

Integrated Power Center

Class 2735



Merlin Gerin
Modicon
Square D
Telemecanique
Schneider Electric Brands

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SQUARE D
Schneider Electric

Integrated Power Center Product Description

Product Description

Integrated Power Centers (IPCs) manufactured by Square D combine power distribution and controls into one integrated package. The IPC may consist of I-LINE® power panels, NQOD, NF, and POWERLINK® lighting and appliance panels with starters, relays, timers, power meters, circuit monitors, TVSS units, lighting contactors, HVAC controller, energy management systems, lighting controls, time clocks, transformers, and power conditioners.

Integrated Power Centers are suitable for use on ac systems through 480 V and can be applied as service entrance equipment. IPCs are Underwriters Laboratories® (UL®) Listed under file E83877.

Installation and Space Savings

A variety of Integrated Power Center configurations are available with stacked circuit breaker panelboards and space for other control devices. This new approach with integrated switchboards reduces installation space and time by preconfiguring and assembling the system in vertical sections at the factory before arrival at the job site.

The IPC eliminates panelboard connectors and conduit between power and lighting panels. The outcome is a lowered installation cost and a reduction in construction cycle time; therefore, the store or facility will open sooner, and revenue will be derived faster on the investment.

Features

- Reduced construction cycle time
- Reduced wall space for electrical equipment
- Fastest electrical equipment installation time
- Lowest overall installed cost
- Segregated structures
- Built per UL and National Electrical Code® (NEC®) standards
- Designed to sit on the floor and bolt to the wall
- Ample conduit space
- Structure is 84 in. high x 10-9/32 in. deep
- Load conductors exit the top or bottom of the IPC

Options

- Bottom closure plates
- Hinged door with quarter-turn latch to cover circuit breaker handles



Integrated Power Center



Full Front Doors



(Optional) Hinged Doors



Integrated Power Center

General and Application Information

General and Application Information

The Integrated Power Center is designed to reduce space and installation time. The conductors from the power distribution to the lighting and control circuits are made at the factory. The sections are bolted together and shipped in large section splits to reduce installation time. When lineups are too large to ship as one section split, the connections between the sections are pre-measured, cut, striped and color-coded for easy installation.

Panel Type	1 Ø 3W	3 Ø 4W	Panel Contains
NQOD	120/240 V	208Y/120 V 240/120 V	QO(B) circuit breakers and accessories
NQOB Column Width	120/240 V	208Y/120 V 240/120 V	QOB circuit breakers and accessories
NF	120/240 V	480Y/277 V 208Y/120 V 240/120 V	ED, EG, EJ circuit breakers and accessories
NF POWERLINK® G3	120/240 V	208Y/120 V, 480Y/277 V 240/120 V	ECB-G3, ED, EG, EJ circuit breakers and accessories
NF Column Width	120/240 V	208Y/120 V, 480Y/277 V 240/120 V	ED, EG, EJ circuit breakers and accessories
NF POWERLINK G3	120/240 V	208Y/120 V, 480Y/277 V 240/120 V	ECB-G3, ED, EG, EJ circuit breakers and accessories
I-LINE®	120/240 V	208Y/120 V, 480Y/277 V 240/120 V	F, K, M, P, I-LINE circuit breakers and accessories

I-LINE Panels (mounting inches)	100 A	225 A	400 A	600 A	800 A	1200 A
Main Lug HCN	27, 45, 63, 81	27, 45, 63, 81	27, 45, 63, 81	....	....
Main Breaker HCN	18, 36, 54	18, 36, 54, 63	27, 45, 63	....	....	....
Main Lug HCM	27, 45, 63	27, 45, 63	27, 45, 63	27, 45, 63	....
Main Breaker HCM	36, 54	27, 45	36	36	....
Main Lug HCP	27, 45, 63, 99	27, 45, 63, 99	27, 45, 63, 99	27, 45, 63, 99
Main Breaker HCW	36, 72	36, 72	....
Main Lug HCWM	27, 45, 63, 99
Main Lug HCR-U	108
Main Breaker HCR-U	108
Main Lug HCP-SU	54	....
Main Breaker HCP-SU	54	....

