Motorized Breakers Make Control Easy!

All relay based systems **MUST** be electrically protected by a circuit breaker. Motorized breakers eliminate the need for wall or rack mounted relay based systems...

- Saves Space
- Saves redundant installation and hardware costs!
- UL listed circuit breaker with built-in internal switching capability manufactured by SQUARE D
- Time tested, in service over 20 years
- Available in 15A, 20A and 30A - 1, 2 or 3 poles for remote control of all electrical loads
- Robust - rated for 60k on, off, on cycles
- Energy efficient - NO holding current or heat sinks required to maintain state - Runs cool, lasts long!
- Automatic load shedding and brownout protection in every panel.
- Emergency override function standard on every panel.

Specifying in 5 easy steps

1. Choose the control method: **SC=RS-232**
2. Choose the cabinet style: **LC** for load center and **P** for panelboard
3. Choose three phase (3) or single phase (1)
4. Choose the number of circuits: **26** or **41** Panelboards are only available in 41 circuits.
5. Choose the maximum number of controlled circuits: **10, 20, 30, 40**, or **50**.

EX: **SCLC 326-20** = a 3 phase load center with 26 circuits (24 max controlled)

SCP 341-30 = a 3 phase panel board with 41 circuits (30 max controlled)

All panels and load centers
Planning and Layout Worksheet — As-built door label

SCLC 127-xx Lighting Control Load Center

RS-232 controlled, AC power remote control for un-dimmed lighting circuits

Breaker types, sizes, positions and connections

Each motorized breaker is actuated by a command from a RS-232 control device. As-built door label example:

The RS-232 address of this breaker is _______.

The board jumpers set the RS-232 address of the board. Each breaker has a sub-address of 1-10. Bold line around box _______ = suggested control board: #1 (Top), #2, #3 or #4.

Fill in ______ box to indicate which control board this breaker is connected to.

The RS-232 # _______ is the RS-232 address of this breaker. As-built door label example:

For each motorized breaker, select the model number of the board and the breaker's address setup from the table provided.

How it works

The CONTROL POWER circuit breaker powers the circuit boards via a 24 volt transformer. The RS-232 address is set for each board by jumpers. The RS-232 output is an optoisolated, buffered, loop-thru for driving other RS-232 devices.

Motorized circuit breakers (face-marked REMOTELY OPERATED) are individually actuated by a command from a remote RS-232 control device. Output data availability is indicated by a flickering LED.

Each numbered LED indicates the status of that addressed breaker. The circuit breakers may be manually controlled by the TEST switches on each board.

Lit = ON, Unlit = OFF

Each circuit board controls up to ten 1, 2, or 3 pole motorized circuit breakers. Power and RS-232 data are fed to the first board of each panel.

RS-232 signals are fed to the first 1, 2 or 3 pole motorized circuit breakers. As-built door label example:

Each motorized breaker is actuated by a command from a RS-232 control device. The test switches work in the absence of a RS-232 signal. A valid RS-232 signal, indicated by a flashing LED, overrides the test switches.

CONTROL POWER

10A un-motorized breaker supplied installed.

Each motorized breaker is actuated by a command from a RS-232 control device.

Suggested Bold line around box _______ = control board: #1 (Top), #2, #3 or #4.

The RS-232 # _______ is the RS-232 address of this breaker.

How it works

The CONTROL POWER circuit breaker powers the circuit boards via a 24 volt transformer.

Motorized circuit breakers (face-marked REMOTELY OPERATED) are individually actuated by a command from a remote RS-232 control device.

Each numbered LED indicates the status of that addressed breaker.

Lit = ON, Unlit = OFF

Each circuit board controls up to ten 1, 2, or 3 pole motorized circuit breakers.

RS-232 signals are fed to the first board of each panel.

Power and RS-232 data are daisy-chain fed board to board by the yellow jumper connectors.

The circuit breakers may be manually controlled by the TEST switches on each board.

The test switches work in the absence of a RS-232 signal. A valid RS-232 signal, indicated by a flashing LED, overrides the test switches.

