TORUS POWER

Engineered to perform & protect like no other | Toroidal Isolation Power Transformers

AVR2 ELITE Series Owner's Manual

Torus Power toroidal isolation transformers dramatically improve the performance of all audio and video systems. Connect audio equipment to a Torus Power isolation transformer and it comes alive - with more dynamics, improved imaging, and cleaner, enhanced bass. Video is crisper, with darker blacks, and brighter colours. Torus Power toroidal isolation transformers are the consistent choice of knowledgeable audiophiles, home theatre enthusiasts, custom electronic system integrators and designers, whose discriminating tastes and technical requirements mandate the ultimate performance and protection levels achievable.

Power system design and custom integration using Torus is effortless, due to the wide range of models, power ratings, chassis types, mounting choices, and control options, which include a local web browser interface and remotely via the cloud-based Torus Power Connect service.

Virtually all power line noise artifacts are eliminated through the toroidal isolation transformer, using patented Narrow Bandwidth Technology. The toroidal isolation transformer provides high levels of instantaneous current, making sure even dynamic components (such as high power amplifiers) are never starved for power. It's like having a clean power source directly adjacent to the plugged-in components.

Torus Power isolation transformers also protect connected equipment from potentially damaging AC power line events, including severe lightning strikes and brownouts, thereby increasing system reliability, and extending product life.

Precision engineered, with more than 30 years of experience, and an unparalleled reputation, Torus Power is manufactured under ISO9001: 2008 quality management system in Canada. Whether you are a music lover with a mid-level system, a dedicated audiophile, a home theatre enthusiast, a custom designer, installer or integrator specifying power systems for home, studio, stadium, or commercial applications, a Torus Power isolation transformer will provide the ultimate clean power source solution.

Cover page photos show the AVR2 ELITE 20 CB model.

Table of Contents

Document Revision	Date
1.1	06/20

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.

TORUS POWER

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)

TORUS POWER

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.

PIUs have ventilation slots on the base, side panels and on the cover. Maintain at least 1" distance from each of these surfaces to anything else. Should your installation conditions be confined, additional forced air-cooling may be necessary.

Do not install the unit directly above heat generating equipment. Maintain at least 6" behind the PIU for adequate wiring space.

TORUS POWER

Torus Power AVR ELITE SERIES Overview

Torus Power AVR ELITE models deliver clean AC power with noise attenuation from 2 KHz to beyond 1 MHz. They provide true isolation (using large toroidal transformers) along with low source impedance and high 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.

Torus Power AVR ELITE series products are full-feature state-of-the art power transformers and voltage stabilizers, with a built-in web browser interface for Local Area Network and Cloud based connectivity for monitoring and control of audio/video systems. It is not necessary to use either as the AVR ELITE provides all the standard features, performance, and benefits right out of the box.

The AVR ELITE series provides multiple outlet zones that can be separately turned on or off through the web browser or via user defined schedules. A key feature is the voltage stabilization that keeps an optimal output voltage range (North America models +/- 4V, Europe/Asia/Australia +/- 8V of nominal operating voltage) regardless of fluctuations in the line voltage. Voltage sags, brownouts, and surges can stress components and shorten equipment life with worst case catastrophic events destroying valuable equipment. In such real world conditions, the Torus Power AVR ELITE can protect your equipment and improve the quality of your audio and video experience.

Series mode surge suppression is built into each AVR ELITE to provide protection against lightning strikes and other power disturbances, meeting IEEE endurance standards of 6000 volts, 3000 amps, with 1000 repeats.

Summary of AVR ELITE Series Features

- Toroidal isolation provides ultimate clean power performance
- Automatic voltage regulation with 4V increments maintains stable voltage output
- Series mode surge suppression protects against lighting, surges, spikes etc.
- Connect to local network using Web page browser
- Addressable outlet zones for control and monitoring
- Scheduling and sequencing of outlet zones
- Password control
- Email notification of fault conditions
- No programming or internet connection needed (required if using Torus Power Connect service)
- Powerful 32-bit processor
- Large graphical display of key power parameters
- Internal Flash Memory for 10,000 events to record data when cloud unavailable
- Internal high reliability power supply module
- Enhanced communication module including WiFi connectivity
- USB 2.0 port for 3rd party connectivity, LED lighting, and charging
- Optical isolation between high voltage and low voltage to increase safety and compliance to new standards

TORUS POWER

Front Panel Display
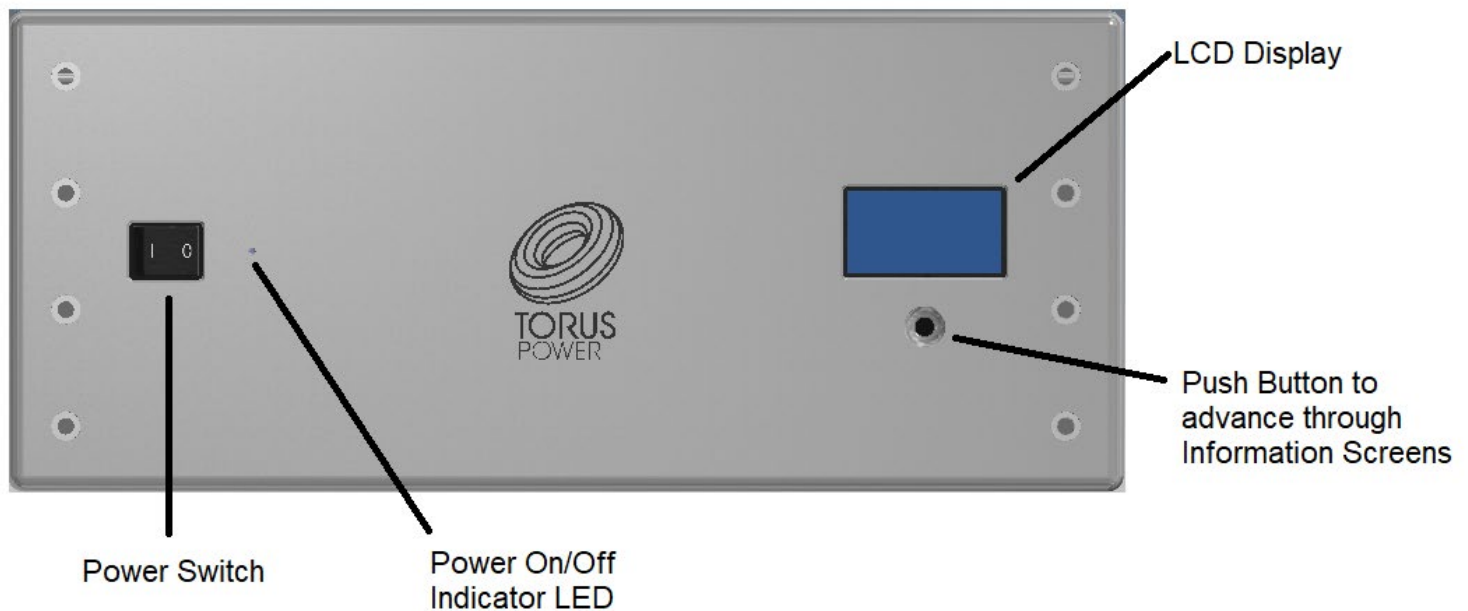
The front panel consists of a 4 line LCD display and a pushbutton switch. Each time you push the button the display will show a different feature of the AVR ELITE.

