TRANSTECTOR

APEX IMAX HT

AC EMP SURGE PROTECTION

PRODUCT SPECIFICATIONS

HEMP™ TESTED

For Part Numbers
HT-AO-IMAX-120Y, HT-AO-IMAX-120T, HT-AI-IMAX-120S

Table of Contents

1. General Model Description

The APEX Imax HT AC Surge Protectors are designed to provide EMP protection for equipment and facilities per Department of Homeland Security (DHS) and the Alliance for Telecommunications Industry Solutions (ATIS) guidelines, and have been tested for survivability to the peak threat levels of the harsh Early Time (E1) and Intermediate Time (E2) High-Altitude (HEMP) environments as defined in MIL-STD-188-125.

The APEX Imax HT Series of surge protection devices are listed as Type 2 SPDs under UL 1449 4th Edition, and are designed to provide primary lightning protection for a wide range of 120VAC power configurations. The APEX Imax Series are also Motorola R56 compliant.

The APEX Imax HT utilizes an extraordinarily robust coordinated combination of Silicon Avalanche Suppression Diodes (SASDs) and Metal Oxide Varistor (MOV) technologies to achieve very low voltage protection levels even at very high induced surge currents.

The units are provided with a metallic NEMA Type 4 enclosure to provide EMI shielding against high strength fields associated with all types of EMP, as well to provide protection for harsh weather environments. Each surge element connects to the monitoring board through a card edge connector system and its functional health can be discriminated through the visual and relay alarm connection point features.

Status LEDs are provided on a window panel for visual health status for all SASD and MOV modules, and multiplexed Form C contacts are provided on the motherboard to allow for system integration and remote annunciation.

2. Features

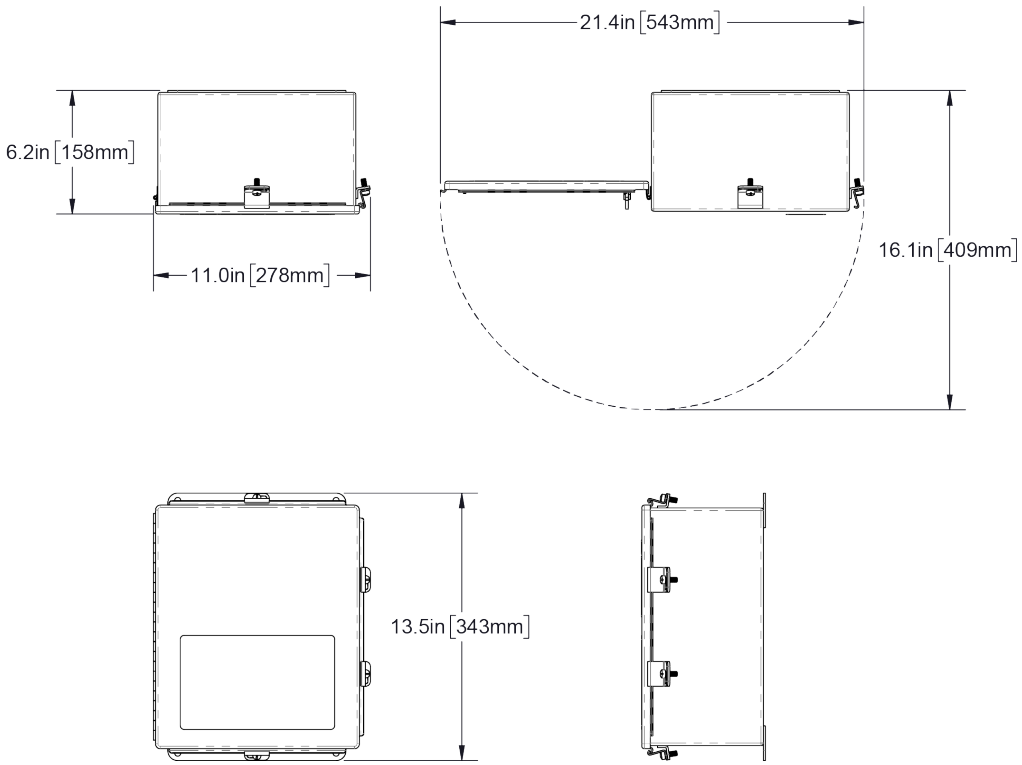
- Tested to MIL-STD-188-125 Early Time (E1) and Intermediate Time (E2) HEMP environments
- Listed to UL 1449 4th Edition (APEX IMAX HT Module Recognized to 4th Edition)
- Fast Response, non-degrading SASD coordinated with robust MOV surge protection technology
- Outdoor Rated (panel protectors)
- Panel mount
- Form C remote alarm contacts (panel protectors)

3. Specifications

APEX IMAX HT			
Part Number	HT-AO-IMAX-120Y	HT-AO-IMAX-120T	HT-AI-IMAX-120S
Product Name	APEX IMAX HT 120Y	APEX IMAX HT 120T	APEX IMAX HT 120S
Product Type	AC EMP Surge Protection		
Application	120/208 VAC	120/240 VAC	120 VAC
Technology	Silicon Avalanche Suppression Diode & Metal Oxide Varistor		Silicon Avalanche Suppression Diode
Electrical			
Frequency Range	50 to 400 Hz		
Service Panel Current Rating	2000 A		
Phases	Wye	Split Phase	Single Phase
Fault Current Rating	up to 65 kAIC		N/A
Protection modes / Protected pairs	L-L, L-N		L-N
Maximum Continuous Operating Voltage (MCOV)	138 Vac L-N, 276 Vac L-L		138 Vac
Surge			
Early Time HEMP (E1) 20/500ns per MIL-STD-188-125	5 kA		
Intermediate Time HEMP (E2) 1.5/3-5000µs per MIL-STD-188-125	250 A		
Maximum Discharge Current - Imax (8/20µs)	160 kA		20 kA
Nominal Discharge Current - In (8/20µs)	20 kA		10 kA
Voltage Protection Rating - VPR (3 kA - 8/20µs)	700 V (peak) L-L, 1000 V (peak) L-N		N/A
Maximum Surge Current (10/1000µs)	1.5 kA		
Maximum Voltage Protection Level (10/1000µs)	< 700V		
Short Circuit Current Rating - SCCR	65 kA		N/A
Standards			
HEMPTested™	per MIL-STD-188-125		
EMP Protection Level	1, 2, 3		
UL Compliance	UL 1449 4th Edition Type 2		UL 1449 4th Edition Type 4CA
IEEE C62.41 2002 Location Category	C High, C Low		B High, B Low
Environmental			
Enclosure Rating	UL50 Type 4 (or 3R), Screw Access		N/A
Shielding Effectiveness (50MHz to 1GHz)	80 dB MIN		N/A
Humidity	100% non-condensing		
Operating Temperature	-40°C to +75°C		
Mean-Time Between Failure (MTBF)	305,374 (GF 25°C Bellcore)	388,010 (GF 25°C Bellcore)	3,444,553 (GF 25°C Bellcore)
Mechanical			
Enclosure Material	Continuously Welded Plated Steel		Noryl 190X
EMI Gasket Material	Foam with Steel Mesh		N/A
Mounting Configuration	Panel Mount		
Dimensions (H x W x D) inches	12 x 10 x 8		4.25 x 4.55 x 0.75
Dimensions (H x W x D) cm	30.5 x 24.5 x 20.3		10.8 x 11.6 x 1.9
Weight lbs (kg)	24 lbs (10.9 kg)		.5 lb (0.2 kg)
Terminal Type	Compression Lug		Bus Bar Mounting Tab
Wire Size	#4 to #1/0 AWG (9.3mm MAX)		N/A (#8 hardware)
Status Indication Terminals	3-pin connector, #22 to #14 AWG (2mm MAX)		N/A
Warranty	15 Years		

4. Mechanical Outline

HT-AO-IMAX-120Y & HT-AO-IMAX-120T:



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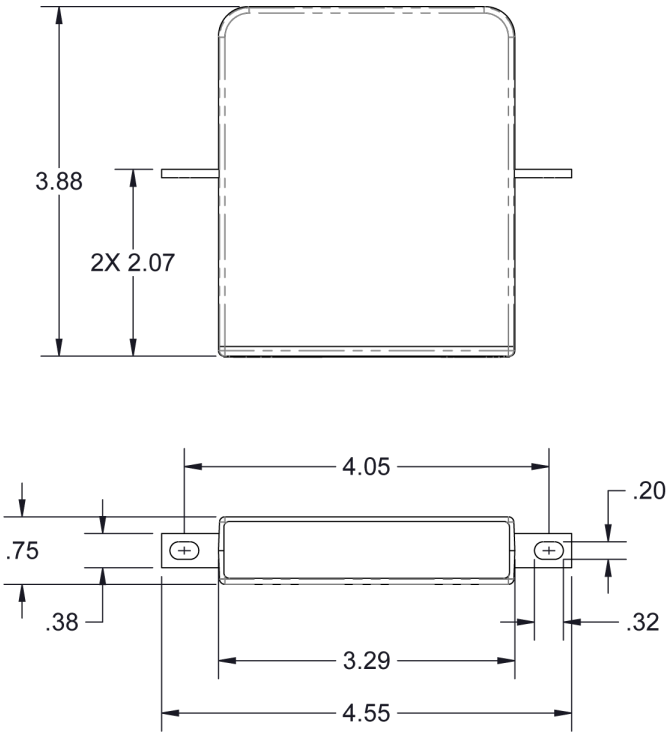

Appendix A: Dept. of Homeland Security EMP Protection Levels

Level 1: Low $s	Level 2: Hours	Level 3: Minutes	Level 4: Seconds
Use procedures & "low cost" best practices to mitigate EMP effects. Unplug power & data lines into spare/backup equipment. Turn off equipment that cannot be unplugged & that is not immediately needed for mission support. Store one week of food, water, & critical supplies for personnel. Wrap spare electronics with aluminum foil or put in Faraday containers. Have backup power that is not connected to the grid (generators, solar panels, etc.) with 1 week of on-site fuel (like propane/diesel). Use GETS, WPS, & TSP services; join SHARES if applicable (see Appendix C for more information).	In addition to Level 1, use EMP rated surge protection devices (SPDs) on power cords, antenna, & data cables & have EMP protected backup power. Use SPDs (1 nanosecond or better response time) to protect critical equipment. Use true online/double-conversion uninterruptible power supplies (UPS). Use fiber optic cables (with no metal); otherwise use shielded cables and ferrites/ SPDs. Shielded racks/rooms &/or facilities may be more cost-effective than hardening numerous cables. Use EMP protected HF radio voice/ email if need long haul nets. Suppress EMP fires.	In addition to Level 2, use civil EMP protection standards (like IEC SC 77C). Use EMP shielded racks/rooms and/ or facilities to protect critical computers, data centers, phone switches, industrial & substation controls & other electronics. Shielding should be 30-80 dB of protection thru 10 GHz. Use SPDs to protect equipment outside of shielded areas. Can use single-door EMP-safe entry ways. Use ITU & IEC EMP standards for design guidance and testing. Have 30 days of backup power with on-site fuel (or via assured service agreement with EMP resilient refuelers). Use EMP protected HF radio & satellite voice/data nets if need long-range links to support missions.	Use Military EMP Standards (MIL-STD-188-125-1 & MIL-HDBK-423), and 80+ dB hardening thru 10 GHz. Use EMP/RFW shielding in rooms, racks, and/or buildings to protect critical equipment. Use EMP SPDs to protect equipment outside of shielded areas. Use EMP protected double door entry ways. Have 30+ days of supplies & EMP protected backup power (to include on-site fuel) for critical systems. Don't rely on commercial internet, telephone, satellite, or radio nets that are not EMP protected for communications. Use EMP protected fiber, satellite, & radio links & Appendix B services.

Four EMP Protection Levels for Equipment, Facilities and Data Center

Source: DHS Electromagnetic Pulse (EMP) Protection and Restoration Guidelines for Equipment and Facilities, Version 1.0, December 22nd, 2016