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SC-10 RS232 PROTOCOL

Commands set

<table>
<thead>
<tr>
<th>Command</th>
<th>Decimal</th>
<th>Hexadecimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start byte</td>
<td>176</td>
<td>0xB0</td>
</tr>
<tr>
<td>Stop byte</td>
<td>240</td>
<td>0xF0</td>
</tr>
<tr>
<td>Board address</td>
<td>1 - 99</td>
<td>0x01 - 0x63</td>
</tr>
<tr>
<td>Output address</td>
<td>1 - 10</td>
<td>0x01 - 0x0A</td>
</tr>
<tr>
<td>Output ON</td>
<td>180</td>
<td>0xB4</td>
</tr>
<tr>
<td>Output OFF</td>
<td>181</td>
<td>0xB5</td>
</tr>
<tr>
<td>Output status</td>
<td>182</td>
<td>0xB6</td>
</tr>
<tr>
<td>Status of all outputs</td>
<td>189</td>
<td>0xBD</td>
</tr>
<tr>
<td>All ON</td>
<td>186</td>
<td>0xBA</td>
</tr>
<tr>
<td>All OFF</td>
<td>187</td>
<td>0xBB</td>
</tr>
<tr>
<td>Set/clear output verification status*</td>
<td>190</td>
<td>0xBE</td>
</tr>
</tbody>
</table>

*Not be implemented - autoscan can distinguish between RR7 and RR9

2. Commands description

2.1 Outputs ON command

0xB0, board_address, 0xB4, output_address_1, ..., output_address_m, 0xF0
m<=10 (0x0A)

Example: B0 01 B4 04 0A F0, turns on outputs at 4 and 10, on 1st card

2.2 Outputs OFF command

0xB0, board_address, 0xB5, output_address_1, ..., output_address_n, 0xF0
n<=10 (0x0A)

Example: B0 02 B5 09 F0, turns off output at 9, on 2nd card

2.3 Outputs ON/OFF command

0xB0, board_address, 0xB4, output_address_1, ..., output_address_m, 0xB5, output_address_1, ..., output_address_n, 0xF0
m and n<=10 (0x0A)

Example: B0 01 B4 04 0A B5 09 F0, turns on output at 4 and 10, and turns off output at 9, on 1st card

2.4 Outputs status

0xB0, board_address, 0xB6, output_address_1, ..., output_address_m, 0xF0
m<=10 (0x0A)

Example: B0 03 B6 04 0A F0, status of outputs at 4 and 10, on 3rd card

2.5 Status of all outputs

0xB0, board_address, 0xBD, 0xF0

2.6 All ON - turn on all available outputs

0xB0, board_address, 0xBA, 0xF0
2.7 All OFF - turn off all available outputs
0xB0, board_address, 0xBB, 0xF0

2.8 Set/clear output verification status (NOT IMPLEMENTED)
0xB0, board_address, 0xBE, output_address_i, output_ver_status_i, output_address_j, output_ver_status_j, ...
output_address_n, output_ver_status_n, 0xF0
output_address_i, output_ver_status_i, output_address_j, output_ver_status_j, ..., output_address_n, output_ver_status_n - addresses and status of outputs, n<=10

Output_ver_status coding

<table>
<thead>
<tr>
<th>Status</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disable</td>
<td>0x01</td>
</tr>
<tr>
<td>Enable</td>
<td>0x02</td>
</tr>
</tbody>
</table>

When verification status of the output is disabled, the board will always respond with “no verification” status for this output. Verification status shall be disabled for all outputs driving RR7 relays.

3. Responses

3.1 Output status codes

<table>
<thead>
<tr>
<th>Status</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>0x01</td>
</tr>
<tr>
<td>On</td>
<td>0x02</td>
</tr>
<tr>
<td>Fault</td>
<td>0x03</td>
</tr>
<tr>
<td>No verification, expected off</td>
<td>0x04</td>
</tr>
<tr>
<td>No verification, expected on</td>
<td>0x05</td>
</tr>
<tr>
<td>Empty</td>
<td>0x06</td>
</tr>
</tbody>
</table>

3.2 Output status change response

This response is transmitted when output(s) change(s) status for ANY reason (RS232 command, button push, brown out, recover from brown out, emergency override, recover from emergency override).
0xB0, board_address, 0xB6, output_address_i, output_status_i, ..., output_address_n, output_status_n, 0xF0
n<=10 (0x0A)
Example: B0 01 B6 04 01 05 02 0A 06 F0, output at 4 is off, at 5 is on, and at 10 is empty, on 1st card

3.3 Status of all ten outputs (transmitted only in reply to status of all outputs command)
0xB0, board_address, 0xBD, byte_1, ..., byte_10, 0xF0
Example: B0 02 BD 01 01 01 01 01 02 02 02 02 06 F0, outputs 1 thru 5 are off, 6 thru 9 are on, and 10 is empty, on 2nd card

