

Power-One is the leading provider of enterprise asset management systems focused on renewable energy generation systems. Aurora Vision is a unified plant management platform that brings together the benefits of a traditional solar monitoring system and a comprehensive asset management system. As a software-as-a-service platform, it is flexible, scalable and expandable.

No matter if the customer is a home owner or an independent power producer, Aurora Vision unified plant management platform provides the solution. Our business is to make our customers businesses operate more efficiently.

- Home owners that purchase a residential solar system with built monitoring can sign up for free portal access, without the need for an installer or Power-One technical support.
- Installers that provide preventative maintenance services can manage their portfolio of residential and commercial customers in one single portal.
- Third party operations and maintenance providers can obtain third party access to any plant of any size across any customer group.
- Third party software-as-a-service providers can access data through our platform API to provide any additional services, such as public displays and web kiosks.

Customers selecting to use Aurora Vision monitoring benefit from not only the tools available in the portal, but also added level of support from Power-One, since we are able to directly monitor and manage the assets from remote. This results in shorter mean time to repair, improved cost of service and ultimately lower cost of ownership.



ANY INVERTER SIZE



**MICRO
INVERTERS**



**STRING
INVERTERS**



**CENTRAL
INVERTERS**

ANY MARKET SEGMENT



RESIDENTIAL
ALWAYS-ON ACCESS WITH
AURORA EASYVIEW



COMMERCIAL
SHARE DATA WITH AURORA
EASYVIEW AND MAINTAIN
PORTFOLIO WITH AURORA VISION



UTILITY
ASSET MANAGEMENT WITH
AURORA VISION IN PARALLEL
WITH SCADA SYSTEMS

ONE MANAGEMENT PLATFORM



AURORA VISION[®] UNIFIED PLANT MANAGEMENT PLATFORM

Aurora Vision reduces mean time to repair

Optimizing mean time to repair of a solar plant includes early fault detection by real-time data acquisition and email alerting. By down to string level granularity of monitoring and intelligent fault descriptions, the type of repair needs and potential spare parts can be identified, minimizing the need for multiple truck rolls. Identification of fault locations minimizes the time on plant. Automatic reset of alarm events after a repair is completed provides instant feedback to the stakeholders.

Aurora Vision improves portfolio management

With the availability of tools, such as the map based portfolio overviews and innovative severity analysis charting, optimization of routing of maintenance personnel could lead to dramatic reductions in cost and improved customer satisfaction.

Aurora Vision reduces cost of service operation

Designed not only for the end-user, but also for collaboration with Power-One's service team, Aurora Vision

can be used by Power-One service personnel to remotely diagnose and troubleshoot inverters and other on-site equipment, such as energy meters, combiner boxes and weather stations.

Aurora Vision improves lost energy

With the innovative analysis tool Symmetry Analysis, locating underperforming plants, inverters, strings or even panels, is available to any user. The sooner a fault or an issue is detected, the sooner it can be fixed which results in a better overall yield. Instant key performance indexes promote teams to keep plants running optimally.

Aurora Vision self-service with Aurora EasyView

Even home owners benefit directly from the unified plant management platform, by selecting to self-register their system or having their installer manage their system for them. There is no need to install software in the home owner's computer, no need to backup energy performance data. Everything is accessible through a standard web browser, tablet or smart phone.

AURORA VISION

Portfolio Manager gives the installer all the information needed to monitor and operate a fleet of residential PV plants. It can be configured to allow customers and installers to jointly manage any plant or to allow customers complete control of their site at the end of an installation.

Users of Portfolio Manager can see aggregate information about all the plants they have under management. They can quickly triage installation and operational issues across different plants to give project teams the details they need to quickly prioritize actions to minimize truck rolls. Users can drill down into any plant under management to track plant assets.



Portfolio Management

Aurora Vision's Portfolio View tracks the performance of all plants under management for executive, financial and operations teams by providing a portfolio summary view of the entire fleet of PV plants, allowing drill down into highest priority performance challenges, as well as identifying assets that are not meeting desired performance ratios. By the use of Key Performance Indicators, asset managers can focus on the most urgent problems first to minimize lost energy production.



Plant Summary and Diagnostics

Aurora Vision's Plant Summary tool tracks and reports on all the key information about your plant's assets such as meters, combiners, inverters, environmental units and loggers. Meter data is especially important to plant operators to maximize plant operational efficiency because it provides the information needed to do detailed root cause production analysis. Root cause production analysis can track issues based on such things as asset dependencies, energy production, irradiance and temperature to improve operational efficiency by reducing effort and time to resolution for plant operation issues. Some performance issues such as dirty or partially obscured panels are more difficult to diagnose than others. However, when comparing inverters to one another, operators can more readily identify performance trends leading to better inverter maintenance and higher energy yields. Using Symmetry Analysis, plant operators can identify and fix these challenging performance issues by comparing devices with each other.



AURORA EASYVIEW

Aurora EasyView is a web based tool designed for residential customers. Home owners using Aurora Easy View can see how well their solar power plant is operating. They can view plant information over the course of a day, week, month or year, without interfering with how the plant is being operated. It is an easy way for the home owner to demonstrate the environmental benefits of their home PV plant to family and friends. Clear and dynamic graphics show how much potential pollution is being prevented by generating solar electricity.

Access to Aurora Easy View is controlled by the plant installer to give the home owner as much access to the plant as the installer wants to provide.



PLANT SOLUTIONS



Aurora Logger

The high-performance Aurora Logger comes in three performance levels to fit your budget and functionality; Residential, Commercial and MAX. All versions collect data from Power-one inverters, logs it on site, and then acts as an internet gateway to send the data to be stored on Power-One's unified plant management platform, Aurora Vision.



EVO Easy Control

EVO Easy Control is ideal for datalogging Power-One inverters and acting as an internet gateway when analog inputs for weather sensors or digital inputs for pulse counting meters and status inputs are also needed.



Aurora Plant Manager

A single enclosure can provide all the components needed to monitor small or medium commercial sites or it can be used as a flexible modular blocks, to create large and geographically distributed utility scale monitoring designs. It includes the Aurora Logger Max, AC to DC power supply, RS-485 repeater and various communication options.



Aurora Environmental

The Aurora Environmental system automatically monitors site meteorological conditions and photovoltaic panel temperature in real-time, transmitting sensor measurements to the Aurora Vision data center. Site irradiance and temperature data are needed to calculate expected performance and the ratio of actual performance to expected performance.



Aurora StringComb

The Aurora StringComb enables DC current monitoring for Aurora Central inverter solutions at the string level to help localize problems and minimize down time.



PMU – Power Management Unit

In order to meet requirements, such as the German medium voltage directive, the PMU provides the direct interface from the utility to the inverter, including power curtailment and power factor control inputs.



Modbus Converter

The PVI-RS-485-MODBUS converter family is an alternative to using the Aurora Logger or Aurora Plant Manager to provide third party monitoring systems with an interface from the Aurora Inverters to a modbus or modbus TCP communication protocol.



PVI-Desktop

For stand-alone applications where the end-user doesn't want to use the Aurora Vision portal, Power-One's Desktop product allows inverter owners to monitor performance from anywhere within 300 meters of the units (free space).



USB to RS485 converter

This converter allows serial interface between photovoltaic or wind inverters and computer via RS-485 link.

AURORA LOGGER

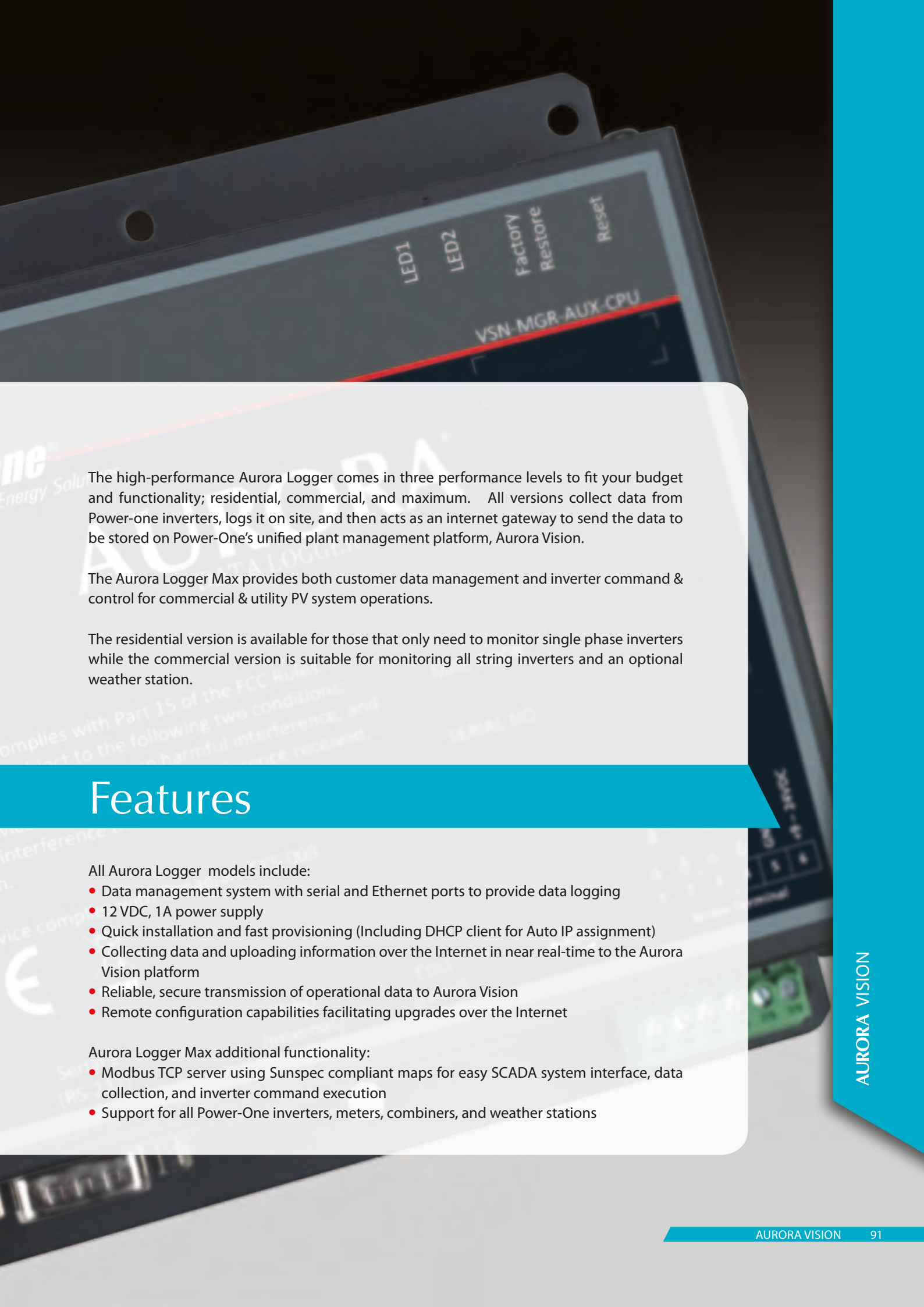
RESIDENTIAL
COMMERCIAL
MAX

GENERAL SPECIFICATIONS



NEW





The high-performance Aurora Logger comes in three performance levels to fit your budget and functionality; residential, commercial, and maximum. All versions collect data from Power-one inverters, logs it on site, and then acts as an internet gateway to send the data to be stored on Power-One's unified plant management platform, Aurora Vision.

