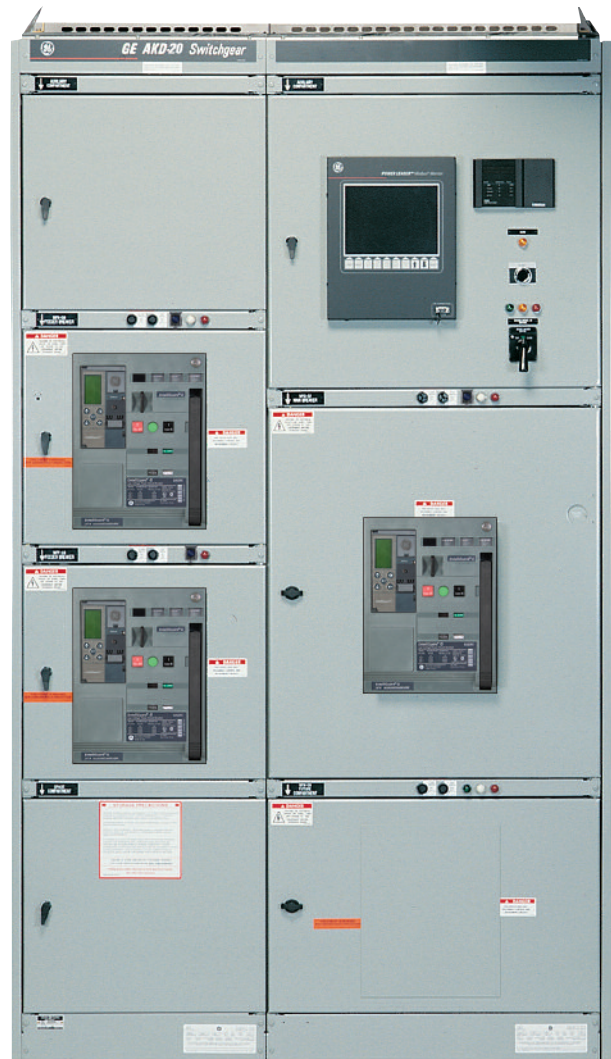


AKD-20 Low-Voltage Switchgear

Don't compromise arc flash protection for system reliability.



imagination at work

The *next* chapter in the history of low-voltage switchgear

AKD-20 low-voltage switchgear continues the tradition of the AKD switchgear line while delivering enhanced arc flash protection. Built to ANSI standards, its protection features include non-vented panels plus insulated *and* isolated bus, and it integrates our new state-of-the-art EntelliGuard® breaker-trip unit system. It also features an optimized footprint so that it now fits into a smaller area for the most common configurations.

EntelliGuard® G circuit breakers are the newest line of GE low-voltage circuit breakers, the next step in the evolution of a line known for its exceptional reliability and performance. They are available from 800A to 5000A, with fault interruption ratings up to 150kAIC – without fuses.



Integral to the EntelliGuard G line are the new, state-of-the-art EntelliGuard TU Trip Units, which provide superior system protection, system reliability, monitoring and communications. The breaker-trip unit system delivers superior circuit protection without compromising either selectivity or arc flash protection.

The EntelliGuard breaker-trip unit system demonstrates yet again GE's core competencies in reliable electric power distribution, circuit protection and personnel protection.

1918	1960	1977	1980	1998	2005	2007	2008
First Metal-Clad Switchgear	AKD-5 Switchgear Introduced	AKD-6 Switchgear with AKR Breakers	AKD-8 Switchgear and MVT-9 Trip Unit	AKD-10 Switchgear and Wavepro Breakers	Entellisys® Switchgear and EntelliGuard Breaker	Entellisys 4.0 Switchgear	AKD-20 Switchgear and EntelliGuard G Breaker

Arc flash protection *and* selectivity

Now you don't have to choose



Modern economic reality and the regulatory environment demand system performance while recognizing the need to protect against the arc flash hazards that expose maintenance personnel to dangerous levels of heat, electrical energy, debris from damaged equipment and concussive forces.

