

Microinverter

Solar Solutions



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Company Profile

Hoymiles Converter Technology Co., Ltd is a high-tech enterprise specialized in green energy industry. We started as a R&D team in the National Key Laboratory of Zhejiang University and have been staying in close strategic cooperation with Hangkai Group. With the powerful technology backing of Zhejiang University and supported by the abundant industrial resources of Hangkai Group, Hoymiles has made remarkable achievements ever since in terms of technology breakthroughs and markets, the photovoltaic inverter technology ranking the top worldwide, products being well and widely received by markets in numerous countries, and a worldwide partner network has been established.

Hoymiles is engaged in developing photovoltaic technology, providing professional solutions and full sets of electrical equipment to customers of photovoltaic power generation systems, commercial and industrial photovoltaic power stations, and large scale ground power plants; we also provide professional equipment and technology support to large solar plants with our innovative modularized photovoltaic inverter technology, intelligent photovoltaic combiner boxes, and high and low voltage power distribution cabinets. Our cutting-edge microinverter technology ensures a safer, smarter and more efficient solar power generation system for the distributed systems. The projects we have completed can be found in almost all major cities and provinces across China and our microinverters are exported to over 30 countries including USA, Australia, Germany, France, Netherlands, Italy, South Korea, Brazil, Mexico, and India.

Ever since its foundation, Hoymiles has established strategic cooperation with the National Key Power Electric Laboratory of Zhejiang University, which based on a full range of Production-Study-Research agreements. Hoymiles boasts an outstanding R&D team composed of 3

post doctors, 10 doctors and 25 masters. The team has made great achievements in scientific research and gained many patents in the field of electronic power converters, photovoltaic inverters and smart grid technology.

As a high tech enterprise integrating R&D, production, marketing and service, Hoymiles is devoted to providing the most reliable photovoltaic power generation products in every link, and to applying power electronic technology to various industries including the fields of new energy and smart grids. Holding the motto of "Seeking the Truth and Pioneering with Team Spirit" and possessing the world leading power electronics technology, Hoymiles will continue to provide innovative solutions for green energy.

Hangkai Group Introduction

Hangkai Group, located in No. 18, Kangjing Road Hangzhou, is a comprehensive and modernized enterprise group characterized by multi-industry cooperation with equipment manufacturing as its main industry. The Group started as Hangzhou Switch Factory which dates back to the year of 1958. With an illustrious industrial background and through decades of reforms, it is now endowed with great vitality for development and innovation.

The Group possesses ten-odd subordinate wholly-owned (holding) companies and has a manufacturing production base covering a total area of 200,000 square meters. The subordinate companies deal with the following products including high and low voltage switch cabinets, electronic transmission and transformation equipment and large scale heat exchangers. With traditional manufacturing industry as their pillar, they have also developed emerging industries related to water, new energy, busbar-system, rare-earth permanent magnet motors, solar power system and power electronics conversion techniques. At the same time, they are also involved in fields like venture capital

investment and cultural tourism. In a word, the Group is going all out to upgrade and optimize industrial patterns while still possessing a complete traditional industry chain.

Having gone through all the vicissitudes of more than half a century, from its very inception, Hangkai Group has taken the task of revitalizing national industries as its own obligation. With "professionalism, integrity and innovation" as its purpose, the Group keeps forging ahead with a down-to-earth manner to search for a new development direction; bearing a scientific notion and harmonious attitude, it is devoted to achieving a win-win situation for the companies, the employees and society and to doing its part for the great rejuvenation of our nation and to make the world a better place.

Our Story

3
Post Doctors

10
Doctors

25
Masters

R&D Team

Hoymiles always holds the company motto of "Seeking the Truth and Pioneering with Team Spirit". Based on a full range of Production-Study-Research agreements, we established strategic cooperation with the National Key Power Electric Laboratory of Zhejiang University. Hoymiles boasts an outstanding R&D team composed of 3 post doctors, 10 doctors and 25 masters. The team has made great achievements in scientific research and gained many patents in the field of electronic power converters, photovoltaic inverters and smart grid technology.