When you first turn on the AVR ELITE the System Status will appear. Each time you push the button it will change from one information screen to another.

13:34:19	In: 115V
Fri. 14/2/2020	Out: 118V 1.4A
	THD: 3.2%

Time/Day/Date   System Status

| Power: 165W | On Outputs |
| Peak: 165W | A B C D   R |

Power Status   Active Zones

| IP: |
| 192.168.0.103 |
| MAC: |
| 04916229e22b |

IP and MAC Address

TORUS POWER

Voltage Fault Protection

If the AC voltage supplied to the AVR ELITE is too high or too low voltage (see reference chart at the end of this section) for 1 second or more, a voltage fault message is displayed and the back panel fault output is turned on. The unit automatically goes into shut down mode so the voltage to each power outlet on the back panel is automatically turned off even while the front panel power switch remains in the ON position.

The front panel display will alternate to show either of the following message pairs:

System OFF	In: 138V
HIGH AC VOLTAGE	Out: 0V 0.0A
	THD: 0.0%

OR

System OFF	In: 83V
LOW AC VOLTAGE	Out: 0V 0.0A
	THD: 0.0%
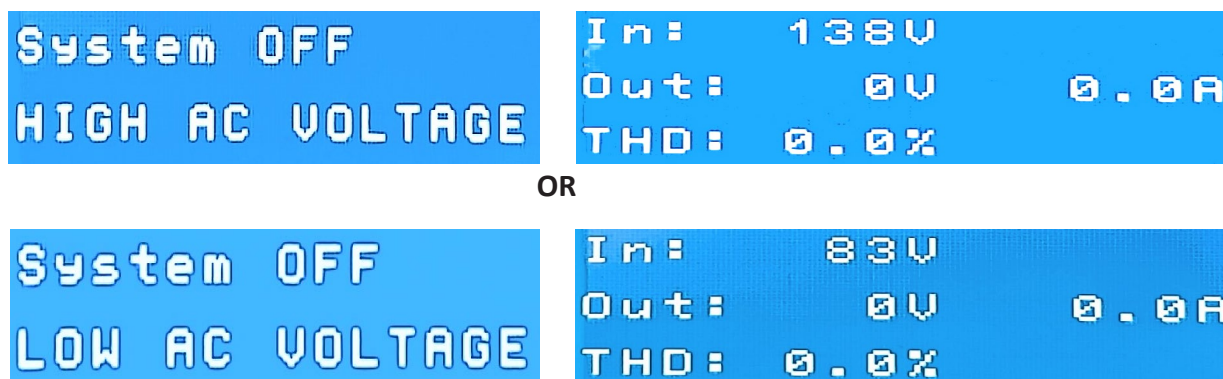
When the AC supply voltage has returned to a normal operating range for 1 minute consecutively the AVR ELITE will resume normal operation and the High or Low AC Voltage advisory message will no longer appear on the LCD display. The rear panel outlet zones will provide power again and be turned on in sequential order with the delay between zones as defined in System Setup.

Nominal Input	Output	Fully Regulated Output Range	Auto Shutdown Low Input Voltage	Auto Shutdown High Input Voltage	Output Range Before Auto Shutdown	Fully Regulated Input Range	Auto Turn On Low Input Value	Auto Turn On High Input Value
North American								
120	120 +/- 4V	116-124	<85	>135	110-130	90-130	90	130
240	120 +/- 4V	116-124	<170	>270	110-130	180-260	180	260
International								
220	220 +/- 8V	212-228	<150	>250	200-240	160-240	160	240
230	230 +/- 8V	222-238	<160	>260	210-250	170-250	170	250
240	240 +/- 8V	232-248	<170	>270	220-260	180-260	180	260

TORUS POWER

Notes:

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

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

3. North American models (15A, 20A): Torus AVR ELITE will keep the output constant within the range of 120±4V, with an input voltage of 90V to 130V. Between 85V to 90V, and between 130V and 135V, the regulation will be reduced.

4. North American BAL models: Torus AVR ELITE will keep the output constant within the range of 120±4V, with an input voltage of 180V to 260V. Between 170V to 180V, and between 260V and 270V, the regulation will be reduced.

5. International models: Torus AVR ELITE will keep the output constant within the range of 240±8V, with an input voltage of 180V to 260V. Between 170V to 180V, and between 260V and 270V, the regulation will be reduced.

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

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

TORUS POWER

Component Connection Zones

Depending upon the power rating AVR ELITE units come in two configurations in terms of IP Addressable zones.
4 Zones + R: A, B, C, D and R

