ETC 240V / 277V Sensor IQ Intelligent Breaker System

Power Control Series

GENERAL INFORMATION

ETC's Sensor IQ Intelligent Breaker System provides mains-fed power distribution for up to 48 branch circuits in the industry's most compact footprint. Sensor IQ breakers combine high-inrush rated overcurrent protection, switched power control, and power usage/breaker status reporting in a single device. With built-in station, sensor, DMX and TimeClock controls and Ethernet connectivity, plus optional 0-10V dimming, DALI output, contact inputs, and isolated ground bar for audio loads, the Sensor IQ integration opportunities are limitless.

APPLICATIONS

- Theaters
- Schools
- Houses of worship
- Conference centers
- Stadiums and arenas

FEATURES

- Main Feed: 240/415V or 277/480V four-wire plus ground
- 12-, 24- or 48-position breaker subpanel
- Breakers
  - Hydraulic magnetic breaker with high inrush trip curve
  - 10kA or 14kA SCCR (or 65kA series rated with main fuse)
  - Freely mix one-pole breakers up to 30A
  - Integrated air-gap relay switching
  - Integrated on/off/tripped and connected load feedback
  - No power required for relay operation at the breaker
- Echo, sACN, DMX-512, TimeClock, or stand-alone control
- Built-in EchoConnect power supply for up to 6 Echo stations/sensors and 5 output products
- Built-in network interface provides:
  - Advanced control of relays over streaming ACN (sACN)
  - Measured energy usage reporting per branch circuit
  - Web UI for configuration
- Available 0-10V, contact input or DALI control cards
- UL924 LISTED emergency control bypass contact input with load shedding

ORDERING INFORMATION

Panel Options

MODEL	DESCRIPTION
IQ12-277	277/480V 12-circuit breaker panel
IQ24-277	277/480V 24-circuit breaker panel
IQ48-277	277/480V 48-circuit breaker panel

MODEL	DESCRIPTION
IQ12-240	240/415V 12-circuit breaker panel
IQ24-240	240/415V 24-circuit breaker panel
IQ48-240	240/415V 48-circuit breaker panel

Note: Select surface or recess door below

Door Options

IQ DOOR 277-12R	Recess-mount door for IQ12-240 or -277
IQ DOOR 277-12S	Surface-mount door for IQ12-240 or -277
IQ DOOR 277-24R	Recess-mount door for IQ24-240 or -277
IQ DOOR 277-24S	Surface-mount door for IQ24-240 or -277
IQ DOOR 277-48R	Recess-mount door for IQ48-240 or -277
IQ DOOR 277-48S	Surface-mount door for IQ48-240 or -277

Optional Main Fuse Kit

IQ277-MF200	Main Fuse Kit: 277/480V (240/415V), 200A, 65kA SCCR

Optional Main Breaker

IQ277-MB100	Main Breaker: 277/480V (240/415V), 100A
IQ277-MB200	Main Breaker: 277/480V (240/415V), 200A
IQ277-MB400	Main Breaker: 277/480V (240/415V), 400A

NOTE: Main breakers for 240/277V IQ panels are for convenience disconnect. To increase series SCCR, use the IQ Main Fuse Kit.

See page 4 for more accessory information.

Echo Power Requirements

EchoConnect:	1 Unit of Output Power
Auxiliary Power:	Not Required

Built-in EchoConnect Power Supply

EchoConnect:	Provides 6U of control power and an additional 5U of Output Power*
Auxiliary Power:	Not Provided

*Note: Built in power supply can be disabled.

Echo Presets

Supports 64 Echo Presets; up to 8 Echo spaces

For more information, download the Echo Quick Guide

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SPECIFICATIONS

REGULATORY AND COMPLIANCE

- Breakers listed to UL 489
- Enclosures listed to UL 67, UL 508, UL 924
- Complies with ANSI DMX512-A standard
- Complies with ANSI E1.31 streaming ACN standard

USER INTERFACE

- Graphical display
- Button interface
  - 0-9 number entry
  - Up, down and back-arrow navigation with enter
  - Test shortcut for local activation of preset, sequence and set level overrides
- USB interface for uploads of setup and software updates
- Onboard Web UI for simple configuration and management