2008

Establish the R&D team of photovoltaic (PV) inverters in Zhejiang University State Key Power Electric Laboratory
Present the topology structure of photovoltaic grid-connected inverter without transformer and the key control algorithm

2009



Start cooperation with Hangkai Group
Complete the design of single-phase PV grid-connected inverter
Complete the design of three-phase PV grid-connected inverter

2010



Establish "Zhejiang University-Hangkai Group new energy technology R&D center"
Start the design of smart modular power station type PV grid-connected inverter

2011



Start the design of the smart microinverter
Single-phase PV grid-connected inverters gain the global certification of TUV, SAA
Three-phase PV grid-connected inverters gain the certification of "CQC-SOLAR"

2012



Establishment of Hangzhou Keweida electric Co. Ltd based on "Zhejiang University-Hangkai Group new energy technology R&D center"
All series of 50kW-500kW smart modular PV grid-connected inverters gain the certification of "CQC-SOLAR"
Become a member of Hangzhou Photovoltaic Association

2013



Establish photovoltaic inverter collaborator with CPVT
Establish electric technology research and development cooperation with FUJI Electric
Join the writing of national compulsory standard of the photovoltaic grid-connected inverter
Appointed supervisor of Hangzhou Photovoltaic Association

2015



Become a national high-tech enterprise
50kW-500kW Modular inverter gains the certification of CQC, enters into the domestic market
250W and 500W microinverter enters the markets of USA, Europe and Australia. The sales volume exceeds 10,000

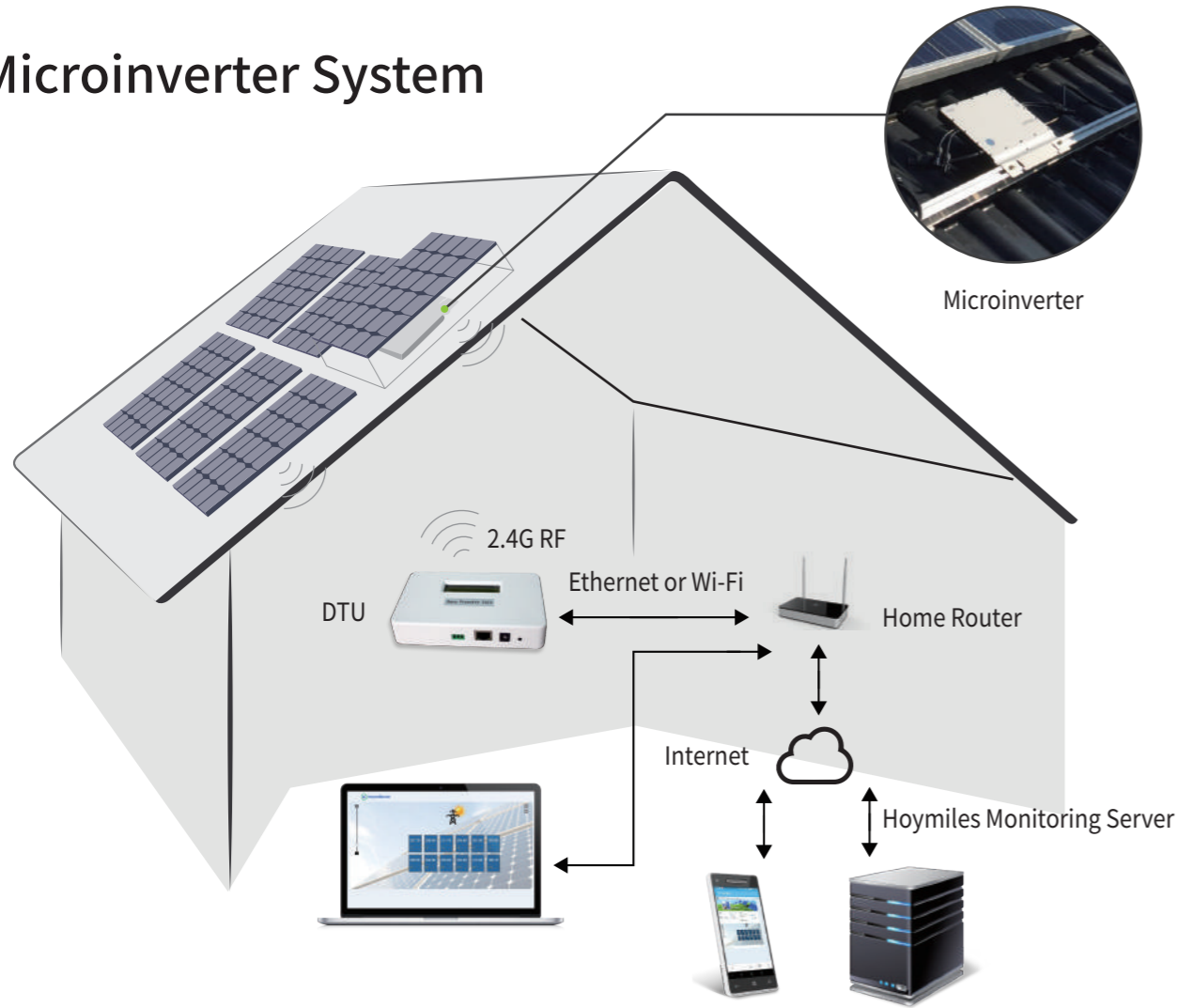
Future... ..

