

**AC300WR**  
**300 WATT REDUNDANT**  
**HF-20A CHASSIS**  
**POWER SUPPLY/SYSTEM MONITOR**  
**TECHNICAL MANUAL**

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Revision A

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# **CHAPTER 1**

## **DESCRIPTION OF EQUIPMENT**

### **1.1 INTRODUCTION**

This manual provides information on the installation and operation of the Model AC300WR Redundant Power Supply/System Monitor. Chapter 1 contains a general description of the product. Chapter 2 contains installation instructions. Chapter 3 contains operating instructions. Chapter 4 provides the theory of operation. Chapter 5 contains maintenance and troubleshooting information. Figure 1 shows a sketch of the Model AC300WR.

### **1.2 DESCRIPTION OF EQUIPMENT**

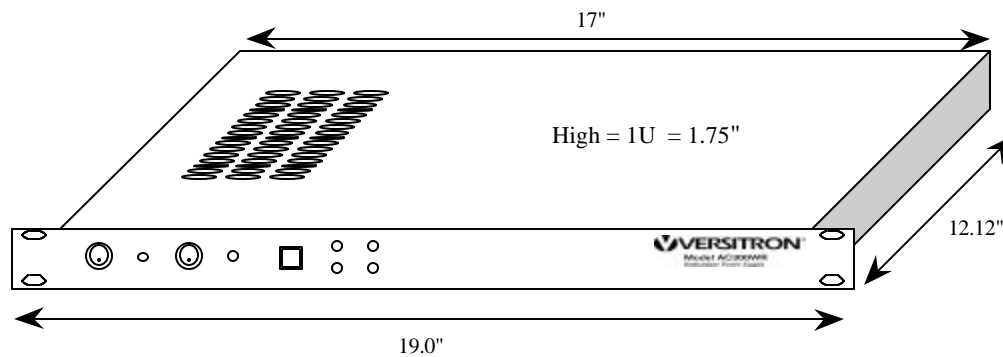
#### **1.2.1 FUNCTIONAL CHARACTERISTICS**

The Model AC300WR Power Supply/System Monitor provides DC power to any VERSITRON FOM II fiber optic modem products when used with the Model HF-20A FOM II rack mount chassis. The power supply is designed for a redundant power configuration and includes provisions for alarm monitoring.

#### **1.2.2 PHYSICAL CHARACTERISTICS**

The Model AC300WR Power Supply/System Monitor is a 1U high 19" rack mountable power supply designed to operate in a redundant power configuration in conjunction with the HF-20A chassis containing any of the FOM II series fiber-optic modems. It measures 1.75" (4.45cm) high x 19" (48.26cm) wide x 12.12" (30.78cm) deep. Model AC300WR has two built-in power supplies configured for complete redundancy each with its own AC-INLET, ON/OFF switch, and a respective power LED. It also has two built-in alarm circuits with separate red LED's for low DC voltage alarm and for system alarm monitoring. In addition, Model AC300WR also has an RS485/RS422 interface at the bank panel for low DC power alarm and for system alarm remote monitoring.

The front panel of the Model AC300WR contains three switches: POWER ON/OFF for each built-in power supply with embedded AC power ON green LEDs, and an Alarm Cut Off / Alarm Reset (ACO/Reset) switch. The front panel also contains six LED indicators: Power 1, Power 2, DOK, PS Alarm, DF Alarm and ACO.



**FIGURE 1. AC300WR REDUNDANT POWER SUPPLY/SYSTEM MONITOR**

### 1.2.3 MAIN FEATURES

Model AC300WR (300 Watt, Redundant Power Supply/System Monitor) has the following main features:

- Compact 1U Rack Mountable Size (1.75" H x 19" W x 12.12" D)
- Combined output power of 600 Watt @ 50 Amp. (max)
- Universal AC (Alternate Current) Input
- Filtered IEC AC Inlet Connectors
- EMI FCC Class B Clearance
- Highly Efficient Design
- 1U Low Profile Height
- No Minimum Load Required
- RS485/RS422 Remote Management
- Low Voltage Power Supply Alarm
- System Alarm & RESET / ACO (Alarm Cut Off) Features

## 1.3 SPECIFICATIONS

### Electrical

Output Voltage	12VDC
Output Ripple	Typical 100 mV
Output Current	25 Amps per power supply in redundancy
Output Power	300 Watt per power supply in redundancy
Total Output Power	600 Watt (300Watt per power supply)
Input Voltage	Universal 90VAC to 264VAC input (2 AC inlet plugs for complete redundancy)
Input Frequency	47Hz to 63Hz
Input AC Current	Approximately 3 Amps (continuous)
Remote Monitoring Interface	RS485/RS422

