INSTALLATION, OPERATION AND MAINTENANCE MANUAL

LE and ME series wall-mount SPDs

- Model numbers covered by this manual are: TLE and TME ending with the part number suffix of WM. (Example: TLE120Y050WM)

Guide to installation and assistance

WARNING

The SPD warranty is voided if the unit is damaged as a result of improper installation. Improper installation or misapplication may result in serious personal injury or damage to the electrical system. Read the complete installation instructions before proceeding with installation.

La garantie du SPD est annulée si l'appareil est endommagé à la suite d'une mauvaise installation. Une mauvaise installation, ou utilisation, peut entraîner des blessures graves ou des dégâts au système électrique. Lisez les instructions d'installation en intégralité avant de procéder à l'installation.

WARNING

The equipment covered by these instructions should be installed and serviced only by competent qualified personnel utilizing proper safety practices and procedures. These instructions are written for such personnel and are not intended as a substitute for adequate training and experience in safe procedures for this type of equipment.

L'équipement couvert par ces instructions doit être installé et entretenu uniquement par un personnel compétent et qualifié, utilisant des pratiques et des procédures de sécurité appropriées. Ces instructions sont rédigées à l'intention de ce personnel et ne sauraient se substituer à une formation adéquate et à une expérience des procédures de sécurité pour ce type d'équipement

WARNING

Remove all power to the electrical panel before installing or servicing the SPD. All work must be performed by licensed and qualified personnel. Follow applicable electrical codes and regulations for the country/location in which the unit is being used.

Coupez l'alimentation du panneau électrique avant d'installer ou de procéder à l'entretien du SPD. Tous les travaux doivent être effectués par un personnel qualifié et agréé. Respectez les codes et réglementations électriques en vigueur dans le pays / lieu où l'appareil est utilisé.

WARNING

Do not HIPOT the SPD unit or the electrical system to which the SPD unit is connected without disconnecting the SPD unit's conductors, including phases, neutral and ground.

Ne procédez PAS à des ESSAIS DE RIGIDITÉ DIÉLECTRIQUE sur le SPD ou le système électrique auquel il est connecté sans déconnecter les conducteurs des SPD, y compris les phases, le neutre et la terre.

WARNING

Check to ensure that a proper bond is installed between neutral and ground at the transformer upstream from all 3-phase wye, 3-phase high-leg or 2-phase SPD devices. If the transformer is not accessible, check the main service disconnect/panel for the NG bond. Lack of a proper bond may damage the SPD and void the warranty. Failure to provide this bond, as required per article 250.30 of the National Electrical Code, can result in elevated phase-to-ground source voltage potentials. These voltages can cause damage to electrical equipment as well as safety hazards including fire, electrical shock, serious injury or death.

Vérifiez qu'une liaison correcte est installée entre le neutre et la terre au niveau du transformateur en amont de tous les SPD triphasés en étoile, triphasés en triangle ou biphasés. Si le transformateur n'est pas accessible, vérifiez la liaison NG sur le sectionneur / panneau de service principal. L'absence d'une liaison appropriée peut endommager le SPD et annuler la garantie. L'absence de cette liaison, telle que requise par l'article 250.30 du Code national de l'électricité, peut entraîner des potentiels de tension élevés entre la phase et la terre. Ces tensions peuvent causer des dégâts aux équipements électriques ainsi que des risques en matière de sécurité, notamment des incendies, des chocs électriques, des blessures graves ou la mort.

WARNING

Installation by person with electrotechnical expertise only.
WARNUNG!
Installation nur durch elektrotechnische Fachkraft.
AVERTISSEMENT!
Installation uniquement par des personned qualifiées électrotechnique.
IADVERTENCIA!
La instalación deberá ser realizada únicamente por electricistas especializados.

Pre-installation requirements

Prior to energization of the SPD, it is critical that the following items have been addressed. Do not attempt to energize the SPD or continue with the installation if all these conditions have not been met, or are unknown.

1. System configuration and voltage

⚠ CAUTION

Prior to installation, ensure the system configuration and voltage is equivalent to the SPD unit being installed.

Avant l'installation, assurez-vous que la configuration et la tension du système sont équivalentes à celles du SPD en cours d'installation.

The SPD model number can be found on the UL label affixed to the SPD enclosure. The SPD selection can be verified by comparing the model number to the correct electrical system described in the "VOLTAGE RATINGS AND POWER SOURCE CONFIGURATIONS" chart.

