



Data Acquisition Solution

Next Wave Energy Monitoring ("NWEM") is a renewable energy performance monitoring & data acquisition platform designed by power quality engineers to deliver substantial energy vitals and system analytics to solar asset owners/managers. NWEM's turnkey DAS extends market-leading customer support and In-field Network Engineering from our US-based teams to streamline system energization and DAS retrofit needs.



Turnkey Solution

Hardware

- ✓ Next Wave Industrial Datalogger
- ✓ Revenue-grade Energy Meter
- ✓ 5-port Ethernet Switch
- ✓ Metal NEMA4 Weatherproof Enclosure
- ✓ 4G/LTE Industrial-Grade Cell Modem (requires a cellular plan)
- ✓ Supplemental Battery + UPS Options
- ✓ Modbus Communication via RS-485 or TCP
- ✓ 8-year Material Warranty Included
- ✓ Non-Proprietary, Off-the-Shelf Components

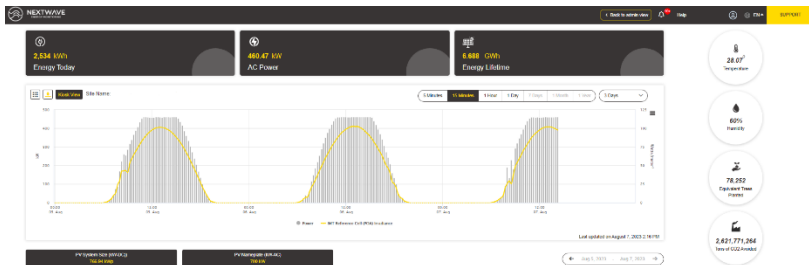
Software

- ✓ Data granularity with ranges including 1 min/ 5 min/ 15 min/ 1hr/ 1 day/ 1 week/ 1 month/ 1 year/ Lifetime
- ✓ Cellular or Ethernet connectivity
- ✓ Full Support + Integration with NWEM **PVPulse™**
- ✓ Sun-Spec Alliance Certified
- ✓ VPN Access / Port Forwarding capabilities for secured remote access
- ✓ Automated Report Generation & Distribution
- ✓ Diagnostics-Level Charting and Metrics
- ✓ Intuitive & Flexible UX/UI Solution

Next Wave **PVPulse™** Performance Monitoring

Next Wave Energy Monitoring's **PVPulse™** is a renewable energy performance monitoring and data analytics platform with a mission

to simplify the high volume of data and focus on meaningful analytics which will lead to root-cause and will reduce the Mean Time to Repair (MTTR). **PVPulse™** intuitive DAS platform is geared towards commercial & industrial, enterprise/portfolio, and utility-scale applications, offering anomaly detection, performance trending, plant or fleet-level interface/data, and troubleshooting capabilities while aggregating data from all interactive equipment and translating it into meaningful power and energy vitals for both highly technical and non-technical end-users.