BREAKER

- Hydraulic magnetic breaker maintains trip curve through entire thermal range, reducing nuisance tripping
- Supports 15A, 20A or 30A single-pole breakers
- Utilizes stab on bus connection
- 50/60hz frequency
- Inrush-pulse tolerance: 25 times rated current for half-cycle
- Integrated hall-effect sensors detect contact positions
- Integrated solenoid for remote operation
- Trips on overload even if handle is forcibly held in the "on" position
- Maintains trip curve through entire thermal range, reducing nuisance tripping
- Load lugs accept 6-14AWG load wiring
- Multi-conductor rated output terminal
- Integral mechanically held air gap relay
- Manual control of relay state using breaker handle without power
- Integral current sensing
- Control and status provided by contact pads directly at bottom of the breaker case. No external wires or connections required for control or feedback
- Remote Feedback for breaker state, breaker type, current draw and phase voltage
- Visible state indication:

LED	Handle	Indication
LED on	Handle on	Output active
LED off	Handle on	Remotely controlled off
LED off	Handle off	Breaker tipped/Manually off

BREAKER CONTROL OPERATIONAL RATINGS

- No load-remote switching 1,000,000 cycles
- 24A Resistive 100,000 cycles
- 15A Electronic ballast (LED) 100,000 cycles
- Handle operations 10,000 cycles
- Duty cycle of 6 full cycles (12 operations) per minute
- Supports voltage isolation of 4000V RMS
- Utilizes latching state relays

SPECIFICATIONS

MECHANICAL

- Enclosure constructed of 16-gauge steel finished in black, fine-textured, scratch-resistant powder coat pain
- Removable outer panel includes integral locking door to limit access to electronics, breakers and local relay overrides
- Full front access with no side clearance required
- Removable covers for access to Class 1 and Class 2 wiring
- Complies with California building code - seismic zone four

ELECTRICAL

- Mains feed power input: 240/415V or 277/480V four-wire plus ground
- Max current input: 100A at 12 circuits, 200A at 24 circuits and 400A at 48 circuits
- Quiescent draw: <10W with relays at steady state
- Optional isolation between chassis and equipment grounding
- Short-circuit rating: 10,000, 14,000 or 65,000 Amps symmetrical (See chart at right)
- Overloads occurs at 50 operations of 600% of rated current
- Integrated current transformer
- Current measurement range of 1-30A. The maximum crest factor of primary current is 2.5
- Feeder entry supported at top or top side
  - Bottom or bottom side entry supported by rotating enclosure during installation
- Load wire entry supported on top, sides or bottom

SHORT-CIRCUIT CURRENT RATING AND LUG SIZING

TYPE	MAX RATING	SCCR RATING	INPUT LUG WIRE SIZE
Main Lug	100A,200A, 400A	10kA, 14kA	2x6AWG-250kcmil (or 1x500kcmil w/ kit for 48ckt panels), 1x350kcmil neutral (dual lug on 48 channel panel), 1x14AWG-2/0 ground (1x6AWG-350kcmil on 48 channel panel)
Main Fuse	200A	65kA	2x6AWG-250kcmil
Branch Breaker	15A, 20A, 30A	10 or 14kA	6-14AWG solid or stranded class B, C, K; 10,12 or 14 AWG dual conductor
GND/Neutral	NA	NA	6-14AWG

Note: Main feed lugs accept copper or aluminum wire; branch breakers accept copper wire only.

SPECIFICATIONS

ENVIRONMENTAL

- Thermal: 0-40°C; 32-104°F operating temperature
  - 24A circuit (30A breaker) - 1.4W, 4.8 BTU/hr
  - 16A circuit (20A breaker) - 1W, 3.4 BTU/hr
- Humidity; 5-95% non-condensing
- Complies with ESD immunity to IEC standard 1000-4-2

