

Mac Victor 2.0

Installation and Operating Manual

MVP-2KS / MVP-2KL (2 kVA rating)
MVP-3KL (3 kVA rating)



The Mac Victor 2.0 is an ultra high quality power system that provides a centralized and wall mounted source for mission critical power to supply the most vital electronic loads distributed throughout a facility.

The Mac Victor 2.0 provides both hard wired connectivity to remotely located Isolated Ground (IG) network power receptacles along with plug and receptacle connectivity for the Uninterruptible Power Supply (UPS).

Mac Victor[®]
Expand Your Power[®]

The mission of Mac Victor[®] is to Expand Your Power[®]
by enhancing the return on investment
of your Critical Electronic Systems

Mac Victor[®] and Expand Your Power[®] are registered U.S. trademarks of Mac Victor Power, LLC

Mac Victor 2.0 (Installation and Operating Manual)

CONTENTS

1	IMPORTANT SAFETY INSTRUCTIONS	3
	1.1 Save these instructions	
	1.2 General	
	1.3 Installation	
	1.4 UPS Batteries	
	1.5 Transport / Storage	
2	PRODUCT OVERVIEW	5
	2.1 Operating Schematic	
	2.2 Theory of Operation	
	2.3 System Benefits	
	2.4 Description of Operation	
	2.5 Component Diagram	
	2.6 Item numbers with Options	
3	OPTIONS / ACCESSORIES	8
	3.1 Mac Victor 2.0 Options	
	3.2 Mac Victor Power Strip Accessories	
4	INSTALLATION	9
	4.1 Package Contents	
	4.2 Location	
	4.3 Typical Elevation	
	4.4 Mounting Instructions	
	4.5 Wiring Diagram - Mac Victor 2.0	
	4.6 Wiring Diagram - Remote Power Off	
	4.7 Wiring Diagram - Remote signaling of Input and Output power status	
	4.8 Wiring Diagram - Optional 5 th Circuit IG Outlet and Optional Remote Off	
5	STARTUP / OPERATION	14
	5.1 Power up of the Mac Victor 2.0	
	5.2 Installation and Strapping of the UPS	
	5.3 Power up of the UPS	
	5.4 Surge Monitoring Operation	
6	MAINTENANCE/TROUBLESHOOTING	18
	6.1 Input & Output Pilot Lights / UPS Bypass Switch	
	6.2 Input SPD Alarm / Output Fuse Indication	
	6.3 Circuit Breakers	
	6.4 UPS (Uninterruptible Power Supply)	
	6.5 Troubleshooting Chart	
	6.6 Mac Victor 2.0 Replacement Parts	
7	SPECIFICATIONS	22
	7.1 Mac Victor 2.0 Specifications	
	7.2 UPS Specifications and Compatible UPS Models	

1 - IMPORTANT SAFETY INSTRUCTIONS

1.1 Save these Instructions

This manual contains important instructions and specifications for the Mac Victor 2.0 that should be followed during installation and maintenance.



CAUTION: Risk of Personal Injury and Equipment Damage.

Before attempting to install and power up the Mac Victor 2.0, carefully read this manual. Keep this manual with the Mac Victor 2.0 for future references. All service work must be done by qualified personnel. Do not attempt to service the Mac Victor 2.0 unless you have had proper training.



WARNING: Risk of Electrical Shock and Personal Injury. Opening or removing covers risk the exposure to dangerous voltages!

While every effort has been made to ensure the completeness and accuracy of this manual, Mac Victor Power, LLC and THOR SYSTEMS, Inc. accept no responsibility or liability for any loss or damage resulting from the use of the information contained in this document. This complete document shall not be copied or reproduced without the written permission of Mac Victor Power, LLC. Due to technical improvements, some of the information contained in this manual may be changed without notice.

1.2 General



- **WARNING: RISK OF ELECTRICAL SHOCK AND PERSONAL INJURY.**
- More than one Disconnect Switch may be required to de-energize the equipment before servicing. Service is to be performed by qualified personnel only!
- See Installation Instructions before connecting to the supply.
- The Mac Victor 2.0 provides plug and receptacle interfacing with selected models of Uninterruptible Power Supplies (hereafter UPS) manufactured by others. See the accompanying UPS Installation Instructions before connecting to the supply. All UPS that are used must be "Mac Victor 2.0 Compatible UPS". (See Section 7.2 for list of Compatible UPS)
- All UPS units have internal batteries as part of the product package. Dangerous voltages may still be present even when all external voltage sources have been de-energized.
- The UPS should be bypassed, turned off and disconnected during maintenance or service work.

1.3 Installation

- The Mac Victor 2.0 base unit should be installed by a licensed electrical contractor.
- The UPS can be installed and started up by qualified office technical personnel.
- To reduce the risk of electric shock, install the Mac Victor 2.0 and the UPS in a temperature and humidity controlled indoor area free of conductive contaminants.
- Ambient temperature must not exceed 30°C (86°F). Optimal battery life of peripheral UPS is also obtained if the ambient temperature does not exceed 30°C (86°F).
- It is important that both the Mac Victor 2.0 and the UPS have adequate ventilation. Maintain air movement around and through the units. Do not block the air vents.
- Avoid installing the units in direct sunlight or near heat sources.

- It is important to install the Mac Victor 2.0 in a location that provides adequate space above the unit for the later installation of the UPS. See the UPS Installation and Operating Manual for the critical dimensions.
- Both the Mac Victor 2.0 and the UPS should be positioned to insure that there is a minimum of 36 inches (3 feet) full front clearance for service and maintenance.
- The Mac Victor 2.0 should only be powered from a hard wired 120Vac, 60 Hz, single phase source of supply. See installation instructions for proper sizing depending on the model used.
- The UPS provides battery backup for the network and is powered by a factory installed, grounded receptacle and overcurrent protection that is part of the Mac Victor 2.0 integrated system. The UPS must be "Mac Victor 2.0 Compatible UPS". (See Section 7.2 for list of Compatible UPS)
- The UPS should never be disconnected from the Mac Victor receptacle while under load.
- The factory installed Mac Victor plug assembly is intended to be plugged into the UPS output supply using one of the available UPS outlets. Do not plug the Mac Victor plug assembly into any other outlets except for the UPS outlets.
- Do not plug other equipment into the other UPS outlets except for the Mac Victor 2.0 plug assembly. Equipment plugged into the other UPS outlets will not function in the bypass mode and will not receive maximum power protection from the system.
- Avoid spilling liquids on or dropping any foreign object onto the Mac Victor 2.0 or the UPS.
- Do not plug a laser printer or other household appliances such as electric heaters or vacuum cleaners into the UPS, the Mac Victor 2.0 accessory Isolated Ground outlets, or other remotely located Isolated Ground outlets that are connected. These devices can overload both units and cause the circuit breakers to trip resulting in system shutdown.
- To prevent unauthorized equipment from being plugged in, it is recommended that any open Isolated Ground outlets that are part of the Mac Victor 2.0 should be covered with safety outlet protector plugs (included).
- The Mac Victor 2.0 should be serviced by trained electrical personnel.

1.4 UPS Batteries

- The UPS Manufacturer's Installation and Operating Manual should be consulted for all references to the proper replacement, handling, storage, and disposal of UPS batteries.

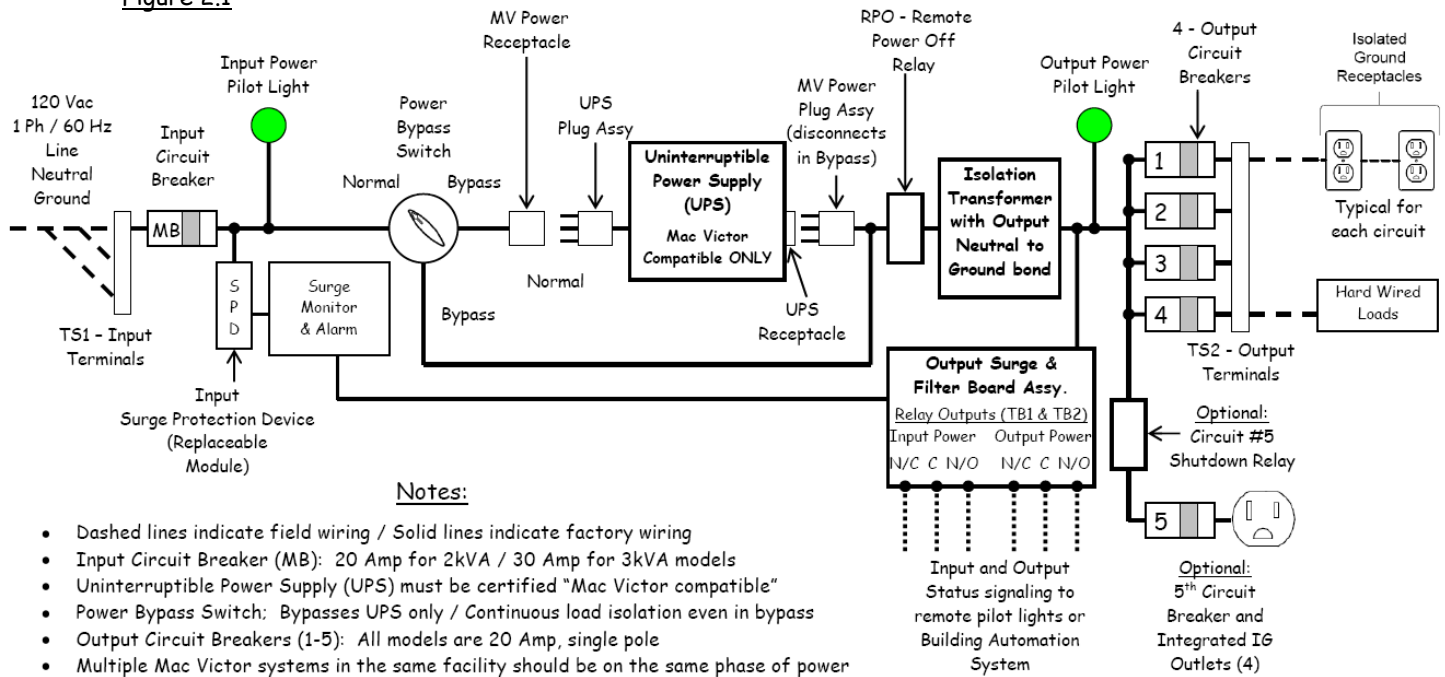
1.5 Transport / Storage

- No liability will be accepted for any transport damage when the Mac Victor 2.0 units are shipped in non-original packaging.
- Store the Mac Victor 2.0 units in a dry location. Storage temperature must be within a range of -15°C to 50°C (5°F to 122°F)

2 - PRODUCT OVERVIEW

Mac Victor 2.0 / Operating Schematic

Figure 2.1



2.1 Operating Schematic

The above Mac Victor 2.0 Operating Schematic provides a conceptual diagram of the system operation and does not represent an actual wiring diagram. See Section 2.4 for a Description of Operation.