The Aurora Logger Max provides both customer data management and inverter command & control for commercial & utility PV system operations.

The residential version is available for those that only need to monitor single phase inverters while the commercial version is suitable for monitoring all string inverters and an optional weather station.

Features

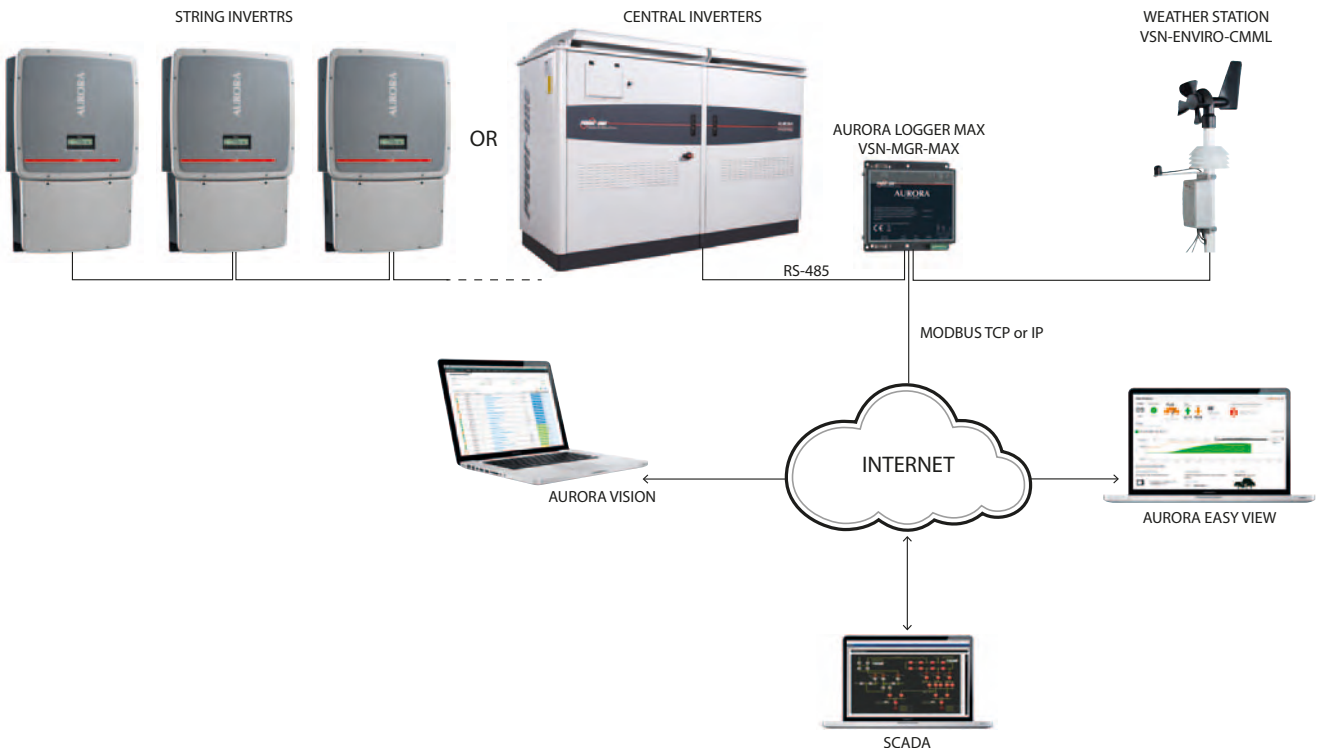
All Aurora Logger models include:

- Data management system with serial and Ethernet ports to provide data logging
- 12 VDC, 1A power supply
- Quick installation and fast provisioning (Including DHCP client for Auto IP assignment)
- Collecting data and uploading information over the Internet in near real-time to the Aurora Vision platform
- Reliable, secure transmission of operational data to Aurora Vision
- Remote configuration capabilities facilitating upgrades over the Internet

Aurora Logger Max additional functionality:

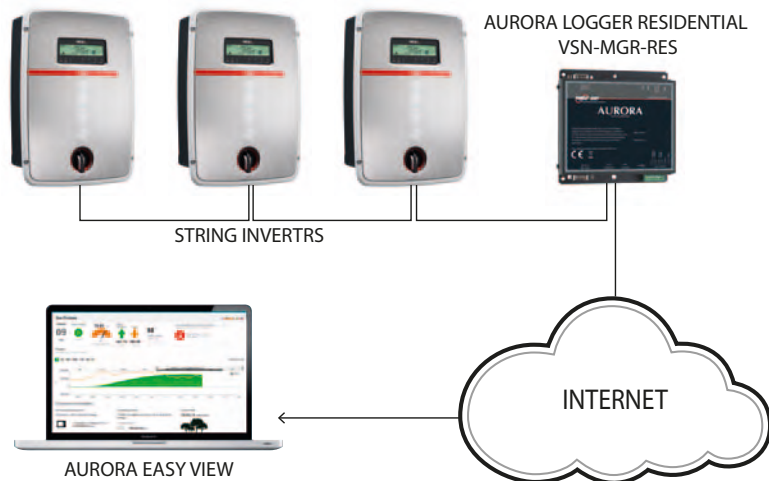
- Modbus TCP server using Sunspec compliant maps for easy SCADA system interface, data collection, and inverter command execution
- Support for all Power-One inverters, meters, combiners, and weather stations

COMMERCIAL AND UTILITY APPLICATION WITH AURORA LOGGER MAX






Block Diagram

APPLICATION WITH AURORA LOGGER RESIDENTIAL



PARAMETER	AURORA LOGGER
Communication Interfaces	
Serial Port Interface	(2) RS-485 + (2) RS-232
Maximum Devices per Serial Port	Physical limitation of 32 (reduced by pole rate, inverter data set size, and logger type)
Fieldbus Cable	RS-485 Shielded twisted pair. Recommend Belden # 1120A cable or # 3106A for 3 conductors
Ethernet Port 0	Firewall protected Ethernet WAN port for internet connection
Ethernet Port 1	Local LAN with static IP address
Ethernet Connections	RJ-45 Ethernet 10/100 base-T (LAN/WAN)
Communication Protocols	
Plant Fieldbus Protocols	Aurora, Modbus RTU, SunSpec
LAN/WAN Protocols	HTTP, DHCP, SSL, SSH, XML
Data Logging Specifications	
Data Sampling Rate	High frequency data sampling - 1 minute average
Local Storage	Log data for 30 days based on 15-minute intervals. (Days logged reduced by intervals shorter than 15-minute)
Upgradeability	Field upgradable over the Internet or locally via USB memory stick
Power Supply	
DC Power Supply Input	100 - 240 VAC
DC Power Supply Output	12VDC, 1A
Environmental Parameters	
Ambient Temperature Range	0°C to 40°C
Environmental Protection Rating	IP20
Relative Humidity	<85% Non-condensing
Mechanical Parameters (per unit)	
Dimensions H x W x D	1" x 5.5" x 5.25" (.03m x .14m x .13m)
Weight	2 lbs (0.91kg)
Mounting System	Screws through flanges
Compliance	
Emission	FCC Part 15 Class B, CISPR 22, EN 55022 Conducted and Radiated Emission
Immunity	EN55024

LOGGER MODEL COMPARISON			
	RESIDENTIAL (VSN-MGR-RES-P1-XX)	COMMERCIAL (VSN-MGR-CMML-P1-XX)	MAX (VSN-MGR-MAX-XX)
Logging Real Time Power Values	15-minute intervals only	1 to 7 minute configurable intervals	1 to 7 minute configurable intervals
Modbus/TCP Server	No	No	YES
Inverter Control Commands	No	No	YES
Devices Supported	5 Power-One	10 Power-One	All Power-One devices
	Single phase (only) string inverters	String inverters	3rd party meters (Consult latest supported list)
		1 Weather station	

ACCESSORIES		
VSN-MGR-DIN	Din Rail Kit to mount logger on a din rail	
VSN-ENVIRO-ENTRY	Weather station with sensor: ambient, panel, global irradiance	
VSN-ENVIRO-CMML	Weather station with sensor: ambient, panel, global irradiance, plane of array irradiance, wind speed & direction	

PVI-AEC-EVO

GENERAL SPECIFICATIONS





PVI-AEC-EVO is ideal for datalogging Power-One inverters and acting as an internet gateway when analog inputs for weather sensors or digital inputs for pulse counting meters and status inputs are also needed.

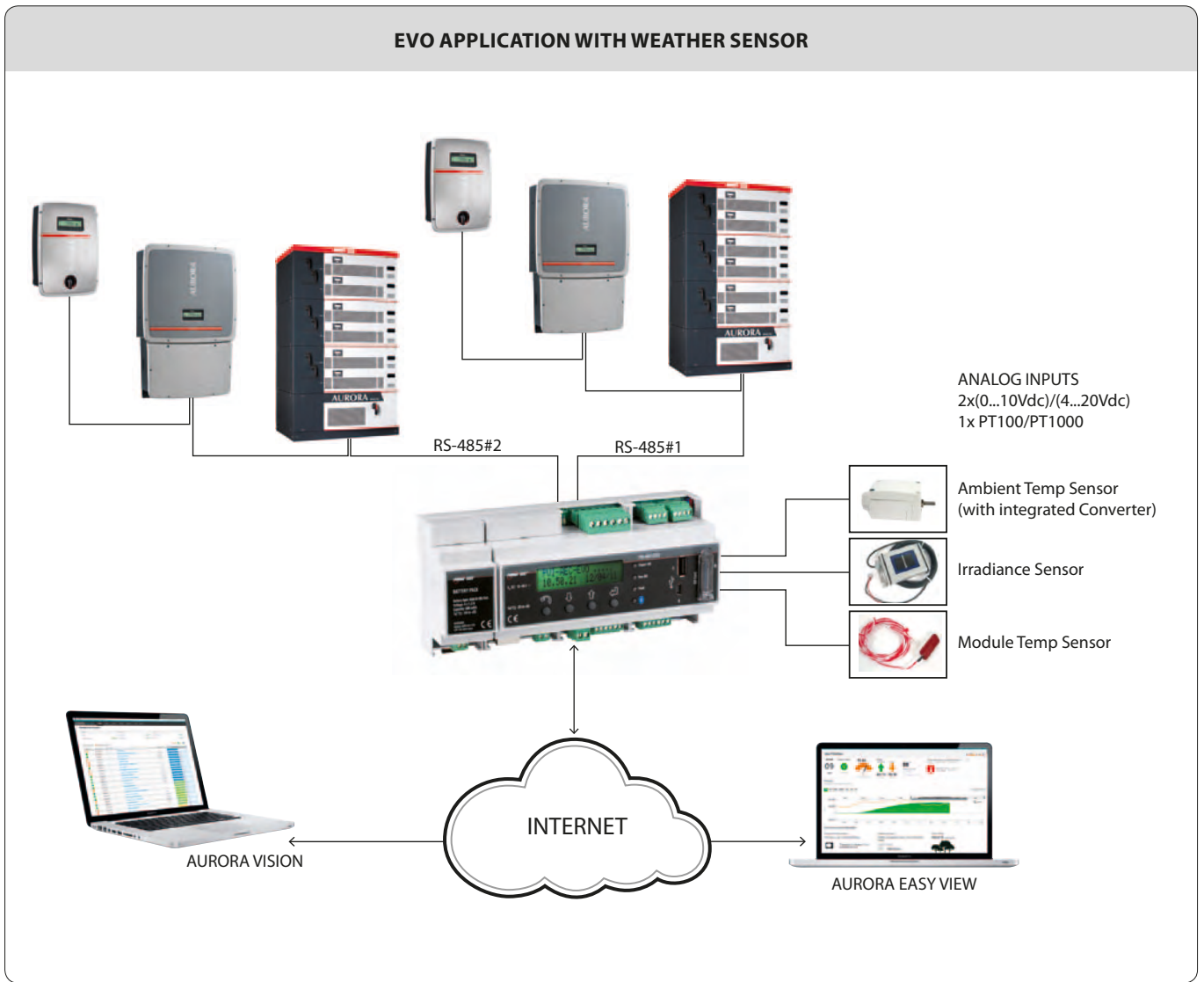
EVO can also satisfy the need for generating impulse signals, status signals, or relay outputs.