### Typical Safety Rating:

Designed in full compliance with	UL60950 CSA 22.2 No. 234 EN60950
EMI	EN55022 "Class B"
EMS	EN61000-4-2,-3,-4,-5,-6,-8,-11
Harmonics	EN61000-3-2 Class D

### Environmental

Overload Protection	Auto-recovery
Functional Temperature	0 to 70 °C
Storage Temperature	-20 to 85 °C
Over voltage Type	Latch off
Efficiency	80-90% Typical

### Physical

Dimensions	1U (1.75" H x 19" W x 12.12" D); (4.45cm x 48.26cm x 30.78cm)
Weight	13.25 lb. = 6.01kg = 212oz

## CHAPTER 2 INSTALLATION

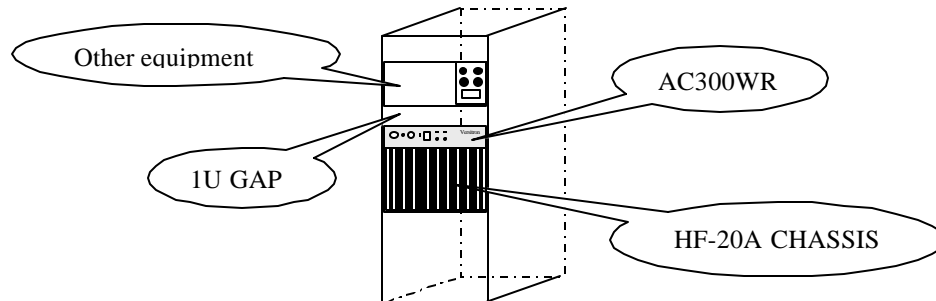
### 2.1 GENERAL

This chapter contains information on the installation and initial checkout of the Model AC300WR Redundant Power Supply/System Monitor. Paragraph 2.2 contains general information on the chassis installation. Paragraph 2.3 describes the input power requirements. Paragraph 2.4 contains initial checkout procedures.

### 2.2 INSTALLATION PROCEDURE

The Model AC300WR Redundant Power Supply/System Monitor is designed to work with the Model HF-20A FOM II chassis only. (The HF-20A fits into a standard 19" equipment rack.) The power supply is used with all models of VERSITRON FOM II modems.

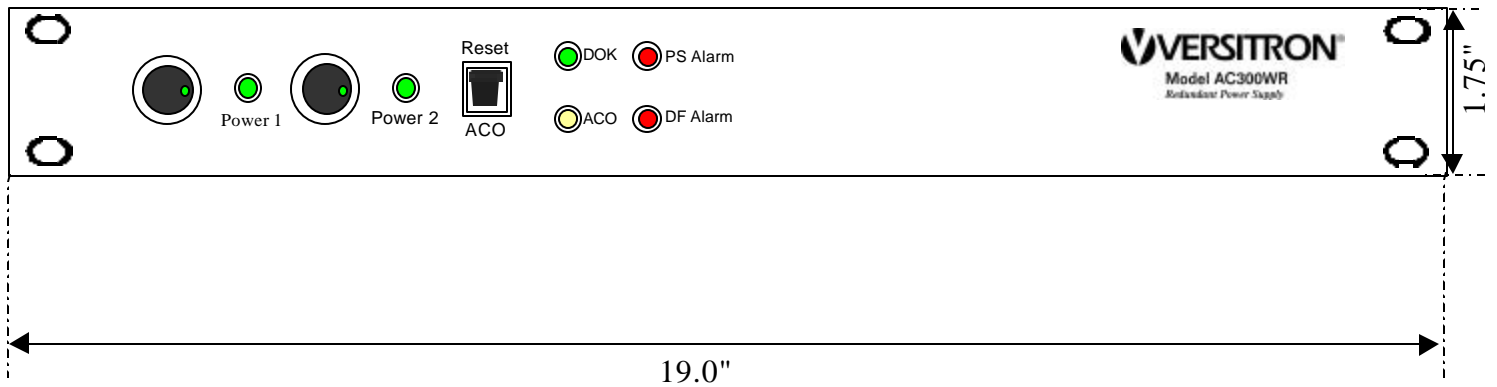
Complete redundancy and a combined power of 600 Watts makes the Model AC300WR a one-of-a kind power supply. It is mounted into a standard 19" communications rack directly above a HF-20A Chassis. It is recommended that a 1U gap be left between the top of AC300WR and any other equipment installed in the rack (see figure 2).



