CHNT POWER 正泰电源系统

上海正泰电源系统

环境检测仪

安装使用手册

上海正泰电源系统有限公司

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在您开始之前…

尊敬的客户，感谢您选购本公司的环境检测仪(Intersensor)。本手册主要介绍了该产品的结构、外观、安装与设置以及故障诊断等方面的内容。

注意

风速与风向传感器的接线请参照原厂说明书。

声明

安装前请仔细阅读本手册，若未按本手册的说明进行安装和使用而出现设备损坏，本公司有权不予以质量保证。

适用对象

本手册的阅读对象是使用本产品的工程技术人员、系统集成商、工程师以及最终用户。

第一章　环境检测仪(Intersensor)总体介绍

1.1 概述

环境检测仪(Intersensor)通过各种预置的传感器，实现对太阳光照辐射强度、环境温度、电池板温度、风速及风向等环境参数的实时检测，同时提供了方便的通信接口，将检测数据上传给远程监控终端，如图 1-1 所示。

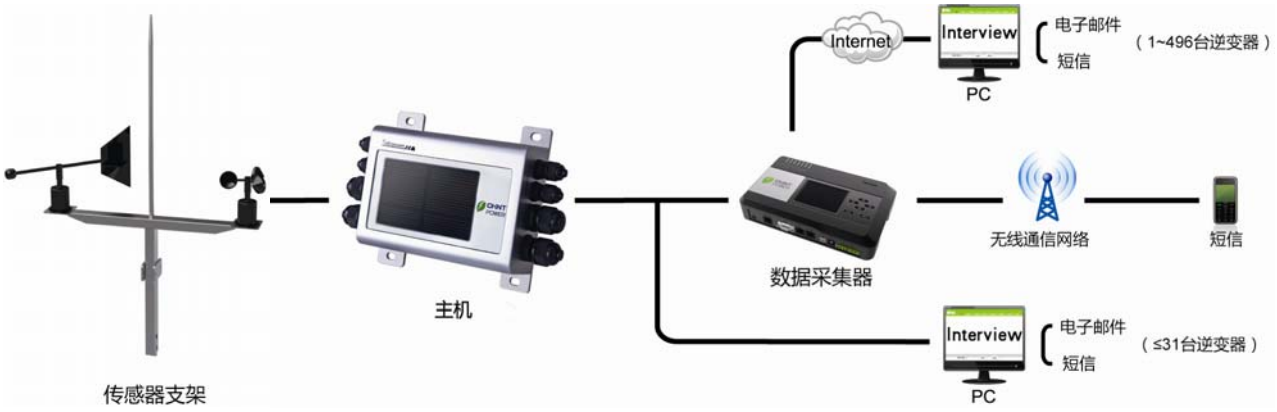

图 1-1 环境检测仪系统示意

1.2 装箱确认

本产品主要由主机包装箱、安装支架包装箱、风速风向传感器包装箱和 50 米电源线组成一个大的包装箱。其中风速、风向传感器可以选择性购买，如果未购买风速风向传感器，且直接将主机安装于光伏组件支架上，也可以不购买安装支架。

每个包装箱内均有一张装箱清单，请确认您收到的产品及配件是否齐全，有无损坏。如果出现不齐全或发现损坏请联系您的供应商。

1.2.1 主机包装箱

主机包装箱内所含部件见图 1-2。

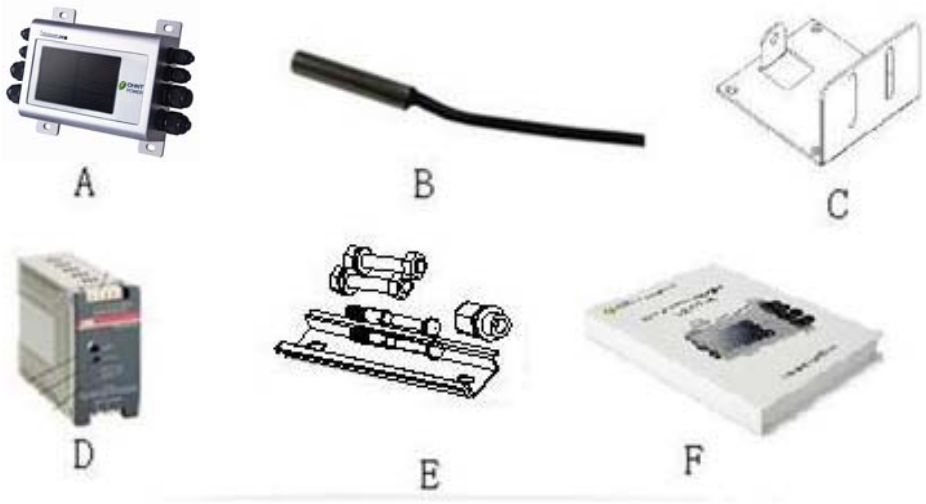

图 1-2 主机包装箱内的物品

表 1-1

标号	数量	描述
A	1	主机(集成太阳光照辐射强度传感器)
B	2	PT100温度传感器(附黑色胶带)
C	1	主机安装背板(附螺钉)
D	1	直流电源(单独包装)
E	1	直流电源导轨、电缆紧固头、螺钉
F	1	安装使用手册

注：对于 F 项，如果购买风速风向传感器和安装支架，安装使用手册放于大包装箱内。如果未购买风速风向传感器和安装支架，安装使用手册放于主机包装箱内。

1.2.2 安装支架包装箱

安装支架包装箱内所含部件见图 1-3。

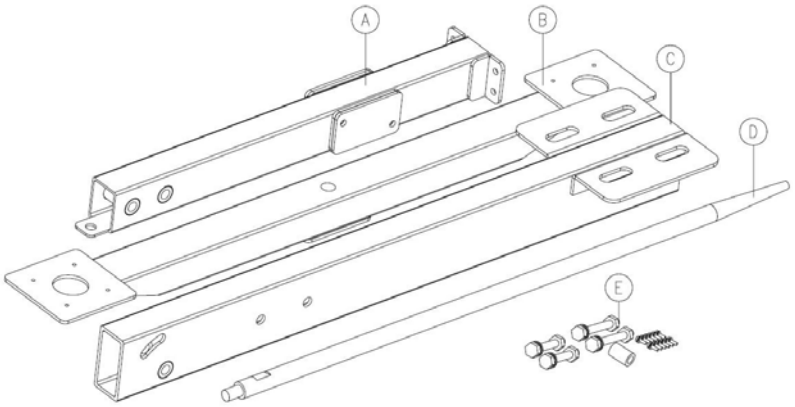

图 1-3 支架包装箱内的部件

表1-2

序号	数量	描述
A	1	竖直支架
B	1	水平支架
C	1	斜撑梁
D	1	避雷针
E	8	M3X12十字槽盘头螺钉
	4	M5X12十字槽盘头螺钉
	2	M8X45六角头螺栓、螺母、垫片
	2	M8X75六角头螺栓、螺母、垫片
	1	支撑钢管

*附安装支架说明书。

1.2.3 风速、风向传感器包装箱

风速、风向传感器包装箱内所含部件见图 1-4。

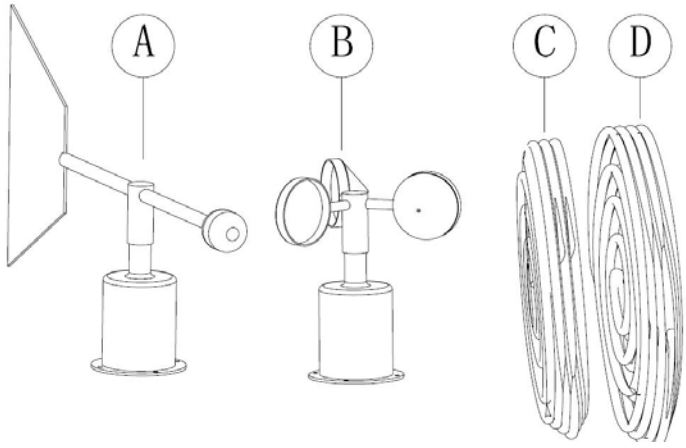

图 1-4 传感器包装箱内的部件

表1-3

序号	数量	描述
A	1	风向传感器
B	1	风速传感器
C	1	风速传感器电缆
D	1	风向传感器电缆

*附风速风向传感器说明书。

1.3 安装需要的工具

安装本产品需要使用的工具清单如表 1-4:

表1-4

序号	名称	规格	用途说明
1	一字螺丝刀	2#	锁三叶风杯及风向标
2	十字螺丝刀	2#	锁M3及M5十字盘头

			螺钉
3	梅花头螺丝刀	T20	背板螺钉
4	剥线钳	18-28AWG	信号线去外皮
5	冲击钻	钻头直径6mm	安装电源导轨
6	手电钻	钻头直径9mm	光伏组件支架钻孔安装主机支架
7	万用表		测量电源输出线“+”“ -”极
8	开口扳手	12mm	锁紧避雷针
9	开口扳手	14mm	锁紧M8六角头螺钉
10	尖嘴钳		剪线接线

