

Product Specification Report

Supplier Name:		IGEN Tech Co., Ltd.	
Supplier Part No.:			
Customer Name:			
Customer Part No.:			
Product Name:		Energy Management Device	
Product Type:		EMB-2-4G	
WEB Version:			
WiFi 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, EMB-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.

EMB-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 EMB-2. EMB-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

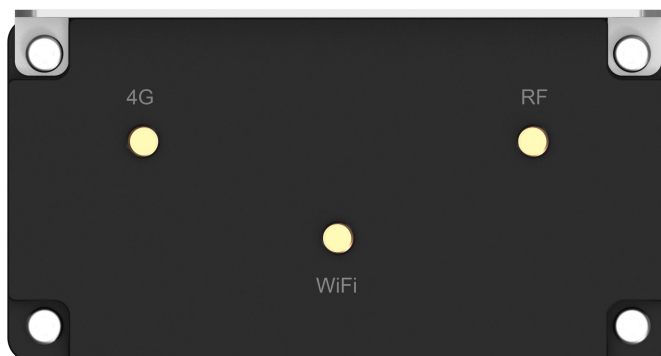
Catalog	Parameter	Value
Ethernet Parameter	Data Interface*1	RJ45
	Network Rate	Adaptive 10/100Mbps
	Link	Shielded twisted pair<50m
	Network Switching Stack	≤4 Layers
4G Wireless Parameter (Globe)	Network Parameter	LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28
		LTE-TDD: B38/B39/B40/B41
		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 sucker 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 sucker antenna
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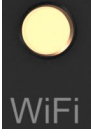

Table 2

Catalog	Parameter	Value	
Hardware Parameter	Data Interface*2	RS485	
	Working Voltage	DC12V±5%	
	Working Power	5W	
	Indicator Light*6	System running light--RUN--Green	
		Server connection light--SER--Green	
		Network connection light--NET--Green	
		RF connection light--RF--Green	
		RS485-1 connection light--COM1--Green	
		RS485-2 connection light--COM2--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%		
Software Parameter	No. of Connections	32	
	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 (Restart after 12h)		
	Hardware watchdog		
Others	Real time control, data resuming		
Enclosure	Material	Aluminium alloy	
	IP Grade	IP65	
	Installation	Wall mounted	