EVO's built in display enables easy configuration of inputs, outputs, and communications; in addition to quick review of energy and power. An expansion bus enables easy connection of options for battery backup pack or GSM/GPRS module for remote connectivity.

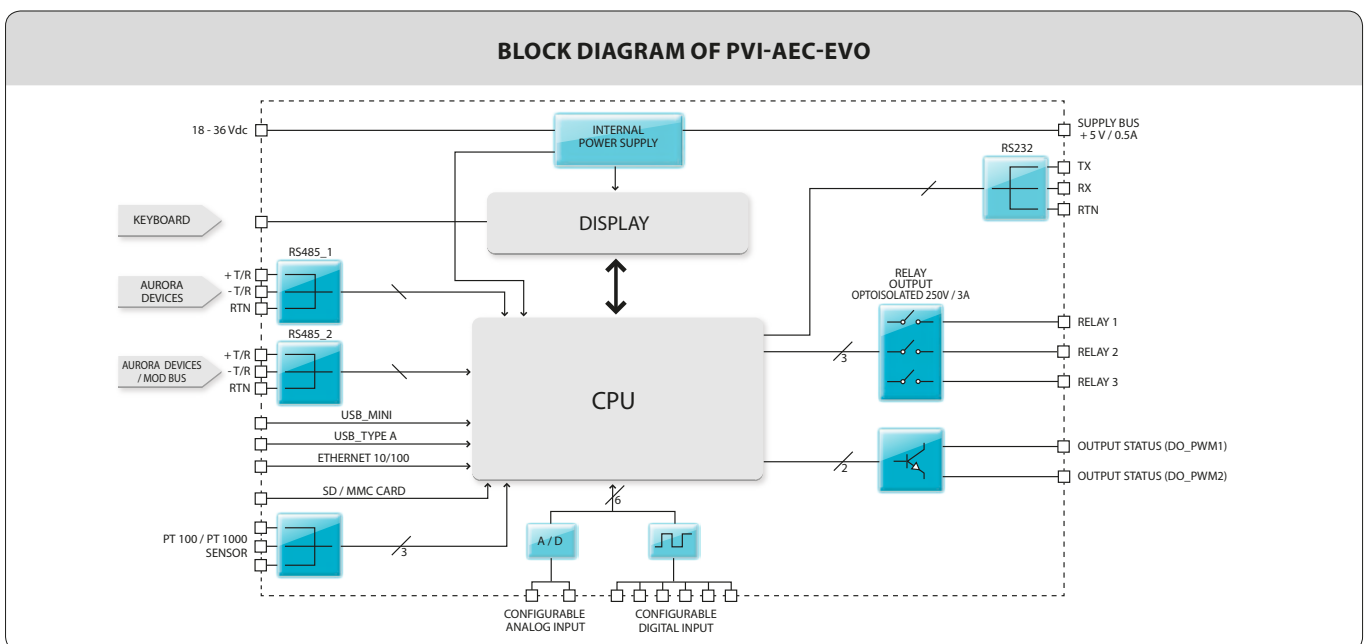
Features

- The Easy Control data logger links Power-One inverters and balance-of-system components over the Internet to Power-One's performance monitoring and management system Aurora Vision
- Connects up to 128 Power-One inverters using RS485 Power-One proprietary communications protocol for low-frequency data sampling
- Collects performance information such as energy harvest, power, voltage and inverter status

EVO APPLICATION WITH WEATHER SENSOR



Block Diagram



PARAMETERS	PVI-AEC-EVO
Communication Interfaces	
Inverter Communication (Port 1)	1 x RS485
Additional Inverter Communication (Port 2)	1 x RS485 Configurable to as interface to Aurora
Maximum Number of AURORA Devices⁽¹⁾	64 x string inverters or 32 x 55kW conversion module (central inverter) for each RS485 ⁽²⁾
Ethernet Connections	RJ-45 Ethernet 10/100 base-T (LAN/WAN)
Fieldbus Cable	RS-485 Shielded twisted pair. Recommended Belden # 1120A cable or # 3106A for 3 conductors
Communication Protocols	
Plant Fieldbus Protocols	Aurora, Modbus RTU
LAN/WAN Protocols	HTTP, XML
Data Logging Specifications	
Data Sampling Rate	Continuous
Logging	15 min
Local Storage	SD card (2GB)
Upgradeability	Field upgradable over the Internet or locally via SD card
Features	
Configurable Analog Inputs	2 configurable as 0 to 10 Vdc or 4 to 20 mA
Temperature Analog Input	1 x PT100 or PT1000 sensor with autsetting
Configurable Digital Inputs	4 x opto isolated as status inputs (for alarms) or power management (PM) control signals ⁽³⁾ 2 x opto isolated as status inputs or pulse converter inputs (from energy meter)
Digital Outputs	3 x relais power contacts 230 V / 3 A
Digital Outputs Configurable	2 x opto isolated (27 V, 50 mA) output status or power output
Power Supply	
DC Power Supply Input	100...240 VAC
DC Power Supply Output	12 VDC, 1 A
Maximum Consumption	<7.5 W
Battery for Integrated Clock	Lithium type Li2032
Environmental Parameters	
Ambient Temperature Range	-20...+55 °C (-13... 131 °F)
Environmental Protection	IP 20
Relative Humidity	< 90% non condensing
Mechanical Paramters (per unit)	
Dimensions H x W x D	190 mm x 90 mm x 63 mm / 93,54" x 6,30" x 2,48" -9 modules
Weight	< 0.36 kg /0.80 lb
Mounting System	35 mm top hat din rail (EN50022)
Available Products	
Standard	PVI-AEC-EVO
Light	PVI-AEC-EVO-LIGHT ⁽⁴⁾
Compliance	
Marking	CE
Safety and EMC Standards	EN60950, EN 55022, EN 55024









1. AURORA Devices are AURORA String Inverters and Modules for CENTRAL AURORA Inverter. Monitoring of String Comb is done via Stringcomb Manager Module configured in Central Inverter. The maximum number of STRING COMB for each Stringcomb Manager is 12.

2. Limited to 5 String Inverters for PVI-AEC-EVO-LIGHT

3. Check for availability

4. Available only for string inverters, TRIO-20.0/27.6 models excluded

Remark. Features not specifically listed in the present data sheet are not included in the product

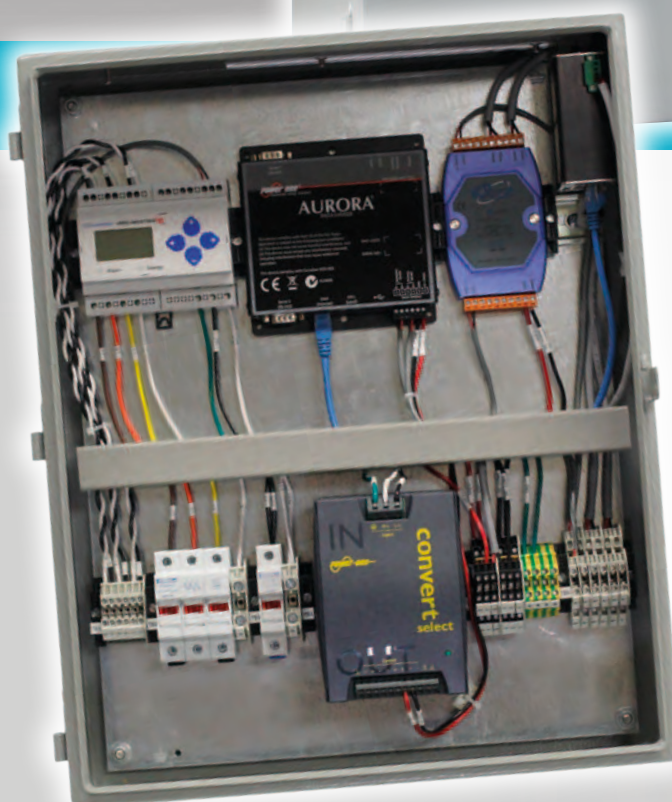
ACCESSORIES					
PVI-AEC-IRR	Irradiance reference cell 0 - 10 V		PVI-AEC-T1000-Integrated	PT-100 temperature Sensor with integrated converter 0 to 10 V	
PVI-AEC-IRR-T	Irradiance reference cell 0 - 10 V & back of reference cell temperature				
PVI-AEC-IRR-T(30)	Irradiance reference cell 0 - 10 V & back of reference cell temperature with 30 m cable				
PVI-AEC-T100-ADH	PT-100 Self-Adhesive back of panel temperature sensor		PVI-AEC-WIND-COMPACT	Wind Speed Sensor	
PVI-AEC-T1000-BOX	Ambient temperature sensor with IP65 enclosure		PVI-AEC_GPRS	GPRS cellular module	
PVI-AEC-T100-24V	Convert PT-100 0 to 10 V, requires 24 V supply		PVI-AEC_BATTERY	Backup battery pack	

