TABUCHI ELECTRIC

Inverter Catalog

TABUCHI ELECTRIC

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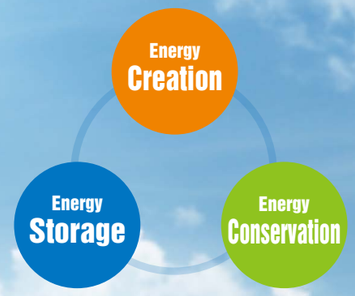
Innovate for a sustainable future

Consumers are looking for energy solutions that combine three types of technology: energy creation, energy conservation, and energy storage. Electric energy is generated from natural sources and from fuel cells. Energy conservation is achieved through the use of rechargeable batteries that store generated power that is used when needed. The core of this energy management system is the control device, the solar inverter. Through products designed for this environmental era, Tabuchi Electric is making further contributions to society.





The History of the Tabuchi Electric Power Electronics Business

Since its founding in 1925, Tabuchi Electric's core business has been transformer products, and even now, Tabuchi is well known to public as a transformer manufacturer.
In 1976, Tabuchi advanced into the power supply unit business with a focus on the development and deployment of high-frequency transformer technology.
With the deregulation of the electric power industry in 1995, we began to develop the PV solar inverter, a culmination of experience using transformer and power supply unit technology.
Since that time, for over 10 years, PV generation has attracted great interest thanks to the support of the national government and local municipalities, as well as a growth in environmental awareness.
During this period, Tabuchi Electric has continued production and development of solar inverters. We have also accumulated and expanded our knowledge of power electronics technology.
In 2005, in addition to our core consumeroriented business area, Tabuchi Electric advanced into the heavy electrical and industrial field. As a result, we are now able to respond to demands in both consumer and industrial domains.
The knowledge we have accumulated in power electronics technology over the past 10 years has found application in many areas. It is our mission and responsibility to make use of this technology for the global environment.

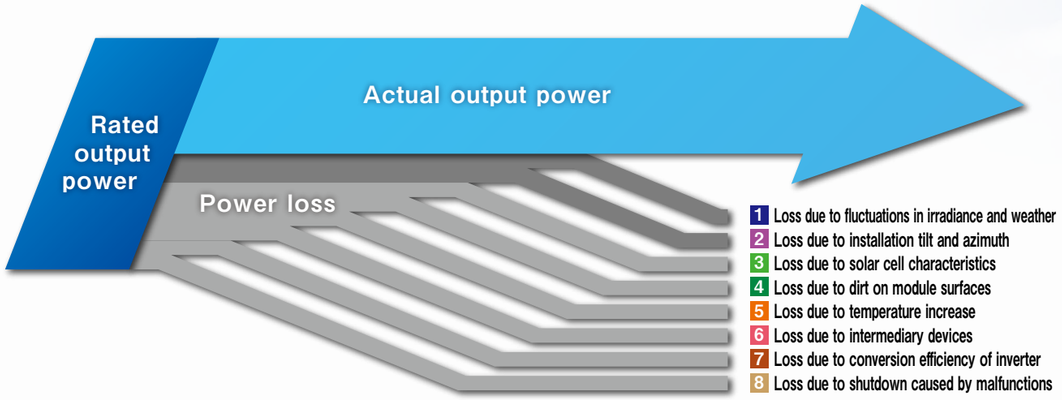
INDEX

01 The Solar Age

PV systems are environmentally friendly and economical, making them ideal for generating power. However, there are currently a host of issues that need to be resolved, from the planning stage to post-installation.

What You Should Know About Power Loss in PV Systems.

There are a number of factors underlying power loss. Let's explain each factor one by one.



1 Loss due to fluctuations in irradiance and weather

Since it is impossible to avoid fluctuations in insolation due to latitude and climate conditions, it is important to perform adequate simulations when developing the installation plan. Check regional insolation information and other data to build a system that can dependably generate sufficient power under the anticipated conditions mentioned above.

2 Loss due to installation tilt and azimuth

With 100% irradiance at due south, irradiance decreases the more the panel orientation (azimuth) faces to the east or west. The optimum tilt (angle of inclination) for PV panels in Japan is roughly 30°.

Multi-string inverters offers more flexibility for PV system design.

3 Loss due to solar cell characteristics

Internal losses in a solar module are varied and linked to the imbalances between solar cells. Voltage imbalances are particularly apt to occur when PV strings are connected in parallel. Current flowing from the higher voltage PV string to a lower voltage PV string results in a voltage drop at the inverter input of the system.

A multi-string system controls voltage loss.

4 Loss due to dirt on module surfaces

Dirt on the surface of the solar panels impedes the system's ability to receive sunlight. Rainfall does not wash away some types of dirt, so the ability to maintain generation capacity is dependent on periodic cleaning. In particular, leaf litter and other foreign matter that has blown onto the panels can reduce irradiation. Partial shading can affect the generation capacity of PV panels and cause loss similar to 3 .

A multi-string system minimizes loss due to dirt and partial shade.

5 Loss due to temperature increase

Typically, the conversion efficiency of solar cells decreases as the temperature rises. More power is generated on cool days than hot days when there is a great deal of irradiation.
A good design practice provides plenty of airflow around PV panels.

6 Loss due to intermediary devices

Diodes are installed in junction boxes and panel boards to prevent reverse current damage to solar cell modules. However, the operating power of these diodes and the heat generated when they run results in a loss of power. Even more voltage conversion loss occurs when booster units are used. The anticipated nameplate capacity will not be attained if the overall efficiency of the system is not taken into consideration.

Built-in junction boxes eliminate loss due to intermediary devices.

7 Loss due to conversion efficiency of inverter

Conversion efficiency does not account for all loss caused by the solar inverter. When the internal temperature of the inverter increases, its efficiency decreases. Furthermore, a higher grid voltage may also decrease the inverter efficiency. When the inverter is installed indoors, in an enclosed space, temperature monitoring is likely to activate the cooling system. The inverter may shutdown without proper ventilation or cooling.

Outdoor installation reduces loss due to temperature increase.

8 Loss due to shutdown caused by malfunctions

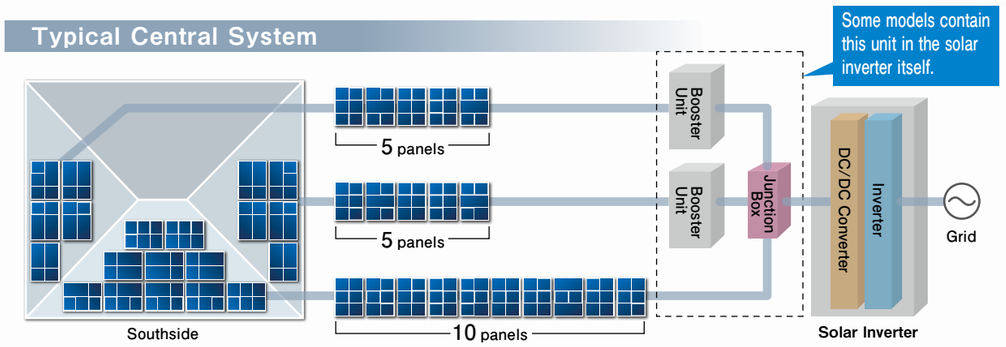
When panels or devices deteriorate or malfunction, the system must be stopped until repairs are made. The longer it takes to detect a malfunction and complete repairs, the greater the decrease in power generated.

Even when panels malfunction, multi-string systems continue to generate power.

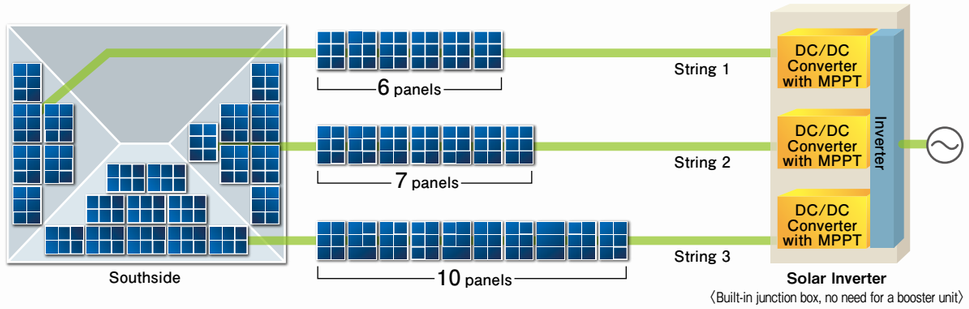
02 Multi-string systems reduce power loss

Since a multi-string system can control the voltage input of each string, there is no need to adjust the capacity as with central systems. Installation is simple, there is no need for junction boxes, booster units, or any other such intermediary devices. Also, input connections can be made directly to the inverter without causing intermediate losses. Multiple strings makes it possible to combine different types of solar panels. Since devices can now be installed in locations that were previously impossible, installers can make the most effective use of roof surface area for the generation of electric power.

Typical Central System



Multi-entry System (Multi-string System) Generation increases! Power loss decreases!



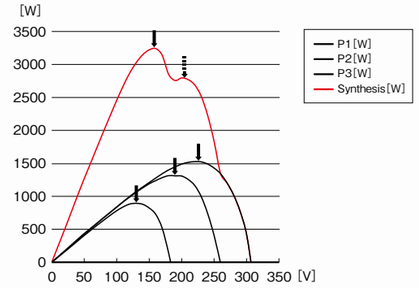
〈Built-in junction box, no need for a booster unit〉

*String-level monitoring is possible.

Maximum Power Point Tracking (MPPT)

Since there are multiple input peaks* in a central inverter design, the maximum power point can be lost. However, with a multi-string inverter, MPPT control is used on each string, so it typically attains the maximum power point.