2014



In closer cooperation with Hangkai Group and Zhejiang University, Hangzhou Keweida electric Co. Ltd is renamed Hangzhou Hoymiles converter technology Co.Ltd
Smart microinverter gains the certification of CSA, BV, SAA and CQC

Microinverter System



System Highlights

Productivity

The efficiency of microinverter is up to 96.7%
Panel level MPPT, 10%-30% more energy harvest



Safety

No high DC voltage
No fire and electric shock during installation and operation



Smart Monitoring

Panel level monitoring
Worldwide on-line system maintenance and trouble-shooting



Reliability

Warranty is up to 12 years, and can be extended to 25 years
No single point failure
Rugged NEMA6 (IP67) enclosure rating
6000V surge protection

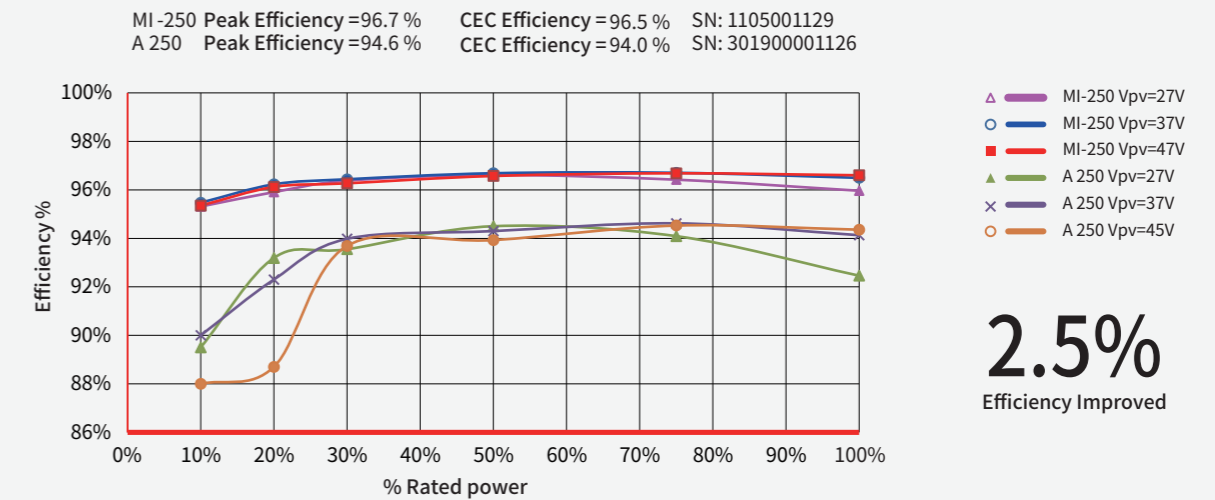


Microinverter Highlights

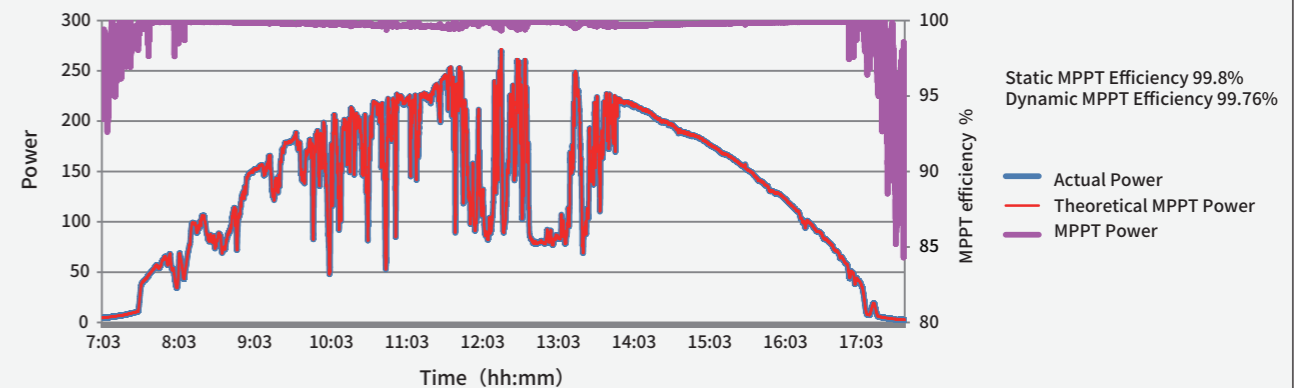
- 1. High Efficiency**
Peak efficiency 96.7%
CEC efficiency 96.5%
- 2. Fast and Accurate MPPT Algorithm**
Static MPPT efficiency 99.8%
Dynamic MPPT efficiency 99.76% in heavy cloudy day
- 3. Wide Input Voltage Range (16V to 60V)**
Support both 60 & 72 cells PV panels
- 4. High Reliability**
Rugged NEMA6 (IP67) enclosure rating
6000V surge protection

5. **Global Certified**
-

Comparison of Hoymiles MI-250 and the Microinverter of Company A



Fast and Accurate MPPT Algorithm



MI-250 Microinverter



Highlights

- Maximum output power up to 300W, Adapted to 60 & 72 cells PV panels
- Peak efficiency 96.7%, CEC efficiency 96.5%