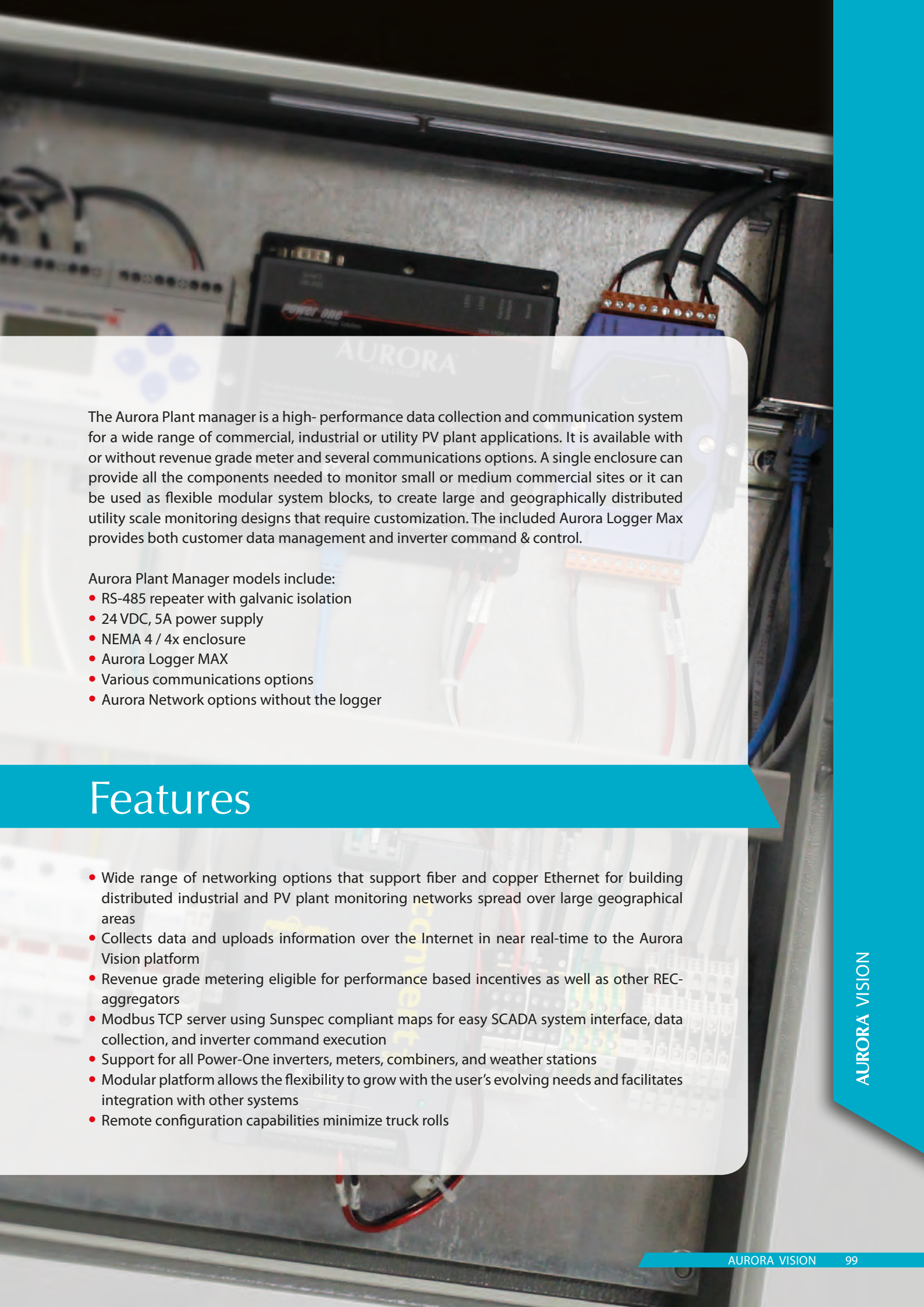
AURORA PLANT MANAGER

GENERAL SPECIFICATIONS



NEW



The background of the page is a photograph of an open electrical rack. Inside the rack, there are several components. A prominent black device in the center has the word "AURORA" printed on it. To its left, there's a white device with a small display. To its right, there's a blue terminal block with several wires connected to it. The rack is filled with various cables and components, typical of a control or monitoring system.

The Aurora Plant manager is a high-performance data collection and communication system for a wide range of commercial, industrial or utility PV plant applications. It is available with or without revenue grade meter and several communications options. A single enclosure can provide all the components needed to monitor small or medium commercial sites or it can be used as flexible modular system blocks, to create large and geographically distributed utility scale monitoring designs that require customization. The included Aurora Logger Max provides both customer data management and inverter command & control.

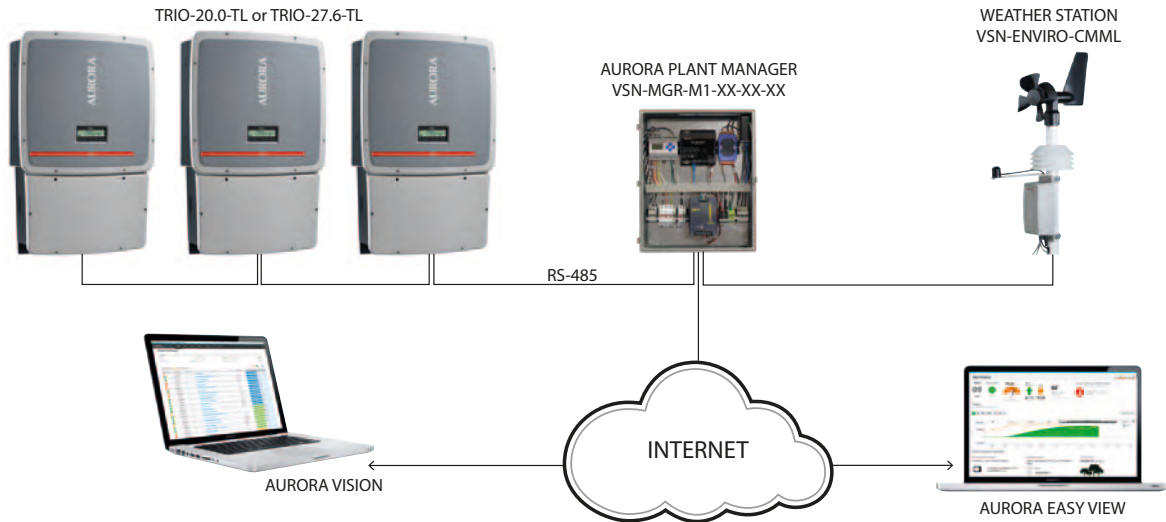
Aurora Plant Manager models include:

- RS-485 repeater with galvanic isolation
- 24 VDC, 5A power supply
- NEMA 4 / 4x enclosure
- Aurora Logger MAX
- Various communications options
- Aurora Network options without the logger

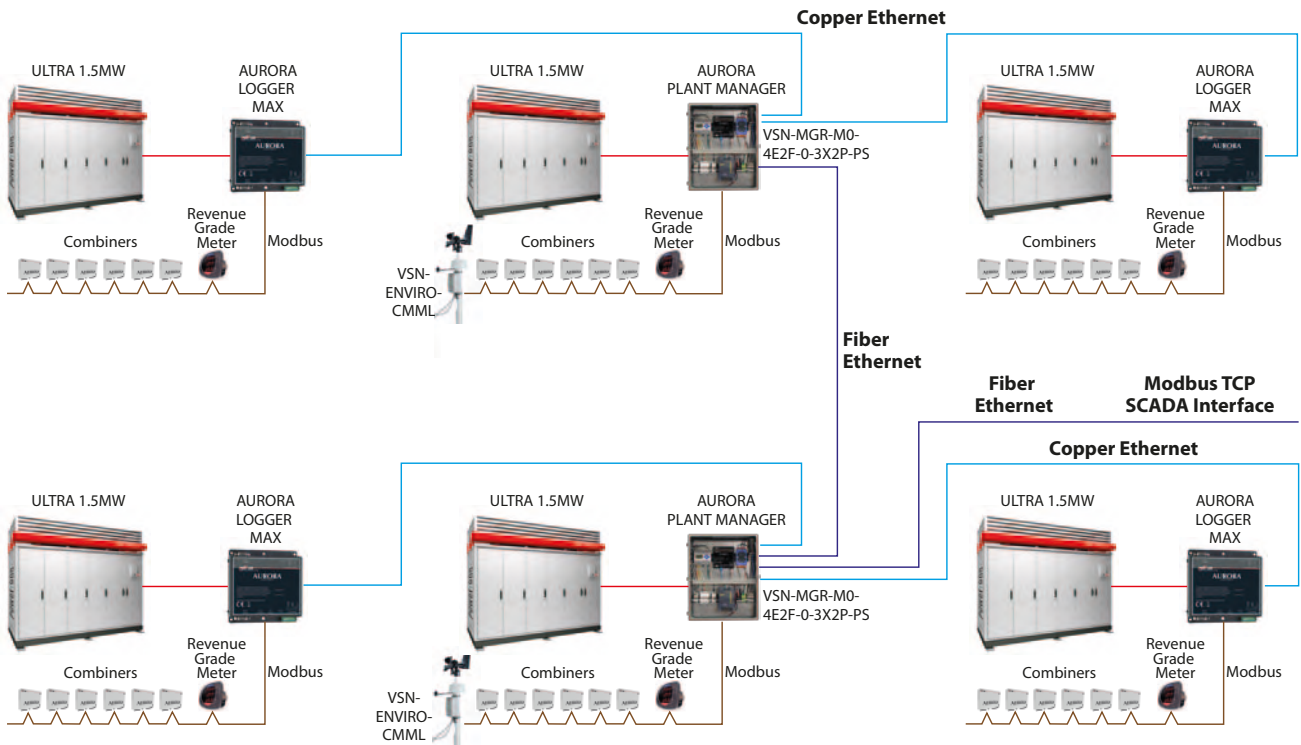
Features

- Wide range of networking options that support fiber and copper Ethernet for building distributed industrial and PV plant monitoring networks spread over large geographical areas
- Collects data and uploads information over the Internet in near real-time to the Aurora Vision platform
- Revenue grade metering eligible for performance based incentives as well as other REC-aggregators
- Modbus TCP server using Sunspec compliant maps for easy SCADA system interface, data collection, and inverter command execution
- Support for all Power-One inverters, meters, combiners, and weather stations
- Modular platform allows the flexibility to grow with the user's evolving needs and facilitates integration with other systems
- Remote configuration capabilities minimize truck rolls

COMMERCIAL APPLICATION WITH AURORA PLANT MANAGER



UTILITY APPLICATION – 10MW INSTALLATION EXAMPLE






PLANT MANAGER COMPARISON

Model Number	Logger Type	Revenue Grade Meter	Ethernet Switch	Cell Router	Optical Isolated Repeater	Pwr Supply
VSN-MGR-M0-1E-1E-1P	MAX				1 Port	Yes
VSN-MGR-M0-1E-GPRS-1P	MAX			Yes	1 Port	Yes
VSN-MGR-M0-5E-GPRS-1P	MAX		6 Port	Yes	1 Port	Yes
VSN-MGR-M0-1E-GPRS-3P	MAX			Yes	3 Port	Yes
VSN-MGR-M0-5E-1E-3P	MAX		6 Port		3 Port	Yes
VSN-MGR-M0-4E2F-1E-2X3P	MAX		4 Port Copper, 2 Port Fiber		(2) 3 Port	Yes
VSN-MGR-M1-1E-1E-1P	MAX	Veris E51C2			1 Port	Yes
VSN-MGR-M1-1E-GPRS-1P	MAX	Veris E51C2		Yes	1 Port	Yes
VSN-MGR-M1-5E-GPRS-1P	MAX	Veris E51C2	6 Port	Yes	1 Port	Yes
VSN-MGR-M1-1E-GPRS-3P	MAX	Veris E51C2		Yes	3 Port	Yes
VSN-MGR-M1-5E-1E-3P	MAX	Veris E51C2	6 Port		3 Port	Yes
VSN-MGR-M1-1E-1E-3P	MAX	Veris E51C2			3 Port	Yes
VSN-NET-MTR1-PS-US		Veris E51C2				Yes
VSN-NET-0-0-0-5A						Yes
VSN-NET-0-0-1P-5A					1 Port	Yes
VSN-NET-4E2F-0-3P-5A			4 Port Copper, 2 Port Fiber		Yes	Yes
VSN-NET-8E-GPRS-0-5A			8 Port			Yes