2. System grounding and bonding

Verify that an NEC (National Electrical Code) compliant X0 bond has been made at the upstream transformer or other separately derived system that feeds the SPD. Per NEC Article 250.30, this bond must be in place on all 3-Phase WYE, 3-Phase Hi-Leg Delta and Single-Phase Split-Systems. Refer to diagram "EXAMPLE OF AN NEC COMPLIANT GROUNDING ARRANGEMENT FOR A SEPERATELY DERIVED SYSTEM" for an example of an installation that complies with these NEC recommendations.

Verify that there have not been multiple instances of neutral-to-ground bonds on the electrical system. These bonds, while either intentional or accidental, result in ground currents that can create differential voltage potentials between neutral and ground. Redundant neutral-to-ground connections can result in damage to the SPD and are in violation of the NEC.

3. SPD installation on ungrounded power systems

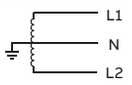
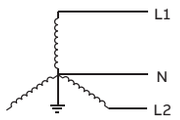
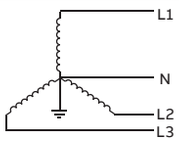
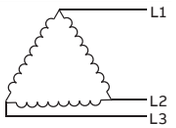
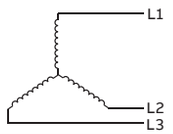
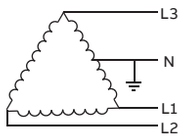
Ungrounded power systems are inherently unstable and can produce excessively high line-to-ground voltages during certain fault conditions. During these fault conditions, any electrical equipment, including an SPD, may be subjected to voltages that exceed their designed ratings. This information is being provided to the user so that an informed decision can be made before installing any electrical equipment on an ungrounded power system.

4. SPD location / primary overcurrent protection

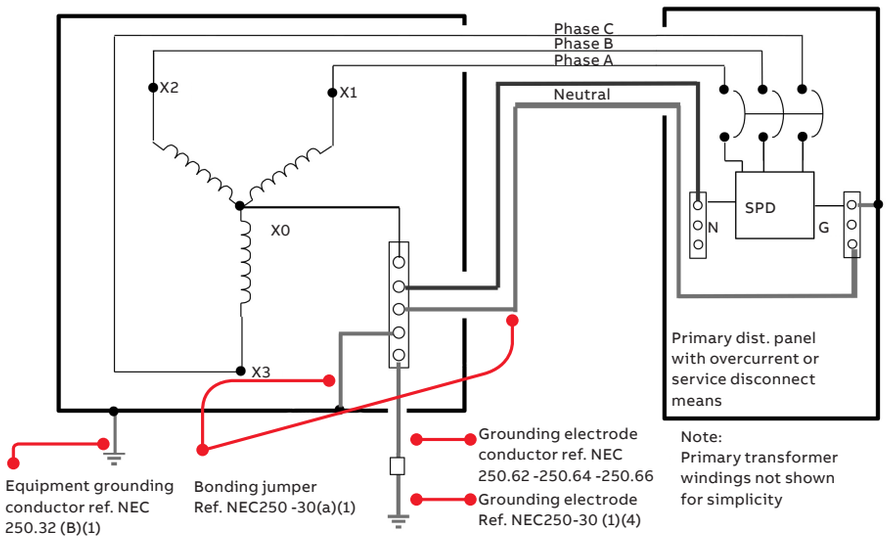
Per the National Electrical Code (NEC Article 285), Type 2 SPDs are allowed to be placed on the load side of the main service breaker/fuse.

Pre-installation requirements

Table 1: Voltage ratings and power source configurations

Model	Nominal voltage (50/60 Hz)	Maximum continous operating voltage (MCOV)	System type	Source configuration
TLE / TME 120S	120 / 208–240 V	150 V (L-N / L-G)	Single-phase 3 wire + ground	
			Dual-phase 3 wire + ground	
TLE / TME 120Y	120 / 208 V	150 V (L-N / L-G)	Three-phase WYE 4 wire + ground	
TLE / TME 220Y	220 / 380 V	320 V (L-N / L-G)		
TLE / TME 240Y	240 / 415 V	320 V (L-N / L-G)		
TLE / TME 277Y	277 / 480 V	320 V (L-N / L-G)		
TLE / TME 240D	240 V	270 V (L-G)	Three-phase Delta, 3 wire	
TLE / TME 480D	480 V	550 V (L-G)		
			Three-phase WYE, 3 wire	
TLE / TME 240H	120 / 240 V	150 V (L-N / L-G) Phase A & C 270 V (L-N / L-G) Phase B	Three-phase Delta Hi-Leg, 4 wire + ground	

Example of an NEC compliant grounding arrangement for a separately derived system



The illustration shown provides a recommended method for grounding a separately derived power system, per the National Electrical Code, Article 250.30. Please check with the local municipality or governing authority for additional codes or other approved regulatory requirements before attempting to configure any electrical power distribution system.

