

GEH-6254 Installation Instructions

Voltage Conditioner Assembly

For Spectra® RMS Molded-Case Circuit Breakers
with *microEntelliGuard*™, *MicroVersaTrip*® PM or *MicroVersaTrip*® Plus Trip Units

For Catalog Number SVCAA
UL LISTED Circuit Breaker Accessory



Overview

The General Electric Voltage Conditioner Assembly is used to provide voltage-sensing signals to Spectra® RMS Molded-Case Circuit Breakers with *microEntelliGuard*™ or *MicroVersaTrip*® PM/Plus Trip Units via the Distribution Cable System.

The assembly has the maximum capacity to provide voltage signals to a Distribution Cable System consisting of 20 Spectra® RMS Molded-Case Circuit Breakers with *microEntelliGuard*™ or *MicroVersaTrip*® PM/Plus Trip Units with a maximum system cable length of 40 feet.

The Voltage Conditioner Assembly requires a power supply source voltage of +24Vdc to operate properly. The Power Supply Assembly (catalog number SPSAA) or Power Supply Plate (catalog number SPSAI20, SPSA208, SPSA240, SPSA480 or SPSA600) can provide this required input. The unit also requires 120Vac @60 Hz voltage inputs from the secondary of three 1-VA high accuracy potential transformers (not included). The primary side of each potential transformer must be fused with 2-amp class CC fuses (not included). The Voltage Conditioner Assembly is designed to operate in temperatures between 0°C and 70°C.

Figure 1 shows how the Voltage Conditioner Assembly is used in a typical MicroVersaTrip® PM system. Figure 2 shows how the Voltage Conditioner Assembly is used in a typical MicroVersaTrip® Plus system. The *microEntelliGuard™* Trip Unit can be used with either configuration, i.e. Figure 1 or Figure 2. The connection diagram shown in Figure 2 applies to *microEntelliGuard™* Trip Units with Basic Metering.

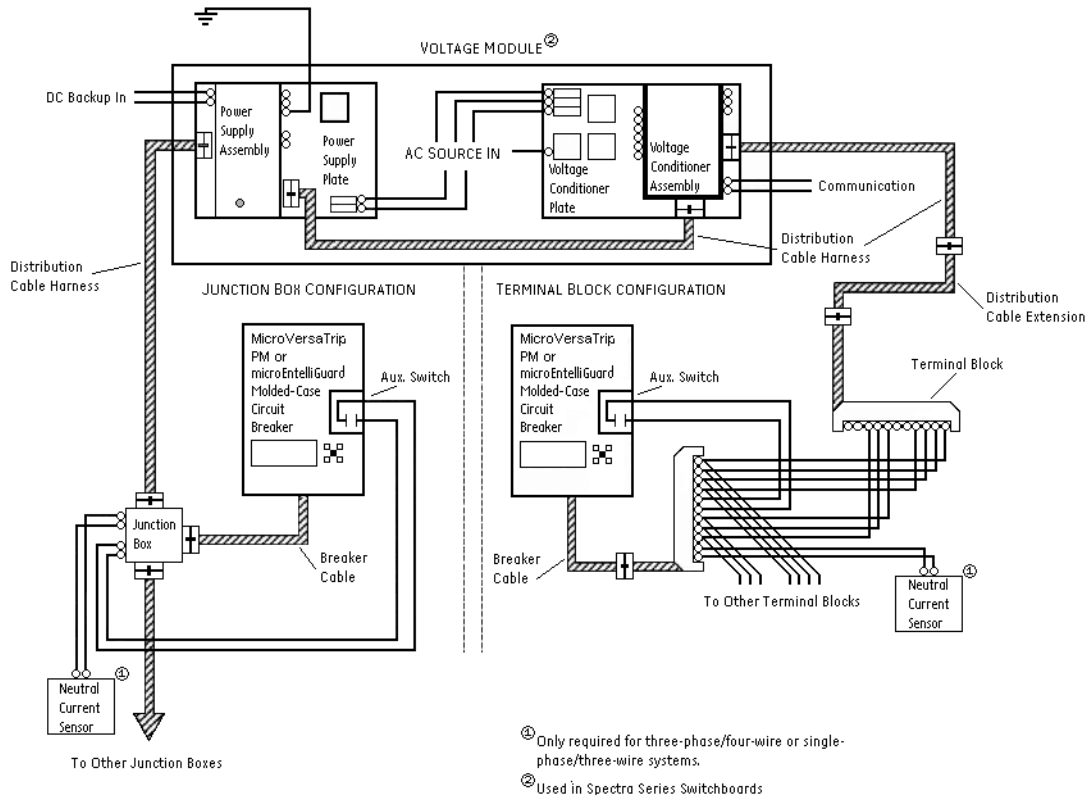


Figure 1. Typical MicroVersaTrip® PM Trip Unit System detailing the Voltage Conditioner Assembly.

