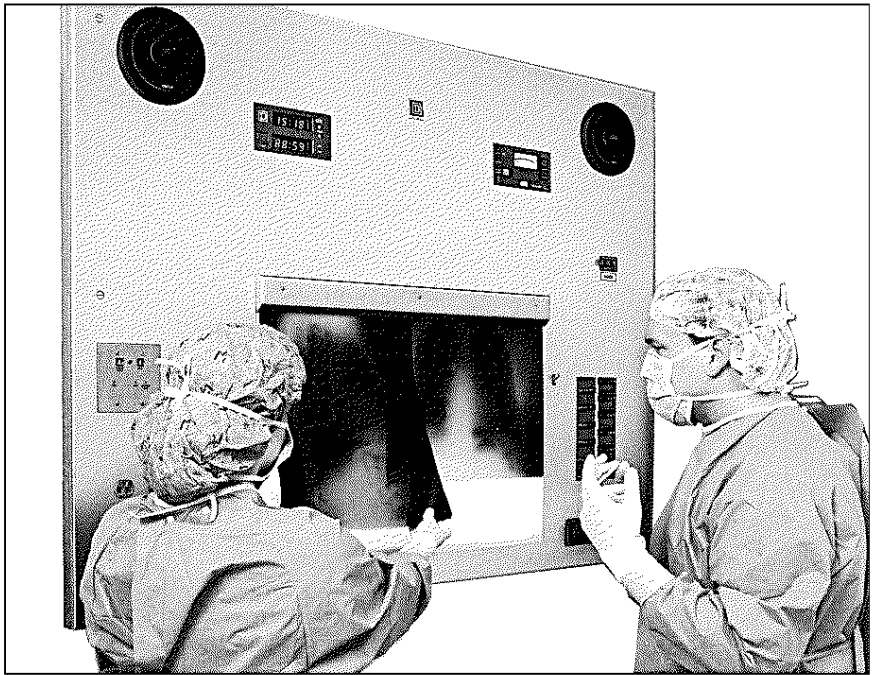

Surgical Facility Panels



Isolated Power Systems for Maximum Efficiency

ISO 9000 Registered Facility

Square D surgical facility panels are manufactured in a facility that has been registered to ISO 9002 by Underwriters Laboratories in the United States. This major accomplishment is just the first step in demonstrating our commitment to quality.

ISO 9000 is a series of standards recognized by nearly 100 countries and is used for global quality registration. The ISO standards describe elements of quality systems that are designed to ensure that a product or service meets all requirements before it is delivered to the customer. To achieve registration, facilities must document every process they follow—from building a product to taking corrective action—and go through an audit by an independent third party.

Square D's Oshkosh, Wisconsin facility manufactures low voltage dry type lighting, general purpose, open core and coil transformers, motor starting auto-transformers and hospital isolated power systems.



Square D Company

Square D Power-Cast transformers are manufactured in a facility that is Quality Systems Registered by Underwriters Laboratories to ISO 9002.

Surgical Facility Panels

Square D surgical facility panels combine several required operating room components in an economical, UL recognized package. Isolated power centers, power outlets, time clocks and controls, and x-ray film viewers are grouped together in one enclosure that can be easily installed and maintained. When installed separately, these items require expensive labor, and take up valuable surgical suite space.

High Efficiency

Surgical suites require an extremely high degree of efficiency. Surgical facility panels eliminate unnecessary traffic problems by concentrating certain electrical supply items in one area. By centralizing the location of critical time keeping equipment and x-ray viewing equipment, operating room efficiency is increased.

Simple Installation Reduces Costs

Reduced labor and material costs are a major advantage of surgical facility panels. Installation is simplified because all of the required electrical supply components for the surgical suite are already assembled together in a single unit. Also, many of the electrical conduits required to feed power to these components are eliminated.

Guaranteed Equipment Compatibility

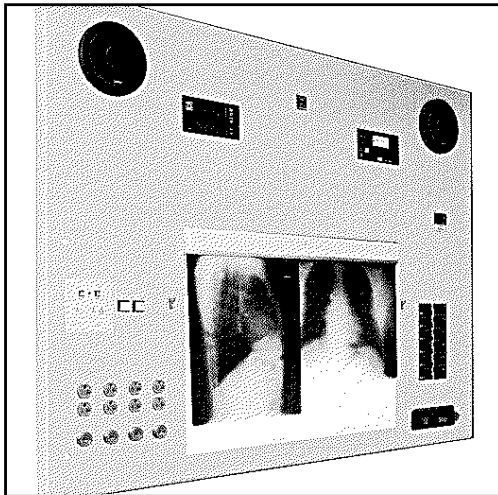
Perhaps the most critical advantage of Square D surgical facility panels is the total compatibility of pre-assembled components. Pre-assembly eliminates the uncertainty of component compatibility, and the difficulties of coordinating with other equipment, such as medical gas, patient monitoring and medical supply storage equipment.

