

Quantum Automation

OFF GRID-POWER

REMOTE MONITORING & CONTROL PANELS

- Solar Panel
- Lithium Ion Battery
- Charge Controller
- Pole Mount or Ground Mount



Quantum Automation

Order Information						
Maximum Continuous 24 VDC Load	Battery Capacity (Wh)	Battery Run Time	Solar Panel Power Size (Watts peak)	Pole Mount	Ground Mount	Quantum Part Number
Max 15W/0.63A	30Wh	120min	25 Watts	X		QSB1-24-15-S25-P
Max 15W/0.63A	30Wh	120min	70 Watts	X		QSB1-24-15-S70-P
Max 15W/0.63A	30Wh	120min	70 Watts		X	QSB1-24-15-S70-G
Max 15W/0.63A	30Wh	120min	150 Watts	X		QSB1-24-15-S150-P
Max 15W/0.63A	30Wh	120min	150 Watts		X	QSB1-24-15-S150-G

Order Information						
Maximum Continuous 24 VDC Load	Battery Capacity (Wh)	Battery Run Time	Solar Panel Power Size (Watts peak)	Pole Mount	Ground Mount	Quantum Part Number
Max 120W/5A	240Wh	120min	70 Watts	X		QSB2-24-120-S70-P
Max 120W/5A	240Wh	120min	70 Watts		X	QSB2-24-120-S70-G
Max 120W/5A	240Wh	120min	150 Watts	X		QSB2-24-120-S150-P
Max 120W/5A	240Wh	120min	150 Watts		X	QSB2-24-120-S150-G
Max 120W/5A	240Wh	120min	300 Watts	X		QSB2-24-120-S300-P
Max 120W/5A	240Wh	120min	300 Watts		X	QSB2-24-120-S300-G
Max 120W/5A	480Wh	240min	300 Watts	X		QSB2-2-24-120-S300-P
Max 120W/5A	480Wh	240min	300 Watts		X	QSB2-2-24-120-S300-G

Pre-assembled and Pre-wired 16''x14''x6 enclosure	QSB-PNL-WIRED
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Solar Energy Kits with Lithium Ion Batteries for 24 Volt Remote Power Applications

Q Solar Battery offers complete remote power solutions at a best-value price!



Pole Mounted Solar Energy Kit
(Pre-wired enclosure optional)
*Pole not included



Ground mounted Solar Energy Kit
(Ballast weight not included)

Features and Benefits

- Complete kits with solar panel, battery, charge controller, and mounting bracket
- **Regulated Power Output** (not just a simple voltage output that varies with the charge of the battery)
- Lithium Ion vs. Conventional Lead Acid Batteries

1/3 Size and Weight

3x Life (7-10 years)

4x Life Cycles (2,000 - 3,000 charge/discharge cycles)

100% Depth of Discharge (vs. only 50% for lead acid)

Does not require vented enclosure (Lead acid does)

- BMS (Battery Management System) for optimized charging/discharging and safety protection circuits

8 Layers of Safety

1. Overcurrent Protection
2. Short Circuit Protection
3. Over Temperature Protection
4. Under Temperature Protection
5. Over Charging Protection
6. Over Discharging Protection
7. Overload Protection
8. Sleep Mode for shipping and long shelf life

Solar Battery Sizes

Small (QSB1)

- 30Wh of 24VDC energy supporting loads up to 15 Watts (2 hours backup power)

Large (QSB2)

- 240Wh of 24VDC energy supporting loads up to 120 Watts (2 hours backup power)
- Includes integrated panel mounting enclosure



Determine Your Energy and Power Requirements

Maximum Power Requirement

If over 15 Watts, must use QSB2 battery pack

Calculate Daily Energy Requirement

1. Standby Load * Duty Cycle (always on = 100% Duty Cycle) = **Hourly Standby Load**
2. Active Load * Duty Cycle = **Hourly Active Load**
3. Hourly Standby Load * 24 hours/day + Hourly Active Load x 24 hours/day = **Daily Energy Requirement**
4. **Add number of "ride through" days** (assuming cloudy weather) to Daily Energy Requirement.