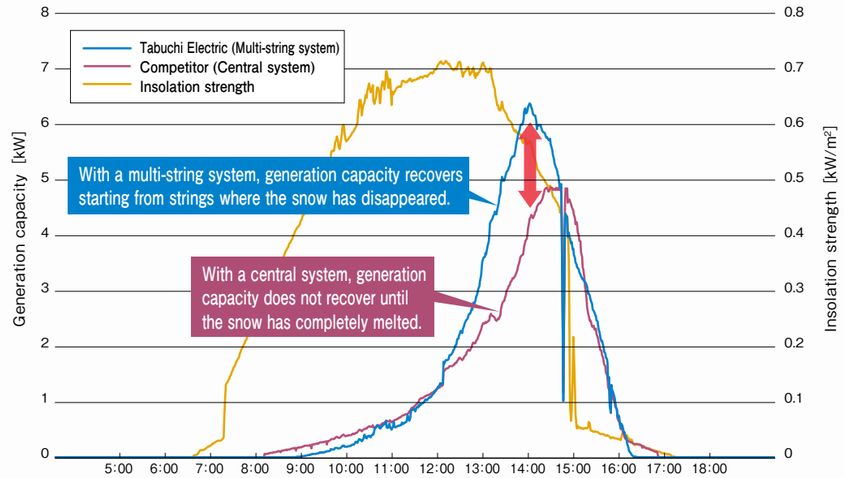
*The maximum power point is the peak of the P-V (power-voltage) curve.



The Multi-string Inverters: See the Difference!
Comparison Study: Generation capacity when snow melts

The following chart shows the amount of generation the day after snowfall in Japan. There is a significant difference in the recovery of power generation capacity between a multi-string system and a central system as the snow on the panels melts.
(Actual data from the Tabuchi Electric Renewable Energy Research Center in Japan)

Comparison of generation capacity when snow melts



*This does not constitute a guarantee of power generation when snow has accumulated.

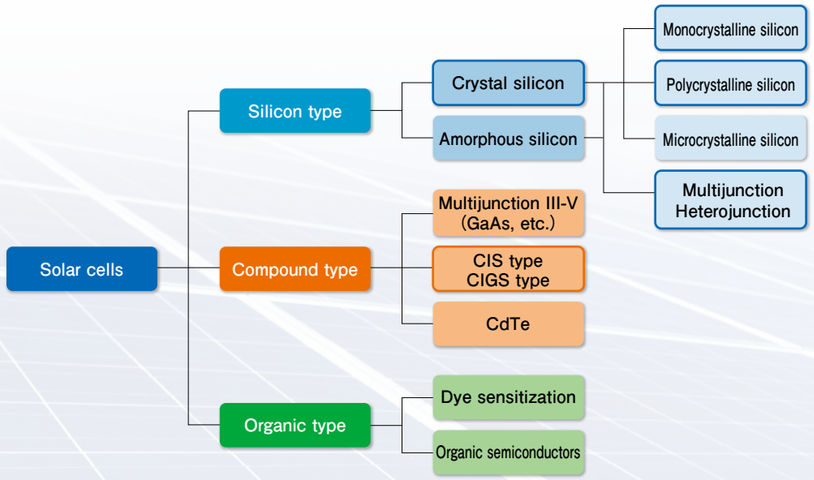
03 Supports a wide variety of panels

Thanks to steady progress and technical innovation, new types of PV panels are constantly making inroads into the market.
Our solar inverters are designed with a wide range of input parameters to support different types of PV panels.
The Tabuchi Electric Renewable Energy Research Center evaluates new panels from each manufacturer. Data is collected and verified by testing the panels under natural conditions for an extended period of time.

Test combining PV panels and solar inverters

Solar Cells: Types & Characteristics

Solar cells are currently classified by the type of material they are made from.



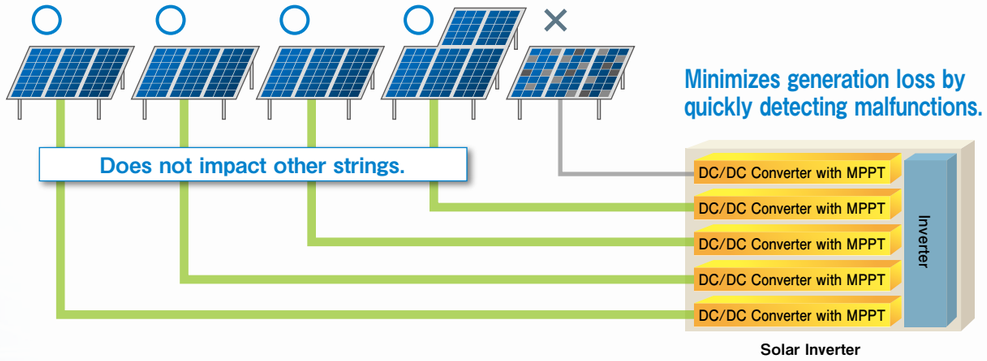
Type		Features
Silicon type	Monocrystalline	Although monocrystalline solar cells excel in performance and reliability, substrate prices are high.
	Polycrystalline	These solar cells have polycrystalline silicon substrates. Although conversion rates are lower than monocrystalline panels, these panels dominate the market because they are cheaper and easier to make.
	Amorphous	This type of solar cell uses an amorphous silicon film on a glass substrate. Although conversion efficiencies are less than crystalline systems, they can be mass produced for large surfaces.
	Multi-contact type	Solar cells with multiple layers of silicon film. This method uses smaller amounts of silicon and lends itself to the mass production of large surface areas. Since these panels absorb a wide band of wavelengths, they are more efficient than amorphous solar cells.
Compound type	CIS system CIGS system	Solar cells made using copper, indium, gallium, selenium, and other compounds. They are thin so they conserve resources and are easily mass produced. They offer high performance, so a great deal of work is being done on their development.

04 Ease of maintenance & repair

Solar panels degrade over their lifespan. Years of use and potential damage to the panels may reduce their power output. The causes of these problems are not visible, so output gradually declines. Loss will continue to occur until the problems are discovered and repairs are made. Also, if a malfunctioning panel remains connected to the system, it can have a negative impact on other panels. Timely maintenance is important to ensure consistent generation capacity. However, the multi-string solar inverter is designed to minimize loss and reduce the burden on customers as much as possible after installation.

Steps taken to minimize loss

In our multi-string system, each string is independent of the other strings. Even if some panels in a particular string malfunction, the other strings remain unaffected.
Since strings can be turned on and off individually, the malfunctioning string can be electrically isolated.
The system can continue to generate power until the malfunctioning string is repaired.



Solar Inverter

Also suitable for large-scale generation!

With our multi-string systems, panel generation data can be collected for each string so decreases in output can be detected early on. Also, since exactly which panel is defective can be identified, maintenance can be performed without delay. Therefore, loss is minimized when the system is shut down for routine maintenance or when a malfunction occurs.

Global Lineup

Japan Models

4.0 kW, 4.9 kW, 5.5 kW, Single-phase 9.9 kW
Three-phase 9.9 kW, Three-phase 25 kW
Hybrid Solar Inverter: PV 5.5 kW Battery 9.89 kWh
Portable Battery Storage System 2.5 kWh, 5.0 kWh

Global Model

Stand-alone Inverter

Thailand Model

3.5/5.5 kW Solar Inverter

USA/Canada Models

EMVAS

EIBS

Product Name	Certification	Energy Source	Applications	Installation Location	Installation Method	Number of Strings	Topology	Display/Operation	
USA/Canada Models									
 **EMVAS**[*1] Three-phase 25 kW Solar Inverter **EPW-T250P6-US**	ETL (UL1741/1699B, CSA C22.2 No. 107.1-01 IEEE 1547a, CEC) FCC Class A	Solar	Power Plant	Outdoor	Rack-mounted	6	Transformer-less	Chassis-embedded Master Box	» P.10
 **EIBS**[*2] Hybrid Solar Inverter with Embedded Battery **EHW-S55P3B-PNUS**	ETL (UL1741/1699B/60950-1, CSA C22.2 No. 107.1/No. 60950-1, IEEE 1547a, CEC, Hawaii requirement) FCC ClassB	Solar, Battery	Home, Facility	Outdoor (Battery unit must be installed indoors)	Floor-mounted	3	High Frequency Isolated Transformer	Color LCD Remote Controller	» P.16
Thailand Model									
 3.5 kW/5.5 kW Solar Inverter **EPC-A-S35MPT** **EPC-A-S55MPT**	PEA, MEA	Solar	Home, Apartment, Facility	Outdoor	Wall-mounted	2 3	High Frequency Isolated Transformer	——	» P.22
Global Model									
 Stand-alone Inverter[*3] **TDS001** **TDS002**		Solar, Battery	Home, Leisure, Emergency, No Electricity	Indoor	Wall-mounted	1	High Frequency Isolated Transformer	——	» P.26

*1 EMVAS…Eco Mega Value System *2 EIBS…Eco Intelligent Battery System
*3 Please conform to country-specific standards and regulations.

[EMVAS]*
EPW-T250P6-US
Three-phase 25 kW Solar Inverter

*Eco Mega Value System

[Energy Source] [Applications]

Solar

Power Plant

Intertek

EOW-MBX03-US (Required)

For High Voltage Grid-tied Megawatt Systems

Our Mega Value System is a space-saving distributed generation system that is simple to install and maintain, and allows for detailed monitoring.

1. **Individual MPPT DC Input Strings – 4.2 kW input DC/DC Converter x 6 Strings**
2. **98.5% (CEC 97.5%) Efficiency – High efficiency is realized by SiC Power Diode - 3 Level Inverter**
3. **Three-phase 480 V AC Output – Separate installation of transformers reduces use of heavy cables**
4. **Highly corrosion-resistant enclosure**
5. **Eliminates the need for combiner boxes – All PV module strings terminate at the Inverter**
6. **Remote setup and monitoring**