4. AMX Device Discovery

Beacon request: “AMX\r”
Beacon: “AMXB<-SDKClass=Utility><-Make=Lyntec><-Model=SC10><-Revision=1.0.0>\r”
Mechanical Dimensions and Knockouts

LynTec MSLC 113-xx, MSLC 127-xx, MSLC 129-xx, MSLC 326-xx, MSLC 329-xx (MLO), LCLC 326-xx, LCLC 329-xx (MLO) SCLC 127-xx, SCLC 129-xx, SCLC 326-xx or SCLC 329-xx (MLO)

Surface Mount ONLY

### Knockouts

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>.50</td>
<td>.75</td>
<td>1.00</td>
<td>1.25</td>
<td>1.50</td>
<td>2.00</td>
<td>2.50</td>
</tr>
<tr>
<td>MM</td>
<td>13</td>
<td>19</td>
<td>25</td>
<td>32</td>
<td>38</td>
<td>51</td>
<td>64</td>
</tr>
</tbody>
</table>

### Mechanical Dimensions

DUAL DIMENSIONS: INCHES / MILLIMETERS

#### Knockouts

- **A**: 1.00 (25 mm)
- **B**: 1.25 (32 mm)
- **C**: 1.50 (38 mm)
- **D**: 2.00 (51 mm)
- **E**: 2.50 (64 mm)

### Load Center Bottom End Panel Hole Pattern

- **Sequencer 1**: A, B, C, D, E, F, G
- **Sequencer 2**: A, B, C, D
- **Sequencer 3**: A, B, C

Load center bottom end panel hole pattern is same as top except flipped end-to-end.

### LynTec Low Voltage Sequencer Sidecar

LynTec MSLC 113-xx, MSLC 127-xx, MSLC 129-xx, MSLC 326-xx, MSLC 329-xx (MLO), LCLC 326-xx, LCLC 329-xx (MLO) SCLC 127-xx, SCLC 129-xx, SCLC 326-xx or SCLC 329-xx (MLO)

### Single Phase Load Centers

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Maximum System Voltage</th>
<th>Mains Ampere Rating</th>
<th>Spaces</th>
<th>Maximum Number of Single Pole Circuits</th>
<th>Main Wire Size AWG AL/CU</th>
</tr>
</thead>
<tbody>
<tr>
<td>QO130M200</td>
<td>120/240Vac 1Ø, 3W</td>
<td>200</td>
<td>30</td>
<td>30</td>
<td>#4-250</td>
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</table>

### Three Phase Load Centers

<table>
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<tr>
<th>Catalog Number</th>
<th>Maximum System Voltage</th>
<th>Mains Ampere Rating</th>
<th>Spaces</th>
<th>Maximum Number of Single Pole Circuits</th>
<th>Main Wire Size AWG AL/CU</th>
</tr>
</thead>
<tbody>
<tr>
<td>QO327M100</td>
<td>208Y/120Vac 3Ø, 4W</td>
<td>100</td>
<td>27</td>
<td>27</td>
<td>#4-2/0</td>
</tr>
</tbody>
</table>
**Thermal-magnetic Molded Case Circuit Breakers**

250 Ampere Frame  
Class 734

**POWERPACT Q-frame** — 250 A, Thermal-magnetic (240 Vac)

<table>
<thead>
<tr>
<th>Current Rating @ 40°C</th>
<th>AC Magnetic Trip Settings</th>
<th>D Interrupting</th>
<th>G Interrupting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hold</td>
<td>Trip</td>
<td>Catalog Number</td>
</tr>
<tr>
<td>2-pole, 240 Vac</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LynTec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSP 139</td>
<td></td>
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<td></td>
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<tr>
<td>SCP 139</td>
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<td></td>
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</tr>
<tr>
<td>Use a 2 pole, back-fed main breaker, rated at 100 AMPS or less.</td>
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<tr>
<td>LynTec</td>
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<tr>
<td>MSP 119, MSP 141</td>
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<td>SCP 141</td>
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<tr>
<td>LCLC 326</td>
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<tr>
<td>MSLC 326</td>
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<tr>
<td>SCP338</td>
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<tr>
<td>Use a 3 pole, back-fed main breaker, rated at 100 AMPS or less.</td>
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<tr>
<td>LynTec</td>
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<tr>
<td>SCP 141</td>
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**Interrupting Ratings (kA)**