**FIGURE 2. STANDARD 19" RACK INSTALLATION**

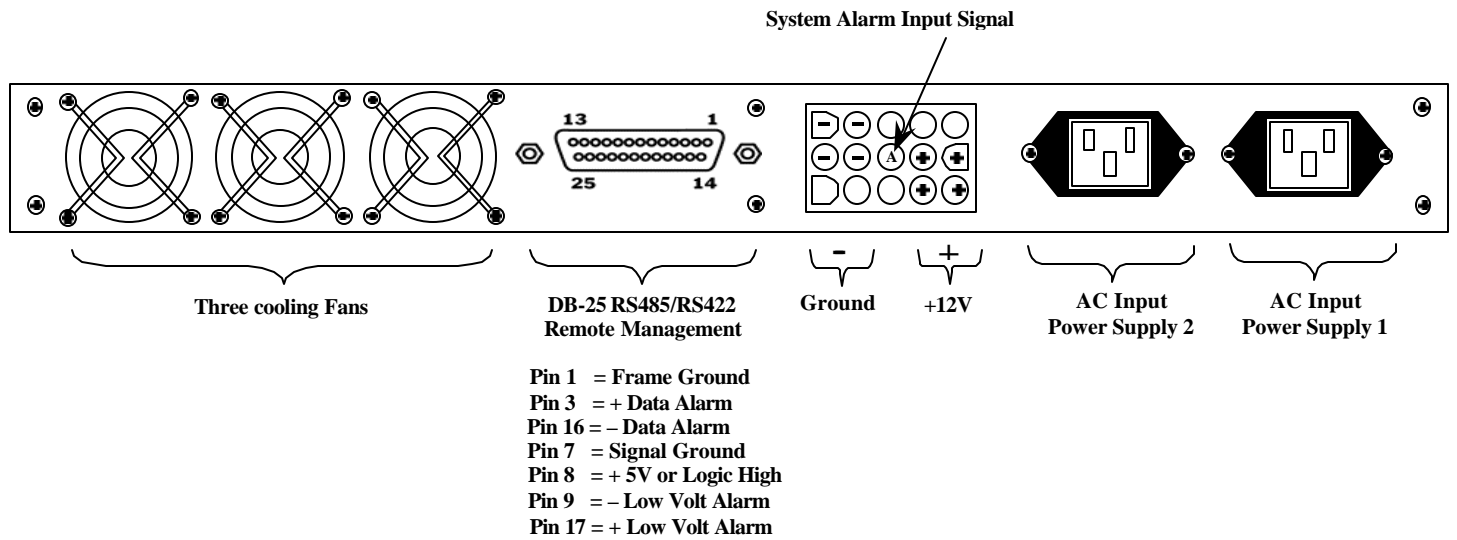
The electrical power connections are located on the back panel of the Model AC300WR power supply. There are two AC power INLETS, one for each power supply unit located inside the Model AC300WR. These should be connected to a clean and a well ground AC power source. Also, there is a DC Volt 15-pin connector socket for 12 Volt DC output. Beside these power connectors Model AC300WR power supply also has a DB-25 connector for RS485/RS422 remote management. This particular interface is used for monitoring Low DC voltage levels in an overload situation and also for monitoring the alarm associated with any circuit card installed in the HF-20A chassis, provided that the Alarm Cut Off (ACO) switch is not enabled on the front panel of Model AC300WR. Refer to figure 3 and 4 on the next page.





**FIGURE 3. MODEL AC300WR FRONT PANEL VIEW**

**Warning: To avoid damage to the LEDs and Switches DO NOT place the front panel of the unit face down, and/or DO NOT press against the front panel.**



**FIGURE 4. MODEL AC300WR REAR PANEL VIEW**

## 2.3 POWER REQUIREMENTS

The Model AC300WR Redundant Power Supply/System Monitor operates with either a 115VAC or 230VAC power sources. The unit automatically recognizes the input voltage. There is no switch for 115VAC or 230VAC, hence making Model AC300WR a completely universal input AC-voltage power supply.

## 2.4 INITIAL CHECKOUT PROCEDURE

Once installed, the Model AC300WR requires no adjustments. Before beginning system operation the following items should be checked to verify proper installation:

1. Verify the 15-pin DC power cord connector is fully inserted and firm at the rear end of Model AC300WR. Similarly, verify the other end of the power cord is fully inserted and secure in the back plane of the HF-20A chassis through a 9-pin round cable connector.
2. Verify the AC power cords are firmly connected to the back plane of the Model AC300WR unit and the AC power sources are clean and well grounded.

