CITEL

10108 USA Today Way, Miramar, FL 33025

800.248.3548 | www.citel.us | info@citel.us

iMDS Enclosed Surge Protective Device

Installation and Operating Manual

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U-I-00534-iMDS-480D

Installation and Operating Manual

iMDS

UL Type 1 AC Surge Protective Device

READING AND UNDERSTANDING THIS MANUAL IN ITS ENTIRETY IS ESSENTIAL PRIOR TO INSTALLING AND COMMISSIONING THE SURGE PROTECTIVE DEVICE

Safety Precautions

The electrical system on which this surge protective device (SPD) will be installed must be in proper working order. Consult a trained electrician before proceeding with the installation if there are any questions regarding system status. The potential exists for this unit to be damaged if the requirements of this manual are not followed. Failure to comply with the applicable requirements of this manual may void the warranty. Removal of warranty label will result in warranty void.

Introduction

Proper installation of the CITEL iMDS enclosured surge protective device (SPD) is essential to maximize performance and effective protection. Read the entire Installation and Operation Manual prior to beginning installation. This manual does not replace national and local electrical codes. Verify compliance with all electrical codes.

Package Contents & Inspection

Upon receipt of the iMDS unit(s), inspect the entire package to ensure there are no signs of damage or mishandling. Remove packing material and inspect device for any obvious shipping damage. Immediately file a claim with the shipping company and inform CITEL if any damage is found that is a result of shipping or handling.

Each package contains the following:

- (1) iMDS Enclosure
- (1) Installation and Operation Manual
- (1) Wall mounting installation kit
- (1) Accessories & Batteries (sold separately)

WARNING

Hazard of electric shock

- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors and covers before turning on power to this equipment.
- This equipment must be effectively grounded per all applicable codes.

Failure to follow these instructions may result in serious injury or death

Electrical Drawing & Assembly

Imax in kA			300	600	750
Electrical drawing	Basic	L / G	75	150	225
		L / N	75	150	225
		N /G	150	150	150
		Per Phase	150	300	450
		Itotal	300	600	750
	Standard	L / G	75	150	225
		L / N	75	150	150
		N / G	150	300	300
		Per Phase	150	300	375
		Itotal	300	600	750
	Enhanced	L / G	150	225	300
			/	/	/
			/	/	/
		Per Phase	300	600	750
		Itotal	300	600	750
Skeme			Y	T	D

Product Description

The CITEL iMDS enclosed SPD series is designed to protect electrical equipment from the damaging effects of transient voltages created by direct and indirect lightning strikes, equipment switching or other surge causing disturbances and comes pre-installed with disconnect switch. Metal Oxide Varistor (MOV) technology is utilized to achieve a high level of protection performance. MOVs in iMDS units incorporate replaceable modules which allows for effcient maintenance. Each unit comes standard with status lights, alarm, auxiliary contacts, EMI filtering and a fuse disconnect. A power switch handle and surge counter display is optional. The SPD's within the devices described in this manual are UL/cUL Listed.

Characteristics

General Characteristics for iMDS Series *("E" Enhanced, "S" Standard, Basic Versions)					
UL Voltage Protection Rating	VPR	700	900	1500	2500
Protection Level at In	Up	900	1300	1700	3000
UL Short-Circuit Current Rating	SCCR	200kA	200kA	200kA	200kA
Follow Current	If	none	none	none	none
Sine Wave Tracking		Yes			
IMAX 8/20µs		100kA			
Thermal Disconnector		UL 60691			
Dimensions		See Dimensions and Diagram			
Connection		by screw terminals, AWG depends on version			
Remote Signal Indicator		250Vac Max, 2A			
Mounting		Wallmount by screws (not supplied)			
Operating Temp		-50°C to +85°C			
Operating Altitude		13,000 ft (4,000m)			
Relative Humidity		5 to 95% non-condensing, up to 100% external			
Enclosure Material		Metal Standard, Stainless Steel option (NEMA 4X)			
Environmental Rating		NEMA 4			
Standards Compliance		(for SPD within unit only)			
IEC 61643-1 - INTERNATIONAL		Class I & II			
EN 61643-11 - EUROPE		Class I & II			
NF EN 61643-11 - FRANCE		Class I & II			
UL1449 4th Edition - USA		Type 1			
UL1449 4th Edition - CANADA		Type 2			
CSA C22.2 No. 8-M1986		Class 9091 32, Class 9091 92			
RoHS		Directive 2002/95/EC			
UL1283 - USA		Listed			
UL96A		Compliant			