The challenge is to provide both better personnel protection by minimizing arc flash hazards *and* maintain electrical power to mission-critical loads. But these objectives often seem to conflict, pitting the speed and sensitivity required to optimize safety against the sequence of operations and interlocking required to maximize power system availability.

The EntelliGuard G breaker-trip unit system meets the challenge. It achieves selectivity in a wide range of situations without excessive sacrifice of arc flash protection. With its Reduced Energy Let-through setting (RELT), the system protects at

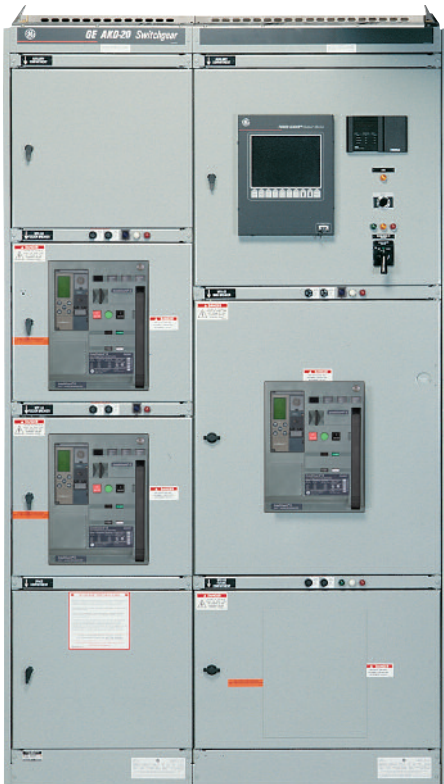
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HRC1 or 2 for available fault currents as high as 100kA. Here's how:

- Multiple short time bands under 100 ms optimally fit above the instantaneous clearing times of the EntelliGuard G circuit breaker.
- Alternate Instantaneous setting (RELT) mitigates arc flash hazard while maintaining complete selectivity during normal operation, with an option for a positive feedback signal.
- Special algorithm provides Instantaneous protection and simultaneously achieves selectivity – even when set low, it can provide 100,000A of selectivity.
- Completely adjustable ST and GF Zone Selective Interlocking optimize restrained and unrestrained bands.
- Zone Selective Instantaneous protection, multiple zone protection, 3 cycle clearing and selectivity are provided simultaneously.
- Instantaneous trip adjusts up to 30X trip plug rating.

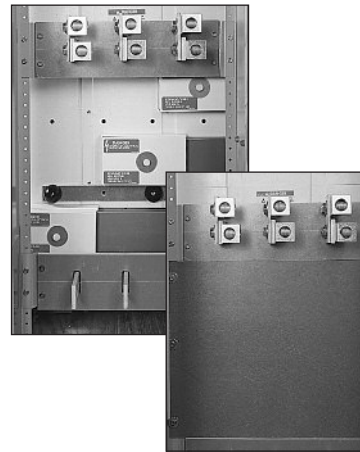
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The advantages of AKD-20 low-voltage switchgear



AKD-20 includes many features that address the needs of system reliability, arc flash protection and reduced footprint size.

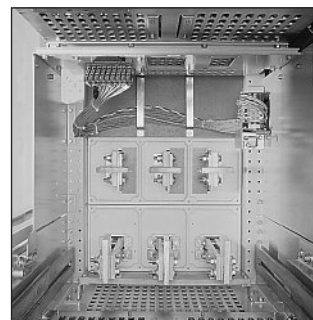
- The optimized footprint uses smaller section sizes when possible. Sections are provided in 22", 30" or 38" widths.
- Breaker compartment doors have no ventilation openings, thus protecting operators from hot ionized gases vented by the breaker during circuit interruption.



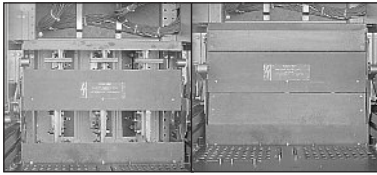
- A superior bus system offers different levels of protection. Insulated and isolated bus makes maintenance procedures touch friendly to reduce the risk of arc flash.
- True closed-door drawout construction is standard with all AKD-20 equipment. The breaker compartment doors remain stationary and closed while the breaker is racked out from the connect position, through test, to the disconnect position. Doors are secured with rugged 1/4-turn latches.