7 Zones + R: A, B, C, D, E, F, G and R

- Zones A to G can be individually controlled and programmed.
- Each zone can be scheduled to turn ON or OFF at any time or day of the week.
- Each zone can also be individually turned ON or OFF through the local web browser interface or Torus Power Connect account
- Zone R can be programmed as either a controlled outlet or an automatically rebooted Router outlet.
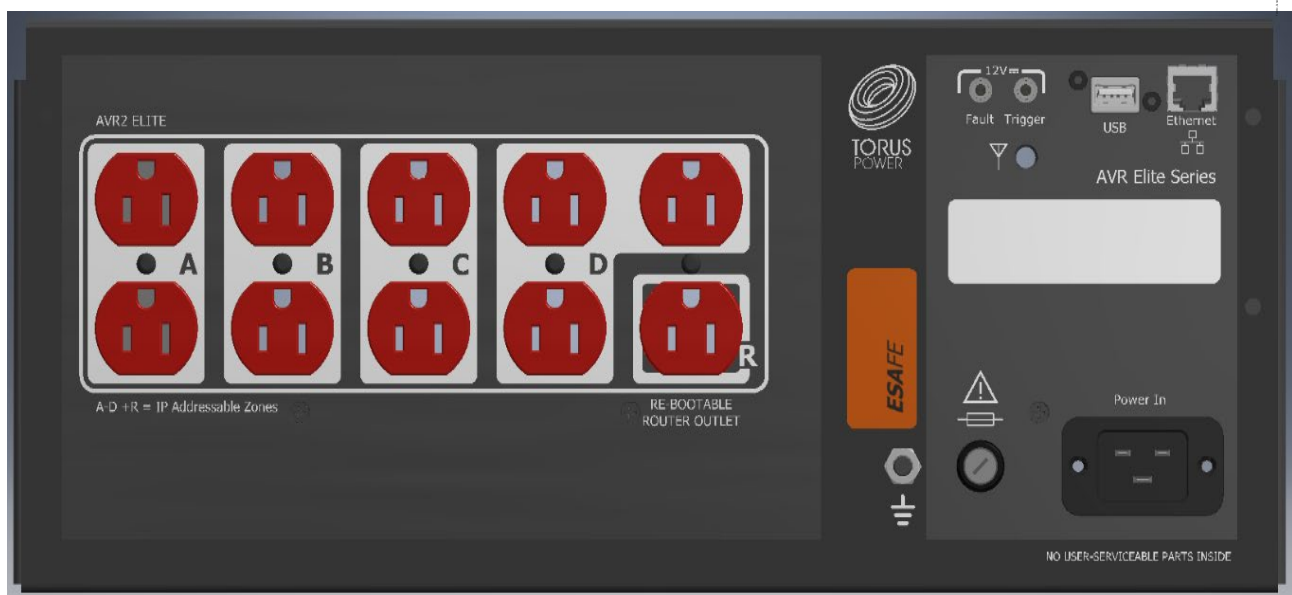
Rear Panel with **4 Zones + R**

The Zones on the AVR ELITE 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). All outlet zones will be turned to the ON state when the AVR ELITE is turned ON. This also applies when outlet zone(s) were OFF prior to cycling its main power by turning it OFF and then ON again.

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 AVR ELITE is capable of providing full current with no restriction, connecting components for preferred sequencing will NOT compromise performance.

Rear Panel Connections

Ethernet

Allows access to the AVR ELITE and internal software via a local web browser interface (See AVR ELITE software section for more details) or Torus Power Connect service (see Torus Power Connect section).

USB 2.0 Port

For charging and external control (future)

12VDC Trigger On/Off

The AVR ELITE can be turned on and off by a 12 volt trigger input. Applying 12 volts turns ON the AVR ELITE and removing the 12 volts turns it OFF. Requires a 3.5 mm TS type male audio connector with tip wired as positive and sleeve wired as negative from controlling source.

12VDC Fault Output

The AVR ELITE 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. Requires a 3.5 mm TS type male audio connector with tip wired as +ve and sleeve wired as -ve.

Antenna

Connect the provided antenna for WiFi functionality if using the Torus Power Connect service.

Circuit Schematics

North American Model (AVR2 ELITE 20)
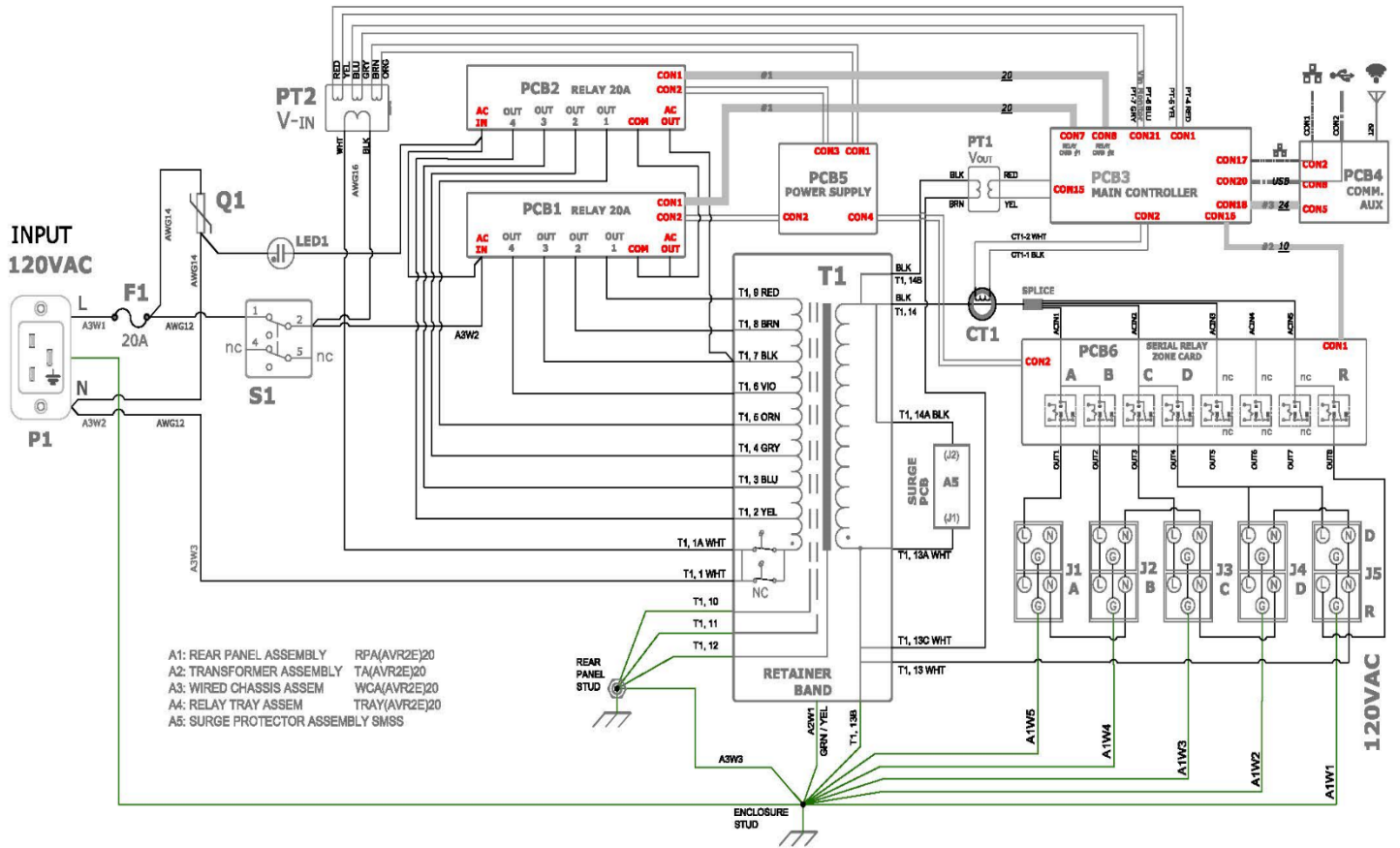
North American Model (AVR2 ELITE 40 BAL)
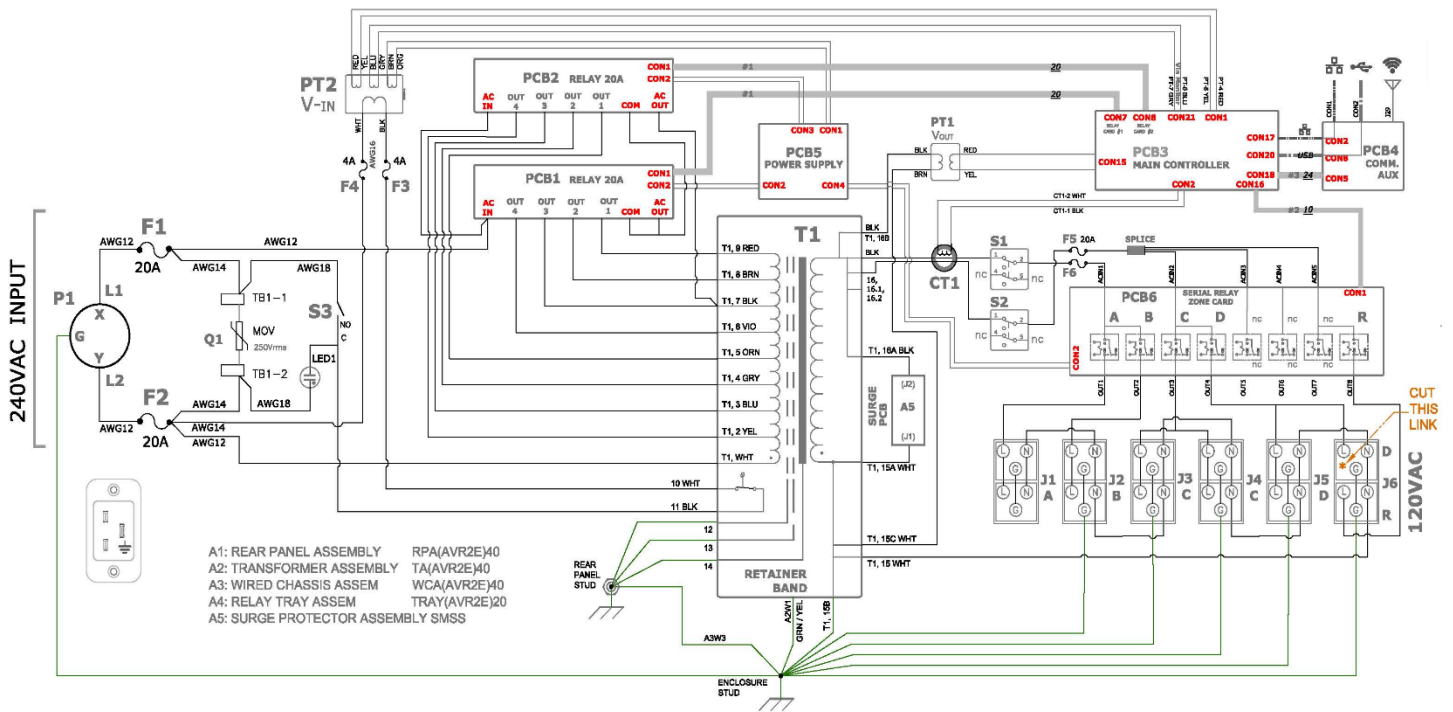
International Model (AVR2 ELITE 16 CE)