2.2 Theory of Operation

Isolated Ground (hereafter IG) receptacles (identified by their orange color or an orange triangle) are used with critical electronic systems to provide a separate, isolated ground reference point (for data communication and logic) from the safety or equipment ground required to protect the circuit from over current faults.

Typically, the IG conductors are run back to the electrical main service entrance grounding terminal of the facility, which can result in electrical disturbances on the IG conductor caused by induced voltages from other parallel conductors run in the same conduits, raceways and panelboards. This practice can effectively defeat the purpose of the IG receptacles by injecting electrical noise onto the IG conductor.

The National Electrical Code (NEC) allows for an alternative IG grounding method through the use of a "separately derived system" such as an isolation transformer that allows for the re-establishment of the Neutral to Ground bond on the output wiring. This Neutral to Ground bond, also known as a newly derived Neutral, provides an acceptable location to terminate the IG conductor in lieu of wiring back to the main service entrance grounding terminal.

The Mac Victor 2.0 constitutes a "separately derived system" because of the internal, low impedance, isolation transformer that has the Neutral and Ground output wiring bonded together. All the conductors associated with the installation of IG receptacles (Line, Neutral, Ground, Isolated Ground) are designed to terminate at the Mac Victor 2.0 which is also designed to interface with plug and receptacle connections with the Uninterruptible Power Supply (UPS) that provides battery backup for the network.

The Mac Victor 2.0 therefore provides a centralized system with both "clean" isolated ground power and battery backup power for critical electronic networks in addition to many other operational and maintenance benefits.

2.3 System Benefits

- Provides clean and continuous power for critical electronic systems to minimize downtime and lost revenue associated with computer lockups, data losses, hardware failures and power outages.
- Centralized, wall mounted design saves valuable floor space and is easier to maintain and manage.
- Eliminates the need for all remote plug in battery backups, filters, power conditioners, and surge strips which saves under counter / desktop space.
- Assures that all connected equipment is on the same electrical phase of power for better data communication.
- UPS Bypass Switch (make before break) provides seamless power during UPS maintenance
- Input and output power pilot lights provide for status indication and ease of troubleshooting

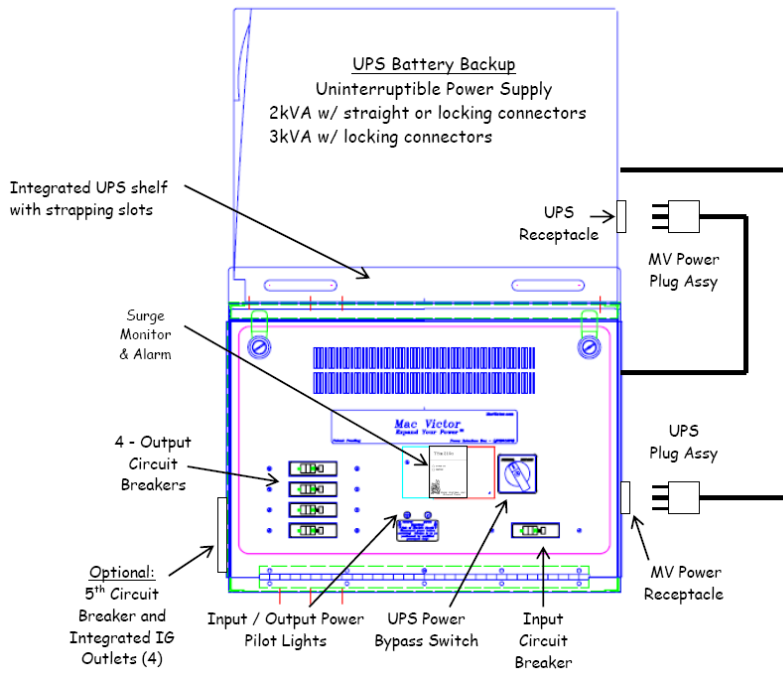
2.4 Description of Operation

- 120 Vac, 1 Phase input power supplied to Mac Victor 2.0 from remote supply (20A for 2kVA or 30A for 3kVA circuit)
- Input circuit breaker provides overcurrent protection for Mac Victor 2.0 (20A for 2kVA or 30A for 3kVA circuit)
- Input Surge Protection Device (hereafter SPD) replaceable module protects Mac Victor 2.0 from surges
- Front Panel mounted Monitor detects open fuses on both Input SPD & Output Surge & Filter Board Assembly
- Input power status light is illuminated when the input circuit breaker is turned on
- Power routed within Mac Victor 2.0 to the Normal / Bypass transfer switch
- In Normal mode:
 - Power routed from Normal/Bypass switch to the Mac Victor 2.0 Power receptacle and UPS plug assembly
 - UPS provides 120 Vac output with battery backup to UPS receptacle
 - Mac Victor 2.0 plug assembly connects to UPS receptacle and returns power back to the Mac Victor 2.0
 - Power routed through remote power off relay to the Isolation Transformer with neutral to ground bond
 - Output Surge & filter board assembly provides additional surge power protection and noise filtering
 - Output Surge & filter board assembly provides signal relays for Input and Output Power remote status
 - Output Surge & filter board assembly provides supply power & fuse status signal to panel monitor
 - Output power status pilot light is illuminated
 - Power routed to 4 output circuit breakers and terminals for field wiring to remote IG power circuits
 - (Optional) Power routed to 1 output circuit breaker that powers 4 fully integrated IG receptacle outlets
 - (Optional) Remote power off shutdown relay can be added for the integrated IG receptacles
 - Mac Victor 2.0 provides dedicated, fully isolated, battery backup source to remote hardwired Isolated Ground (IG) receptacles and other hard wired equipment
- In Bypass Mode:
 - Power is routed from Normal / Bypass switch directly to remote power off relay, bypassing the UPS
 - Power is disconnected from the Mac Victor 2.0 Power Plug assembly in the bypass mode
 - Output power status pilot light remains illuminated and does not flicker during the transfer since the switch has "make before break" capability
 - Power is routed through the isolation transformer and through the circuit breakers to the isolated ground receptacles the same as in the Normal Mode operation
- In Remote Power Off (RPO) Mode:
 - RPO function is enabled when a jumper feeding the coil of the Remote Power Off relay is removed and replaced with wiring to the maintained normally closed (N/C) contacts of a Remote Power Off switch.
 - When the RPO switch is activated input power feeding the isolation transformer is disconnected by the relay on both the Line and Neutral conductors which removes power from the IG receptacles and equipment
 - When the RPO switch is deactivated input power feeding the isolation transformer is reconnected by the relay which restores power to the IG receptacles and equipment

2.5 Component Diagram

Mac Victor 2.0 / Component Diagram

Figure 2.2



2.6 Item numbers with Options

Item numbers are comprised of one of the three Base Item Numbers with the addition of one or more Optional Item Suffixes added to the end of the Base Item Number. Multiple suffixes can be used for additional options. See Section 3 for more information about the available Options and other Accessory items.

Example: 2kVA Mac Victor 2.0 Base unit w/ locking blade UPS connectors & Optional 5th breaker w/ IG outlets
Item Number = MVP-2KL-IG

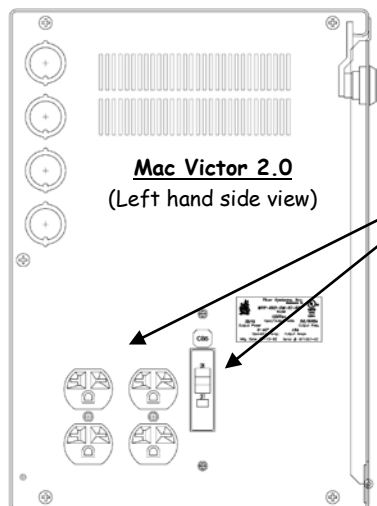
<u>Base Item Number</u>	<u>Description</u>
MVP-2KS	2kVA – Mac Victor 2.0 w/ straight blade UPS receptacle (NEMA 5-20P or L5-20P / 5-20R)
MVP-2KL	2kVA – Mac Victor 2.0 w/ locking blade UPS connectors (NEMA L5-20P / L5-20R)
MVP-3KL	3kVA – Mac Victor 2.0 w/ locking blade UPS connectors (NEMA L5-30P / L5-30R)
MVP-3KL-1B	3kVA – Mac Victor 2.0 w/ locking blade UPS connectors (NEMA L5-30P / L5-30R) with a single 30 amp output breaker for wiring to panel board or control panel
<u>Option Item Suffix</u>	<u>Description</u>
Add suffix - IG	Optional 5 th output circuit breaker and integrated Isolated Ground receptacles (4 outlets total)
Add suffix - ES	Optional Remote power off shutdown relay added for the integrated Isolated Ground receptacles. (must be ordered along with the –IG option)

Uninterruptible Power Supplies (UPS) that mount on top of the Mac Victor 2.0 base units must be ordered separately and must be "Mac Victor 2.0 Compatible UPS". See Section 7.2 for a list of Compatible UPS models.

