

# QL Series Electromechanical Relay Selection Guide



QL series relays are general purpose relays designed for a wide range of applications, from power to sequence controls in various factory machines and control panels. They are ideal for electric control panels requiring stable and reliable relays.

## Features

- Small package design
- ARC Barrier equipped
- Silver Cadmium Oxide contact
- High dielectric strength (1,800 VAC)
- High reliability and long life
- Ultra-high sensitivity with quick response time (25 ms max.)
- High vibration and shock resistance
- LED indicator on all models, so you can easily see if relay is working properly without using a voltmeter
- Diode protection available on 24 VDC models, which protects contacts and electronic components from back EMF
- UL recognized, CE certified, CSA approval pending
- DPDT and 4PDT models

• ORDER SOCKET SEPARATELY

| QL Series Selection Guide |       |              |               |                |            |                          |       |            |
|---------------------------|-------|--------------|---------------|----------------|------------|--------------------------|-------|------------|
| Part Number               | Price | Coil Voltage | Configuration | Contact Rating | Dimensions | Relay Socket Part Number | Price | Dimensions |
| QL2N1-A120                | <---> | 110/120VAC   | 2PDT          | 10A            | Figure 1   | SQL08D                   | <---> | Figure 3   |
| QL4N1-A120                | <---> |              | 4PDT          | 10A            | Figure 2   | SQL14D                   | <---> | Figure 4   |
| QL2N1-A220                | <---> | 220VAC       | 2PDT          | 10A            | Figure 1   | SQL08D                   | <---> | Figure 3   |
| QL4N1-A220                | <---> |              | 4PDT          | 10A            | Figure 2   | SQL14D                   | <---> | Figure 4   |
| QL2N1-D24                 | <---> | 24VDC        | 2PDT          | 10A            | Figure 1   | SQL08D                   | <---> | Figure 3   |
| QL2X1-D24                 | <---> |              | 2PDT          | 10A            | Figure 1   | SQL08D                   | <---> | Figure 3   |
| QL4N1-D24                 | <---> |              | 4PDT          | 10A            | Figure 2   | SQL14D                   | <---> | Figure 4   |
| QL4X1-D24                 | <---> |              | 4PDT          | 10A            | Figure 2   | SQL14D                   | <---> | Figure 4   |

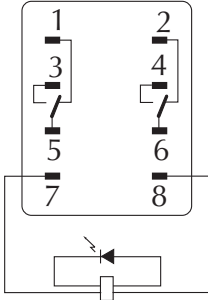
# QL Series Electromechanical Relay Specifications