A1: REAR PANEL ASSEMBLY   RPA(AVR2E)40
A2: TRANSFORMER ASSEMBLY   TA(AVR2E)40
A3: WIRED CHASSIS ASSEM   WCA(AVR2E)40
A4: RELAY TRAY ASSEM   TRAY(AVR2E)20
A5: SURGE PROTECTOR ASSEMBLY SMSS

A1: REAR PANEL ASY   RPA(AVR2E)16CE
A2: TRANSFORMER ASY   TA(AVR2E)18
A3: WIRED CHASSIS ASY WCA(AVR2E)16
A4: RELAY TRAY ASY   TRAY(AVR2E)20
A5: SURGE PROTECTOR ASY SMSS ON TRAY

OUTPUT
230VAC
50/60Hz

TORUS POWER

AVR ELITE Embedded Software

The AVR ELITE local area network web browser interface is resident in the microprocessor on the internal control board. There are two methods to access the software.

1) Connect the AVR ELITE Ethernet port to a local network port and open a web browser on a PC that is connected to the same local network. Enter AVR (or the IP address displayed on the AVR ELITE's LCD display) into the browser window. Press ENTER and the software will open.

2) Use a three way DHCP Router. You then connect both PC and AVR ELITE 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.
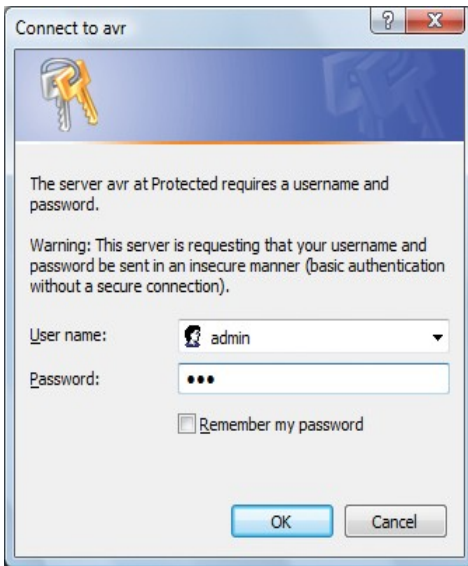
Username and Password

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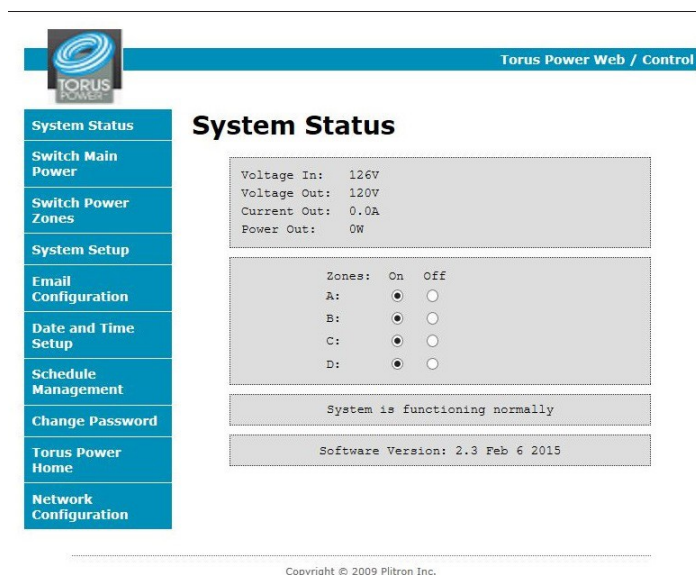
This is the default password, and can be changed.
You can change your password by selecting: **Set Password**

Forget your password

The AVR ELITE can be restored to the factory default password **avr** by pressing and holding the button on the front panel for at least 10 seconds.