WARNING

- Verify that a proper neutral-ground bond has been made when power is supplied from an upstream transformer or any other type of separately derived power source.
- Power must be disconnected prior to installation, inspection or servicing. Failure to do so may cause injury, death and/or equipment damage.
- Failure to provide this bond, as required by NEC 250.30, will void the warranty and can result in elevated phase to ground source voltage potentials. These voltages can cause damage to electrical equipment, pose a fire hazard or a safety hazard such as electrical shock, injury or death.

The CITEL iMDS is designed such, that upon the end of life of an MOV, it will disconnect rom the circuit, and signal the need for replacement visually and audibly. Consult pages 5-6 of this manual for instructions on troubleshooting and replacement of MOV modules. The possibility exists of a surge current greater than the rated capacity of an SPD, potentially allowing surge energy through to the protected equipment. Even though the SPD is working properly, additional SPDs may be required. These additional SPDs should be placed closer to the load(s).

Product Pre-Installation

Prior to installing any iMDS enclosed SPD, please read and understand this operation manual, ensure that all safety precautions are taken and follow all applicable electrical codes.

1) Power must be disconnected prior to installation. Failure to do so may cause injury, death and/or equipment damage.

2) Ensure that the iMDS model selected is the proper one for the electrical system and voltage ratings.

3) NEC Article 285 states that Type 2 SPDs may only be placed on the load side of the main breaker or fuse at each utility service entrance.

4) Per National Electric Code (NEC), ensure that a proper neutral-ground bond has been made when power is supplied from an upstream transformer or any other type of separately derived power source. NEC Article 250.30 states this bond must be in place on all 3 Phase WYE and Single Phase Split Systems.

Installation

Prior to installation please ensure that you follow the “Pre Installation Checklist” and understand all requirements.

1) Mounting Instructions

CITEL iMDS enclosures are constructed with a NEMA 4 (description below) painted steel enclosure. Multiple sizes available (see dimension drawings on page 8). The iMDS enclosure can be installed in indoor/outdoor locations as close to the protected circuit as possible. Avoid long wire runs between the SPD and protected circuit, as this will reduce performance. Take care to ensure the surface or structure the unit will be mounted on is stable and capable of bearing the load. Mounting brackets are included. Knock out holes should be made to the side of the enclosure nearest to the wiring terminals. Avoid foreign particles from entering the enclosure. Metal shavings can cause internal shorts.

Type 4
Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water);and that will be undamaged by the external formation of ice on the enclosure.

2) Disconnect Power Handle and Shaft Attachment

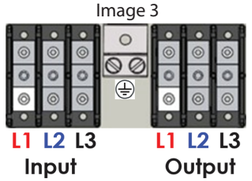
Turn the handle and shaft as shown below. This allows the unit to be energized and de-energized for startup and servicing, respectively. When the power handle is in the OFF position, the unit is disconnected from the circuit, and the circuit is not protected.

3) Connecting your inputs an outputs

Connect your input wire (1/0-14 AWG) from your source into the left terminal block labled INPUT using a torque of 32-120 in lbs.
Connect your load to the right side into the terminal block labeled OUTPUT using a torque of 32-120 in lbs.
Connect your grounds to the ground terminal lugs located in between the 2 terminal blocks.