FUNCTIONAL

- **System-Wide control**
  - DMX input
    - Per-circuit patching
    - Per-circuit patch exclusions
    - Per-circuit threshold
    - 0-200 prioritization (matches sACN priorities)
  - Choice of DMX loss behavior: Hold last look or wait time
  - sACN input
    - Circuit-by-circuit patching
    - Circuit-by-circuit patch exclusions
    - 0-200 prioritization (matches sACN priorities)
  - Choice of sACN loss behavior: Hold last look or wait time
  - Global data loss behavior
  - UL924 emergency lighting with load shedding
    - Load shedding requires a UPS Control Backup Wiring Kit (7131K1817) and Uninterruptable Power Supply (UPS) by others
    - UPS to supply 800W-2400W AC power to control processor
- **Application/Space segmented Control**
  - Space segmenting: up to eight spaces per panel
  - Power sequencing
  - Presets
  - Zone control: up to 16 zones per space
  - TimeClock (up to 50 events)
    - Event types: Preset and sequence activation, Flick warn
    - Timed hold (24 hours max.)
    - Auto-timed hold
    - Indefinite holds
    - Scheduled event overrides
    - Calendar and time of day based event scheduler
    - Holiday shut off
    - Astronomical time events: sunrise/sunset offsets
  - Integral station power supply (for up to six stations with up to six power panels connected)
- **Global monitoring**
  - Per circuit
    - Breaker-trip notification
    - Relay state
    - Current draw per circuit
    - Phase voltage
    - Energy usage
  - Per space
    - Active sequences
    - Active presets
    - Zone levels
    - Active-clock events

SPECIFICATIONS

OPTION CARDS AND ACCESSORIES

0-10 Dimming Option

- 24 outputs of 0-10V sink dimming control rated for 400mA per output

Contact Input Option

- 24 dry contact inputs which can be used to:
  - trigger presets and sequences, which will play at the priority configured for architectural sources, or;
  - directly control one or more outputs. The priority of these outputs is configurable. If nothing is configured, the last action takes precedence

DALI Control Option

- 24 control loops of broadcast DALI control
- Each loop supports up to 64 ballasts
- External DALI power supply required

Ride Thru Option

- Short-term power backup of control electronics
- Automatically engages when power is lost
- Recharges during normal power operation

UPS Backup Kit for Load Shedding

- Allows Power Control Processor to be powered via external UPS (by others)
- Required for load shedding applications
- UPS provides power to drive relays off when normal power is lost
- UPS for each Sensor IQ panel must by UL 924 Listed and rated for a minimum of 200W peak load

Branch Circuit Fuse Kit

- DIN-rail electrical enclosure with choice of 6, 12 or 24 fuse holders for class-CC fusing placed on the output of the breaker/relay
- Aids engineers in selective coordination* of emergency circuits

Note: Selective coordination is a study on emergency systems that assures that an overcurrent on the output of any downstream branch circuit results in that branch tripping/clearing before the upstream mains breakers.

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SENSOR IQ BREAKERS

GENERAL INFORMATION

ETC's Sensor IQ breaker is a high-quality, UL 489 Listed circuit breaker which incorporates the ability to rapidly switch the load using an internal solenoid when the breaker is in the 'on' position. The IQ breaker is designed with a high-inrush trip curve to handle the demands of modern entertainment and architectural lighting fixtures. IQ's unique hydraulic-magnetic trip mechanism maintains this trip curve throughout the operating temperature of the breaker, giving you outstanding protection against nuisance tripping.

A variant of the breaker without switching is available for standard breaker-panel applications.

Sensor IQ breakers are designed for use in Sensor IQ panels only.

Intelligent Breakers with Switching

MODEL	RATED CURRENT	POLES
IQ SM B15-277	15A	1-Pole
IQ SM B20-277	20A	1-Pole
IQ SM B30-277	30A	1-Pole

NOTE: All of the above branch circuit breakers are compatible with 240/415V systems.