TORUS POWER

AVR ELITE Menu Selections

System Status

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)

Switch Main Power

This screen allows ON/OFF control of the AVR ELITE unit.

Press the SET button to implement your selection. As the output power from the Torus AVR ELITE unit is shut down, all the connected equipment is turned off.

The AVR ELITE main power switch remains in the ON position, although there is no power to the load.

TORUS POWER

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 AVR ELITE experiences an issue the AVR ELITE 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 AVR ELITE is connected to the Internet, the date, time and day will automatically be set. However, when the AVR ELITE has no access to the Internet the Date, Time and Day can be set manually which will allow the AVR ELITE 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.

WARNING: If the unit is powered off/on when the Internet connection is lost the date, time and day is nulled. It can be manually re-entered here.

System Setup

Delay Time Between Zones (Scheduler and Start UP):
Select a delay interval time (1 to 999 seconds) for sequential Power ON and OFF between zones.

Schedule:
By checking this button the output zones will follow the defined schedules for turning power on or off. (see Schedule Management)

Front Panel Display:
There are 3 modes for the front panel display;
- Always ON (default setting)
- Dim after delay time (10-255 seconds) expires
- Turn off after delay time (10-255 seconds) expires

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.

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

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.

Check the box associated with each zone to have power enabled at its outlets at the specified time.

WARNING: Leaving a zone's box unchecked for a specific time will turn power off.

Network Configuration

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

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

The AVR ELITE 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 AVR ELITE also supports this option.

The WiFi section is required when using the Torus Power Connect service.

Change Password

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

In case you forget your password, the AVR ELITE 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**.

North American Models

Electrical Specifications

Model Number	Input Voltage Nominal	Output Voltage Nominal	Input Fuses	Maximum Available Output Current	Number of IP Addressable Zones
AVR2 ELITE 20	120VAC, 60Hz (Operating Range 85V to 135V)	120VAC ± 4V	1 x 20A	20A	4 + R
AVR2 ELITE 40 BAL	240VAC, 60Hz (Operating Range 170V to 270V)	120VAC ± 4V	2 x 20A	40A	7 + R
AVR2 ELITE 60 BAL			2 x 30A	60A	7 + R
AVR2 ELITE 90 BAL			2 x 45A	90A	7 + R

Mechanical Specifications

Model Number	Input Connector (Rear Panel)	Output Connector (Rear Panel)	Line Cord	Size, mm (WxDxH) Size, inch (WxDxH)	Weight KG(lb)	Chassis Height
AVR2 ELITE 20	IEC 20A Inlet, NEMA C20	10 Medical Grade Outlets, 20A	N5/20, 12AWG-C19, 20A/125V	483x483x203 17x19x8	40.5(89)	4U (7.00")
AVR2 ELITE 40 BAL	Hubbell Twist-lock 30A/250V NEMA L6-30P	18 Medical Grade Outlets, 20A	Twist-lock, 2.5M 10AWG, 30A	483x559x249 17x22x9.8	63(139)	5U (8.75")
AVR2 ELITE 60 BAL					75(165)	
AVR2 ELITE 90 BAL	Hubbell Twist-lock 50A/250V 2P3W	24 Medical Grade Outlets, 20A	Twist-lock, 2.5M 6AWG, 50A	483x660x249 17x26x9.8	91(201)	

TORUS POWER

International Models

Electrical Specifications

Model Number	Input Voltage Nominal	Output Voltage Nominal	Input Circuit Breaker (Fuses)	Maximum Available Output Current	Number of IP Addressable Zones
AVR2 ELITE 8 CE	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ± 8V	1 x 8A	8A	4 + R
AVR2 ELITE 16 CE			1 x 16A	16A	7 + R
AVR2 ELITE 30 CE			2 x 30A (Fuses)	30A	7 + R
AVR2 ELITE 8 UK	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ± 8V	1 x 8A	8A	4 + R
AVR2 ELITE 16 UK			1 x 16A	16A	7 + R
AVR2 ELITE 30 UK			2 x 30A (Fuses)	30A	7 + R
AVR2 ELITE 8 AUS	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ± 8V	1 x 8A	8A	4 + R
AVR2 ELITE 16 AUS			1 x 16A	16A	7 + R
AVR2 ELITE 30 AUS			2 x 30A (Fuses)	30A	7 + R
AVR2 ELITE 8 515R	240VAC, 50/60Hz (Operating Range 170V to 270V)	220-240VAC ± 8V	1 x 8A (Fuse)	8A	4 + R
AVR2 ELITE 16 520R			1 x 16A	16A	7 + R
AVR2 ELITE 30 520R			2 x 30A (Fuses)	30A	7 + R

Mechanical Specifications

Model Number	Input Connector (Rear Panel)	Output Connector (Rear Panel)	Line Cord	Size, mm (WxDxH) Size, inch (WxDxH)	Weight KG(lb)	Chassis Height
AVR2 ELITE 8 CE	IEC 15A Inlet, NEMA C14	16A/250V CE Socket (x6)	10A/250VAC, 2.5M Plug: CEE 7/7 Connector: IEC - C13	483x483x203 17x19x8	38.5(85)	4U (7.00")
AVR2 ELITE 16 CE	IEC 20A Inlet, NEMA C20	16A/250V CE Socket (x9)	16A/250VAC, 2.5M Plug: CEE 7/7 Connector: IEC - C19	483x559x249 17x22x9.8	56.5(125)	5U (8.75")
AVR2 ELITE 30 CE	Hubbell Twist-lock 30A/250V NEMA L6-30P	16A/250V CE Socket (x9)	Twist-lock, 2.5M 10AWG, 30A		86(190)	
AVR2 ELITE 8 UK	IEC 15A Inlet, NEMA C14	13A/250V UK Socket (x6)	10A/250VAC, 2.5M Plug: BS 1363 Connector: IEC - C13	483x483x203 17x19x8	38.5(85)	4U (7.00")
AVR2 ELITE 16 UK	IEC 20A Inlet, NEMA C20	13A/250V UK Socket (x8)	13A/250VAC, 2.5M Plug: BS 1363 Connector: IEC - C19	483x559x249 17x22x9.8	56.5(125)	5U (8.75")
AVR2 ELITE 30 UK	Hubbell Twist-lock 30A/250V NEMA L6-30P	13A/250V UK Socket (x8)	Twist-lock, 2.5M 10AWG, 30A		86(190)	