- Static MPPT efficiency 99.8%, Dynamic MPPT efficiency 99.76% in heavy cloudy day
- High reliability: NEMA6(IP67) enclosure, 6000V surge protection



Model	MI-250-NA(For North America)	MI-250-EU(For Europe Australia and China)	
Input Data(DC)			
Recommended input power (W)	200~310		
Peak power MPPT voltage range (V)	27~48		
Operating voltage range (V)	16~60		
Maximum input voltage (V)	60		
Maximum input current (A)	10.5		
Output Data (AC)			
	@208V AC	@240V AC	@230V AC
Rated output power (W)	250	250	250
Rated output current (A)	1.20	1.04	1.09
Nominal output voltage/range (V)	208/183-229	240/211-264	230/200-270
Nominal frequency/range (Hz)	60/57-62.5	60/57-62.5	50/45-55
Power factor	>0.99	>0.99	>0.99
Output current harmonic distortion	<3%	<3%	<3%
Maximum units per 20A branch	13	15	14
Efficiency			
Peak inverter efficiency	96.7%		
CEC weighted efficiency	96.5%		
Nominal MPPT efficiency	99.8%		
Night time power consumption (mW)	<50		
Mechanical Data			
Ambient temperature range (°C)	-40~+65		
Operating temperature range (°C)	-40~+85		
Dimensions (W×H×D mm)	183×164×28		
Weight (kg)	1.65	1.98	
Enclosure rating	NEMA6	IP67	
Cooling	Natural convection – No fans		
Features			
Communication	Wireless		
Warranty	Standard 12 years (can be extended to 25 years)		
Compliance	FCC Part15 Class B UL1741 CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01 IEEE1547	EN6100-6-1/2/3/4 CNCA/CTS0004:2009A EN 62109-1/2 AS3100 \ AS4777 VDE4105 \ VDE0126 EN50438:2013 UTE C 15-712-1	