Specifications

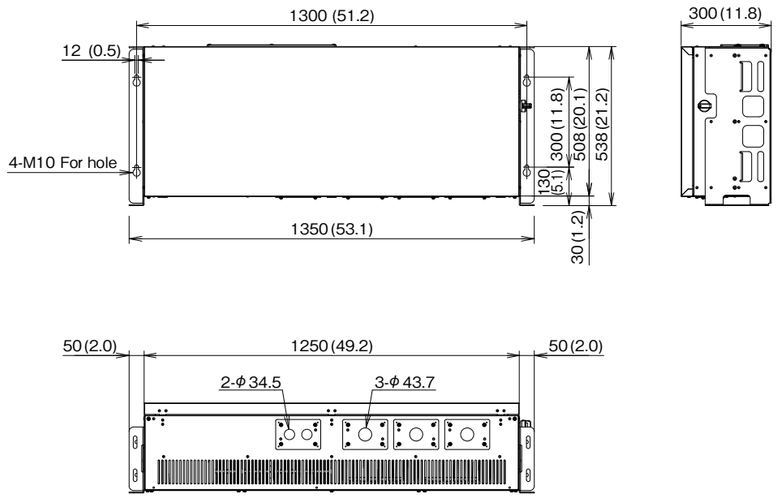
Input (DC)	
Rated input power per string	4200 W
Max. input voltage	1000 V
Operation voltage range/rated input voltage	140 to 880 V/700 V
MPPT voltage range	500 to 800 V
Min. input voltage/starting voltage	140 V/200 V
Number of MPP tracker input/inputs	6
Max. input current per string	10 A
Output (AC: Grid connected)	
Grid connection type	Three-phase, 4-wire type
Conversion method	Vector modulation method
Rated output power*1	25000 W
Rated AC voltage	480 V (277 V WYE)
Nominal AC voltage range	422.4 to 528 V
Rated power frequency	60 Hz
Rated output current	30 A
Power factor at rated output power	≧ 0.99
Distortion rate of the output current	Total: less than 5%, Each: less than 3%
Efficiency	
Efficiency*2	Max. 98.5% (DC700 V, 50% output), Typ. 97.7%/CEC 97.5%
Protection	
Islanding operation detection: Passive	Frequency change detective method
Islanding operation detection: Active	Frequency shifting method
General Data	
Dimensions (W/H/D)	1350/538/300 mm (53.1/21.2/11.8 in)
Weight	91 kg (199 lb)
Installation location	Outdoor
Operating temperature range	−20℃ to +50℃ (−4°F to +122°F)/Rated output until +40℃ (+104°F)
Noise emission*3 (typical)	≦ 50 dB (for reference)
Internal consumption (night)	< 12 W
Topology	Transformer-less
Cooling concept	Internal air circulation
Protection class	Equivalent to JIS IP65, NEMA 3R
Features	
Constant power factor control	80% to 100%
DC terminal	Terminal block (+, −) × 6
AC terminal	Terminal block (L_1, L_2, L_3, N)
Grounding terminal	Terminal block (3 poles)
Contact point output circuit	Yes
Controller	Master Box (Required)
Master Box for output control	EOW-MBX03-US
Interface	RS-485
Certification	ETL (UL1741/1699B, CSA C22.2 No. 107.1-01, IEEE1547a, CEC), FCC class A

* 1 When the Power factor is 100% during inverter operation.
* 2 Efficiency under the conditions defined in JIS C 8961.
* 3 According to A characteristics of JIS C1509-1, noise measurements are taken at a position, 1 m away from the center of the front side of the solar inverter at 1 m above the floor.

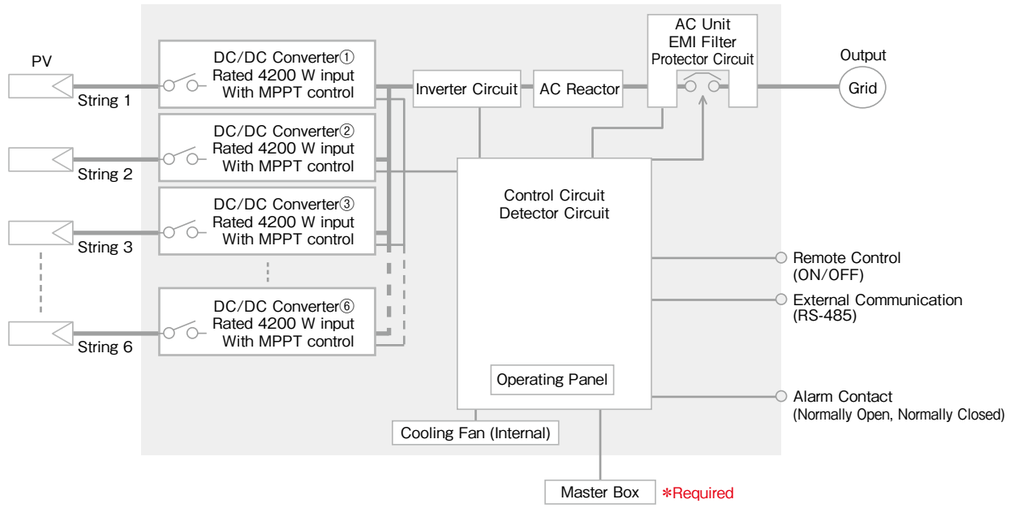
Some specifications or aspects of appearance may be changed without notice to improve the product.

Dimensions

Unit: mm (in)

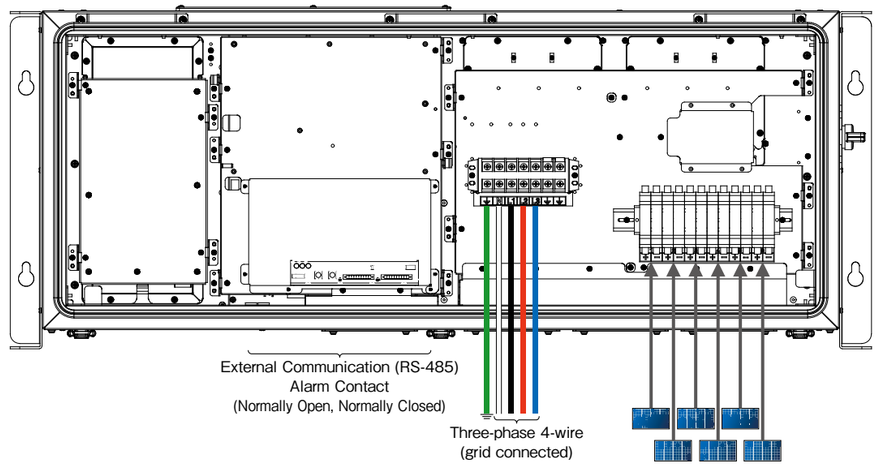


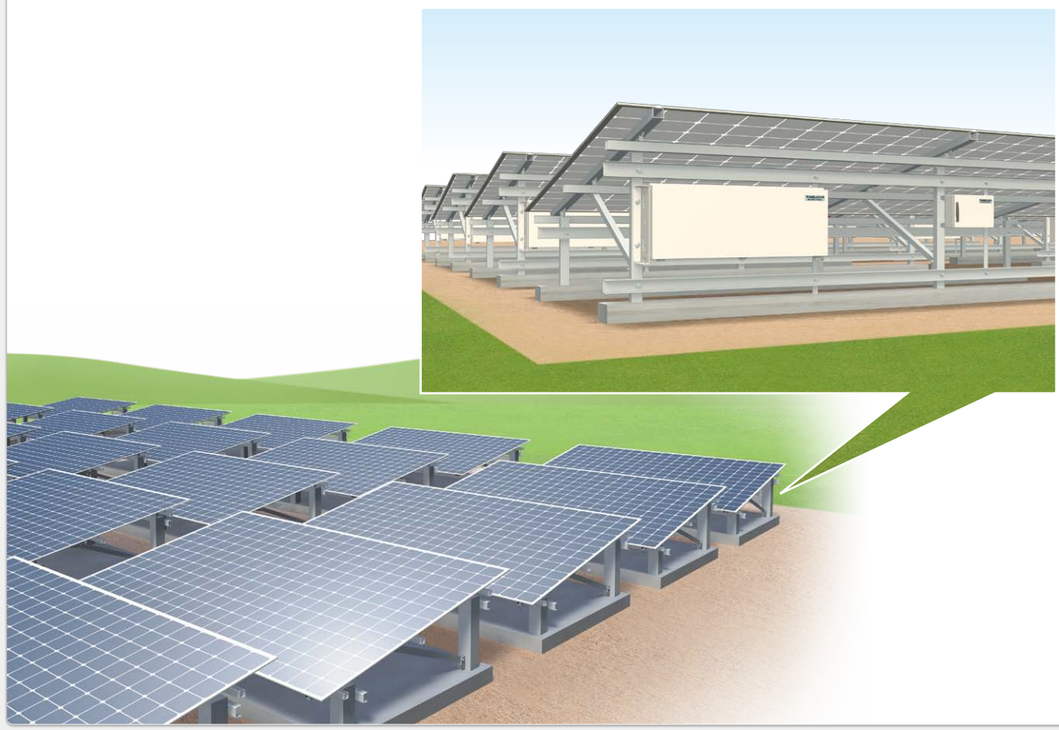
Block Diagram



Installation Diagram

Please refer to the Installation Manual for further details.





[EMVAS]
External control systems for three-phase solar inverter

EOW-MBX03-US (compatible with EPW-T250P6-US: Required)

Master Box

Collective control for multiple solar inverters.

Basic Functions

❶Remote Control

Start/Stop, Re-Start of Stopped Inverters, and Parameter Setting.

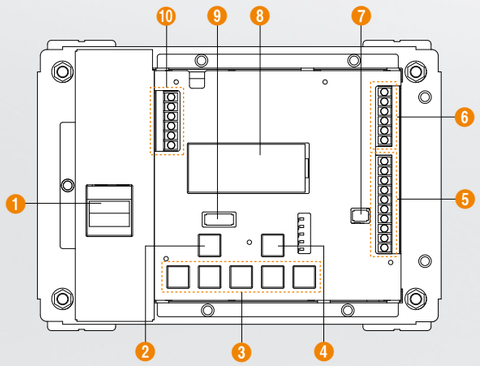
❷Display of Operating Status

The state of the inverter is indicated by the LED display on the Control Board.

❸Number of Solar Inverters

Up to 20 solar inverters can be connected to a Master Box. Up to 10 Master Boxes may be networked together.

Internal Structure



❶ **Power SW**
Power switch to start Master Box.

❷ **START/STOP Button**
Start/Stop operation of connected inverters.

❸ **Operating Button**
Changes modes and Setting.

❹ **RE-START Button**
Use to manually recover when a malfunction has occurred.

❺ **RS485 COM Terminal**
Inverter or Master Box are connected by a RS485 signal.

❻ **REMOTE Terminal**
Not Used (Optional).

❼ **RS485 Termination SW**
Electric termination ON needed for the Master Box in the end position.

❽ **LCD Display Panel**
PV power Status , System Information, Parameter Set.

❾ **Master Box Address SW**
Sets the address of each Master Box when two or more Master Boxes are connected.