NF Panels (Number of Circuits)	100 A	125 A	225 A	250 A	400 A	600 A
Main Lug	N/A	12, 18, 30	....	30, 42, 54	30, 42, 54	30, 42, 54
Main Breaker	12, 18, 30	18, 30, 42	30, 42, 54	30,42,54	30, 42, 54	30, 42, 54
Main Lug Column Width	....	30	30, 42	....	....	....
Main Breaker Column Width	30	....	42	....	....	....
Main Lug POWERLINK	....	30	....	30, 42, 54	30, 42, 54	30, 42, 54
Main Breaker POWERLINK	30	18, 30, 42	30, 42, 54	30, 42, 54	30, 42, 54	30, 42, 54
Main Lug POWERLINK Column Width	....	30	42	....	....	....
Main Breaker POWERLINK Column Width	30	....	42	....	....	....

NQOD Panels (Number of Circuits)	100 A	225 A	250 A	400 A	600 A	....
Main Lug	12, 24, 30	30, 42, 54	....	30, 42, 54	30, 42, 54	....
Main Breaker	12, 24, 30	30, 42, 54	30, 42, 54	30, 42, 54	....	....
Main Lug Column Width (NQOB)	30, 42	30, 42	....	....	....	....
Main Breaker Column Width (NQOB)	30, 42	30, 42	....	....	....	....

Integrated Power Center General and Application Information

The following components and/or systems are available factory-installed and wired at the Integrated Power Center assembly plant:

- Starters
- Relays
- Terminal blocks
- Timers
- Control transformers
- Power distribution blocks
- Fuse blocks
- Push buttons
- Pilot lights
- Circuit Monitors
- Power Meters
- TVSS units - SURGELOGIC®
- Lighting contactors
- HVAC controller
- Building automation systems
- Lighting controls
- Time clocks
- Power conditioners (transformer type)

The Integrated Power Center is suitable for use as service equipment in the following applications:

- Retail stores/grocery stores
- Office buildings/public buildings
- Shopping malls/strip malls
- Schools/universities
- Restaurants/food service
- Hotels/motels
- Warehouses
- Equipment rooms

System Configurations

The Integrated Power Center is custom designed to meet the customer specifications. Panel interiors can be single or stacked two-high depending on the application.

Standards

The Integrated Power Center is manufactured and tested to meet the following standards:

Standard	Description
UL 50	Standard for enclosures for electrical equipment
UL 67	Standard for panelboards
UL 98	Standard for enclosed and deadfront switches
UL 489	Standard for molded case circuit breakers
UL 891	Standard for switchboards
NEMA AB 1	Standard for molded case circuit breakers and molded case switches
NEMA PB 1	Standard for panelboards
NEMA PB 2	Standard for switchboards
NEMA 250	Enclosures for electrical equipment
National Electrical Code® (NEC)® Article 384	Switchboards and panelboards
NFPA 70	National Electrical Code (NEC)

The Integrated Power Center and the devices within are manufactured and tested to meet the following federal specifications:

Specification	Description
W-C 375B/GEN	Specification for molded case circuit breakers
W-C 865C	Specification for fusible switches
W-P 115B Type 1, Class 1	Specification for circuit breaker panelboards



Integrated Power Center General and Application Information



NQOD Interior

NQOD Circuit Breaker Interior

Type

NQOD circuit breaker interiors are for use on ac systems and are UL Listed under File E33139. NQOD circuit breaker interiors accept QO® and QOB branch circuit breakers. Refer to the *NQOD Circuit Breaker Panelboards* catalog or the Square D technical library website (www.squared.com) for detailed information.

Features

NQOD circuit breaker interior features:

- 240 Vac maximum
- 600 A maximum vertical main circuit breakers
- 600 A maximum main lugs
- 150 A maximum branch circuit breakers
- 30, 42, and 54 circuit interiors
- 10–65 kA maximum RMS symmetrical amperes short circuit current rating (SCCR)
- Fully rated or series rated systems
- Copper or aluminum plated bus interiors
- Bolt-on or plug-on branch circuit breakers
- Interiors may be mounted for top or bottom feed
- Branch user placement
- VISI-TRIP® indicator on branch circuit breakers
- Suitable for use as service equipment

Options

- 200% rated neutrals up to 225 A
- Split bus interiors
- 1000 A/in² copper bus
- 750 A/in² aluminum bus
- Sub-feed and through-feed lugs
- Sub-feed circuit breakers
- TVSS units



NF Circuit Breaker Interior

Type

NF circuit breaker interiors are for use on ac systems and are UL Listed under File E33139. NF circuit breaker interiors accept EDB, EGB, and EJB branch circuit breakers. Refer to the *NF Circuit Breaker Panelboards* catalog or the Square D technical library website (www.squared.com) for detailed information.