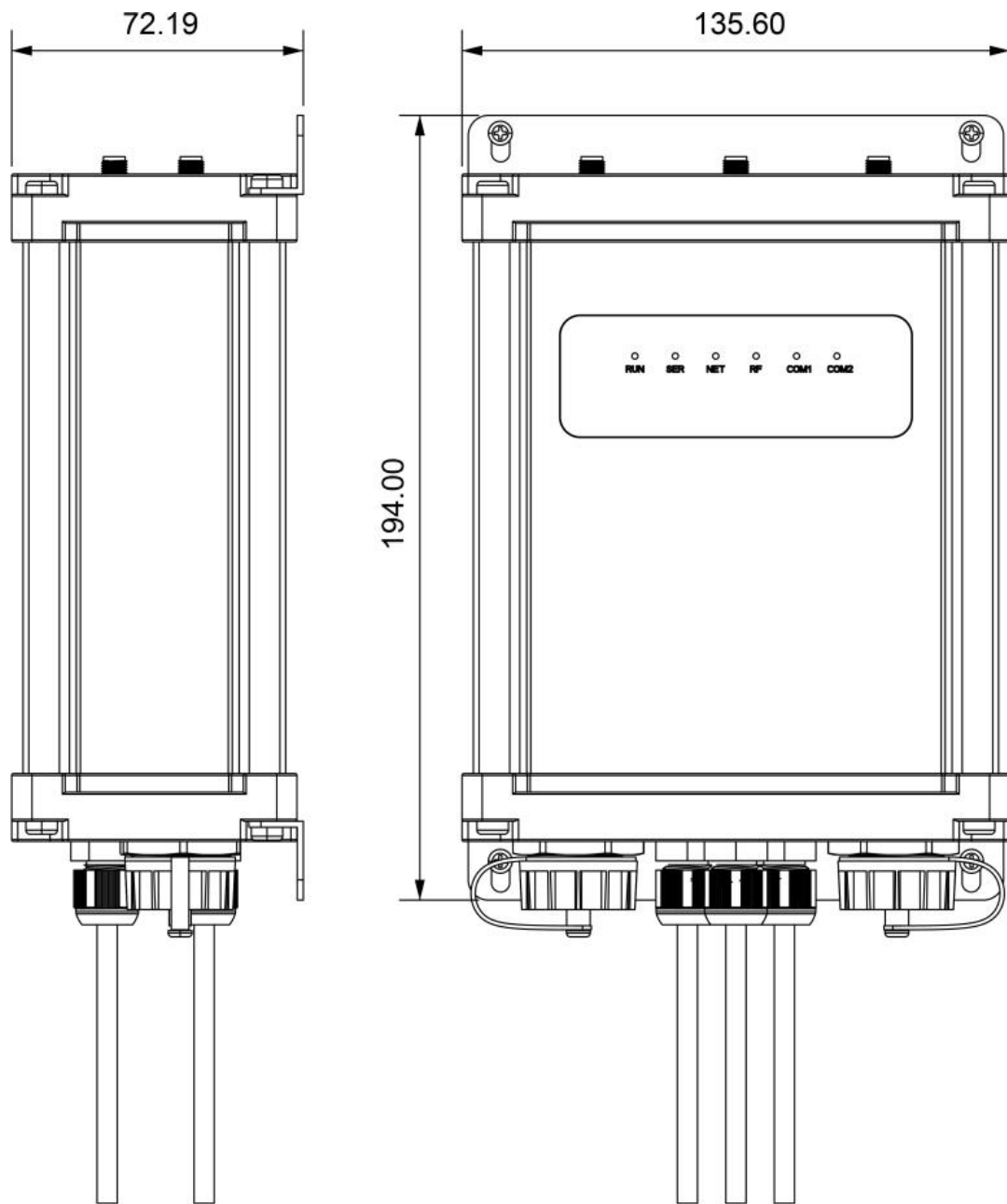
Interface Identification






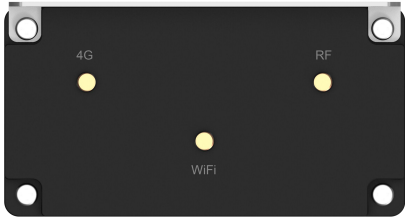

No.	Name	Picture	Details																																													
1	Ethernet		<table border="1"> <thead> <tr> <th>Color</th> <th>RJ45</th> <th>Identification</th> <th>Type</th> <th>Instruction</th> </tr> </thead> <tbody> <tr> <td>White Orange</td> <td>Pin1</td> <td>TX+</td> <td>O</td> <td>TX+(Sending+)</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></td> <td></td> <td></td> </tr> <tr> <td>White Blue</td> <td>Pin5</td> <td></td> <td></td> <td></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></td> <td></td> <td></td> </tr> <tr> <td>Brown</td> <td>pin8</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Color	RJ45	Identification	Type	Instruction	White Orange	Pin1	TX+	O	TX+(Sending+)	Orange	Pin2	TX-	O	TX-(Sending-)	White Green	Pin3	RX+	I	RX+(Receiving+)	Blue	Pin4				White Blue	Pin5				Green	Pin6	RX-	I	RX-(Receiving-)	White Brown	Pin7				Brown	pin8			
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Static IP: 169.254.254.254																																																
Supports profile import and logger firmware upgrade																																																
2	DC 12V		DC power input interface																																													
3	COM1/COM2		For RS485 bus communication																																													
4	USB Interface (Configurable)		Connect to PC USB interface																																													
5	RF antenna SMA Interface (Configurable)		To connect RF sucker antenna																																													

6	WIFI SMA Interface		To connect 2.4G sucker antenna
7	4G SMA Interface		To connect 4G sucker antenna

Product Size (Unit: mm)