MI-500 Microinverter



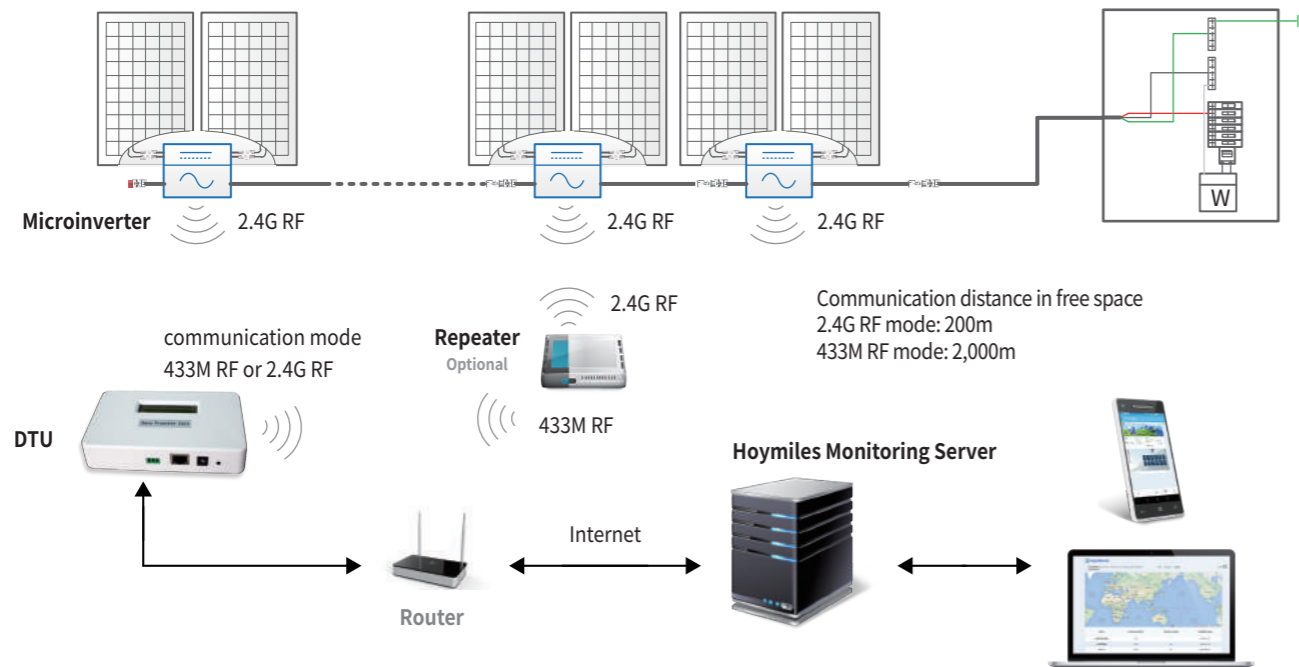
Highlights

- Single microinverter connects two modules, Maximum output power up to 600W
- Individual MPPT for each module
- Peak efficiency 96.7%, CEC efficiency 96.5%
- Static MPPT efficiency 99.8%, Dynamic MPPT efficiency 99.76% in heavy cloudy day
- High Reliability: NEMA6(IP67) enclosure, 6000V surge protection



Model	MI-500-NA / MI-600-NA (For North America)	MI-500-EU/ MI-600-EU (For Europe Australia and China)	
Input data(DC)			
Recommended input power (W)	200~310/200~350		
Peak power MPPT voltage range (V)	27~48/32~48		
Operating voltage range (V)	16~60		
Maximum input voltage (V)	60		
Maximum input current (A)	10.5		
Output Data (AC)			
	@208V AC	@240V AC	@230V AC
Rated output power (W)	500/600	500/600	500/600
Rated output current (A)	2.40/2.88	2.08/2.50	2.17/2.61
Nominal output voltage/range (V)	208/183-229	240/211-264	230/200-270
Nominal frequency/range (Hz)	60/57-62.5	60/57-62.5	50/45-55
Power factor	>0.99	>0.99	>0.99
Output current harmonic distortion	<3%	<3%	<3%
Maximum units per 20A branch	6/5	7/6	7/6
Efficiency			
Peak inverter efficiency	96.7%		
CEC weighted efficiency	96.5%		
Nominal MPPT efficiency	99.8%		
Night time power consumption (mW)	<50		
Mechanical Data			
Ambient temperature range (°C)	-40~+65		
Operating temperature range (°C)	-40~+85		
Dimensions (W×H×D mm)	250×180×28		
Weight (kg)	2.73	3.08	
Enclosure rating	NEMA6	IP67	
Cooling	Natural convection – No fans		
Features			
Communication	Wireless		
Warranty	Standard 12 years (can be extended to 25 years)		
Compliance	FCC Part15 Class B UL1741 CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01 IEEE1547	EN6100-6-1/2/3/4 CNCA/CTS0004:2009A EN 62109-1/2 AS3100 \ AS4777 VDE4105 \ VDE0126 EN50438:2013 UTE C 15-712-1	

