Product Specification Report

Supplier Name：		IGEN Tech Co., Ltd.
Supplier Part No.：		
Customer Name：		
Customer Part No.：		
Product Name：		Energy Management Device
Product Type：		EMH-2-4G
Firmware Version：		
Inverter Type：		
Inverter Protocol：		
Effective Date：		
Customer Approval		Supplier Approval
Confirmed By	Approved By	

Version	Note	Updated Time	Updated By
1.0	First Draft		

Introduction

By collecting operating data and power generation of inverter, EMH-2 can run a long-term and efficient monitoring of PV system. Furthermore, by reading electric parameters of meter, it can display power consumption data at real time.

EMH-2 can connect to the inverter via RS485 interface, which enables to collect all the data of PV system from the inverter. Meanwhile, remote monitoring cloud platform (SOLARMAN 3.0) provides powerful data support for EMH-2. EMH-2 sends the data to the monitoring platform via WiFi/LAN/4G. The real time status and historical data can be displayed with graphs, enabling intuitive and clear understanding of PV system, which realizes the management of PV system at anytime and anywhere, also simplifies the maintenance significantly.

Product Parameter

Table 1

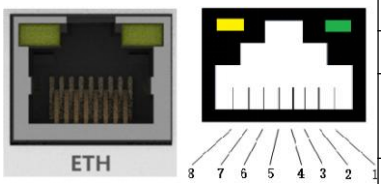
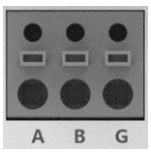
Catalog	Parameter	Value
Ethernet Parameter	Data Interface*1	RJ45
	Network Rate	Adaptive 10/100Mbps
	Link	Shielded twisted pair<50m
	Network Switching Stack	≤4 Layers
4G Wireless Parameter (Globe)	Network Parameter	LTE-FDD：B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28
		LTE-TDD：B38/B39/B40/B41
		UMTS：B1/B2/B4/B5/B6/B8/B19
		GSM：850/900/1800/1900MHz
	Transmitting Power	Class 4(33dBm±2dB) for GSM850
		Class 4(33dBm±2dB) for GSM900
		Class 1(30dBm±2dB) for DCS1800
		Class 1(30dBm±2dB) for PCS1900
		Class E2(27dBm±3dB) for GSM850 8-PSK
		Class E2(27dBm±3dB) for GSM900 8-PSK
		Class E2(26dBm±3dB) for DCS1800 8-PSK
		Class E2(26dBm±3dB) for PCS1900 8-PSK
		Class 3(24dBm+1/-3dB) for WCDMA bands
		Class 3(23dBm±2dB) for LTE-FDD bands
		Class 3(23dBm±2dB) for LTE-TDD bands
		Class 4(33dBm±2dB) for GSM850
	Antenna	External antenna: SMA blade antenna
	Applicable Area	Globe
WIFI&BT Wireless Parameter	Wireless Standard	802.11 b/g/n
	Frequency	2.412GHz-2.472GHz
	Transmitting Power	802.11b: +16dBm(@11Mbps)
		802.11g: +14dBm(@54Mbps)
		802.11n: +13dBm(@HT20， MCS7)
	Receiving Sensitivity	802.11b: -87dBm (@11Mbps ，CCK)
		802.11g: -73dBm (@54Mbps， OFDM)
		802.11n: -71dBm (@HT20， MCS7)
	BT Frequency	2.402GHz-2.480GHz
	BT Wireless Standard	BLE5.0
	BT Transmitting Power	Max 15dBm

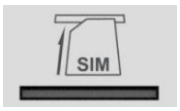
	BT Receiving Sensitivity	-90dBm
	WIFI&BT Antenna	External antenna: SMA blade antenna

Table 2

Catalog	Parameter	Value
Hardware Parameter	Data Interface	RS485
	Working Voltage	DC5V~12V
	Working Power	5W
	Indicator Light*4	System running light--RUN--Green
		Server connection light--SER--Green
		RS485 connection light--COM--Green
		Network connection light--NET--Green
	Data Storage	Default: 512MByte NAND FLASH
	Real Time Clock	RTC power failure endurance>7 days
	Working Temperature	-30℃~+70℃
	Working Humidity	＜90% (No Condensation)
	Storage Temperature	-45℃~+90℃
	Storage Humidity	<40%
	External Interface	3PIN-5.0mm spacing terminal interface/RJ45
Software Parameter	No. of Connections	1-10
	Serial Communication Rate	9600bps （1200-115200bps Configurable)
	Data Collecting Interval	1 min
	Data Uploading Interval	5 mins (1-15 mins Configurable)
	Connection Method	RS485 cable
	Configuration	AT+Instruction set
		Local Web configuration
		Remote server
	Firmware Upgrade	Remote upgrade
		Local Web upgrade
	Restart	Software watchdog
		Hardware watchdog
	Others	Real time control, data resuming
Enclosure	Material	PC
	IP Grade	IP20
	Installation	Wall mounted