❿ **TEMP Irradiance Terminal**
Connected to cables from the pyrano meter and temperature meter via 4 to 20 mA transducers. (optional)

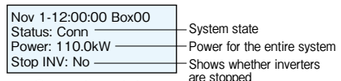
Basic Specifications

Exterior dimensions: 480 × 300 × 191 mm (18.9 × 11.8 × 7.5 in)
(dustproof and waterproof (UL50 Type 3R))
Weight: Approx. 12 kg (26 lb)
Working temperature range: −20°C to +50°C (−4°F to +122°F)
Rated input voltage: AC115 V
Rated input current: 0.03 A
Power consumption: Max. 3 W
Installation method: Wall-mounted or rack-mounted

Samples LCD Display

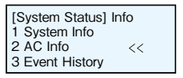
Individual Solar Inverter Screen

■ Observation Mode Screen

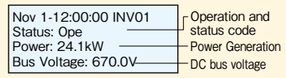


Generating state for overall system

■ System Status Information Screen

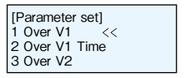


■ Generation Status Screen



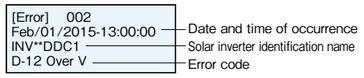
Generating status for individual solar inverter

■ System Value Setting Screen



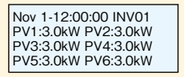
Parameter setting

■ Event History Screen



Error history

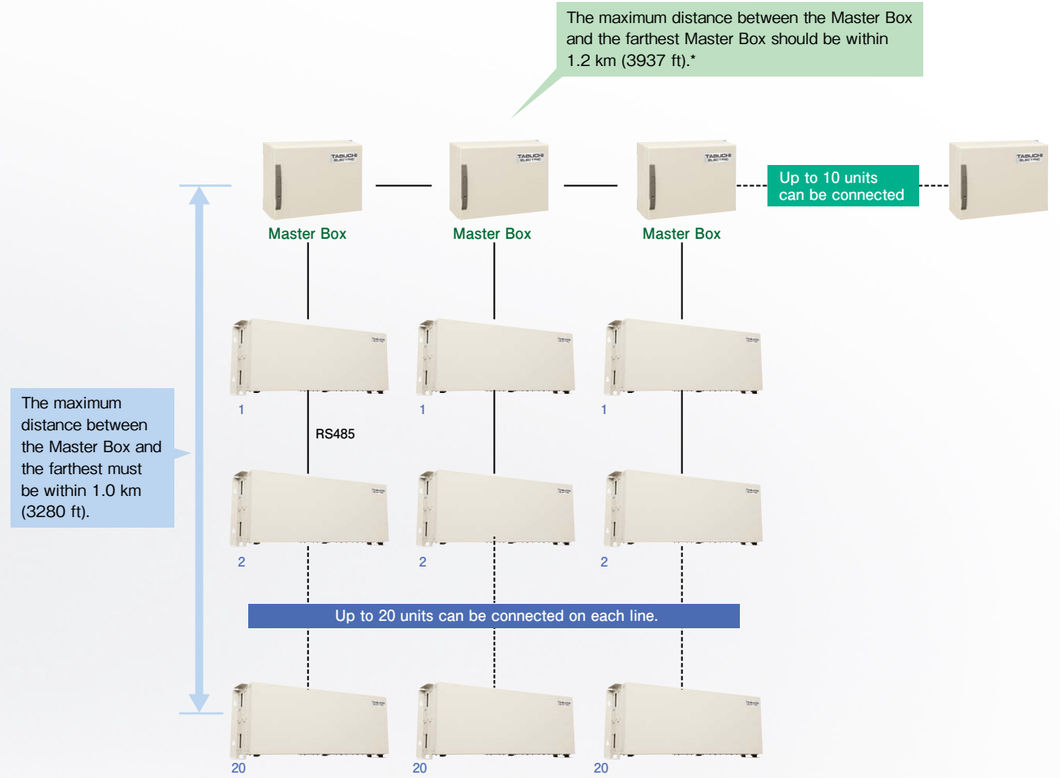
■ String PV power Status Screen



Series input circuit status

※The actual image differs slightly from the pictures shown.

Example of Master Box Configuration



*Please refer to the Installation Manual for required installation conditions.

[EIBS]*

EHW-S55P3B-PNUS

Hybrid Solar Inverter with Embedded Battery

*Eco Intelligent Battery System

Energy Sources: Solar, Battery
Applications: Home, Facility

ZREM-35TEB01-US

E0W-LB100-PNUS
(Compatible battery model)

The smart way to use electric power

Storage batteries are an effective way to store solar power and facilitate utility rate "peak cutting". Batteries may be charged from the grid or PV array.
Patented software prevents arbitrage of power export from battery to grid.
The EIBS is capable of being used as a stand-alone system during power outages.

1. 3 MPPT 5.5 kW solar inverter
2. Bi-directional DC to DC battery converter
3. Automatic transfer switch
4. Battery charge controller (Battery Management System)
5. 9.89 kWh lithium ion battery
6. Easy remote controlled setup
7. Solar and battery remote monitoring

Specifications

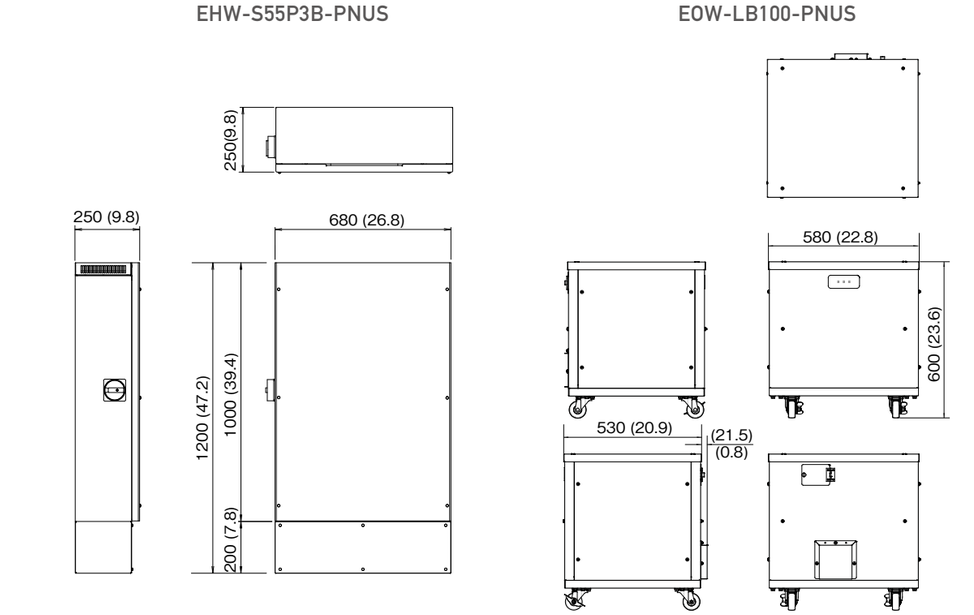
Input (DC: Photovoltaic)	
Max. input power per string	2150 W
Max. input voltage	450 V
Operation voltage range/rated input voltage	80 to 450 V/250 V
Min. input voltage/starting voltage	80 V/100 V
Number of MPP tracker input/inputs	3
Max. input current per string	10.3 A
Charge/Discharge(DC: Battery)	
Compatible battery model	EOW-LB100-PNUS *1
Storage capacity	Typical 9.89 kWh (Rated 9.48 kWh)
Number of input circuit	1 circuit
Charge power	1.5 kW *2
Discharge power	2.0 kW *2
Conversion method (Charge)	Grid connected operation: PWM method by power command (Constant current, constant voltage control) Standalone operation: Bus voltage stabilization PWM method (Constant current, constant voltage control)
Conversion method (Discharge)	Grid connected operation: PWM method by power command / Standalone operation: Bus voltage stabilization PWM method
Output (AC: Grid connected)	
Grid connection type	Single-phase, 2-wire type (connected to single-phase, 3-wire type)
Conversion method	Voltage type current controller method
Rated output power*3	5500 W
Rated AC voltage	240 V
Nominal AC voltage range	211.2 to 264 V
Rated power frequency	60 Hz
Rated output current	22.9 A
Power factor at rated output power	≧ 0.95
Distortion rate of the output current	Total: less than 5%, Each: less than 3%
Output (AC: Stand alone)	
Connection type	Single-phase 2-wire
Conversion method	Voltage type voltage controller method
Rated output power	Max. 2.0 kVA*6
Rated output voltage	120 V ±5 V
Efficiency (Solar)	
Efficiency*4 (typical)	Max. 93.3% (DC300 V, 75% output), Typ. 92.5%/CEC 91.5%
Protection	
Islanding operation detection: Passive	Frequency change rate detection method
Islanding operation detection: Active	Frequency feedback method with step implantation
General Data	
Inverter dimensions (Including base)	680/1200/250 mm (26.8/47.2/9.8 in)
Battery dimensions (W/H/D)	580/600/551.5 mm (22.8/23.6/21.7 in) *Includes the castors
Inverter weight (Including base)	76 kg (168 lb)
Battery weight	110 kg (243 lb)
Installation location	Outdoor (Battery unit must be installed indoors)
Operating temperature range (Inverter)	−20℃ to +40℃ (−4°F to +104°F)
Operating temperature range (Battery)	0℃ to +40℃ (+32°F to +104°F)
Noise emission*5 (typical)	≦ 45 dB
Topology	High frequency isolated transformer method
Cooling concept	Forced air cooling
Protection class (Inverter)	Equivalent to JIS IP55, NEMA 3R
Features	
DC terminal	Terminal block (+, −) × 4
AC terminal	Terminal block (L_1, L_2, N)
Stand-alone terminal	Terminal block (L, N)
Grounding terminal	Terminal block (2 poles)
Display	None
Remote controller	Accessory
Cable (Remote controller)	Accessory
Interface	RS-485
Certification (Inverter)	ETL (UL1741/1699B/60950-1, CSA C22.2 No. 107.1/No. 60950-1, IEEE1547a, CEC, Hawaii requirement), FCC class B
Certification (Battery)	ETL (UL1973, CSA C22.2 No. 60950-1)

*1 The inverter is designed for the battery (EOW-LB100-PNUS). *2 Limited periods of maximum output. *3 Value calculated when all strings were in use.
*4 Efficiency under the conditions defined in JIS C8961.
*5 According to A characteristics of JIS C1509-1 A, noise measurements are taken at a position, 1 m away from the center of the front side of the solar inverter at 1 m above the floor.
*6 When power is supplied to electric appliances connected to the stand-alone outlets, inrush current may trip protective devices and prevent the appliances from running.