Standard Equipment

- Square D 3 KVA hospital isolation system with microprocessor controlled line isolation monitor, load center and isolation transformer.
- Double wide x-ray film illuminator.
- Square D digital clock system.
- Power receptacles.
- Ground jacks.
- Equipotential ground bus bar.

Optional Equipment

- Stereo system with AM/FM stereo radio, CD player and speaker system.
- Provisions for mounting surgical light controls.
- Isolated power x-ray receptacle for portable x-ray machine.
- Code alarm button.
- 5.0, 7.5 and 10.0 KVA isolation transformers.



Combining critical operating room electrical components within Square D surgical facility panels ensures the compatibility of the electrical components and increases operating room efficiency by eliminating unnecessary traffic problems.

Quality Design and Construction

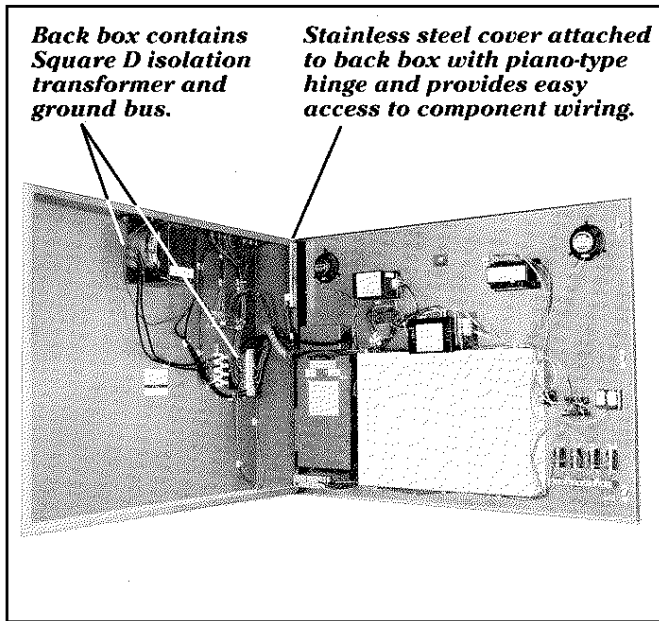
With over 50 years experience as a supplier of hospital specific electrical components, Square D has the expertise necessary to meet the ever increasing demands of the medical industry. Square D provides reliable products and support services our customers have grown to depend upon.

Custom Designed

Square D surgical facility panels are considered the standard by which operating room panels are measured. Custom designed and manufactured with the architect, builder and operating room personnel in mind, these panels are design friendly, installation friendly and user friendly. Each panel incorporates a steel backbox with a hinged stainless steel cover that allows easy access to all panel mounted components.

Quality Manufacturing

Square D surgical facility panels are constructed in accordance with the requirements of UL 1047 (standard for Hospital Isolation Systems) and are UL Listed. All materials used within the panel are of the highest quality available and most of the individual components are manufactured by Square D Company directly. The isolation transformers, line isolation monitor, circuit breakers, digital clock, and equipotential ground bar are the same components as used in Square D hospital isolation panels.



Back box contains Square D isolation transformer and ground bus.

Stainless steel cover attached to back box with piano-type hinge and provides easy access to component wiring.