PARAMETER	AURORA PLANT MANAGER
Platform	
Devices Supported	All Power-One devices, 3rd party meters & other modbus devices (Consult latest supported list)
Monitoring	Power/Energy generation and demand, Inverter Direct, Environmental Sensors *
Inverter Control	Power reduction, reactive power, COS φ by Modbus TCP (Available commands are inverter dependent)
Communication Interfaces	
Serial Port Interface	(2) RS-485 + (1) RS-232
RS-485 Port 1 Configuration	Optically isolated repeater for Modbus or Aurora Protocol support
RS-485 Port 2 Configuration	Non-isolated Modbus or Aurora Protocol support
Maximum Devices per Serial Port	Physical limitation of 32 (reduced by pole rate and inverter data set size)
Fieldbus Cable	RS-485 shielded twisted Pair. Recommend Belden # 1120A cable or # 3106A for 3 conductors
Ethernet Port 0	Firewall protected Ethernet WAN port for internet connection
Ethernet Port 1	Local LAN with static IP address
Ethernet Connections	RJ-45 Ethernet 10/100 base-T (LAN/WAN)
Communication Protocols	
Plant Fieldbus Protocols	Aurora, Modbus RTU, SunSpec
LAN/WAN Protocols	Modbus/TCP, HTTP, DHCP, SSL, SSH, XML
Data Logging Specifications	
Data Sampling Rate	High frequency data sampling - 1 minute average
Logging	Real time power values at 1 to 7 minute configurable intervals
Local Storage	Log data for 30 days based on 15-minute intervals. (Days logged may be reduced by intervals shorter than 7-minute)
Upgradeability	Field upgradable over the Internet or locally via USB memory stick
Ethernet Switch	
CAT-5 Connections	RJ-45 Ethernet 10/100 base-T ports
Fiber Connections	10/100 BaseFX ST ports
Managed	Unmanaged
Copper Max Distance	100 meters
Fiber Max Distance	2km
Cell Router	
Network	GSM Class 12 GPRS /Class 10 Edge
Internet Connection	Firewall protected Ethernet WAN
Antenna Connection	50W SMA (f)
Revenue Grade Energy Metering	
Meter Input Range	0 to 0.333 Voltage CTs.
Current Scaling Input	5A to 32,000A
Voltage Input	UL:90V _{L-L} to 600V _{L-L} ; CE90V _{L-N} to 300V _{L-L}
Active Power Accuracy	IEC 62053-22 (0.5% Accuracy). ANSI C12.20 (0.5% Accuracy)
Reactive Power Accuracy	IEC 62053-23 class 2 (2% Accuracy)
Fieldbus	Modbus RTU RS-485 (sunspec)
CT Integration	Wide Range of CTs must be ordered separately. See user guide for full specifications.
Power Supply	
DC Power Supply Input	90 VAC to 264 VAC
DC Power Supply Output	24VDC, 5A
Environmental Protection Rating	
Ambient Temperature Range	-40oC to 50oC
Environmental Protection Rating	NEMA 4 / 4X
Relative Humidity	0 to 100% condensing
Mechanical Parameters	
Dimensions H x W X D	20" x 16" x 6" (.51m x .41m x .15m)
Enclosure Options	Painted stainless steel
Weight	40 lbs (18.2 kg)
Mounting System	Screws through flanges
Compliance	
Safety	UL/CSA/EN/IEC 61010-1
Marking	cCSAus / CE
Altitude	Operate below 3000m
Emission	FCC Part 15 Class A, CISPR 22, EN 55022 Conducted and Radiated Emission
Immunity	EN 61000, EN55024
Telecom	FCC Part 68

* see Power-One's web site for supported devices

** see Power-One's web site for other supported programs

ACCESSORIES		
VSN-ENVIRO-ENTRY	Weather Station with sensors: ambient, panel, global irradiance	
VSN-ENVIRO-CMML	Weather Station with sensors: ambient, panel, global irradiance, plane of array irradiance, wind speed & direction	
VSN-MGR-AUX-CT100	Current transformer 100 A, 0.333VAC output, 1% accuracy, solid core, 1.0" window diameter	
VSN-MGR-AUX-CT200	Current transformer 200 A, 0.333VAC output, 1% accuracy, solid core, 1.0" window diameter	
VSN-MGR-AUX-CT200SC	Current transformer 200 A, 0.333VAC output, 1% accuracy, split core, 1.25" window diameter	
VSN-MGR-AUX-CT400SC	Current transformer 400 A, 0.333VAC output, 1% accuracy, split core, 2.9" x 2.5" window diameter	
VSN-MGR-AUX-CT600SC	Current transformer 600 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 2.9" window	
VSN-MGR-AUX-CT800SC	Current transformer 800 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 2.9" window	
VSN-MGR-AUX-CT1000SC	Current transformer 1000 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 5.50" window	
VSN-MGR-AUX-CT1200SC	Current transformer 1200 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 5.5" window	
VSN-MGR-AUX-CT1600SC	Current transformer 1600 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 5.5" window	
VSN-MGR-AUX-CT2000SC	Current transformer 2000 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 5.5" window	
VSN-MGR-AUX-CT2400SC	Current transformer 2400 A, 0.333VAC output, 1% accuracy, split core, 2.5" x 5.5" window	

AURORA ENVIRONMENTAL

GENERAL SPECIFICATIONS



Features

Solar Weather Station Instruments

Comprehensive environmental sensor set which supports measurement of ambient temperature, solar irradiance, plane-of-array irradiance, back-of-module temperature; wind speed and direction that enables plant management across a broad range of plant sizes.

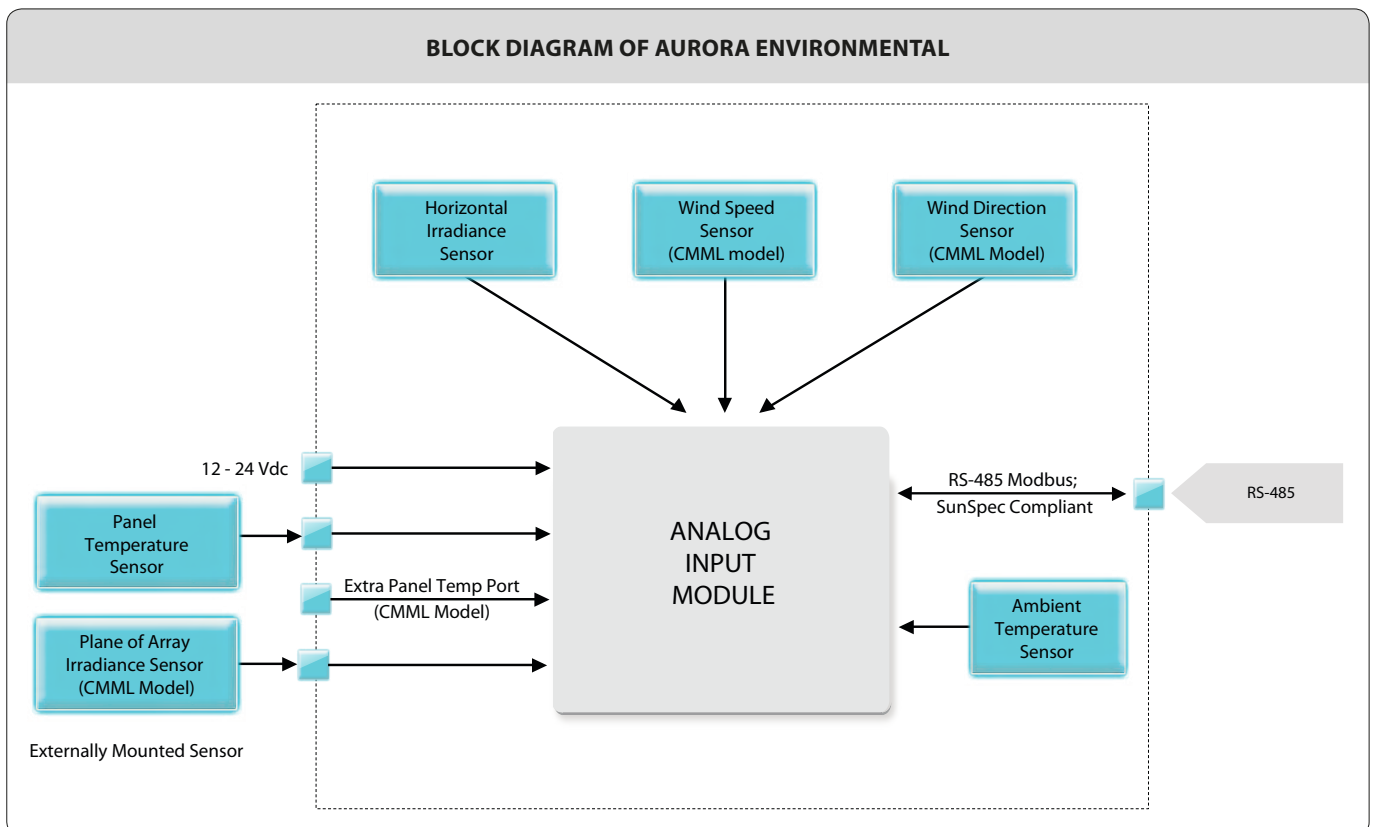
Integrated with Aurora Plant Manager and Aurora Vision

Aurora Environmental is fully compatible and integrated with Aurora Plant Manager data acquisition device as well as the Aurora Vision plant monitoring solution. This reduces the installation, support, & maintenance costs as well as improves robustness & manageability of the solution.