第二章　器件介绍

环境检测仪(Intersensor)由主机、直流电源、传感器支架组成，详细介绍如下。

2.1 主机

主机外观如图 2-1，内部示意见 2-2，端子接线见表 2-1。

图 2-1 主机外观图

A：防水接头

B：集成式太阳辐射传感器

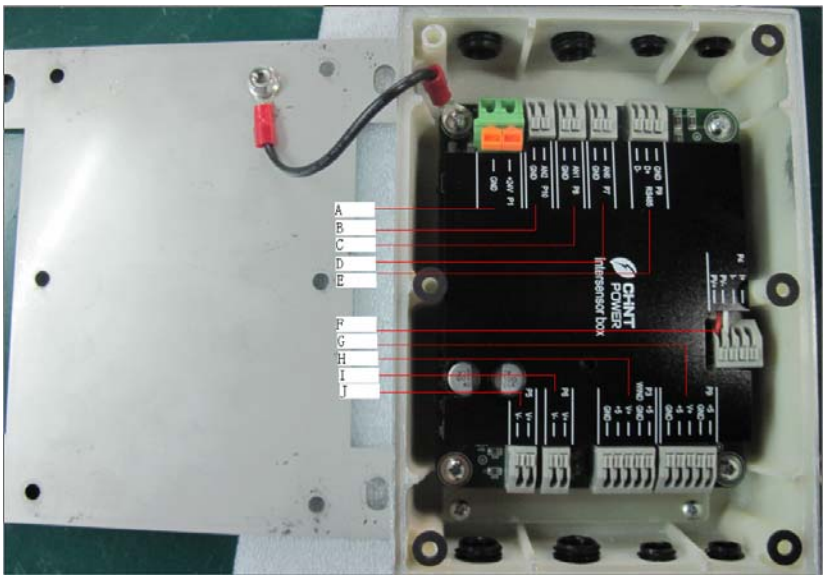

图 2-2 主机内部示意图

表 2-1

序号	端子	功能
A	P1	连接24V DC电源
B	P10	可连接标准信号输入（0-5V，0-10V，4-20mA）
C	P8	可连接标准信号输入（0-5V，0-10V，4-20mA）
D	P7	可连接标准信号输入（0-5V，0-10V，4-20mA）
E	P11	连接RS485通信线
F	P4	连接太阳辐射强度传感器(已连接)
G	P9	连接风向传感器
H	P3	连接风速传感器
I	P6	连接环境温度传感器
J	P5	连接电池板温度传感器

2.2 直流(DC)电源

直流电源外观如图 2-3 所示，端子及部件说明见表 2-2。

图 2-3 直流电源外观示意图

表 2-2

序号	功能	描述
①	OUTPUT L+, L-	直流输出端
②	DC OK	直流电源运行状态信号输出端
③	INPUT L, N, PE	交流电源输入端
④	OUTPUT OK	绿色指示灯亮则输出电压正常， 红灯亮则异常
⑤	OUTPUT Adjust	输出电压微调器
⑥	Circuit diagram	电源工作原理示意图

2.3 传感器支架

传感器支架示意见图 2-4。

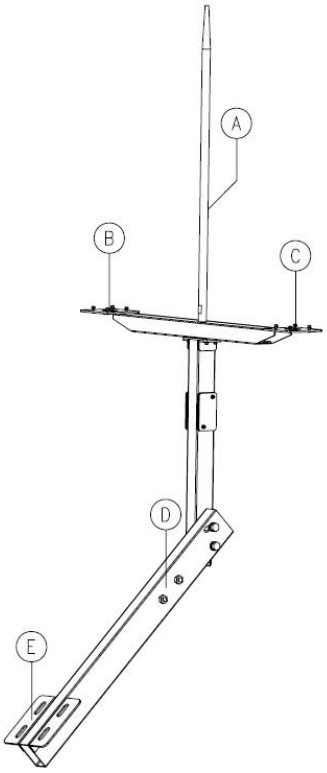

图2-4 传感器支架外观示意图

A：避雷针

B：风速传感器安装位置

C：风向传感器安装位置

D：主机安装位置

E：支架固定位置

第三章　整机安装

3.1 传感器支架安装

传感器支架应安装于与 DC 电源较近，且不能给光伏组件造成阴影的光伏组件支架上。

(1) 将斜撑梁固定在光伏组件支架上，连接螺钉需用光伏组件安装支架配套螺钉，如图 3-1；

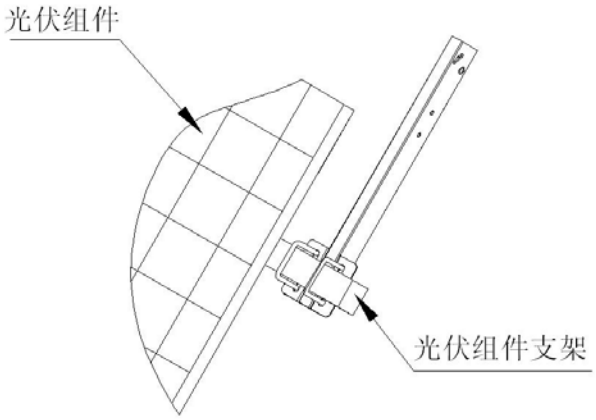

图 3-1 光伏组件及支架示意图

(2) 将避雷针安装在水平支架上，并用 12mm 开口扳手锁紧；用附带的 M5X12 盘头螺钉将水平支架与竖直支架连接并锁紧，如图 3-2；

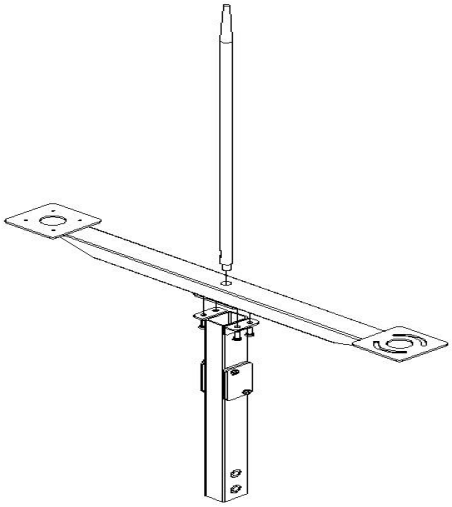

图 3-2 拼接传感器支架

(3) 将附件内支撑钢管放入斜撑梁架内腰型孔位置，用 M8X75 螺栓、螺母及垫片连接斜撑梁上部及竖直支架，调整好角度使竖直支架与地面垂直并锁紧，如图 3-3。

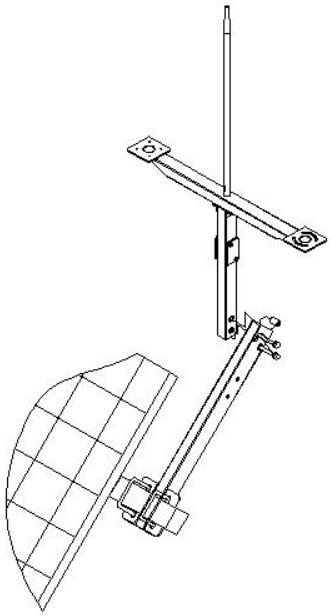

图 3-3 安装传感器支架

3.2 风速传感器安装

(1) 将风速传感器用附带的 M3x12 盘头螺钉固定在水平支架上，安装时应保证三叶风杯与地面水平，如图 3-4；

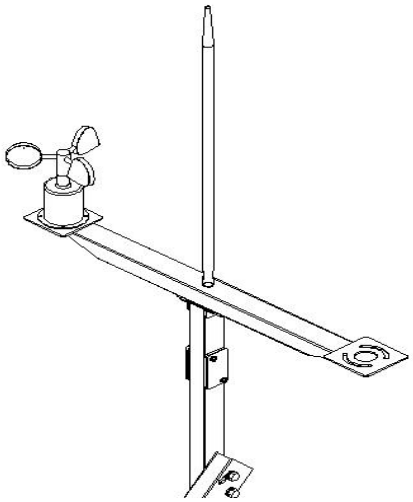

图 3-4 安装风速传感器

(2) 将三叶风杯用固定螺丝锁紧在杯体上方的轴上,如图3-5;

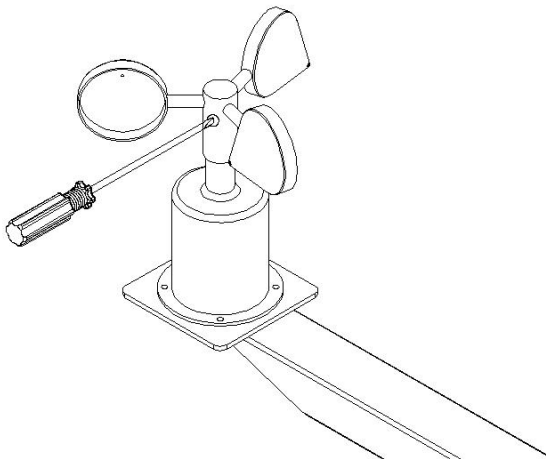

图 3-5 将叶片固定于风杯上

(3) 在支架的中空管内布置风速传感器与主机相连的电缆，并接好风速传感器端的接线。

3.3 风向传感器安装

(1) 将风向传感器杯体用附带的 M3x12 盘头螺钉安装于在水平支架横梁所示位置，安装时应保证杯体与地面水平，如图 3-6;

