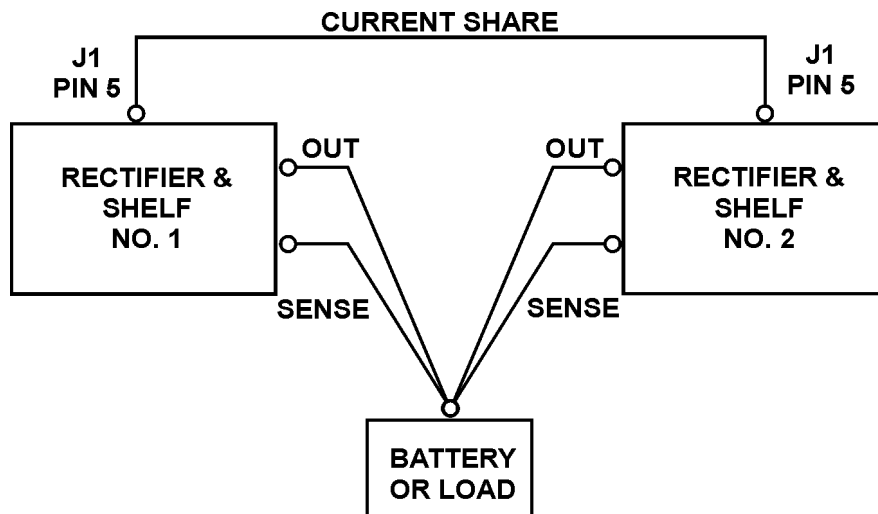
## 12.0 OPERATING INFORMATION

12.1 **Input Voltage.** The Magellan Series rectifier operates off worldwide AC input voltages within the range of 85 to 265 VAC at 47 to 63 Hz. The unit has a terminal block for a conduit cable connection. For complete details see Section 16.2 and Figure 4.

- 12.2 Output Connection.** The 24V or 48V output is provided on a terminal block. Connection should be made by means of clean wires. For complete details see Section 16.3 and Figure 4. Both positive and negative outputs are floating.
- 12.3 Output Voltage.** The output voltage of the rectifier is factory set to 54.4V for the 48V rectifier and 27.2V for the 24V rectifier. If a different output voltage is required it should be accurately set by means of the front panel, high resolution, 12-turn output adjustment potentiometer. The output voltage can also be adjusted by means of the remote adjust input connected to an external voltage source. In both cases the adjustment range is 44-58V or 22-29V.
- 12.4 Output Power.** Maximum output power is 22.5A at 54.4 VDC or 45A at 27.2 VDC, both giving a total maximum output of 1224 volt-amperes. The maximum output power may be drawn at up to 50°C ambient temperature. Above 50°C the output current must be derated by 2.5%/°C. See Figure 5. The maximum operating temperature is 70°C, at which the output current must be derated by 50%.
- 12.5 Output Overload Protection.** The rectifier output is protected from damage due to overload, a dead battery or another short circuit condition. This protection is continuous and without damage; recovery is automatic when the overload or short is removed.
- 12.6 Remote Sensing.** Remote sensing connections are made to pins 1 (+Sense) and 2 (-Sense) of the rectifier shelf J1 connector. Remote sensing is used to regulate the output voltage at the point of load, i.e., a battery or other load, by compensating for the voltage drop in the wires to the load. The +Sense lead must be connected to the + side of the load and the -Sense to the - side of the load. The sense leads should be a color-coded, twisted pair of AWG no. 22 or 24 copper wire. See Figure 6.
- Remote sensing can compensate for a total voltage drop of 0.5V, or 0.25V per load wire. The sense leads should not exceed 10 feet (3 meters) in length. If remote sensing is not required, the sense leads may be left open for local sensing at the output terminals. Be careful not to reverse the sense lead connections.
- 12.7 Control & Supervisory Signals.** All control and supervisory signals are accessible at J1, a 9-pin connector on the back of the rectifier shelf. See Section 15 for a complete description of these input and output signals.



**Figure 6. Remote Sensing Connection**



**Figure 7. Parallel Connection of Magellan Rectifiers.**

- 12.8 Alarm Signals.** Among the control and supervisory signals are two logic alarms for each rectifier: AC Power Good and DC Power Good. They are open collector, TTL-compatible signals referenced to -Sense, J1 Pin 2. **AC Good:** A logic LO indicates that there is AC input and the PFC converter stage is operating. **DC Good:** A logic LO indicates a DC output is present and within operating range.