See image 3

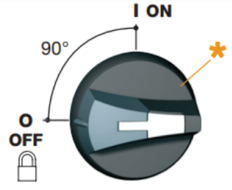
Image 3

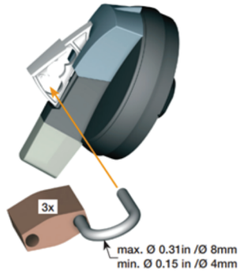


4) Final check and energizing

Ensure that all requirements of this manual have been met and the unit is installed properly. Upon verifying this, power can be re-connected and the unit energized. Close the unit door, reconnect power and turn the handle to the ON position. The unit is now connected to and is protecting the circuit.

Handle Lock





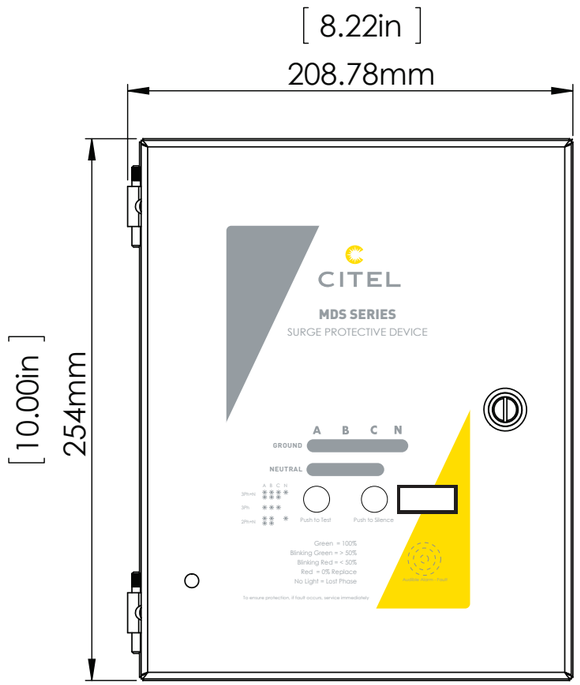
Maintenance

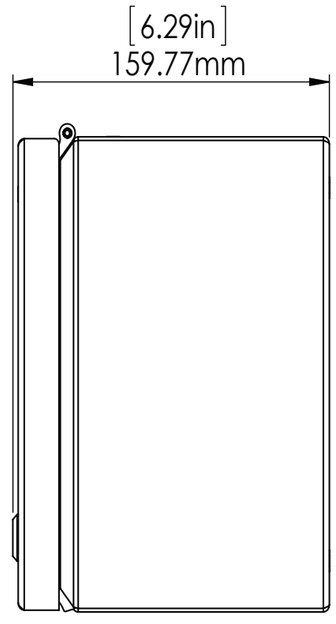
The design of the iMDS eliminates the need for prevenative maintance. The remote display will indicate the status of the SPDs and surge capacity remaining. Remote contacts can be wired to allow for notification when a fault is present. Qualfied personnel should be used for any inspections or replacements of modules inside iMDS.

Diagnostics

Upon energizing the iMDS unit, check to ensure proper operation. iMDS units with the Basic Display will show green LEDs for all modules and no alarms. Should LED’s appear RED or RED BLINKING, turn the handle to the OFF position, disconnecting the unit from the circuit. Check to make sure the electrical network is in good working order and all instructions in this manual have been followed. If the condition persists, consult page 5 of this manual to determine if any MOV and/or Fuse modules are defective.
For technical support please contact CITEL at 800. 248.3548 or visit our website at www.citel.us

Dimensional Drawings





Product Selection

Selecting the proper surge protection device can be a complicated task. Consult qualified personnel to ensure the electrical system is in good working order and for proper sizing of an SPD. Reference technical data table and electrical drawings provided in the manual. For product selection support please contact CITEL or visit our website