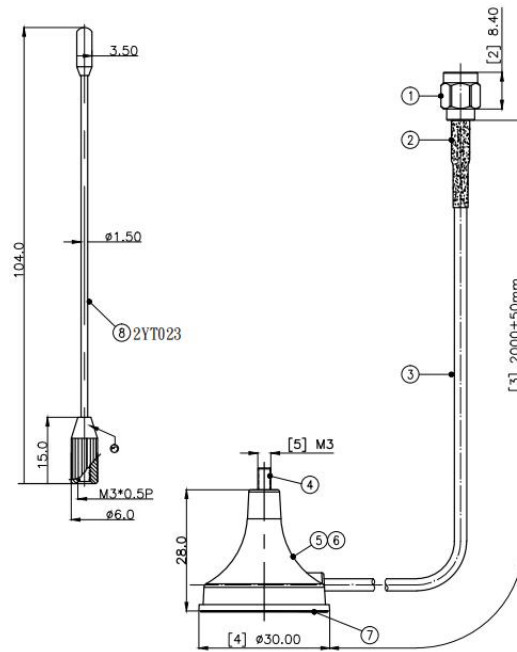
Product Picture

<p>Front</p>	
<p>Back</p>	
<p>Side</p>	
<p>Top</p>	
<p>Bottom</p>	

Antenna

WIFI&BLE antenna

External SMA sucker antenna needs to connect with 2.4GHz antenna.

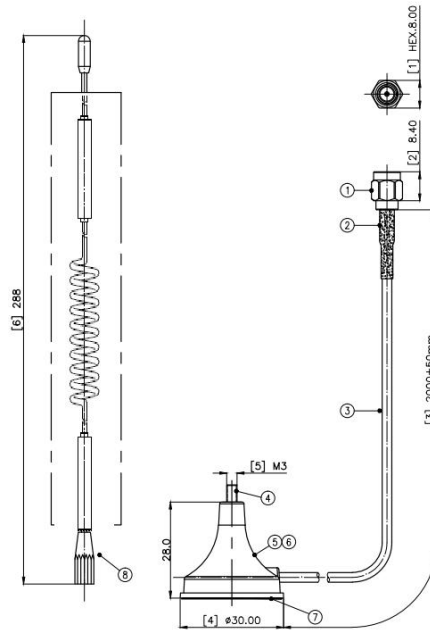


Antenna electrical performance index:

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

4G antenna

External SMA sucker antenna needs to connect with 4G LTE antenna.

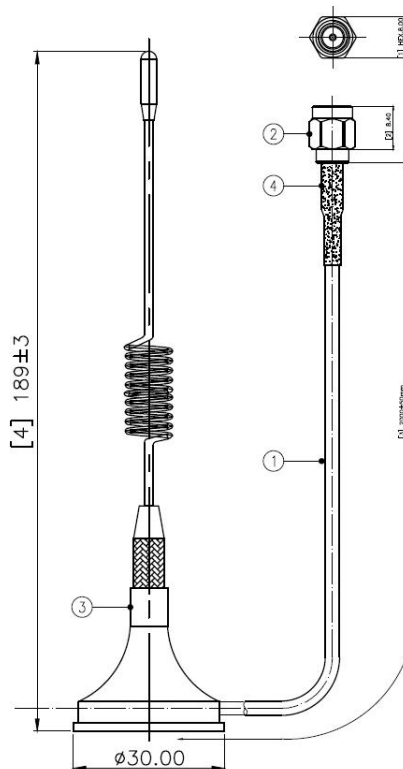


Antenna electrical performance index:

Classification	Performance Parameter
Frequency rang-GHz	4G LTE
VSWR	≤2
Input Impedance-Ω	50Ω
Gain-dBi	3dBi
Antenna Color	Black
Input connector	SMA

RF-868 antenna (Configurable)

External SMA sucker antenna needs to connect with 868MHz antenna.






Antenna electrical performance index:

Classification	Performance Parameter
Frequency rang-GHz	869.525MHz
VSWR	≤2
Input Impedance-Ω	50Ω
Gain-dBi	3dBi
Antenna Color	Black
Input connector	SMA

LED Indicator lights Instructions

Light			Running Status		
Name	Picture	Identification	ON	Flash	OFF
RUN		Power light/System running light	ON	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

RF		Connection with RF868/LoRa	Successful connection RF sub-device	/	Connection failure/No connection
COM1		Serial Port 1-Device connection light	Successful communication		Connection failure/No connection
COM2		Serial Port 2-Device connection light	Successful communication		Connection failure/No connection

Packing



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	1	--
2	SMA sucker antenna	3	One WiFi&BLE antenna One 4G antenna One RF868 antenna
3	Expansion screw	8	Specification: 6*30mm
4	DC 12V power	1	
5	2-core waterproof joint	3	Wire diameter: 3-7mm
6	3-core waterproof joint	1	Wire diameter: 3-7mm
7	RJ45 waterproof joint	1	