



Introduction.....	16-1
AKD-10 Low-Voltage Switchgear	16-3
AKD-20 Low-Voltage Switchgear	16-3
Arc Vault™ Arc Flash Protection System	16-4

Low Voltage Switchgear

GE low-voltage switchgear is heavy-duty equipment built to ANSI Standards. GE switchgear is designed to have more margin within its ratings and to provide maximum continuity of service for those applications subject to severe duty such as repetitive switching encountered with motor starting, power factor correction, demand control, and load shedding, etc. A major factor contributing to this extended continuity of service is the availability of renewal parts complete with detailed maintenance instructions and original equipment documentation. From a coordination standpoint, Air circuit breakers can provide full selectivity with each other and with other protective devices. The bus is thermally rated; i.e. based upon temperature rise, as opposed to switchboards where the bus may be sized on a current density basis.

Switchgear also houses instrumentation and other auxiliary circuit protective devices. It is available in single or multiple source configurations and applied as a power distribution unit or as part of a unit substation in indoor or outdoor construction.

Key Switchgear Features

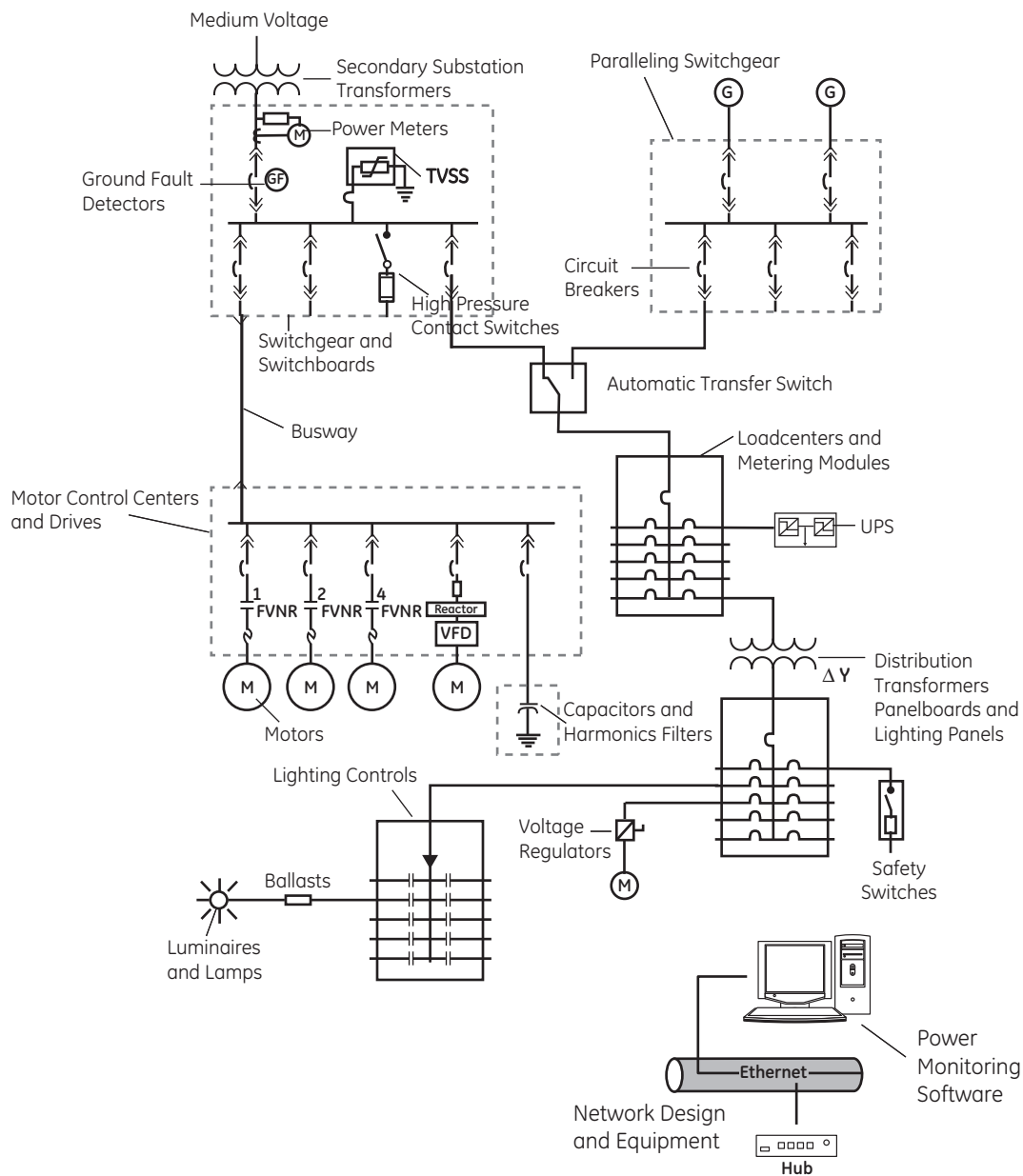
- Full tin-plated copper bus
- Optional insulated/isolated bus bar system—protects against accidental contact by people or foreign objects and inhibits the spread of any arcing faults.
- Breaker compartment doors without ventilating slots
- True closed-door draw-out—added protection for operator
- Instrument panel for breaker control circuitry—permits several maintenance functions without subjecting operators to energized primary circuits of an open breaker compartment door
- Optional shutters over primary disconnects—provides personnel protection from energized disconnects
- Modular construction—for greater installation flexibility