## 13.0 PARALLEL OPERATION

A rectifier can be operated in either an N+1 redundant mode or a non-redundant mode with another identical rectifier or rectifiers. See Figure 7.

- 13.1 Redundant Operation.** A Magellan rectifier can be operated in a 1+1 redundant mode with another Magellan rectifier. This means, that the full load current can be carried by one rectifier. While operating normally the current is shared approximately equally among the two rectifiers. If one fails, the output current is then maintained by the other rectifier. The failed unit can only be replaced, however, by first turning off the AC input to both rectifiers.
- 13.2 Non-Redundant Operation.** Higher output current can be achieved by operating the rectifier with another rectifier in the non-redundant mode. However, in this case if a rectifier fails, the load will lose power since only part of the required current can be supplied by the remaining rectifier, and it will go into current limit. The failed rectifier, however, can be quickly replaced to restore the load current. To replace it the AC input power must first be turned off.
- 13.3 Multiple Parallel Rectifier Operation.** Multiple rectifiers can also be operated in parallel by interconnecting their current share terminals (J1 Pin 5). The total power can be expanded by several times. In this case N+1 redundant operation is achieved by reserving one rectifier of the total for redundancy. In such applications each set of remote sense wires must be separately connected to the battery or point of load. This is true for any redundant or non-redundant connection of these rectifiers. In all cases the AC input power must be turned off before replacing a rectifier.



## 14.0 CONTROL & SUPERVISORY SIGNAL CONNECTIONS

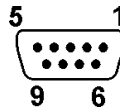
**14.1** Connections for control and supervisory signals are made at the shelf rear to connector J1, a standard 9-pin subminiature D connector (AMP No. 205203-1 with No. 205090-1 contacts). The mating connector is AMP No. 747952-1 with No. 205089-1 contacts.

**14.2** The pin connections to J1 are shown in the table.

### J1 CONNECTIONS

PIN	FUNCTION
1	+ Sense
2	- Sense
3	Remote Adjust
4	AC Power Good
5	Current Share
6	DC Power Good
7	Enable - N.O.
8	No Connection
9	No Connection

### J1 CONNECTOR:



AMP NO. 205203-1 with  
NO. 205090-1 contacts.  
Mating connector: AMP  
NO. 747952-1 with NO.  
205089-1 contacts.

<b>MATING CONNECTOR KIT</b>
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Order Kit No. 775-1444-0000
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## 15.0 DESCRIPTION OF CONTROL AND SUPERVISORY SIGNALS

SIGNAL	PIN	DESCRIPTION
+ Sense - Sense	1 2	These remote sense leads should be connected as a twisted pair to the respective + and - load points to provide regulation at the point of load.
Remote Adjust	3	This is an analog voltage input to the rectifier by which the output voltage is adjusted. A zero to + 5V input represents approximately 44 to 58V output for a 48V rectifier or 22 to 29V for a 24V rectifier. This input should be driven from a source impedance less than 100 ohms and is referenced to -Sense, Pin 2. If the input control voltage is above 5V or the pin is left open, the output voltage reverts to the value determined by the front panel potentiometer setting.
AC Good	4	This is an open collector TTL output. A TTL LO (sinking 5mA) indicates the AC input is present and the PFC converter stage has output. A TTL HI indicates AC input or PFC converter failure. This signal is referenced to -Sense, Pin 2.
Current Share	5	This is an analog control signal. This pin is used to connect to Pin 5 of another identical rectifier to share output currents. Output currents between rectifiers are shared within an accuracy of 10% of full load current over a 50% to 100% load range. This signal is referenced to -Sense, Pin 2.
DC Good	6	This is an open collector TTL outputs. A TTL LO (sinking 5mA) indicates that the unit is operating properly with output voltage in its controllable range. A TTL HI indicates output failure or cooling fan failure. This signal is referenced to -Sense, Pin 2.
Remote Enable	7	A TTL HI or open at this input enables (turns on) the rectifier. A TTL LO (sinking 2mA) inhibits (turns off) the rectifier. This input is referenced to -Sense, Pin 2.
No Connection	8 9	

