TORUS POWER
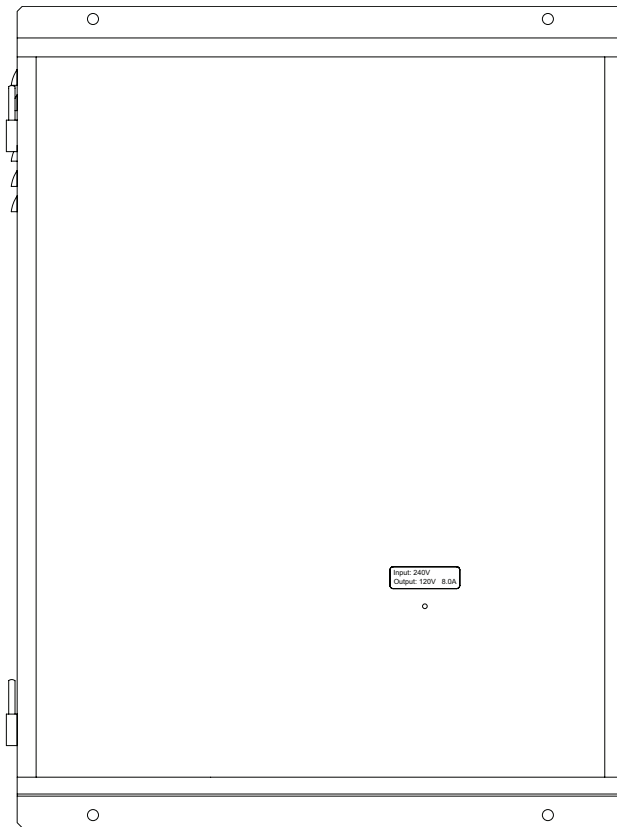
Engineered to perform
& protect like no other

Toroidal Isolation
Power Transformers

WM AVR2 Series Manual
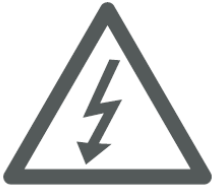
Input: 240V
Output: 120V 8.0A

Warning:
User is responsible for installing this unit in accordance with all local, provincial/state and federal electrical code requirements. The installation of this unit requires inspection and approval by local safety authority. This wall mount unit is not equipped with a power safety interlock.

Table of Contents

Important Safety Instructions

CAUTION! To reduce the risk of electric shock and fire, do not remove the cover of this device. There are no user serviceable parts inside. Please refer all servicing to licensed service technicians.

CAUTION! The international symbol of a lightning bolt inside a triangle is intended to alert the user to uninsulated "dangerous voltage" within the device's enclosure. The international symbol of an exclamation point inside a triangle is intended to alert the user to the presence of important operating, maintenance and servicing information in the manual accompanying the device.

CAUTION! To prevent electrical shock, match wide blade of plug to wide slot, fully insert.

CAUTION! To reduce the risk of electrical shock, do not expose this equipment to rain or moisture.

1. Read Instructions—All safety and operating instructions should be read before operating the device.

2. Retain Instructions—The safety and operating instructions should be retained for future reference.

3. Heed Warnings—All warnings on the device and in the operating instructions should be adhered to.

4. Follow Instructions—All operating and safety instructions should be followed.

5. Water & Moisture—The device should never be used in, on or near water for risk of fatal shock.

6. Ventilation—The device should always be located in such a way that it maintains proper ventilation. It should never be placed in a built-in installation or anywhere that may impede the flow of air through its ventilation slots.

7. Heat—Never locate the device near heat sources such as radiators, floor registers, stoves or other heat-generating devices.

8. Power Cord Protection—Power cables should be routed so they are not likely to be stepped on or crushed by items placed on them or against them. Special attention should be paid to areas where the plug enters a socket or fused strip and where the cord exits the device.

9. Periods Of Non-Use—The device should be unplugged when not being used for extended periods.

10. Dangerous Entry—Care should be taken that no foreign objects or liquids fall or are spilled inside the device.

11. Service—The device should always be serviced by licensed technicians. Only replacement parts specified by the manufacturer should be used. The use of unauthorized substitutions may result in fire, shock, or other hazards.

12. Damage Requiring Service—The device should be serviced by licensed technicians when:

• The plug or power supply cord has been damaged.

• Objects have fallen or liquid has spilled inside the device.

• The device has been exposed to moisture.

• The device does not appear to be operating properly or exhibits a marked change in performance.

• The device has been dropped or the enclosure becomes damaged.

13. Do not position the equipment so that it is difficult to operate the disconnecting device (power cord).

14. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

15. The power switch should be in the "off" position when connecting or disconnecting equipment from a Torus Power unit.

16. CAUTION Some units can be very heavy, please use safe practices when lifting.

| ≥18 kg (39.7 lb) | ≥32 kg (70.5 lb) | ≥55 kg (121.2 lb) |

Shipping Carton & Packing Material

Please keep the original shipping box and all packing material. This will ensure the unit is protected in future transport.

In the unlikely event you have a problem and must return it for service you must use the original packing material.

Ship the unit only in the original packing material, as the unit is not insurable by carriers otherwise.

Placement & Ventilation

Torus power PIUs (Power Isolation Units) are extremely efficient yet very high power devices, and must be adequately cooled.

Wall Mount units have ventilation slots on the side panels near the top of the unit. Maintain at least 5" distance from each of these surfaces to anything else.

Do not install the unit directly above heat generating equipment.

Torus Power AVR2 Series Description

Torus Power AVR2 series products are full-feature state-of-the-art power transformers and voltage stabilizers, with built-in web interface and multiple addressable zones to provide the ultimate in monitoring and control of audio/video systems.

The AVR2 series offeres multiple IP-addressable outlet zones that can be separately turned on or off through the web browser, and/or remotely scheduled. Torus Power AVR2 models deliver clean AC power, providing noise attenuation from 2 kHz to beyond 1MHz.

They provide true isolation (using massive toroidal transformers) along with low source impedance and large enough instantaneous current for today's most sophisticated and powerful audio amplifiers. The performance level is far beyond what any typical power conditioner using discrete filters can provide.