Interface Identification

<table>
<tr><th>No.</th><th>Name</th><th>Picture</th><th>Details</th></tr>
<tr><td rowspan="11">1</td><td rowspan="11">Ethernet</td><td rowspan="11"> 
</td><td>Color</td><td>RJ45</td><td>Identification</td><td>Type</td><td>Instruction</td></tr>
<tr><td>White Orange</td><td>Pin1</td><td>TX+</td><td>O</td><td>TX+(Sending+)</td></tr>
<tr><td>Orange</td><td>Pin2</td><td>TX-</td><td>O</td><td>TX-(Sending-)</td></tr>
<tr><td>White Green</td><td>Pin3</td><td>RX+</td><td>I</td><td>RX+(Receiving+)</td></tr>
<tr><td>Blue</td><td>Pin4</td><td colspan="3"></td></tr>
<tr><td>White Blue</td><td>Pin5</td><td colspan="3"></td></tr>
<tr><td>Green</td><td>Pin6</td><td>RX-</td><td>I</td><td>RX-(Receiving-)</td></tr>
<tr><td>White Brown</td><td>Pin7</td><td colspan="3"></td></tr>
<tr><td>Brown</td><td>pin8</td><td colspan="3"></td></tr>
<tr><td colspan="5">Static IP：169.254.254.254
Supports profile import and logger firmware upgrade</td></tr>
<tr><td>2</td><td>DC Power</td><td> 
</td><td colspan="4">DC Voltage: DC 5~12V input</td></tr>
<tr><td rowspan="4">3</td><td rowspan="4">COM
RS485
Interface</td><td rowspan="4"> 
</td><td>Identification</td><td colspan="2">Type</td><td>Details</td></tr>
<tr><td>A</td><td colspan="2">I/O</td><td>RS485 Bus A</td></tr>
<tr><td>B</td><td colspan="2">I/O</td><td>RS485 Bus B</td></tr>
<tr><td>G</td><td colspan="2">GND</td><td>To ground（Unable to use）</td></tr>
<tr><td>4</td><td>RESET</td><td> 
</td><td colspan="4">Reset: Long press for 5s, SER light flashes
Restore factory settings: Long press for 10s, COM</td></tr>
</table>

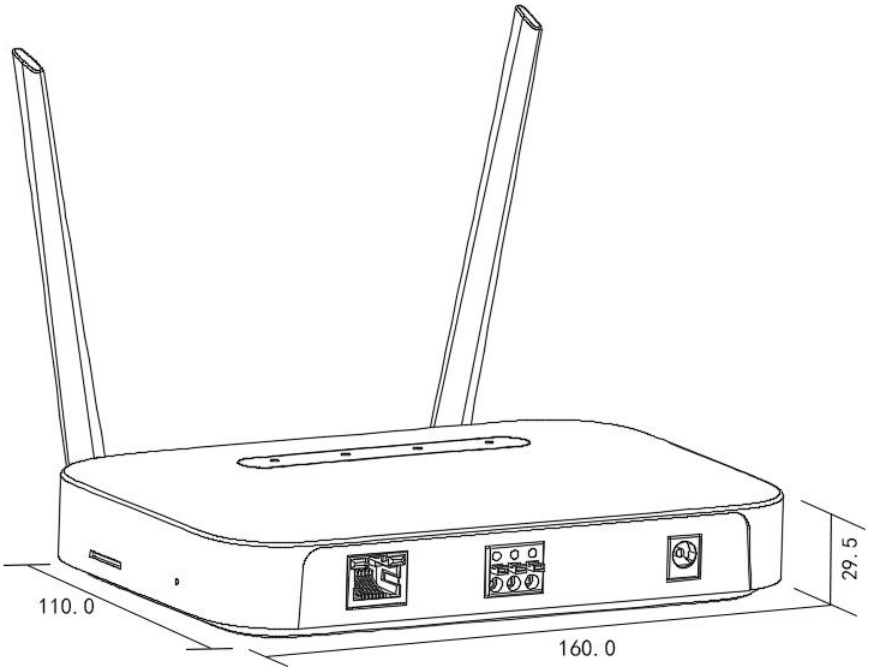
			light flashes
5	WIFI Antenna		WIFI antenna SMA interface, to connect 2.4G blade antenna
	4G Antenna		4G antenna SMA interface, to connect 4G blade antenna
7	SIM Card Slot		SIM card slot, to install 15mm×25mm SIM card