3 - OPTIONS / ACCESSORIES

3.1 Mac Victor 2.0 Options

These Mac Victor 2.0 optional features are available with the MVP-2KS, MVP-2KL, and MVP-3KL base units. See complete part number listing in Section 2.6.



-IG Suffix (Isolated Ground receptacle option)

Integrated Isolated Ground Receptacles Option (-IG suffix) – includes 4 outlets and a 5th output circuit breaker.

The Integrated Isolated Ground Receptacle Option and breaker are located on the left hand side of the cabinet. NOTE: When using this option, it may be necessary to remove the left hand side panel (5 screws) to improve access to the ground bars.

-ES Suffix (Emergency Shutdown for the -IG Suffix option)

Emergency Shutdown Option (-ES suffix) for the Integrated Isolated Ground receptacles. Used in gasoline fueling applications to shut down data boxes that are part of the fueling system during emergency shutdown.

Includes the addition of a relay and terminal strips that are factory wired inside the cabinet. (Must be ordered along with the -IG option.)

Figure 3.1

3.2 Mac Victor Power Strip Accessories

The Mac Victor 2.0 also has accessory U.L. Listed factory assembled, pre-wired Isolated Ground power strips that are available in 4 outlet and 10 outlet configurations. Mac Victor Power Strips must be ordered separately.

Important Note: Installation of the Mac Victor Power Strips shall comply with the latest revision of the National Electrical Code (NEC), NFPA 70.

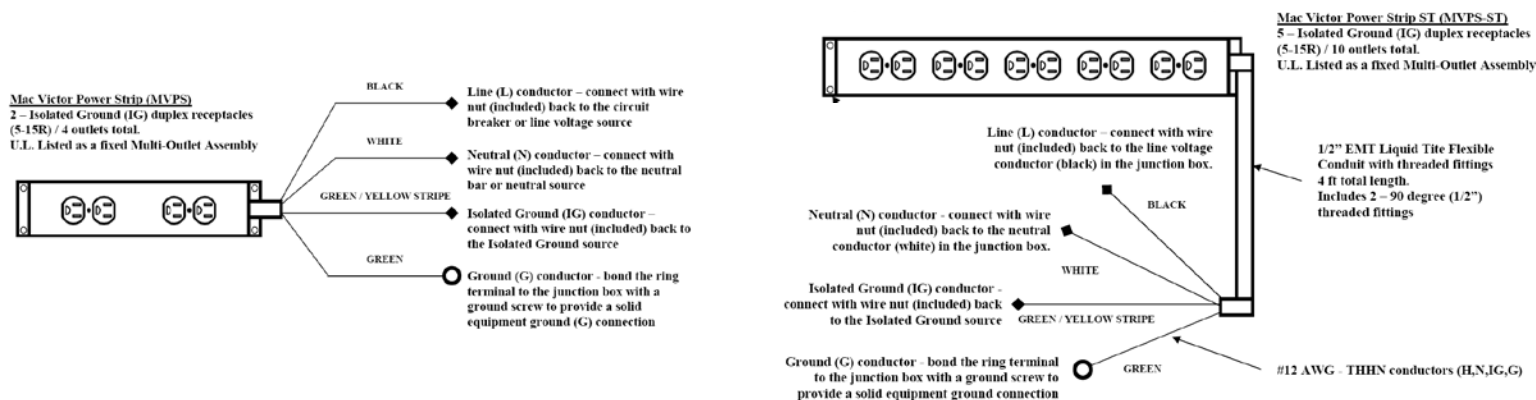


Figure 3.2

4 - INSTALLATION

4.1 Package Contents

The packing box contains a Mac Victor 2.0, mounting hardware (wood stud mount only), a circuit polarity plug tester, safety outlet protector plugs (12), UPS strapping materials, and this Installation and Operating Manual. Carefully inspect all the contents. If any damage is visible immediately notify the carrier and the shipper.

4.2 Location

Please refer to Section 1.3 of the Important Safety Instructions regarding installation. Typical wall mounted locations include the manager's office, electrical room or closet, telecom equipment wall, datacom room, or other secure locations that are not accessible to the public.

To minimize the distance of branch circuit runs to the remote Isolated Ground receptacles, choose a relatively central location if possible to mount the Mac Victor 2.0.

A location relatively close to a circuit breaker panel is also preferred since a single 120Vac, single phase circuit (Line, Neutral, and Ground) must be run to feed the input terminals of the Mac Victor 2.0.

Allow for UPS mounting height on top of the Mac Victor 2.0 when locating the height of installation.

4.3 Typical Elevation

The Mac Victor 2.0 Typical Elevation below provides a conceptual diagram of a typical wall mounted elevation that shows the overall enclosure dimensions and typical input and output power wiring.

Mac Victor 2.0 / Typical Elevation

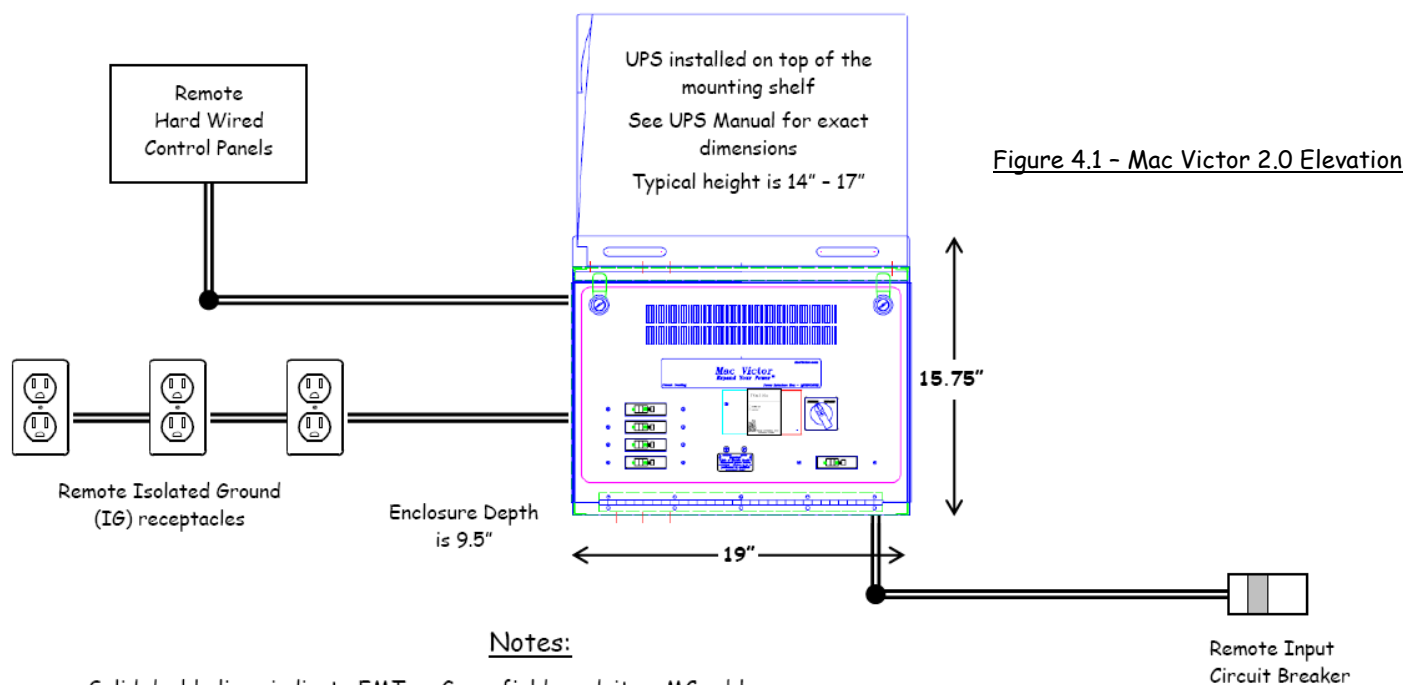


Figure 4.1 - Mac Victor 2.0 Elevation

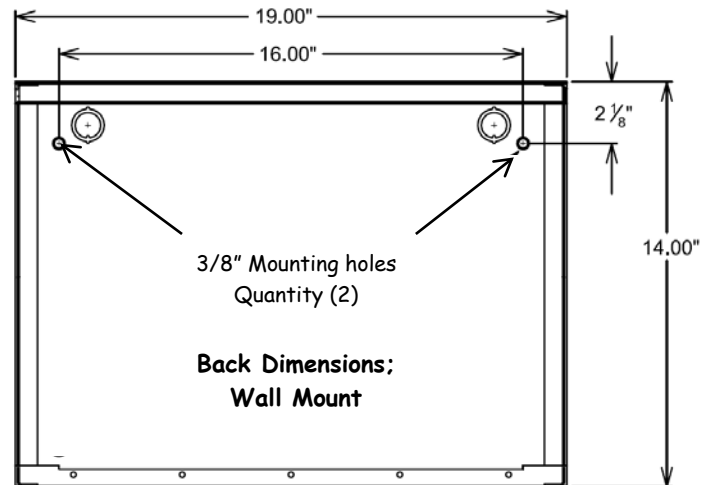
4.4 Mounting Instructions



- **CAUTION** - Improper installation can result in serious personal injury. Make sure the mounting surface can support a redundant weight factor five times the total weight of the equipment. If not, reinforce the structure before installation of the Mac Victor 2.0
- **CAUTION** - Improper installation can result in equipment damage. The installer is responsible for verifying that the installation wall will safely support the combined load of the Mac Victor 2.0 and the top mounted UPS (if applicable)
- **CAUTION** - The combined weight of the Mac Victor 2.0 and the UPS on top must not exceed 200 lbs
- **CAUTION** - Watch for pinch points. Do not put your fingers between moving parts such as the hinged, front door and the latches.
- **WARNING** - Install, wire, power up, and test the Mac Victor 2.0 completely before the installation of the UPS battery backup which is detailed in Section 5.