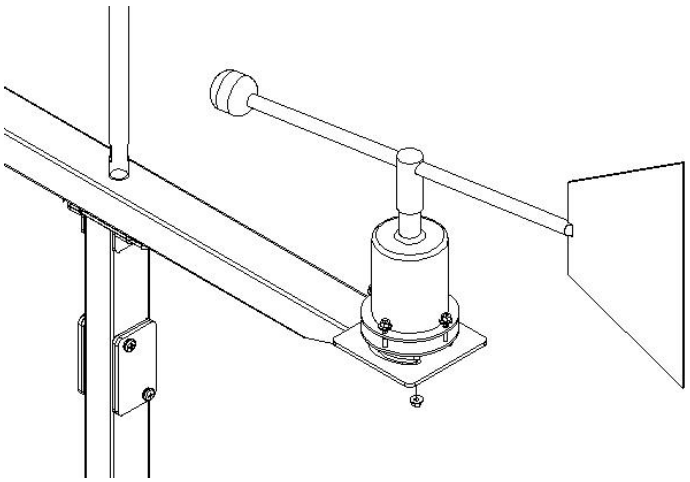

图 3-6 安装风向传感器

(2) 安装时将风标插入转轴，并将风标固定在杯体上方的轴上，这时将主机接通直流电源和检测仪监控软件，调整风叶箭头对准北面，然后锁紧固定螺丝，如图 3-7；

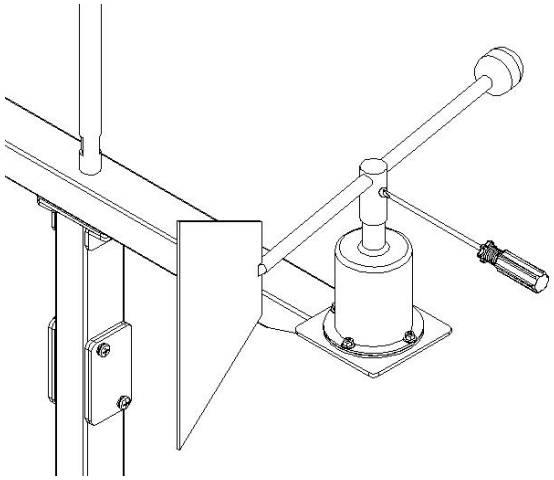

图 3-7 将风标固定于风杯上

(3) 在支架的中空管内布置风向传感器与主机相连的电缆，并接好风向传感器端的接线。

3.4 电池板温度传感器安装

在主机附近选择一个电池板，将电池板背面处理干净，再将温度传感器用附带的胶带粘贴于电池板背面，如图 3-8。

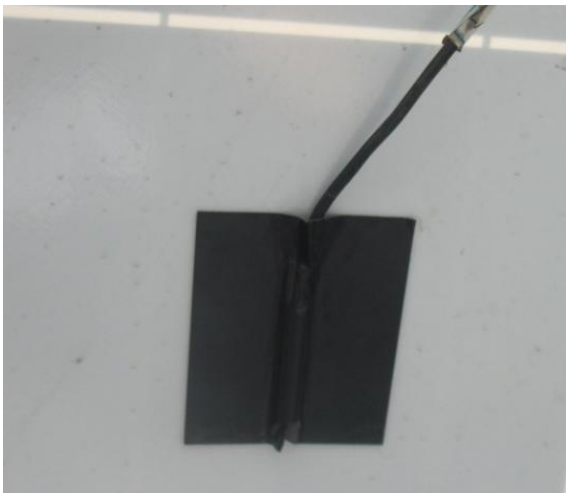

图 3-8 安装温度传感器于电池板上

3.5 环境温度传感器安装

将附件的防水接头安装于主机安装背板上，将 PT100 温度传感器穿入防水接头并调至合适的位置，旋紧尾帽，如图 3-9。

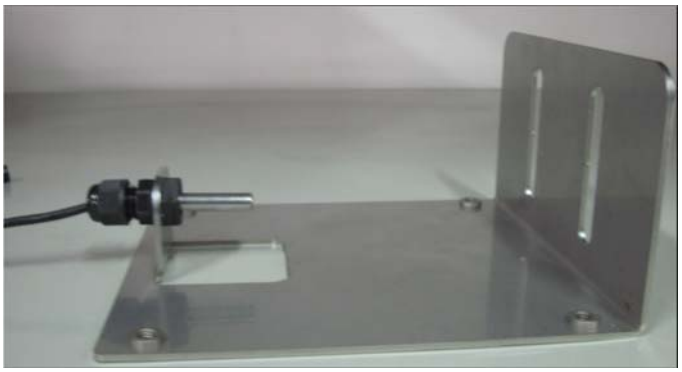

图 3-9 安装温度传感器于主机盒背板上

3.6 主机安装

主机既可安装在斜撑梁上，也可直接安装在光伏组件支架上。主机安装角度、朝向应保持与光伏组件的安装角度和朝向相同。

3.6.1 安装于斜撑梁上

(1) 用附件中 M8x45 六角头螺栓、螺母及垫片二组，将主机安装背板固定于斜撑梁上，如图 3-10(a)和 3-10(b)；

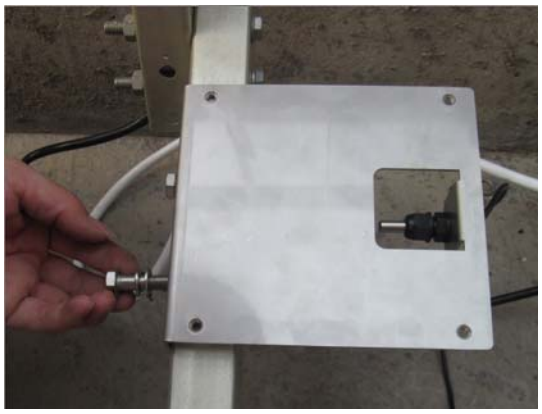

图 3-10(a)

图 3-10(b)

(2) 将接好传感器及系统配置完成的主机固定在背板上，如图 3-11。传感器的接线及系统配制请参见“系统设置”一章。

图 3-11 安装在斜撑梁上

3.6.2 安装于光伏组件支架上

(1) 首先在光伏组件支架上打孔，再将主机安装背板用附件内 M8x45 六角头螺栓、螺母及垫片二组，安装在光伏组件支架上，如图 3-12(a)和 3-12(b)；

图 3-12(a)

图 3-12(b)

(2) 将接好了传感器的主机固定在安装背板上，如图 3-13。传感器的接线及系统配制请参见“系统设置”一章。

图 3-13 安装在电池板支架上

3.7 直流(DC)电源安装

DC 电源应安装在室内或室外通风较好的控制箱内，应该尽可能靠近 220V 交流电源和主机。

(1) 首先在选定的箱柜上打孔，再将电源导轨安装在支撑面上并固定，如图 3-14；

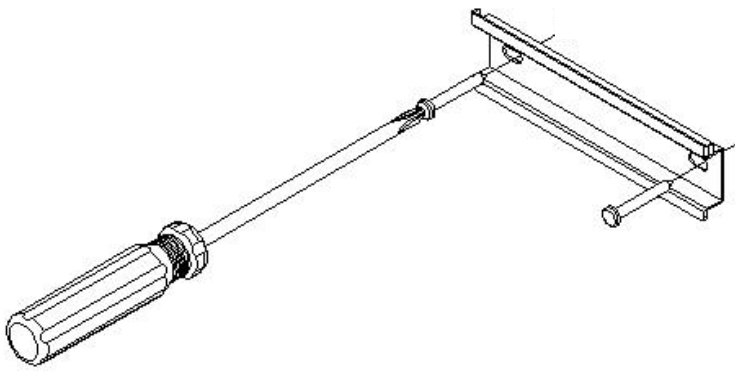

图 3-14 固定电源导轨

(2) 将 DC 电源固定在安装导轨上，如图 3-15;

图 3-15 固定 DC 电源

(3) 将交流 220V 电源线引入 DC 电源;

(4) 正泰电源供货时已提供 50m 电源线用作直流电源与主机间的连接电缆，如果二者之间距离大于 50 米，请用户自行购买。推荐型号为 SVT18AWGx2C 或外径小于 6mm 的双芯线。