**WARNING: For safety reasons, DO NOT turn the Model AC300WR ON prior to connecting ALL power input cords.**

3. When turning the unit ON with the front panel power-switches, the AC POWER (Green LEDs embedded in the switches), Power 1 (Green LED for DC Power), Power 2 (Green LED for DC Power) and DF Alarm (Red LED For System Alarm) should illuminate. Press the Alarm Reset switch to initialize the system alarm status. After the alarm resets, the DOK (Green LED for System OK) should come ON, the DF Alarm (Red LED) should go OFF and the other two LEDs (PS Alarm and ACO) should remain OFF.
4. If a malfunction is detected during the initial checkout procedure, refer to Chapter 5 for information on isolating the malfunction in the unit.

## CHAPTER 3 OPERATION

### 3.1 INTRODUCTION

This chapter contains a description of the operating controls of the Model AC300WR Redundant Power Supply/System Monitor. The AC300WR is designed for continuous and uninterrupted operation. Once the power supply is installed with the HF-20A chassis it should remain in service as long as required.

**Warning: The power supply circuitry contains hazardous voltage levels inside. Do not remove the cover. There are no user-serviceable parts inside.**

### 3.2 STATUS INDICATORS

The Model AC300WR has eight LED indicator lamps on its front panel. The two green LEDs embedded inside the power switches are illuminated when AC power is applied to the unit, and the power switches are turned ON. The Power 1 and Power 2 are illuminated when good DC voltages are supplied to the HF-20A Chassis. The DOK LED (green) is illuminated when there are no active status alarms in the system (FOM II card circuits). Two red LEDs provide alarm indications: PS Alarm is ON if the DC output voltage drops below 10 volts, and the DF Alarm comes ON if a circuit card alarm is sensed on the alarm bus of the HF-20A. An ACO LED (yellow) is illuminated when the ACO front-panel switch is activated.

### 3.3 SWITCHES

There are three switches on the front panel of the Model AC300WR Redundant Power Supply/System Monitor. The two power switches control the two independent AC inputs. The ACO (Alarm cut off) / Reset switch has three positions. In the lower position this switch disables the DF Alarm LED that is available on the front panel of the Model AC300WR. When the switch is pressed into the upper position, the DF Alarm is cleared. The switch can be left in the lower position, but must be pushed and held in the upper position to reset the system alarm. In the center position the switch is OFF.

### 3.4 ALARMS

The Model AC300WR Redundant Power Supply/System Monitor contains circuitry to monitor the Model HF-20A alarm bus and the switching power supplies of the unit. Remote alarm monitoring is possible through the DB-25 female RS485/RS422 interface on the back panel of the unit. The location of the connector is shown in Figure 4. The Model AC300WR alarm circuitry monitors all alarms set by each circuit card and will therefore change state and oscillate whenever there is a loss of sync (such as due to a possible failure of fiber) on a FOM II card.

## ALARMS (continued)

### Remote Management DB-25 Connector Pin Out\*\*

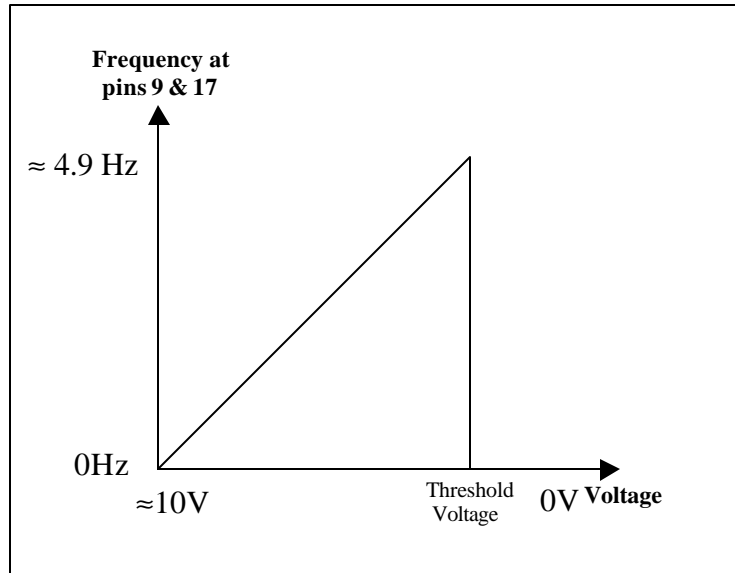
Pin Out	Description
Pin # 1	Frame Ground
Pin # 3	+ Data Alarm (RS485/R2422 Interface)
Pin # 16	- Data Alarm (RS485/R2422 Interface)
Pin # 7	Signal Ground
Pin # 8	+ 5 V or (TTL logic High at Power ON)
Pin # 9	- Low Volt Alarm (RS485/R2422 Interface)
Pin # 17	+ Low Volt Alarm (RS485/R2422 Interface)