Features

NF circuit breaker interior features:

- 480Y/277 Vac maximum
- 600 A maximum vertical main circuit breakers
- 125 A maximum branch mounted circuit breakers
- 18–65 kA maximum RMS symmetrical amperes short circuit current rating (SCCR)
- 800 A maximum main lugs
- Copper or aluminum plated bus interiors
- Interiors may be mounted for top or bottom feed
- VISI-TRIP® indicator on branch circuit breakers
- Fully rated or series rated systems
- Suitable for use as service equipment

Options

- 200% rated neutrals up to 250 A
- 1000 A/in² copper bus
- 750 A/in² aluminum bus
- Sub-feed and through-feed lugs
- Sub-feed circuit breakers
- TVSS units



NF Interior



Integrated Power Center General and Application Information



NF POWERLINK G3 Standard Width Interior



NF POWERLINK G3 Column Width Interior

NF POWERLINK® G3 Circuit Breaker Interiors

Type

NF POWERLINK G3 circuit breaker interiors are for use on ac systems and are UL Listed under File E33139. NF POWERLINK G3 circuit breaker panelboards accept ECB-G3 and ED, EG, and EJ bolt-on circuit breakers.

Features

NF POWERLINK G3 circuit breaker interior features:

- 480Y/277 Vac maximum
- 225 A maximum main lugs or main breaker for column width
- 800 A maximum main lugs (600 A main breaker) for standard width
- Copper or aluminum plated bus interiors
- Interiors may be mounted for top or bottom feed
- SCCR ratings to 100 kA @ 240 V and 65 kA @ 480Y/277 V
- Interior mounting spaces for up to 54 devices (standard width)
- Standard or remotely operated branch circuit breakers

POWERLINK G3 remotely operated circuit breaker features:

- Bolt-on line connectors
- Oversided load terminals
- Integral ON/OFF/trip status position indicator
- Manual override
- Modular control connector
- Rated for 200,000 remote operations
- UL Listed switch duty rated (SWD), heating, air-conditioning, refrigeration rated (HACR), and high intensity discharge lighting (HID)

Options

- Dual voltage panels
- TVSS units
- Sub-feed and through-feed lugs
- Sub-feed circuit breakers
- 200% rated neutrals up to 250 A
- 1000 A/in² copper bus
- 750 A/in² aluminum bus



Integrated Power Center General and Application Information

POWERLINK® G3 500, 1000, 2000 Level Lighting Control System

Type

This section contains a brief overview of the major components of the POWERLINK G3 500, 1000, 2000 Level Lighting Control System. Refer to the *POWERLINK G3 Lighting Control Systems* catalog or the Square D technical library website (www.squared.com) for detailed information.

Features

The POWERLINK G3 product line offers a simple, cost-effective means for controlling branch lighting circuits. Three systems are offered that support a variety of capabilities, depending on your application needs. System features are listed below:

500 Level System

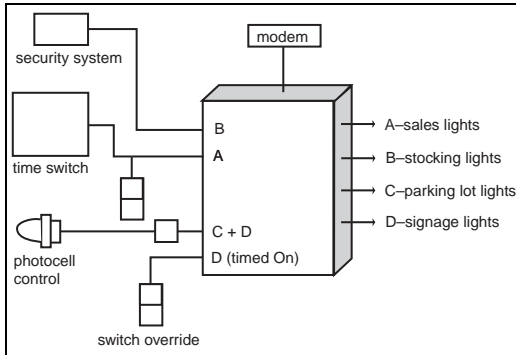
The 500 level system is designed to be used in conjunction with other control devices such as external time clocks, access systems, occupancy sensors, or other building systems that provide either dry-contact closures or digital serial communications. In response to these commands, the controller will automatically switch a programmed group of lighting circuits. The controller also contains both RS-232 and RS-485 communication ports and can be easily interfaced with a building automation system.

1000 Level System

The 1000 level system includes all the features of the 500 level system and incorporates a flexible time scheduler that eliminates the need for external time clocks. This time scheduler includes many control features that are not found in traditional, mechanical time clocks or energy management systems. These features include automatic daylight savings adjustments, sunrise and sunset tracking according to geographic location, and special events that will run only on specific dates. The 1000 level system is ideally suited for stand-alone systems in retail, office, institutional, and industrial facilities.