## 16.0 INSTALLATION

- 16.1 Mounting.** The Magellan Series rectifier and shelf are mounted in a rack by means of mounting brackets on each side of the shelf. There are nine different bracket positions on the side of the shelf. When mounting, the shelf should be first be securely mounted to the rack, then the rectifier should be inserted into the slides on the shelf. The rectifier is secured by the captive screws on each end of the front panel.
- 16.2 AC Input Connections.** See Figure 4. The rectifier input provision is for a three-wire conduit cable connection to a terminal block. Ground connection is made to the chassis by means of the wire clamp shown in the diagram.
- 16.3 DC Output Connections.** The DC output connections are shown in Figure 4. The positive and negative output connections are made to the terminal block as shown. The top terminal is negative, and the bottom one positive. Connection to the terminals should be made by means of copper wires. The output wires should be sized in accordance with the load current and length of conductor. Table 16-1 shows minimum permissible copper wire size up to 50°C ambient temperature.

**Table 16-1 Output Minimum Copper Wire Sizes**

RECT. NOM. VOLTAGE	MAX. OUTPUT CURRENT	MINIMUM WIRE SIZE	WIRE CIRCULAR MILS
48V	22.5 A	# 12 AWG	6,530
24V	45 A	# 8 AWG	16,510

- 16.4 Contact Resistance.** The connecting wires should be clean, and a tight, firm connection should be made to the output terminals to minimize contact resistance.
- 16.5 Control and Supervisory Signal Connections.** These connections are made to J1, a subminiature D 9-pin connector (AMP No. 205203-1 with No. 205090-1 contacts), by means of the mating connector. Details for these connections are given in Sections 14.1 and 14.2.
- 16.6 Cooling.** The rectifier is cooled by six 40 mm, DC ball bearing fans. For proper cooling the area in front of the fans and around the air exits should be kept clear for unimpeded air flow.

## 17.0 MAINTENANCE

No routine maintenance is required on the Magellan Series except for periodic cleaning of dust and dirt around the fans and the ventilation holes. A small vacuum nozzle should be used for this.

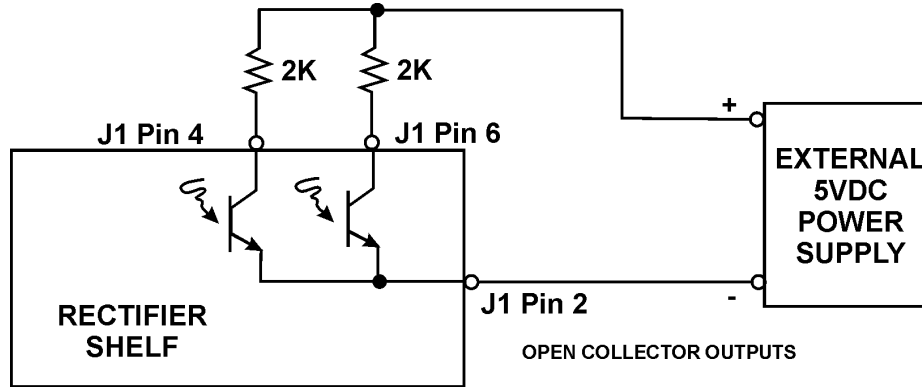
## 18.0 RECTIFIER AND SHELF SETUP AND TESTING

- 18.1 The rectifier and shelf can be initially tested mounted in a rack or on a test bench. Start connections to the empty shelf.
- 18.2 Connect a three-wire AC conduit cable to the proper terminals on the input terminal block with the safety ground wire to the ground clamp. Do not plug the AC line into the power socket yet.
- 18.3 Connect a resistive power load across the DC output terminals. This load can be a DC electronic load that is set to the resistive mode or a high-power resistor that has the proper power capacity and cooling. For this test the load should be between about 25% and 50% of the full load rating of the rectifier. For the 48V rectifier the resistor should be between 4.8 and 9.7 ohms; for the 24V rectifier it should be between 1.2 and 2.4 ohms.
- 18.4 Connect a color-coded, twisted pair (no. 22 or 24 AWG) from the remote sense pins to the load. The +Sense lead (J1 Pin 1) **must go** to the positive side of the load and the - Sense lead (J1 Pin 2) **must go** to the negative side of the load. The Remote Enable input (J1 Pin 7) should be open.
- 18.5 Insert the rectifier into the shelf. Plug the AC power in and measure the voltage across the load at the remote sense points with a digital voltmeter. The voltage should be approximately 54.4V for a 48V rectifier or 27.2V for a 24V rectifier. If a different output voltage is desired, it should be set by means of the voltage adjustment potentiometer on the front panel.
- 18.6 **Checking the Front Panel LEDs.** The AC Good and DC Good LEDs should both be green.
- 18.7 **Checking the Remote Enable Input.** Next, connect a Remote Enable wire from J1 Pin 7 to Pin 2. The rectifier output should turn off, giving zero volts across the load. The DC Good LED should go off. Disconnect the Remote Enable wire.