AURORA ENVIRONMENTAL

PARAMETER	VSN-ENVIRO-ENTRY	VSN-ENVIRO-CMML
Sensors		
Ambient Temperature	Range -40°F to 176°F (-40°C to 80°C) Accuracy +/- 0.54°F (0.3°C)	
PV Panel Temperature	Range -40°F to 176°F (-40°C to 80°C) Accuracy +/- 0.54°F (0.3°C) Cable length 25ft (7.62m)	
Solar Radiation	Range 0 to 1750W/m ² Accuracy +/- 5% Temperature range -13°F to 131°F (-25°C to 55°C)	
Number of Radiation Sensors	1 horizontal	1 horizontal, 1 plane of array
Wind Direction	N/A	Range 360 degrees Accuracy +/- 22.5° Threshold 2 MPH (0.89m/s) Temp range -40°F to 140°F(-40°C to 60°C)
Wind Speed	N/A	Range 0 to 150 MPH (0 to 67m/s) Accuracy is Greater of 1 mph (0.45m/s) or 5% Threshold 2 MPH (0.89m/s) Temp range -40°F to 140°F(-40°C to 60°C)
Communication		
Serial Port	RS-485 2 wire, modbus RTU, SunSpec compliant	
Terminal Block	#22 - #18 AWG	
Recommended Cable	Belden #1120A or equivalent	
Power Supply		
DC Power Supply Input	10-30 VDC, 50mA	
Terminal Block	Accepts AWG #22 - #18	
Compliance		
EMC	FCC Part 15, Subpart B; ICES-003; EN 61326-1:2006; Emission class B, Immunity is class A	
Enclosure	UL 94 V-2, ROHS compliant, IP65	
Humidity	0 to 100% Condensing	
Physical Parameters		
Dimensions (HxWxD)	20.9" x 5.1" x 4.7"(0.53m x 0.13m x 0.12m)	24.8" x 9.8" x 13"(0.63m x 0.25m x 0.33m)
Weight	1.75lbs (0.8kg)	7lbs (3.2kg)
Ambient Temperature Range	-13°F to 131°F (-25°C to 55°C)	
Mounting	Pole or tripod	

BLOCK DIAGRAM OF AURORA ENVIRONMENTAL



PVI-STRINGCOMB

GENERAL SPECIFICATIONS



The Aurora string combiner box is an ideal complement to the Aurora commercial and utility grade inverter that ensures the same monitoring accuracy of the PV generator typically achieved with string inverters.

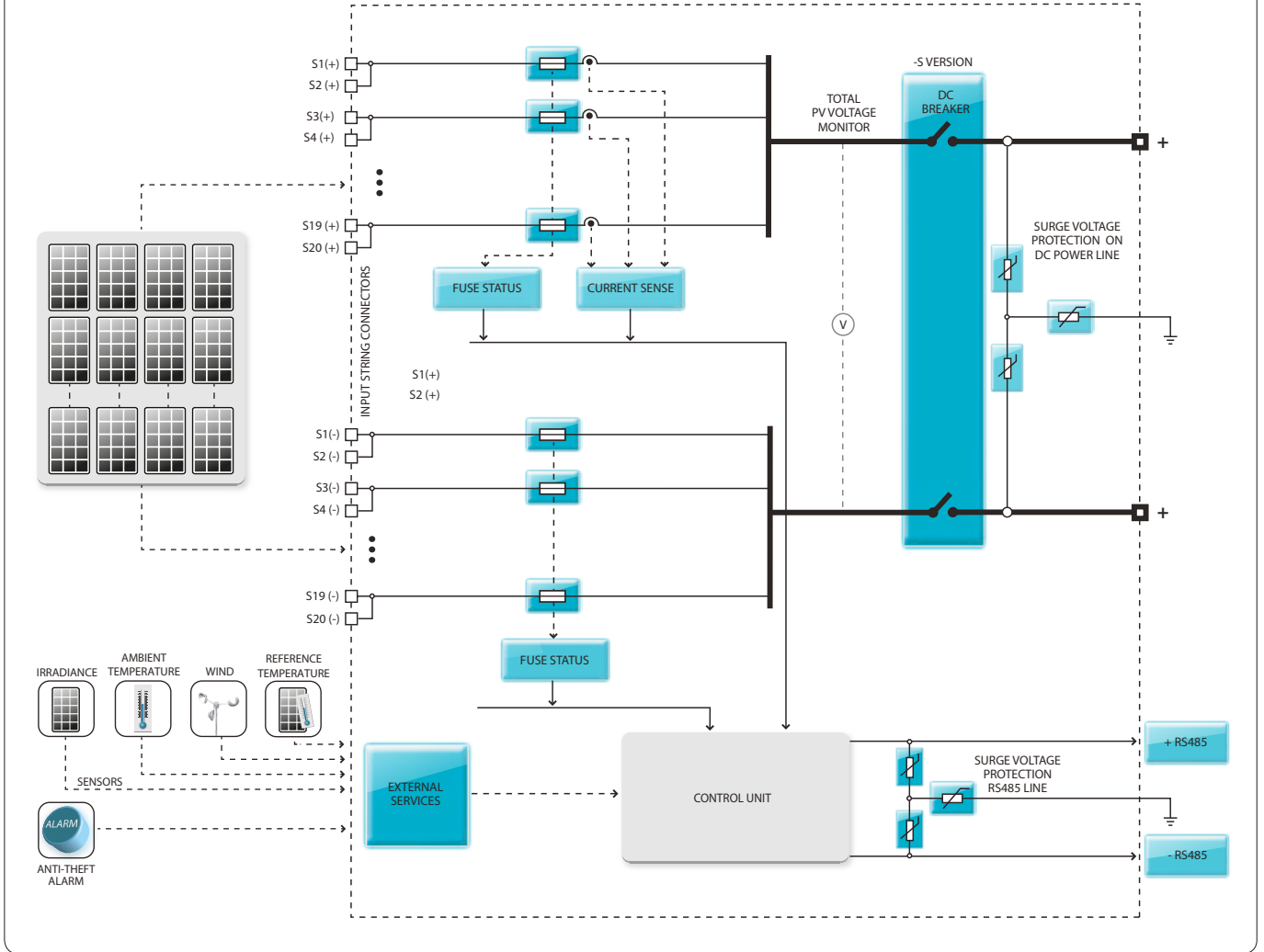
Up to 10 channels of individual or paired string currents can be accurately monitored via hall effect sensors, and any issue detected promptly signaled to the managing inverter and the system supervisor to allow prompt detection of the faulty strings.

All string combiner boxes include surge protection with removable elements as well as fuse protection for each couple of string channels. It is available with a fully-integrated DC switch (optional on -S version), fuse and remote controlled DC disconnect function.

Features

- Up to 20 strings directly connectable
- Cartridge fuse on each input for over current protection
- 10 Hall-effect current sensors for fast and precise monitoring and fault diagnostic
- Integrated DC disconnection switch (-S version)
- Rugged watertight powder-coated aluminum enclosure
- RS485 serial bus for communication with the central inverter
- 4 analog inputs for ambient sensors: temperature, irradiance, wind speed, anti-theft
- Available fuse size: 10A, 12A, 16A, 20A
- Internal auxiliary power supply and additional output for external auxiliary (-S Version)
- Overvoltage protection on DC power line and signals via replaceable varistors

BLOCK DIAGRAM OF STRINGCOMB



Block Diagram

PARAMETER	AURORA® STRINGCOMB	AURORA® STRINGCOMB-S
Input Side		
DC Input String Voltage Range	250...1000 V	250...1000 V
Absolute Maximum DC Input String Voltage	1000 V	1000 V
Maximum DC Current for each Measurement Channel	20 A	20 A
Measurement Channels	10	10
DC Connection for Each Measurement Channel	2	2
Maximum Number of DC Connection	20	20
Number of Input DC Connections for Each Fuse	2	2
String Cable Cross Section	6 mm ² max.	6 mm ² max.
Type of Input DC Connection	Multicontact MC4 connectors or PG 13.5 Cable Gland	Multicontact MC4 connectors or PG 13.5 Cable Gland
Output Side		
Maximum Output Current	125.0 A	125.0 A
Output Cable Connection ⁽¹⁾	1 x M10 (200 mm ² max.)	1 x M10 (200 mm ² max.)
Ground Cable Connection	1 x M8 (35 mm ² max.)	1 x M8 (35 mm ² max.)
Output DC Switch Rating	Not Available	125 A / 1000 V
Communication		
User Interface	1 x RS485	1 x RS485
Features		
Anti-theft Alarm	Yes	Yes
Anemometer Sensor Monitoring (opt.)	Yes	Yes
Temperature Sensor Monitoring (opt.)	Yes	Yes
Reference PV Cell Monitoring (opt.)	Yes	Yes
Data Monitoring		
String Currents	Yes	Yes
String Fuse Status	Yes	Yes
Ambient Parameters	Yes	Yes
Overvoltage Status	Yes	Yes
Environmental Parameters		
Ambient Temperature Range	-25...+ 55°C/-13...131°F	-25...+ 55°C/-13...131°F
Relative Humidity	0...100% condensing	0...100% condensing
Maximum Operating Altitude without Derating	1000 m / 3280 ft	1000 m / 3280 ft
Environmental Protection Rating	IP65	IP65
Cooling	Natural	Natural
Enclosure	Fiberglass	Fiberglass
Dimension (H x W x D)	559mm x 757mm x 250mm / 22.0" x 29.8" x 9.8"	559mm x 757mm x 250mm / 22.0" x 29.8" x 9.8"
Weight	< 23 kg / 50.7 lb	< 23 kg / 50.7 lb
Warranty	5 years standard 10/15/20 optional	5 years standard 10/15/20 optional
Safety		
Marking	CE	CE
Safety and EMC standard	EN 50178, EN61000-6-2, EN61000-6-4	EN 50178, EN61000-6-2, EN61000-6-4
10 A x 20 input strings or 20 A x 10 input strings	PVI-STRINGCOMB	Not available
10 A x 20 input strings or 20 A x 10 input strings with DC switch	Not available	PVI-STRINGCOMB-S

Available options:

PG36 Cable Gland (Allowed external diameter: 20-32mm)

M40 Cable Gland (Allowed external Cable diameter: 15-23mm)

M32 Cable Gland (Allowed external cable diameter 13-21mm)

M20 Cable Gland (Allowed external cable diameter 7-13mm)

Remark. Features not specifically listed in the present data sheet are not included in the product

PARAMETERS	AURORA PVI-PMU
Power Entry characteristic	
AC Input Voltage Range ($V_{ac,min} \dots V_{ac,max}$)	15...36 V
Nominal AC Input Voltage ($V_{ac,n}$)	24 V
Nominal Frequency (f_n)	50/60 Hz
DC Input Voltage Range ($V_{dc,min} \dots V_{dc,max}$)	18...48 V
Nominal DC Input Voltage ($V_{dc,n}$)	24 V
Power Consumption	< 10 W
RS485 Section	
Ports	RS485 Inverter / RS485 External
Serial Interface Type	Half-Duplex
Baud Rate	19200 bps
Protocol	Power-One proprietary
Number of Inverters	32 ⁽¹⁾
Power Factor Range	± 0.9
Line Biasing Resistor (where necessary)	1 k Ω between +5V/+D and RTN/-D
Termination Resistor	120 Ω ⁽²⁾
Isolation	100 V _{dc} ⁽⁴⁾
Analog Input Section	
Active Power Control	4...20 mA (max 22 mA)
Reactive Power Control	4...20 mA (max 22 mA)
Digital Input Section	
Number of Inputs for Active Power control	4 ⁽³⁾
Rating Voltage	15 V
Rating Current	50 mA
Isolation	100 V _{dc} ⁽⁴⁾
Physical and Environmental	
Environmental Protection	IP 20
Ambient Temperature Range	-20...+60 °C
Relative Humidity	0...95%
Dimension	53x90x57 mm
Weight	180 g