2000 Level System

The 2000 level system combines the control, input, and scheduling features of the other systems with the added benefit of embedded Ethernet connectivity. This provides the ultimate in control capabilities and communication with a true peer-to-peer (P2P) control network that allows different controllers to share input signals, schedules, and lighting zone states. For instance, the status of a photo sensor input connected to one controller can be shared across multiple panels, allowing this single sensor input to control branch circuits in other 2000 level POWERLINK panels located throughout a facility. Using Ethernet connectivity, network installation costs are reduced by eliminating the need for a dedicated lighting control network. The network can be maintained by your existing network support staff. This helps reduce operating costs and improve reliability, since maintenance of the network requires no special networking skills that are usually associated with a dedicated lighting control network.



POWERLINK G3 systems accommodate a wide variety of control devices, such as occupancy sensors, low voltage switches, inputs from external building systems, and photo sensors.



Setup is easily accomplished, either from the keypad or from easy-to-use Windows-based software



Integrated Power Center General and Application Information



I-LINE Interior

I-LINE® Circuit Breaker Interiors

Type

I-LINE® circuit breaker interiors are for use on ac systems and are UL Listed under File E33139. I-LINE circuit breaker interiors are rated 100–1200 A. Refer to the *I-LINE Circuit Breaker Panelboards* catalog or the Square D technical library website (www.squared.com) for detailed information.

Features

I-LINE circuit breaker interior features:

- 600 Vac maximum
- 1200 A maximum main circuit breakers or main lugs
- UL Listed for use on systems up to 65 kA maximum RMS symmetrical amperes available fault current when using current limiting main or branch circuit breakers
- Fully rated and series rated systems
- Aluminum bus standard
- Interiors may be mounted for top or bottom feed
- Interior, front, and most circuit breakers only require a screwdriver for installation
- Fully prepared spaces provided for adding additional circuit breakers
- Circuit breakers do not require any additional external mounting hardware
- Circuit breaker connections are “blow-on” type that draw the connector jaws together, providing a firmer grip under high level short-circuit conditions
- Well-suited for rearranging circuits
- Suitable for use as service equipment

Options

- MICROLOGIC® microprocessor and/or thermal magnetic main and branch circuit breakers
- Ground fault protection for equipment available on main circuit breaker
- Copper bus
- 1000 A/in² copper bus
- Six-circuit QO plug-on distribution panel
- Sub-feed lugs through 1200 A
- TVSS



Integrated Power Center General and Application Information

I-LINE Circuit Breaker Ratings

Circuit Breaker Frame Type	Maximum Voltage Rating	Number of Poles	Cont. Ampere Rating	UL Listed Interrupting Rating—RMS Amperes (Symmetrical)			Federal Specs W-C-375B/GEN
				AC Volts, 50/60 Hz			
				120	240	480	
FY ▲	277	1	15–30	18 K	14 K	—	—
FA 240 V	120 240 240	1 2 3	15–100	10 K	— 10 K 10 K	—	11 a 11 b, 12 b 11 b, 12 b
FA 480 V	277 480 480	1 2 3	15–100	25 K	18 K ■ 25 K ■ 25 K	— 18 K 18 K	11 a, 12 a, 13 a 13 b 13 b
FH	277 277 480	1 1 2, 3	15–30 35–100 15–100	65 K	65 K ■ 25 K ■ 65 K	— — 25 K	13 a 13 a 22 a
FC	480	2, 3	20–100	100 K	100 K	65 K	22 a
FJ	480/277	1	15–70	65 K	65 K	65 K	—
FI	480	2, 3	20–100	200 K	200 K	200 K	16 a
QB	240	2, 3	70–225	10 K	10 K	—	—
QD	240	2, 3	70–225	25 K	25 K	—	—
QG	240	2, 3	70–225	65 K	65 K	—	—
QJ ▼	240	2, 3	70–225	100 K	100 K	—	—
KA	480	2, 3	70–250	42 K	42 K	25 K	19 a, 20 a
KH	480	2, 3	70–250	65 K	65 K	35 K	23 a
KC	480	2, 3	110–250	100 K	100 K	65 K	23 a
KI	480	2, 3	110–250	200 K	200 K	200 K	16 a
LA	480	2, 3	125–400	42 K	42 K	30 K	21 a
LH	480	2, 3	125–400	65 K	65 K	35 K	23 a
LC	480	2, 3	300–600	100 K	100 K	65 K	—
LI	480	2, 3	300–600	200 K	200 K	200 K	—
MA	480	2, 3	300–800	42 K	42 K	30 K	21a
MH	480	2, 3	300–800	65 K	65 K	65 K	23 a
PG	480	2, 3	600–1200	65 K	65 K	35 K	—
PJ	480	2, 3	600–1200	100 K	100 K	65 K	23 a
PL	480	2, 3	600–1200	125 K	125 K	100 K	—
MICROLOGIC Trip Circuit Breakers							
LX	480	3	100–600	100 K	100 K	65 K	—
LXI	480	3	100–600	200 K	200 K	200 K	—
LE	480	3	100–600	100 K	100 K	65 K	—
PG	480	2, 3	250–1200	65 K	65 K	35 K	—
PJ	480	2, 3	250–1200	100 K	100 K	65 K	—
PL	480	2, 3	250–1200	125 K	125 K	100 K	—
RG	480	2, 3	1000–1200	65 K	65 K	35 K	—
RJ	480	2, 3	1000–1200	100 K	100 K	65 K	—
RL	480	2, 3	1000–1200	125 K	125 K	100 K	24 a