Smart Monitoring



Data Transfer Unit(DTU)

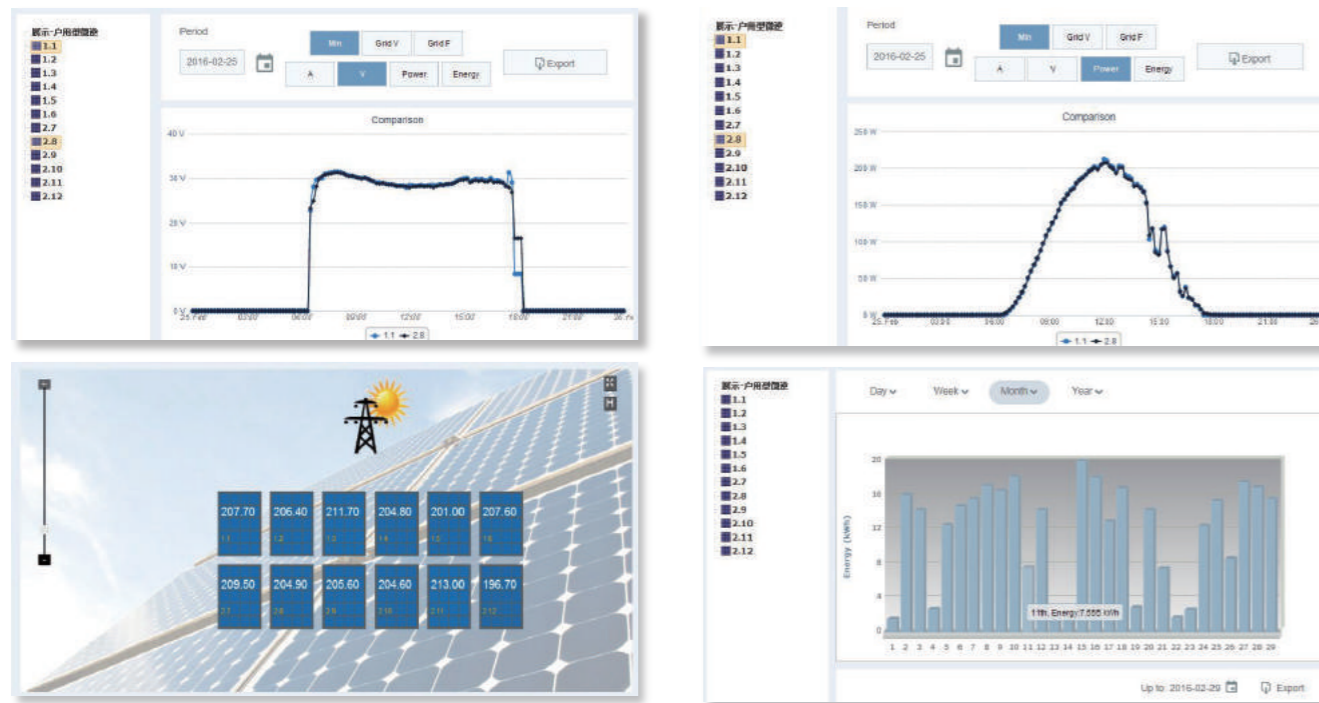
DTU collects performance data from each microinverter via wireless, and sends the data to hoymiles monitoring server via internet. Embedded monitoring server of DTU can provide local monitoring via the browser.

Repeater (optional)

Repeater is used to extend the communication distance of DTU and microinverter. The communication distance between microinverter and repeater in free space is 200m using 2.4G RF, which can be extended to 2000m between DTU and repeater using 433M RF.