Figure 4.2



Parts Required (Wood Stud Mount)

- 2 - Lag bolts (5/16" x 3 1/2") - included
- 2 - Flat washers (5/16") - included

Tools Required

- Electric drill and drill bit set
- Socket wrench set
- Level and marking device
- Misc hand tools - hammer, screwdrivers, etc.

Installation Steps (Wood Stud Mounting)

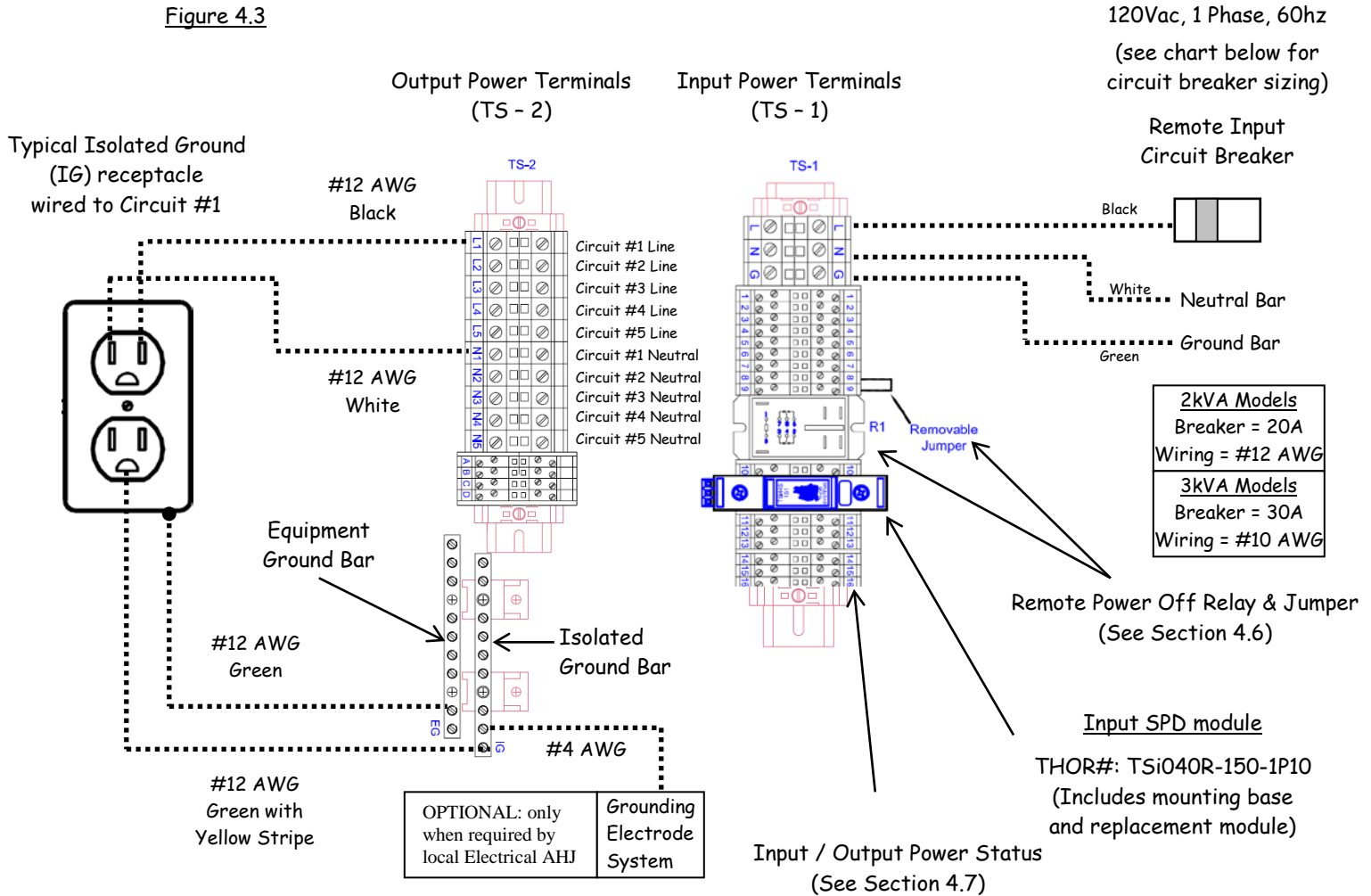
1. Locate 2 adjacent wooden studs (16" on center) at the desired installation location.
2. **BE SURE TO ACCOUNT FOR THE HEIGHT OF THE UPS TO BE INSTALLED ON TOP OF THE MAC VICTOR 2.0 SHELF WHEN DETERMINING THE MOUNTING LOCATION.**
3. Determine the desired mounting height and mark on the wall (centered on one of the wood studs) the desired location of the top of the Mac Victor 2.0 enclosure (not including the mounting shelf flanges).
4. From this mark drop down 2 1/8" and make another mark on the wall. This is the location of one of the top two mounting holes.
5. Use a level from this mark to make a second mark a distance of 16" to the center of the adjacent wood stud. This is the location of the 2nd mounting hole.
6. Drill 2 pilot holes on the centerline wood stud marks using a 3/16" bit approximately 3" deep through the wall and into the wood studs.
7. Carefully lift the Mac Victor 2.0 enclosure so that the 3/8" mounting holes shown in Figure 4.2 line up with the pilot holes drilled in Step 6.
8. Install the supplied 2 - 5/16" x 3 1/2" lag bolts and 2 - 5/16" flat washers through the two mounting holes and into the wood studs using a socket wrench.
9. At this point, the Mac Victor 2.0 should hang freely on the wall.
10. Check the 2 lag bolts to insure they are fully and securely tightened.

4.5 Wiring Diagram – Mac Victor 2.0

The below Mac Victor 2.0 Wiring Diagram provides the input and output wiring terminals for proper installation. The factory wiring and other wiring components are not shown for the sake of simplicity. Follow these wiring diagrams exactly and do not modify any factory wiring or other wiring components.

Mac Victor 2.0 / Wiring Diagram

Figure 4.3



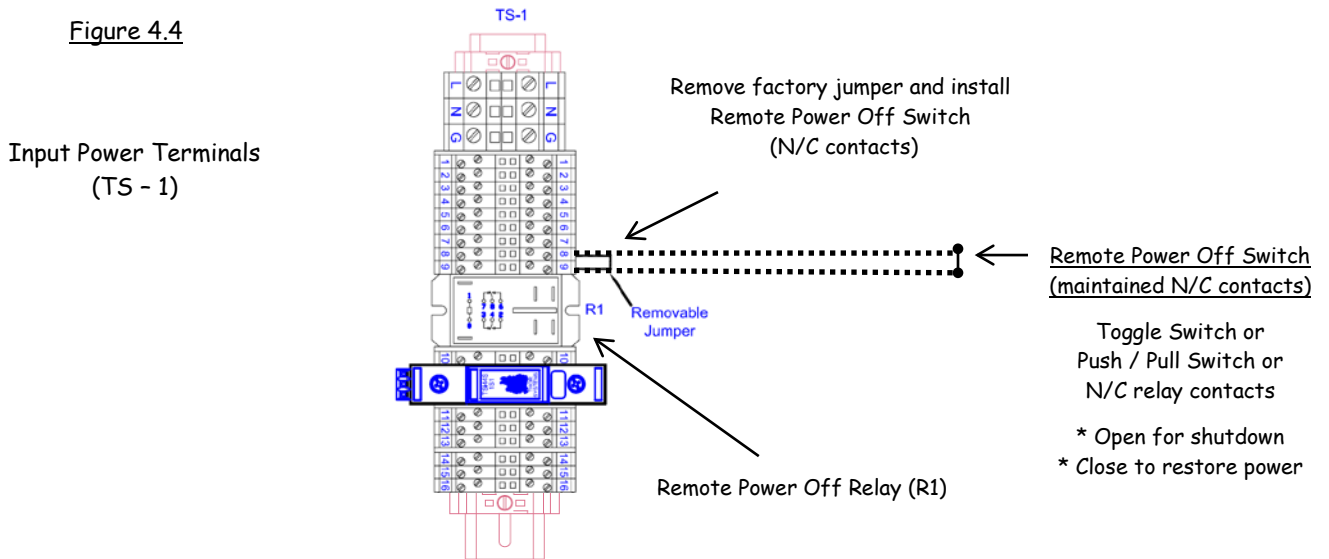
Notes:



- **WARNING: RISK OF ELECTRICAL SHOCK AND PERSONAL INJURY.**
- Dashed lines indicate field wiring
- Remote Input Circuit Breaker wiring must be run in separate conduit from all output wiring
- All output wiring must be run in dedicated conduits or MC cable and not routed with any other equipment wiring to avoid induced voltages.
- Replace the Input SPD module if the front panel surge monitor goes into alarm condition
- See Section 4.6 for the wiring diagram for the Remote Power Off function
- See Section 4.7 for the wiring diagram for the Input / Output Power Status function