- ▲ 15 and 20 A are Switching Duty rated (SWD).
- 277 VAC rated.
- ▼ QJ 3-pole is rated 100 KA at 208Y/120 VAC.



Integrated Power Center General and Application Information



Type L—Electrically-Held



Type LX—Mechanically-Held



Type SM—Electrically-Held



Type SM—Mechanically-Held



Type DPA—Electrically-Held

Lighting Contactors

Type

Lighting contactors are for use on ac systems and are UL Listed under File E131840 for use in IPC construction. Class 8903 Type L/ LX, Class 8903 Type SM, and Class 8910 Type DPA lighting contactors are available in IPC construction. Refer to the Lighting Contactor Catalogs or to the Technical Library at <http://www.SquareD.com/us/internet/hotlinks.nsf> for detailed information.

Features

Lighting contactor features are listed below:

- Class 8903, Type L/LX
 - 30 A ballast lighting rating, 20 A tungsten lighting rating
 - Voltage systems
 - 120/240 Vac; single-phase, three-wire
 - 208Y/120 Vac; three-phase, four-wire
 - 480Y/277 Vac; three-phase, four-wire
 - Available with 2 to 12 N.O. poles
 - Up to 8 N.C. poles maximum
 - Field-convertible poles (N.O. to N.C.) standard
 - Contactor status indicator standard
 - Electrically or mechanically held
- Class 8903, Type SM
 - 30 A mixed load rating (lighting/motor)
 - Voltage systems
 - 208Y/120 Vac; three-phase, four-wire
 - 480Y/277 Vac three-phase, four-wire
 - Available with 2 to 5 N.O. poles
 - Contactor status indicator standard
 - Electrically or mechanically held
- Class 8910, Type DPA
 - 30 A ballast and tungsten lighting rating
 - Voltage systems
 - 120/240 Vac; single-phase, three-wire
 - 208Y/120 Vac; three-phase, four-wire
 - 277 Vac; three-phase, four-wire (ballast only)
 - Available with 2 to 4 N.O. poles
 - Contactor status indicator standard
 - Electrically held



Integrated Power Center General and Application Information

Transformer Assemblies

Type

Transformer Assemblies are for use on ac systems and are UL Listed under File E8681. Refer to the *Transformer Assemblies for POWER-STYLE® QED Switchboards* handout or to the Technical Library at <http://www.SquareD.com/us/internet/hotlinks.nsf> for detailed information.

Features

Transformer Assembly features are listed below:

- 37.5–167 kVA single-phase 480–120/240
- 45–225 kVA three-phase 480 Delta–208Y/120
- H-220C insulation with 150 °C (302 °F) rise
- NEMA 1 enclosure
- Suitable for one or two transformers per enclosure (refer to the Stacking Rules for Stacked and Non-Stacked Transformer Sections table on page 14)
- Provisions for close coupling to Integrated Power Centers lineup

Options

Transformer Assembly options are listed below:

- Factory-supplied cables ready to connect
- Aluminum or copper windings
- General purpose lighting transformers
- Energy-efficient (EE) transformers
- Electrostatic shield
- Stacking configurations
 - Single-phase transformers
 - Three-phase transformers
 - Combination of single- and three-phase transformers