TORUS POWER

| Model Number	Input Connector (Rear Panel)	Output Connector (Rear Panel)	Line Cord	Size, mm (WxDxH) Size, inch (WxDxH)	Weight KG(lb)	Chassis Height
AVR2 ELITE 8 AUS	IEC 15A Inlet, NEMA C14	10A/250V AUS Socket (x6)	10A/250VAC, 2.5M Plug: AS/NZS 3112:2000 Connector - IEC C13	483x483x203 17x19x8	38.5(85)	4U (7.00")
AVR2 ELITE 16 AUS	IEC 20A Inlet, NEMA C20	20A/250V AUS Socket (x8)	13A/250VAC, 2.5M Plug: BS 1363 Connector: IEC - C19	483x559x249 17x22x9.8	56.5(125)	5U (8.75")
AVR2 ELITE 30 AUS	Hubbell Twist-lock 30A/250V NEMA L6-30P	20A/250V AUS Socket (x8)	Twist-lock, 2.5M 10AWG, 30A		86(190)	
AVR2 ELITE 8 515R	IEC 20A Inlet, NEMA C20	10 Medical Grade Outlets, 15A	N5/20, 12AWG-C19, 2.5M	483x483x203 17x19x8	38.5(85)	4U (7.00")
AVR2 ELITE 16 520R	IEC 20A Inlet, NEMA C20	12 Medical Grade Outlets, 20A	N5/20, 12AWG-C19, 2.5M	483x559x249 17x22x9.8	56.5(125)	
AVR2 ELITE 30 520R	Hubbell Twist-lock 30A/250V NEMA L6-30P	18 Medical Grade Outlets, 20A	Twist-lock, 2.5M 10AWG, 30A		86(190)	5U (8.75")

Circuit Breaker

Input Voltage Range V_I

Automatic Voltage Stabilizer
- 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

Toroidal Isolation Transformer
- 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

Surge Removal and Complete Protection
- Protects against surges and lightning strikes up to 6000V/3000A
- Series mode technology does not contaminate ground

Hospital Grade Duplex Receptacles

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
- 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	Fully Regulated Input Range	Operable Input Range	Fully Regulated Output Range
North American	120V	90-130	85-135	120 ±4V
North American Balanced	240V	180-260	170-270	120 +4V
International	220V	160-240	150-250	220 +/- 8V
International	230V	170-250	160-260	230 +/- 8V
International	240V	180-260	170-270	240 +/- 8V

6000V Surge

Series Mode Response

● V(D3:1) ● V(R7:1)   Time

Factory Reset Procedure

1. Disconnect the Ethernet cable from the AVR.
2. Turn the power switch to the OFF position. The power light will go out.
3. Press and hold the little pushbutton switch below the front panel display on the AVR.
4. Continue to hold the pushbutton switch and turn the power switch to the ON position. Hold the pushbutton switch for approximately 30 seconds and then release the pushbutton switch.
5. Use the pushbutton as you would normally to scroll through the various screens until you get to the IP address screen and it should now show as 0.0.0.0.
6. Plug in the Ethernet cable. The IP address should change to a value appropriate for your new network setup as the unit's network configuration is now set to factory default as DHCP.
7. You can then use this new IP address to access the unit as you did previously if you wish to assign it a new static IP address.

TORUS POWER

Torus Power Connect
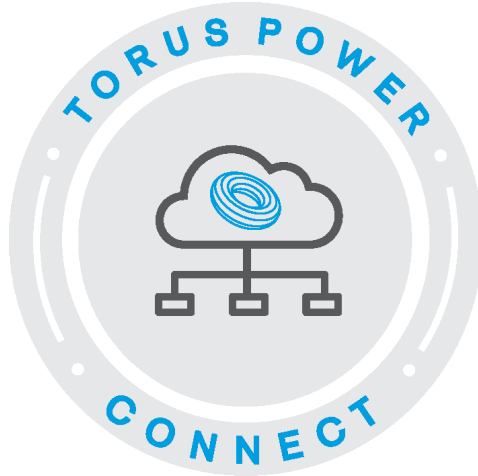
Torus Power Connect is a powerful cloud-based website developed by Torus Power for control, data logging and reporting. Torus Power Connect provides Users with a custom dashboard for control, status, setup, and configuration purposes.

One year of Torus Power Connect service is included with each new AVR Elite purchase. A subscription renewal is required to continue this service beyond the first year. Visit www.toruspower.com to purchase a 1, 2, or 3 year subscription renewal.

TORUS POWER

User Registration

A User can register for the Torus Power Connect service directly or via their dealer/installer.

Direct Registration

This is done on the Torus Power Connect web site (www.toruspowerconnect.com). Click on *Register* and complete all fields on the Self Registration screen, perform the Anti-Spam Verification, and then click on *Register Account*.

A temporary password will be sent to the email address provided. The User must login to the Torus Power Connect web site (www.toruspowerconnect.com) within 30 days to set a new secure password and activate their Torus Power Connect account.

For any problems with this self registration please email (toruspowerconnect@toruspower.com) or contact Torus Power Connect directly (1-877-337-9480).

Dealer/Installer Registration

Your Torus Power dealer/installer will get the required details to proceed with the registration and activation of this service for your AVR Elite and provide your account login details.

Device Registration (applies to Self Registered Users only)

Each AVR Elite device to utilize the Torus Power Connect service by the dealer and/or user must be registered. There is a unique identifier called a MAC address for each AVR Elite device. The MAC address can be found on the label close to the Ethernet connection jack on the back of the unit. It can also be found by scrolling through the information shown on the front panel's LCD display by pressing the small button below the display when the unit is powered on. Once the MAC address and a Device Description (optional but recommended) is entered click the *Register Device* text bar. Now the device can be assigned to a user.

User Menu

The Torus Power Connect User login defaults to the Live Data screen (see Present Live Data for details).

Click on *User Menu* to see a dropdown list of available options. Highlight and click to select the desired option (see below for details of each option)

> Get information by hovering the mouse cursor over (computer or tablet) or clicking on (smart phone) this icon to open a popup window with information about the fields on that specific screen.

System Status

Click the *Show* text for a specific AVR Elite device to view its system status details. This will provide a snapshot of the values at the time of the request. Clicking the *Refresh* text bar will update the System Status details every 3 seconds for 1 minute.