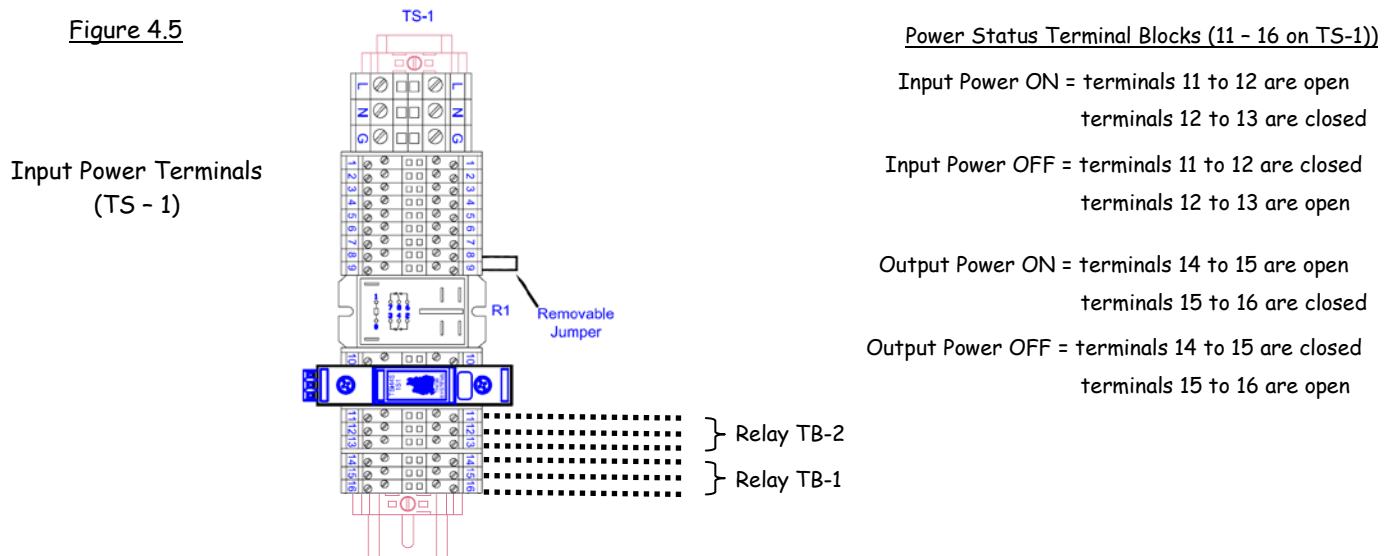
4.6 Wiring Diagram - Remote Power Off

This Mac Victor 2.0 standard feature is for the manual shutdown of all Mac Victor 2.0 output power via an externally mounted Remote Power Off switch. Use only when required by the local Authority Having Jurisdiction (AHJ).



4.7 Wiring Diagram - Remote signaling of Input and Output power status

This Mac Victor 2.0 standard feature provides the ability to provide dry contact relay signals (form C type) for both the Input Power status and the Output Power status. This signaling can be used to operate remotely located power status pilot lights or to provide dry contact status signals to the inputs of Building Automation Systems.

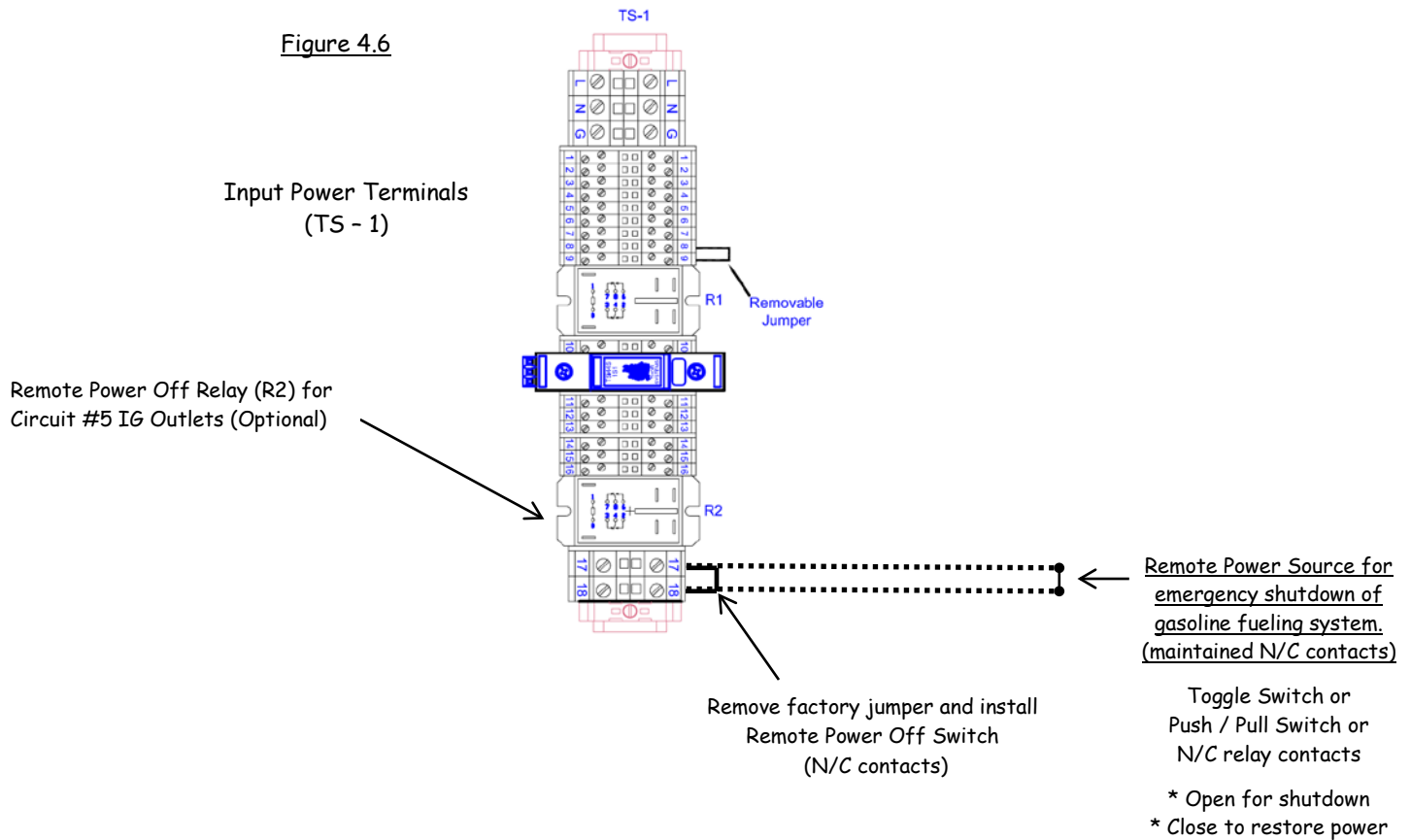


Relay Specifications (TB-1 & TB-2):

Maximum contact rating (per relay)
1/10 amp at 120Vac

4.8 Wiring Diagram – Optional 5th Circuit IG Outlet and Optional Remote Off

This Mac Victor 2.0 optional feature is for manual shutdown of just the optional Isolated Ground outlet power (left hand side of cabinet) only when required by the local Authority Having Jurisdiction (AHJ) and only in gasoline fueling applications. These special applications can have fueling data boxes plugged into the IG outlets that may need to be shut down during fueling emergencies. This option disconnects both Line and Neutral wiring.



5 - STARTUP / OPERATION

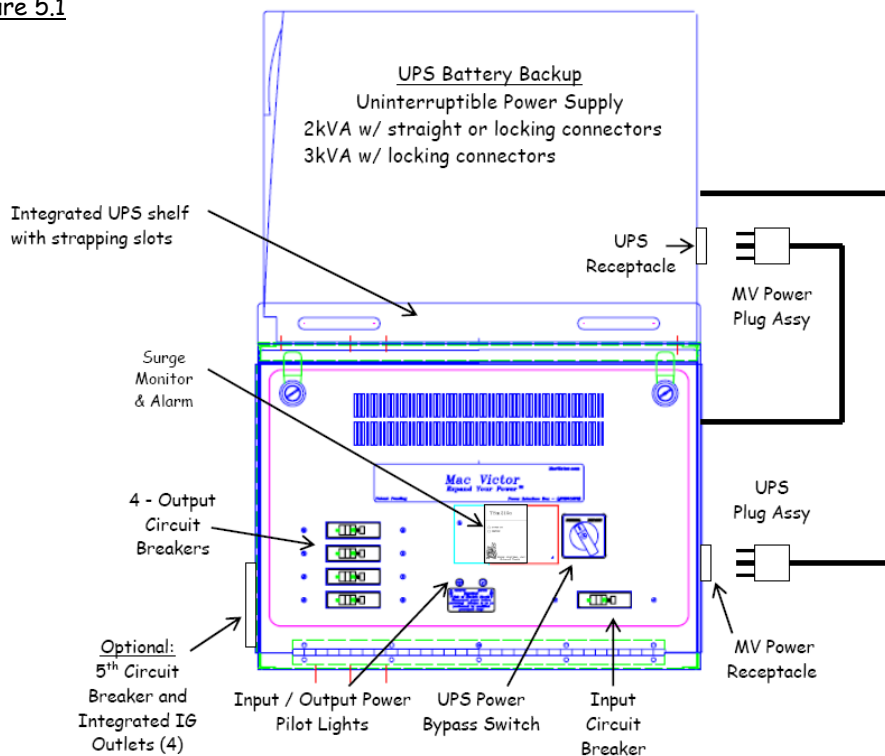
5.1 Power up of the Mac Victor 2.0



- **WARNING: RISK OF ELECTRICAL SHOCK AND PERSONAL INJURY**
 - **Do not install the UPS until the startup of the Mac Victor 2.0 system is completed.**
1. Turn off all input and output circuit breakers / Set the UPS Bypass Switch to the "Normal" position
 2. Verify all the wiring connections are correct per Sections 4.5 - 4.8
 3. Turn on the remote circuit breaker feeding the Mac Victor 2.0 and test for 120Vac on voltage input terminals (TS-1 terminals L and N). Verify proper grounding on the input terminal strip (TS-1 terminal G)
 4. Close and latch the front hinged enclosure cover
 5. Turn on the input power circuit breaker (MB-1) located at the lower front right of the enclosure
 6. The "Input Power" pilot should come on.
 7. Set the UPS Bypass Switch to the "Bypass" position
 8. The "Output Power" pilot should come on / The SPD Monitor should also come on.
 9. Turn on the output circuit breakers #1 - #4. If the integrated IG receptacle option is used, turn on circuit breaker #5 which is on the left hand side of the enclosure.
 10. Test the remote IG receptacles that are wired to the output terminals with the Circuit Polarity Plug Tester (included) to verify correct wiring of the IG receptacles.
 11. Plug in the selected electronic equipment to the remote IG receptacles and the optional integrated IG outlets.
 12. Insert the Safety Outlet Protector Plugs (included) on all remaining open outlets on the IG receptacles.