*此电源连接线可和 485 网线同时铺设。

第四章 系统设置

本节将介绍如何将传感器接入主机，如何设置 RS485 通信参数和如何校正风向传感器指北。

4.1 打开主机

(1) 用梅花头螺丝刀将主机背板螺钉拆除，见图 4-1；

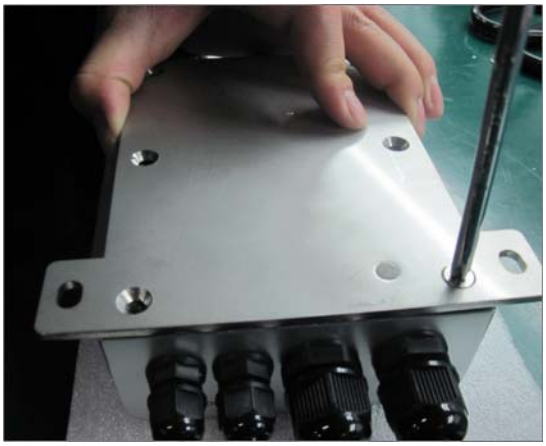

图 4-1 卸下背板螺丝

(2) 打开主机背板，见图 4-2。

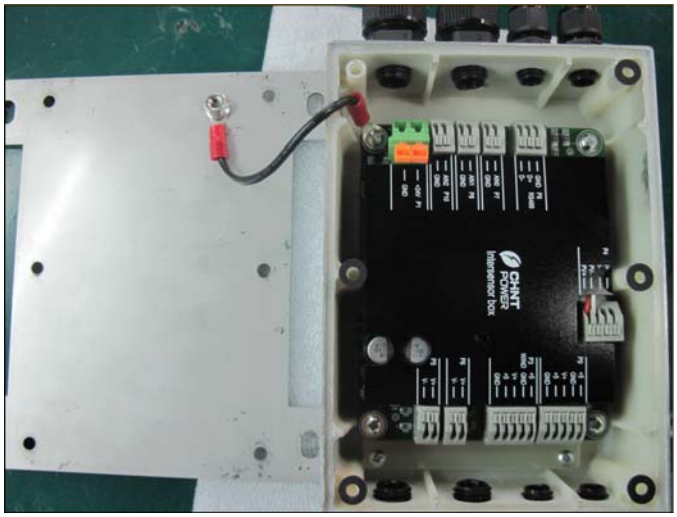

图 4-2 打开主机背板

4.2 连接风速传感器

将风速传感器连接电缆通过主机上的“WIND SPEED”防水接头，连接到 P3 端子，风速传感器连接电缆各芯线与 P3 端子对应关系如下：

各芯线	P3接线号	备注
红	+5	工作电源
黑	GND	电源地
黄	V+	风速输出信号
棕	+5	加热电源
蓝	GND	电源地

图 4-3 风速传感器各芯线连接

4.3 连接风向传感器

将风向传感器连接电缆通过主机上的“WIND DIRCETION”防水接头，连接到 P9 端子，风向传感器连接电缆各芯线与 P9 端子对应关系如下(+5、GND 为预留的加热电源)：

各芯线	P9接线号	备注
棕	+5	工作电源
蓝	GND	电源地
黄	V+	风向输出信号

	+5	预留加热电源
	GND	预留电源地

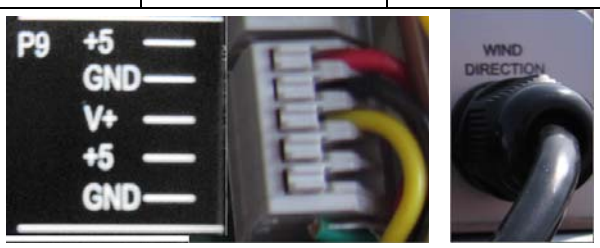

图 4-4 风向传感器各芯线连接

*产品出厂时，风向已校正在指北方向，现场安装应使用环境监测仪监控软件进行调整，风标箭头对准北面插入转轴固定即可。

4.4 连接电池板温度传感器

将温度传感器连接电缆通过主机盖上的“TEMP.-1”防水接头，连接到 P5 端子，温度传感器引出线压接时无极性要求，但要确保接触可靠。

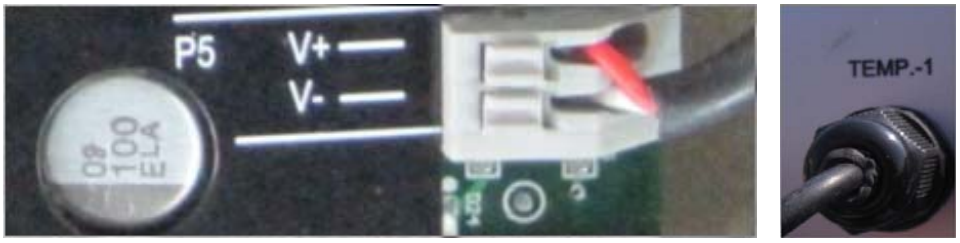

图 4-5 电池板温度传感器各芯线连接

4.5 连接环境温度传感器

将温度传感器连接电缆通过主机盖上的“TEMP.-2 ”防水接头，连接到 P6 端子，温度传感器引出线压接时无极性要求，但要确保接触可靠。

图 4-6 环境温度传感器各芯线连接

4.6 连接 RS485 通信线

将 RS485 通信线通过主机盖上的“RS485”防水接头，连接到 P11 端子，485 通信线各芯线与 P11 端子对应关系如下：

各芯线	P11接线号	备注
白橙	D+	RS485+
白绿	D-	RS485-
白棕	GND	RS485地

图 4-7 RS485 通信线连接

*通信参数设置：产品出厂时，默认的通信地址为 31，通信波特率为 9600bps。

4.7 连接 DC 电源线

将 24V DC 电源线通过主机上盖上的“POWER”防水接头，连接到 P1，连接时需注意与电源“+”“ -”极对应，接反会熔断主电路板上的贴片保险丝，各芯线接压对应关系如下：

各芯线	P1接线号	备注
黄白	+24V	24V电源正极
黑	GND	24V电源负极

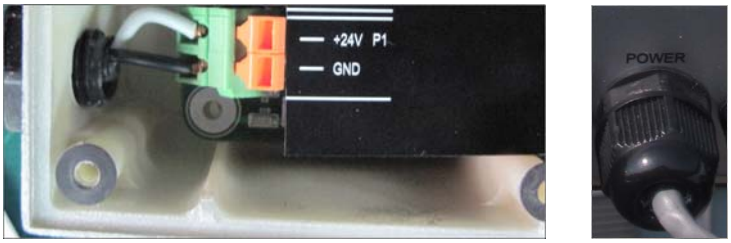

图 4-8 DC 电源线连接

4.8 防水密封

(1) 接线完成后，安装主机盒底板。安装前请先检查主机盒的密封条是否安装好，确认后锁紧底板螺钉。

(2) 安装好主机底板后，请确认防水接头是否已锁紧，未连接传感器的空余防水接头，请用防水塞棒塞住并锁紧。

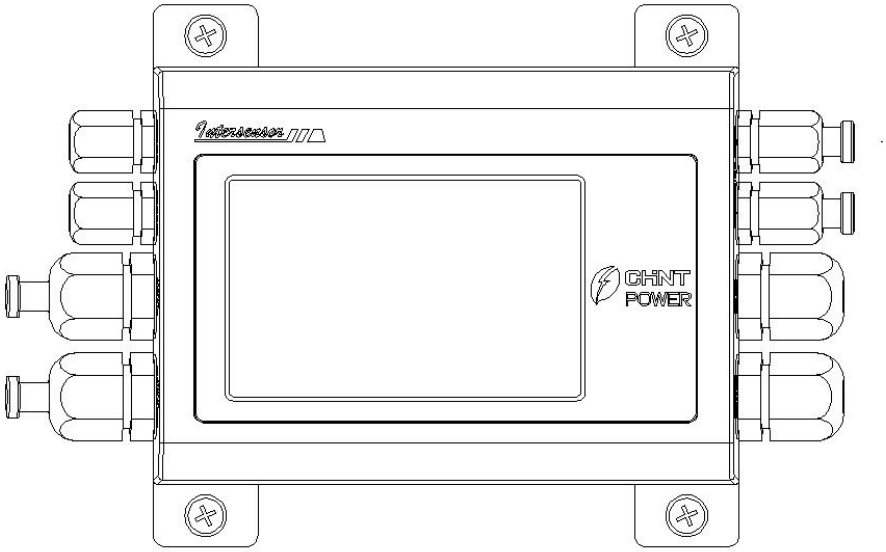

图 4-9 安装防水接头

第五章 故障检测

若遇到的故障不在此章节描述内，请拨打正泰电源系统有限公司售后服务热线(见封底)。

故障现象	故障可能原因	故障排除方法
后台监控找不到Intersensor设备	Intersensor的通信参数没有正确配置	按照“通信参数设置”正确配置
后台监控显示环境温度为555.5	环境温度传感器没有接好	打开主机检查温度传感器接线是否良好。
后台监控显示电池板温度为555.5	电池板温度传感器没有接好	打开主机检查温度传感器接线是否良好。