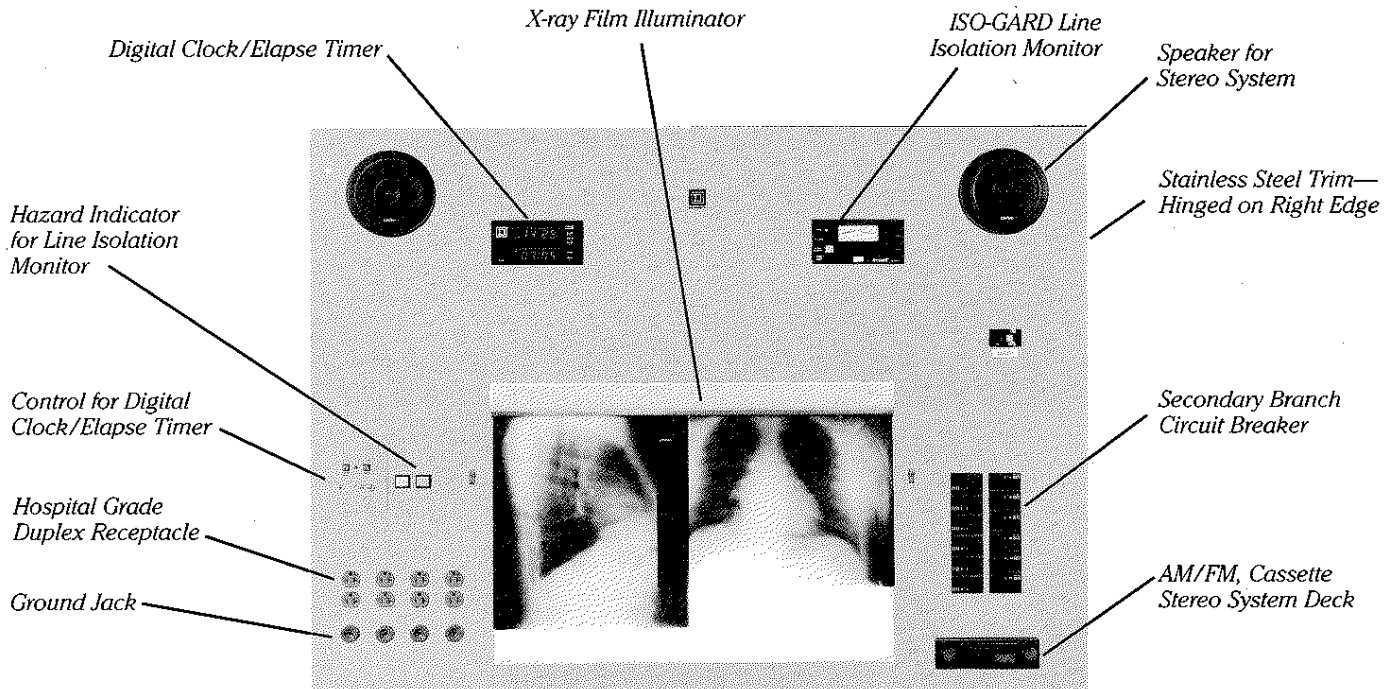
Square D surgical facility panels contain all required components and are pre-wired to ensure ease of installation. Isolated power centers, power outlets, time clocks and controls, and x-ray film viewers are grouped together in one enclosure that is easily installed and maintained.

Ease of Installation

Installation of the panel is similar to any typical isolation power center. A backbox which contains the isolation transformer is mounted during the wall stud framing of the operating room. At this time all conduits and wires can be brought to this box. After all plastering or tiling has been completed the hinged cover of the panel can be installed. The hinged cover will contain items such as the load center, LIM, film viewer, etc. and an electrical interlock which disconnects all power within the panel upon opening the cover for maintenance.

Components Totally Compatible

Most of the surgical facility panel's major components are manufactured by Square D, such as the ISO-GARD® line isolation monitor, isolation transformer, load center, QO circuit breakers, digital clock and ground bus bar. The optional items, such as stereo systems, surgical light provisions, code alarm controls, vacuum bottle storage areas, medical gas outlets, x-ray receptacle for portable x-ray machine and nurse call provisions are assembled prior to shipment and are collectively compatible.



