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
Each motorized breaker is actuated by a command from a RS-232 control device. The RS-232 # of the breaker is the address of this breaker. 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 board jumpers set the RS-232 address of the board. Each breaker has a sub-address of 1-10. 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 idicates the status of that addressed breaker. Lit = ON, Unlit = OFF. Flashing = command execution in progress.

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 RS-232 panel.

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

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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. Output data availability is indicated by a flickering LED.

MANUAL CONTROL

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.

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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

\[
0xB0, \text{board_address}, 0xB4, \text{output_address}_1, \ldots, \text{output_address}_m, 0xF0
\]

\[m \leq 10 \ (0x0A)\]

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

2.2 Outputs OFF command

\[
0xB0, \text{board_address}, 0xB5, \text{output_address}_1, \ldots, \text{output_address}_n, 0xF0
\]

\[n \leq 10 \ (0x0A)\]

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

2.3 Outputs ON/OFF command

\[
0xB0, \text{board_address}, 0xB4, \text{output_address}_1, \ldots, \text{output_address}_m, 0xB5, \text{output_address}_1, \ldots, \text{output_address}_n, 0xF0
\]

\[m \text{ and } n \leq 10 \ (0x0A)\]

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

\[
0xB0, \text{board_address}, 0xB6, \text{output_address}_1, \ldots, \text{output_address}_m, 0xF0
\]

\[m \leq 10 \ (0x0A)\]

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

2.5 Status of all outputs

\[
0xB0, \text{board_address}, 0xBD, 0xF0
\]

2.6 All ON - turn on all available outputs

\[
0xB0, \text{board_address}, 0xBA, 0xF0
\]
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: “AMXr”
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

### Single Phase Load Centers

- **EX:** MSLC 127 or SCLC 129
  - Catalog Number: QQ130M200
  - Maximum System Voltage: 120/240Vac 1Ø, 3W
  - Mains Ampere Rating: 200
  - Spaces: 30
  - Maximum Number of Single Pole Circuits: 30
  - Main Wire Size: #4-250

### Three Phase Load Centers

- **EX:** MSLC 326 or LCLC 329
  - Catalog Number: QQ327M100
  - Maximum System Voltage: 208Y/120Vac 3Ø, 4W
  - Mains Ampere Rating: 100
  - Spaces: 27
  - Maximum Number of Single Pole Circuits: 27
  - Main Wire Size: #4-2/0

## 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>
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<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>
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<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>

## Dual Dimensions:

- **INCHES**
- **MILLIMETERS**

## Knockout Symbols:

- R.31 [8]

## Wall Mounting Surface:

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

---

**LynTec**

Low Voltage Sequencer Sidecar

---

**LynTec**

139-0269-05 Small Panel Mech. 06/11/2010
Thermal-magnetic Molded Case Circuit Breakers
250 Ampere Frame
Class 734

QDL & QGL
2 and 3-pole
70–250 Ampere

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>
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<tbody>
<tr>
<td></td>
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<td>Trip</td>
<td>Catalog Number</td>
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<td>2-pole, 240 Vac</td>
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<td>70</td>
<td>1000</td>
<td>1800</td>
<td>QGL22070</td>
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<td>1200</td>
<td>2400</td>
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<td>1200</td>
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<td>1200</td>
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<td>1200</td>
<td>2400</td>
<td>QGL22200</td>
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<td>225</td>
<td>1200</td>
<td>2400</td>
<td>QGL22225</td>
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<tr>
<td>250</td>
<td>1200</td>
<td>2400</td>
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</table>

3-pole, 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>
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<td>1000</td>
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<td>QGL22080</td>
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<td>1000</td>
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<td>1200</td>
<td>2400</td>
<td></td>
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For Branch Breaker Series Ratings
see http://www.lyntec.com/139-0407_Series_Ratings.pdf

Interrupting Ratings (kA)

<table>
<thead>
<tr>
<th></th>
<th>QD</th>
<th>GQ</th>
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<tbody>
<tr>
<td>240 V</td>
<td>25</td>
<td>65</td>
</tr>
<tr>
<td>Series</td>
<td>Main Type</td>
<td>Branch Type</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>100 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>125 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>200 M</td>
<td>QO (B)</td>
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<td>200,000 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>600 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>1,000 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>2,000 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
<tr>
<td>5,000 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
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<tr>
<td>10,000 M</td>
<td>QO (B)</td>
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<td>20,000 M</td>
<td>QO (B)</td>
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</tr>
<tr>
<td>50,000 M</td>
<td>QO (B)</td>
<td>15–70 A</td>
</tr>
</tbody>
</table>

**QOBPxxxx = MB series Clip-on, Motorized.** (REMOTE OPERATED) 
**xxxx = poles, xxx = trip current, -5393 suffix denotes special 60" control wires.**

- **[1 pole] BUMB-15, BUMB-20, BUMB-30**
- **[2 pole] BUMB-215, BUMB-220, BUMB-230**
- **[3 pole] BUMB-315, BUMB-320, BUMB-330**

**QOBxx = UMB series Clip-on, UnMotorized Breaker**

- **[1 pole] UMB-15, UMB-20, UMB-30**
- **[2 pole] UMB-215, UMB-220, UMB-230**
- **[3 pole] UMB-315, UMB-320, UMB-330**

All 15 & 20 A breakers are HM (High Magnetic)
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.
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.
5. Ensure that power supply and control device meet requirements listed under "Remotely Operated Circuit Requirements."

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

All LynTec supplied breakers have special 60” control wires. (Square D standards are 18”.)

See page 2 for LynTec part number explanation.
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.

---

**BMB series motorized circuit breakers (Snap-On)**

May be used in LCLC, LCP, MSP, SLC or SP series panels.

**MB 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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Ampere Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB-15</td>
<td>15 Amp</td>
</tr>
<tr>
<td>MB-20</td>
<td>20 Amp</td>
</tr>
<tr>
<td>MB-30</td>
<td>30 Amp</td>
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<tr>
<td>MB-315</td>
<td>15 Amp</td>
</tr>
<tr>
<td>MB-320</td>
<td>20 Amp</td>
</tr>
<tr>
<td>MB-330</td>
<td>30 Amp</td>
</tr>
</tbody>
</table>

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

Three pole motorized - call for pricing & delivery

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Ampere Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB-215</td>
<td>15 Amp</td>
</tr>
<tr>
<td>MB-220</td>
<td>20 Amp</td>
</tr>
<tr>
<td>MB-230</td>
<td>30 Amp</td>
</tr>
</tbody>
</table>

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

** = Stocked items

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Ampere Rating</th>
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<tbody>
<tr>
<td>MB-115</td>
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<tr>
<td>MB-120</td>
<td>20 Amp</td>
</tr>
<tr>
<td>MB-130</td>
<td>30 Amp</td>
</tr>
</tbody>
</table>

LynTec supplied breakers with 60” leads.

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 QOBPLPS (bolt-on).

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

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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