Installation

WARNING

Power must be proven disconnected before starting installation, inspection or maintenance. Failure to do so may cause serious injury, death and/or property damage.

Il doit être prouvé que l'alimentation est déconnectée avant de commencer l'installation, l'inspection ou l'entretien. Le non-respect de cette précaution peut entraîner des blessures graves, la mort et/ou des dégâts matériels.

Before attempting installation, make sure that the pre-installation requirements of this manual have been satisfied. If the status of the pre-installation requirements are not known, do not attempt to continue.

1. Mounting
The wall-mount SPD must be installed as close to the protected circuit as possible. Long connecting cable runs between the SPD and point of attachment will result in significantly reduced performance.

Select a mounting location that will allow for a minimum length of wire between the SPD and the power terminals of the electrical service panel. The SPD can be mounted in any orientation; however, special consideration should be given to allow for periodic inspection of the diagnostic display panel. The SPD should be mounted to a secure structure or surface.

2. Dimensions and recommended conduit entrance locations

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SPD model type:
TLE-WM
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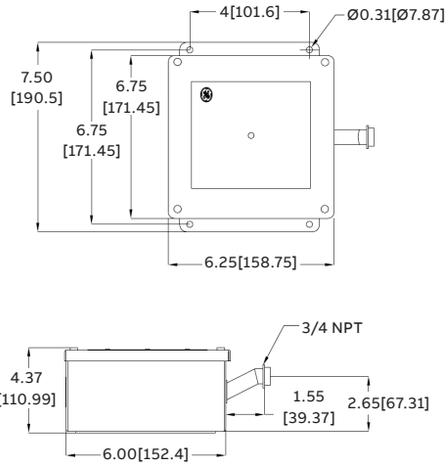
Note: Units are in inch (mm)



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SPD model type:
TLE-WM
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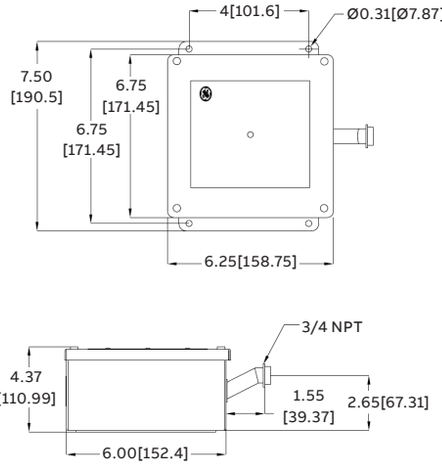
Note: Units are in inch (mm)



3. Conduit fittings
A ¾" NPT offset-style conduit nipple is provided as an integral part of the SPD for routing the wiring pigtails into the electrical panel. Caution: Do not attempt to remove, twist, turn or alter the integral conduit nipple. This will cause irreversible damage to the SPD internal wiring and will void the warranty. An additional conduit spacer, adapter or fitting should be used only when necessary to facilitate installation.

4. Power connections
Wiring pigtails are provided on the SPD for connection to the electrical power system. These wires are #10 AWG stranded copper, color-coded black for phase connections, white for neutral and green for ground. See following page for power connection location and identification.

5. Wire routing
The length of wiring to the SPD must be kept at a minimum. For the best performance, ABB recommends maintaining 36" of length or less for each conductor (including neutral and/or ground). Wire lengths should be short, straight runs between the SPD and power source. Do not attempt to splice into or lengthen the provided pigtails as this will result in reduced performance. Wiring impedance can be further minimized by twisting the phase, neutral and ground conductors together and routing them in the same conduit, raceway or channel. Always avoid sharp bends when routing SPD conductors.

6. Circuit breaker
A dedicated ≤30 A circuit breaker (not included) is required to connect the SPD to the power system. Failure to connect the SPD to a breaker will violate the UL rating and render the installation potentially unsafe for equipment and personnel should the SPD ever fail.