The AVR2 series provides voltage stabilization that keeps equipment in the optimal voltage operating range (in North America +/ 5V, in Europe/Asia/Australia +/- 10V of nominal operating voltage), regardless of fluctuations in line voltages. Voltage sags, brownouts, and surges can stress components and shorten equipment life. In the worst case, catastrophic events can destroy valuable equipment. In such real world conditions, Torus Power AVR2 can protect your equipment, and improve the quality and enjoyment of your audio and video experience.

Series mode surge suppression is built into AVR2 units to provide protection against lighting strikes and other power disturbances.

Summary of AVR2 Series Features

- Toroidal Isolation provides the ultimate clean power performance
- Automatic Voltage Regulation maintains stable output voltage
- Series Mode Surge Suppression protects against lighting strikes
- IP addressable zones with built-in web interface for remote control and monitoring
- Password control
- Email notification of fault conditions
- RS232 control compatible with Crestron and other major control systems
- Delayed Switch ON (5 seconds) when power turned on/restored
- Front panel displays input/output voltage, current drawn and IP address
- Individually addressable outlet zones
- Zone "R" can be re-configured to provide automatic router reboot in case of Internet failure
- Enhanced web browser interface to monitor/control/schedule/sequence individual zones
- Scheduling features allows automatic control (ON/OFF) of any outlet zone according to user defined schedule. Schedule parameters allow one week repeating schedule, with up to six events per day for each controlled zone. Outlets can be sequenced during start up. Each zone can be operated by the schedule, or in real time via the web browser. Schedule is followed even when the Internet connection is lost, as long as system power is maintained.

Connecting Components to IP Addressable Zones

All WM AVR2 models have 7 + R IP addressable zones.

Please see WM AVR2 Model Layout drawing on page 13.

- Zones A to G can be individually controlled and programmed.
- Each zone can be scheduled to turn ON or OFF at anytime or day of the week.
- Each zone can also be individually turned ON or OFF through webpage.
- Zone R can be programmed to be used as either a controlled outlet or a rebootable Router outlet.

The Zones on the AVR2 switch on in sequence: Zone A first, Zone B second and so on. This will allow you to select the order in which your components are switched on. For example, components that should be switched on first (such as front end components) can be connected to Zone A and Zone B. Components to be switched on last (such as power amplifiers) can be connected to Zones C, D (or Zones E, F, G in higher capacity units).

Routers should be connected to Zone R if the automatic reboot feature is to be utilized; if this feature is NOT to be used, Zone R can be used as an extra controllable outlet zone. Zone R switches on last.

Since every outlet on the AVR2 is capable of providing full current with no restriction, connecting components for preferred sequencing wil NOT compromise performance.

Front Panel Display

The front panel display consists of a two line LCD and a pushbutton switch. Each time you push the button the display will show a different feature of the AVR2.
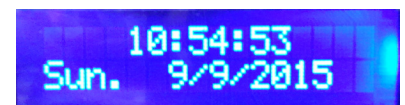
When you first turn on the AVR2 the System Status will appear. Each time you push the button it will change from one display to another. One last push will take you back to the System Status and will stay here till you push the buttons again.
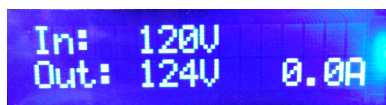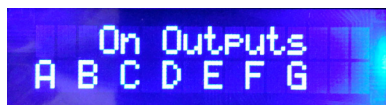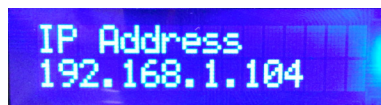

System Status

Power Status

Time/Day/Date

Active Zones

IP Address

Protection in Event of Voltage Faults

If a high or low voltage condition occurs, and remains for 30 seconds or more a voltage fault message is displayed. The fault output is turned on and the system shuts down (unless over-ridden by the user). The user can program the AVR2 software to allow the system to remain on in case of fault (see AVR2 software section for details).

The display will show one of following messages:

 OR
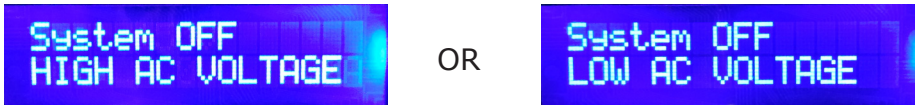
As the output power from the Torus Power AVR2 is shut down, all the connected components are turned off. The AVR2 power switch remains in the ON position, although there is no power to the load.

When the voltage has been restored to the normal operating range, the unit will automatically switch on. If the fault condition still exists, the AVR2 will require approximately 15 seconds to monitor the incoming voltage, and the system will shut down again.

Notes:

1. The AVR2 unit needs to be switched ON at all times for series mode surge protection to be active. If the AVR2 and connected components will not be used for an extended period of time, it is recommended to unplug the AVR2 unit from main power.

2. There is a 20-second delay built into the AVR2 system, to prevent nuisance switching. The AVR2 will take approximately 20-seconds to change relay taps to switch to the proper output voltage setting.

3. North American BAL models: Torus AVR2 will keep the output constant within the range of 115Volts to 125Volts, with an input voltage of 170V to 270V. Between 160V to 170V, and between 260V and 270V, the regulation will be reduced.

4. International models: Torus AVR2 will keep the output constant within the range of 240±10V, with an input voltage of 170V to 270V. Between 160V to 170V, and between 260V and 270V, the regulation will be reduced.

5. The output current (Amps) displayed on the LCD is the RMS reading of the load. It does not indicate the peak current loads.

6. A drop in the input voltage is normal when increasing the load on the AVR2. This is a result of the impedance of the power line, a function of the distance from the electrical panel and transformer regulation.

