LynTec RS-232 Controlled Panels and Load Centers

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

**LynTec SCLC 329-xx Lighting Control Load Center**

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

**Breaker types, sizes, positions and connections**

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

As-built door label example:
The RS-232 # _______ is the RS-232 address of this breaker. 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 board jumpers set the RS-232 address of the board. Each breaker has a sub-address of 1-10.

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

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

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 RS-232 panel.

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

**How it works**

**CONTROL POWER**

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. 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.

**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 LED, receiving RS-232 LED overrides the test switches.

www.LynTec.com

800-724-4047

8-5 Central Time
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 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

### Mechanical Dimensions and 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>

### Knockouts

- **Sequencer 1**
  - A, B
- **Sequencer 2**
  - A, B, C
- **Sequencer 3**
  - A, B, C, D

- **LINE 3N1**
- ** Knockouts 22**
- **2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21**

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

- **Wall mounting surface**

---

**LynTec**

<table>
<thead>
<tr>
<th>Single Phase Load Centers</th>
<th>SQUARE D 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>EX: MSLC 127 or SCLC 129</td>
<td>QQ0130M200</td>
<td>120/240Vac 1Ø, 3W</td>
<td>200</td>
<td>30</td>
<td>30</td>
<td>#4-250</td>
</tr>
</tbody>
</table>

| Three Phase Load Centers | QQ0327M100               | 208Y/120Vac 3Ø, 4W      | 100                 | 27     | 27                                     | #4-2/0                   |
**Thermal-magnetic Molded Case Circuit Breakers**

250 Ampere Frame

**Class 734**

---

**QDL & QGL**

2 and 3-pole
70–250 Amperes

**Interrupting Ratings (kA)**

<table>
<thead>
<tr>
<th></th>
<th>QD</th>
<th>GG</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 V</td>
<td>25</td>
<td>65</td>
</tr>
</tbody>
</table>

**For the most up-to-date information**

see [http://www.lyntec.com/139-0407_Series_Ratings.pdf](http://www.lyntec.com/139-0407_Series_Ratings.pdf)

---

**LynTec**

**MSP 119, MSP 141**

**SCP 141**

All models 70–225A

Special order, NCNR
Non Cancelable Non Returnable

**LynTec**

**LCLC 326**

**MSLC 326**

**MSLC 338**

**MSP 338**

**SCLC 326**

**SCLC 338**

**SCP338**

Use a 3 pole, back-fed main breaker, rated at 100 AMPS or less.

**LynTec**

**LCLC 341**

**MSLC 341**

**SCLC 341**

Standard

Optional from stock

▲ Replacement lugs are not available for POWERPACT Q-frame circuit breakers.

Lugs for the POWERPACT Q-frame circuit breakers accept (1) #4–300 kcmil.

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**Accessories**

pages 6-36–6-38

**Optional Lugs**

pages 6-43, 6-44

**Dimensions**

pages 6-49, 6-50

**Enclosures**

pages 6-51–6-54
This page contains UL Tested and Certified series combination ratings for panelboards. These ratings apply to either an integral main located in the

**Branch Circuit Breaker Designations and Allowable Ampere Ranges**

<table>
<thead>
<tr>
<th>Type</th>
<th>1-pole</th>
<th>2-pole</th>
<th>3-pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>QG</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QC</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QO</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
<tr>
<td>QOB</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
<tr>
<td>QG</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QC</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QO</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
<tr>
<td>QOB</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
<tr>
<td>QG</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QC</td>
<td>15–30 A</td>
<td>15–60 A</td>
<td>15–100 A</td>
</tr>
<tr>
<td>QO</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
<tr>
<td>QOB</td>
<td>15–150 A</td>
<td>15–200 A</td>
<td>15–300 A</td>
</tr>
</tbody>
</table>

**Main Type**

- **QG**: Motorized
- **QC**: Motorized
- **QO**: Non-Motorized
- **QOB**: Non-Motorized

**Branch Type**

- **E**: Non-remote
- **F**: Remote
- **G**: Remote

**Poles**

- **1**: 1-pole
- **2**: 2-pole
- **3**: 3-pole

**Maximum System Voltage AC**

- **600**: Maximum 600 V AC

**Allowable Ampere Ranges**

- **150 A**: 150 A
- **200 A**: 200 A
- **250 A**: 250 A
- **300 A**: 300 A
- **350 A**: 350 A
- **400 A**: 400 A
- **450 A**: 450 A
- **500 A**: 500 A
- **550 A**: 550 A
- **600 A**: 600 A

**Remote Control Circuit Breakers**

- **3 Pole**: 3 pole
- **2 Pole**: 2 pole
- **1 Pole**: 1 pole

**Series Ratings**

- **NQOD Series**
- **I N S H O D**
- **K L C E H J**
- **P C E J K L**
- **T C E J K L**
- **U C E J K L**
- **V C E J K L**
- **W C E J K L**
- **X C E J K L**
- **Y C E J K L**
- **Z C E J K L**

**QOBPLxxx = BMB series**

- **B** = Bolt-on
- **M** = Motorized
- **R** = Remotely Operated

**QOBxx = UMB series**

- **B** = Bolt-on
- **M** = Motorized
- **R** = Remotely Operated
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.

See page 2 for LynTec part number explanation

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."
CIRCUIT BREAKER INSTALLATION

**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 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 required to connect to LynTec control boards in low voltage cabinet.

- Use only in LCP, MSP or SP Panelboards.

MB series motorized circuit breakers (Snap-On)

May be used with LCLC, LCP, 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.

All BMB & MB-x15’s and BMB & MB-x20’s are HM breakers.

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.

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 QOBLPS (bolt-on).

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

- 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.

- 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.

- 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.

- 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)/normally closed (NC) contact is illustrated below.

- 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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