Hoymiles Monitoring Server

Hoymiles monitoring server collects and stores the performance data of microinverter through DTU via internet, which provides the module level smart monitoring. Customer can login the server through browsers to check the performance of PV system. Maintenance staff can use the server to maintain the system remotely, e.g. troubleshooting, upgrading the firmware of DTU and microinverters, which ensures the reliability of the system.



Model	DTU
Communication to Microinverter	
Type	2.4G RF
Sample rate	5 minutes
Maximum distance (free space)	200m
Maximum number of inverters connected	99
Communication to Router/PC	
RJ45 Ethernet	10M/100M
Power Supply	
Type	External plug-in adapter
Adapter input voltage / frequency	100-240V AC/50 or 60Hz
Adapter output voltage / current	5V/0.8A
Power consumption	2.5W (typical) , 5W (maximum)
Mechanical Data	
Ambient temperature range (°C)	-20~+55
Dimensions (W×H×Dmm)	149×90×31
Weight (kg)	0.22
Mounting system	Wall mounting
Display	16 Characters x 2 lines LCD
Features	
Compliance	IEC60950 IEC61000-6-2 FCC Part 15 Class B/Class C
Standard warranty	2 years

Model	Repeater
Communication to Microinverter	
Type	2.4G RF
Maximum distance (free space)	200m
Communication to DTU	
Type	433 M RF
Maximum distance (free space)	2000m
Power Supply	
Input voltage / frequency	100 - 240 V AC / 50 or 60Hz
Power consumption	0.5W (typical) , 1W (maximum)
Mechanical Data	
Ambient temperature range (°C)	-40 ~ +65
Dimensions (W×H×Dmm)	145x125x60
Weight (kg)	0.35
Enclosure rating	IP65
Features	
Compliance	IEC60950 IEC61000-6-2 FCC Part15 Class B / Class C
Standard warranty	5 years

Projects



Hangzhou Energy Institute Commercial Solar System 10kW



Quzhou Shiliang Residential Solar System 5kW



Hangzhou Hejiayuan Residential Solar System 6kW



Quzhou Kecheng District 63 Residential Solar Systems 343kW



Quzhou Villa Residential Solar System 2kW

Projects



Hangzhou East Software Park Commercial Solar System 1.5kW



Zhejiang University Commercial Solar System 70kW



Hangkai Group Industrial Solar Systems 200kW



Quzhou Qujiang District Nieli Town 500 Residential Solar Systems 500 x 3kW



Ningbo Subway Line 2 Commercial Solar System 20kW



Australia Residential Solar System 3kW



Shanghai Kangshun Industrial Solar Systems 1.2MW



Sri Lanka Residential Solar System 5kW



Hangzhou Xie' an Zijun Commercial Solar System 22kW

Global Service



System Design

We provide customized service to customers in terms of system design of photovoltaic power station, the implementation, equipment selection, optimization, consultation and the necessary support, which help our customers optimize the PV power stations.



Regular Return Visit

Our after-service staff will give one return visit in the minimum annually within the warranty. We'll check the equipment to remove any hazards thus to reduce the chance of faults and guarantee the proper functioning of the equipment.



Hotline Service

Customers can reach us by the hotline in case of any equipment failure. The service is available 24/7. We ensure that our technical staff will be contacting the customer within one hour of the repair order to analyze the fault, propose solutions, and consequently direct the customers in trouble shooting.



Customer Training

Hoymiles attaches much importance on customer training to effectively deliver the specialized knowledge to our customers. We provide timely on-site training programs according to varied requirements to share the specialized knowledge and rich experience. The regular training programs include fault diagnosis, device debugging, equipment maintenance, etc.



On-site Service

If the problem can't be solved via hotline, engineers will be sent to the site within 24 hours to clear the fault and ensure the proper functioning of the equipment within the shortest possible time.



Customized Service

Customized service and corresponding agreements are available to meet the specific needs of customers. The services include multiple training, equipment upgrading, secondary development, technique support to special tests, warranty service, etc.

Global Market

With the world leading cutting-edge technology of the Microinverter, Hoymiles developed a global market which covers more than 30 countries, including USA, Australia, Germany, France, Netherlands, Italy, Japan, Korea, Brazil, Mexico and India.