Mac Victor 2.0 / Component Diagram

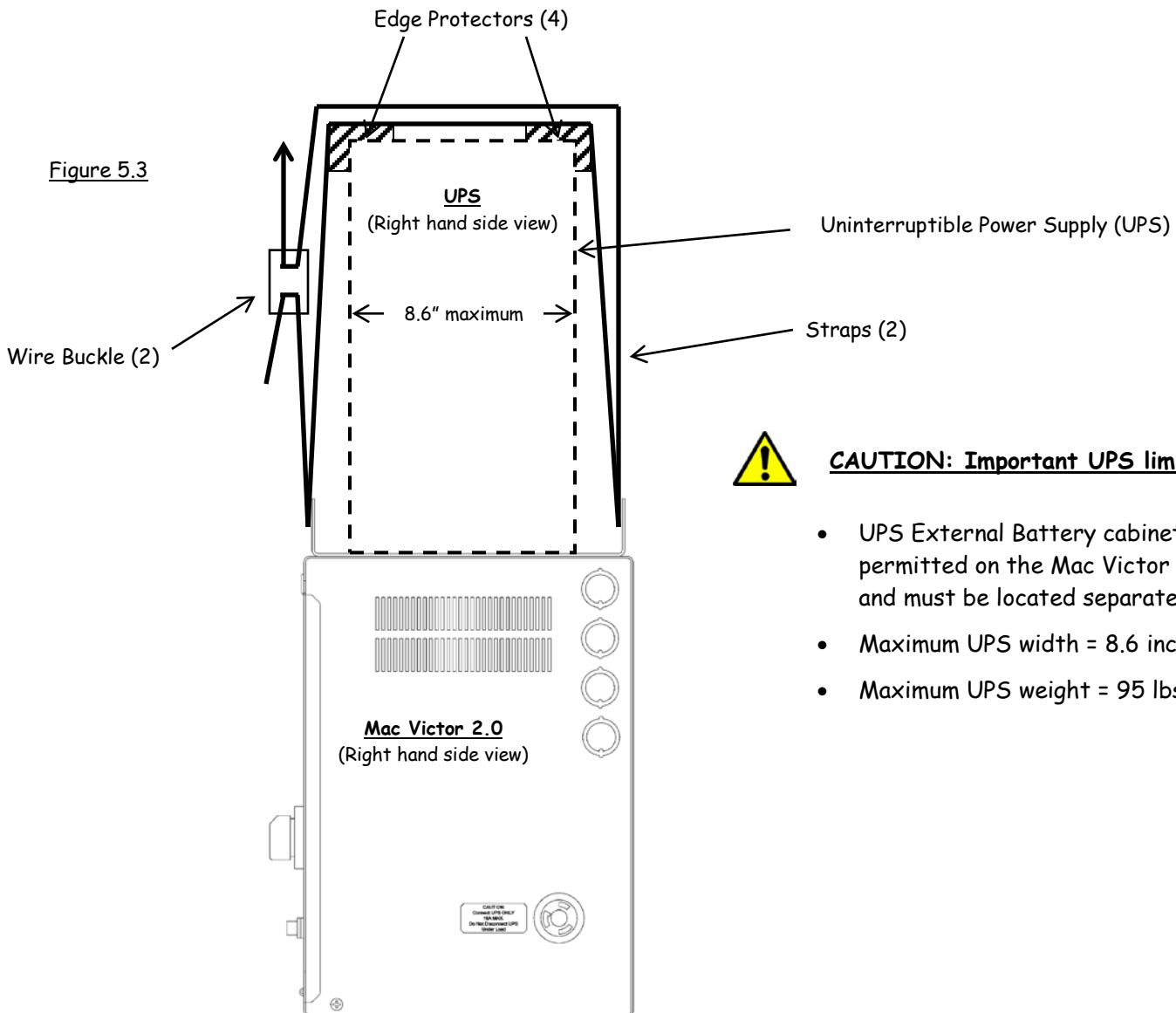
Figure 5.1



5.2 Installation and Strapping of the UPS



- **CAUTION: RISK OF PERSONAL INJURY AND EQUIPMENT DAMAGE.**
1. The strapping of the UPS to the Mac Victor 2.0 shelf is strongly recommended before the UPS has been started up and is fully operational. Strapping requirements may vary for different localities so consult with the local Authority Having Jurisdiction (AHJ) for specific strapping requirements and / or materials.
 2. The Mac Victor 2.0 has an integrated UPS shelf with total of 4 strapping slots (2 front and 2 back) to accommodate the installation of 2 separate straps.
 3. Mount the UPS on top of the Mac Victor 2.0 Shelf with the front of the UPS facing to the left (outlets and power cord facing the right)
 4. The UPS should be located on the shelf in a position that insures adequate rear ventilation of the UPS (surface facing the back wall) according to the UPS Manual. Do not block the UPS ventilation holes.
 5. The Mac Victor 2.0 comes with 2 - 8' straps ($\frac{1}{2}$ " wide polypropylene - 600 lb rated), 2 wire buckles, and 4 edge protectors for use on top of the UPS. Install the 2 sets of strapping, edge protectors, and wire buckles as shown in Figure 5.3 to secure the UPS.

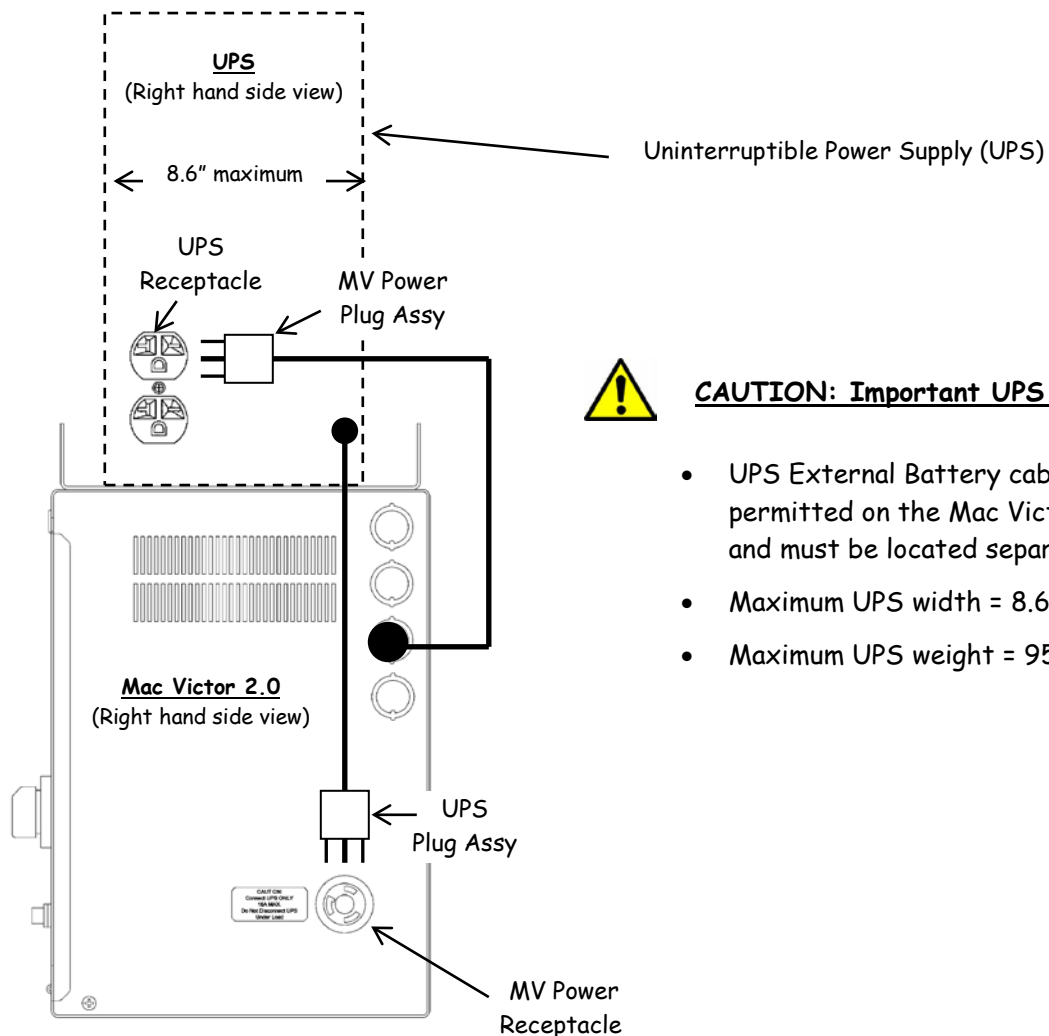


5.3 Power Up of the UPS



1. **WARNING: RISK OF ELECTRICAL SHOCK AND PERSONAL INJURY**
2. Consult the accompanying UPS Manual for the approved procedures for installing and powering up the UPS
3. Insert the UPS Plug Assy into the MV Power Receptacle on the right hand side of the enclosure
4. Plug the MV Power Plug Assy into one of the UPS receptacle provided on the back of the UPS
5. Dress the Mac Victor and UPS wiring cables with wire ties to secure any excess cabling
6. Insert the Safety Outlet Protector Plugs (included) on all open outlets on the back of the UPS
7. Follow the UPS power up procedures as outlined in the accompanying UPS Manual
8. Wait until the UPS has gone through all diagnostic self checks and is fully operational
9. Set the Mac Victor 2.0 Bypass Switch to the "Normal" Position

