

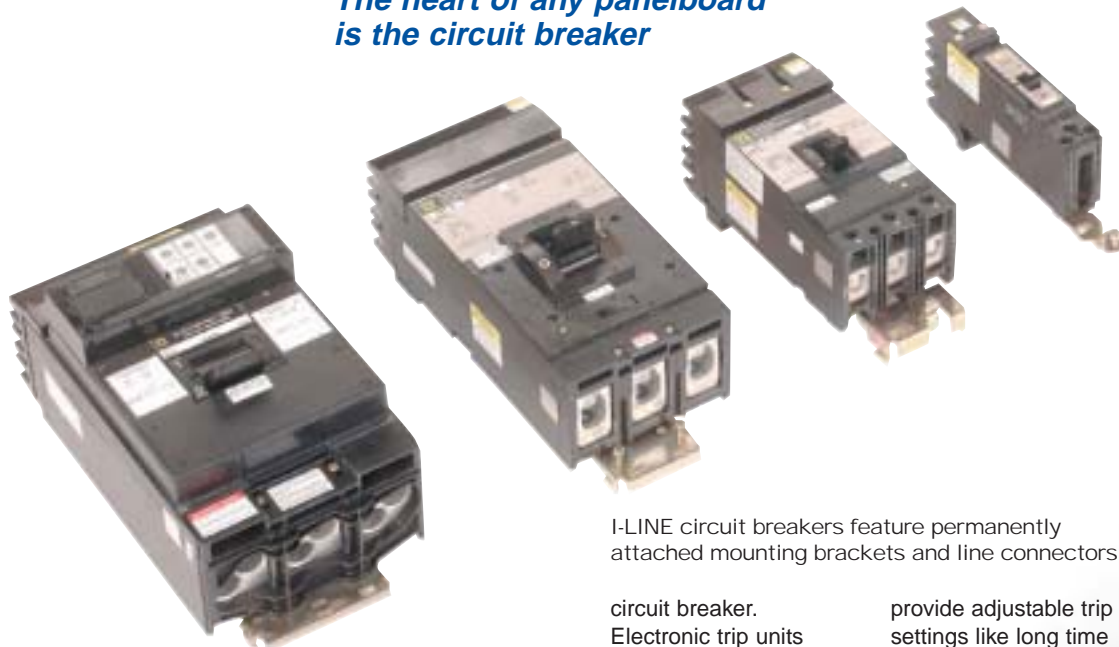
I-LINE[®] Panelboards

Family line features



I-LINE Circuit Breakers

*The heart of any panelboard
is the circuit breaker*



We have a complete line of circuit breakers and molded case switches specifically designed for use in I-LINE panelboards. Each circuit breaker is ready to install, right from the factory-sealed carton, with permanently attached mounting brackets and line connections. And, each is loaded with features including:

- Interrupting rating through 100,000 A at 600 VAC
- Common trip – prevents single-phasing of motors
- Single magnetic adjustment – permits adjusting all poles simultaneously

Correct connections are easily made since phase markings for each breaker pole are clearly marked on the face of each breaker at the load end.

Circuit breaker accessories include:

- Shunt trip
- Ground fault shunt trip
- Undervoltage trip
- Alarm switch
- Auxiliary contacts
- Handle attachments

Thermal-Magnetic Molded Case Circuit Breakers

Thermal-magnetic molded case circuit breakers are the most common overcurrent protection devices. Their primary functions are to provide a means to open a circuit manually and automatically under overload or short circuit conditions. Thermal-magnetic circuit breakers use bimetals and electromagnetic assemblies to provide overcurrent protection. Plus, with their characteristic inverse time tripping under overload conditions, they are ideally suited for many applications – varying from light commercial to heavy industrial loads. For high level (short circuit) overcurrents, instantaneous trip characteristics allow molded case circuit breakers to interrupt with no intentional delay.