Digital Clock/Elapse Timer

X-ray Film Illuminator

ISO-GARD Line Isolation Monitor

Speaker for Stereo System

Hazard Indicator for Line Isolation Monitor

Stainless Steel Trim—Hinged on Right Edge

Control for Digital Clock/Elapse Timer

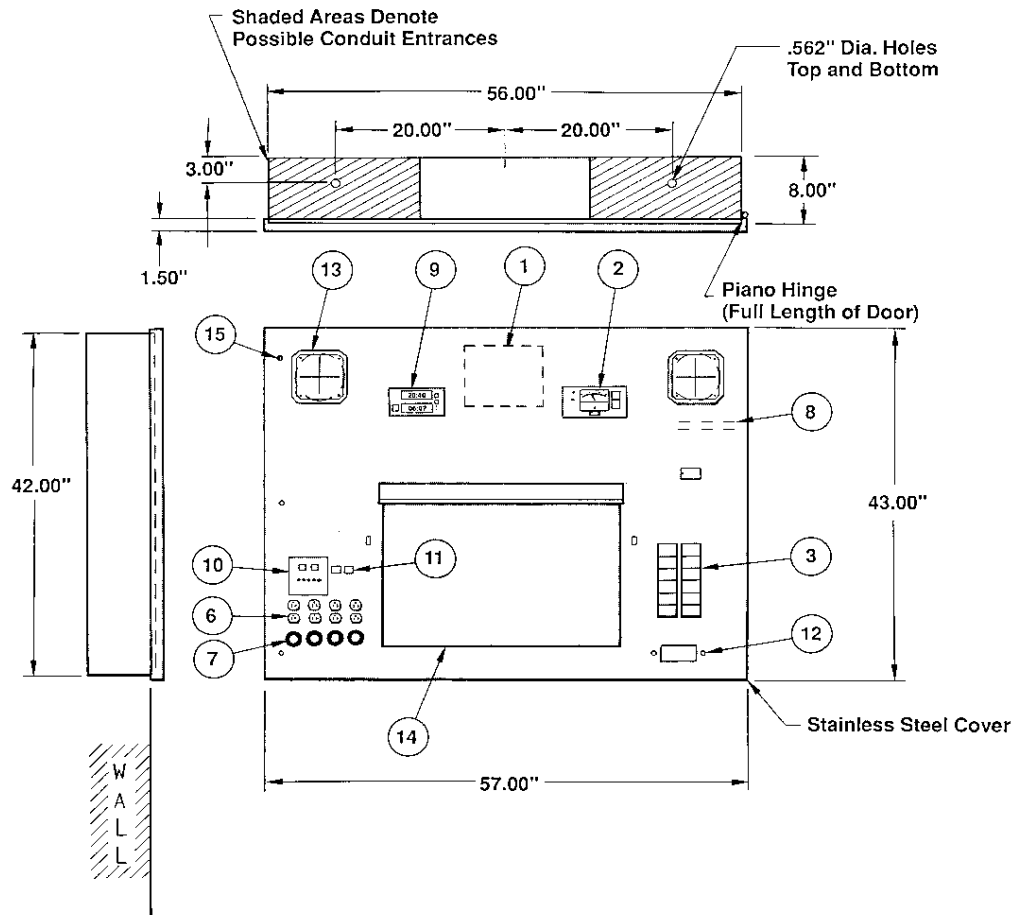
Secondary Branch Circuit Breaker

Hospital Grade Duplex Receptacle

Ground Jack

AM/FM, Cassette Stereo System Deck

Dimensional Data



Item	Description
1	Isolation Transformer 3 KVA 120-120
2	ISO-GARD Line Isolation Monitor
3	Circuit Breaker Panel with: 1— Primary Circuit Breaker-30 Amp, 2 Pole 8— Secondary Branch Circuit Breakers, 20 Amp, 2 Pole
*4	Power Lock Receptacle
*5	Single Receptacle, 20 Amp, Hospital Grade
6	Duplex Receptacle, 20 Amp, Hospital Grade
7	Ground Jack, 30 Amp, Green
8	Ground Bus Bar
9	Digital Elapsed Timer / Clock
10	Control for Digital Elapse Timer / Clock
11	Hazard Indicator with Push-to-Test
12	AM/FM Cassette Stereo System Deck
13	Speaker for Stereo System
14	X-Ray Film Illuminator
15	Trim Lock

*Available, but not shown in illustration.

Specifications

The contractor shall furnish and install Surgical Facility Panels, Catalog #SFS-200, as indicated on the drawings. The panels are to be manufactured by Square D Company, Oshkosh, Wisconsin. Location of panels is indicated on the drawings and cannot be changed without written permission from the Consulting Electrical Engineer and Architect.

The panels shall be factory wired and tested and include a Square D/Sorgel shielded low leakage isolating transformer, primary and secondary circuit breakers and Square D Iso-Gard Line Isolation Monitor.