Standard Breakers without Switching

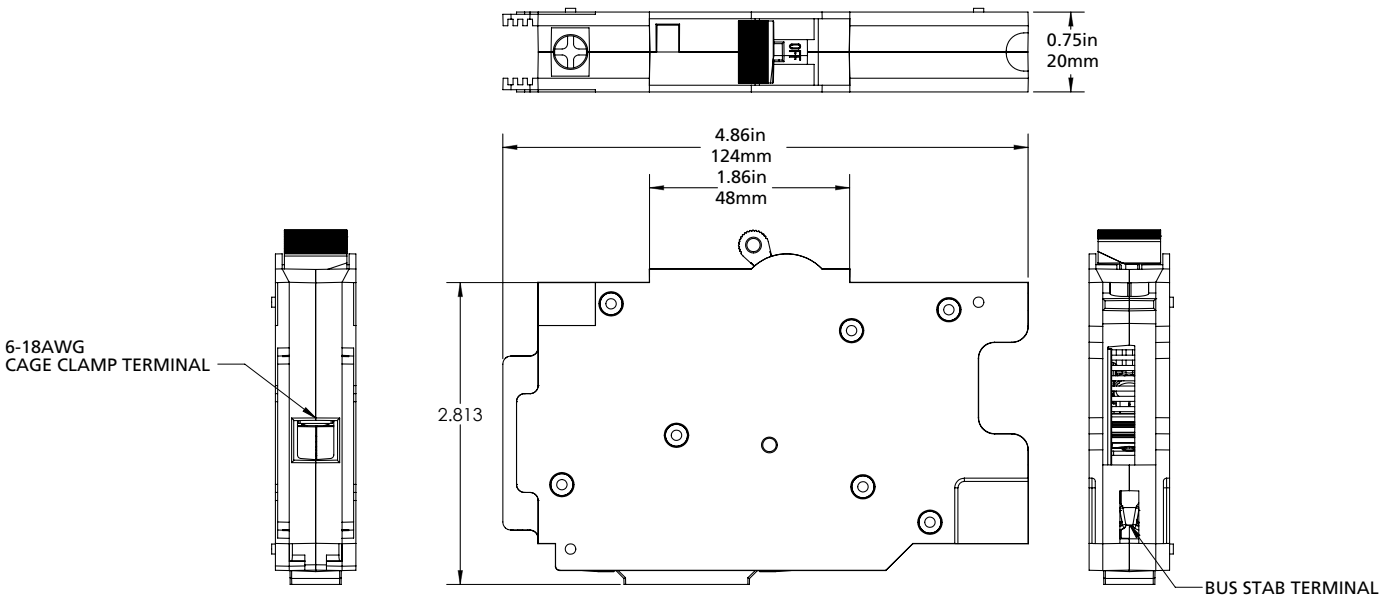
MODEL	RATED CURRENT	POLES
IQ B15-277	15A	1-Pole
IQ B20-277	20A	1-Pole
IQ B30-277	30A	1-Pole

NOTE: All of the above branch circuit breakers are compatible with 240/415V systems.