CSI Specifications

- Low Voltage Metal Enclosed
- 16400 Low Voltage Switchgear
- 26 23 00 Low Voltage Switchgear

Low Voltage Switchgear One-Line



Switchgear — Low Voltage

AKD-10 and AKD-20

Section 16

For pricing and application assistance,
contact your local GE sales office.

GE type AKD-10 low-voltage switchgear consists of WavePro power circuit breakers combined with the field-proven switchgear design features needed to meet today's exacting requirements for safety, reliability, maintainability, flexibility, convenience, economy and continuity of service. Integral to the WavePro low-voltage power circuit breaker is the Power+, enhanced MicroVersaTrip™ Plus or MicroVersaTrip™ PM solid-state, digital trip unit. The optional POWER LEADER™ Power Management System is available for applications requiring a completely integrated system including overcurrent protection, protective relaying and system monitoring. AKD-10 switchgear and WavePro circuit breakers meet or exceed industry standards including UL 1066 and 1558; CSA C22.2; NEMA SG-3 and SG-5; ANSI-C37.13 and C37.20.1.



WavePro and EntelliGuard™ Low Voltage Power Circuit Breakers

- Time proven—for trouble free performance
- Five cycle stored energy closing
- 6 frame sizes 800-5000 amps—for application flexibility
- Interrupting ratings: 30kA-200kA
- Fully maintainable—to assure operational readiness
- MicroVersaTrip™ solid-state protection trip unit with LCD—increased flexibility and accuracy with true rms sensing for standard (s) and optional (o) time-current adjustments:
 - Adjustable current setting (s)
 - Adjustable long-time delay (s)
 - Phase selectable digital rms ammeter (s)
 - Adjustable instantaneous pick-up (s)
 - Adjustable ground fault pick-up and adjustable ground fault delay with selectable I²t curve (o)
 - Adjustable short-time pick-up and adjustable short-time delay with selectable I²t curve (o)
- Zone selective interlocking—for improved selectivity on both short-time and ground-fault or ground-fault only (o)
- Defeatable GF (o)
- Switchable INST/ST and GF (o)
- Integrally fused breakers—for high fault-current applications
- Rating plugs for added flexibility
- Power+ Trip unit with true rms sensing and rotary selection of pick-up and delay settings:
 - Adjustable long-time pick-up and delay (s)
 - Adjustable instantaneous pick-up (s)
 - Adjustable short-time pick-up and delay with I²t in or out (o)
 - Adjustable ground fault pick-up and delay with I²t in or out (o)
 - Defeatable ground fault (o)
 - Target module with LED trip indicators (o)
- Ground fault function contained within the rating plug