Assembly	Operating Humidity	10% to 90% non-condensing
	Operating Temperature	-40°F to 185°F / -40°C to 85°C
	Weight	38.00lbs / 17.24kg
	Line Input Voltage Range	90V, 100V, 120V, 208V, 220V, 230V, 240V
	Frequency	50Hz – 60Hz ± 1% tolerance
	Rated Insulation V(AC/DC)	1000VAC / 1500VDC
	Standards / Compliance	UL Listed 508A Type 4, RoHs Compliant, cUL Listed per CSA C22.2 No. 94.1, 94.2, 14 / IEC 62208 / ISO9001 (2008)
Enclosure	Enclosure Dimensions	20" x 20" x 8" / 48.26cm x 48.26cm x 20.32cm
	Enclosure Inner Depth	6.69" / 17cm
	Enclosure Rating	Metal NEMA4
	Weight	7.56 lbs / 3.43 kg
	Base Material	Metal
	Standards / Compliance	EN 62208.UL 508A / E189312
	Degrees of Protection	IP66/IP67
Data Logger	Flammability Rating	UL 746C 5 inch flame test
	Interval Recording	1 to 60 minutes, user selectable (default 15 minutes)
	Processor / OS / Memory	i.MX 6UltraLite / Linux 4.x / x512 MB RAM
	Storage	4GB NOR Flash
	Devices Supported	Up to 64 connected Modbus RTU enabled devices
	Primary Protocols	Modbus/RTU, Modbus/TCP, TCP/IP, PPP, HTTP/HTML, FTP, NTP, XML, SNMP-Trap
	Serial Ports	2 x RS-485 Modbus, supports 32 external devices per port
Revenue Grade Energy Meter	LAN	2 x RJ45 10/100 Ethernet, full half duplex, auto polarity
	Security / Compliance	SSL & TLS / FCC CFR 47 Part 15, Class A, EN 6100, EN 61326, CE, UL61010 Recognized
	Modbus/RTU Output	RS-485 2-wire, 9600 to 230400 baud
	BACnet MS/TP Output	RS-485 2-wire, 9600 to 115200 baud
	Relay	2x Solid-State Relay Outputs (100mA @ 50V max), User Programmable for alarm, status or pulse output
	Accuracy	0.2% Max
	Standards / Compliance	ANSI C12.20 Class 0.2 Accuracy Certified / FCC Part 15 Class B, UL Listed #E250395
Cellular Modem	WAN Interface	1 x Embedded LTE Modem with Redundant SIM Slot
	LAN Interface	2 x 10/100/1000 M Ethernet Port
	Router Throughput	300 Mbps
	Load Balancing	Intelligent Failover, Session Persistence, Per-Service Load Distribution, Multiple Algorithms
	Networking	NAT and IP Forwarding, Static Routes, Port Forwarding, UPnP, NAT-PMP
	Security	128-bit WEP, WPA, & WPA2, Stateful Firewall, DoS Prevention, Web Blocking
	Standards / Compliance	FCC, CE, IC, RoHs, E-Mark, EN 61373, EN50155, EN61000





Ethernet Switch	Ports	5 x 10M/100M BASE-T Ethernet Port (RJ45) connectors
	Packet Forwarding Rate	0.74Mpps
	Switch Delay	< 5us
	Packet Buffer	448K
	Standards / Compliance	UL, cUL, IEC EN 62368-1, FCC (NA), CE (EU), PSE (JP)
Power Supply	AC Input Voltage Range	90VAC – 264VAC (120V, 208V, 220V, 230V, 240V)
	Input Frequency	47Hz – 63Hz
	Inrush Current (115/230VAC)	25 / 50A
	Power Factor	Meets EN6100-3-2, EN61000-3-3
	Line & Load Regulation	1%
UPS	Standards / Compliance	UL508, UL1310 Class 2, IEC/UL/CSA/EN62368-1, EN60950-1, CE Mark
	Input Voltage Range	18 VDC – 30VDC
	Case Material	Flame Retardant Polycarbonate (UL94 V-0)
	Operating Temperature	-25°C to +75°C
Modbus Gateway	Standards / Compliance	EN 61000-6-1/2/3/4, EN 60950-1, EN 50121-4, UL Listed UL 508, UL/C-UL Recognized UL 60950-1
	CPU	32-bit ARM
	Ethernet	10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator) PoE (IEEE 802.3af, Class 1)
	COM Port	3 x 2-wire RS-485
	Self-Tuner	Yes, automatic RS-485 direction control
	Connector	10-Pin Removable Terminal Block x 1
Transient Voltage Surge Suppressor	Additional Features	DHCP / Web Configuration / UDP Search / Modbus Gateway / Multi-client
	Input Specifications	519 VAC L-L, 250 J / Phase (x3)
	Continuous AC Volts	300 VAC L-N
	Continuous DC Volts	385 VDC L-N
	Peak Surge Current 8/20 uS	10,000A (1X) / 6,500A (2X)
	Max. Varistor V @ 1mA	517 V
Cellular Antenna	Max. Clamp V @ 100A	775 V
	Cable Length/Type	2 x 5 meters / RG174
	Dimensions	9" x 2.5" x 2.5" / 23cm x 6.5cm x 6.5cm
	Gain	10 – 12 dBi
Weather Station	Frequency Range	698 – 960 MHz / 1710 – 2170 MHz / 2300 – 27000MHz
	Irradiance (W/m ²)	0 – 2000
	Uncertainty (Daily Total)	< 7%
	Calibration Uncertainty	± 3%
	PV Panel Temp. Sensor	-40°C to 100°C, ± 1°C
	Ambient Temp. Sensor	-40°C to +80°C
Communication	RS-485 Modbus RTU	