Installation

7. Remote alarm contacts

Remote alarm monitoring contacts are provided on all SPD model types covered by this manual. If this type of monitoring is desired, refer to the diagram "Remote alarm monitoring terminals" for the location and wiring configuration of these contacts. The contacts are dry, form C type, rated 120 V AC, 1 A (30 V DC, 2 A) maximum. Once the SPD has been energized and is operating as intended, the alarm contacts will switch to “normal status.” The contacts will only change back to “alarm status” if there is a failure within the SPD suppression circuitry, or if power has been disconnected from the SPD. Allowing the remote alarm contacts to remain unconnected will not affect the performance or integrity of the SPD.

8. Pre-energization check

Once all of the pre-installation conditions have been met and the SPD has been installed, the SPD can now be energized. For SPD operational status, refer to Operation and Maintenance sections.

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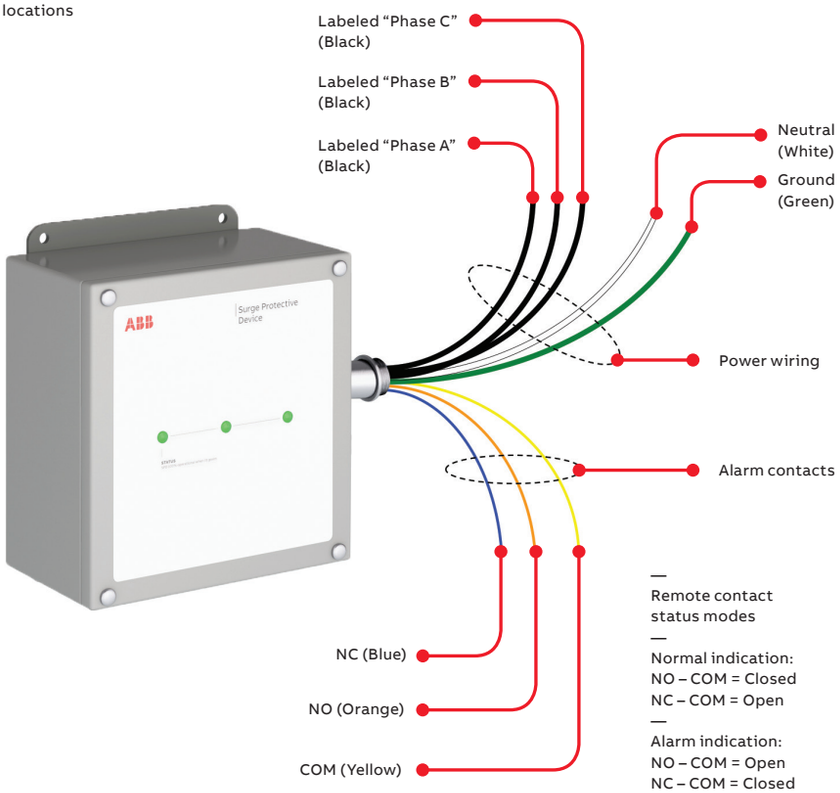
Power wiring and remote alarm locations



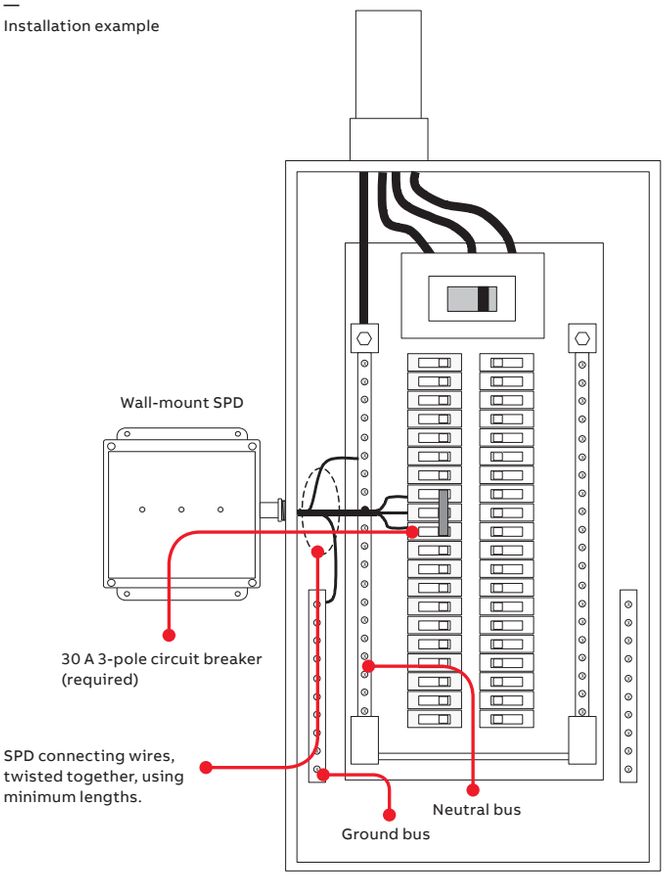
The above illustration represents the wiring and alarm contacts for both the TLE and TME wall-mount SPDs for 3-phase applications. (Split/single-phase versions will have only two black power wires for connection.) Black wires are marked and identified as Phase A, Phase B, Phase C. Various mounting orientations are possible and will not affect the performance of the SPD if wire connections and cable length are kept to a minimum.