Example:

Standby Load: 3 Watt

Active Load: 10 Watt

Ride Through Days: 2

Standby Load Duty Cycle: 100%

Active Load Duty Cycle: 15%

1. 3 Watts * 100% = 3
2. 10 Watts * 15% = 1.5
3. 3 * 24 hours/day + 1.5 * 24 hrs./day = **108 Watt hours**
4. 108 Watt hours * 2 days = **216 Watt hours**

Energy Requirement & Battery Solution

≤ 30Wh, use QSB1

> 30Wh, use QSB2 Battery Pack (240Wh capacity)

> 240Wh, QA offers a 480Wh battery solution.

Sleep Timers (Q-SLP-TMR-1)

- If the system does not need to be on continuously, use a *QA Sleep Timer!*
- Uses only .0003ma
- Will "wake up" to turn on valves, power up a PLC, instrumentation, radio, etc. on a cyclical sequence
- Communicates with QA PLC's for a dynamic timing sequence like:
 - Daytime vs nighttime sequence
 - Special sequence for an alarm event
 - Sequence based on the battery state of charged capacity

Solar Panel Sizing

Sizing is based in several factors:

1. Amount of sunlight based on location
2. Climate and temperatures at location
3. Daytime vs. nighttime load profile (if not equivalent)
4. Desired recharge time
5. Safety factor against running out of power in the worst case scenarios

Call Quantum Automation at (714) 854-0800 to discuss Solar Panel Sizing for your specific needs!

Quantum Automation offers a complete line of panel fabrication product including enclosures!

Visit Quantumautomation.com for more information!



Specifications

	Performance Specifications	QSB1	QSB2
Electrical Characteristics	Output Power Max.	15W (0.625 Amps @24VDC)	120W (5 Amps @24VDC)
	Rated Energy Capacity	30Wh	240Wh
	Regulated 24 VDC \pm 2%	24.48 to 23.52 VDC	24.48 to 23.52 VDC
	Surge Capacity	2x Current for 250ms @1.25 Amps	2x Current for 250ms @10 Amps
	Output Ripple Voltage	<200mVp-p	<200mVp-p
	Cycle Life	>2000 cycles 100% DoD (depth of Discharge)	>2000 cycles 100% DoD (Depth of Discharge)
	Monthly Self Discharge	\leq 3.5% per month	\leq 3.5% per month
	Input Min. Power	24VDC (10W)	24VDC (75W)
	Sleep Mode Sleep mode is used for transportation purposes and will not be active as long as 24VDC is connected to battery.	Sleep Mode is active when output power < 2W for 30+ minutes and no input power present. Connect 24VDC to activate battery.	Sleep Mode is active when output power < 4W for 30+ minutes and no input power present. Connect 24VDC to activate battery.
Input Specifications	Input power (Managed by the Charge Controller)	Recharge time varies with size of solar panel and charge controller	Recharge time varies with size of solar panel and charge controller
Environmental @60 \pm 25% Relative Humidity	Charge Temperature	0 to 45°C (32 to 113°F)	0 to 45°C (32 to 113°F)
	Discharge Temperature	-20 to 65°C (-4 to 149°F)	-20 to 65°C (-4 to 149°F)
	Storage Temperature	0 to 45°C (32 to 113°F)	0 to 45°C (32 to 113°F)
	Cell Chemistry	Lithium Iron Phosphate	Lithium Iron Phosphate
Mechanical	Dimensions (Width, Height, Depth)	5.9'' x 2.6'' x 3.9'' (151mm x 65mm x 99mm)	7.1 x 3 x 6.7 (181mm x 76mm x 169mm)
	Case Material	Plastic	Metal
	Weight	2 Lb (0.9 Kg)	5.6Lb 2.5 Kg
	Connections	Terminal Block	Terminal Block

Certifications

- UL1642 - Battery
- UL1703 - Solar Panel (available upon request)
- UL1703 - Solar Panel Class 1, Division 2, Groups A, B, C, D (available upon request)