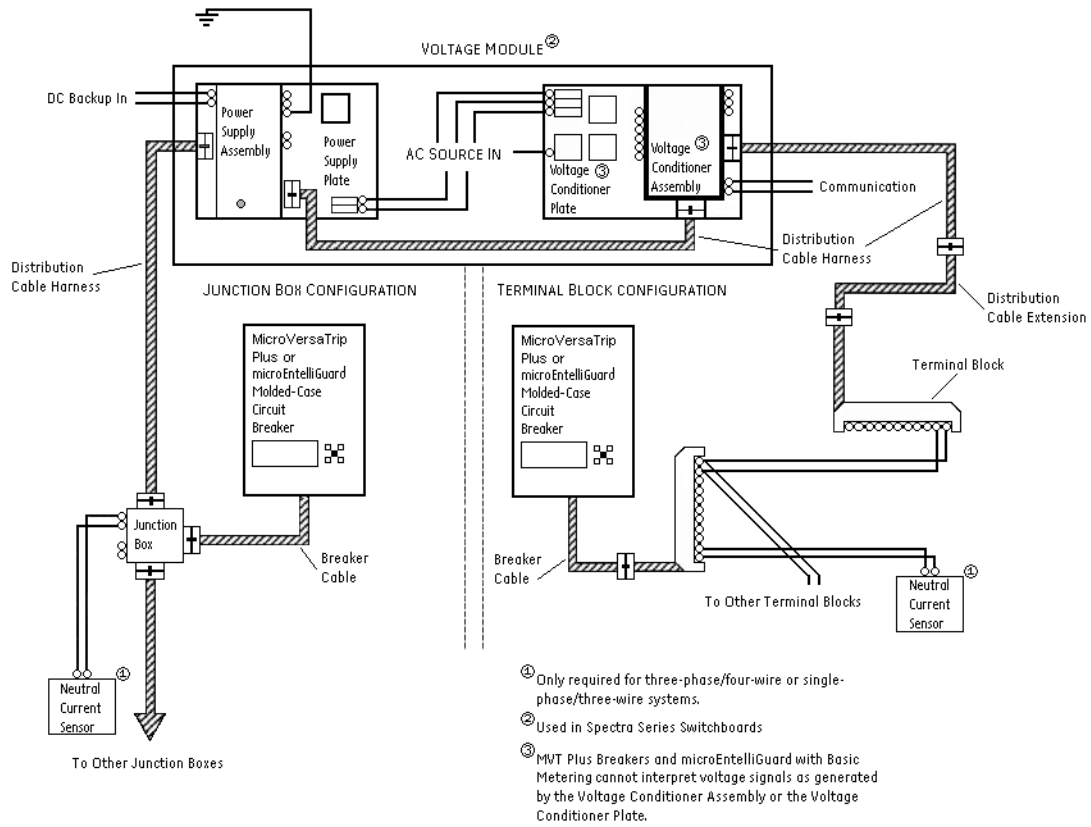


Figure 2. Typical MicroVersaTrip® Plus Trip Unit System detailing the Voltage Conditioner Assembly.

A communications connection is provided for applications where data is transmitted to an external intelligent device (See Table 1). The distribution cable system is used to interconnect the voltage signal on the Voltage Conditioner Assembly and the Spectra® RMS Molded-Case Circuit Breakers.

Table 1. Associated Software and Protocol for the different Spectra® Series Breakers.

Trip Unit Type	Protocol	Software
MicroVersaTrip® PM	Commnet	GE POWER LEADER™
microEntelliGuard™	Modbus	EnerVista Viewpoint

An additional voltage output connection is available for applications where a voltage signal is needed on an Air Circuit Breaker or Insulated Case Circuit Breaker with an EntelliGuard™ TU or a MicroVersaTrip® PM Trip Unit (Do not connect this voltage signal to a Spectra® Trip Unit. The voltage signal structure is different between the MCCB and ACB/ICCB Trip Unit platforms).

NOTE: THE VOLTAGE CONDITIONER ASSEMBLY IS SIZED FOR A MAXIMUM OF 20 BREAKERS. Use of the Voltage Conditioner Assembly to provide voltage sensing signals and/or +24Vdc control power to a main Air Circuit Breaker or a main Insulated Case Breaker with a MicroVersaTrip® PM/Plus or EntelliGuard™ TU Trip Unit reduces the total quantity of 20 Spectra® RMS Molded-Case Circuit Breakers with *microEntelliGuard™* or MicroVersaTrip® PM/Plus Trip Units by one. The overall maximum cabling length of the system remains 40 feet.