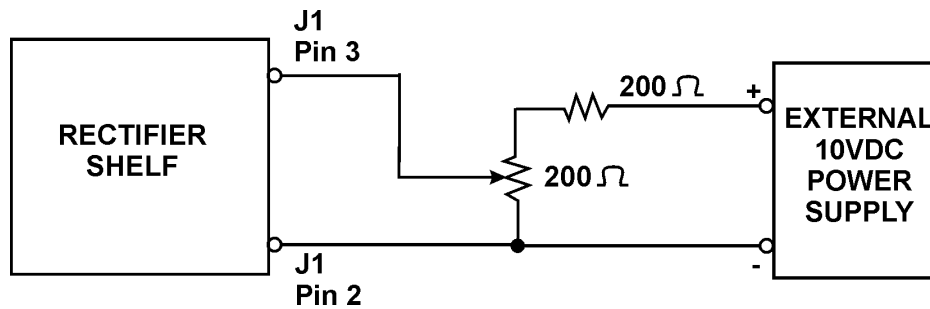
**18.8 Checking the AC Good and DC Good Outputs.** Connect the -lead of an external 5V power supply to -Sense (J1 Pin 2). Connect one end of a 2K resistor to the +lead of the 5V supply and the other end to the AC Good output (J1 Pin 4). Connect one end of another 2K resistor to the +lead of the 5V supply and the other end to the DC Good output (J1 Pin 6). Measure the voltage from J1 pin 4 to Pin 2 and Pin 6 to Pin 2 with a digital voltmeter. Both voltages should be less than +0.5V, indicating a TTL LO. See Figure 8.

Reconnect the Remote Enable wire from Pin 1 to Pin 22. Measure the output voltage at both J1 Pins 4 and 6 with respect to -Sense (Pin 2) with a digital voltmeter. Pin 6 should be at a TTL HI, or about +5V. Pin 4 should be at a TTL LO, or less than +0.5V. Disconnect the Remote Enable wire.

**18.9 Checking the Remote Adjust Input.** Connect a 200-ohm resistor and 200-ohm potentiometer to an external 10V power supply as shown in Figure 9. Connect the wiper arm of the pot to the Remote Adjust input, J1 Pin 3. With the voltage at the wiper arm set to zero, check the output voltage of the rectifier module with a digital voltmeter. For a 48V unit it should be approximately 44V and for a 24V unit it should be approximately 22V. Next, adjust the wiper arm to +5V and check the output voltage of the rectifier. For a 48V unit it should be approximately 58V and for a 24V unit it should be approximately 29V. Unplug the external 10V supply and unplug the AC input to the rectifier shelf. This completes the rectifier setup and testing.



**Figure 8. Checking AC Good and DC Good Outputs**



**Figure 9. Checking Remote Adjust Input**

## 19.0 TROUBLESHOOTING GUIDE

**19.1** If you encounter difficulties in getting the rectifier to operate properly, go through the following troubleshooting guide.

### 19.2 Table 19-1. Magellan Rectifier Troubleshooting

SYMPTOM	POSSIBLE CAUSE	ACTION TO TAKE
No output, AC Good and DC Good LEDs off.	No input power.	Check connection to AC source. Check AC source circuit breakers.
No output, DC Good LED off, AC Good LED on.	Remote Enable in OFF mode.	Make sure J1 Pin 7 (Remote Enable) is open or at TTL HI.
No output, DC Good LED off, AC Good LED on.	Shorted output.	Check for short and remove.
No output, DC Good LED off, AC Good LED on.	Overvoltage protection (OVP) has latched.	Reset output by cycling the AC input OFF for 10 seconds and then back ON.
No output, DC Good LED off, AC Good LED on.	Overtemperature protection is activated.	Allow rectifier to cool down for about 10 minutes. It will then start up automatically. Check to see if the cooling fans are operating.
No output, DC Good LED off, AC Good LED on.	Output load is too great for the rectifier output rating.	Reduce load to proper level.

**19.3** If none of the above actions solves the problem, call UNIPOWER Telecom 954-346-2442 Ext. 400 for help and try to resolve the problem over the telephone.