<table>
<thead>
<tr>
<th>QD</th>
<th>QG</th>
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<tbody>
<tr>
<td>240 V</td>
<td>25</td>
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</table>

For **Branch Breaker Series Ratings**  
see [http://www.lyntec.com/139-0407_Series_Ratings.pdf](http://www.lyntec.com/139-0407_Series_Ratings.pdf)
<table>
<thead>
<tr>
<th>Branch Circuit Breaker Designations and Allowable Amperes Ranges</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>QO</td>
</tr>
<tr>
<td>VB</td>
</tr>
</tbody>
</table>

For series ratings, see the LynTec Series Ratings document available online. For the most up-to-date information, visit http://www.lyntec.com/139-0407_Series_Ratings.pdf

**QOBlxxx (B) = BUMB series Bolt-on, Motorized**, (REMOTE OPERATED)  
- **xx = poles, **tx = trip current,  
- **9393 suffix denotes special 60" control wires.**

**NB Series Ratings**

<table>
<thead>
<tr>
<th>Main Type</th>
<th>Branch Type</th>
<th>Poles</th>
</tr>
</thead>
<tbody>
<tr>
<td>95000</td>
<td>EDB</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>100000</td>
<td>EDB</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>125000</td>
<td>EDB</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>200000</td>
<td>EDB</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>

QOBlxxx (B) = BUMB series Bolt-on, Motorized, (REMOTE OPERATED)  
- **xx = poles, **tx = trip current,  
- **9393 suffix denotes special 60" control wires.**

**QOBlxxx (B) = BUMB series Bolt-on, UnMotorized Breaker**  
- **xx = poles, **tx = trip current,  
- **9393 suffix denotes special 60" control wires.**

**QOBlxxx (B) = BUMB series Slip-on, UnMotorized Breaker**  
- **xx = poles, **tx = trip current,  
- **9393 suffix denotes special 60" control wires.**

For the most up-to-date information, visit http://www.lyntec.com/139-0407_Series_Ratings.pdf
Instruction Bulletin

QO-PL (Plug-on), QOB-PL (Bolt-on) Powerlink® Remotely Operated Circuit Breakers
(Use in Type QO Load Centers and Type NQO, NQOB, and NQOD Panelboards)
Retain for future use.

REQUIREMENTS

Remotely Operated Circuit Requirements

**DANGER**

HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION.

When servicing a branch circuit fed by a remotely operated circuit breaker, move handle of remotely operated circuit breaker to OFF position. Do not rely on remote operation to open circuit breaker.

Failure to follow these instructions will result in personal injury or death.

CIRCUIT BREAKER INSTALLATION

**DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death, or serious injury.

POWERLINK® QO(B)-PL Remotely Operated Circuit Breakers require a power supply capable of delivering at least two amperes at 24 Vdc for a minimum of 50 milliseconds. One-, two-, and three-pole circuit breakers all have one internal motor, and power requirements are the same regardless of the number of poles and ampere ratings.

The required power supply ampacity and control device contact rating are determined by the number of circuit breakers to be switched simultaneously (i.e., four circuit breakers switched simultaneously require a power supply and a control device contact rated 8 amperes minimum). The control device may be either a normally-open (NO)/normally-closed (NC) contact; a single-pole, double-throw switch (SPDT); or other three-wire control device.

1. Turn off all power supplying this equipment before working on or inside equipment.
2. Before installing circuit breaker turn circuit breaker handle to OFF position.
3. Remove panelboard cover and deadfront. Verify power is off with voltage meter before proceeding.

Installation of circuit breaker into panelboard/load center (refer to figure below)

4. Except for remotely operated connections, QO(B)-PL remotely operated circuit breakers are installed in a panelboard/load center the same as conventional QO(B) circuit breakers.

Connection of remotely operated circuit (refer to the figure on next page)

5. Assure that power supply and control device meet requirements listed under "Remotely Operated Circuit Requirements."

See page 2 for LynTec part number explanation
CIRCUIT BREAKER INSTALLATION

HAZARD OF CIRCUIT BREAKER DAMAGE.

Connect the 24 Vdc remote control wiring as shown on this page.

Failure to follow these instructions can permanently damage the remotely operated circuit breaker.

**CAUTION**

**HAZARD OF CIRCUIT BREAKER DAMAGE.**

Connect the 24 Vdc remote control wiring as shown on this page.