Technical Data

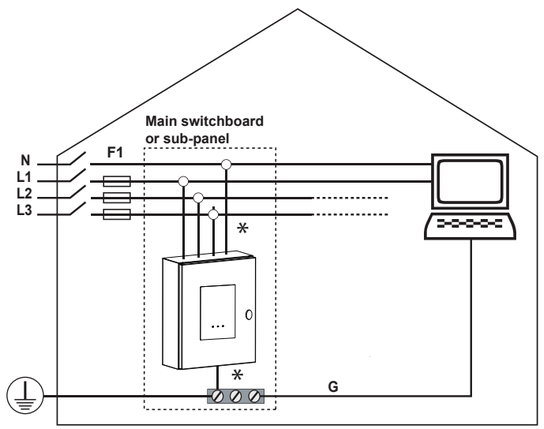
2000 m max.
6500 ft max.

-40/+85°C max.
-40/+1°F max.

IP66 / Nema 4

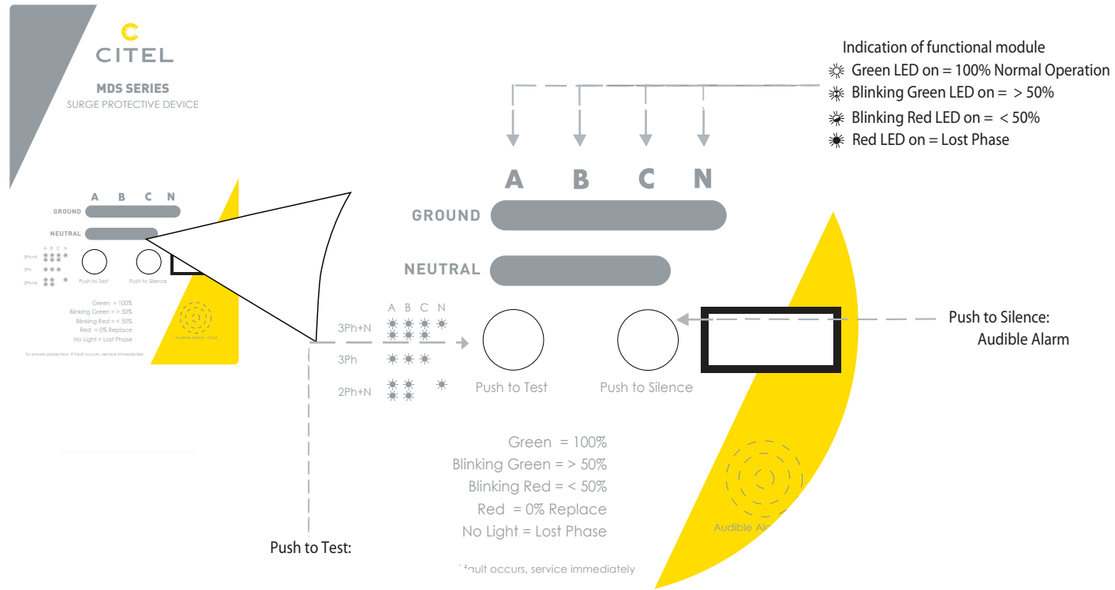
	P/N								
	iMDSXXX(E, S, -) -120T	iMDSXXX(E, S, -) -120Y	iMDSXXX(E, S, -) -220Y	iMDSXXX(E, S, -) -240Y	iMDSXXX(E, S, -) -240DCT	iMDSXXX(E, S, -) -240D	iMDSXXX(E, S, -) -277Y	iMDSXXX(E, S, -) -347Y	iMDSXXX(E, S, -) -480D
System									
120T	●								
120Y		●							
220Y or 240Y			●	●					
240D						●			
240DCT					●				
277Y							●		
347Y								●	
480D									●
Max.* VPR L-N	1300V		1700V			—	900V		—
Max.* VPR L-G	2800V		3600V			2000V			
Max.* VPR L-L	2800V	—	3600V			2000V			
Max.* VPR N-G	1300V		1700V		—	900V		—	
MCOV	150V		275V		—	400V		550V	
In	20kA 8/20								
SCCR	200kA / 600V 60hz								