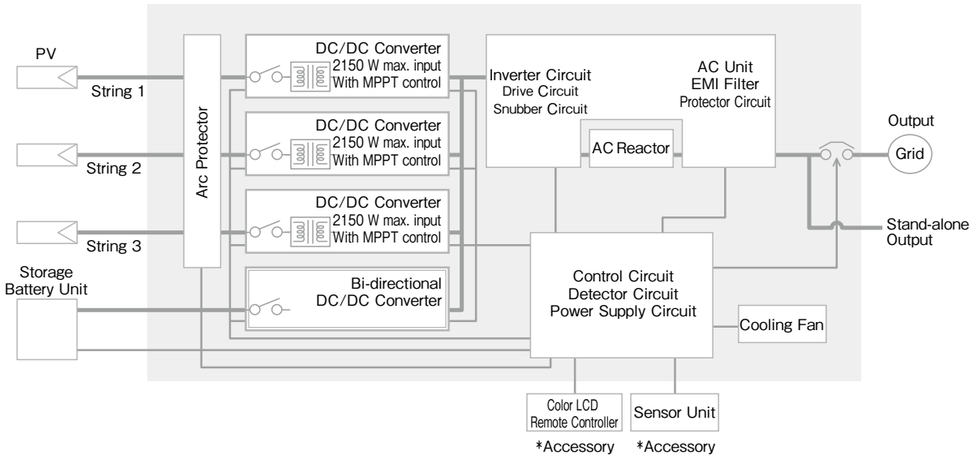
Some specifications or aspects of appearance may be changed without notice to improve the product.

Dimensions

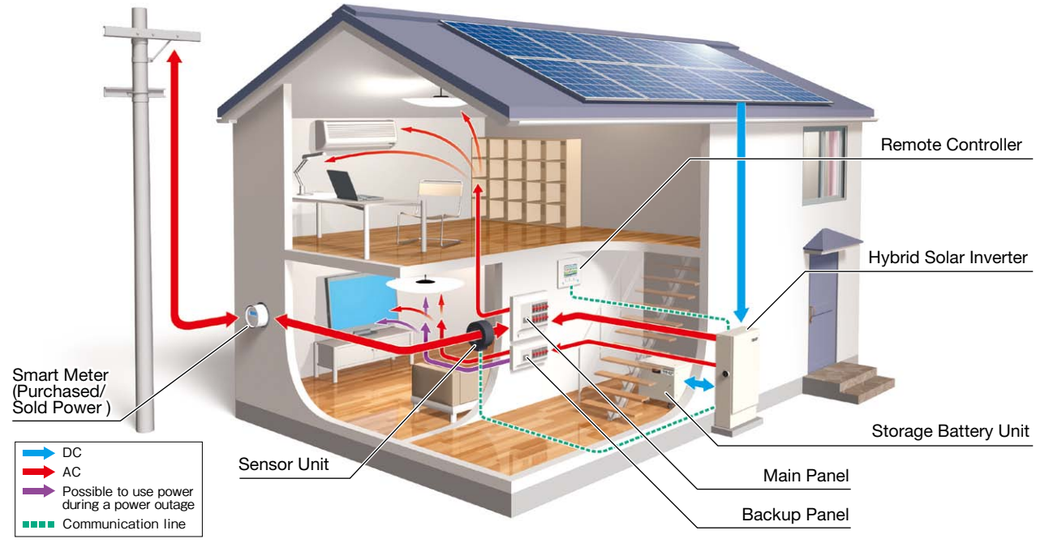
Units: mm (in)



Block Diagram



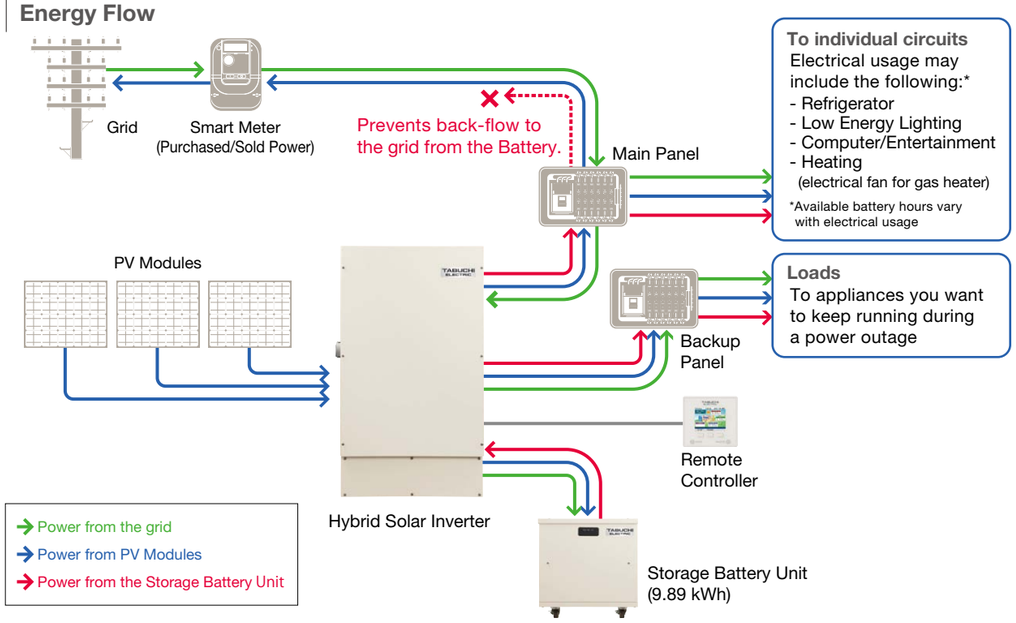
Installation Diagram



*It is required to connect appliances kept during a power outage in advance to the backup panel.

Please refer to the Installation Manual for further details.

Energy Flow



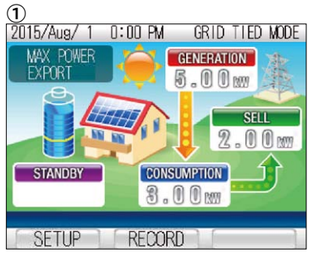
Some specifications or aspects of appearance may be changed without notice to improve the product.

Three Operating Modes-Max Power Export, Home Backup, and Economy

❶ Max Power Export Mode

The most economical mode of electric power is through the charging and discharging of storage batteries. This mode prioritizes selling PV-generated power during the day. It uses the power stored in the battery to cover the household load in the evening when demand is high. The battery is charged overnight when power rates are low to compensate for the power used during the daytime and the evening.

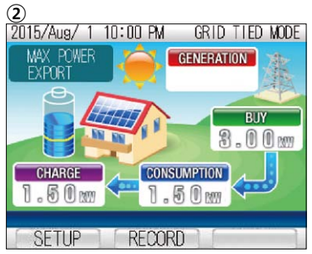
①



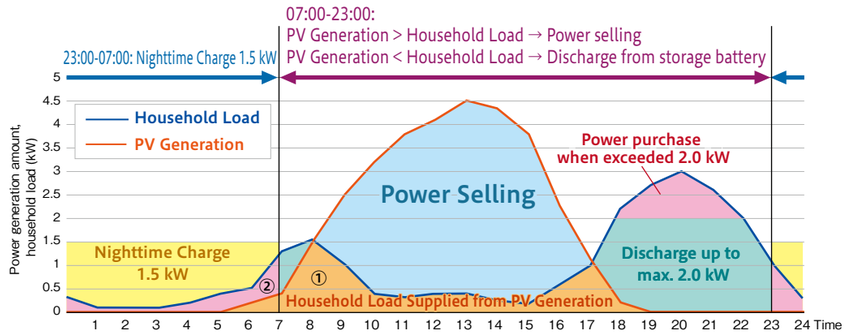
After solar power is generated and used for the household load, surplus power is sold to the power company.

In the evening, power is discharged from the storage battery to cover power shortages during peak load.

②



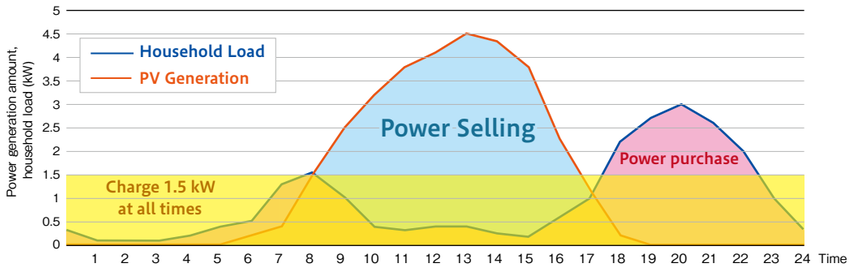
Power is purchased from the power company and used in the home, while power is stored in the storage battery.



This mode minimizes use of "peak electricity" and "purchased electricity" by charging the storage batteries at night when utility rates are low and evening to run connected electric appliances.

❸ Home Backup Mode

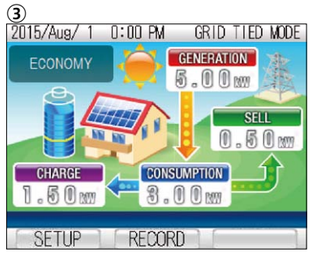
This mode was designed for areas that are subject to a power outage to keep the storage batteries fully. It is charged at all times by using surplus PV-generated power during the daytime and purchasing power from the power company at night. After charging the storage batteries fully, it is standing by for a power outage.



❷ Economy Mode

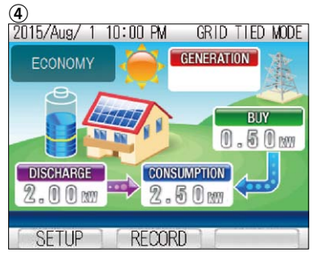
This mode increases energy savings by increasing self-generated power, thus reducing power purchased from the grid. This mode stores in the storage batteries surplus PV-generated power during the daytime and discharges power in the evening and overnight to cover the household load.

③

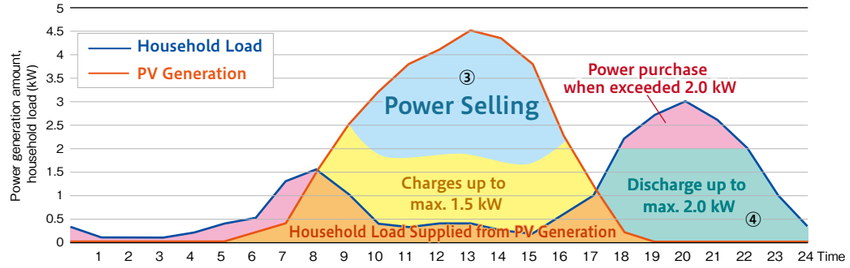


After supplying the household load, surplus PV power is used to charge the storage battery. Any excess power may be exported to the power company.