Ethernet Connections
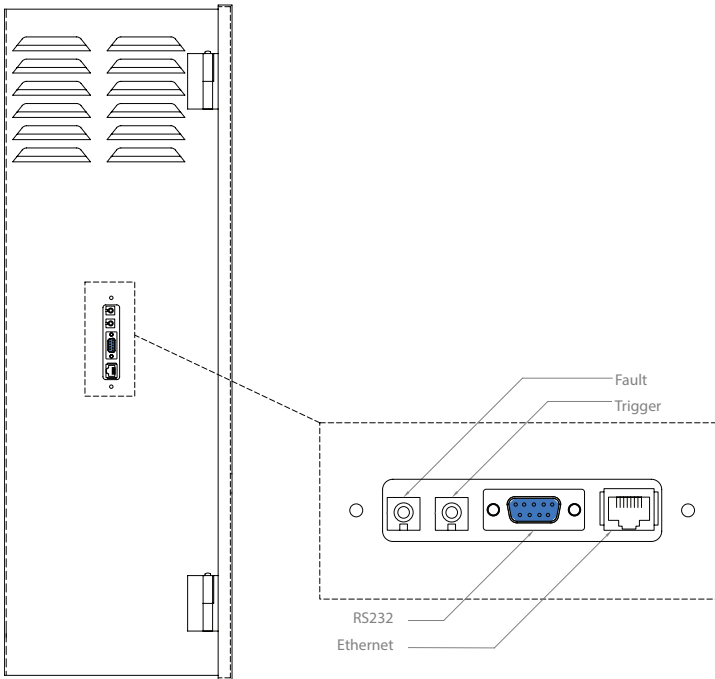
Ethernet
Allows access to the AVR and internal software. See AVR software section for more details.

RS232
Allows access to automation and external control. See Home Automation Interface commands at end of manual.

12VDC Trigger On/Off
The AVR can be turned on and off by a 12 volt trigger input. Applying 12 volts turns on the AVR and removing the 12 volts turns it off.

12VDC Fault Output
The AVR provides a 12 volt fault output through a jack on the back panel. The output goes to 12 volts when a relay or voltage fault is detected. The maximum current that can be drawn from this output is 75mA.

Fault
Trigger
RS232
Ethernet

AVR2 Software

The AVR2 software is resident in the microprocessor on the internal control board. There are two methods to access the software.

1) Connect the AVR2 to the Ethernet port. Open a web browser on a PC that is connected to the same network through another Ethernet port. Enter AVR (or the IP address displayed on the LCD) into the browser window. Press ENTER and the software will open.

2) Use a three way DHCP Router. You then connect both PC and AVR2 to the same DHCP Router. Open a browser window from the PC. Type AVR, (or the IP address displayed on the LCD) into the browser window. Press ENTER and the software will open.
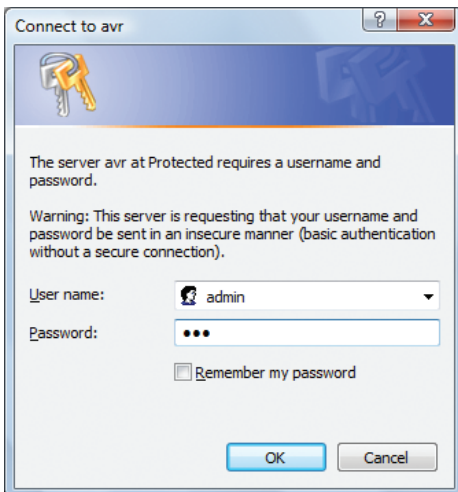
Username and Password
The password is required to change the setup of the Torus unit.

Username: **admin**
The username is factory set and cannot be changed.

Password: **avr**
This is the default password, and can be changed.
You can change your password by selecting: **Set Password**

In case you forget your password, the AVR2 can be restored to the factory default password **avr** by pressing and holding the button on the front panel for at least 10 seconds.
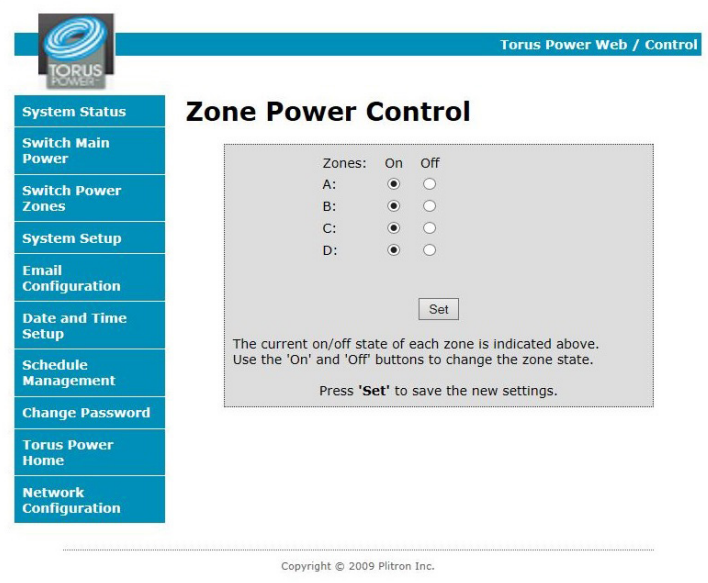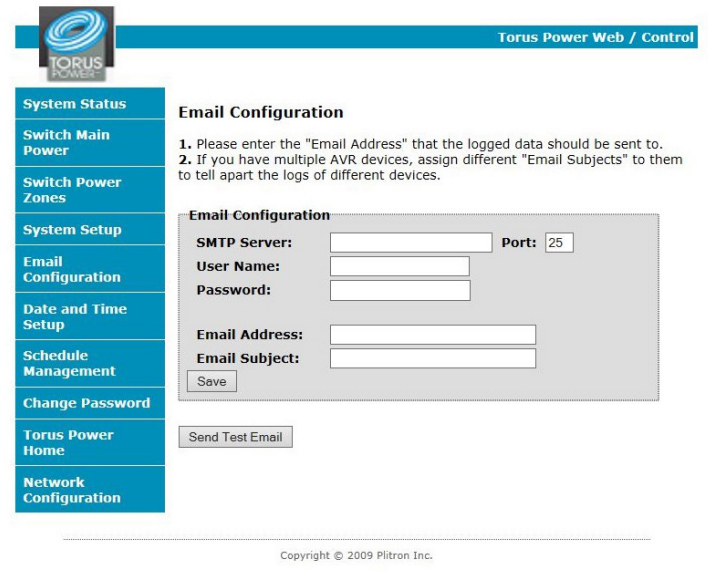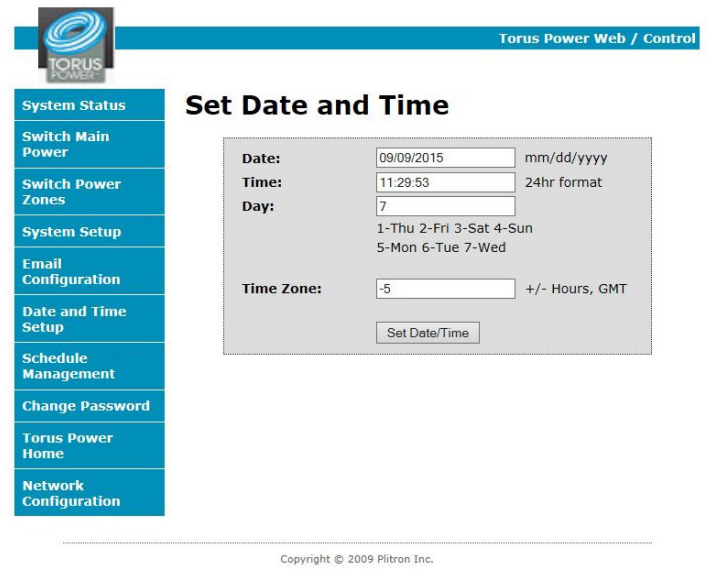
AVR2 Software - Menu Selections