NOTICE

Hi-Leg Delta power systems:
TLE/TME240H SPD model types are intended for Hi-Leg Delta systems and are configured with Phase B as the intended Hi-Leg connection point. Attempting to connect the SPD Phase C or Phase A conductor to the system Hi-Leg will result in immediate SPD failure.

Installation

Installation example



⚠ WARNING

Upon energization of the SPD, if any of the lamps or alarms indicates an abnormal condition, power should be disconnected promptly from the SPD. The electrical system should be inspected and the pre-installation requirements should be validated. Do not attempt to leave power applied to the SPD, or re-energize the SPD in the event of an alarm condition.

Lors de la mise sous tension du SPD, si l'une des lampes ou des alarmes indique une condition anormale, l'alimentation du SPD doit être coupée rapidement. Le système électrique doit être inspecté et les exigences de pré-installation doivent être validées. N'essayez pas de laisser le SPD sous tension, ou de le remettre sous tension en cas d'alarme.

Operation

After applying power to the SPD, verify that the protection monitoring circuits are functioning correctly. If all status alarms indicate "normal," the SPD has been successfully installed and is operational.

1. Line status indicator LEDs
The green line status LEDs provide visual indication of SPD health status. As long as the SPD is connected to the electrical system supply voltage and the SPD suppression circuitry is functional, each available line status indicator will be illuminated green. There is one green indicator per each protected phase on TME models. TLE models have a single green status indicator to monitor the health of the entire SPD.

2. Remote alarm contacts
Remote alarm contacts are available to remotely monitor the health status of the SPD. An alarm condition will result in a status change of the contacts. These contacts do not affect the performance of the SPD and are not required to be connected for the SPD to function as intended.

Maintenance

ABB does not provide a specific schedule for preventative maintenance as conditions will vary based on location and the environmental factors presented at each installation site. However, periodic inspections should be scheduled to verify that the SPD does not indicate a failure mode. Inspections should also be made to check the integrity of the electrical supply connections to the SPD to ensure continued reliable performance.

The unit's heavy-duty construction is designed to provide years of uninterrupted service.

The unit contains no serviceable parts.

L'unité ne contient aucune pièce réparable.

Servicing/troubleshooting

Should a condition occur that results in premature failure of the SPD, the integral fusing or required circuit breaker will safely interrupt current flow through the SPD without disrupting power to the protected equipment. This will remove the SPD from the power system and the load equipment will remain unprotected from subsequent surge activity until the SPD is replaced.

If a change in operational status/alarm indication occurs, a qualified (licensed) electrician should inspect the electrical system to verify electrical system integrity. If the SPD remains in alarm after inspection/corrections have been made, the SPD should be replaced.

NOTICE

In the event of an SPD alarm condition, do not attempt to disassemble the SPD to replace fusing or other components. The SPD contains fusing components that will only open when the SPD has failed in a non-serviceable condition. The entire SPD must be replaced.

En cas de condition d'alarme du SPD, n'essayez pas de démonter le SPD pour remplacer les fusibles ou d'autres composants. Le SPD contient des MOV protégés thermiquement qui ne s'ouvrent que lorsque le SPD tombe en panne et ne fonctionne plus. L'ensemble du SPD doit être remplacé.

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electrification.us.abb.com/products/surge-protective-devices

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