The Voltage Conditioner Assembly contains five connection points. The following list contains a description and type of connection points.

- “To Distribution Cable”
 - 12-pin plug connector that mates with the 12-pin receptacle of a Distribution Cable Harness (catalog number SDCHA11, SDCHA30 or SDCHA60).
- “To Power Supply”
 - 12-pin plug connector that mates with the 12-pin receptacle of the Distribution Cable Harness (catalog number SDCHA11, SDCHA30 or SDCHA60). The other end of the harness MUST mate to either

a Power Supply Assembly (catalog number SPSAA) or a Power Supply Plate (catalog number SPSA120, SPSA208, SPSA240, SPSA480 OR SPSA600). Failure to do so will result in the absence of a voltage-sensing signal and inaccuracies in voltage dependent information / metering at Spectra® RMS Molded-Case Circuit Breakers with MicroVersaTrip® PM Trip Units and/or MicroVersaTrip® PM Programmers in Air Circuit Breakers or Insulated Case Circuit Breakers.

- “120Vac Input From P/T’s”
 - Six-screw terminal block for connection of the potential transformers.
- “Communications”
 - Two-screw terminal block for connection to communications network.
- “Output to ACB/ICCB”
 - Three-screw terminal block for optional voltage-sensing signal output to MicroVersaTrip® PM or EntelliGuard™ TU Trip Units in Air Circuit Breakers and/or Insulated Case Circuit Breakers.

By plugging the Voltage Conditioner Plate into the Distribution Cable System you create system wide signals that are available to all breakers connected to the system; a list of those functions appears in Table 2.

Table 2. Signals available on the Distribution Cable System by connection of the Voltage Conditioner Assembly.

Spectra® RMS Breaker with <i>microEntelliGuard™</i> Trip Unit	Spectra® RMS Breaker with MicroVersaTrip® PM Trip Unit	Spectra® RMS Breaker with MicroVersaTrip® Plus Trip Unit
control power (+24vdc)	control power (+24vdc)	control power (+24vdc)
control power (common)	control power (common)	control power (common)
system communication (comm. +)	system communication (comm. +)	
system communication (comm. -)	system communication (comm. -)	
voltage 1 (defined as potential between Aφ & N or between Aφ & Cφ)	voltage 1 (defined as potential between Aφ & N or between Aφ & Cφ)	
voltage 2 (defined as potential between Bφ & N or between Cφ & Bφ)	voltage 2 (defined as potential between Bφ & N or between Cφ & Bφ)	
voltage 3 (defined as potential between Cφ & N or between Bφ & Aφ)	voltage 3 (defined as potential between Cφ & N or between Bφ & Aφ)	

Dimensions and Wiring Diagrams

A Voltage Conditioner Assembly dimensioned drawing is provided in Figure 3 to assist in mounting the accessory. The maximum unit weight is one and a half pounds.

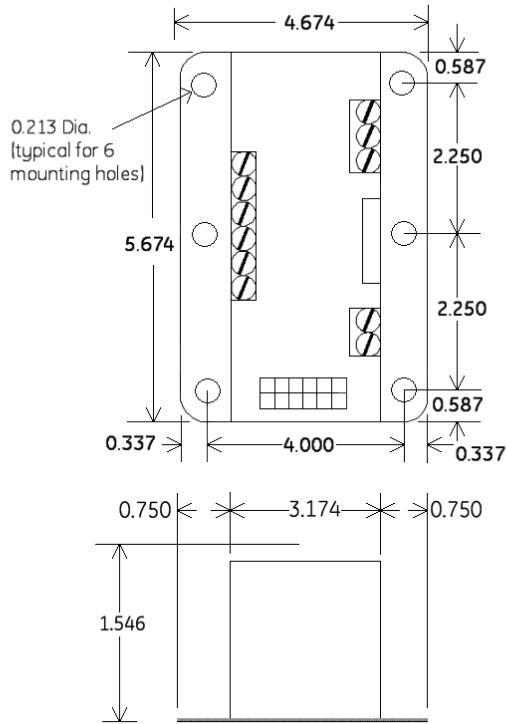


Figure 3. Dimensioned drawing of the Voltage Conditioner Assembly (dimensions shown in inches).

Figure 4 contains a point-to-point wiring diagram for a Voltage Conditioner Assembly as it integrates into a typical *microEntelliGuard™* or *MicroVersaTrip®* PM system.