AVR2 Menu Selections

- System Status
- Switch Main Power
- Switch Power Zones
- System Setup
- Email Configuration
- Date and Time Setup
- Schedule Management
- Change Password
- Torus Power Home
- Network Configuration

Screen by screen description of software options

Torus Power Web / Control **System Status** System Status Switch Main Power Switch Power Zones System Setup Email Configuration Date and Time Setup Schedule Management Change Password Torus Power Home Network Configuration Voltage In: 126V Voltage Out: 120V Current Out: 0.0A Power Out: 0W Zones: On Off A: ◉ ◯ B: ◉ ◯ C: ◉ ◯ D: ◉ ◯ System is functioning normally Software Version: 2.3 Feb 6 2015 Copyright © 2009 Plitron Inc.	**System Setup** This screen indicates the overall status of the system, showing Voltage In, Voltage Out, Current Out, Power Consumption and Active Zones. It also reports if the system is functioning normally or whether there is a fault condition. (No password required to monitor status)
Torus Power Web / Control **Switch Main** System Status Switch Main Power Switch Power Zones System Setup Email Configuration Date and Time Setup Schedule Management Change Password Torus Power Home Network Configuration The system power is **ON** To turn the power on or off, select the 'On' or 'Off' button below and then press **'Set'**. ◯ On ◯ Off Set Copyright © 2009 Plitron Inc.	**Switch Main Power** This screen allows ON/OFF control of the AVR2 unit. Press the SET button to implement your selection. As the output power from the Torus AVR2 unit is shut down, all the connected equipment is turned off. The AVR2 main power switch remains in the ON position, although there is no power to the load.

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Zone Power Control

The current ON/OFF state of each zone is indicated here. Each zone can be individually turned on or off.

Use the 'ON' and 'OFF' buttons to change the zone state. Press 'SET' to save the new settings.

Active zones are also shown in the front panel display.

Email Fault Alert Notification

In the unlikely event your AVR2 experiences an issue the AVR2 will shut down and send an email notification, if this section is configured. After entering the configuration parameters use the 'Send Test Email' button to confirm your settings are correct.

Date and Time Setup

When the AVR2 is connected to the Internet, the Day, Date and Time will automatically be set. However, when the AVR2 has no access to the Internet the Date, Time and Day can be set manually which will allow the AVR2 to follow scheduled programming even if the Internet is later unavailable.

If the Internet connection is restored the Date, Time and Day will be automatically set.

System Setup

This page allows the configuration of the AVR's programmable parameters.

Out of range voltage:	☑ Turn Power off on **low** or **high** line voltage.
Zone R/Router Reset:	☑ Check to Activate Auto Reboot and disable Zone R Scheduling.
Router Reset Delay Time:	`10` (1 to 255 minutes) Select time interval between router resets. System will attempt 3 resets.
Delay Time between zones (Scheduler and Start-Up):	`5` (1 to 999 seconds) Select interval for sequencing and power up between zones.
Front Panel Display:	`255` (0 to 255 seconds) ☑ Display Always On
Schedule:	☑ System Follow Schedule

Save Setup

Copyright © 2009 Plitron Inc.

System Setup
Out of Range Voltage:
The factory default settings is to shut down in case of fault voltage condition (button checked).
By unchecking this button it will override and the AVR2 will remain ON even if voltage drops or rises beyond acceptable range.

Delay Time Between Zones(Scheduler and Start UP):
Select delay time interval for sequential Power Up between zones.

Front Panel Display:
Always ON is the default setting. If you don't want the display to be on all the time, you can select a time from 0-255 seconds.

Zone R/Router Reset:
User has the option to assign Zone R (individual zone located at rear panel) to act as an additional output zone or to be used for automatic router reboot.

Unchecked Zone R/Router Reset:
- Zone R will act like a regular zone, and can be programmed to switch ON/OFF individually like other zones. (see page 8, Zone Power Control)
- Zone R works with the Schedule Manager and can be programmed to turn ON/OFF at any time on any day of the week like other zones. (see page 10, Scheduling Management)
- Zone R operates with other zones during sequential start-up.

Checked Zone R/Router Reset:
- Zone R can only be used for router and/or modems.
- The Auto reboot feature initiates power cycling of the router or modem when internet connection is down. The system will reset Zone R up to three times with adjustable time intervals between each attempt.
- Zone R can no longer be individually turned OFF/ON through Zone Power Control.
- Zone R will disappear in the Zone Power Control section.
- Zone R can no longer be scheduled or sequenced to turn ON/OFF.

Schedule:
By checking this button the system will follow the schedule.

When you have made your selection, press **SAVE SETUP**.

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Page 9

AVR Software - Menu Selections (continued)

Schedule Management

Scheduling features allow automatic control (ON/OFF) of any outlet zone according to user-defined schedule.

Schedule parameters allow one week repeating schedule, with up to 6 events per day for each controlled zone.

Outlets can be sequenced during start up. Each zone can be operated by the schedule, or in real-time via the web browser.

Schedule is followed even when Internet connection is lost, as long as system power is maintained.

Network Configuration

Each AVR2 unit has a unique MAC Address which is factory assigned.

The IP address assigned to the AVR2 is dynamically assigned and is displayed on this screen as well as on the front panel LCD of the AVR2.

The AVR2 can be programmed through the web browser to automatically get an IP address from the network switch or router and this is the default setting and should work on most networks.

Some networks require each PC or device to use a fixed IP address and the AVR2 also supports this option.

Change Password

If you wish to change the password, use this screen.