1. Max 32 string inverter or 55kW modules

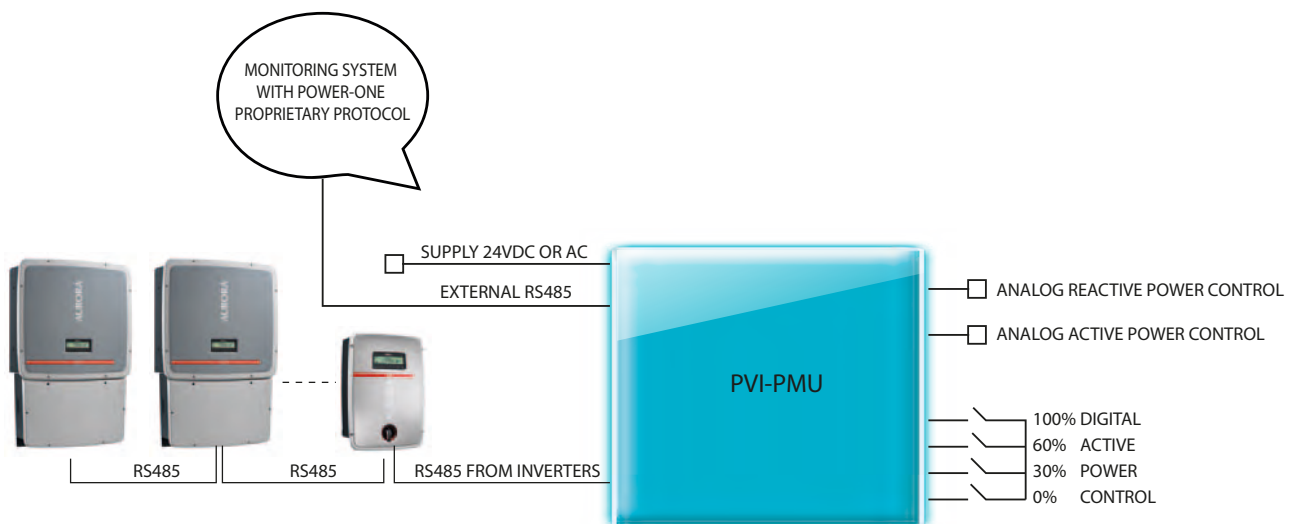
2. Adjustable

3. Alternative to the analog input

4. Between input and serial port

Remark. Features not specifically listed in the present data sheet are not included in the product

BLOCK DIAGRAM OF AURORA PVI-PMU



PVI-RS485-MODBUS Converter



GENERAL SPECIFICATIONS

CONVERTER FROM RS485 (AURORA PROTOCOL) TO MODBUS RTU
CONVERTER FROM RS485 (AURORA PROTOCOL) TO MODBUS TCP USED



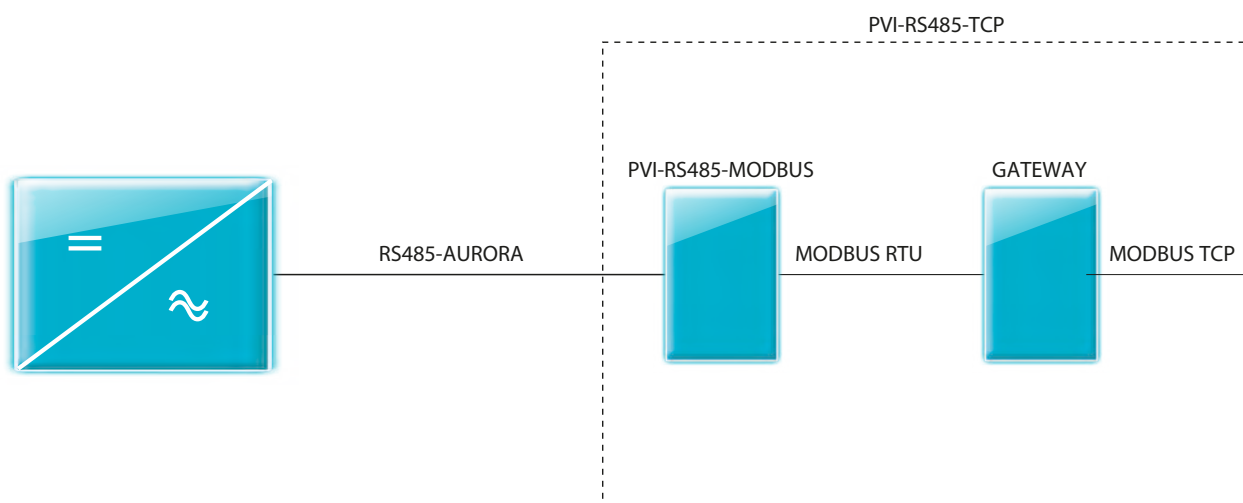
Features

- Protocol converter from Power-One Aurora proprietary protocol too Modbus RTU or Modbus TCP
- Up to 32 inverters or 55kW modules connected
- Multi-drop bus connection allowed for RTU
- 50 Hz transformer and cables are provided
- No active-reactive power control in Modbus RTU

PARAMETER	PVI-RS485-MODBUS
Power Entry characteristic	
AC Input Voltage Range ($V_{ac,min} \dots V_{ac,max}$)	15...36 V
Nominal AC Input Voltage ($V_{ac,n}$)	24 V
Rated Frequency (f_r)	50 or 60 Hz
DC Input Voltage Range ($V_{dc,min} \dots V_{dc,max}$)	18...48 V
Nominal DC Input Voltage ($V_{dc,n}$)	24 V
RS485 AURORA Section	
Serial Interface Type	RS485 Half-Duplex
Baud Rate	19200 bps not modifiable
Protocol	Power-One Proprietary
Number of Devices	32
Line Biasing Resistor (where necessary)	1 k Ω between +5V/+D and RTN/-D
Termination Resistor	120 Ω settable via Switch
RS485 MODBUS Section	
Serial Interface Type	RS485 Half-Duplex
Baud Rate	19200 bps
Protocol	MODBUS RTU - MODBUS/TCP
Number of Devices	32
Line Biasing Resistor (where necessary)	1 k Ω between +5V/+D and RTN/-D
Termination Resistor	120 Ω settable via Switch
Physical and Environmental	
Environmental Protection Rating	IP 20 (Indoor use only)
Ambient Temperature Range	-40...+ 60°C/-40...140°F
Relative Humidity	0...95%
Safety	
Isolation	Yes, 2500 V_{dc}
Marking	CE, KEMA
Available Products Variants	
RTU STRING	PVI-RS485-MODBUS-STRING (for PVI STRING INVERTER)
TCP STRING	PVI-RS485-MODBUS-TCP-STRING (for PVI CENTRAL INVERTER)
RTU CENTRAL	PVI-RS485-MODBUS-CENTRAL (for PVI CENTRAL INVERTER)
TCP CENTRAL EU Version	PVI-RS485-MODBUS-TCP-CENTRAL-EU (for PVI CENTRAL INVERTER)
TCP CENTRAL US Version	PVI-RS485-MODBUS-TCP-CENTRAL-US (for PVI CENTRAL INVERTER)
TCP CENTRAL Lite CN Version	PVI-RS485-MODBUS-TCP-CENTRAL-LITE (for PVI CENTRAL LITE INVERTER)

Remark. Features not specifically listed in the present data sheet are not included in the product

BLOCK DIAGRAM OF PVI-RS485-MODBUS CONVERTER



PVI-DESKTOP



GENERAL SPECIFICATIONS



Features

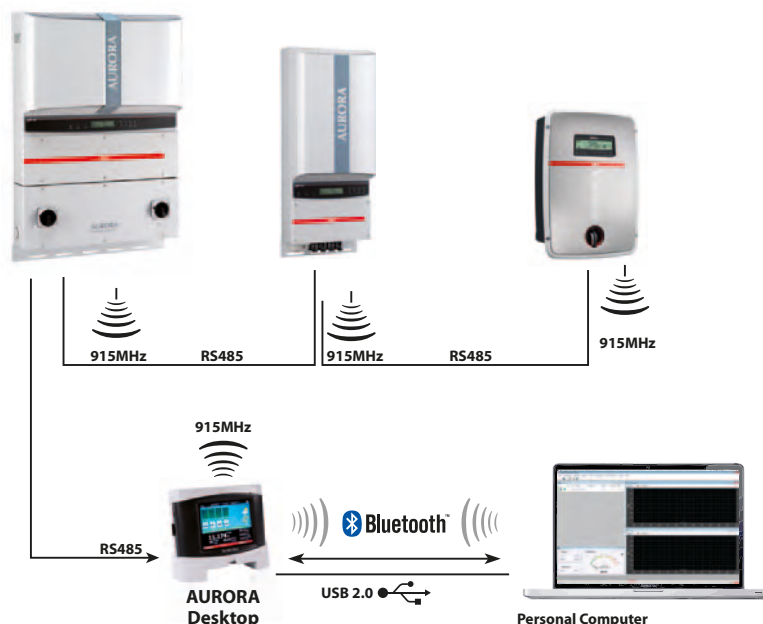
- The Aurora Desktop provides the ability to monitor performance of connected inverters and is ideal for residential and small commercial PV and wind applications
- In addition to wired connectivity (via RS-485), the Aurora Desktop system can also be connected to six targets inverters via a wireless RF transceiver link capable of connectivity anywhere within 300 m / 960 feet (free field). The wireless communication requires an optional radio transceiver module to be installed in each inverter orderable separately
- The system can be linked to a personal computer via Bluetooth (-BT version) or USB connectivity, and will therefore allow performance monitoring at any location with online access using Aurora Communicator
- Energy harvesting data for up to six Aurora inverters can be monitored simultaneously using the Aurora Desktop

PARAMETERS	PVI-DESKTOP	PVI-DESKTOP-AU
Inverter Communication - Radio		
Radio Communication	965 MHz	915...927 MHz
Maximum Radio Coverage	300 m / 960 ft (free space)	
Wired Communication	RS485 (Half Duplex 19200 bps) / alternative to radio	
Maximum Wired Connection	1000 m / 3280 ft	
PC Communication		
Wireless	Bluetooth (optional) / alternative to wired	
Wired Communication	USB 2.0	
Connectivity		
Compatibility with Inverters	Aurora PVI String Series ⁽¹⁾	
Maximum Number of Aurora Inverters	6	
Features		
Data Displaying Parameters	All parameters of Aurora Inverters ⁽¹⁾	
Data Storage Parameters	Power and Energy (by SD Card)	
Software Upgrade	USB (Aurora Communicator) or SD Card	
Language	IT, EN, ES, DE, FR	
Power Supply		
AC/DC Adapter	included, 5V, 1A 50/60 Hz	
USB	Yes	
Stand Alone	Rechargeble Li-Ion Battery	
Display		
Dimensions	3.5"	
Color	Yes	
Resolution	QVGA 320x240 px	
Type	Resistive touch screen	
Equipment		
Stylus Pen	yes	
AC Adapter	Yes	
USB Cable	Yes	
SD Card (1 GB)	Yes	
Environmental Parameters		
Ambient Temperature Range	0...+40 °C (32...104 °F)	
Environmental Protection Rating	IP20	
Relative Humidity	< 90 % Non Condensing	
Mechanical		
Dimensions H x W x D	102 mm x 125 mm x 35 mm / 4" x 5" x 2.1"	
Weight	< 0.4 kg / 0.88 lb	
Mounting Kit (Desk and Wall)	Yes	
Available Products		
Standard	PVI-DESKTOP	PVI-DESKTOP-AU
Bluetooth	PVI-DESKTOP-BT	PVI-DESKTOP-BT-AU
Safety		
Marking	CE	C-Tick
Safety and EMC Standards	EN 60950, EN 62311, EN 301489, EN 50371, EN 300220, EN 300328	AS/NZS 4268