④



Although power from the storage battery is used for household consumption, any shortages are covered by purchasing power from the power company.



This mode minimizes power purchases from the grid by replacing it with clean renewable energy.

Topics

We are developing new products with Geli

Solar inverter manufacturer Tabuchi Electric has partnered with Geli, a software provider for battery storage and microgrids, to provide a residential solar-plus-storage solution to accelerate the residential solar market.

Through this partnership, a solar-plus-storage solution will be created by combining Geli's software with Tabuchi's hardware to optimize grid performance.

Tabuchi's Eco Intelligent Battery System (EIBS) residential solar-plus-storage solution integrated with Geli's Energy Operating System software will systematically manage energy flow from the home to the grid when connected to solar installations and smart home devices such as smart thermostats and pool pumps.

About Geli

Geli provides software and business solutions to design, connect, and operate energy storage and microgrid systems. Geli's suite of products creates an ecosystem where project developers, OEMs, financiers, and project operators can deploy advanced energy projects using a seamless hardware-agnostic software platform. Geli ESyst™ is an online design tool for the analysis and design of energy storage and microgrids. Geli EOS™, short for Energy Operating System, is a software platform that allows for advanced functionality of any OEM equipment via Geli Energy Apps & Geli Energy Drivers. Geli GENI™, which stands for Global Energy Network Interface, is the portal through which systems are monitored for performance and can be aggregated for virtual power-plant services.

EPC-A-S35MPT/EPC-A-S55MPT
3.5 kW/5.5 kW Solar Inverter

Energy Source: Solar

Applications: Home, Apartment, Facility

PEA MEA

For residential use

This galvanically isolating inverter is designed for residential rooftop with high frequency transformer and 2 (3.5 kW)/3 (5.5 kW) MPP trackers, directly connected with all types of solar cells.

1. **Individual MPPT PV input string x 2 (3.5 kW)/x 3 (5.5 kW)**
2. **Max. DC input 2.15 kW/450 V per string**
3. **High frequency isolation transformer**
4. **Easy outdoor installation – Junction boxes or booster units are unnecessary**

Specifications

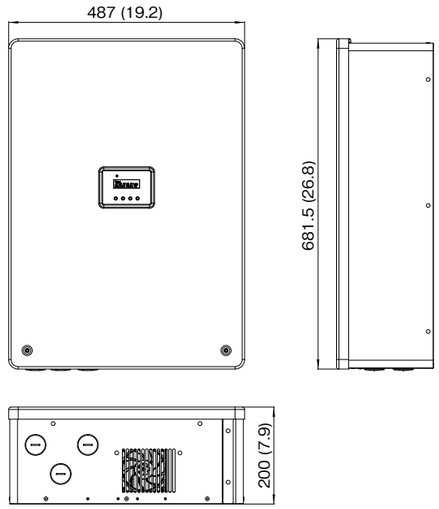
Input (DC)	**EPC-A-S35MPT**	**EPC-A-S55MPT**
Max. input power per string	2150 W	
Max. input voltage	450 V	
Operation voltage range/rated input voltage	80 to 450 V/250 V	
MPPT voltage range	80 to 450 V	
Min. input voltage/starting voltage	80 V/100 V	
Number of MPP tracker input/inputs	2	3
Max. input current per string	10.3 A	
Output (AC: Grid connected)		
Grid connection type	Single-phase, 2-wire type	
Conversion method	Voltage type current controller method	
Rated output power*1	3500 W	5500 W
Rated AC voltage	220 V (PEA)/230 V (MEA)	
Nominal AC voltage range	198 to 242 V (PEA)/200 to 240 V (MEA)	
Rated power frequency	50 Hz	
Rated output current	16 A	25 A
Power factor at rated output power	≧ 0.99	
Power factor control	lag 0.95 to lead 0.95 (PEA)	
Active power control	Available (PEA)	
Distortion rate of the output current	Total: less than 5%, Each: less than 3%	
Efficiency		
Efficiency	Max. 94.6% (DC250 V, 70% output), Typ. 94.3%	Max. 94.5% (DC250 V, 60% output), Typ. 94.0%
Protection		
Islanding operation detection: Passive	Frequency change rate detection method	
Islanding operation detection: Active	Frequency feedback method with step implantation	
General Data		
Dimensions (W/H/D)	487/681.5/200 mm (19.2/26.8/7.9 in)	
Weight	23 kg (51 lb)	26 kg (56 lb)
Installation loacation	Outdoor	
Operating temperature range	−20℃ to +45℃ (−4°F to +113°F)	
Noise emission*2 (typical)	< 44 dB	
Internal consumption (night)	< 10 W	
Topology	High frequency isolated transformer method	
Cooling concept	Forced air cooling	
Protection class	Equivalent to IP55	
Features		
DC terminal	Terminal block (+, −) × 2	Terminal block (+, −) × 3
AC terminal	Terminal block (L, N)	
Grounding terminal	Terminal block (1 pole)	
Display	LED display	
Interface	RS-485	
Certification	PEA, MEA	

*1 Value calculated when all strings were in use.
*2 According to A characteristics of JIS C1509-1 A, noise measurements are taken at a position, 1m away from the center of the front side of the solar inverter at 1m above the floor.

Some specifications or aspects of appearance may be changed without notice to improve the product.

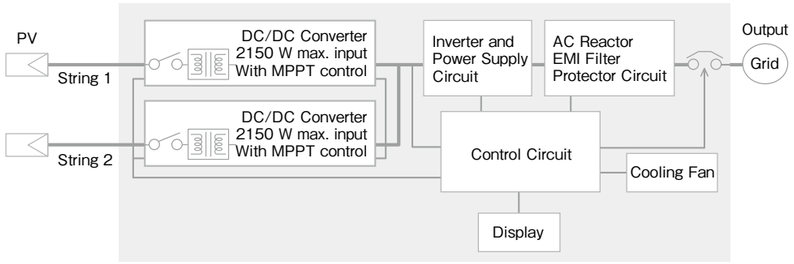
Dimensions

Unit: mm (in)

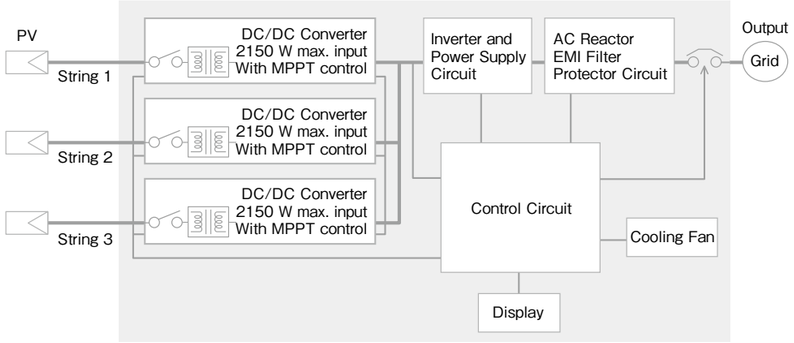


Block Diagram

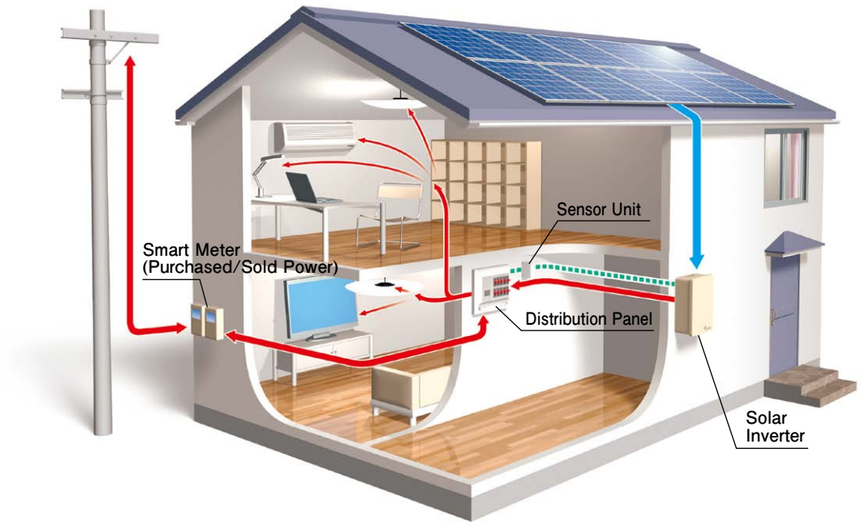
EPC-A-S35MPT

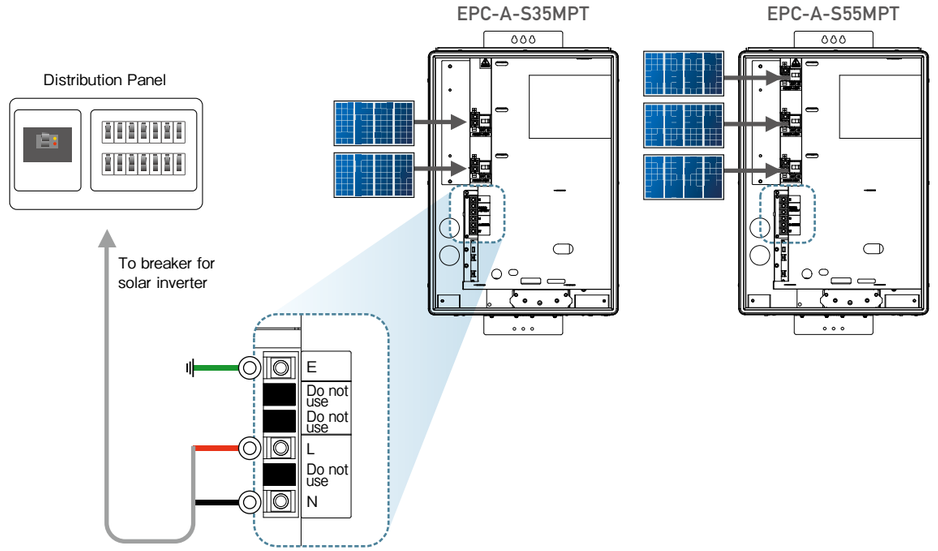


EPC-A-S55MPT



Installation Diagram





Please refer to the Installation Manual for further details.