Transformer Assembly–Uncovered



Transformer Assembly–Covered



Stacking Rules for Stacked and Non-Stacked Transformer Sections

Single-Phase Transformers kVA Rating					
Top transformer (in kVA)	Blank	Blank	Blank	Blank	Blank
Bottom transformer (in kVA)	37.5	50	75	100	167
Enclosure width/depth (in inches)	24 x 24	24 x 24	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	37.5	37.5	37.5	37.5	37.5
Bottom transformer (in kVA)	37.5	50	75	100	167
Enclosure width/depth (in inches)	24 x 24	24 x 24	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	50	50	50	50
Bottom transformer (in kVA)		50	75	100	167
Enclosure width/depth (in inches)		30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	—	75	75	75
Bottom transformer (in kVA)			75	100	167
Enclosure width/depth (in inches)			30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	—	—	100	100
Bottom transformer (in kVA)				100	167
Enclosure width/depth (in inches)				36 x 36	36 x 36
Three-Phase Transformers kVA Rating					
Top transformer (in kVA)	Blank	Blank	Blank	Blank	Blank
Bottom transformer (in kVA)	45	75	112.5	150	225
Enclosure width/depth (in inches)	24 x 24	30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	45	45	45	45	45
Bottom transformer (in kVA)	45	75	112.5	150	225
Enclosure width/depth (in inches)	24 x 24	30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	75	75	75	75
Bottom transformer (in kVA)		75	112.5	150	225
Enclosure width/depth (in inches)		30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	—	112.5	112.5	112.5
Bottom transformer (in kVA)			112.5	150	225
Enclosure width/depth (in inches)			30 x 36	30 x 36	36 x 36
Combination: Single-Phase on Top/Three-Phase on Bottom kVA Rating					
Top transformer (in kVA)	37.5	37.5	37.5	37.5	37.5
Bottom transformer (in kVA)	45	75	112.5	150	225
Enclosure width/depth (in inches)	24 x 24	30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	50	50	50	50	50
Bottom transformer (in kVA)	45	75	112.5	150	225
Enclosure width/depth (in inches)	24 x 24	30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	75	75	75	75
Bottom transformer (in kVA)		75	112.5	150	225
Enclosure width/depth (in inches)		30 x 36	30 x 36	30 x 36	36 x 36
Top transformer (in kVA)	—	—	100	100	100
Bottom transformer (in kVA)			112.5	150	225
Enclosure width/depth (in inches)			36 x 36	36 x 36	36 x 36