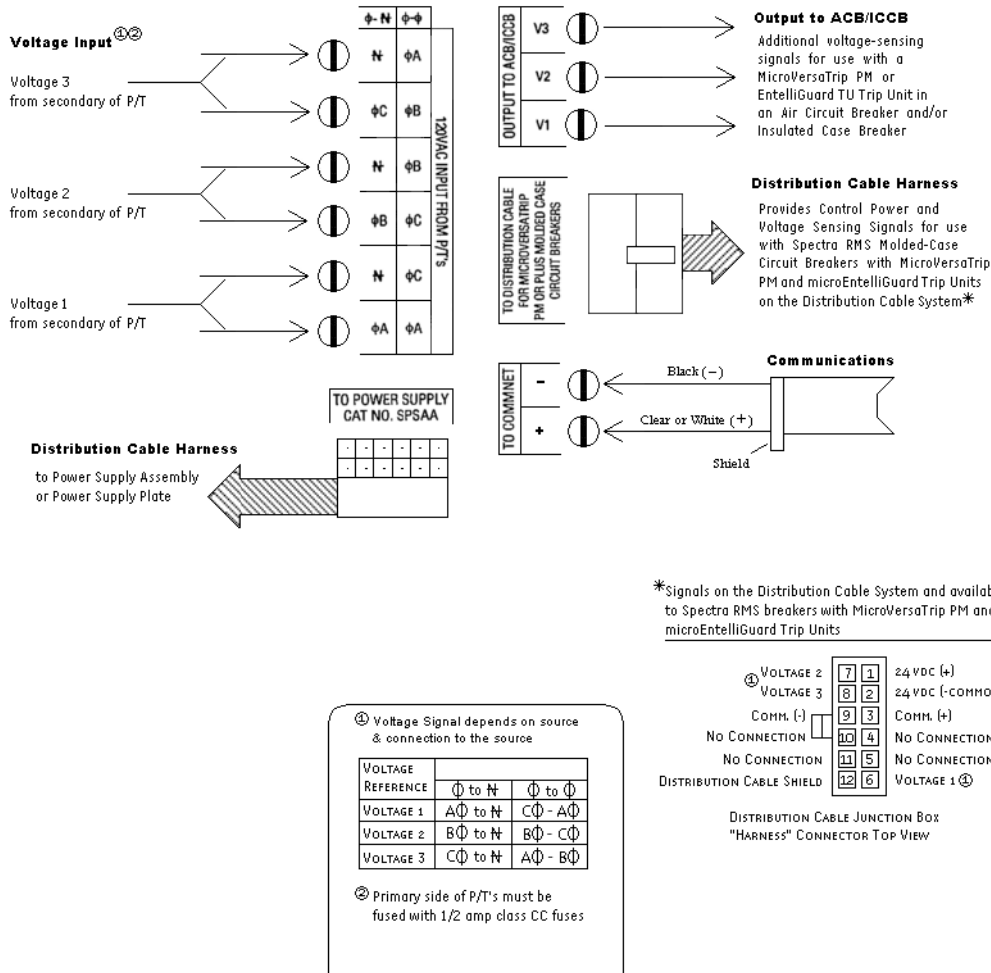


Figure 4. Wiring connections to the Voltage Conditioner Assembly for a typical *MicroVersaTrip®* PM System.

Connections

The screw terminals on the Voltage Conditioner Assembly are labeled by function for clarity. The terminal strip pocket will accommodate a spade lug or ring terminal with a tongue width up to 0.320 inches. The terminal screw size is 10-32. To make the Connection, attach an appropriate spade lug or ring terminal to the wire, then slip the fastener beneath the terminal screw and tighten.

The Voltage Conditioner Assembly also contains two 12-pin plug connectors. The connectors are keyed so they cannot be inserted incorrectly into a mating 12-pin receptacle connector. To connect to the Voltage Conditioner Assembly plug(s), align the receptacle interlock connector of a Distribution Cable Harness with the plug hook connector of the Voltage Conditioner Assembly. Insert the receptacle until the interlock and hook catch (see Figure 5).

To disconnect from the Voltage Conditioner Assembly, press down at the rear of the receptacle interlock until the interlock clears the plug hook and withdraw the receptacle interlock (see Figure 6).

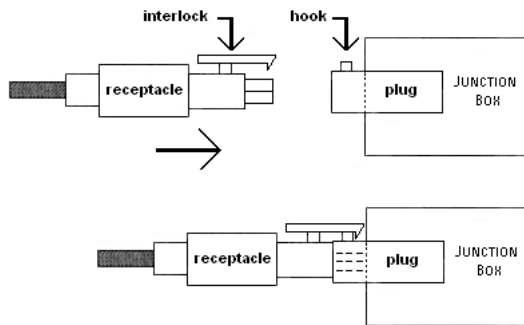


Figure 5. Slide view of receptacle-plug insertion into the Voltage Conditioner Assembly.

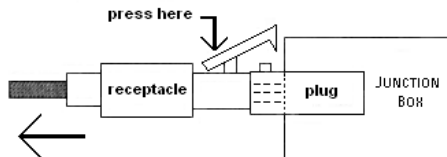


Figure 6. Side view of receptacle-plug removal from the Voltage Conditioner Assembly.

PARTS AND OPTIONS

There are no user-serviceable components or parts within the Voltage Conditioner Assembly; however, in order for the unit to be properly protected, the fuses and fuse holders listed in Table 3 are recommended for use with the Voltage Conditioner Assembly (connect to the primary side of the three potential transformers). Table 4 contains a list of potential transformers that are recommended for use with the Voltage Conditioner Assembly (all units rated 120Vac on the secondary and are rated 1-VA @ 60Hz with 0.2% on magnitude accuracy). These potential transformers *must always be protected*. It is recommended that the primary side of the potential transformer be fused with the fuses previously described.

If it is preferred to purchase a voltage-sensing accessory that has factory-mounted AC line fuses and three 1-VA @ 60Hz accuracy potential transformers, Table 5 contains a listing of GE Voltage Conditioner Plates. These Voltage Conditioner Plates contain the Voltage Conditioner Assembly as an integral part of the plate and are factory-wired from the Voltage Conditioner Assembly to the three 1-VA potential transformers and to the fuses holders (one set of fuses is included).

Table 3. Recommended replacement fuses for use with the Power Supply Assembly.

Class CC Current limiting Fuse	Fuse Holder
Gould-Shawmut ATMR 2	Gould-Shawmut 3012R & DFC3M

Table 4. Recommended potential transformers for use with the Voltage Conditioner Assembly.

Primary Rating	Transfab Inc. Catalog Number
120Vac	DL7027EE
208Vac	DL7026FE
240Vac	DL7029GE
277Vac	DL7030LE
480Vac	DL7025OE
600Vac	DL7028QE

Table 5. Available Voltage Conditioner Plates.

Catalog Number	Source Voltage Rating	Comments
SVCA120Y	120Vac Wye connection	φ to N potential
SVCA208Y	208Vac Wye connection	φ to φ potential
SVCA240D	240Vac Delta connection	φ to φ potential
SVCA277Y	277Vac Wye connection	φ to N potential
SVCA480Y	480Vac Wye connection	φ to φ potential
SVCA480D	480Vac Delta connection	φ to φ potential
SVCA600D	600Vac Delta connection	φ to φ potential

Additional Information

Refer to these other user's manuals for more details:

GEH-5934	MicroVersaTrip® Plus and MicroVersaTrip® PM Trip Units in Spectra® RMS Molded-Case Circuit Breakers	DEH-006	Distribution Cable Junction Box
GEH-700	Spectra® G Breaker w/ <i>microEntelliGuard</i> ™ Trip Unit	GEH-705	MET Distribution Cable Extension (20-pin)
GEH-701	Spectra® K Breaker w/ <i>microEntelliGuard</i> ™ Trip Unit	GEH-6256	Distribution Cable Extension (12-pin)
GEH-702	<i>microEntelliGuard</i> ™ Trip Unit Users Manual	GEH-6255	Distribution Cable Harness (12-pin)
DEH-41318	Universal Rating Plug	GEH-706	MET Distribution Cable Terminal Blocks (11 point & 22 point)
GEH-6250	Voltage Module	GEH-6257	Distribution Cable Terminal Block (11 point)
GEH-6251	Power Supply Plate	GEH-6491	POWER LEADER™ Modbus Concentrator
GEH-6252	Voltage Conditioner Plate	GEH-6502	POWER LEADER™ PMCS 5.0 Network Architecture Guide
GEH-6253	Power Supply Assembly	GEH-707	MET Sealable Cover kits
GEH-703	MET Battery Pack Adapter	DEH-4568	GTU digital test kit (GTUTK20)
GEH-704	MET Advanced Distribution Cable Junction Box	GEH-5551	Shunt Trip and UVR instructions
		GEH-5593	Aux switch and bell alarm
		GEK-64467	TIM-1 Zone Selective Interlock Module

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These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.

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