第六章 技术参数

6.1 Intersensor 参数

通讯方式	
标准通讯方式	RS485
电源要求	
电源转换	电源适配器
适配器电压	100 ~ 240Vac, 50/60Hz
额定电压 / 允许电压	24Vdc / 14~28Vdc
损耗功率	1.44W
操作环境	
环境温度	-20℃ ~ +50℃
防护等级	IP65
机械参数	
长X宽X高(mm)	140×43×100
重量(g)	950
附件(含传感器)	
光照辐射强度传感器	●
光伏组件温度传感器	●
环境温度传感器	●
风速传感器	○
风向传感器	○
传感器支架	○
电源适配器	●

●标准配置 ○可选配置

6.2 传感器参数

传感器类型	光照辐射强度传感器	光伏组件温度传感器	环境温度传感器	风速传感器	风向传感器
技术参数					
材料	多晶硅	PT100		塑性材料	塑性材料
工作温度	-40 ~ +85℃	-20 ~ +110℃		-40 ~ +80℃	-40 ~ +80℃
测量范围	0~1500W/m²	-20 ~ +100℃	-20 ~ +85℃	0~70m/s	0 ~ 360°
测量精度	±5%	±0.1℃		±0.1 m/s	0.1%

6.3 DC 电源参数

输入参数	100-240V AC/47-63Hz
输出参数	24V DC/1.25A
宽x高x长	43.5x88.5x115 (mm)
重量	0.29kg
安装方式	壁式导轨安装
安装环境	室内
工作环境	-25—70℃
防护等级	IP20

第七章 质量保证

7.1 质保期

本产品质保期为 24 个月，即安装日起计算 24 个月；有合同约定的，按照合同所定质保期执行。

7.2 责任豁免

1、运输途中的损坏；

2、超出本手册规定的环境下运行；

3、产品使用不正确或不恰当（包括安装和使用）；

4、未经授权擅自更改产品或所提供的软件；

5、忽视产品及文档中已包含的安全警告和相关法定的安全规范；

6、发生无法预料的灾难或不可抗拒的事故。

7.3 质量条款（保修条款）

1、质保期内发生故障的产品，本公司将免费维修或者更换新产品；

2、 更换下的不合格的产品应返回本公司；

3、 需提供本公司检修设备的合理时间。

如果您有关于环境检测仪(Intersensor)的任何问题请与我们联系，我们将非常乐意为您服务。

上海正泰电源系统有限公司
总部：中国上海市松江区文合路 855 号 4 号楼
总机：+86-021-37791222
传真：+86-021-37791222-6001
网址：www.chintpower.com
服务热线：021-37791222-6300
邮箱：service.cps@chint.com

正泰电源系统环境监测仪安装使用说明书（BOM 9.0020.0020C0）第一次印刷。
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CPS Intersensor

Installation and Operation Manual

SHANGHAI CHINT POWER SYSTEMS CO., LTD.

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Before You Start…

Dear customers, thank you for choosing the Intersensor product of our company. This manual mainly focuses on the structure, appearance, installation, configuration and troubleshooting, etc. of the Intersensor.

Caution

For the wiring of wind speed and direction sensors, please refer to the manual of original manufacturer.

Statement

Please read this manual carefully before installation. The warranty will be invalid for any damage of the Intersensor system due to improper installation and operation.

Target users

This manual is prepared for engineering and technical personnel, system integration suppliers, engineers and end users who use the Intersensor.

Chapter 1 General Introduction of Intersensor

1.1 Overview

Intersensor is used to achieve real time monitoring of the environmental parameters including solar radiation, ambient temperature, PV panel temperature, wind speed and direction etc through various preset sensors. At the same time, convenient communication interfaces are provided to upload the detection data to the remote monitoring terminal, as shown in Figure 1-1.

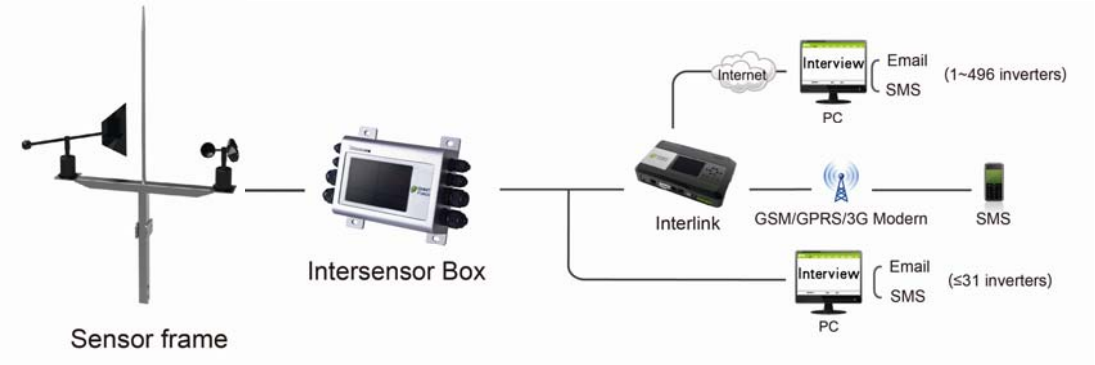


Fig 1-1 Diagram of Intersensor System

1.2 Packing confirmation

The product package consists of a string of 50 meter long power line and 3 small packages inside, which are key components of Intersensor, mounting brackets, wind speed and direction sensors. The wind speed and direction sensors are optional for sale. Besides, if the Intersensor is mounted on the PV panel bracket, the mounting brackets are optional as well.

There is a checklist in each product package. Please

contact the supplier if the product or components are incomplete or damaged.

1.2.1 Packing list of Intersensor key components

The intersensor key components are shown in Fig 1-2.

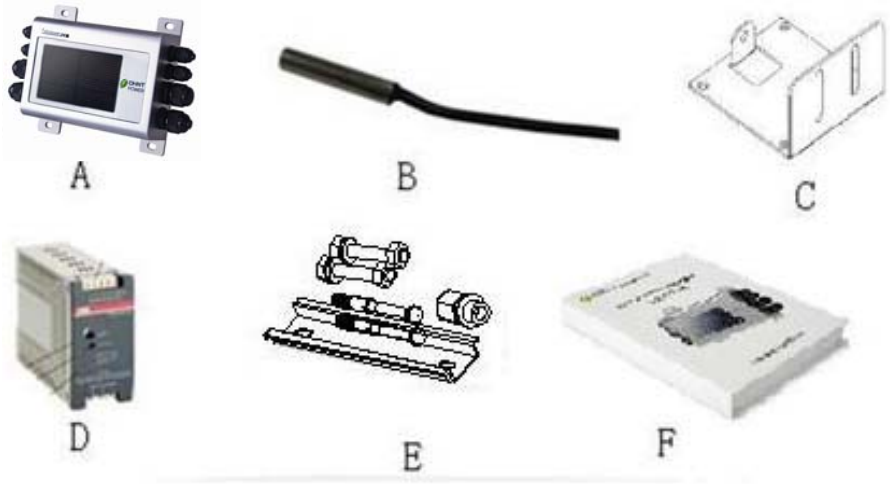


Fig 1-2 Items inside the main package

Table 1-1

Label	Qty	Description
A	1	Intersensor BOX integrated with solar radiation sensor
B	2	PT100 temperature sensor (with black adhesive tape)
C	1	Intersensor BOX mounting backboard (with screws)
D	1	DC power supply (separate package)
E	1	DC Power supply mounting guide rail, cable terminals and screws
F	1	Installation and Operation Manual

Remark: For item F, if the wind speed & direction sensors and mounting brackets are purchased, the user

manual will be put inside the product package instead of the key components package.

1.2.2 Packing list of sensor mounting bracket (optional)

Components in the mounting bracket package are shown in Fig 1-3.

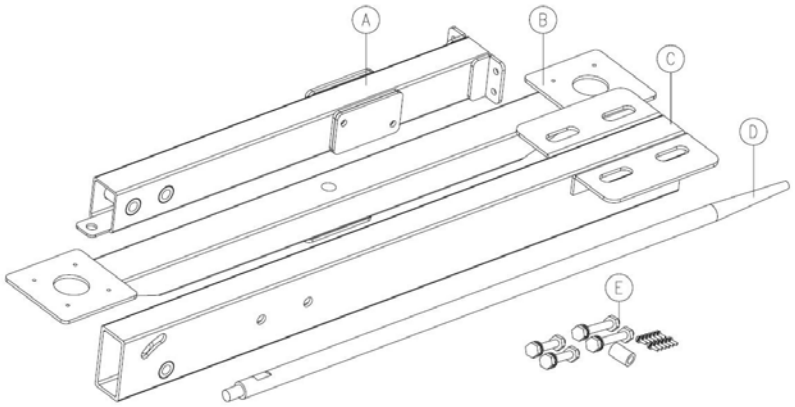


Fig 1-3 Key components of mounting bracket

Table 1-2

Label	Qty	Description
A	1	Vertical support
B	1	Horizontal support
C	1	Diagonal supporting arm
D	1	lightning rod
E	8	M3X12 cross recessed pan head screws
	4	M5X12 cross recessed pan head screws
	2	M8X45 hexagonal bolts, nuts and gaskets
	2	M8X75 hexagonal bolts, nuts and gaskets
	1	Supporting steel tube

*The manual of mounting bracket is enclosed.