Enclosures

The enclosure shall be 12 gauge steel which will be degreased, phosphatized, primed and finish painted with a coat of baked enamel, except for the front trim which is to be of Type 304 stainless steel with a No. 4 brushed finish. The enclosure will be semi-flush mounting unless otherwise stated on the plans; units shall have a maximum depth of 8" (12" for 7.5 KVA panels). The front trim shall be mounted on a continuous length piano-type hinge for access to field wiring compartments. The front panel shall not contain any type of grille or louver for the purpose of Isolation Transformer ventilation. The panel and transformer shall be so designed that the heat generated by the transformers under full load conditions shall not affect the normal operation of the circuit breakers and ground detector. The maximum front panel temperature shall not exceed 30° Centigrade rise under full load continuous operation. Certification of this temperature test shall be provided to the Consulting Engineer upon request.

Isolation Transformer

The isolation transformer shall be wound with an electrostatic shield between the primary and secondary windings which shall be grounded to the enclosure. The electrostatic shield will be of such design that it will prevent direct shorting of the primary winding to the secondary winding and reduce the coupling of harmonic distortions between the primary circuit and secondary circuits. The total leakage current to ground from the transformer secondary winding shall not exceed values shown in Table 29.2 of UL 1047. Regulation to be certified not to exceed 2.6% at .8PF at 20° Centigrade above the full load continuous operating temperature in accordance with NEMA-ANSI Standards. The transformer is to be single phase, 60-hz, with primary and sec-

ondary voltages as listed in the drawings and/or schedule. Class H rated insulation shall be used in the manufacture of the transformer and the temperature rise will be limited to 55° Centigrade above ambient under full load conditions when tested in accordance with NEMA-ANSI Standards.

Transformers must have a 220° Centigrade UL recognized insulation system. The core and coil shall be vacuum impregnated and shall have a final wrap of insulating materials so as not to expose any bare conductor.

The core shall be of stacked design and securely clamped and bolted. The core and coils shall be internally isolated from the enclosure by means of a suitable vibration dampening system. The design sound level of the completed units shall not be in excess of 27 decibels. Certified sound level reports shall be furnished for each individual unit upon the request of the Consulting Engineer.

Circuit Breakers

The panel shall be equipped with a two pole circuit breaker to protect the primary windings of the isolation transformer. The rating of the primary circuit breaker shall be in accordance with Article 450-3 (b) (1) of the National Electrical Code (NFPA 70). The panel shall have at least eight factory installed secondary branch circuit breakers rated at 20 amperes. All secondary branch breakers are to be two pole and shall utilize a combination thermal and magnetic trip mechanism. The panel shall be designed to allow field conversion for up to 16 two pole branch circuit breakers. The conversion shall not require the use of any special tools or punches. Refer to the panelboard schedule for quantity and sizes of secondary branch circuit breakers.

Line Isolation Monitor, ISO-GARD®

The line isolation monitor shall be the Square D ISO-GARD Series D. The LIM shall use microprocessor-based digital signal processing to continually monitor the impedance from all secondary conductors of the isolated power systems to ground. The LIM shall be capable of measuring all combinations of capacitive and resistive faults including balanced, unbalanced and hybrid faults. LIMs which internally switch between either line and ground will not be accepted. The LIM shall not contribute more than 50µA to the total hazard current of the system being monitored.

Specifications Continued

The LIM shall have the following specifications:

Operating voltage	85 to 265 VAC
Accuracy	5% or better
Alarm level	2 or 5 mA (selectable)
Alarm band width	Zero (0)
Alarm hysteresis (on/off)	50µA
Mode	Single or three phase
Monitor hazard current	50µA
Operating frequency	50 or 60 Hz

All of the listed specifications shall be contained within one unit and be user selectable thus allowing the LIM to be interchanged from system to system.

The LIM shall incorporate a momentary test switch. When pressed, it shall check and recalibrate the unit. Additionally, the test switch shall perform a complete test of all indicating lamps and meters on the face of the LIM and at any remote indicating stations.

The LIM shall use digital signal processing to determine the hazard current of the system being monitored. The microprocessor within the LIM shall be #MC68HC16Z1 as manufactured by Motorola. The algorithms used to determine the system hazard current shall be preprogrammed in the LIMs microprocessor. At least every 65 minutes, the unit shall recheck its calibration and recalibrate the system to original performance specifications. Additionally, by pressing the LIMs momentary test switch, an immediate check and recalibration of the LIM shall be performed.

If internal components are more than 30% out of original specifications because of aging or failure, the LIM shall notify the user by displaying a unique error code thus eliminating the need for periodic manual testing to determine the unit's integrity. LIMs which use analog signal processing technology and/or require manual testing or recalibration will not be accepted.