In case you forget your password, the AVR2 can be restored to the factory default password by pressing and holding the button on the front panel for at least 10 seconds.

The default password is **avr**.

Block Diagram - AVR2 System

	Automatic Voltage Stabilizer	Toroidal Isolation Transformer	Surge Removal and Complete Protection	
Circuit Breaker	· Maintains stable Voltage Output as shown in table below regardless of input voltage swings · Fault protection · Web interface · Front panel display · 12 volt triggers · Media control system option	· Complete isolation of primary from secondary allows attenuation of noise from 2kHz to over 1MHz · Low impedance - provides instantaneous power · High Power capability · Low Mechanical noise	· Protects against surges and lightning strikes up to 6000V/3000A · Series mode technology does not contaminate ground	**Hospital Grade Duplex Receptacles**

Input Voltage Range V_I

Output Voltage Range V_O

TORUS Technical Features

· Micro-controller based switching system
· Reliable relays rated for 40A

Toroidal Transformer Technologies
· Narrow Bandwidth (NBT)
· Low Noise (LONO)
· Low Inrush (IMIN)
· Low Stray Fields (LoSTray)
· Triple Ground Screen (UST)
· Shock mounted oversized transformer

· No sacrificial MOVs
· No air core inductors to generate noise

· Medical grade outlets
· Clean ground

Model	Nominal Input	Operable Input Range	Output
North American	120V	85V - 135V	120V ± 5V
North American Balanced	240V	170V - 270V	120V ± 5V
International	220V	150V - 250V	220V ± 10V
International	220V	160V - 250V	230V ± 10V
International	230V	160V - 260V	230V ± 10V
International	240V	170V - 270V	240V ± 10V
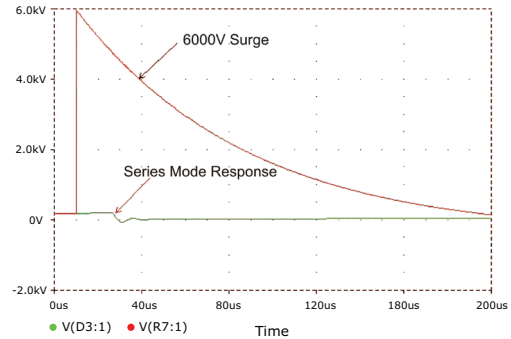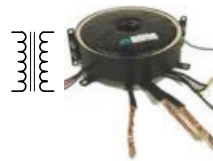
Transient Voltage Surge Suppression (TVSS)

All WM Series models are available with a Transient Voltage Surge Suppression (TVSS) device built into its signal path. The UL certified panel TVSS responds in under 5 nano-seconds and manages surges up to 80,000 Amps. The TVSS also offers additional noise filtration of EMI and RFI (40 dB typical).

Circuit Protection

The input fuses prevent excessive current from entering the PIU.

Thermal Protection

The Torus Power PIU will shut down if internal unit temperature reached excessive levels.

Circuit Schematic - North American WM AVR2 Model (WM 60 BAL AVR2 TVSS)

COMPONENT PANEL

CT1	: 10576-X0-00 CURRENT TRANSFORMER; TO MONITOR OUTPUT CURRENT
PT2	: 12001-X0-02 POTENTIAL TRANSFORMER; TO MONITOR INPUT VOLTAGE AND SUPPLY POWER TO PCB3 AND PCB5
PT1	: 10575-X0-02 POTENTIAL TRANSFORMER; TO MONITOR OUTPUT VOLTAGE
T1	: 11134-V1-02 MAIN POWER TRANSFORMER 7.08kVA
PCB1	: 580240 - 9 AVR RELAY BOARD
PCB2	: 580240 - 9 AVR RELAY BOARD
PCB3	: CONTROLLER PCB; DISPLAY I/O VOLTAGE AND CURRENT
PCB4	: COMM. PCB; RJ45 NETWORK, RS-232, 12V TRIGGER AND 12V FAULT
PCB5	: OUTLET IP ADDRESSABLE DRIVER BOARD
TS1	: TRANSFORMER TEMPERATURE LIMIT SWITCH 130°C, NORMALLY CLOSED