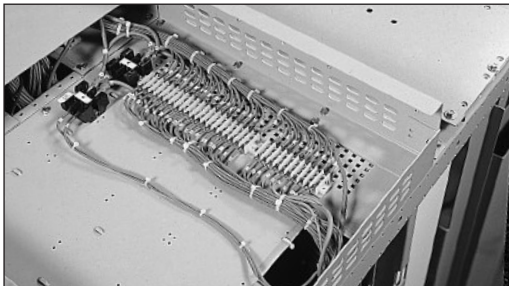
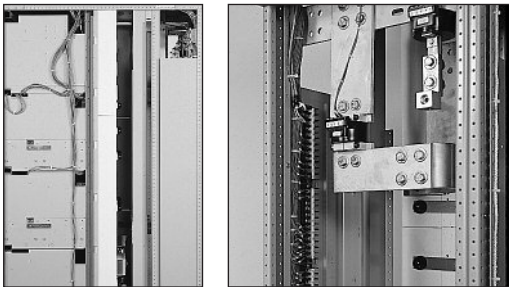
- An easy-to-read metal instrument panel above each circuit breaker holds a variety of control circuit devices, including the RELT switch.



- Each circuit breaker is located in a completely enclosed ventilated compartment with grounded steel barriers to minimize the possibility of fault communication between compartments.



- Optional safety shutters protect operators from accidental contact with live conductors when the breaker is withdrawn.
- Easy access to equipment compartments simplifies maintenance of the breaker cubicle and control circuit elements as well as inspection of the bolted bus connections.
- The conduit entrance area meets NEC requirements. Extended depth frame options are available in 7" and 14" sizes for applications requiring additional cable space. The section width also can be increased for additional cable space.
- A rail-mounted hoist on top of the switchgear provides the means for installing and removing breakers from the equipment. This is a standard feature on NEMA 3R outdoor walk-in construction and optional on indoor construction.



- Control wires run between compartments in steel riser channels. Customer terminal blocks are located in metal-enclosed wire troughs in the rear cable area. Intercubicle wiring is run in a wireway on top of the switchgear, where interconnection terminal blocks are located.
- All EntelliGuard G circuit breakers are equipped with rollers and a guidebar to provide easy and accurate drawout operation.

- An optional remote racking device reduces the risk of the arc flash hazard by allowing the operator or electrician to move the breaker anywhere between the DISCONNECT and CONNECT positions from outside the arc flash boundary.



- Optional infrared (IR) scanning windows can be installed in the switchgear rear covers to facilitate the use of IR cameras for thermally scanning cable terminations.
- AKD-20 switchgear can be expanded easily to handle increased loading and system changes. Specify a requirement for a fully equipped future breaker to obtain a cubicle that has been set up for additional breaker installation, or add vertical sections without modifications or the use of transition sections.

