



## Q-MFT™ Multi Function Tower

CUSTOMIZABLE MEDIUM SCALE POWER SYSTEM

### POWER CONFIDENCE

The Q-LS 10 to 60 kVA customizable power management systems are known for their innovative Uninterrupted Power Quality™ (UPQ) technology. These uninterruptible power systems utilize 5-stages of isolation and conversion to filter and regulate dirty input power - transforming it to a pure and consistent sine wave output. The Q-LS Series delivers superior, serviceable, rugged, power conditioning and uninterrupted power for all of your critical, high-power applications.

Why the Q-LS Series is superior:



**Highest Quality Power**

High-resolution sine wave output



**Customizable**

Made to meet your voltage input/output requirements



**Modular**

Rapid replace modules are easily serviced or replaced



**Most Reliable**

Highest MTBF in its class



**Customer Service**

System certifications, preventative maintenance, and service plans available

**OUTPUT**

Three-phase, split-phase, single-phase inputs or combinations available upon request.

|                                    | Q-LS™ 10                                 | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|------------------------------------|--|----------|----------|----------|----------|----------|
| Capacity (VA)                      | 10,000                                   | 20,000   | 30,000   | 40,000   | 50,000   | 60,000   |
| Capacity (Watts)                   | 8,000                                    | 16,000   | 24,000   | 32,000   | 40,000   | 48,000   |
| Current (peak amp) Per Phase       | 43                                       | 87       | 130      | 174      | 218      | 260      |
| Current (peak amp) 1 Phase         | 130                                      | 260      | 390      | 520      | 650      | NA       |
| Nominal Voltage Range (3-Phase)*   | 220/380/460 VΔ -- 208/380/400/415/480 VY |          |          |          |          |          |
| Nominal Voltage Range (1-Phase) *  | 220/240/120 V, 1p2w or 1p3w              |          |          |          |          | NA       |
| Frequency*                         | 50, 60, or 400 Hz                        |          |          |          |          |          |
| Frequency Tracking                 | ± 2.5 Hz of the input frequency          |          |          |          |          |          |
| Maximum Output Frequency Deviation | ± 2.5 Hz                                 |          |          |          |          |          |
| Power Factor                       | > 0.8                                    |          |          |          |          |          |
| Waveform                           | high-resolution pure sine wave           |          |          |          |          |          |
| Outlets                            | Terminal block—customer distribution     |          |          |          |          |          |
| Single Phase Output                | Yes                                      |          |          |          |          | No       |
| 3-Phase Output                     | Yes                                      |          |          |          |          |          |

**INPUT**

|                                   | Q-LS™ 10        | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|-----------------------------------|-----------------|----------|----------|----------|----------|----------|
| Frequency*                        | 50, 60 ± 2.5 Hz |          |          |          |          |          |
| Power Factor (6-Pulse Rectifier)  | 0.7 to 0.8      |          |          |          |          |          |
| Power Factor (12-Pulse Rectifier) | 0.75 to 0.9     |          |          |          |          |          |

**GENERAL**

|                                 | Q-LS™ 10   | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|---------------------------------|--|----------|----------|----------|----------|----------|
| Input To Output Impedance       | 5 %  |          |          |          |          |          |
| UPQ Power Conditioning Topology | Five-stage isolation with true on-line sine wave |          |          |          |          |          |
| Remote Power Management         | Yes  |          |          |          |          |          |

\*Customizable

**VOLTAGE REGULATION**

|   | Q-LS™ 10       | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|---|----------------|----------|----------|----------|----------|----------|
| Input Voltage Range*                    | 120 to 690 VAC |          |          |          |          |          |
| Full Load With Backup                   | ±16%           |          |          |          |          |          |
| Full Load Without Backup                | ±20%           |          |          |          |          |          |
| Output Voltage Regulation (Normal Mode) | ±1%            |          |          |          |          |          |

## ISOLATION

|                             | Q-LS™ 10   | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|-----------------------------|--|----------|----------|----------|----------|----------|
| Input To Output Isolation   | Dielectric strength 5 kV, 120 dB common mode attenuation |          |          |          |          |          |
| Common-Mode Noise Rejection | Yes  |          |          |          |          |          |
| Normal-Mode Noise Rejection | Yes  |          |          |          |          |          |

## SUPPRESSION

|                                     | Q-LS™ 10                    | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|-------------------------------------|-----------------------------|----------|----------|----------|----------|----------|
| IEEE 587/ANSI 62.41 (North America) | Yes                         |          |          |          |          |          |
| IEEE 587/ANSI 62.41 (International) | Yes                         |          |          |          |          |          |
| Joules (Energy Absorption)          | 2,200                       |          |          |          |          |          |
| TVSS MOV Joule Rating               | 765 joules per phase        |          |          |          |          |          |
| TVSS Low Pass Filter                | 750 Hz                      |          |          |          |          |          |
| Peak Surge Current (amps)           | 20,000                      |          |          |          |          |          |
| Multi-Stage Protection              | Yes                         |          |          |          |          |          |
| Reverse Inverter Impulse Protection | 54 joules without batteries |          |          |          |          |          |
| IEC                                 | 62040-2                     |          |          |          |          |          |
| FCC                                 | Class A                     |          |          |          |          |          |
| EN500091-1                          | Yes                         |          |          |          |          |          |
| EN500091-2                          | Yes                         |          |          |          |          |          |
| EN 60610 (Leakage Current)          | < 1 mA                      |          |          |          |          |          |
| CE Approval                         | Yes                         |          |          |          |          |          |
| Conditioning                        | Yes                         |          |          |          |          |          |
| Output THD (Linear Load)            | < 2%                        |          |          |          |          |          |
| Current THD (6-Pulse Rectifier)     | Maximum of 20%              |          |          |          |          |          |
| Current THD (12-Pulse Rectifier)    | Maximum of 9%               |          |          |          |          |          |
| Input Frequency Range               | 50/60 Hz ± 10 Hz            |          |          |          |          |          |