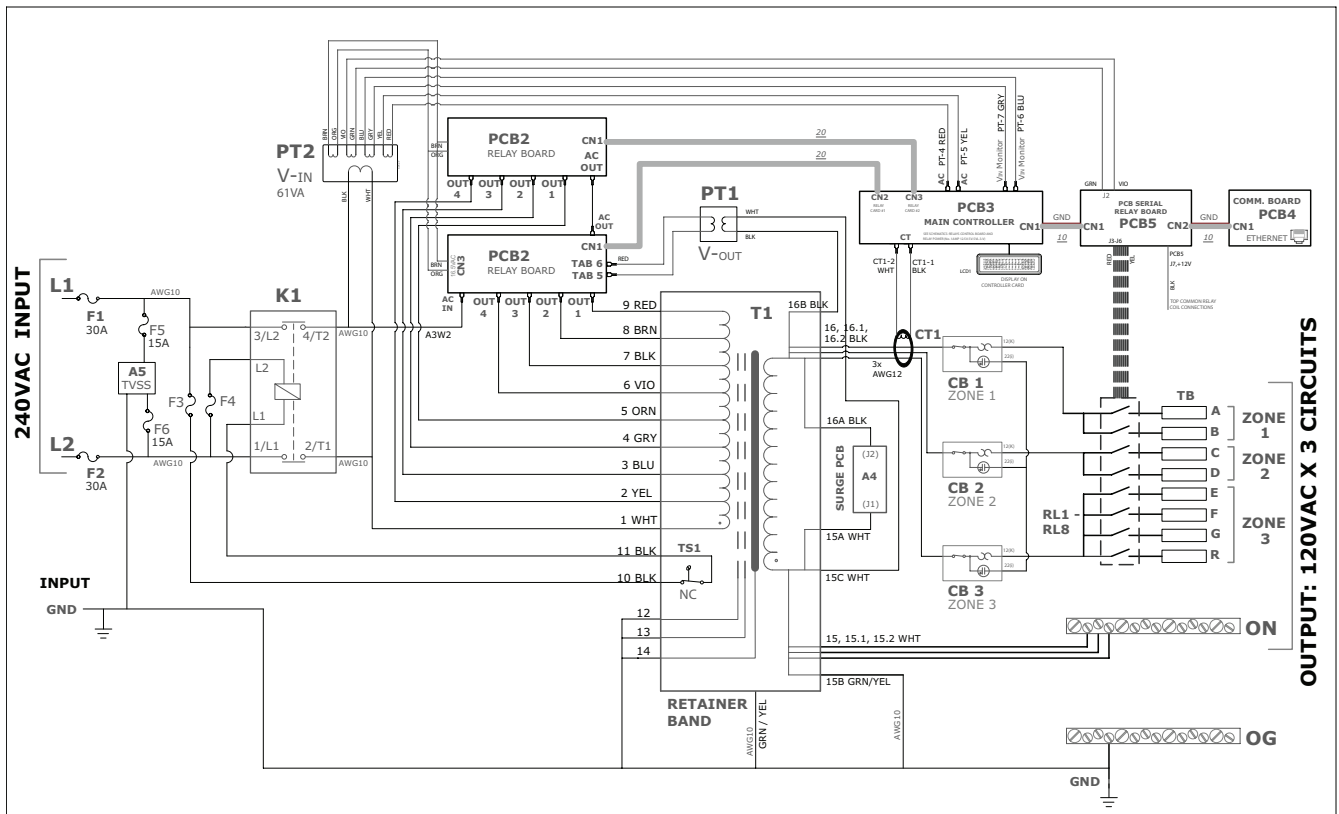|	
F1-F2	: FUSE: 30A TD; 600VAC, TYPE J; use: JDL30 in holder JT60030
F3-F4	: FUSE: 2.0A FA; 250VAC, 20mm X 5mm. 200A at 250V
F5-F6	: FUSE: 15A FA; 250VAC, 31.75mm X 6.35mm
K1	: 2-POLE CONTACTOR, 30A, 600VAC, COIL: 208-240VAC
RL1-RL8	: AMERICAN ZETTLER RELAY AZ2280-1C-12DF
A4	: SURGE SUPPRESSOR ACROSS THE OUTPUT
A5	: EMERSON POWERSURE LOW EXPOSURE SURGE SUPPRESOR
CB1-CB3	: THREE OUTPUT LINE CIRCUIT BREAKERS, 20A EACH
TB1-TB3	: TERMINAL BLOCK 3 POS 71000 SERIES 600V, 86A
ON	: OUTPUT NEUTRAL BUSS BAR
OG	: OUTPUT GROUND BUSS BAR

CUSTOMER WIRING CONNECTIONS

INPUT MAINS SUPPLY: **L1, L2   INPUT GROUND**

OUTPUT TO LOAD / EQUIPMENT: TB1, TB2 AND TB3 TO NEUTRAL BUSS BAR.   OUTPUT GROUND OG BUSS BAR
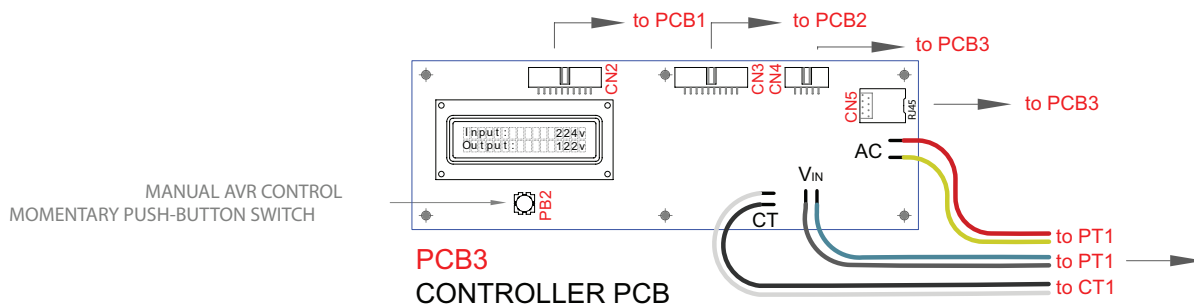
Note:

Circuit schematic drawing is provided for reference only, Torus Power WM AVR2 units have no user serviceable parts inside. Please return unit to manufacturer for repair and service when required.

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T1

7.08kVA, 60Hz ISOLATION TRANSFORMER
NOMINAL INPUT = 240VAC
NOMINAL OUTPUT = 120VAC X 3 CIRCUITS

Monitors
V-Input

PCB5

Monitors
V-Output

SURGE
SUPRESSOR

A4

PCB4

TS1
Thermal Switch N.c

CT1

A5
TVSS

R
G
F
E

RL1
-RL8

D
C
B
A

OUT1
OUT2
OUT3
OUT4

OUT4
OUT3
OUT2
OUT1

2/T1   4/T2

K1

30A

1/L1   3/L2

F3 F4
F5 F6
2A 2A 15A 15A

CB1 CB2 CB3
20A 20A 20A

PCB2

PCB1

F1   F2

30A   30A

L1   L2

INPUT
240VAC

R G F E D C B A

**OUTPUT
GROUND**

R G F E D C B A

N

OUTPUT
NEUTRAL

TB1 - TB3

A B C D E F G N/C R

OUTPUT
120VAC

Input Ground

Note:

Layout drawing is provided for reference only, Torus Power WM AVR2 units have no user serviceable parts inside. Please return unit to manufacturer for repair and service when required.

Electrical Specifications - North American Models

Model Number	Input Voltage Nominal	Output Voltage Nominal	Surge Suppression	Input Current Limiting	Output Circuit Breakers	Maximum Available Output Current
WM 45 BAL AVR2	240VAC, 60Hz (Operating Range 170V to 270V)	120VAC ±5V	NO	2x25A (Fuses)	3x20A	45A
WM 60 BAL AVR2				2x30A (Fuses)	3x20A	60A
WM 75 BAL AVR2				2x40A (Fuses)	5x20A	75A
WM 90 BAL AVR2				2x45A (Fuses)	5x20A	90A
WM 45 BAL AVR2 TVSS	240VAC, 60Hz (Operating Range 170V to 270V)	120VAC ±5V	YES	2x25A (Fuses)	3x20A	45A
WM 60 BAL AVR2 TVSS				2x30A (Fuses)	3x20A	60A
WM 75 BAL AVR2 TVSS				2x40A (Fuses)	5x20A	75A
WM 90 BAL AVR2 TVSS				2x45A (Fuses)	5x20A	90A