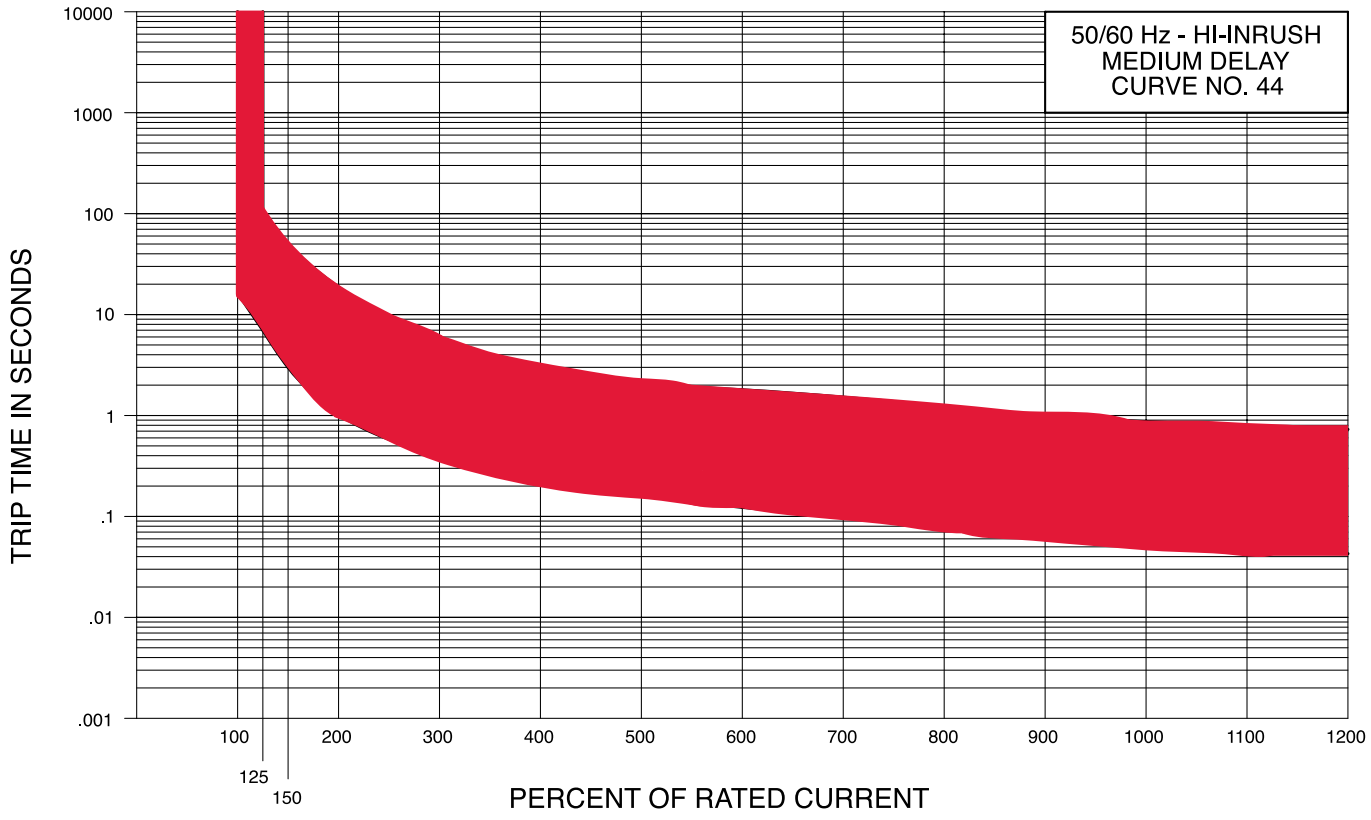
OPTION CARDS AND ACCESSORIES

MODEL	DESCRIPTION
IQ-LVD	0-10V Dimming Control Option
IQ-DALI	DALI Control Option
IQ-CI	Contact Input Option
IQ-UPS-KIT	UPS Control Backup Wiring Kit - **required for shedding normal loads when the emergency state is active; a UL 924 Listed UPS (provided by others) with a minimum load rating of 200W peak load is recommended for each Sensor IQ panel for load shedding applications**
IQ-RTO	RideThru Option
IQ277-500KCMIL	IQ-48 500kcmil feeder lug kit for support of 400A feeders up to 500kcmil
IQSC-6, -12, -24	Branch circuit fuse boxes that may be used for selective coordination of loads (see p.3 for details)
IQ12/24 ISO GND, IQ48 ISO GND	Isolating ground bar
NEW IQ-TAP	Mains feed tap kit for normal sense circuits for emergency lighting control (not for use with ELTS2)
	Echo Sensors, Stations, Zone Controllers, Station Power Modules and Interfaces