\*Customizable

**HIGH FREQUENCY ON-LINE INVERTER**

|   | Q-LS™ 10                                   | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|---|--|----------|----------|----------|----------|----------|
| Inverter Design                           | Full H-bridge                              |          |          |          |          |          |
| Inverter Driver Frequency                 | 16.5 to 20 kHz                             |          |          |          |          |          |
| Inverter Regulation                       | 50/60/400 Hz ± 0.1 Hz                      |          |          |          |          |          |
| Overload Capacity                         | <110% continuous                           |          |          |          |          |          |
| Crest Factor                              | 3:1  |          |          |          |          |          |
| Transfer Time                             | Zero                                       |          |          |          |          |          |
| Overall System Efficiency                 | 93%  |          | 93.5%    |          | 94%      |          |
| Efficiency                                | >93%                                       |          |          |          |          |          |
| Inverter To Reserve / Reserve To Inverter | Zero-cross transfer, < 4 ms (2 ms minimum) |          |          |          |          |          |

**RECTIFIER**

|                                   | Q-LS™ 10   | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|-----------------------------------|--|----------|----------|----------|----------|----------|
| 6-Pulse                           | 110 µs single-phase triggering                         |          |          |          |          |          |
| 12-Pulse                          | 6.4 kHz pulse width, 80 µs for 1.7 ms around 11 pulses |          |          |          |          |          |
| Efficiency                        | 98%  |          |          |          |          |          |
| Current Limit (amp) (208/120 VAC) | 46   | 90       | 136      | 182      | 228      | 272      |
| Current Limit (amp) (415/380 VAC) | 22   | 46       | 68       | 92       | 114      | 136      |
| Current Limit (amp) (480/277 VAC) | 20   | 39       | 59       | 79       | 98       | 118      |

**STATIC SWITCH**

|                                | Q-LS™ 10                      | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|--------------------------------|-------------------------------|----------|----------|----------|----------|----------|
| Voltage Range                  | 173–277 VAC (line to neutral) |          |          |          |          |          |
| Frequency Range                | 47.5–52.5 Hz / 57.5–62.5 Hz   |          |          |          |          |          |
| Efficiency                     | 99.5%                         |          |          |          |          |          |
| Transfer Time—Main To Inverter | 0 ms                          |          |          |          |          |          |
| Transfer Time—Inverter To Main | 0 ms                          |          |          |          |          |          |

**BATTERY**

|                          | Q-LS™ 10 | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|--------------------------|----------|----------|----------|----------|----------|----------|
| Boost Charge             | 402 VDC  |          |          |          |          |          |
| Float Charge             | 390 VDC  |          |          |          |          |          |
| Battery Low Voltage      | 320 VDC  |          |          |          |          |          |
| Battery Low Stop Voltage | 295 VDC  |          |          |          |          |          |
| Hot-Swappable            | Yes      |          |          |          |          |          |

\*Run time may vary with environment, charge state, and age of batteries.

**ENVIRONMENTAL**

|                                   | Q-LS™ 10                                     | Q-LS™ 20 | Q-LS™ 30 | Q-LS™ 40 | Q-LS™ 50 | Q-LS™ 60 |
|-----------------------------------|--|----------|----------|----------|----------|----------|
| Maximum Heat Dissipation kW       | 0.65   | 1.3      | 1.9      | 2.6      | 3        | 3.5      |
| Maximum Heat Dissipation BTU/hr   | 2,933  | 5,865    | 8,798    | 11,730   | 14,663   | 17,595   |
| Operating Temperature             | 32 to 104 °F (0 to 40 °C) *                  |          |          |          |          |          |
| Humidity                          | 0%–90% non-condensing                        |          |          |          |          |          |
| Audible Noise                     | < 63 dBA at 1 meter                          |          |          |          |          |          |
| Altitude                          | Less than 1,500 m (4,921 ft) above sea level |          |          |          |          |          |
| De-rating Temperature To Altitude | 39 °F / 3,281 ft (4 °C / 1,000 m)            |          |          |          |          |          |

\*A range of 0 to 50 °C is possible with 125% system upsize but will result in shorter battery life.

**PHYSICAL**

|                             | Q-LS™ 10                                 | Q-LS™ 20  | Q-LS™ 30  | Q-LS™ 40  | Q-LS™ 50  | Q-LS™ 60                |
|-----------------------------|--|-----------|-----------|-----------|-----------|-------------------------|
| W x D x H                   | 21.5 x 32 x 63 in (550 x 800 x 1,600 mm) |           |           |           |           |                         |
| Weight (Lbs. <sup>1</sup> ) | 1050-1400                                | 1200-1400 | 1300-1500 | 1600-1700 | 1900-2100 | 1950 -2900 <sup>2</sup> |
| Weight (Kg. <sup>1</sup> )  | 480-640                                  | 550-640   | 600-700   | 730-775   | 875-975   | 900-1325                |

<sup>1</sup>These weights are provided as a reference point. Most Q-LS systems are created with customizations that will often cause the system to weigh significantly more than its standard configuration.

<sup>2</sup>Weight variance in the Q-LS 60 is significant due to the option of a single cabinet or double-wide cabinet configuration.

**POWER INNOVATIONS PUTS POWER IN YOUR HANDS**

Specializing in custom, critical, rugged and renewable power applications, we deliver the highest quality uninterruptible power solutions for homes, businesses, and governments worldwide.



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