Electrical Specifications - International Models

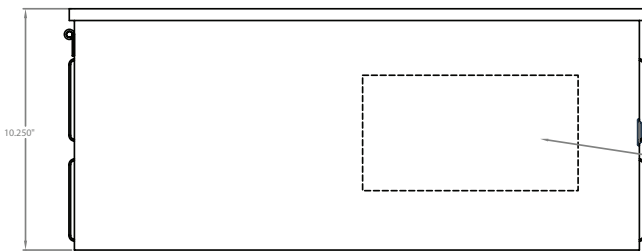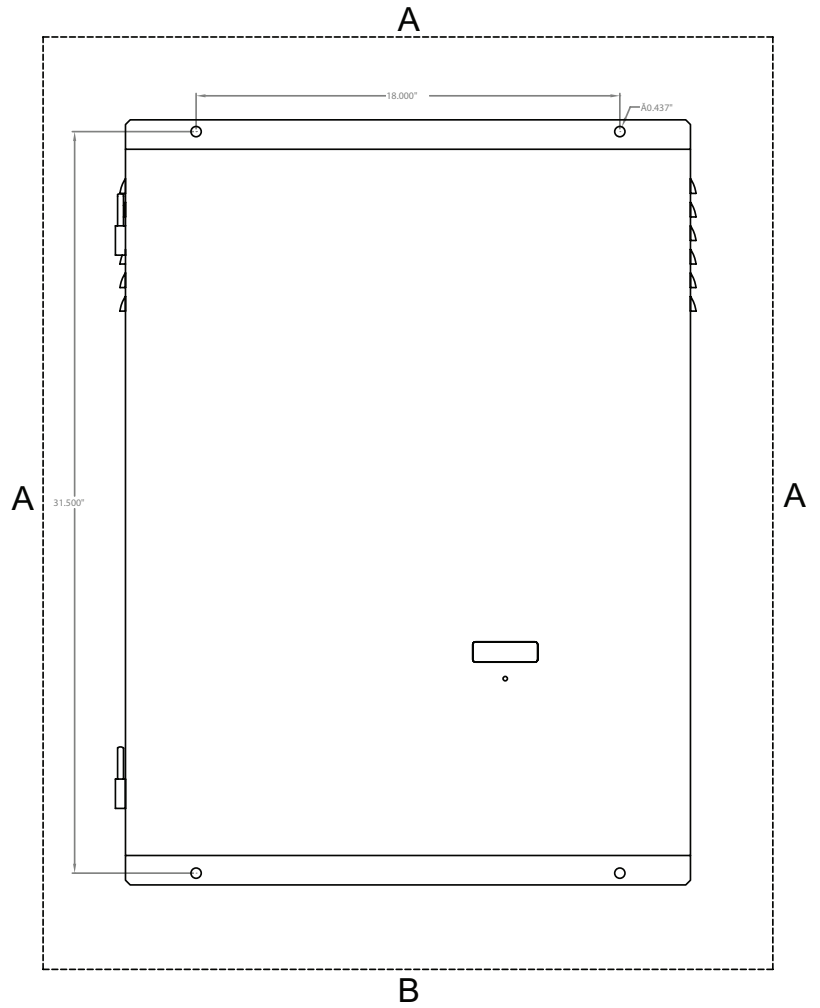| Model Number	Input Voltage Nominal	Output Voltage Nominal	Surge Suppression	Input Current Limiting	Output Circuit Breakers	Maximum Available Output Current
WM 30 AVR2	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ±10V	NO	2x30A (Fuses)	3x15A	30A
WM 45 AVR2				2x45A (Fuses)	5x15A	45A
WM 30 AVR2 TVSS	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ±10V	YES	2x30A (Fuses)	3x15A	30A
WM 45 AVR2 TVSS				2x45A (Fuses)	5x15A	45A

Mechanical Specifications - North American Models

Model Number	Weight KG(lb)	Size, mm (HxWxD) Size, inch (HxWxD)	Construction
WM 45 BAL AVR2	79.5 (175)	826x627x261 32.5x24.7x10.3	NEMA TYPE 1 Enclosure 14 guage steel Black Powder Coat Slip hinges enable door removal 1/4 turn latch
WM 60 BAL AVR2	91.5 (202)		
WM 75 BAL AVR2	103.5 (228)		
WM 90 BAL AVR2	105.5 (233)		
WM 45 BAL AVR2 TVSS	81(179)	826x627x261 32.5x24.7x10.3	
WM 60 BAL AVR2 TVSS	93(205)		
WM 75 BAL AVR2 TVSS	105(232)		
WM 90 BAL AVR2 TVSS	107(236)		

Mechanical Specifications - International Models

Model Number	Weight KG(lb)	Size, mm (HxWxD) Size, inch (HxWxD)	Construction
WM 30 AVR2	102.5 (226)	826x627x261 32.5x24.7x10.3	NEMA TYPE 1 Enclosure 14 guage steel Black Powder Coat Slip hinges enable door removal 1/4 turn latch
WM 45 AVR2	112.5 (248)		
WM 30 AVR2 TVSS	104(229)	826x627x261 32.5x24.7x10.3	
WM 45 AVR2 TVSS	114(251)		

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Wall Cabinet External Layout - WM AVR2 Series

A

10.250"

32.500"

30.374"

18.000"

Ø0.437"

A

A

31.500"

B

10.250"
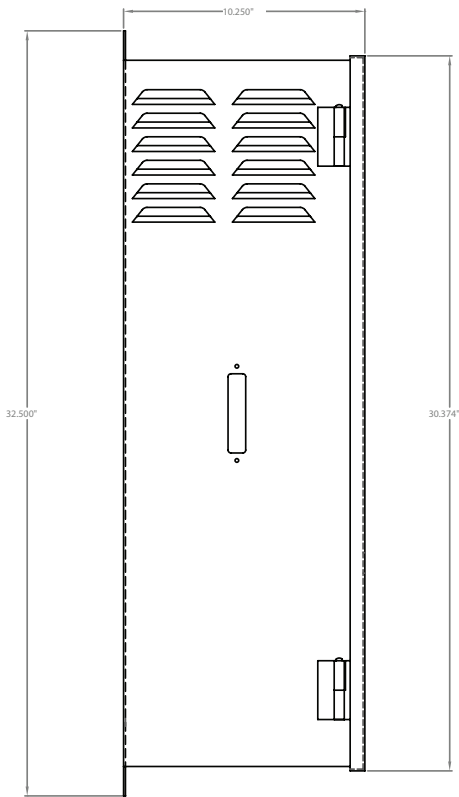
Space around unit as shown above:
'A' = 5.00"
'B' = 6.00"

Customer electrical connections:
Wiring conduit holes should be
added as required to this area.