I-LIMITER® Circuit Breakers

I-LIMITER circuit breakers combine a conventional high-speed circuit breaker mechanism in series with a fuseless current limiting section. They are cUL listed for use on systems capable of delivering fault currents up to 200,000 RMS symmetrical amperes at 240 or 480 VAC and 100,000 RMS symmetrical amperes at 600 V.

Electronic Trip Circuit Breakers

Electronic trip circuit breakers combine proven SQUARE D molded case circuit breaker construction and features with advanced electronic technology, using a set of current transformers (called CTs or sensors) to sense current, a trip unit to evaluate the current and a tripping solenoid to trip the

I-LINE circuit breakers feature permanently attached mounting brackets and line connectors.

circuit breaker. Electronic trip units provide long-time and instantaneous trip protection and enable the user to adjust the instantaneous trip function of the circuit breaker per specific system requirements.

MICROLOGIC® Trip Circuit Breakers

MICROLOGIC trip circuit breakers combine the electronic technology of electronic trip circuit breakers with advanced features such as communications, power metering and monitoring capabilities. In addition, they

provide adjustable trip settings like long time pickup and delay, short time pickup and delay, instantaneous pickup and ground fault pickup and delay. The proper MICROLOGIC trip unit will allow the circuit breaker to communicate with other circuit breakers, to gather power information, monitor events and remotely control breakers based on predetermined conditions, leading to substantial savings in electrical system operating costs.



I-LINE Panelboards

Delivery when you want it!



I-LINE panelboards are available custom assembled at the factory or RTA (ready-to-assemble) from local distributor stock. Either way, you get the same time proven design in a complete line of boxes, interiors, fronts, breakers and accessories on hand when you need them.

I-LINE panelboards are available with main lugs or main breakers through 1200 A. Main breaker and main lug panelboards are rated 600 VAC and 250 VDC maximum. In addition, each I-LINE panelboard has cUL listed short circuit current ratings, indicating that they are suitable for use on

systems with up to 100,000 RMS symmetrical amperes at 600 VAC when assembled with appropriately rated main or branch breakers.

HCR-U panelboard with four-piece front. Available with an optional Type 3R enclosure.



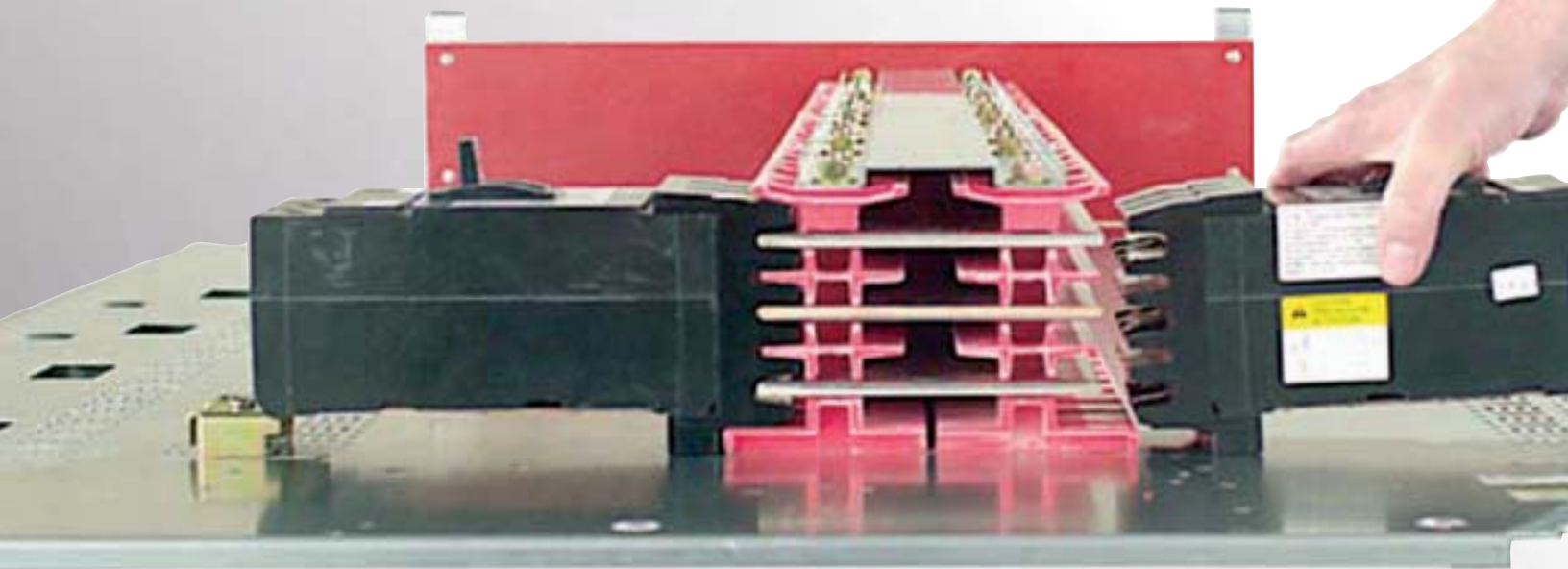
I-LINE circuit breakers are available in thermal-magnetic, electronic or MICROLOGIC trip construction.



The I-LINE bus stack provides circuit breaker mounting flexibility and simplifies installation and maintenance.

I-LINE Panelboards

The difference is in the details...



Main Lugs

Fix-mounted main lugs are located in a separate compartment that is completely isolated from the branch breaker section. A hinged cover permits access to this compartment. Lugs are front-removable for ease of wiring. All connections are "straight-in," with standard aluminum or copper lugs. Incoming main cables are of similar length, because the panelboard solid

neutral is mounted adjacent to the main lugs in the same compartment. The side and end gutters, opposite the mains, are open to facilitate branch wiring. The panelboard solid neutral is mounted adjacent to the main lugs in the same compartment. Plug-on main lugs mount in the branch circuit breaker area, and the solid neutral mounts in the end gutter next to the main lugs.

Main Breakers

Factory-installed main breakers in I-LINE panelboards are either vertically or horizontally mounted. Main breakers are clearly identified and vertically mounted main breakers are installed so that their operating handle is down when OFF and up when ON. Main lugs interiors may be converted to main breaker interiors by simply back feeding a branch mounted

breaker. All I-LINE circuit breakers are cUL Listed for use in any mounting position with either end as "line" or "load." When back-feeding a branch breaker, the use of back-fed main breaker barriers is mandatory.

Branch Breakers

I-LINE branch breakers mount on both sides of the vertical bus stack in double row interiors or on one side only of

single row interiors. Each breaker mounts independently of other breakers on the interior. Conventional panelboard design requires branch breakers to be mounted in pairs of the same frame size opposite each other. Modular I-LINE panelboard construction permits branches to be mounted anywhere on the bus stack without restriction. You never waste space.

I-LINE Panelboards

Breaker Mounting

A screwdriver is all that is required to mount 15 ampere through 1200 A I-LINE circuit breakers. Breakers ratchet firmly onto the bus stack. Captive retaining screws secure the circuit breaker to the mounting pan.



Breaker Connections

Breaker connections are "blow-on" type. Under high-level fault conditions, the magnetic forces developed force the jaws together, gripping the bus bar more firmly. Heavy-duty jaw connectors are plated to ensure good conductivity at the contact.

Bussing

The I-LINE panelboard gets its name from its unique single vertical main bus stack. Plated

bus bars are supported continuously by molded, glass-reinforced, polyester insulators. A large base insulator of the same material aligns with and supports branch breakers. The bus bar stack is held together securely between continuous steel channels with hardened steel bolts jacketed in high dielectric strength impact resistant polycarbonate. I-LINE panelboards are available in both single and double row construction.

Accessories

A wide variety of accessories are available for field or factory installation into I-LINE panelboards.

- 1 Equipment ground bars are for termination of equipment grounding conductors.
- 2 Specifically designed QO distribution modules mount in I-LINE panelboards the same as branch circuit breakers. This permits less expensive QO 15 through 30 ampere breakers to be installed to feed lighting or receptacle circuits from I-LINE panelboards applied on 240 V systems.
- 3 cUL listed box extensions provide additional end gutter when increased wire bending space is desired.



Push-To-Trip

A trip button is provided on the cover for mechanically tripping the circuit breaker. This allows maintenance checks of the breaker, control circuits, alarm devices and other associated equipment and exercises the trip mechanism.

Solid Neutral

The solid neutral assembly mounts at the same end of the

interior as the main lugs or main breaker. Branch neutral connections are provided for a wide variety of breaker combinations and suitable for copper or aluminum wires. The solid neutral is insulated but can be bonded to the enclosure with a full-capacity bonding strap for service entrance requirements.

Sub-Feed Lugs

Sub-feed lugs through 1200 A plug on in the same manner as a branch breaker.

Cabinets

Panelboard boxes are constructed of code gauge steel with wiring gutters in accordance with cUL and CSA standards. Boxes are available in 26", 32", 42" and 44" widths and are made

of galvanized steel. A variety of knockouts are provided in 26" wide box endwalls while 32", 42" and 44" wide endwalls are blank. All box sizes have removable endwalls. I-LINE panelboard fronts are finished with gray baked enamel electrodeposited over cleaned phosphatized steel. Fronts are attached to the box with trim screws.

Blanks

Blank fillers and extensions are required to fill unused circuit breaker mounting space in I-LINE panelboards.

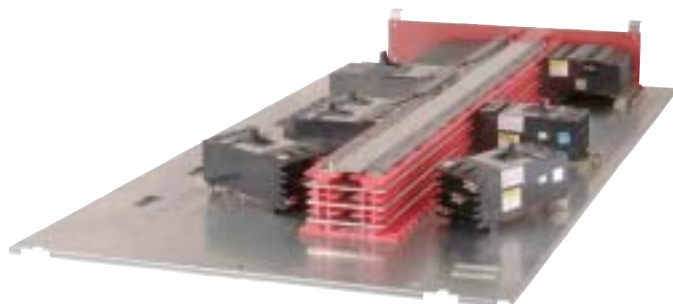


I-LINE Panelboards



I-LINE Connections

- Silver plated I-LINE connectors have multiple contact fingers that provide independent current paths for more contact area, ensuring excellent conductivity at the connection interface.
- The I-LINE jaws clamp firmly onto the busbar stack, providing minimal electrical resistance.
- Preset jaw tolerances allow for proper contact force.
- To ensure proper alignment, the I-LINE jaws are surrounded by a molded shroud, which is keyed to fit guide slots in the stack insulator.



Circuit Breaker Mounting

- The 15 to 1200 ampere I-LINE circuit breakers can be placed anywhere on the I-LINE busbar stack for unlimited circuit arrangements. A screwdriver is all that's required to mount them for quick installation.
- The connectors are an integral part of the I-LINE circuit breaker, eliminating assembly of connectors to the busbar.
- The plug-on jaws clamp firmly onto the busbar stack.
- The rear steel mounting bracket fits securely into the pre-punched mounting pan.
- The unique lineside connection requires no routine maintenance.
- No mounting hardware means reduced errors during installation.



I-Line Busbar stack

- A grade-5 steel bolt clamps the busbar assembly together.
- Glass-reinforced polyester insulators continuously support and provide phase isolation for the entire length of the bus.
- The I-LINE bus stack is securely bolted between two U-shaped steel channels, providing superior performance during fault conditions.
- The molded circuit breaker shroud surrounding the jaws is keyed to fit a slot in the molded stack insulator, ensuring proper alignment.

I-LINE Plug-on Unit with SURGELOGIC™ TVSS

*A cost-effective surge protection solution that
plugs onto an I-LINE panelboard bus stack just like
a circuit breaker*

Features and Benefits

- Plug-on design requires less cable and conduit than wall mounting, saving labor time and material costs
- Bus connected design enhances performance
- Factory-wired phase conductors reduce the chance of installation errors
- Branch-mounted design saves wall mounting space
- cUL listed for retrofit applications in existing I-LINE panelboards
- Integrated TVSS and circuit breaker disconnects feature compact design, requiring only 13.5" of branch mounting space
- SCCR up to 200kA rating meets a wide variety of customer applications



I-LINE Plug-On Unit
with SURGELOGIC TVSS

The SQUARE D I-LINE plug-on unit with SURGELOGIC TVSS is ideal for applications where protection of sensitive electronic equipment from transient over-voltages is needed. Designed to plug onto the bus stack of an I-LINE panelboard this compact, easy-to-install unit can significantly reduce installation time and material cost.

In addition, the retrofit capability of the I-LINE plug-on unit with SURGELOGIC TVSS makes it well-suited for existing facilities. Square D has over thirty years of heritage with I-LINE panelboards and as a result, a sizable installed base. Adding surge protection, as part of system upgrades, is as simple as plugging the I-LINE plug-on unit with SURGELOGIC TVSS onto the bus.



I-LINE TVSS unit plugs directly
onto the bus stack

Customized Solutions...

The I-LINE plug-on unit with SURGELOGIC TVSS can be fitted onto the I-LINE interiors of the SQUARE D Modular Panelboard System (MPS) or the SQUARE D Integrated Power Center (IPC). MPS and IPC are customized solutions that are ideal for retail construction applications.

1200 A POWERPACT® P- and R-Frame Circuit Breakers in I-LINE Panelboards

Smaller footprint allows higher density installations

Ideal for use in I-LINE panelboards, the POWERPACT P- and R-frame circuit breakers lead the industry with proven, reliable protection and innovative design. The P-frame, standard-rated circuit breaker is available as PG, PJ and PL with a 1200 A rating. In addition, the P-frame circuit breaker requires only 9" of circuit breaker mounting space, making it 40% narrower than the previous N-frame circuit breaker that required 15". The R-frame circuit breaker, which requires 15" of breaker mounting space, is available as RGC, RJC and RLC with a 1200 A, 100% rating.



I-LINE Panelboard with POWERPACT P-Frame (left) and R-Frame (right) Circuit Breakers

Features and Applications

- P-frame circuit breakers are available as 250 A–800 A, 80% or 100% rated and 1000 A–1200 A 80% rated with MICROLOGIC trip units
- R-frame circuit breakers are available with a 1200 A, 100% rating with MICROLOGIC trip units
- Compact breaker size allows for smaller footprint installations using I-LINE panelboards; 9" width on P-frame designs and 15" width on R-frame designs provide increased density installations
- Built-in MODBUS® protocol provides an open communications platform and eliminates the need to purchase additional proprietary network solutions
- Selection of four interchangeable MICROLOGIC trip units with POWERLOGIC® power metering and monitoring capabilities available in advanced trip units
- Most field-installable accessories are common to all frame sizes for easier stocking and installation
- Can be mounted in HCP main lugs, HCP-SU, HCWM and HCR-U I-LINE panelboards and HMA OEM I-LINE interiors; requires the L frame mounting slots in I-LINE interiors
- Interrupting ratings available up to 100kA @ 480 V and 65kA @ 600V; suitable for all fully rated and series-rated applications
- Can also be used in modular panelboard system (MPS) applications with I-LINE interiors
- The P- and R-frame circuit breakers replace the MX, ME, NA, NC, NE and NX frame circuit breakers in I-LINE panelboards

These new breakers have the following interrupting characteristics:

POWERPACT-P

	G	J	K	L
240 V	65kA	100kA	65kA	125kA
480 V	35kA	65kA	50kA	100kA
600 V	18kA	50kA	25kA	—

POWERPACT-R

	G	J	K	L
240 V	65kA	100kA	65kA	125kA
480 V	35kA	65kA	65kA	100kA
600 V	18kA	25kA	65kA	50kA



Cutaway Showing Bus Stack

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