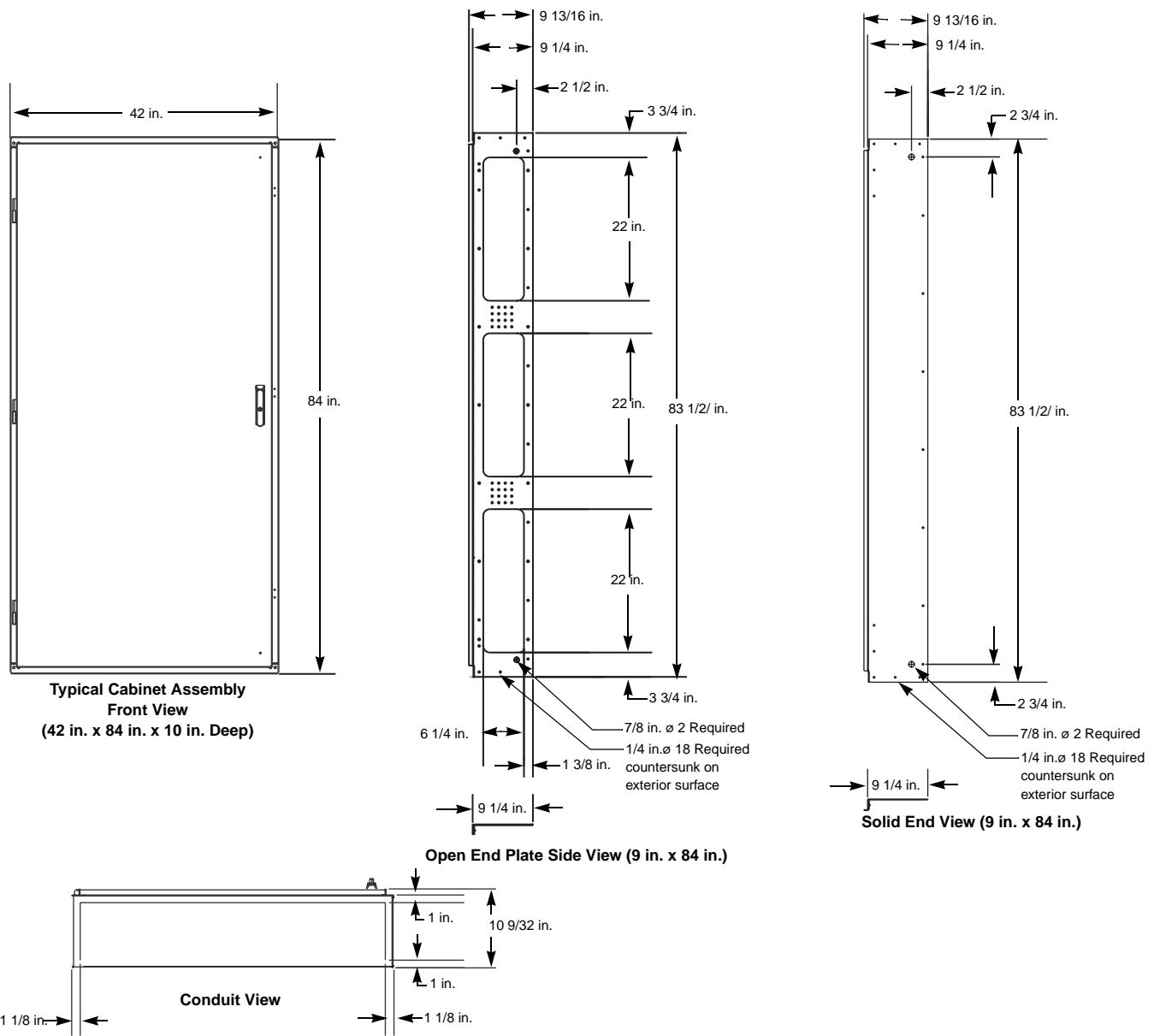
Integrated Power Center Dimensions

Structure and Dimensions

The Integrated Power Center frame is designed to provide a sturdy platform to build switchboard products. Individual sections are built from one formed top, bottom and rear plate, and separate side plates. Side plates between sections have three 6.25 in. x 22 in. cutouts for connections between sections. Solid side closure plates are designed for the left- and right-most sections. Section doors are provided with three-point latch assembly with locking provisions and optional doors over panel interiors for complete front accessibility.

Section dimensions are determined by the type, size, quantity, and arrangement of components and devices installed within the section. The Integrated Power Centers are designed to rear-align and match up with POWER-STYLE® QED switchboards when the system ampacity is greater than 1200 amperes. IPCs are also designed to be rear-aligned and match with transformer assemblies when applications require integrated transformers.

IPCs are available in NEMA Type 1 indoor enclosures. IPC sections can be moved into place using rollers or lifting hooks.



Integrated Power Center Specifications

GENERAL

Specifications

Power Distribution Panelboard

Furnish and install distribution panelboard(s) as specified herein and where shown on the associated [schedules] or [drawings].

Lighting and Appliance Panelboard

Furnish and install lighting and appliance panelboard(s) as specified herein and where shown on the associated [schedules] or [drawings].

References

The panelboard(s) and circuit breaker(s) referenced herein are designed and manufactured according to the latest revision of the following standards:

- UL 50—Standard for enclosures for electrical equipment
- UL 67—Standard for panelboards
- UL 98—Standard for enclosed and deadfront switches
- UL 489—Standard for molded case circuit breakers
- UL 891—Standard for switchboards
- NEMA AB 1—Standard for molded case circuit breakers and molded case switches
- NEMA PB 1—Standard for panelboards
- NEMA PB 2—Standard for switchboards
- NEMA 250—Enclosures for electrical equipment
- National Electrical Code® (NEC)® Article 384—Switchboards and Panelboards
- NFPA 70—National Electrical Code (NEC)
- Federal Specification W-P-115C—Type 1, Class 1
- Federal Specification W-C-375B/Gen—Circuit breakers, molded case, branch circuit, and service

Submittal and Record Documentation

Approval documents shall include drawings. Drawings shall contain overall switchboard enclosure dimensions, interior mounting dimensions, and wiring gutter dimensions. The location of the main, branches, and solid neutral shall be shown clearly. In addition, the drawing shall illustrate one line diagrams with applicable voltage systems.

Qualifications

Suppliers shall have specialized in the assembly of switchboard products with a minimum of twenty-five (25) years documented experience.

Panelboards shall be manufactured in accordance with standards listed in "References".

Delivery, Storage, and Handling

Inspect and report concealed damage to the carrier within their required time period.