Figure 5.2

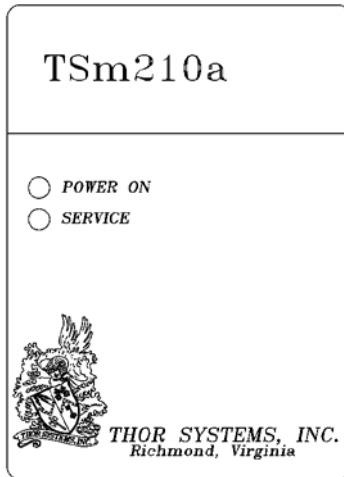


CAUTION: Important UPS limitations

- UPS External Battery cabinets are not permitted on the Mac Victor 2.0 Shelf and must be located separately
- Maximum UPS width = 8.6 inches
- Maximum UPS weight = 95 lbs.

5.4 Surge Monitor Operation

This Mac Victor 2.0 standard feature monitors both the Input SPD Module and the Output Fuse (F1) on the Output Surge & Filter Board Assembly.



Standard Surge Monitor Operation:

- POWER ON (green LED) is ON during normal operation
- SERVICE (red LED) is OFF during normal operation
- SERVICE (red LED) is ON indicates Input SPD module must be replaced (THOR#: TSi040R-150-1P10)
- POWER ON (green LED) is OFF indicates loss of output power or the output Surge & Filter Board Assembly Fuse (F1) must be replaced (THOR#: 0603-0004-01)

Figure 5.4

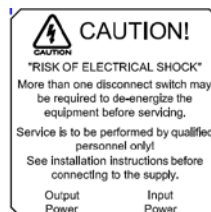
6 - MAINTENANCE / TROUBLESHOOTING

6.1 Input & Output Pilot Lights / UPS Bypass Switch

This Mac Victor 2.0 standard feature is to provide a means to bypass the UPS for service and maintenance while still providing continuous and isolated power to all the connected equipment. Listed below are some troubleshooting tips based on the status of the input and output power pilot lights.

NORMAL OPERATION

- * Both the "Input" & "Output" lights are "ON"
- * Switch to "Bypass" only when replacing or performing maintenance on the UPS
- * After replacing & starting up UPS, switch back to "Normal"
- * When the Switch is in "Bypass", if there is a utility power outage, the output power will go off.



"ON" "ON"

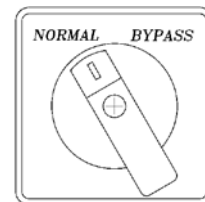
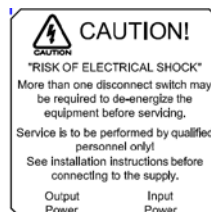


Figure 6.1

LOSS OF INPUT POWER

- * "Input" light is "OFF" and "Output" light is "ON"
- * Indication of a utility power outage OR
- * Indication of input circuit breaker tripped or turned off
- * If there is not a power outage, check the circuit breaker
- * UPS is keeping the output power energized
- * Do NOT switch to "Bypass" as this will cause output power to go off



"ON" "OFF"

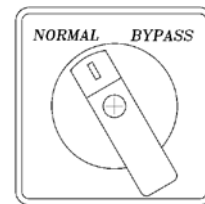
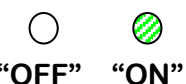
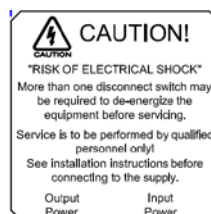


Figure 6.2

LOSS OF OUTPUT POWER

- * "Input" light is "ON" and "Output" light is "OFF"
- * Immediately switch to "Bypass" to restore output power
- * Indication of circuit breaker on back of UPS tripped OR
- * Indication of UPS failure OR
- * Indication that Mac Victor plug cable is not plugged into UPS
- * Switch to "Normal" after the UPS power is restored



"OFF" "ON"

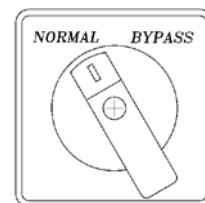
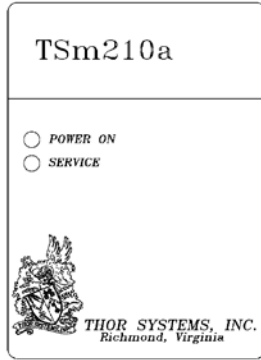


Figure 6.3

6.2 Input SPD Alarm / Output Fuse Indication



Surge Monitor Operation:

Standard Monitor and Alarm

See Section 5.4 for complete operation and troubleshooting

Figure 6.4

6.3 Circuit Breakers

If any of the circuit breakers trip, a red indicator appears behind the clear plastic window on each breaker. To reset the breaker, switch to the "Off" position and then switch back to the "On" position. If a circuit breaker continues to open, check for a circuit overload or a wiring fault. A qualified electrician may be required to safely diagnose this problem.

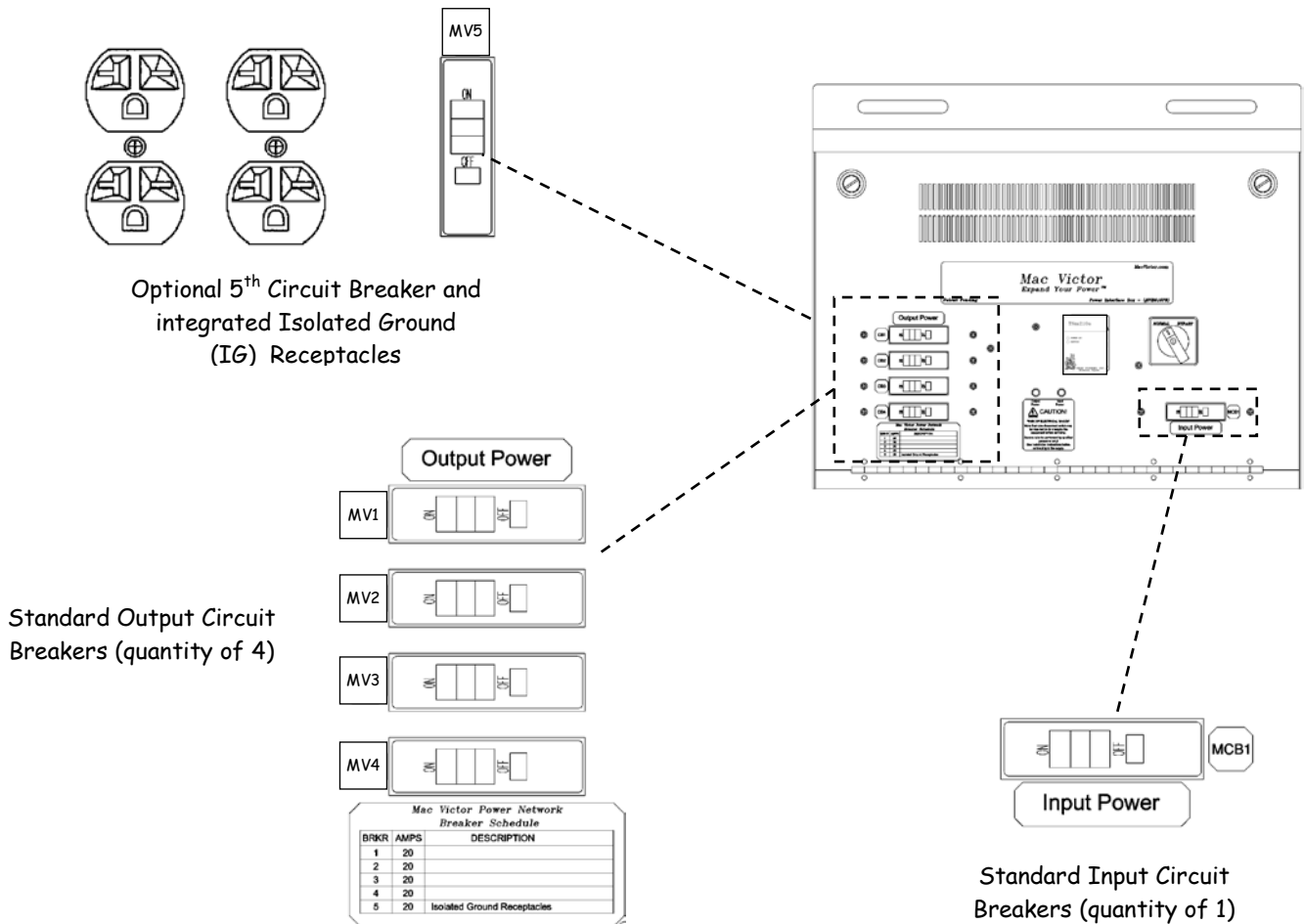


Figure 6.5

6.4 UPS (Uninterruptible Power Supply)

See the UPS Installation / Operation Manual from the UPS manufacturer.