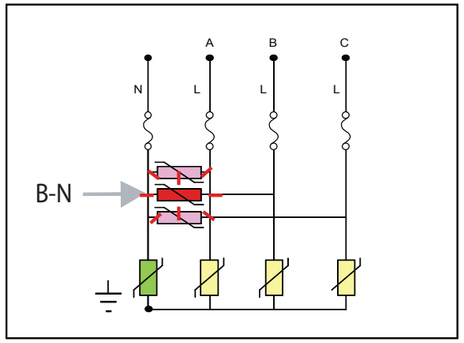
Application



* Shortest distance possible

Display "E" Enhanced Series

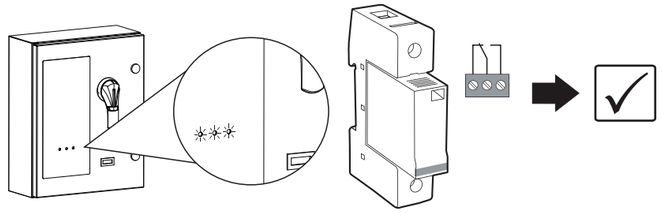


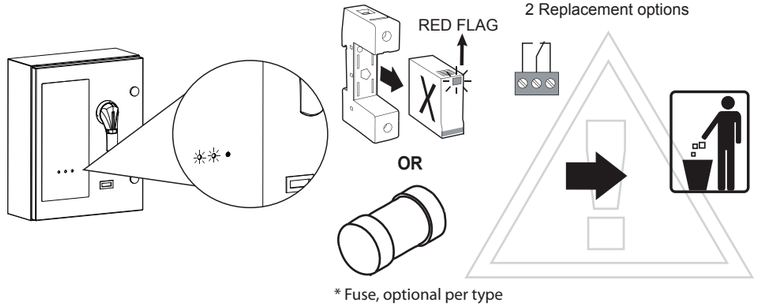


Example of Replacement
on Phase B to N Module

Troubleshooting

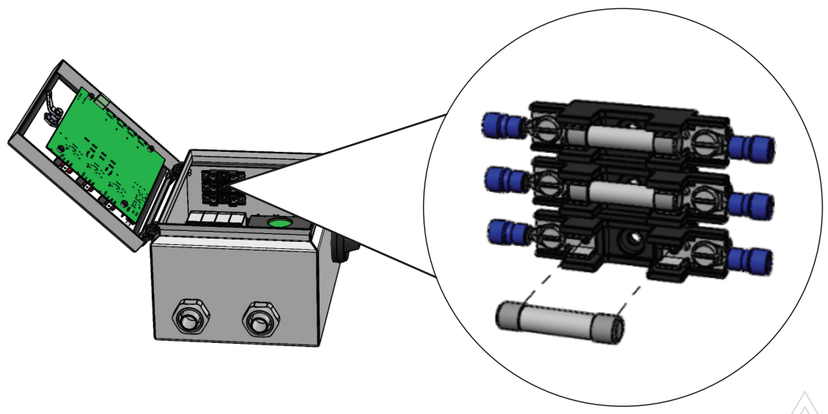
First, check the remote display. If all LEDs are green, the unit is working properly. If any LEDs are red or not lit, refer to phase of where red light is indicated or light is not shown. If any module is defective, and needs to be replaced, red ag will appear on the face of the module

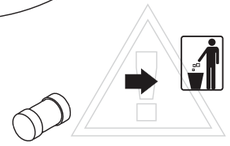




Fuses

Replacement may be necessary if a phase is lost in the diagnostic display board.





Remote Wiring Dry Contacts

A “form C” contact which is a three wire contact: Normally Open (NO), Normally Closed (NC), and a Common (C). Dry Contacts allows a remote piece of equipment or instrumentation to use its own control loop and loop through the dry contacts.

*Contacts

Classification	Standard
Load	Resistive load
Contact type	Bifurcated crossbar
Contact material	Ag + Au-alloy
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC