



MicroVersaTrip Plus™ & MicroVersaTrip PM™ Conversion Kits for GE Power Circuit Breakers



*GE AKU-2A-50
with MicroVersaTrip PM trip unit upgrade*

- Easily replace electro-mechanical trip units with the latest electronic, digital trip unit technology
- Ensure safe, reliable operation with ANSI C37.59 tested kits
- Improve system protection and increase productivity by eliminating nuisance tripping
- Integrate mixed switchgear with kits available for Westinghouse, I-T-E & Allis Chalmers low voltage power circuit breakers

The easy, cost-effective way to increase reliability, enhance performance and extend the life of your existing equipment.



Now upgrade your low-voltage power circuit breakers with electronic trip unit technology

Normal wear and tear of aging electro-mechanical trip devices on low-voltage power circuit breakers increases susceptibility to loss of calibration that can subsequently jeopardize electrical power system coordination, protection and reliability.

GE has channeled its decades of circuit breaker trip system experience into the development of the MicroVersaTrip® Plus and MicroVersaTrip® PM conversion kits for GE, Westinghouse, I-T-E, and Allis Chalmers low-voltage power circuit breakers.

ANSI C37.59 design verification tested to ensure safe, reliable operation, these kits are designed to extend the life of your mechanically sound breakers and...

- Eliminate costly downtime due to nuisance tripping
- Improve electrical power system coordination and protection
- Permit easy upgrades to communicating Power Management Control Systems (PMCS)
- Provide safe, convenient closed-door local metering via the optional Remote Display

Standard and optional features

Standard MicroVersaTrip Plus and MicroVersaTrip PM adjustable trip unit functions include:

- Current setting
- Long time
- Long time delay
- Instantaneous
- Local fault trip indicators

Optional features include:

- Short time
- Short time delay with or without I^2t
- Ground fault
- Ground fault delay with or without I^2t
- Switchable instantaneous/short time and ground fault (off) (not UL approved for a listed breaker)
- Full function metering (MicroVersaTrip PM)
- Protective relaying (MicroVersaTrip PM)
- Industry standard open communications capability (MicroVersaTrip PM)
- Remote display module
- Trip unit test set (TVRMS2)

MicroVersaTrip Plus conversion kit features

- Superior trip unit accuracy and system protection is achieved by taking 64 samples per 60 Hz cycle. This provides true RMS sensing of electrical distribution systems that include AC and DC variable speed drives, rectifiers, induction heaters and other loads that contribute to non-sinusoidal (high-harmonic) current wave forms.
- Easy system coordination with maximum flexibility is obtained using multiple trip setpoints, time-delay bands and ramp time functions.
- Visual pickup and trip indicators for overload, short circuit and ground fault, display type of fault, phase and current magnitude when applicable
- Predictive and preventative maintenance decisions are made easily using the trip operations counter that stores the total number of Long time, Short time, Instantaneous and Ground Fault trips.
- Continuously self-testing micro-processor eliminates trip unit bench-testing
- Non-volatile memory
- High-visibility LCD display
- Cold setup capability and target viewing from long-life (5-year) field-replaceable lithium battery – external power not required
- Positive setpoint recognition, values flash until entered and accepted
- Easy access 5-button keypad with positive action
- Phase selectable ammeter ($\pm 2\%$ accuracy)
- Sealable, clear Lexan protective cover over LCD display and “Enter” key prevents unauthorized access to protective functions and target reset
- Interchangeable rating plug
- Quick-disconnect trip unit design speeds installation and allows for easy upgrade to MicroVersaTrip PM units with communications capability, full-function metering and optional protective relaying functions





Easy conversion kit and rating plug catalog number selection

Catalog Number Structure

AKO25 C 3 F 06 02 PM

Breaker	
AK-1-15	= AK115
AK-15	= AKO15 ⁷
AK-1-25	= AK125
AK-25	
AKU-25	= AKO25 ⁷
AKR-30	
AKR-30H	= AKR30
AKRU-30	
AKR-30S	
AKRU-30S	= AKR3S
AK-1-50	= AK150
AK-50	
AKU-50 ⁸	
AKT-50	= AKO50 ⁷
AKS-50	
AKSU-50 ⁸	
AKST-50	
AKR-50	
AKR-50H	
AKRU-50	
AKRT-50	
AKRT-50H	= AKR50 ²
AKJ-50	
AKJ-50H	
AKJT-50	
AKJT-50H	
AK-75 ⁸	= AKO75 ³
AKR-75	= AKR75 ³
AK-100 ⁸	= AKO10 ³
AKR-100	= AKR10 ³
AKW-100	= AKW10 ³

Model
C = Generation

Wiring
3 Wire = 3
4 Wire ¹ = 4

Sensor Type
F = Fixed CTs

Sensor Rating ⁶	
150A	= 01
no CTs ⁴	= XA
225A	= 02
400A	= 04
no CTs ⁴	= XC
600A	= 06
800A	= 08
no CTs ⁴	= XE
1600A	= 16
no CTs ⁴	= XF
2000A	= 20
no CTs ⁴	= XG
3000A	= 30
3200A ⁵	= 32
no CTs ^{4,5}	= XI
4000A	= 40
no CTs ⁴	= XJ

Trip Functions	
LI	= 02
LIG	= 03
LSI	= 04
LSIG	= 05
LS	= 06
LSG	= 07
LSIGX	= 08
LH ⁹	= 09
LHG ⁹	= 10
LSH ⁹	= 11
LSHG ⁹	= 12

Options	
Blank	= Plus
M	= Metering & Communication
PM	= Metering, Communication & Protective Relaying

Sensor Rating Selection		
Frame	Breaker Catalog Numbers	Sensors
225	AK-1-15	150A
	AK-15	225A
	AK-1-25	150A
600	AK-25	225A
	AKU-25	600A
	AKR-30, AKR-30H	150A
800	AKRU-30	400A
	AKR-30S, AKRU-30S	800A
	AK-1-50, AK-50, AKU-50, AKS-50, AKSU-50	800A
1600	AKR-50, AKR-50H, AKRU-50, AKJ-50, AKJ-50H	1600A
	AKT-50, AKST-50, AKRT-50, AKRT-50H, AKJT-50, AKJT-50H	2000A
2000	AK-75	3000A
3000	AKR-75	3200A
3200	AK-100, AKR-100, AKW-100	4000A

Trip Unit Functions	
LI	Long Time & Instantaneous
LIG	Long Time, Instantaneous & Ground Fault
LSI	Long Time, Short Time & Instantaneous
LSIG	Long Time, Short Time, Instantaneous & Ground Fault
LS	Long Time & Short Time
LSG	Long Time, Short Time & Ground Fault
LSIGX	Long Time, Short Time/Inst. & Switchable Ground Fault (off), not approved for a UL Listed breaker
LH	Long Time & High-Range Instantaneous
LHG	Long Time, High-Range Instantaneous & Ground Fault
LSH	Long Time, Short Time & High-Range Instantaneous
LSHG	Long Time, Short Time, High-Range Instantaneous & Ground Fault

1. Only applicable to trip units with ground fault
 2. Not applicable for converting breakers equipped with Power Sensor -contact factory
 3. Contact the factory for stationary breaker applications
 4. Available only for MicroVersaTrip™ or MicroVersaTrip™ RMS-9 type AKR breakers equipped with fixed current sensors
 5. Only available on AKR-75 breaker frames
 6. Order rating plug separately, see chart on facing page
 7. For converting AK-2 version breakers and newer, not applicable for AK-1 or AKR
 8. Breakers equipped with older style open fuse lockout devices (OFLO), must be retrofitted with newer style OFLO device prior to conversion process.
 Order replacement OFLO kits as follows: AKU-50 - order OFLO kit #121C2870G2, AK-75 - order OFLO kit #121C2870G3, AK-100 - order OFLO kit #121C2870G4
 9. High range instantaneous trip function option (H) only available for AKO25 conversion kits



Rating Plugs

(Rating plugs priced and ordered separately)

Frame Size (Amps)	Sensor Rating (Amps)	Current Rating (Amps)	Current Range (Amps)	Rating Plug Catalog No.
225	150	60	30-66	TR1B60
		80	40-88	TR1B80
		100	50-110	TR1B100
		125	63-138	TR1B125
		150	75-165	TR1B150
225 or 600	225	100	50-110	TR225B100
		150	75-165	TR225B150
		225	113-248	TR225B225
600	600	300	150-330	TR6B300
		400	200-440	TR6B400
		450	225-495	TR6B450
		500	250-550	TR6B500
		600	300-660	TR6B600
800	150	60	30-66	TR1B60
		80	40-88	TR1B80
		100	50-110	TR1B100
		125	63-138	TR1B125
		150	75-165	TR1B150
800	400	150	75-165	TR4B150
		200	100-220	TR4B200
		225	113-248	TR4B225
		250	125-275	TR4B250
		300	150-330	TR4B300
800 or 1600	800	400	200-440	TR4B400
		300	150-330	TR8B300
		400	200-440	TR8B400
		450	225-495	TR8B450
		500	250-550	TR8B500
600	300-660	TR8B600		
700	350-770	TR8B700		
800	400-880	TR8B800		

Frame Size (Amps)	Sensor Rating (Amps)	Current Rating (Amps)	Current Range (Amps)	Rating Plug Catalog No.
1600	1600	600	300-660	TR16B600
		800	400-880	TR16B800
		1000	500-1100	TR16B1000
		1100	550-1210	TR16B1100
		1200	600-1320	TR16B1200
		1600	800-1760	TR16B1600
2000	2000	800	400-880	TR20B800
		1000	500-1100	TR20B1000
		1200	600-1320	TR20B1200
		1500	750-1650	TR20B1500
		1600	800-1760	TR20B1600
3000	3000	2000	1000-2200	TR20B2000
		1200	600-1320	TR30B1200
		1600	800-1760	TR30B1600
		2000	1000-2200	TR30B2000
		2500	1250-2750	TR30B2500
3200	3200	3000	1500-3300	TR30B3000
		1200	600-1320	TR32B1200
		1600	800-1760	TR32B1600
		2400	1200-2640	TR32B2400
4000	4000	3200	1600-3520	TR32B3200
		1600	800-1760	TR40B1600
		2000	1000-2200	TR40B2000
		2500	1250-2750	TR40B2500
		3000	1500-3300	TR40B3000
3600	1800-3960	TR40B3600		
4000	2000-4400	TR40B4000		



MicroVersaTrip® PM conversion kits— Power management made easy

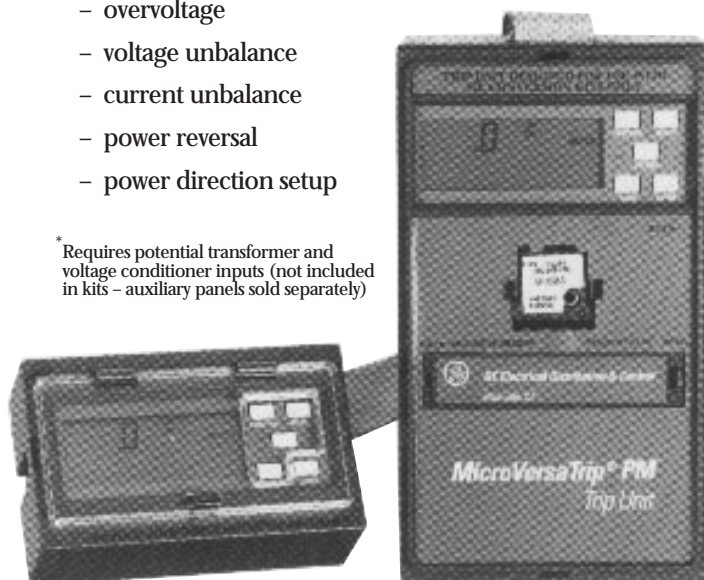
The enhanced MicroVersaTrip PM trip unit adds power management system capability – including advanced metering and protective relaying – to the basic functions of the MicroVersaTrip Plus. When connected to GE's Power Management Control System (PMCS), it gives you the power to increase productivity and reduce costs while meeting all your electrical system monitoring needs. You can easily:

- Use standard graphics packages that allow the end user to view custom one-lines for metering and trending screens
- Analyze energy consumption and power factor trends to minimize utility demand and PF charges or provide low-cost allocations
- Collect precise sequences of alarm and event information to speed diagnosis and minimize downtime
- Use alarm and event logs to assist with preventive maintenance interval planning
- Analyze system harmonics (with data input from PQM, EPM 3710, EPM 3720 or EPM 7700 meters)
- Communicate with other devices, including Spectra Series™ molded case and Power Break™ insulated case breakers, full-function electronic power meters, programmable logic controllers, GE Multilin protective relays and “smart” motor starters
- Utilize GE's Power Management Control System and its industry standard Modbus RTU, Ethernet TCP/IP open protocols

Additional features

- Full-function metering* including
 - current (Amps, kAmps)
 - voltage (Ph-Ph, Ph-N)
 - energy (kWh, MWh, GWh)
 - real power (kW, MW)
 - total power (kVA, MVA)
 - frequency (Hz)
 - demand & peak demand (avg. kW, MW)
- Optional protective relaying* functions include
 - undervoltage
 - overvoltage
 - voltage unbalance
 - current unbalance
 - power reversal
 - power direction setup

* Requires potential transformer and voltage conditioner inputs (not included in kits – auxiliary panels sold separately)



Optional Remote Display



- Provides safe, convenient closed-door access to breaker metering, status and setup functions
- Available for use with either MicroVersaTrip® Plus or MicroVersaTrip PM trip units
- Rugged NEMA Type 1 enclosure with LCD display and keypad
- Mounts easily on outside of breaker compartment door
- Sealable, clear Lexan protective cover over display and “Enter” key prohibits unauthorized trip setting changes
- Connects to breaker trip unit via tough non-flammable, non-toxic 20-pin plug-in cable for fast installation
- Breaker trip unit operates independently if cable is disconnected

Everything you need in one package

GE's MicroVersaTrip Plus™ and MicroVersaTrip PM™ kits are shipped complete with detailed installation instructions and everything needed for fast and easy trip unit conversions.

All kits come complete with:

- Digital solid-state trip unit with quick disconnect
- Direct-acting flux shifter with automatic reset
- Epoxy encapsulated high-accuracy current transformers
- Specially designed mounting hardware and wire harnesses with communications cable for each breaker frame
- Detailed instruction manual
- Interchangeable rating plug (order separately)



For details on other MicroVersaTrip Plus and MicroVersaTrip PM conversion kits, ask your ED&C sales engineer for these publications:

DET-067B *MicroVersaTrip Plus & MicroVersaTrip PM Conversion Kits for I-T-E Power Circuit Breakers*

DET-093B *MicroVersaTrip Plus & MicroVersaTrip PM Conversion Kits for Westinghouse Power Circuit Breakers*

DET-226 *MicroVersaTrip Plus & MicroVersaTrip PM Conversion Kits for Allis Chalmers Power Circuit Breakers*

DEE-019 *GE POWER LEADER™ Product Information*

DEP-041 *MicroVersaTrip Plus & MicroVersaTrip PM Remote Display*

DEP-056A *PMCS Auxiliary Panel Components - Pricing & Selection Guide*

GEP-1100 *GE Buylog
(Reference for Power Management Components)*



GE Industrial Systems

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