TDS001/TDS002
Stand-alone Inverter

[Energy Source] [Applications]

Compact Stand-alone Inverter

This sleek, portable and lightweight stand-alone inverter is designed for mobile applications. With protection and storage functions, the inverter can be used for a variety of purposes, such as unelectrified areas and power outages caused by disasters.

1. Modified Sine Wave Output
2. Various Protection Functions
3. Battery Status LED Display
4. High Efficiency

Specifications

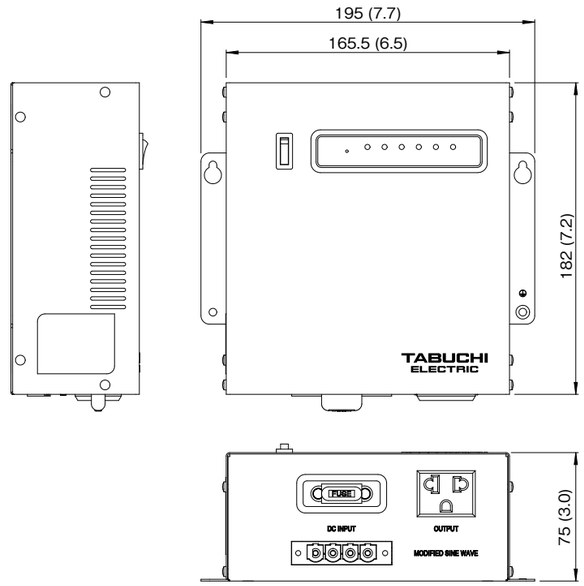
Input (DC)		TDS001	TDS002
Solar Panel	Solar panel type	Polycrystalline Silicon	Polycrystalline Silicon
(Recommended)	PV max. voltage	24 V	24 V
Solar Panel to Battery	Operation voltage range	12 to 24 V	12 to 24 V
	PV max. current	7 A	7 A
Battery	Battery type	Lead-Acid Battery	Lead-Acid Battery
(Recommended)	Storage capacity	40 Ah/65 Ah/120 Ah	40 Ah/65 Ah/120 Ah
Battery to Inverter	Nominal voltage	12 V	12 V
	Inverter voltage range	10.5 to 12.5 V	10.5 to 12.5 V
	Inverter maximum current	18 A	18 A
Output (AC)			
Inverter	Rated output power	150 VA/150 W	150 VA/150 W
	Rated AC voltage	220 V	120 V
	Nominal AC voltage range	198 to 242 V	108 to 120 V
	Rated power frequency	50 Hz (±1 Hz)	60 Hz (±1 Hz)
	Max. output current	0.8 A	1.5 A
	Waveform	Modified Sine Wave	Modified Sine Wave
Protection			
Alarm		Reverse Polarity (Battery)	
		Over Temperature (Reset Automatically)	
		High/Low Battery Voltage (Reset Automatically)	
		Over/Under Voltage (Reset Automatically)	
		Over Current/Over Load	
		Over Charge/Discharge (Reset Automatically)	
		Surge Protection	
Indicator			
Solar charger		Battery Charging (Yellow)	
Battery level		Full Battery (Yellow)	
		Medium Battery (Yellow)	
		Low Battery (Yellow)	
Inverter		Normal Operate (Green)	
		Alarm (Red)	
Efficiency			
Max. Efficiency		Max. 93.6% (DC12.5 V, 65% output), Typ. 91.2%	TBD
General Data			
Dimensions (W/H/D)		165/182/75 mm (6.5/7.2/3.0 in)	
Weight		1.5 kg (3.3 lb)	
Installation location		Indoor	
Operating temperature range		±0°C to +45°C (+32°F to +113°F)	
Operating humidity range		0 to 95% (non-condensing)	
Topology		High frequency isolated transformer	
Cooling concept		Natural air cooling	
Feature			
DC Terminal		Pluggable Terminal Block x 4	
AC Terminal		AC Outlet Mounted Prong x 3	
Grounding terminal		Earth Ground Wall Mounted	
DC Fuse		Panel Mount Fuse Holder	
Display		LED Indicator	

* [1] Use the solar panels and batteries according to the value specified in the table. Otherwise, the inverter may be damaged.
* [2] Maximum efficiency was not calculated at maximum load.
* [3] This inverter meets UL458 requirements.

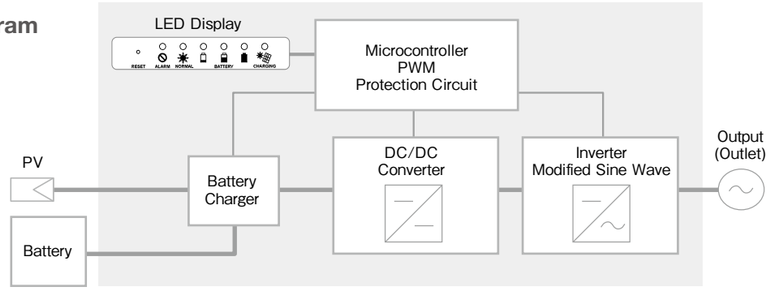
Some specifications or aspects of appearance may be changed without notice to improve the product.

Dimensions

Unit：mm (in)



Block Diagram

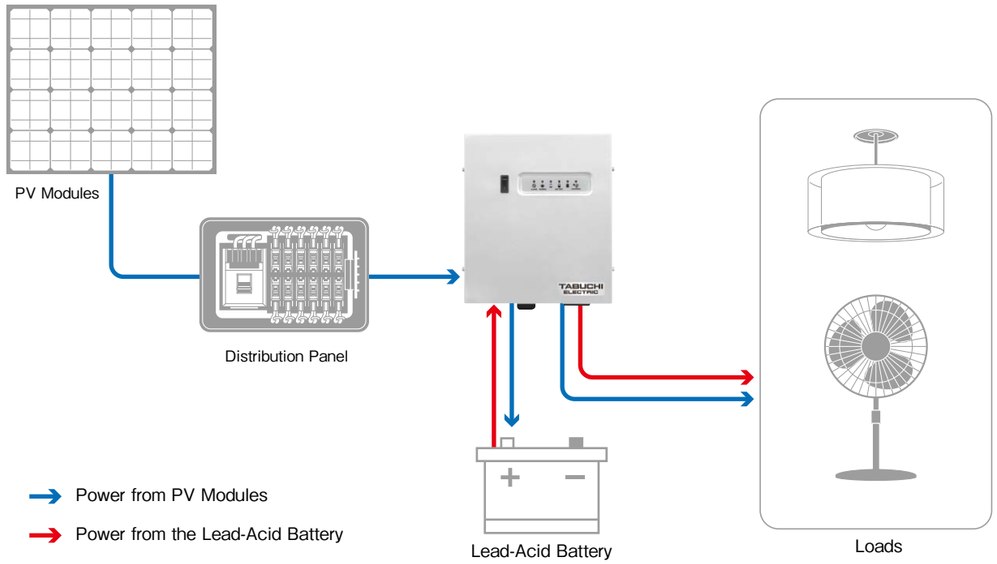


Included Devices

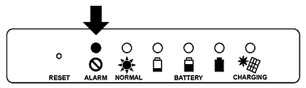
Fuse ×2 (in use ×1)
(spare ×1)

Input Terminal ×1

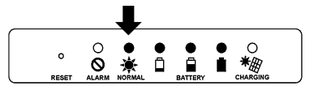
Energy Flow



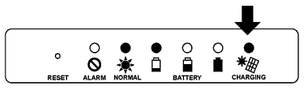
Indicators LED



Fault light (red) indicates that the inverter has shut down due to inverter over current, over temperature, short circuit, leakage or fault happen.

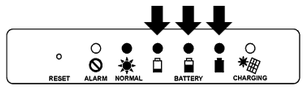


Power light (green) indicates the inverter is operating.

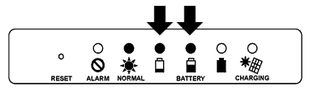


Battery charging light (yellow) indicates the inverter has charge battery from solar panel when battery voltage less than solar panel voltage.

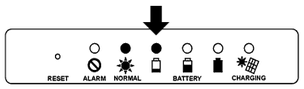
Charge level



Battery Full light (yellow) indicates battery voltage is full when battery voltage between 12.0 to 15.0 Volts.



Battery Medium light (yellow) indicates battery voltage is medium when battery voltage between 10.5 to 12.0 Volts.



Battery Low light (yellow) indicates batteryvoltage is low when battery voltage between 9.7 to 10.5 Volts.

Japan Product Lineup

	Product Name	Energy Source	Applications	Installation Location	Installation Method	Number of Strings	Topology	Display/Operation
	**4.0 kW**	Solar	Home, Apartment	Outdoor	Wall-mounted	2	High Frequency Isolated Transformer	Color LCD Remote Controller
	**4.9 kW**	Solar	Home, Apartment	Outdoor	Wall-mounted	3	High Frequency Isolated Transformer	Color LCD Remote Controller
	**5.5 kW**	Solar	Home, Apartment, Facility, Power Plant	Outdoor	Wall-mounted	3 4	High Frequency Isolated Transformer	Color LCD Remote Controller
	**Single-phase 9.9 kW**	Solar	Home, Apartment, Facility, Power Plant	Outdoor	Wall-mounted	5	High Frequency Isolated Transformer	Color LCD Remote Controller
	**Single-phase 9.9 kW**	Solar	Home, Apartment, Facility, Power Plant	Outdoor	Wall-mounted	5	High Frequency Isolated Transformer	Color LCD Remote Controller
	**Three-phase 9.9 kW**	Solar	Facility, Factory, Power Plant	Outdoor	Wall-mounted Rack-mounted	5	High Frequency Isolated Transformer	Chassis-embedded Master Box
	**Three-phase 25 kW**	Solar	Power Plant	Outdoor	Wall-mounted Rack-mounted	8	Transformer-less	Chassis-embedded Master Box
	**Hybrid Inverter** **PV: 5.5 kW Battery: 9.89 kWh**	Solar, Battery	Home, Facility	Outdoor (Battery unit must be installed indoors)	Floor-mounted	3	High Frequency Isolated Transformer	Color LCD Remote Controller
	**Portable battery storage system** **Battery: 2.5 kWh**	Battery	Home, Facility, Factory	Indoor	Floor-mounted	—	—	Unit Panel
	**Portable battery storage system** **Battery: 5.0 kWh**	Battery	Home, Facility, Factory	Indoor	Floor-mounted	—	—	Unit Panel

Monitoring System (TABUCHI-cloud) for Japan Market

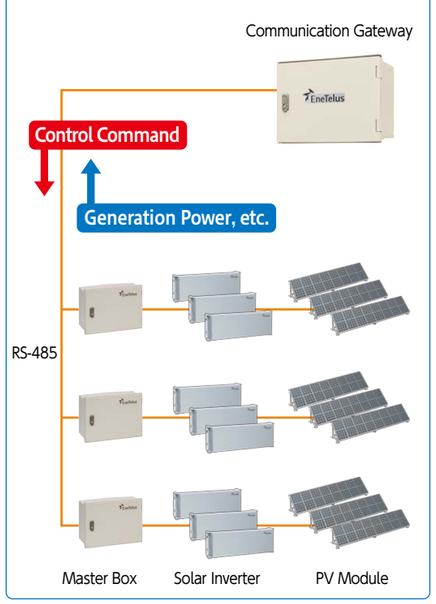
Residential
Single-phase Commercial

Connecting the remote controller to the internet allows the customer to implement remote monitoring and control output of the system.