| QL Series Specification Table                 |  |                 |               |               |              |                                |               |                                |
|---|--|-----------------|---------------|---------------|--------------|--------------------------------|---------------|--------------------------------|
| Part Numbers                                  | QL2N1-A120   | QL2N1-A220      | QL4N1-A120    | QL4N1-A220    | QL2N1-D24    | QL2X1-D24                      | QL4N1-D24     | QL4X1-D24                      |
| <b>Contact Specifications</b>                 |  |                 |               |               |              |                                |               |                                |
| <b>Current Rating</b>                         | 10A  |                 |               |               |              |                                |               |                                |
| <b>Contact Type</b>                           | DPDT   | 4PDT            |               |               | DPDT         | 4PDT                           |               |                                |
| <b>Terminal Type</b>                          | Spade Plug-In Socket   |                 |               |               |              |                                |               |                                |
| <b>Rated Max. Resistive Load</b>              | 10A@110VAC/10A@24VDC   |                 |               |               |              |                                |               |                                |
| <b>Rated Max. Inductive Load</b>              | 7.5A@110VAC/ 5A@24VDC  |                 |               |               |              |                                |               |                                |
| <b>Minimum Recommended Load</b>               | 1mA @ 5VDC   |                 |               |               |              |                                |               |                                |
| <b>Max. Switching Cap. (Resistive Load)</b>   | 1,100VAC/240W  |                 |               |               |              |                                |               |                                |
| <b>Max. Switching Cap. (Inductive Load)</b>   | 825VAC/120W  |                 |               |               |              |                                |               |                                |
| <b>Max. Contact Rating</b>                    | 250VAC/125VDC  |                 |               |               |              |                                |               |                                |
| <b>Coil Specifications</b>                    |  |                 |               |               |              |                                |               |                                |
| <b>Options</b>                                | LED Indicator  |                 |               |               |              | LED Indicator/Diode Protection | LED Indicator | LED Indicator/Diode Protection |
| <b>Coil Input Voltage</b>                     | 110/120VAC   | 220/240VAC      | 110/120VAC    | 220/240VAC    | 24VDC        |                                |               |                                |
| <b>Rated Current at 50Hz</b>                  | 9.9 /10.8mA  | 6.2/6.8mA       | 17/19mA       | 11.5/13.1mA   | 36.9mA       |                                | 69mA          |                                |
| <b>Rated Current at 60Hz</b>                  | 8.4/9.2mA  | 5.3/5.8mA       | 18/16.4mA     | 9.8/11.2mA    | 36.9mA       |                                | 69mA          |                                |
| <b>Coil Resistance</b>                        | 4.43k $\Omega$   | 12.95k $\Omega$ | 2.2k $\Omega$ | 6.7k $\Omega$ | 650 $\Omega$ |                                | 350 $\Omega$  |                                |
| <b>Power Consumption</b>                      | Approx. 0.9W to 1.1W (at 60Hz)   |                 |               |               | Approx. 0.9W |                                |               |                                |
| <b>Dropout Voltage (% of rated voltage)</b>   | Min. 30%   |                 |               |               | Min. 10%     |                                |               |                                |
| <b>Pick-Up Voltage (Must operate voltage)</b> | Max. 80% of the rated coil voltage   |                 |               |               |              |                                |               |                                |
| <b>Max. Voltage (Max. continuous voltage)</b> | 110% of the rated coil voltage   |                 |               |               |              |                                |               |                                |
| <b>Min. Operating Voltage</b>                 | 80% of the rated coil voltage  |                 |               |               |              |                                |               |                                |
| <b>General Specifications</b>                 |  |                 |               |               |              |                                |               |                                |
| <b>Service Life</b>                           | Mechanical: AC: Min. 50 million operations; DC: Min. 100 million operations (at operating frequency of 18,000 operations/hour)<br>Electrical: DPDT: Min. 500k operations; 4PDT: Min. 200k operations (at operating frequency of 1,800 operations/hour) |                 |               |               |              |                                |               |                                |
| <b>Operate Time</b>                           | 25ms max   |                 |               |               |              |                                |               |                                |
| <b>Release Time</b>                           | 25ms max   |                 |               |               |              |                                |               |                                |
| <b>Ambient Temperature</b>                    | -25° C to 70° C (-13° F to 158° F)   |                 |               |               |              |                                |               |                                |
| <b>Ambient Humidity</b>                       | 45% to 85% Relative Humidity   |                 |               |               |              |                                |               |                                |
| <b>Contact Material</b>                       | Silver Cadmium Oxide   |                 |               |               |              |                                |               |                                |
| <b>Contact Resistance</b>                     | 50m $\Omega$ max.  |                 |               |               |              |                                |               |                                |
| <b>Operating Frequency</b>                    | Mechanical 18,000 operations/hour; Electrical 1,800 operations/hour  |                 |               |               |              |                                |               |                                |
| <b>Vibration Resistance</b>                   | 10Hz to 55Hz at double amplitude of 1.0mm  |                 |               |               |              |                                |               |                                |
| <b>Shock Resistance</b>                       | 1,000m/s <sup>2</sup> (approx. 100G)   |                 |               |               |              |                                |               |                                |
| <b>Weight</b>                                 | 35g (1.24oz.)  |                 |               |               |              |                                |               |                                |
| <b>Agency Approvals and Standards</b>         | UL Listed (#E150950), CE Certified (9667186-9811), CSA Certified   |                 |               |               |              |                                |               |                                |

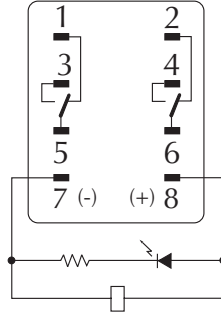
# QL Series Wiring Diagrams and Derating Curves

## Wiring Diagrams

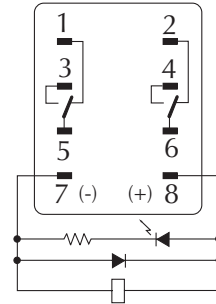
QL2N1-A120  
QL2N1-A220



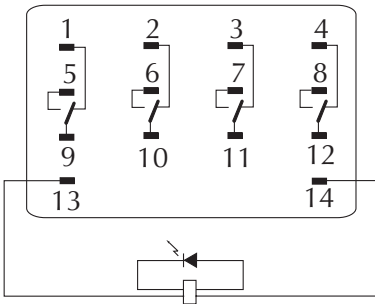
QL2N1-D24



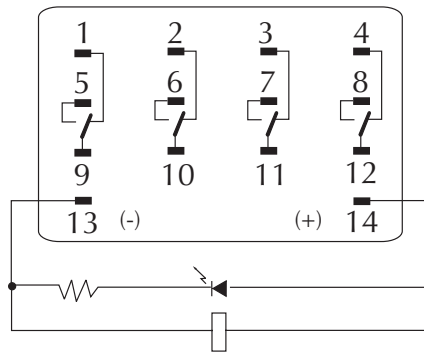
QL2X1-D24



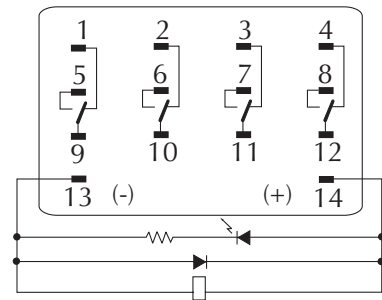
QL4N1-A120  
QL4N1-A220



QL4N1-D24



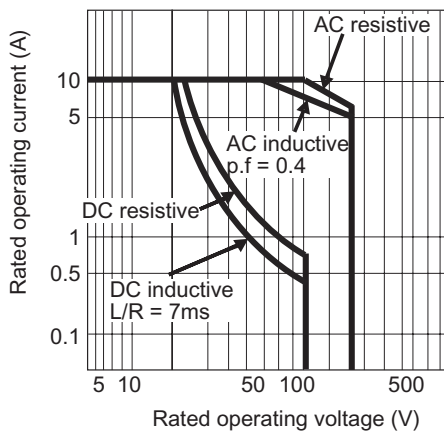
QL4X1-D24



## Derating Curves

### DPDT

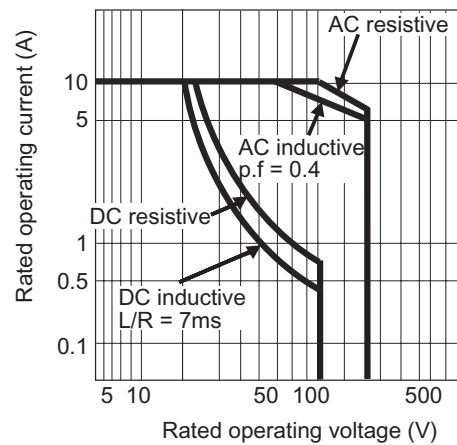
Max. Switching capacity



QL DPDT

### 4PDT

Max. Switching capacity

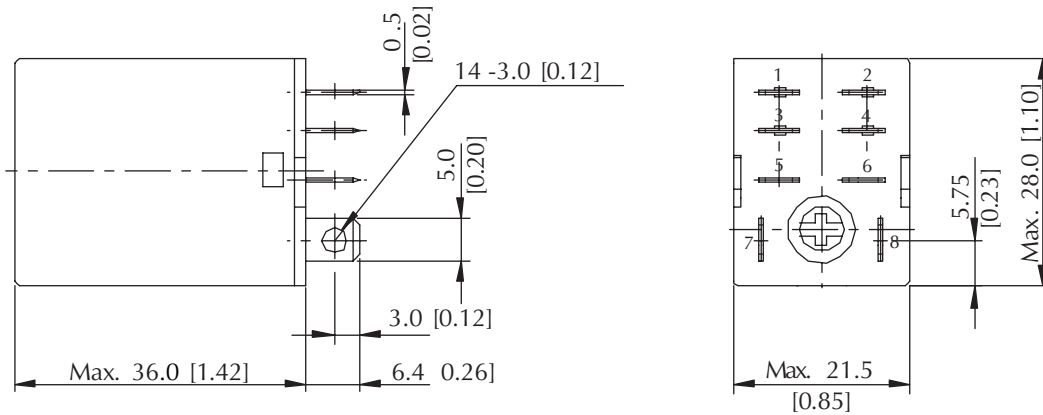


QL 4PDT

# QL Series Dimensional Drawings

## Mounting dimensions (mm/in)

**Figure 1**  
**QL2 Dimensions**



**Figure 2**  
**QL4 Dimensions**