POWER LEADER™ Power Management System

- A MicroVersaTrip™ PM trip unit on each breaker for overload, short-circuit and ground fault protection, with true rms sensing and an LCD for local metering.
- Trip unit mounted in the breaker escutcheon, providing convenient “out front” trip unit information on the LCD.
- A Modbus Monitor mounted on the switchgear with a display screen and keypad to display power systems data.
- A shielded, twisted pair communication bus that carries information between the POWER LEADER™ Monitor and breakers.
- A port for remote communication. All information can be transmitted to a host computer for metering, energy monitoring, load analysis and other functions using POWER LEADER™ Power Management Control System software.

AKD-20 Low-Voltage Switchgear

For pricing and application assistance, contact your local GE sales office.

GE type AKD-20 low-voltage switchgear consists of EntelliGuard™ G power circuit breakers and state-of-the art EntelliGuard™ TU digital trip unit that together provide enhanced protection, endurance and safety. The key features of the AKD-20 are the tried and true construction of the AKD family heritage, common transitions to older versions of AKD equipment, true closed door racking with remote racking devices, non vented circuit breaker panels, insulated and isolated bus construction and more. The product is fully rated to UL 1066 and 1558; CSA C22.2; NEMA SG-3 and SG-5; ANSI C37.13 and C37.20.1; Seismic ratings to IBC-2003 and IEEE-693-1997.

Instructions/Maintenance

Low Voltage Switchgear	
AKD-10 Application Guide	DET-196
WAVEPRO Low Voltage Power Circuit Breaker	
Application Guide	DET-167
User Publication Summary	DEE-194



Stop Arc Flash in Its Tracks With the Fastest Arc Flash Containment Technology Available.

GE's innovative Arc Vault™ takes a different approach. It doesn't exhaust the arc flash; it extinguishes it. Arc Vault™ can stop an arcing fault in less than eight milliseconds, a fraction of the time that traditional systems need to stop a flash.

When it comes to arc flash protection, the faster a flash is eliminated, the less destructive energy it generates. Arc Vault™ cuts the energy released by the flash, reducing the potential for serious injury and minimizing stress on transformers, circuit breakers, and other equipment. In many cases, you'll be operational within a working day. And Arc Vault™ protects your people and your equipment whether the cabinet doors are open or closed.

A product of GE's Global Research organization, Arc Vault™ is typical of the kind of breakthrough products you've come to expect from GE. It is innovative, reflecting our industry leadership in arc flash protection, yet reliable. Over the last five years, we've subjected the Arc Vault™ to GE's rigorous development and testing process to make sure it performs under the most demanding conditions.

GE Arc Vault™ advantages:

- It can stop an arc fault in just 8 milliseconds and reduces incident energy to less than 1.2 cal/cm².
- It helps reduce work-related injuries even when panel doors are open during routine maintenance.*
- It decreases stress on equipment due to an arc flash, cutting downtime to as little as a single day.
- It reduces energy released by 63% or more compared to a bolted fault that would occur with a crow bar system.
- It eliminates the need to install exhaust chimneys or plenums.
- It can be retrofitted on most existing low-voltage equipment.
- When activated, Arc Vault™ continuously monitors current and voltage to identify an arc flash.
- When an arc flash occurs, the arc is diverted by creating a secondary arc fault, not a bolted fault as in crow bar systems.
- At the same time, the system opens an upstream circuit breaker, eliminating the fault condition and de-energizing the system.

Ready to Retrofit and Integrate

Arc Vault™ provides superior arc flash protection virtually anywhere there's low-voltage equipment. You can scale the suppression for such variables as the number of sources, and main-tie-main configurations.

Reference Publications

Arc Vault Application Guide	DEH-41484
Arc Vault Installation Operation and Maintenance Manual	DEH-41483



*Under normal conditions, the doors should remain closed.