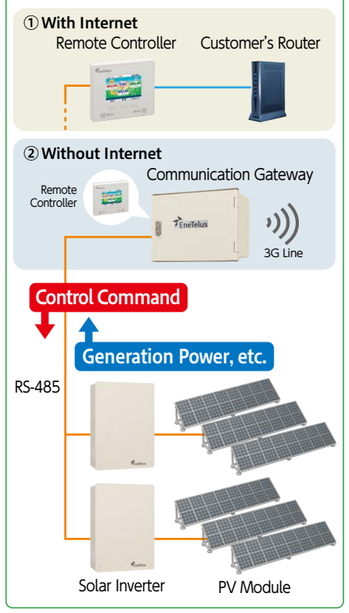
Three-phase Commercial

Connecting the communication gateway to the 3G line allows the customer to implement remote monitoring and control output.

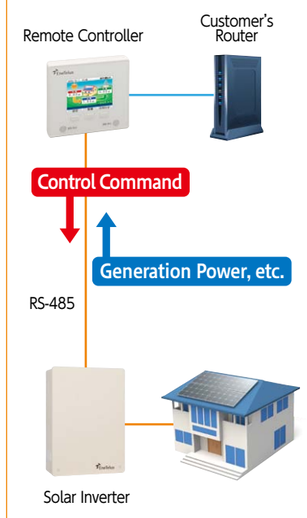
Three-phase Commercial

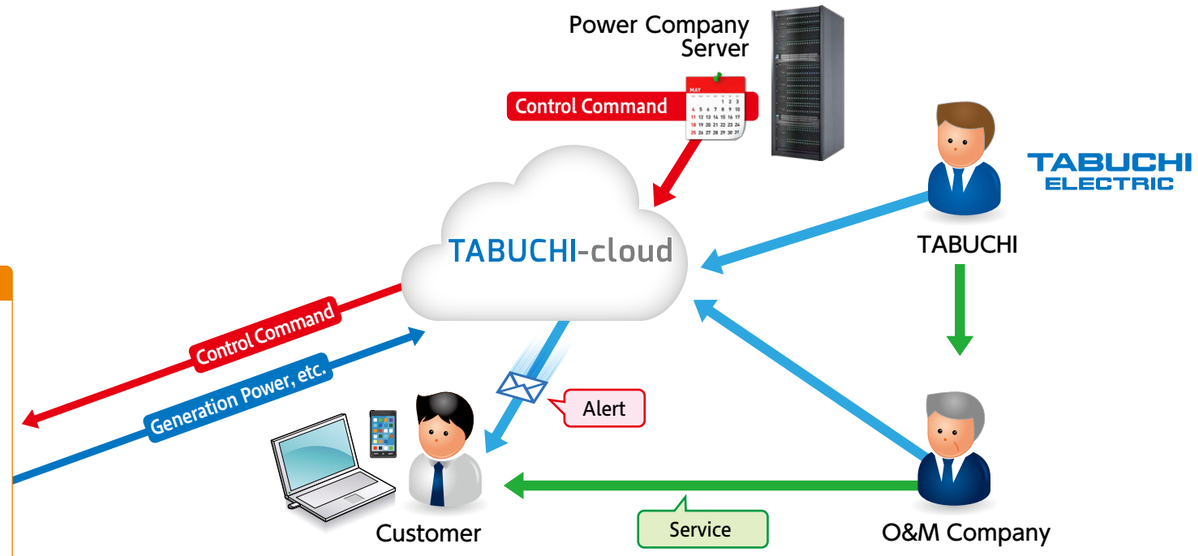


Single-phase Commercial



Residential



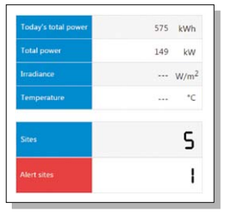


Basic Function

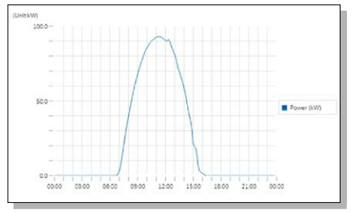
Common Function	Residential Single-phase Commercial Three-phase Commercial	• Generation Status Monitoring • Data download (CSV file) • E-mail Alert • Smart Phone Monitoring
Limited Function	Single-phase Commercial Three-phase Commercial	• Collective control for multiple power plants
Network	Residential	• Internet
	Single-phase Commercial	• Internet or 3G line
	Three-phase Commercial	• 3G line

PC Screen

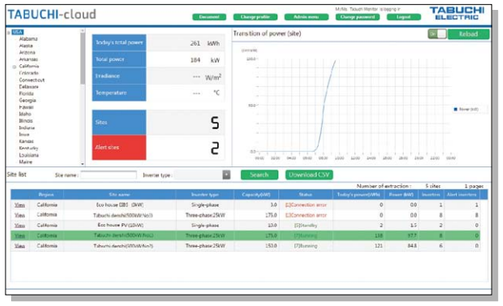
Monitoring Panel



Power Generation Graph

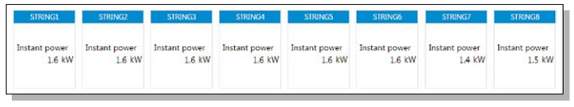


Monitoring Generation by PC

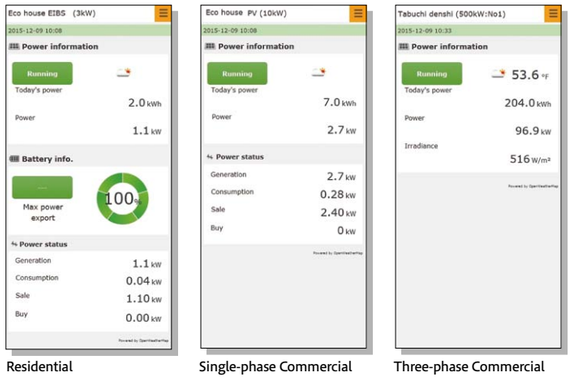


Three-phase Commercial

String Monitoring



Smart Phone Screen



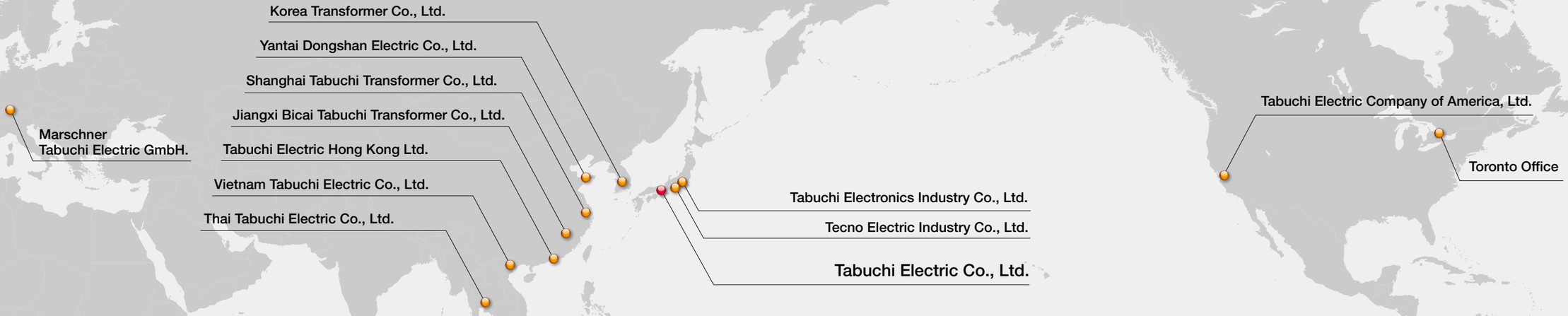
Residential　Single-phase Commercial　Three-phase Commercial

Monitoring Data (Main)

Application	Monitoring Interval	Date Item
Residential Single-phase Commercial	30 min.	AC power generation Grid power generation Grid frequency Alert, etc
Three-phase Commercial	10 min.	AC power generation Grid power generation Grid frequency Alert Outside temperature (Option) Solar irradiance (Option)
	Real time	Alert

Some specifications or aspects of appearance may be changed without notice to improve the product.

Tabuchi Electric Global Network



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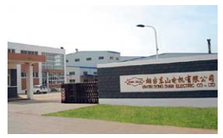

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Memo

TABUCHI ELECTRIC

Before operating this product, please read the user manual carefully.

⚠ Safety Precautions

- We do not guarantee and will not repair solar inverters that have malfunctioned due to improper use that does not conform with the user manual, installation manual, precautions, etc.
  - ・Do not connect life-sustaining medical devices to the inverter load as failure or malfunction of such devices may result in bodily injury or a direct threat to human life.
  - ・Do not operate the inverter in a location where the inverter may cause bodily injury or result in a direct threat to human life.
  - ・Do not expose the inverter to excessive steam, oily spray, smoke, dust, salt, corrosive materials, explosive/flammable gases, chemical agents, vibration, or fire. Please contact your distributor or installer for more details regarding installation.
  - ・Do not use products for any other purpose other than their intended use as listed in the catalog.(See the Lineup page.)
- We recommend regular maintenance to ensure long-term use of the solar inverter.
- Catalog contents and product specifications may change without notice.
- Installation should be performed by qualified personnel.
- Do not disassemble, alter, or modify any Tabuchi products.