1. All Aurora Aurora String Series inverter may optionally be equipped with Radio Transmitter module. For further information about compatibility on the AURORA PVI-DESKTOP, make reference to FAQ - Frequently Asked Question

Remark. Features not specifically listed in the present data sheet are not included in the product

BLOCK DIAGRAM OF PVI-DESKTOP



PVI-USB-RS232_485 Converter



GENERAL SPECIFICATIONS



Features

- Allows serial interfacing between photovoltaic or wind inverters and computer via RS485 link
- Operating systems supported: Win XP, Win 7, and Linux based
- Works with centralized and string inverters
- No power supply needed (auto-supplied via USB port)

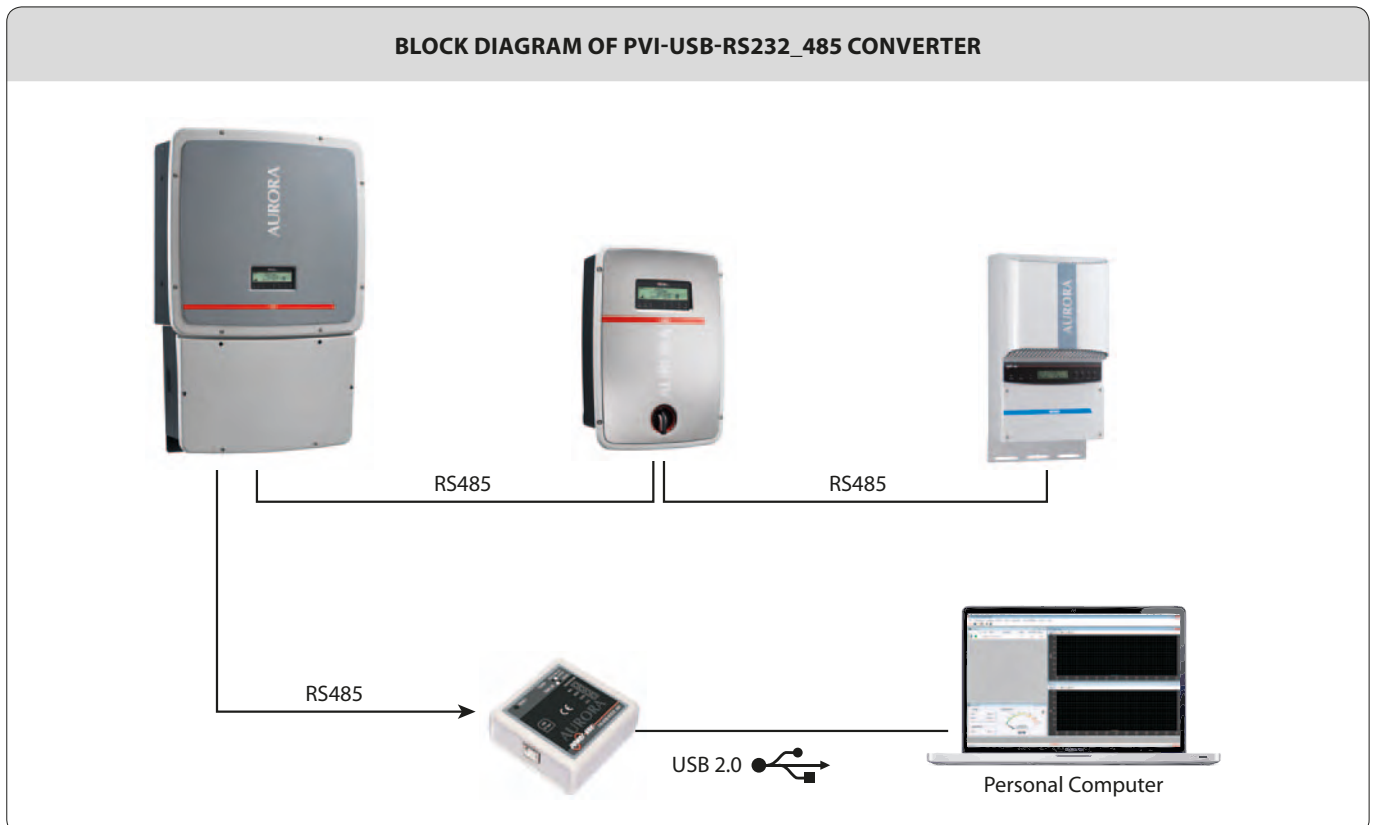
Compatible Power-One Softwares:

- Aurora Communicator – Monitoring of string and centralized inverters
- Aurora CVI Central - Managing and Monitoring of centralized inverters
- Aurora Stringcomb Installer – Managing and Monitoring of String combiner
- Aurora Manager – Configuration and Monitoring Software

PARAMETER	PVI-USB-RS232_485
USB Side	
Standard	2.0
Connection	B-Type
RS485/232 Side	
RS485/232 function	selectable via switch
RS485	Half-Duplex
Status Led (Tx/Rx)	Yes
O.S	Windows 7, Windows XP, Linux Based ⁽¹⁾
Supply	
Auto-Supply	Yes, via USB port
Maximum Current	150 mA
Status Led (Power On)	Yes
Environmental	
Ambient Temperature Range	-25...+ 50°C/-13...122°F
Physical	
Environmental Protection Rating	IP 20 (Indoor use only)
Dimension (H x W x D)	66mm x 66mm x 28mm
Safety	
Isolation	2500 V _{dc}
Marking	CE
Accessories	
B-type/A-type USB cable	included
485 side mating part plug screw terminal block	included

1. For a complete list see: <http://www.ftdichip.com/Drivers/VCP.htm>

Remark. Features not specifically listed in the present data sheet are not included in the product



AURORA COMMUNICATOR

BASIC TOOL FOR PHOTOVOLTAIC AND WIND PLANTS MONITORING

This free software works on Windows XP as well as Windows 7 and represents the basic tool for multi inverter plant monitoring.

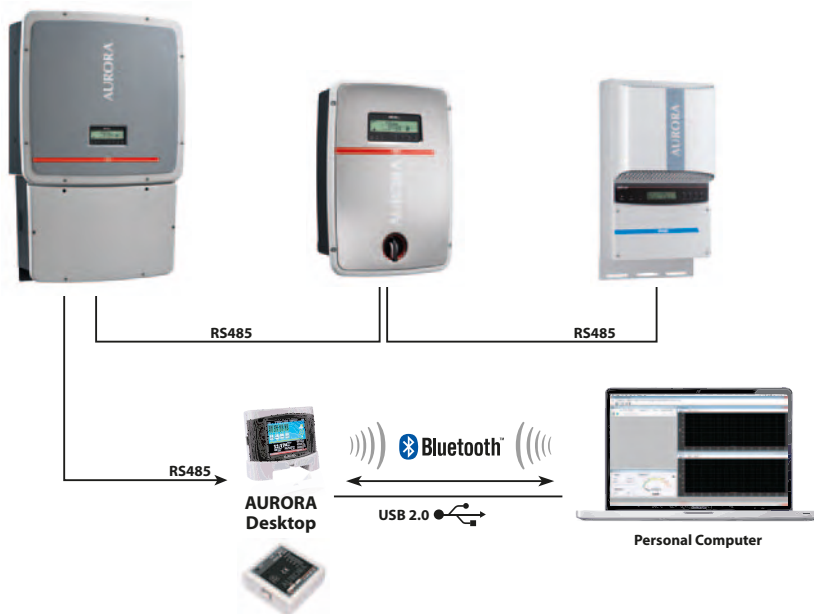
FEATURES

- It works on Windows based operating systems
- Inverters autoscans
- Data logging features with data saving every 60 seconds (minimum)
- Total energy harvest info reading (Daily, Weekly, Monthly, Yearly, Lifetime)
- Plots energy and power harvest
- Acquires warning and errors from inverters
- Daily report and alarms via e-mail
- PVI-Desktop firmware upgrade
- Multilanguage (DE, IT, EN, FR, ES, CN, CZ, JP)
- Time/Date synchronization with inverters
- Automatic check for software updates

Code	Description	Date/Time	Startup No.	Progressive No.	Value
E012	Wrong Mode	02/02/2012 11:20:02	435	2	
E012	Wrong Mode	02/02/2012 11:20:07	436	1	
E019	Watt Low	02/02/2012 11:22:06	439	1	0,000
E019	Watt Low	02/02/2012 11:20:46	415	1	0,000
E018	Watt Low	02/02/2012 11:09:13	413	1	0,000
E018	Watt Low	02/02/2012 10:59:56	414	2	0,000
E018	Watt Low	02/02/2012 10:59:38	414	1	0,000
E021	Error Read V	08/02/2012 10:24:25	402	9	
E007	IGBT Get	01/02/2012 11:26:36	394	3	
E007	Input UC	01/02/2012 11:05:36	394	2	
E007	Input UC	01/02/2012 11:03:03	394	1	
E007	Input UC	01/02/2012 11:24:53	394	363	
E007	Input UC	01/02/2012 11:24:53	394	352	
E007	Input UC	01/02/2012 11:24:53	394	344	
E007	Input UC	01/02/2012 11:24:53	394	331	
E007	Input UC	01/02/2012 11:24:53	394	320	
E007	Input UC	01/02/2012 11:24:53	394	309	
E007	Input UC	01/02/2012 11:24:52	394	136	
E007	Input UC	01/02/2012 11:24:52	394	128	



BLOCK DIAGRAM OF AURORA COMMUNICATOR



power-one Search: GO English

Home | About Power-One | Support | Investor Relations | Careers | Contact Us | News

Renewable Energy | Products | Product Selector | Downloads | Aurora Vision | News & Events | Knowledgeshare | Service

Aurora Installer Software

Renewable Energy

- Aurora Installer Software Manual
- Aurora Installer Software V3 1.4
- Aurora StringComb Installer v. U0037
- PVI String Inverter USB Driver Installation
- [Aurora Communicator v.020921](#)
- [Aurora Communicator Software Manual](#)
- Aurora Designer (Excel 2003-2007) v3.8.0_23_09_2010
- USB Drivers for PVI-USB-RS232_485

Join our Mailing List | Product Catalogs

Copyright © 2013 Power-One Inc. | Privacy Policy | Terms of Use | Feedback

Share:

AURORA COMMUNICATOR

Download the free software from Power-One official web site:
<http://www.power-one.com/renewable-energy/series/aurora-installer-software>