1.2.3 Packing list of wind speed and direction sensor (optional)

Key components in the package are shown in Fig. 1-4.

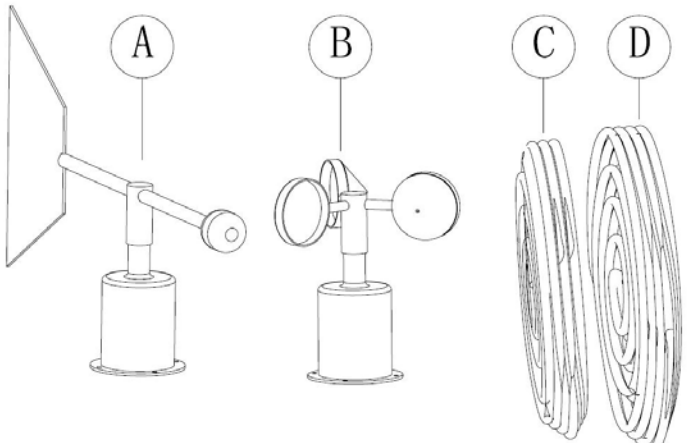


Fig 1-4 Key components inside the package

Table 1-3

Label	Qty	Description
A	1	Wind speed sensor
B	1	Wind direction sensor
C	1	Cables of wind speed sensor
D	1	Cables of wind direction sensor

*The manual of wind speed and direction is enclosed.

1.3 Tools for installation

Tools for the installation of this product are shown in Table 1-4:

Table 1-4

Serial No.	Description	Specification	Application
1	Straight screwdriver	2#	For wind speed and direction sensors
2	Cross head screwdriver	2#	For M3 and M5 cross-shaped screws
3	Spline screwdriver	T20	For screws on the mounting backboard
4	Wire stripper	18-28AWG	For signal wires
5	Impact drill	drilling head of 6mm diameter	For mounting lead rail of power supply
6	Electric hand drill	drilling head of 9mm diameter	For mounting Intersensor box on PV panel bracket
7	Multimeter		Measure polarity of power output
8	Open end wrench	12mm	Secure lightning rod
9	Open end wrench	14mm	For M8 hexagonal screws
10	Sharp-nose pliers		Cut and connect wires

Chapter 2 Description of parts

Intersensor system consists of Intersensor BOX, DC power supply and sensor support. The following is the detailed introduction.

2.1 Intersensor BOX

The intersensor box is shown in Fig. 2-1. The internals are shown in Fig. 2-2.

Fig 2-1 Appearance of Intersensor BOX

A: Waterproof connection terminal

B: Integrated sunlight irradiation strength sensor

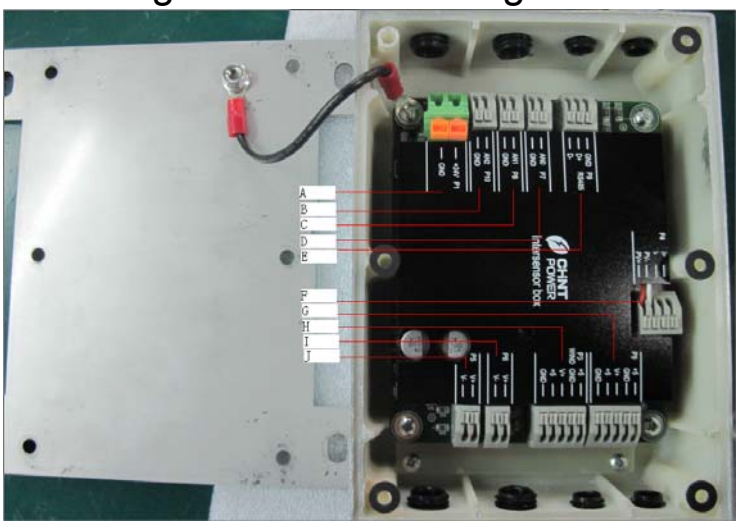


Fig 2-2 Internals of intersensor BOX

The terminal connections are shown in Table 2-1.

Table 2-1

Location	Terminal No.	Description
A	P1	Connect to 24V DC power supply
B	P10	Can connect to standard signal input (0-5V, 0-10V 4-20mA)
C	P8	Can connect to standard signal input (0-5V, 0-10V 4-20mA)
D	P7	Can connect to standard signal input (0-5V, 0-10V 4-20mA)
E	P11	Connect to RS485 communication cable
F	P4	Connect to sunlight radiation strength sensor
G	P9	Connect to wind direction sensor
H	P3	Connect to wind speed sensor
I	P6	Connect to ambient temperature sensor
J	P5	Connect to PV panel temperature sensor

2.2 DC power supply

The appearance of DC power supply is shown in Fig. 2-3. Terminals and components are shown in Table 2-2.

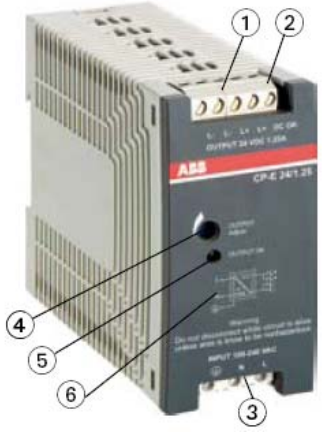


Fig 2-3 Diagram of DC power supply

Table 2-2

Location	Function	Description
①	OUTPUT L+, L-	DC output
②	DC OK	DC working status output
③	INPUT L, N, PE	AC input
④	OUTPUT OK	Output voltage is normal when green light is on
⑤	OUTPUT Adjust	Output voltage trimmer
⑥	Circuit diagram	Power supply working principle diagram

2.3 Sensor mounting bracket

The sensor mounting bracket is shown in Fig. 2-4.

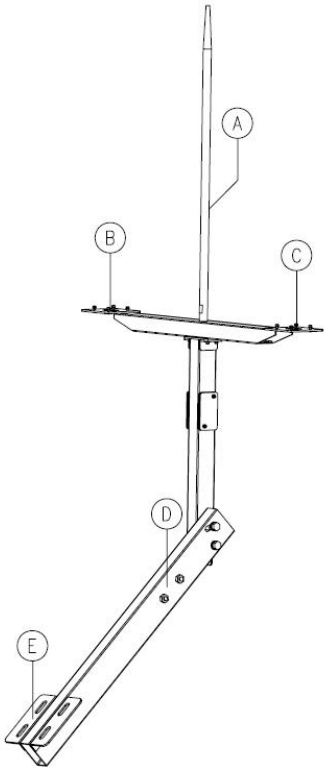


Fig 2-4 Sketch of mounting bracket

A: Lightning rod

B: Wind speed sensor mounting position

C: Wind direction sensor mounting position

D: Intersensor BOX mounting position

E: Bracket secure position

Chapter 3 Installation

3.1 Mounting of sensor support

The sensor bracket should be mounted on the PV panel bracket near the DC power supply and should not create a shadow on the PV panels.

(1) Secure the diagonal supporting arm at the PV panel bracket. Screws of PV panel bracket should be used, as shown in Figure 3-1.

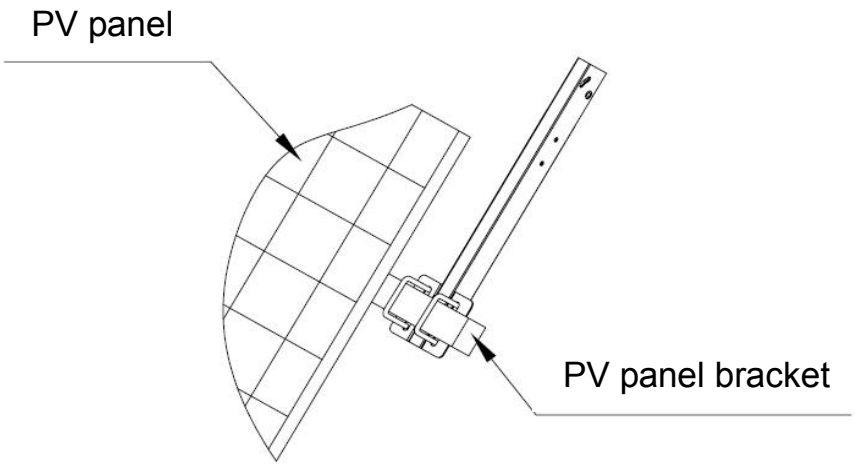


Fig 3-1 Securing diagonal supporting arm on PV panel bracket

(2) Secure the lightning rod on the horizontal supporting arm and tighten with the 12mm open end wrench; Use M5X12 pan head screws to secure the horizontal and vertical supporting arms, as shown in Figure 3-2.