**TABLE: 1**

**Note** \*\* Pins not mentioned in the table do not have any connections

To understand the power and system alarm remote monitoring, please refer to the following graphs:

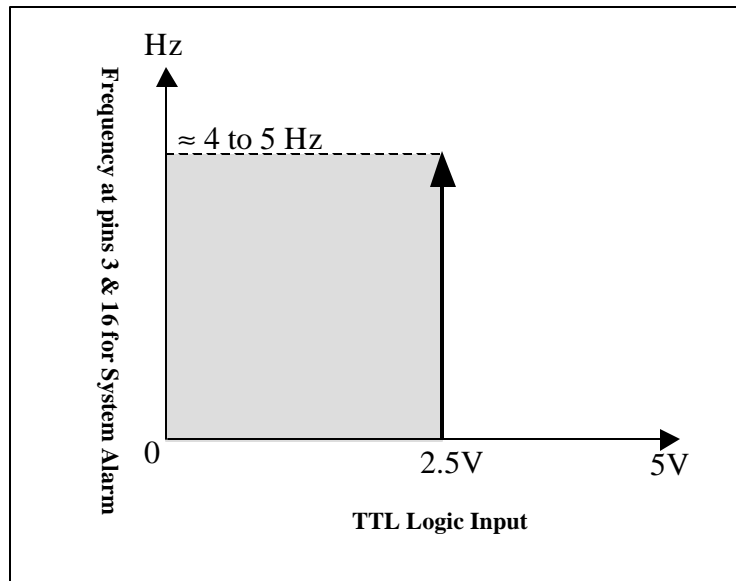
**Graph 1. PS Alarm or Low Voltage Alarm System**



**Note** Output DC voltage reduction level is reciprocal to the output frequency at the RS484/RS422 interface. As the voltage decreases from about 10V to Threshold Voltage (**due to overload**), the frequency respectively increases from 0Hz to 4.9Hz.

## ALARMS (continued)

**Graph 2. DF Alarm or System Alarm**



**Note** Whenever the TTL input level is below 2.5V or at Logic Zero, the RS485/RS422 output pulses at a continuous frequency of approximately 4 to 5 Hz

### 3.5 REDUNDANT POWER CONFIGURATION

The Model AC300WR Redundant Power Supply/System Monitor is designed to operate in a completely redundant power configuration. This is accomplished by supplying separate power sources to the two independent AC INLETS of the Model AC300WR unit and turning ON both AC POWER switches located on the front panel. By doing this the unit will supply a combined total power of 600 Watts to the system. If for some reason either of the internal built-in power supplies stopped working, the other would handle the load of the system. Hence, keeping the HF-20A chassis operating under all conditions.

## CHAPTER 4 THEORY OF OPERATION

### 4.1 INTRODUCTION

The second generation VERSITRON fiber optic modem and interface extender products, the FOM II Series, are designed to operate with 12 VDC input power. The Model AC300WR Redundant Power Supply/System Monitor has been developed to provide adequate power for up to **20 FOM II modems in a Model HF-20A chassis.**

In addition, the Model AC300WR has circuitry to monitor the HF-20A alarm bus. The unit takes an input of 115 or 230 volts AC and transforms it into a 12 volt DC output with 50Amp current (Total combined current of the unit). The Model AC300WR consists of shielded AC filtered inlets, diode rectifiers and three mini fans, and a printed circuit board containing the LED drivers and alarm circuitry. The unit is enclosed in an aluminum alloy housing.

## **CHAPTER 5**

### **MAINTENANCE AND TROUBLESHOOTING**

#### **5.1 INTRODUCTION**

This chapter contains general information designed to isolate a malfunction in the Model AC300WR Redundant Power Supply/System Monitor to a replaceable unit. These units are individually equipped with redundancy. Therefore, a failure in one of these units would not interrupt service.

#### **5.1 FAULT ISOLATION**

The Model AC300WR Redundant Power Supply/System Monitor has AC POWER, Power 1, Power 2 and DOK LEDs which should be illuminated. If one of the AC POWER LEDs embedded in the front panel switches is not ON, check the AC power cord for proper connections to both the Model AC300WR and the AC source. If the embedded AC POWER LEDs are ON but the other status indicators are not correct, first check that the 12-pin power connector from the AC300WR is fully connected to the HF-20A, i.e. the DC power cord is fully inserted into the round plug and secure. Next proceed with the fault isolation procedures for the FOM II modems sharing the HF-20A chassis with the power supply. If you believe that there is a problem with the Model AC300WR, please contact VERSITRON Customer Service for assistance.