The line isolation monitor shall have an optical infrared LED type serial port on the face of the unit for transmitting pertinent LIM and isolated power system data directly to a personal computer (PC). The transmission of data shall not require any mechanical or direct electrical connection to the line isolation monitor. The protocol of data transmission shall be compatible with all Hewlett Packard palmtop personal computers including Hewlett Packard models HP95LX and HP100LX.

The LIM shall provide both analog and digital indication of the isolated power system's hazard current. Digital indication shall be provided by a digital meter and analog indication shall be provided by an LED bar graph type meter calibrated from 0 (zero) to 160% of the alarm setting of the LIM. LIMs with only analog or only digital indication will not be accepted.

The LIM shall have a green safe light and a red hazard light on the front panel. The red hazard light shall remain illuminated for the duration when the isolated power system hazard current is above the selected alarm level of the LIM. An audible alarm shall be incorporated into the unit and shall activate in conjunction with the red hazard light. The audible alarm shall have high, low and off settings. A silence button shall be provided on the face of the unit to silence the audible alarm during fault conditions. Upon silencing the audible alarm, a yellow indicating light shall illuminate to indicate the audible alarm has been silenced. The red hazard light and yellow silence light shall automatically reset when the fault condition is eliminated. During fault conditions, the red hazard light and all red segments to the LED bar graph shall blink at a constant rate. All lamps are to be long life LED type.

A set of normally open and normally closed contacts, rated 3 amperes at 120VAC, shall be provided on the LIM for use with external alarm systems. The LIM shall also provide a 12VAC output signal rated at 10VA to power remote indicator alarm units. This 12VAC output signal shall not increase the hazard current of the system being monitored. Provisions for connection of remote metering shall also be provided as part of the LIM. These connections shall have the ability to operate either an analog or digital type remote meter.

The line isolation monitor shall incorporate a loss-of-ground feature which will activate the audible and visual alarms when connection is lost with the reference ground of the isolated power system being monitored. In addition to activating the alarm, the unit shall display an error code in the digital display of the LIM.

All switches, meters, and indicating lamps shall be flush with the face of the line isolation monitor to provide a neat and clean appearance. The entire front face of the unit shall have a polymer overlay that protects the unit from the intrusion of housekeeping cleaning agents. LIMs with exposed fuses, meters, switches, or circuit breakers will not be accepted.

Specifications Continued

The design of the line isolation monitor shall consist of two circuit boards interconnected by a ribbon connector. The two boards shall contain all of the unit's electrical components and be mounted in the rear housing of the LIM. A phenolic cover shall complete the assembly. The unit shall not contain any components, such as circuit breakers, meter switches or indicating lamps, which are mounted on or attached to the front cover of the LIM. Access to the inside of the LIM shall be through the front of the unit thus eliminating the need to remove the unit from its mounting position to change any of the settings. Unique fasteners shall attach the front cover of the unit to prevent unauthorized access to the interior of the LIM.

The line isolation monitor shall be manufactured by Square D Company, UL component recognized under UL1022 Standard for Line Isolation Monitors, and UL recognized as meeting CSA 22.2 the Canadian Standard for Line Isolation Monitors.

Power Receptacles

The Surgical Facility Panel shall contain (4) Hubbell #23000-HG power receptacles or equal. (Alternate receptacle configuration is (4) Hubbell #8300R power receptacles.) The receptacles shall be rated at 20 amperes and shall be UL listed for hospital use. Termination of conductors to receptacles shall utilize crimp-on type connectors. Each receptacle shall be individually factory wired to a 20 ampere 2 pole circuit breaker located within the Surgical Facility Panel. Receptacles are to be attached to the Surgical Facility Panel by use of copper studs welded to the back of the stainless steel cover. Units which use exposed screws to attach receptacles will not be accepted.

Ground Jacks

The Surgical Facility Panel shall contain a minimum of six 30 ampere green ground jacks as manufactured by Hamden catalog #SLR-3SE. The ground jacks are to be electrically connected to a copper ground bar attached to the 1/4 x 20 brass studs on the rear of the ground jacks. The ground jacks shall be UL listed.

Ground Bus Bar

The Surgical Facility Panel shall contain a ground bus to which the ground bar from the ground jacks, the ground wire from all receptacles and the ground wire from the LIM are

connected. The ground bus bar is to serve as the reference ground point for the operating room. The ground bus bar shall contain a sufficient number of points to allow termination of all internal ground wires and the termination of all ground leads from permanently installed metal objects in the surgery area.