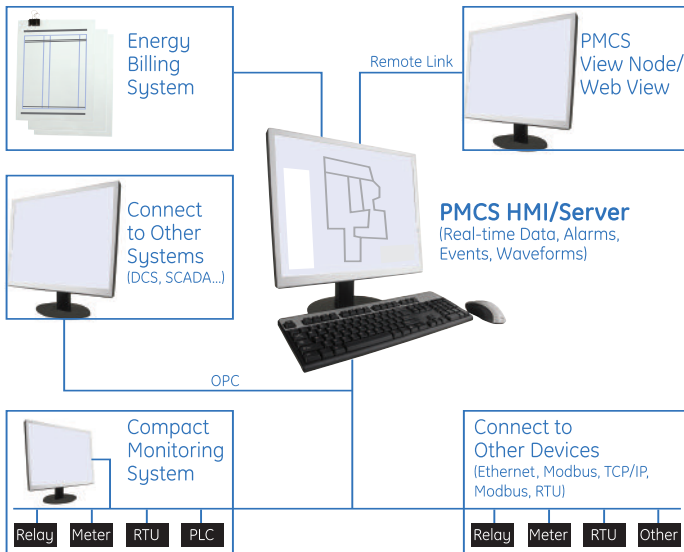


- An array of safety interlock and padlocking features are available to accommodate any type of lockout-tagout procedure a customer may have.
- on the breaker to keep it open and trip free
 - on the breaker in the TEST or DISCONNECT position
 - on the breaker to prevent racking when the breaker contacts are closed
 - on the cubicle door latch to prevent unauthorized entry into the breaker compartment
 - on the cubicles to prevent unauthorized installation of a breaker that has been removed from the cubicle for equipment or load maintenance
 - mechanical interlocking of two breakers, in various configurations, to prevent procedural errors

AKD-20

The most powerful technology

PMCS – Power Management Control System



The best in power management

A large amount of information flows inside through every switchgear lineup in the form of power (volts, amps, waveforms) passing through. With the proper devices and GE Enervista Power Management Control System (PMCS), you can selectively access this wealth of information.

PMCS is the easy-to-use software package that turns a desktop computer into a virtual window for tracking and controlling facility power. It can help you increase productivity, decrease downtime, improve predictive maintenance, increase facility safety and diagnose power quality problems. With just a few clicks of a mouse, you can gain real-time access to the family of GE Multilin and POWER LEADER™ devices and most third party devices or systems. With PMCS's powerful analytical tools, you can perform advanced power quality analysis, monitor energy consumption, and even manage loads.

These features are all available through sophisticated graphics and a highly intuitive interface. Enervista PMCS is both ModBus RTU® and Modbus TCP/IP Ethernet compatible. They all add up to the most flexible, open-architecture, high-performance power management system available today.

The best in metering and power quality

The latest high technology EPM devices – the GE Multilin EPM 6000 and 9000 series – are available for the AKD-20. They boast broad capabilities for usage monitoring, cost allocation, load monitoring, demand tracking, common couplings with utilities, load and process control, and power quality monitoring.

These EPMs cover the moderate range of the metering spectrum, providing solutions for panel mount and submetering applications (EPM 6000), and the high end of the power quality spectrum (EPM 9450Q and 9650Q). The GE Power Quality Meter System, PQM II, is also available for applications requiring a feature set between the EPM 6000 and EPM 9000 offerings.