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Crestron Electronics Module for Torus Power AVR2 Models

Torus Power is an integrated partner with Crestron Electronics. The Integrated Partner Program allows Torus Power equipment to operate seamlessly in a Crestron systems environment. Integrated Partner Modules offer the Crestron control systems programmer a simplified, timesaving drag-and-drop solution for integration of partner products. Crestron's integrated partner program initiative makes it easy to take advantage of the enhanced functionality afforded by using a manufacturer's serial, Ethernet or other enhanced interface. To view all current Torus Power modules for use with a Crestron Control System, please visit the following link:

www.crestron.com

or

http://www.crestron.com/partnerships/integrated_partner_program/

Sample AVR2 Crestron Screens:
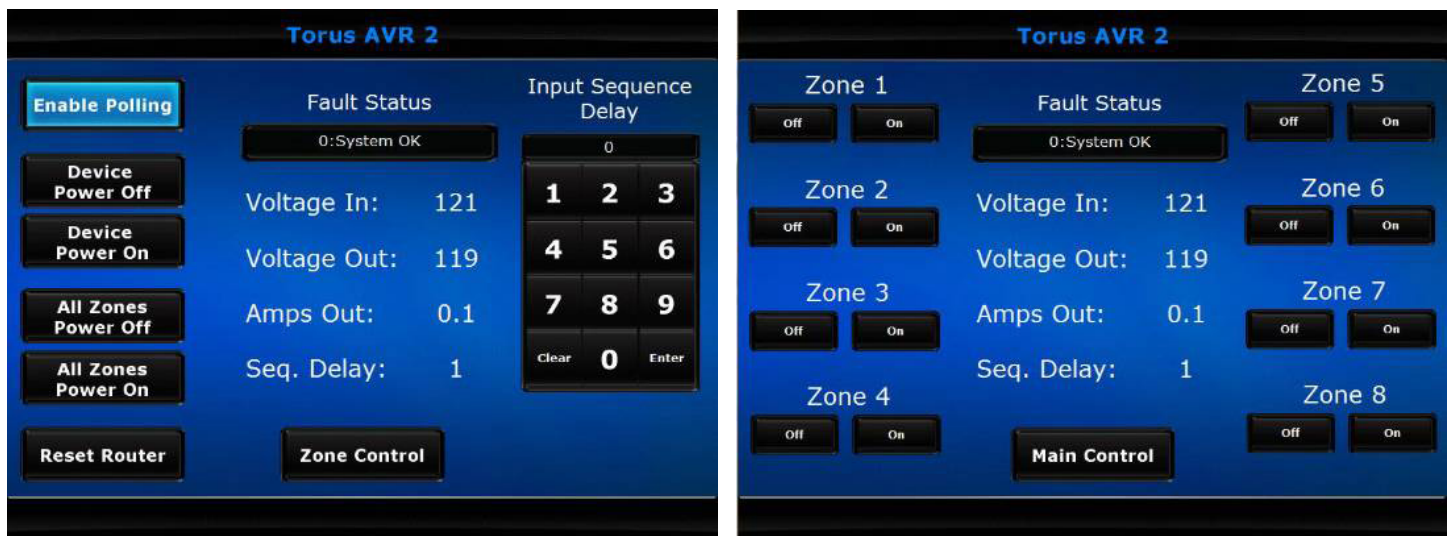
Home Automation Interface through RS232

<table>
<tr><td colspan="2">AVR-2 Serial Protocol
Data Format
Baud Rate:9600
Data Bits:8
Parity:N</td></tr>
</table>

AVR-2 Serial Protocol Data Format Baud Rate:9600 Data Bits:8 Parity:N	Commands are sent to the AVR2 in ASCII format and terminated with a CR(0d hex). Following commands are supported.

Command	Description	Response
C0	Turn off	OK<CR><LF>
C1	Turn on	OK<CR><LF>
C2	Get voltage and current readings	Vin:200V,Vout:120V,Iout:10.5A<CR><LF> The voltage is padded with leading zeros if it is less than 100
C3	Get fault status	0:System OK<CR><LF> or one of the following fault message, if the system has a fault condition. 1:Relay 1A Open Fault 1:Relay 1B Close Fault 2:AC Voltage is Low 2:AC Voltage is High
C4	Reset Router	OK<CR><LF>
C5, MM/DD/YYYY, HH:MM:SS, WeekDay, TimeZone	Set Time Weekday:Thursday is 1, Friday is 2, etc. TimeZone: Time difference from GMTin hours.	OK<CR><LF>
C6	Read Time	MM/DD/YYYY,HH:MM:SS,WeekDay,TimeZone Month/Day/Year,Hours:Minutes:Seconds, Weekday,Time zone offset Weekday:Thursday is 1, Friday is 2, etc. TimeZone:Time difference from GMT in hours. Example: 09/10/2015,11:30:45,1,-4
C7,Z	Turn on zone output Z Z:1 to 8 or A for all outputs	OK<CR><LF>
C8,Z	Turn off zone output Z	OK<CR><LF>
C9,X	Set Sequence Delay to x seconds	OK<CR><LF>
C10	Read Sequence Delay	Sequence Delay<CR><LF>

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Warranty

Torus Power Inc. products are warranted to be free from manufacturing defects as follows:

• Five years from the original date of sale for toroidal transformers

• Two years from the original date of sale for all other components

The product warranty includes parts, labour and return shipping to the customer. Shipping to Torus Power Inc. for warranty repair is the responsibility of the customer.

Warranty coverage is not transferrable and original proof of purchase is required for warranty claims.

In the event of a warranty claim, Torus Power Inc. will remedy the issue by repair or replacement, as we deem necessary, to restore the product to full performance.

This warranty is considered void if the failure of the product or any component part is caused by damage or misuse.

Failure to fully comply with Torus Power operating instructions voids the warranty.

Torus Power products are marketed worldwide by Torus Power Inc.

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