Film Illuminator

The Surgical Facility Panel shall contain a general purpose double film illuminator. Each half of the illuminator shall be switched from toggle-type switches located on the trim of the illuminator. Unit shall be as manufactured by Square D or equal.

Wiring

Wiring within all panels shall be in accordance with applicable NEC Code Standards. Low leakage insulation shall be used on all wire. The total panel leakage for a 3 or 5 KVA panel shall not exceed 30 microamperes when energized and assembled. The manufacturer of the panel shall provide certified test data on each individual panel as to maximum leakage of each complete assembly.

The contractor shall wire all external receptacles to the panels using copper stranded conductor having a cross-linked polyethylene insulation or equivalent with a dielectric constant of 3.5 or less. Minimum insulation wall thickness shall be 3/64" for #10 and #12 AWG and 5/64" for #8 AWG and larger conductor. Under no circumstances shall wire pulling compound be used when pulling wire for isolated circuits. All wiring shall be color coded in accordance with NEC and appropriate NFPA Standards.

MCT-12B Display Clock

The dual display clock and elapsed time indicator shall be as manufactured by the Square D Company. The unit shall have separate display for 12/24 hour clock and elapsed time.

The light displays shall be vacuum fluorescent 15 MM in height and plainly visible at 30 feet. One 1/4 amp line fuse shall be accessible from the front trim. The controls to operate the elapsed timer and to set the clock time shall also be located on the face of the unit. These controls shall operate in parallel with an optional remote control panel. Remote controls to be furnished as shown on drawings.

Specifications Continued

The elapsed timer shall be capable of holding and then resuming a count at the discretion of the operator. The solid state design shall allow the elapsed timer to instantly reset. The clock/timer shall have an extra set of contacts, which when closed will actuate the counting process. An auxiliary battery power supply will be supplied to continue the time and count function during a power interruption, and restore the display when the power is resumed.

The clock shall be field adjustable to display either 12 hour or 24 hour time. Leading zero blanking shall be provided in the twelve hour mode only.

MCT-CT Remote Control

The remote control shall be the MCT-CT control panel as manufactured by the Square D Company. The unit shall operate in conjunction with the MCT-12B. The control panel shall consist of "count/reset" and "hold" push buttons. In addition, two push buttons shall allow for proper setting of the clock time.

Standards

All panel components and accessories shall be manufactured in accordance with the applicable UL, NEMA and NFPA standards and codes but not limited to:

NFPA No. 99	Standard for Healthcare Facilities
NFPA No. 50	National Electrical Code
UL No. 1047	Hospital Isolation Systems
UL No. 1022	Line Isolation Monitors

Additionally, the manufacturer shall build equipment in accordance with a certified quality system. Certification shall be equivalent to ISO 9002. Manufacturer of Surgical Facility Panel shall supply certification information upon request of the consulting engineer or hospital. Certification information must include:

- Name of certifying organization
- Description of quality system if certification is other than ISO 9001
- Date of certification
- Copy of certificate

AM/FM Cassette Stereo System (Optional)

An AM/FM, cassette stereo system shall be provided as an integral part of the Surgical Facility Panel. The system shall

include an AM/FM stereo cassette player with 50-watt (25-watts per channel) booster amplifier, two 6.5" speakers and low voltage power supply. The contractor shall connect unit to hospital's antenna system to ensure proper radio reception. Antennae mounted within Surgical Facility Panel backbox will not be accepted. Stereo system components shall be Clarion brand.

AM/FM Compact Disc (CD) System (Optional)

An AM/FM, CD stereo system shall be provided as an integral part of the Surgical Facility Panel. The system shall include an AM/FM, CD stereo player with 50-watt (25-watts per channel) booster amplifier, two 6.5" speakers and low voltage powersupply. The contractor shall connect unit to hospital's antenna system to ensure proper radio reception. Antennae mounted within Surgical Facility Panel backbox will not be accepted. Stereo system components shall be Clarion brand.

Code Alarm Button (Optional)

The code alarm button shall consist of a set of normally open and normally closed contacts connected to a 2-1/4" diameter red mushroom push button. Lettering below the button shall read "Emergency." When depressed, the button shall signal an alarm to the hospital staff. When applicable, the Code Alarm Button shall be interfaced with the elapsed timer, providing its activation when the button is depressed.

