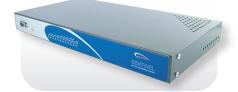


SENTINEL SYSTEM SPECIFICATION

Permanent monitoring for lead-acid and Ni-Cad batteries.

The PowerShield Sentinel system provides monitoring for an unlimited number of batteries. A complete solution of hardware and software ensures you get the information you need to confirm your batteries are operating within IEEE/IEC guidelines.



Sentinel Monitor

The monitor captures, processes and stores data from a range of sensors. This includes monoblock voltage, impedance and temperature, string voltage and current, plus ambient temperature.

Power supply [10W]:	24V DC Model: 11V to 33Vdc, 0.8A max. 48V DC Model: 20V to 65Vdc, 0.4A max. 72V DC Model: 55V to 140Vdc, 0.15A max. AC Model 110V to 240Vac, 50/60Hz, 0.15A max.
Battery inputs Sensor type String voltage	up to 160 (scaleable to 1280) Measurement Module or m-Senzor 2V-1000V
Current inputs Sensor type Measurement range System accuracy Maximum distance	up to 5 (scaleable to 16) Hall Effect OA – 2000A ±1% + sensor accuracy 15m / 50ft ¹
Temperature inputs (Ambient) Measurement range System accuracy Maximum distance	up to 5 (scaleable to 16) 0°C to 80°C/32F to 176F ±1°C / 1.8F 15m/50ft
Digital inputs	4
Relay outputs Rating Selectable	4 voltage free 1.25A @ 24VDC Any relay configurable to any alarm
Memory	350,000 data points
Physical dimensions	Width: 430mm / 17 inches (19" rack compatible) Depth: 270mm / 10.6 inches Height: 45mm / 1.8 inches (1U)
Operating temperature Storage temperature	0°C to 50°C/32F to 122F 0°C to 70°C/32F to 158F
Service port	RS232
Com port 1 (Optional)	Primary monitoring connection with option of: Ethernet – 10Base-T RS232 Wi-Fi
Com port 2 (Optional)	Building management interface with option of: RS485 or RS232 interface Modbus ASCII or Modbus RTU protocol SNMP Modbus TCP





SENTINEL SYSTEM SPECIFICATION



m-Senzor Dual and Single Input

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Purpose	Measures individual monoblock voltage, impedance and temperature			
Application	VRLA and vented lead acid, Ni-Cad cells			
Nominal voltage	Ni-Cad	2V	6V	12V
Voltage measurement range	0.8V-1.9V	1.6V-2.6V	4.8V-7.8V	9.6V-15.6V
Typical Accuracy ²	±0.3%	±0.3%	±0.2%	±0.2%
Resolution	0.001V	0.001V	0.005V	0.005V
Impedance measurement range	0.15 - $5.00m\Omega$	0.15 - 5.00 m Ω	$0.50-20.00 \text{m}\Omega$	$1.00-40.00 \mathrm{m}\Omega$
Typical Accuracy	$\pm 2.5\% \pm 15$ u Ω	$\pm 2.5\% \pm 15 u\Omega$	$\pm 2.5\% \pm 25u\Omega$	±2.5% ±25uΩ
Resolution	1uΩ	1uΩ	1uΩ	1uΩ
Temperature measurement range	-4°C to 70°C/24.8F to 158F			
Measurement location	Negative post of battery			
	(Variable – Pilo	(Variable – Pilot to 1 per battery by demand)		
Maximum input voltage	±5V	±6V	±25V	±65V
Power supply current	50mA	30mA	18mA	18mA
Isolation	750V DC4			
Power supply	Powered by monoblock being monitored			
Interface to Sentinel	BUS II			
	(maximum 150m/492ft per BBUS port)			
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4V, 8V, 16V m-Senzors also available. Contact PowerShield for full details.

Measurement Module Dual and Single Input

Purpose	Measures individual monoblock voltage			
Application	VRLA and vented lead acid			
Nominal voltage	2V	6V	12V	
Measurement range	1.6V-2.6V	4.8V-7.8V	9.6V-15.6V	
Typical accuracy ²	±0.25%	±0.2%	±0.2%	
Maximum input voltage	6V	36V	36V	
Power supply current	10mA	3mA	3mA	
Isolation	600V DC			
Power supply	Powered by monoblocks being monitored			
Interface to Sentinel	PowerShield BBUS (maximum 100m/330ft per BBUS port)			



Link Battery Management Software

Recommended³ minimum PC system requirements for PowerShield Link software:

Processor	1GHz or better x86 or x64 processor
Operating System	Windows XP Professional or later
RAM Hard Drive	2GB 32 bit or 4MB 64 bit Single SATA 2 hard drive or better. 160 GB with 20GB available hard disk space
Monitor	1024 x 768 or 1366 x 768

¹ Greater distances may be used in a benign electrical environment.

 $^{\rm 2}$ Accuracy is ±0.3% for temperature range of 0°C to 50°C / 32F to 122F.

³ Recommended for up to 5 Sentinel sites, with single seat operation. Refer to PowerShield for larger configurations ⁴ Design rated to 750VDC. UL certified to 600VDC