Handle carefully to avoid damage to internal components, enclosure, and finish.

Store in a clean and dry environment. Maintain factory packaging and, if required, provide an additional heavy canvas or heavy plastic cover to protect enclosure(s) from dirt, water, construction debris, and traffic.

Operations and Maintenance Materials

Manufacturer shall provide switchboard installation instructions and NEMA Standards Publication PB 1.1—"Instructions for Safe Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less".

Warranty

Manufacturer shall warrant specified equipment free from defects in materials and workmanship for the lesser of one (1) year from the date of installation or eighteen (18) months from the date of purchase.

PRODUCTS

Manufacturers

Panelboard interiors shall be Square D type:

- NQOD—Class 1630
- NF—Class 1670
- I-LINE®—Class 2110
- NF POWERLINK® G3—Class 1210

Substitutions must be submitted in writing three (3) weeks prior to original bid date, with supporting documentation demonstrating that the alternate manufacturer meets all aspects of the specification herein.

Power Distribution Interiors

Shall be I-LINE Circuit Breaker interiors rated 600 Vac maximum. Refer to product specification 16440-3.3 to obtain interior and circuit breaker specifications.

Lighting and Appliance Interiors

The lighting and appliance interiors shall be:

- NQOD Circuit Breaker Lighting and Appliance interiors rated 240 Vac maximum. Refer to product specification 16440-3.2 to obtain interior and circuit breaker specifications.
- NF Circuit Breaker Lighting and Appliance interiors rated 480Y/277 Vac maximum. Refer to product specification 16440-3.1 to obtain interior and circuit breaker specifications.



Panelboard Lighting Control System

Shall be NF POWERLINK G3 Circuit Breaker Level Lighting Control Systems rated 480Y/277 Vac, 240 Vac maximum. Refer to product specification 16440-9 to obtain interior and circuit breaker specifications.

Integrated Power Center

Integrated System

Power and Lighting panelboard interiors shall be installed in common-depth and front-accessible switchboard enclosures.

Factory-installed power cables shall electrically connect feeder breakers in the power panelboard to the lighting and appliance panelboard mains in the lineup.

When shipping splits are required, power and control cables shall be cut to length, stripped, labeled, and rolled back in one of the adjacent enclosures.

Single section shipping shall be 48 in. (1219 mm) wide max.

Multiple shipping splits shall be 84 in. (2134 mm) wide max.

Enclosures

Switchboard enclosures shall be NEMA Type 1.

Enclosures shall be aluminum or steel construction in accordance with applicable UL standards.

Each section shall have a bottom box cutout.

Large openings shall be provided in the adjacent enclosure sidewalls to facilitate routing cables between sections.

The manufacturer shall provide 1/4-20 x 1-inch bolts to facilitate bolting the sections together in the field.

If one 42-circuit panelboard is mounted above another in the same vertical section, a horizontal metal barrier that complies with UL 891 requirements shall separate the panelboards.

Fronts

Trim front shall meet strength and rigidity requirements of applicable UL standards.

Each section shall have a hinged door with a three-point latch with locking provisions.

A clear plastic directory cardholder shall be mounted on the inside of the door.

Locks shall be cylindrical tumbler type. All lock assemblies shall be keyed alike. One (1) key shall be provided with each lock.

Options

Hinged door with a [quarter-turn latch] or [lockable latch] over the deadfront of each panelboard interior.

Lighting Contactors

[Class 8903 type L], [8903 type SM], [8910 type DP] electrically held, [8903 type LX], [8903 type SM] mechanically held lighting contactors shall be factory installed.

Branch breakers in lighting and appliance panelboards shall be factory wired to the line side of appropriate contactor as indicated on the associated [schedules] or [drawings].

[The load side of the lighting contactors shall be factory wired to terminal blocks.]

HVAC/Energy Management

[Trane] or [NOVAR] or [Johnson Control] or [other] HVAC control shall be factory installed.

EXECUTION

Installation

Install the Integrated Power Center in accordance with manufacturers' written instructions, NEMA Standards Publication PB 2.1- "Proper Handling, Installation, Operation and Maintenance of Deadfront Switchboards Rated 600 Volts or Less", and NEC standards.

Field Quality Control

Inspect complete installation for physical damage, proper alignment, anchorage, and grounding.

Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads within 20% of each other. Maintain proper phasing for multi-wire branch circuits.

Check tightness of bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver per manufacturer's written specifications.



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