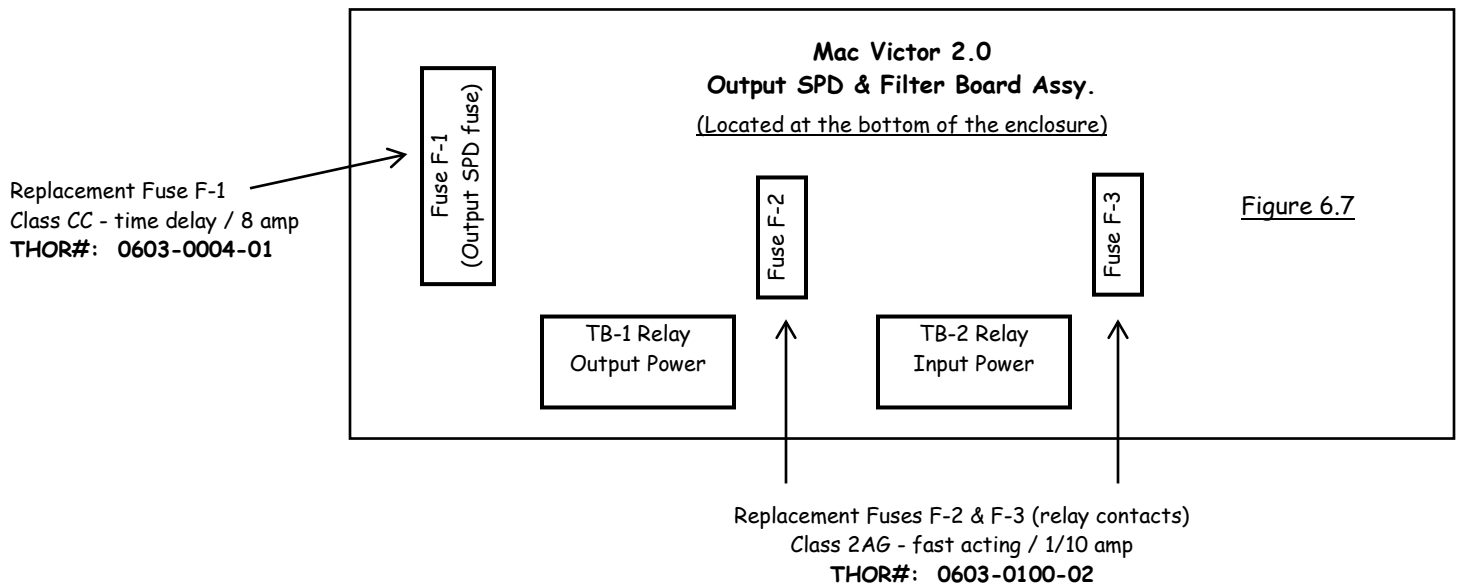
6.5 Troubleshooting Chart

Problem	Possible Cause	Solution
Connected loads not operating during normal operation	Output circuit breakers turned off (See Section 6.3)	Turn on the output breakers
Connected loads not operating during loss of power	UPS turned off Bypass switch in "bypass" mode (See Section 6.1)	Verify UPS is turned on Move Bypass switch to "normal" mode
Input circuit breaker trips	Overloaded system (See Section 6.3)	Remove excess load / reset breaker
UPS output circuit breaker trips	Overloaded system (See UPS operation manual)	Remove excess load / reset breaker
Output circuit breaker trips	Overloaded circuit (See Section 6.3)	Remove excess load / reset breaker
Front display is in alarm	Input SPD Module is bad (See Section 5.4)	Replace Input SPD module (See Section 6.6)
Front display is off	Output SPD Fuse-F1 is bad (See Section 5.4)	Replace output SPD Fuse F-1 (See Section 6.6)
Input status Relay (TB-2) is not operating	Fuse F-3 is bad (See Section 6.6)	Replace Fuse F-3 (See Section 6.6)
Output status Relay (TB-1) is not operating	Fuse F-2 is bad (See Section 6.6)	Replace Fuse F-2 (See Section 6.6)

6.6 Mac Victor 2.0 - Replacement Parts



Replacement Input SPD module
THOR#: TSi040R-150-1P10
(Includes mounting base and replacement module)

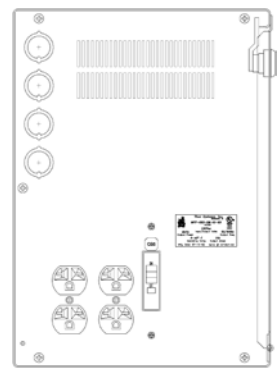
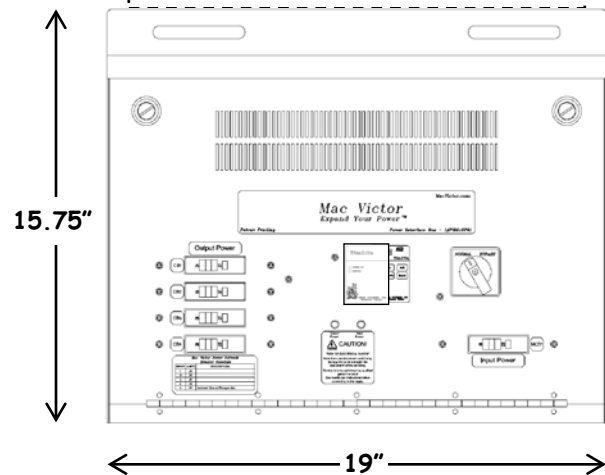


7 - SPECIFICATIONS

7.1 Mac Victor 2.0 Specifications

- **Capacity:** 2kVA (2000VA) straight & locking blade / 3kVA (3000VA) locking blade only
- **Input:**
 - 120Vac, 60hz, 1ph - 20A circuit breaker (2kVA)
 - 120Vac, 60hz, 1ph - 30A circuit breaker (3kVA)
 - Input SPD (Surge Protection Device) replaceable plug-in module type
- **Output:**
 - 120Vac, 60hz, 1ph - 4 circuit breakers (20A) with Line and Neutral conductors pre-wired to output terminal strips for hard wiring to remotely located Isolated Ground (IG) receptacles for critical electronics
 - Isolated Ground bar and Chassis Ground bar for proper IG & ground wiring
 - Output line conditioner includes low impedance isolation transformer, electrical noise filtering, and output SPD (Surge Protection Device)
 - Optional 5th circuit breaker (20A) for integrated IG receptacles (4 outlets)
- **Operating Characteristics:**
 - Overall dimensions - 19" w x 15.75" h x 9.5" d (not including UPS)
 - Weight: 85 lbs. (2kVA) / 105 lbs. (3kVA)
 - Temperature: 0 - 30° C (32-86° F)
 - Humidity: 0% - 90% RH (non - condensing)
- **Listings / Patents:**
 - U.L. 1778 Listed 4th Edition - UPS Maintenance Bypass / Line Conditioner Accessory. The Mac Victor 2.0 is considered a "separately derived source" for the termination of Isolated Ground conductors per the National Electrical Code.
 - U.S. Patents 7,408,271 (11/5/2008) & 7,847,430 (12/7/2010)
- **Product Features:**
 - Plug & receptacle connectivity to many Uninterruptible Power Supply (UPS) vendors
 - UPS battery bypass switch (normal/bypass) - "Make before Break" type
 - Provides clean, isolated power for all loads (even in the UPS bypass switch mode)
 - Front Monitor Display alarms for Input SPD module & Output SPD fuse
 - Input & Output pilot lights on front panel for power status diagnostics
 - Input & Output power monitoring dry contacts (form C) for remote signaling
 - Conduit knockouts (1/2" & 3/4" concentric) on sides, top, bottom, & back
 - Remote switch capability provides output power off for fire emergency compliance
- **Options:**
 - 5th output circuit breaker (20A) for integrated IG receptacles (4 outlets)
 - Remote emergency shutdown of 5th circuit / integrated IG receptacles

UPS installed on top of the mounting shelf
See UPS Manual for exact dimensions
Typical height is 14" - 17"
Maximum width = 8.6"



← 9.5" →

Figure 7.1

7.2 UPS Specifications and Compatible UPS Models

See the UPS Specifications and Installation/Operation Manual from the UPS manufacturer.

List of Mac Victor 2.0 Compatible UPS Models:

Manufacturer	2kVA Model #	3kVA Model #
General Electric	GT2000T * or **	GT3000T
Liebert / Emerson	GXT2-2000RT120 *	GXT2-3000RT120
Eaton Powerware	PW9130-2000 *	PW9130-3000

* = use with MVP-2KS All 3kVA UPS use with MVP-3KL
** = use with MVP-2KL



CAUTION: Important UPS limitations

UPS External Battery cabinets are not permitted on the Mac Victor 2.0 Shelf and must be located separately

Maximum UPS width = 8.6 inches / Maximum UPS weight = 95 lbs.

Designed by:

Mac Victor[®]
Expand Your Power[®]

Mac Victor Power, LLC

6114 Prospect Street
Fredericksburg, VA 22407
Phone: (540) 220-8116
Fax: (540) 242-7004
www.MacVictor.com

Mac Victor[®] and Expand Your Power[®] are registered U.S. trademarks of Mac Victor Power, LLC

Manufactured by:



THOR SYSTEMS, INC.

www.ThorSystems.US

804-355-1100 804-355-8900 fax

3621 Saunders Avenue

Richmond, VA 23227-4354