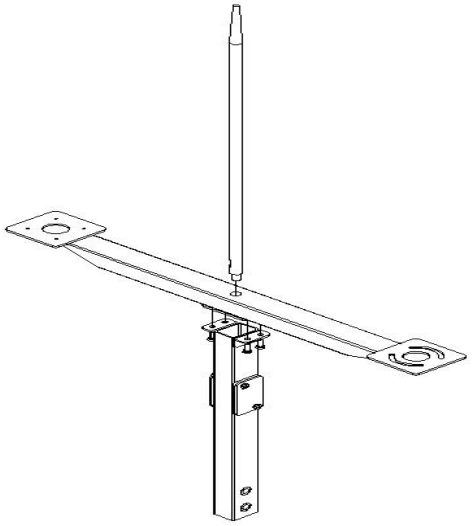


Fig 3-2 Connecting lightning rod and supporting arms

(3) Put the supporting steel tube through the waist-shaped hole on the diagonal supporting arm and use M8X75 bolts, nuts and gaskets to connect the upper section of the diagonal supporting arm with the vertical arm.

Then adjust and secure the vertical supporting arm 90 degree to the ground, as shown in Figure 3-3.

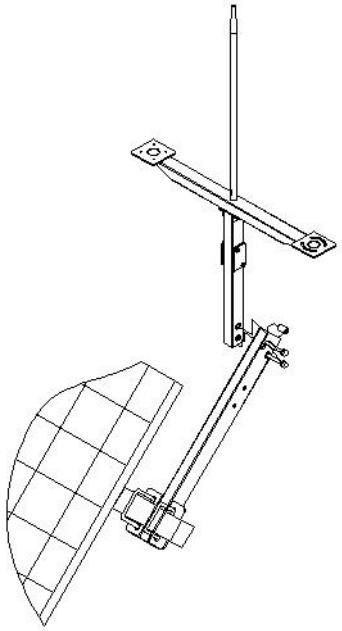


Fig 3-3 Connection between vertical and diagonal arms

3.2 Mount the wind speed sensor

(1) Secure the wind speed sensor with M3X12 pan head screws on the horizontal supporting arm. Make sure that the clover leaf wind cup is parallel with the ground, as shown in Figure 3-4.

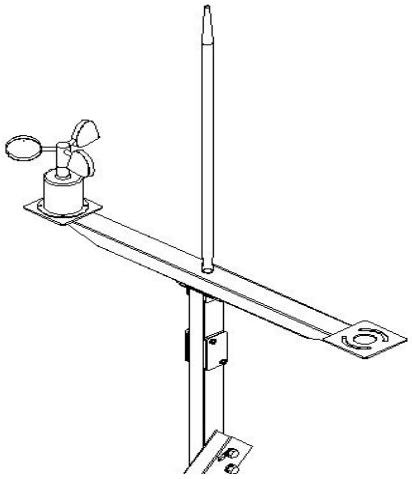


Fig 3-4 Mounting wind speed sensor

(2) Secure the clover leaf wind cup to the axle above the cup with a screwdriver, as shown in Figure 3-5.

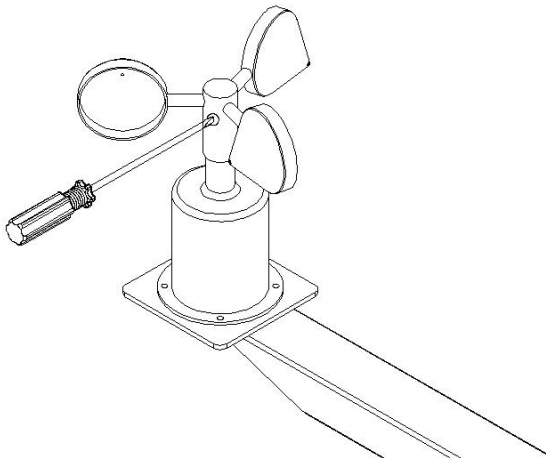


Fig-3-5 Securing clover leaf on the wind cup

(3) Allocate the cables within the hollow tubes of the

supporting arms to connect the wind speed sensor with the Intersensor BOX and terminate the cables on the wind speed sensor end.

3.3 Mount the wind director sensor

(1) Secure the wind direction sensor with M3X12 pan head screws on the right side of the horizontal supporting arm. Make sure that the cup is parallel with the ground, as shown in Figure 3-6.

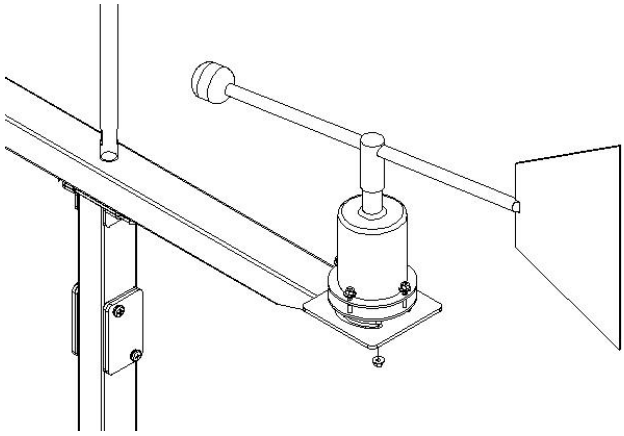


Fig 3-6 Mounting wind direction sensor

(2) Insert the wind vane into the rotating axle and secure the wind vane on the axle above the cup with a screwdriver. Then switch on the DC power for the Intersensor BOX and the detector monitoring software. Adjust the head of wind vane to the north direction and tighten the screws, as shown in Figure 3-7.

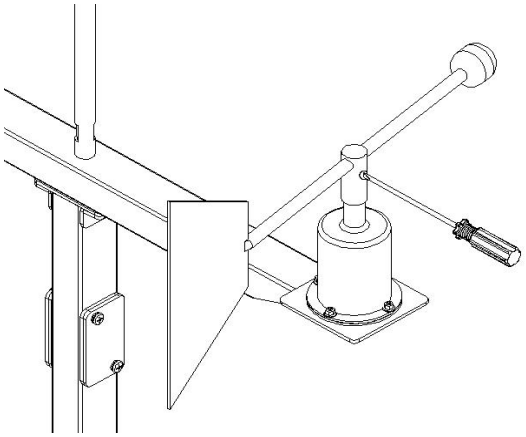


Fig 3-7 Securing wind vane on the cup

(3) Allocate the cables within the hollow tubes of the supporting arms to connect the wind direction sensor with the Intersensor BOX.

3.4 Install the PV panel temperature sensor

Choose a PV panel with the back cleaned near the Intersensor BOX. Attach the temperature sensor on the back of PV panel with tape, as shown in Figure 3-8.

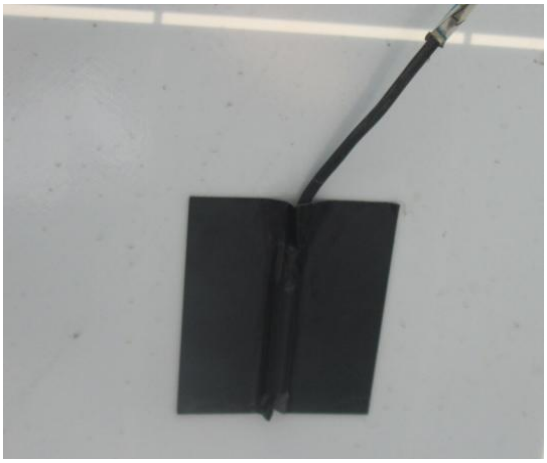


Fig 3-8 Installing temperature sensor on PV panel

3.5 Install the ambient temperature sensor

Secure the waterproof terminal on the backboard of the Intersensor BOX. Then put the PT100 temperature sensor through the waterproof terminal and adjust to the appropriate position and tighten the rear cap, as shown in Figure 3-9.

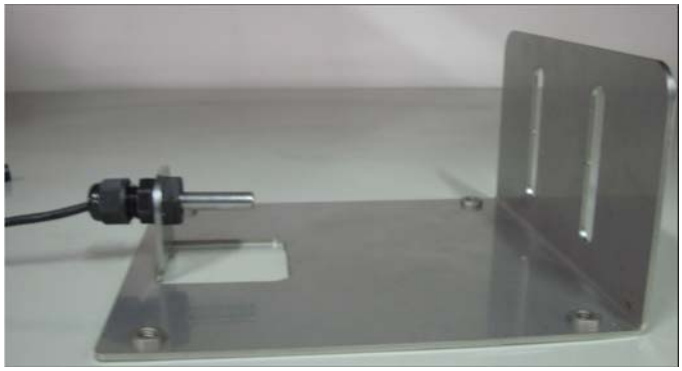


Fig 3-9 Installing ambient temperature sensor

3.6 Mount the Intersensor BOX

Intersensor BOX can be mounted on the diagonal supporting arm and can also be directly mounted on the support of the PV assembly. The mounting angle and orientation of the Intersensor BOX should be the same as the mounting angle of the PV assembly.

3.6.1 Mounting on the diagonal supporting arm

(1) Secure the mounting backboard of Intersensor BOX on the diagonal supporting arm with two groups of M8X45 hexagonal head bolts, nuts and gaskets, as shown in Figure 3-10(a) and 3-10(b).