Failure to follow these instructions can permanently damage the remotely operated circuit breaker.

LynTec part numbers

MB series motorized circuit breakers (Snap-On)
May be used in LGLC, LCP, MSGLC, MSP, SLC or SP series panels.

BMB series motorized circuit breakers (Bolt-On)
Use only in LCP, MSP or SP Panelboards.

All BMB & MB series breakers have Square D part number suffix of -5393 indicating a special 60 inch lead length for remote control wires required to connect to LynTec control boards in low voltage cabinet.

** = Stocked items

**MB-15 = 15 Amp. Square D QO-115PL-5393
**MB-15 = 15 Amp. Square D QOB-115PL-5393

**MB-20 = 20 Amp. Square D QO-120PL-5393
**MB-20 = 20 Amp. Square D QOB-120PL-5393

**MB-30 = 30 Amp. Square D QO-130PL-5393
**MB-30 = 30 Amp. Square D QOB-130PL-5393

Two pole motorized - call for pricing & delivery

MB-215 = 15 Amp. Square D QO-215PL-5393
MB-215 = 15 Amp. Square D QOB-215PL-5393

**MB-220 = 20 Amp. Square D QO-220PL-5393
**MB-220 = 20 Amp. Square D QOB-220PL-5393

MB-230 = 30 Amp. Square D QO-230PL-5393
MB-230 = 30 Amp. Square D QOB-230PL-5393

40A, 50A or 60A, Two pole also available on Special Order

Three pole motorized - call for pricing & delivery

MB-315 = 15 Amp. Square D QO-315PL-5393
MB-315 = 15 Amp. Square D QOB-315PL-5393

MB-320 = 20 Amp. Square D QO-320PL-5393
MB-320 = 20 Amp. Square D QOB-320PL-5393

MB-330 = 30 Amp. Square D QO-330PL-5393
MB-330 = 30 Amp. Square D QOB-330PL-5393

LynTec also stocks UMB & BUMB (un-motorized) QO series circuit breakers including HM (High Magnetic). Recommended for eliminating nuisance trips in high inrush applications. All BMB & MB series are HM breakers.

**800-724-4047**

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6. All wiring and splicing must comply with applicable code requirements for Class 1 circuits. Refer to paragraph 373-8 and article 725 of the National Electrical Code.

7. Three #18 AWG control wires are attached to the remotely operated circuit breaker for connection to the power supply and remote control device and should be cut to the required length to reach the splice connections. Use #18 AWG or larger conductors with 600 V insulation and approved wire connectors for splices.

8. Connect the black lead of the remotely operated circuit breaker to the negative (-) terminal of the 24 Vdc power supply. Connect the red lead of the remotely operated circuit breaker to the positive (+) terminal of the 24 Vdc power supply. Connect the white lead of the remote control device. The remote control device provides connections between either positive or negative potential of the power supply and the white wire of the remotely operated circuit breaker, as appropriate.

9. Applying the positive potential of the power supply to the white wire (contact closure between the red wire and white wire) will operate the remote mechanism of the circuit breaker to the OFF position. Applying the negative potential of the power supply to the white wire (contact closure between the black wire and the white wire) will operate the remote mechanism of the circuit breaker to the ON position. A control circuit utilizing a normally open (NO) or normally closed (NC) contact is illustrated below.

NOTE: The remote mechanism will not move the circuit breaker handle. Also, the remote mechanism cannot turn power ON when the circuit breaker is tripped (VISI-TRIP® flag indicator showing) or when the circuit breaker handle is in the OFF position.

Installation of the trim and operational checks

10. Remove corresponding twist-out from panelboard trim and replace trim.

11. Turn power to panelboard on.

12. Turn remotely operated circuit breaker handle to the ON position.

13. Turn power to the remotely operated circuit on and test this circuit, turning remotely operated circuit breaker off remotely, then on remotely. If power to remote controlled circuit breaker load does not switch off and on, turn off power to remotely operated circuit and panelboard and check wiring.

NOTE: A power supply is available from Square D Company, Cat. No. QOPLPS (plug-on) or QBPLPS (bolt-on).

Splice not normally required with LynTec supplied breakers with 60” leads.

In LynTec Sequencer or DMX controller

Remote Operated Circuit Breaker

Splice Connection

Panelboard/Load Center

(Class 1 Wiring)

24 Vdc Power Supply

ON

Black

Red

White

NO

NC

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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