Product Picture

Name	Picture
Top View	
Front View	

Side View	

Product Size (Unit： mm, Accuracy: ±2%)



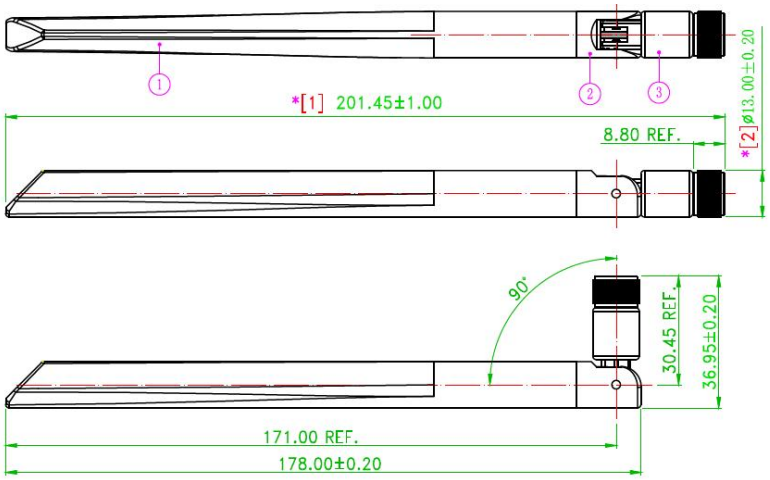
Power Adaptor

Picture	Standard: European power supply
	

Electrical performance index of power supply			
Input Characteristics	**Minimum**	**Nominal**	**Maximum**
Input Voltage	90Vac	100Vac~240Vac	264Vac
Input Frequency	47Hz	60Hz/50Hz	63Hz
Output Characteristics/	**Rated Load**	**Output Range/**	**R+N**
Rate Min. Load	**Max. Load**	**+5V**	
0.1 A	2A	4.65V ~5.35V	150mVp-p

Antenna

External 2.4G blade antenna

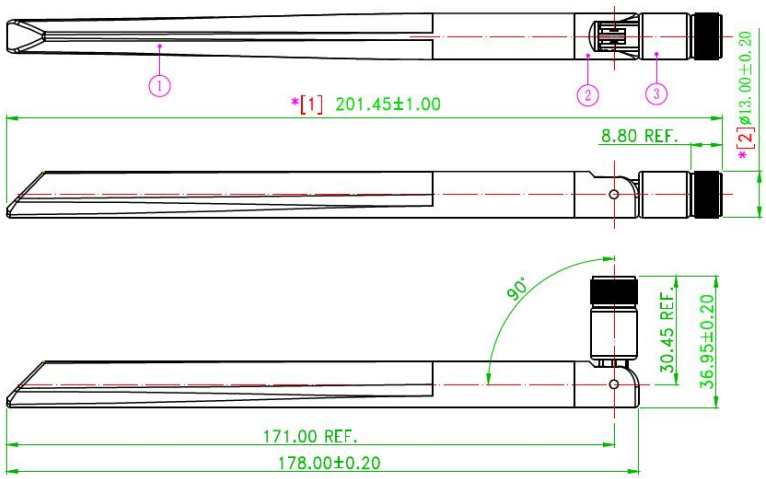


Antenna electrical performance index:

Classification	Performance Parameter
Frequency rang-GHz	2.4GHz
VSWR	≤2
Input Impedance-Ω	50Ω
Gain-dBi	5dBi
Antenna Color	White

Input connector	SMA

External 4G blade antenna



Antenna electrical performance index:

Classification	Performance Parameter
Frequency rang-GHz	4G LTE
VSWR	≤2
Input Impedance-Ω	50Ω
Gain-dBi	5dBi
Antenna Color	White
Input connector	SMA

LED Indicator lights Instructions

Light			Running Status		
Name	**Picture**	**Identification**	**ON**	**Flash**	**OFF**
RUN		Power light/System running light	System runs abnormally	System runs normally	Power failure/Programme failure
SER		Connection with server	Successful connection with server		Connect to server failure
NET		Connection with network	Successful connection with network		Connect to network failure
COM		RS485 device connection	Successful communication		Connection failure/No connection

Firmware Configuration

Direct Forwarding		
1	Domain Name	access1.solarmanpv.com（SOLARMAN3.0）
2	IP	47.102.152.71（SOLARMAN3.0）
3	Port No.	10000（SOLARMAN3.0）
4	APN	——

Contact

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Product List

No.	Name	Quantity	Note
1	Energy management device EMH-2	1	——
2	DC 5 V power	1	——
3	2.4G blade antenna	1	——
4	4G blade antenna	1	——
5	Expansion screw	2	Specification：2.9*32mm
6	Quick Guide	1	——