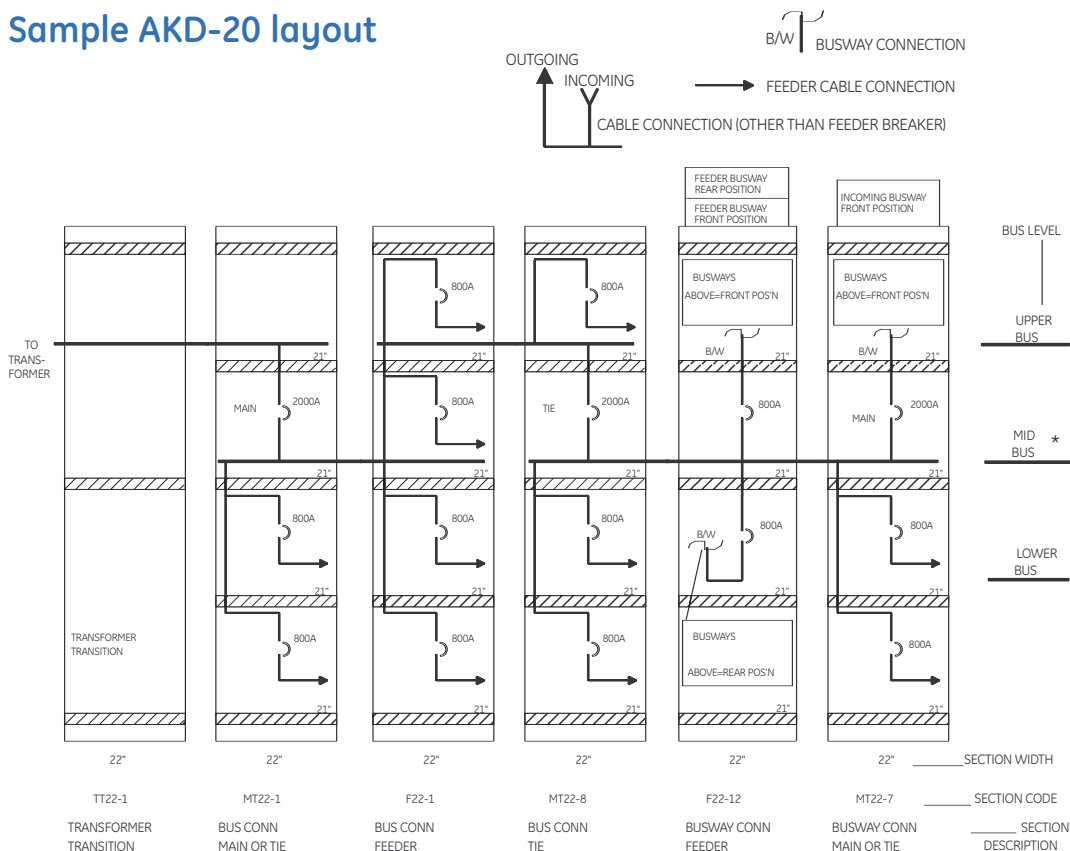
AKD-20

Ratings and dimensions

AKD-20 indoor low-voltage switchgear height is 92" with available breaker stacking space of 84". Optional 78" high indoor equipment, with a breaker stacking space of 70", is available. The breaker frame size and type determine both the width of the breaker sections and the minimum depth of the switchgear line-up. The deepest device in the line-up determines the depth of the entire line-up.

Envelope Size	Breaker Type	Continuous Amps	Instantaneous Interrupting Rating (kA)			Short-Time Ratings (kA)	Close & Latch Rating (kA)	Switchgear Dimensions			
			240V	480V	600V			Minimum Width	Minimum Depth	Optional Depth	
1	N	400	65	65	65	65	22"	60"	67" or 74"		
	H		85	85	65	65					
	N	800	65	65	65	65					
	H		85	85	65	65					
	N	1600	65	65	65	65					
	H		85	85	65	65					
N	2000	65	65	65	65						
H		85	85	65	65						
2	H	800	85	85	65	65	22"			60"	67" or 74"
	E		85	85	85	85					
	M		100	100	85	85					
	H	1600	85	85	65	65					
	E		85	85	85	85					
	M		100	100	85	85					
	H	2000	85	85	65	65					
	E		85	85	85	85					
	M		100	100	85	85					
N	3200	65	65	65	65	30"	74" or 81"				
H		85	85	65	65						
E		85	85	85	85						
M	100	100	85	85							
3	B	3200	100	100	100	100		38"	74"	81"	
	L		150	150	100	100					
	B	4000	100	100	100	100					
	L		150	150	100	100					
	B	5000	100	100	100	100					
	L		150	150	100	100					

Sample AKD-20 layout



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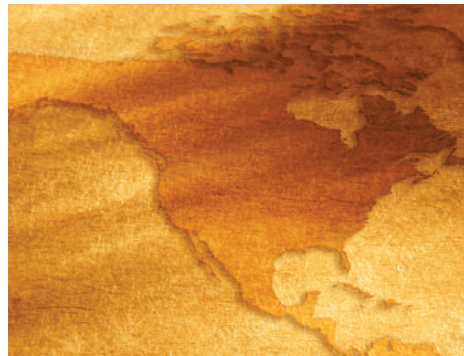
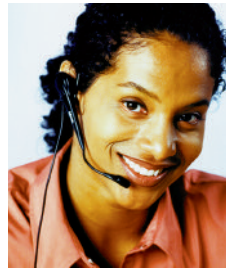
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