SENSOR IQ BREAKER PHYSICAL SPECIFICATIONS



TIME CURRENT CURVE



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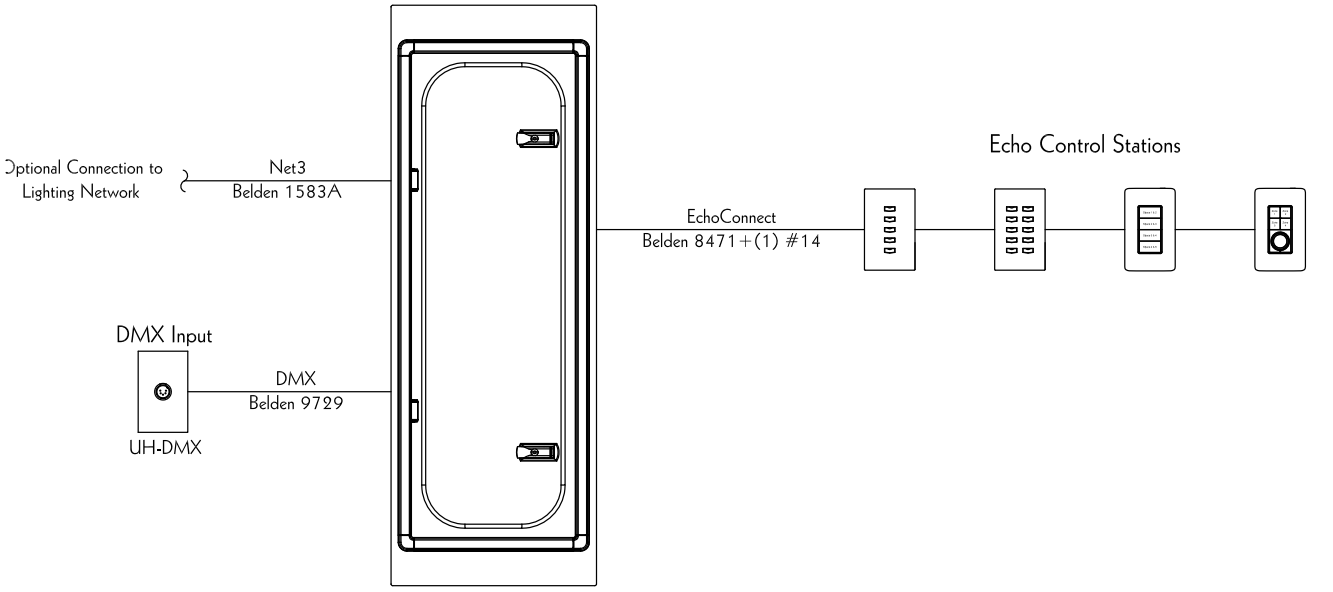
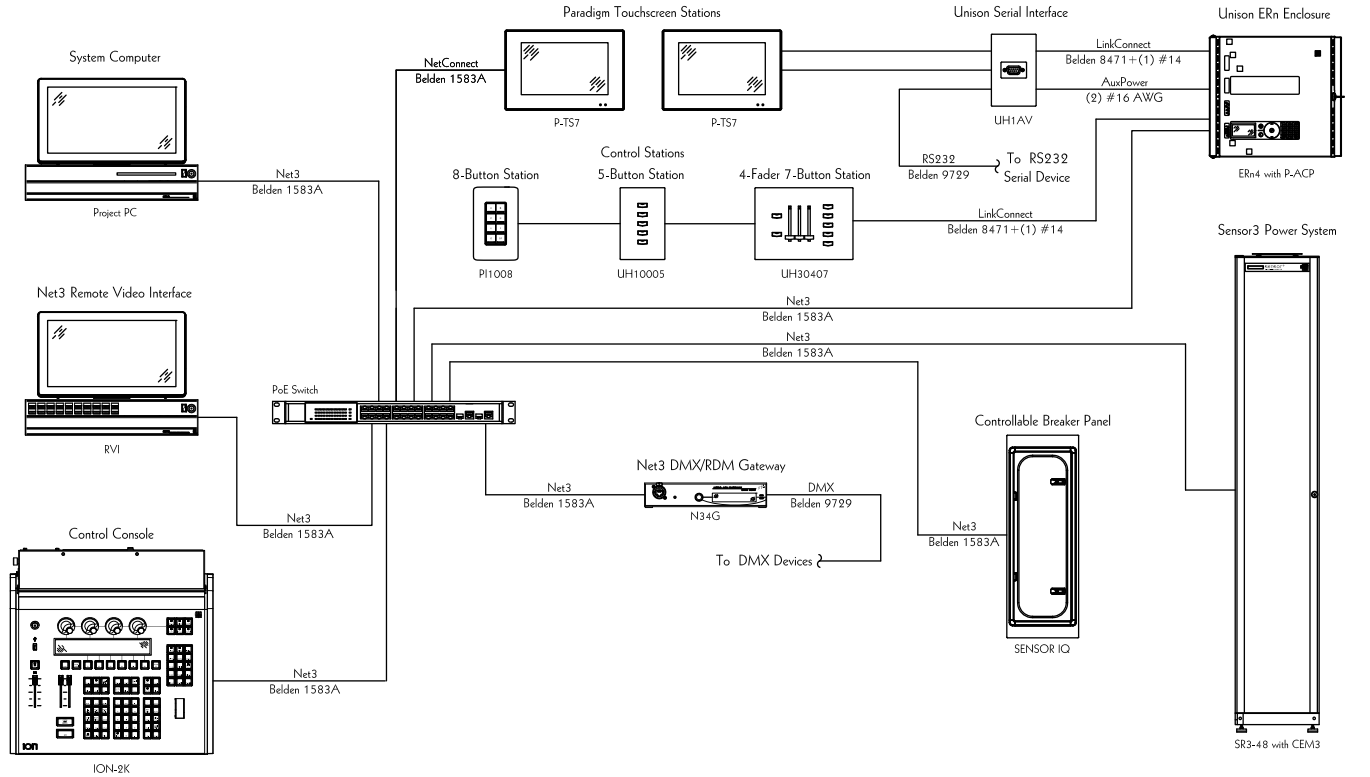