X-Ray Receptacle With Indicator Alarm (Optional)

An x-ray receptacle with indicator alarm shall be provided for connection to the portable x-ray machine isolated power distribution panel board. Receptacle shall be rated at 60 amperes and be equivalent to Hubbell #IN-16494. The indicator alarm shall be equivalent to Square D Catalog #IA-1C.

Substitutions

Suppliers asking consideration as an approved equal shall submit full guaranteed performance data on similar units in service for two or more years. Performance data to be submitted on each size required and received by the engineer no less than ten days prior to bid due date in order to allow acceptance by addendum. All bids are to be based on specified equipment and show credit to be allowed owner if approved substitute is used.

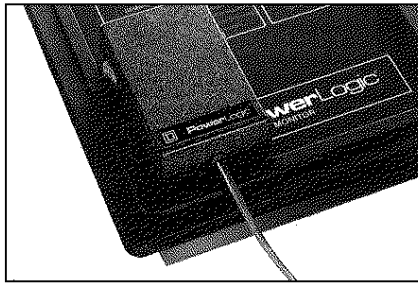
From Single Products to Complete Systems, Look to Square D.

Square D Company is a leading manufacturer and supplier of electrical distribution, automation and industrial control products. The full line of Square D products are available from an extensive network of Square D distributors located throughout North America.

Square D Company is part of Groupe Schneider, an \$11 billion global manufacturer of electrical distribution, automation and industrial equipment.

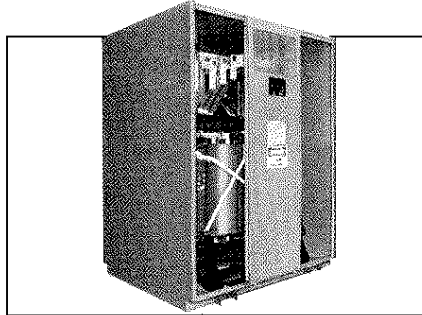
Square D has been serving industrial, construction markets, as well as public utilities, individual consumers and government agencies for over 90 years. We offer unsurpassed quality, innovative design and a committed staff of trained sales representatives and service technicians willing to stand behind every product we sell.

For more information on how we can fulfill your electrical needs, call your local Square D sales representative or authorized Square D distributor.



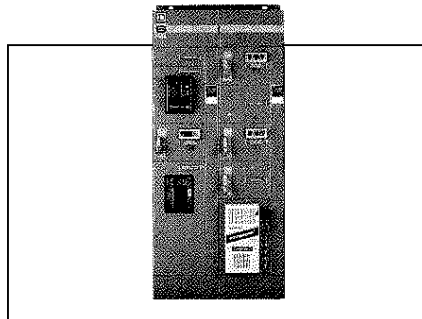
POWERLOGIC® System

The POWERLOGIC system was developed for industrial, institutional, commercial and utility applications, both large and small, to help manage their total electrical system investment: energy costs, the costs of operation and maintenance, the cost of the power equipment itself.



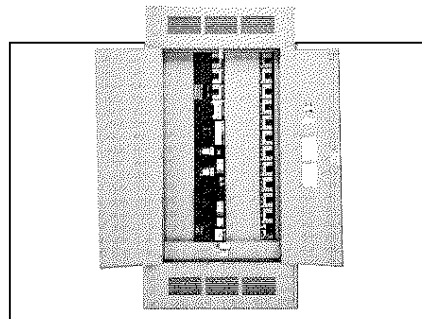
Uni-Cast™ Cast Coil Transformers

Uni-Cast cast coil transformers are an optimum selection for light to medium industrial and commercial power requirements. Combining the best characteristics of solid cast primary coils and full length, sheet wound secondary coils, the Uni-Cast transformer is available in primary voltage classes 2.5 to 34.5kV; 500 through 10,000 KVA sizes.



MODEL 6 Motor Control Centers

Square D MCCs are designed and built for long-term performance. Model 6 features Type S NEMA rated contactors and starters and heavy duty push buttons. Exceptional structural strength is achieved through the 12 guage frame, welded corner channels, single vertical bus molding and bolted mounting shelf. Square D MCCs are built to meet or exceed UL, CSA, NEMA and EEMAC standards.



I-LINE® Panelboards

I-LINE panelboards improve installation and maintenance efficiencies while increasing flexibility. The unique single vertical bus stack supports quick installation of circuit breakers (an average of 20 seconds). It also allows branch circuit breakers to be mounted anywhere on the bus stack for greater flexibility and less wasted space.

