Introduction

The Square D® brand Power-Style® QED-2 Quick Connect Generator Switchboard from Schneider Electric addresses the growing market need for switchboards with quick connect terminals to facilitate connecting generators for temporary back-up power. Common applications include facilities such as nursing homes, hospitals (supplemental equipment not fed by emergency power), and stores with perishable products, that are sensitive to power outages, but typically do not have or require backup power sources.

Customers have become more sensitive to the need for temporary back-up power in order to reduce the duration of disruptions due to hurricanes, tornadoes, snow storms, brownouts, and other circumstances that can result in prolonged power outages. In these situations, a mobile generator can be brought in to quickly get a facility back on line.

Codes and Standards

The Quick Connect Generator Switchboard is UL Listed to the UL891 Switchboard Standard and is suitable for use as service entrance equipment. As part of the listing process, special lugs were designed and tested for use with Type W welding cable commonly provided with temporary generators. This switchboard is available in either NEMA Type 1 or Type 3R construction.

The Quick Connect Generator Switchboard also meets NEC 702 requirements for optional standby systems by providing key interlocking of the main and generator circuit breakers to manually transfer power between sources. An NEC 702 compliance label is affixed to the front of the switchboard to make it easy for inspectors to verify code compliance.

On December 8, 2006, the 2006 Supplement to the Florida Building Code became effective. Section 420.4.2.9.7 of this code requires a permanently installed service entry for a temporary electrical generator. The Quick Connect Generator Switchboard meets this code requirement, allowing health care facilities to quickly address the safety and well-being of their patients.

The Quick Connect Generator Switchboard can also be used in healthcare facilities that desire additional redundancy, as detailed in the Issue 37, September 6, 2006 Sentinel Event Alert published by The Joint Commission. One of the risk reduction strategies stated in this Alert is to, “Assess the need for additional redundancy through portable, truck-mounted generators and develop procedures to isolate generators from problem areas and to tie in supplemental equipment not normally fed by emergency power. Also, consider designing in emergency connection panels. These might, for example, be used to hook up a truck-mounted unit during construction or renovation.”
Application

The Quick Connect Generator Switchboard breaker section can be connected to the main switchboard by either cable or with bus. Generator switchboard sections are provided with copper bus. Each generator switchboard section has Sequence of Operation instructions on an engraved nameplate permanently attached to the front cover.

The Quick Connect Generator Switchboard section can be specified as part of a switchboard line-up for new installations, or as a stand alone section for retrofit applications. Flexibility of design allows retrofit sections to be installed either indoors or outdoors based on the customer’s needs.

Generator Breaker Section

Terminal Section (without generator circuit breaker)

Terminal sections can be used for cable-in, cable-out applications to feed a remotely located temporary generator disconnect. They are available with or without the quick connect terminals, and are standard with incoming Type W lugs. Another version is available for cable-in, through-bus-out applications. This allows the terminal section to feed a section with multiple temporary generator breakers when the facility has more than one main switchboard.
Compartments

The quick connect generator switchboard section consists of the following compartments:

- Incoming Quick Connect Compartment
- Generator Breaker Compartment
- Outgoing Load Connection Compartment

Incoming Quick Connect Compartment

The incoming quick connect compartment provides the terminals used to connect the temporary generator to the electrical system. The terminals can be either lugs or Hubbell plug-in receptacles in one of two configurations. One configuration consists of only lugs, suitable for connecting to Type W welding cable. The other configuration includes both lugs and Hubbell plug-in receptacles for maximum flexibility. The quick connect compartment has removable covers to reduce the risk of damaging the temporary generator cables. See Table 1 and Table 2.

Generator Breaker Compartment

The generator circuit breaker compartment contains a UL Service Entrance (ULSE) approved, Square D brand Powerpact® R-Frame circuit breaker serving as the generator disconnect. The generator circuit breaker is key-interlocked with the main circuit breaker in the main switchboard line-up. Each Quick Connect Generator Switchboard has easy-to-follow Sequence of Operation instructions on an engraved nameplate permanently attached to the front cover of the compartment. The generator circuit breaker is available with ground fault protection and customer metering as well as standard circuit breaker accessories. See Table 1.

Outgoing Load Connection Compartment

The outgoing load connection compartment is available with either through bus or lugs to connect to the main switchboard. This allows the generator section to be part of the main switchboard line-up for new installations, or located remotely from the main switchboard for retrofit applications.

Table 1 and Table 2 below show ratings and dimensions for the Quick Connect Generator Circuit Breaker and Terminal sections.

Table 1: Specifications for Generator Circuit Breaker Section (with R-frame circuit breakers)

<table>
<thead>
<tr>
<th>Ampacity</th>
<th>SCCR (Max)</th>
<th>Number of Sections</th>
<th>Width (Inches)</th>
<th>Depth (Inches)</th>
<th>Incoming Generator Lugs Only</th>
<th>Incoming Generator Lugs and Plug-In Receptacles</th>
<th>Terminals Per Phase/Neutral (Lug or Plug-In Receptacle)</th>
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Table 2: Specifications for Terminal Section (without circuit breakers)

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<th>Ampacity</th>
<th>SCCR (Max)</th>
<th>Number of Sections</th>
<th>Width (Inches)</th>
<th>Depth (Inches)</th>
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<th>Incoming Generator Lugs And Plug-In Receptacles</th>
<th>Terminals Per Phase/Neutral (Lug or Plug-In Receptacle)</th>
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**Sequence of Operation**

The nameplate on each Quick Connect Generator circuit breaker section provides complete Sequence of Operation instructions. A one-line diagram clearly shows the key interlock scheme for additional clarification. Both the instructions and diagram are written in English and French. The diagram and an example of the English instructions are shown below.

### Loss of Utility Power
1. Open all distribution breakers.
2. Open the main breaker and rotate the key A1 to lock the breaker in the open position – key is now removable.
3. Remove generator breaker receptacles cover or generator breaker lugs cover.
4. Connect generator cables to either the receptacles or to the generator breaker incoming lugs per the connection sequence label.
5. Verify proper phase and voltage connection.
6. Remove key from the lock and insert it into the lock on the generator breaker.
7. Rotate key A1 to unlock generator breaker, key is now held captive.
8. Start generator.
10. Close generator breaker, close appropriate distribution breakers.

### Return of Utility Power
1. Open distribution breakers.
2. Open generator breaker and rotate the key A1 to lock the breaker in the open position – key is now removable.
3. Remove key from the lock and insert into the lock on the main breaker.
4. Shut down generator.
5. Disconnect generator cables per the connection sequence label.
6. Replace all covers.
7. Rotate key A1 to unlock the main breaker, key is now held captive.
8. Close main breaker, close all distribution breakers.

![Diagram of Sequence of Operation]