PHYSICAL

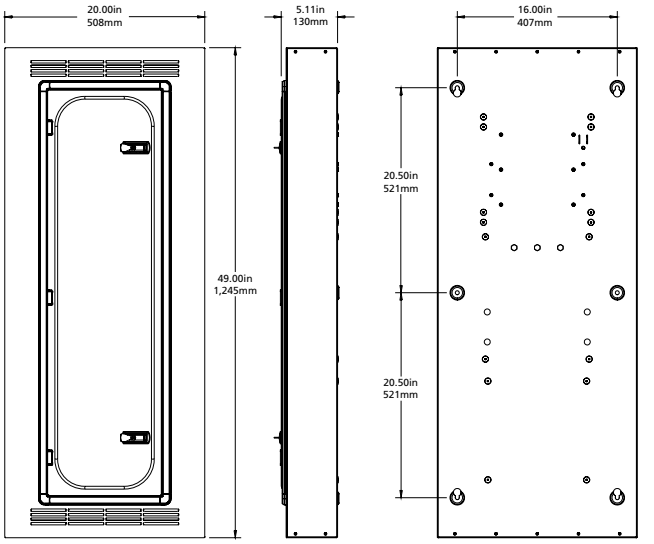
Sensor IQ Dimensions

MODEL	HEIGHT		WIDTH		DEPTH	
	in	mm	in	mm	in	mm
IQ12-277(240)	49	1,245	20	508	5.11	130
IQ24-277(240)	55	1,397	20	508	5.11	130
IQ48-277(240)	73	1,855	20	508	5.11	130

Sensor IQ Weights

MODEL	WEIGHT		SHIPPING WEIGHT	
	lb	kg	lb	kg
IQ12-277(240)	40.0	18.2	44.6	20.3
IQ24-277(240)	50.0	22.7	54.0	24.5
IQ48-277(240)	86.0	39.0	91.3	41.4

IQ12-277(240)



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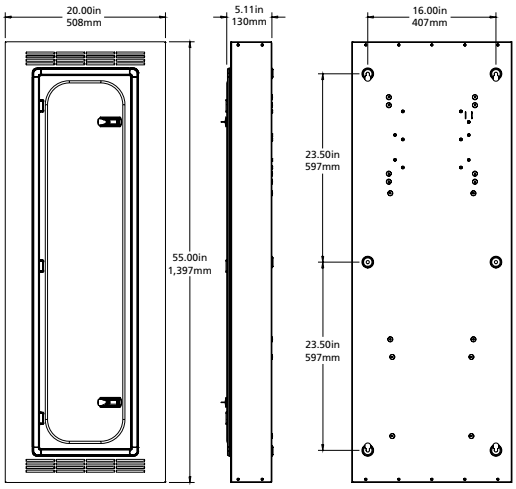

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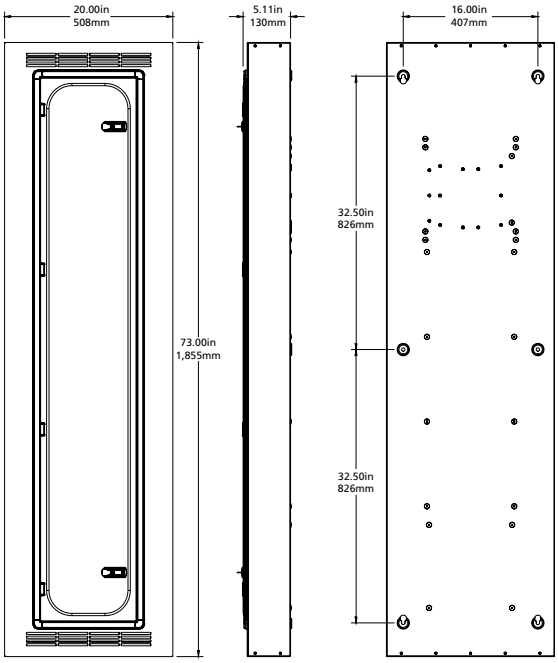

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