System Status

Device Status

Location Description	Torus Power Offices
Device ID	04916229e22b
MAC Address	04:91:62:29:e2:2b
System Power	ON
Model Type	North American 120
Status	System is functioning normally
Device Last Time	1/28/2020 11:36:38 AM
Time Zone	-5 Hours, GMT
Refresh Mode	No updates

Refresh

Subscription End	8/7/2020

System Status

Electrical Values

Voltage In [V]	118.0
Voltage Out [V]	121.4
Current Out [A]	0.2
Power Out [W]	24.0
Output THD [%]	4.2
Tap Number	3

System Status

Zone Values

Zone A Subs	OFF
Zone B Amps	OFF
Zone C Video hardware	OFF
Zone D Components	OFF
Zone R Network Equipment	ON

TORUS POWER

Live Data

Click the *Present* text for a specific AVR Elite device to easily view its input voltage, output voltage, input current, output current, and output Total Harmonic Distortion values. Clicking the *Refresh* text bar will update the Live Data details every 3 seconds for 1 minute.

Live Data

Device Specifications

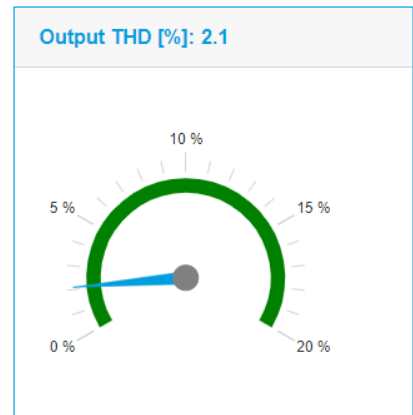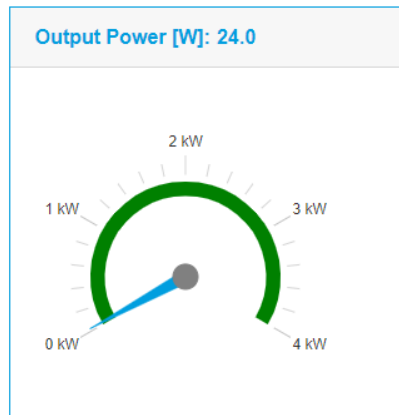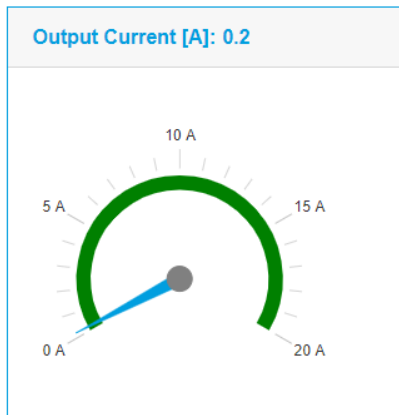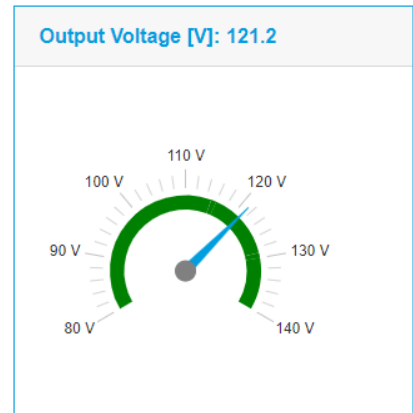Location Description: Torus Power Offices
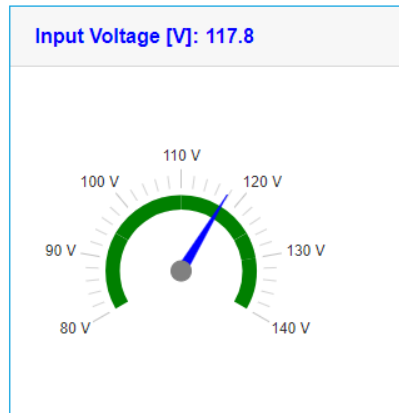
Device ID: 04916229e22b
MAC Address: 04:91:62:29:e2:2b
Device Last Time: 1/21/2020 10:06:33 AM
Refresh Mode: No updates

Refresh

Input Voltage [V]: 117.8

Output Voltage [V]: 121.2

Output Current [A]: 0.2

Output Power [W]: 24.0

Output THD [%]: 2.1

TORUS POWER

Power Control

Click the *Control* text for a specific AVR Elite device to manually control (ON/OFF) the unit's power state or the power state of each individual outlet zone. Click the *Refresh Reported Values* text to confirm the specific action was successful.

Power Control

Switch Main Power

Location Description	Torus Power Offices

Device ID	04916229e22b ▾
MAC Address	04:91:62:29:e2:2b

System	Reported	Desired
Power	ON	ON

Enable Desired Settings

Refresh Reported Values

Power Control

Zone Power Control

Zone	Reported	Desired
A	OFF	OFF
B	OFF	OFF
C	OFF	OFF
D	OFF	OFF
R	ON	ON

Enable Desired Settings

Refresh Reported Values

Power Control

Power Zone Description

Zone	Description
A	Subs
B	Amps
C	Video hardware
D	Components
R	Network Equipment

Save Zone Descriptions

TORUS POWER

System Setup

Click the *Setup* text for a specific AVR Elite device to view and edit operational setting of the device. Click the *Save Setup* text bar for changes to be saved on the AVR Elite.

- Out of Range Voltage – when this box is checked the AVR Elite will automatically turn off when the incoming voltage is above or below the acceptable range.
- Zone R/Router Reset – there is a single outlet on the back of the AVR Elite labelled as zone 'R'. When this box is checked the outlet should only be used to power a network router or switch. Power to this outlet will automatically cycle when the AVR Elite detects a loss of internet connectivity.
  When this box is checked Zone R state can no longer be controlled through Zone Control (it will not be shown as one of the zones) and it can not have a schedule assigned for automatic on/off control.
- Router Reset Delay Time – enter the time (in minutes from 1 to 255) that Zone R outlet power should be cycled if the initial power cycle failed to restore internet connectivity. This power cycle will be attempted a maximum of three time. This setting requires the Zone R/Router Reset box to be checked.
- Delay Time between Zones – enter the time (in seconds from 1 to 999) for delay between the sequential power up of zones when the AVR Elite unit is turned on or multiple zones are turned on at the same by a schedule.
- Front Panel Display – choose between 3 modes;
  - Always ON when the AVR ELITE is powered on
  - Automatically DIM when the delay time expires (10-255 seconds)
  - Automatically turn OFF when the delay time expires (10-255 seconds)

  For the automatic dim and off options the display will turn ON when the AVR ELITE is powered ON or the small pushbutton below the LCD display is pushed.

- Schedule – when this box is checked the outlets for each zone can be controlled automatically by a schedule (see Manage Schedule).
- Device Time Zone – enter the value relative to GMT for the location of the AVR Elite (e.g. enter -5 for Eastern Standard Time, -8 for Pacific Standard Time, ….)
- Device Time – this displays the current local date and time at the AVR Elite.

TORUS POWER

System Setup

Device Settings

Location Description   Torus Power Offices

Device ID   [04916229e22b ▼]
MAC Address   04:91:62:29:e2:2b

Zone R/Router Reset   ☐

Router Reset Delay Time   [15]

Delay Time between zones   [15]

Schedule   ☑

Device Time Zone   [-5]

Device Time   3/24/2020 1:13:49 PM

Front Panel Display

Always ON   ○

DIMMING Delay   ○

OFF Delay   ◉

Delay Time   [120]

[Save Setup]

[Refresh Setup]

TORUS POWER

Historical Charts

Click the *Plot* text for a specific AVR Elite device to

Move the mouse cursor to one of the plot points to get the value and time for that data point.

TORUS POWER

Input and Output Voltages

TORUS POWER
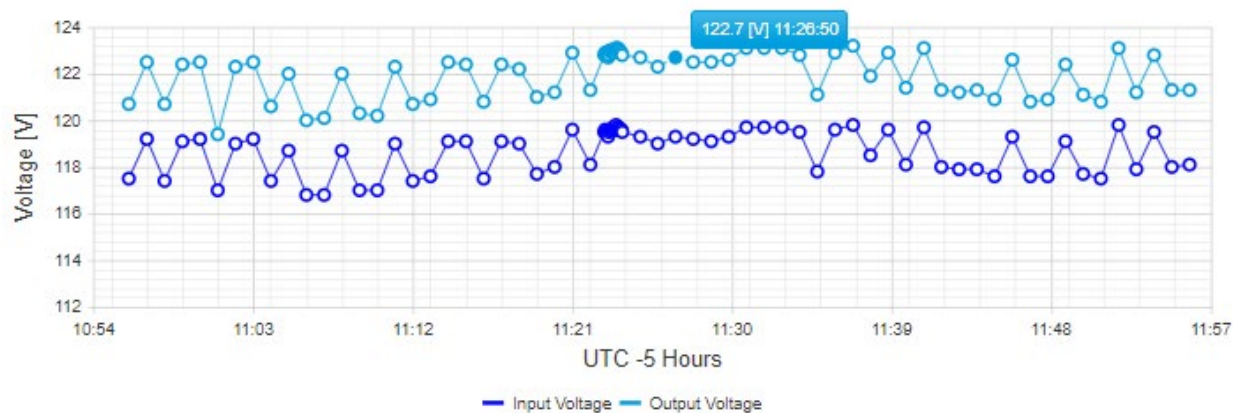
Historical Data

Click the *Retrieve* text for a specific AVR Elite device to get a listing of voltage, current, total harmonic distortion, and voltage regulation values based on the date and time period entered. The Requested Time entered is the time for the first data values and the Requested Interval is the time period duration to be provided. The data is listed chronologically in one minute intervals as the default sort order. The data can be sorted by the values in any of the columns by clicking on the specific column header (e.g. Output Voltage [V]). The first click on the specific column header will sort the values from highest to lowest. Clicking the same column header a second time will sort its data from lowest to highest.

Historical Data	
Device Information	
Location Description	Torus Power Offices
Device ID	04916229e22b ▼
MAC Address	04:91:62:29:e2:2b
Requested Date	28/01/2020
Requested Time	10:56 AM
Requested Interval	1 hour ▼
Device Last Time	1/28/2020 11:55:37 AM
Time Zone	-5 Hours, GMT
Get Data	

TORUS POWER

Date/Time	Input Voltage [V]	Output Voltage [V]	Output Current [A]	Output Power [W]	Output THD [%]	Tap Number	Fault
12/27/2019 12:49:24 PM	121.2	119	0	0	3.3	2	0
12/27/2019 12:50:24 PM	121.3	119.1	0	0	3.4	2	0
12/27/2019 12:51:23 PM	121.3	119.1	0	0	2.7	2	0
12/27/2019 12:52:24 PM	119.5	117.4	0	0	2.8	2	0
12/27/2019 12:53:23 PM	120.8	118.7	0	0	3.2	2	0
12/27/2019 12:54:24 PM	120.8	118.6	0	0	2.9	2	0
12/27/2019 12:55:24 PM	120.8	118.7	0	0	4.1	2	0
12/27/2019 12:56:24 PM	119.1	116.9	0	0	4.2	2	0
12/27/2019 12:57:24 PM	120.8	118.7	0	0	3.4	2	0
12/27/2019 12:57:27 PM	120.8	118.6	0	0	4.6	2	0
12/27/2019 12:57:30 PM	120.8	118.6	0	0	4.6	2	0
12/27/2019 12:57:33 PM	120.7	118.5	0	0	4.6	2	0

TORUS POWER

Schedule

Click the *Manage* text for a specific AVR Elite device to define specific times of each day to automatically turn on and off power for each output zone individually. The Schedule box under Setup System must be checked for any defined schedule to apply.

To create a scheduled power on or off click the desired day, then type in the hour and minutes (24 hour format) or use the up/down arrows to scroll to the desired value. Check the box associated with each zone you wish to have power enabled at its outlets at that time.

WARNING: Leaving a zone's box unchecked for a specific time will turn power off for all the zone's outlets at that time.

Click the *Save Schedule on the Device* text bar when the required schedules have been entered.

Schedule Management	ⓘ
Device Schedule	
Location Description	Torus Power Offices
Device ID	04916229e22b ▼
MAC Address	04:91:62:29:e2:2b
System Power	ON
Device Time	1/28/2020 11:18:36 AM
Save Schedule on the Device	
Read Schedule from the Device	

TORUS POWER

Schedule Management

		A	B	C	D	R
Hours	**Minutes**					
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8	00	☑	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐

TORUS POWER

Report

Click the *Send* text for a specific AVR Elite device to email system event details for the specified time period. It can be sent as a CSV format file or a fixed format pdf file. The CSV format file can be imported into a spreadsheet software program such as Microsoft Excel so it can be manipulated to filter/present the information in the desired format. The pdf format file has information presented in a fixed report format. The file is sent to the email address entered in the Dealer Information section.

Personal Information

The Personal Information home screen shows the User's contact information submitted during the Torus Power Connect registration.

The User can use the *Change Password* text bar at any time to submit a new Torus Power Connect login password.