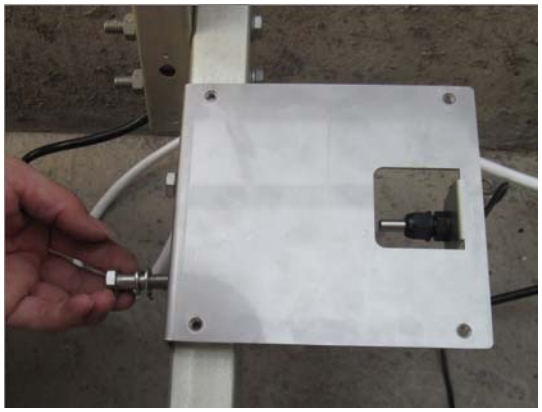


Fig 3-10(a)

Fig 3-10(b)

(2) Configure the Intersensor BOX and make sure that all the sensors are well connected before securing the BOX on the backboard, as shown in Figure 3-11. Please refer to “Intersensor system connection” for the wiring of sensors and system configuration.

Fig 3-11 Mounting Intersensor BOX on diagonal supporting arm

3.6.2 Mounting on the PV panel bracket

(1) Drill holes on the PV panel bracket and mount the mounting backboard of the Intersensor BOX on the PV panel bracket with two groups of M8X45 hexagonal bolts, nuts and

gaskets, as shown in Figure 3-12(a) and 3-12(b)

Fig 3-12(a)

Fig 3-12(b)

(2) Secure the Intersensor BOX connected with the sensors on the backboard, as shown in Figure 3-13. Please refer to “Intersensor system connection” for the wiring of sensors and system configuration.

Fig 3-13 Mounting intersensor BOX on PV panel bracket

3.7 Mounting of DC power supply

DC power supply should be mounted inside the control box indoors or outdoors with good ventilation. It should be near the 220V AC power supply and Intersensor BOX as

much as possible.

(1) Drill holes on the chosen cabinet and secure DC power guide rail on bearing surface, as shown in Figure 3-14.

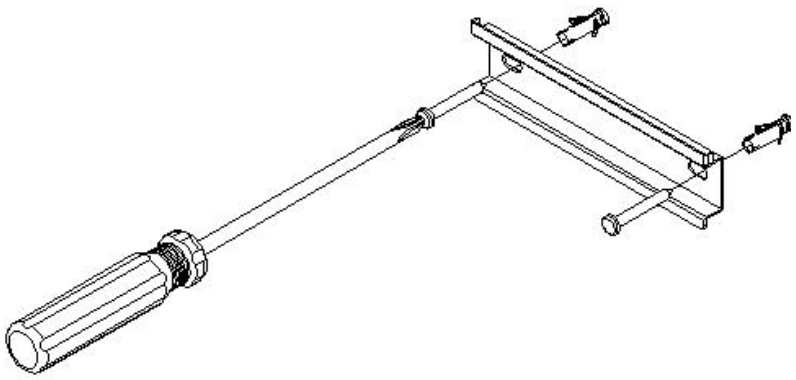


Fig 3-14 Securing guide rail on bearing surface

(2) Secure the DC power supply on guide rail, as shown in Figure 3-15.

Fig 3-15 Mounting DC power supply

(3) Connect 220V AC power cables to the DC power supply.

(4) CPS provides a 50m power cable to connect DC power supply with the Intersensor BOX. Customer can

purchase power cables longer than 50m if necessary. The recommended type of cable is SVT18AWGx2C or double core cable (<6mm outer diameter).

*The power cables can be installed with RS485 network cables together.

Chapter 4 Intersensor system connection

In this chapter, the sensor connection to Intersensor BOX, configuration of RS485 communication parameters and calibration of wind direction sensor orientation are described.

4.1 Open the Intersensor BOX

(1) Disassemble the backboard of Intersensor BOX with a spline screwdriver, as shown in Fig. 4-1.

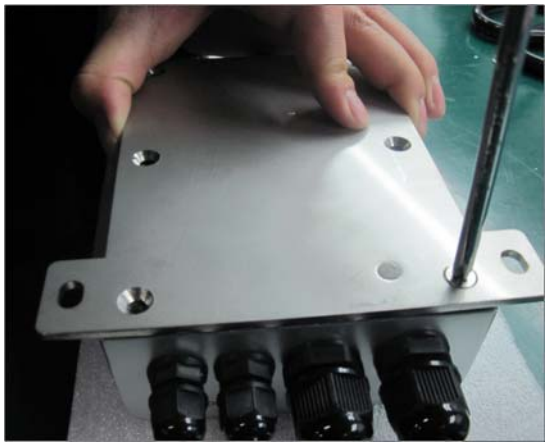


Fig 4-1 Remove the backboard

(2) Open the Intersensor BOX, as shown in Fig.4-2

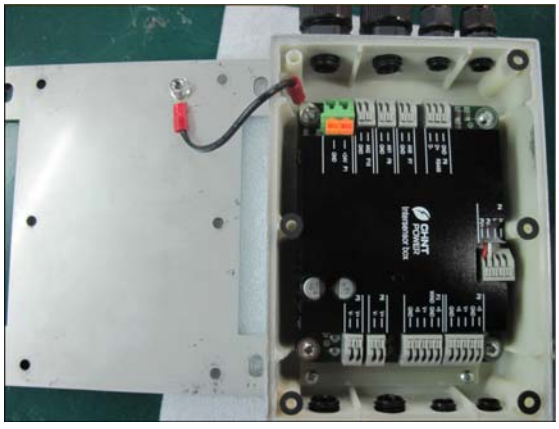


Fig 4-2 Internals of Intersensor BOX

4.2 Connect wind speed sensor

Connect the wind speed sensor connection cables to P3 terminal through “WIND SPEED” waterproof terminals on the BOX. The corresponding relationship between the connection cable core wires of the wind speed sensor and P3 terminal is shown in the table below:

Core wires	P3 connection No.	Remarks
Red	+5	Working power supply
Black	GND	Power supply grounding
Yellow	V+	Wind speed output signal
Brown	+5	Power supply for heating
Blue	GND	Power supply grounding

Fig 4-3 Wiring of wind speed sensor

4.3 Connect wind direction sensor

Connect the wind direction sensor connection cables to P9 terminal through “WIND DIRECTION” waterproof terminal on the BOX. The corresponding relationship between the sensor connection cable core wires and P9 terminal is shown in the table below (+5 and GND are reserved power supply for heating):

Core water	P9 Connection No.	Remarks
Brown	+5	Working power supply
Blue	GND	Power supply Grounding
Yellow	V+	Wind direction output signal
	+5	Reserved power supply for heating
	GND	Reserved power supply grounding

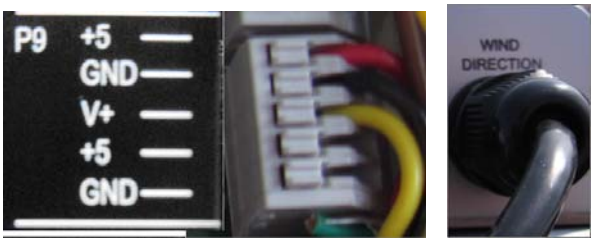


Fig 4-4 Wiring of wind direction sensor

*The wind direction had been calibrated to direct to the north before the product is released from the factory. The Intersensor monitoring software should be used for adjustment during installation on site. The wind vane only needs to be directed to N, inserted into the rotating axle and secured.

4.4 Connect the PV panel temperature sensor

Connect the PV panel temperature sensor connection cable to P5 terminal through the “TEMP.-1” waterproof terminal on the BOX. No polarity is required for the compression connection of the temperature sensor cable. But make sure that the contact is reliable.

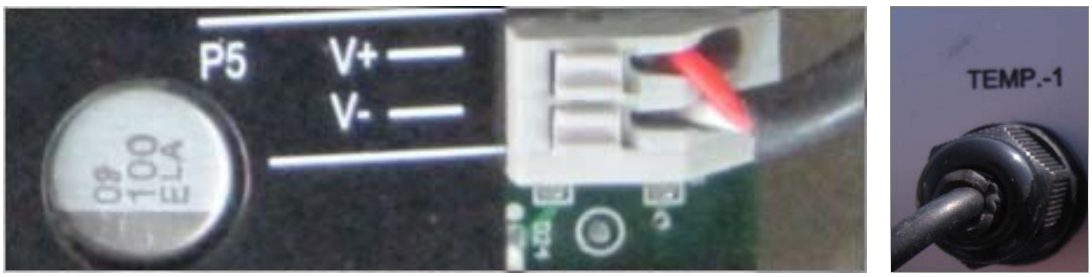


Fig 4-5 Wiring of PV panel temperature sensor

4.5 Connect the ambient temperature sensor

Connect the ambient temperature sensor connection cable to P6 terminal through “TEMP.-2” waterproof terminal on the BOX. No polarity is required for the compression connection of the temperature sensor cable. But make sure that the contact is reliable.

Fig 4-6 Wiring of ambient temperature sensor

4.6 Connect RS485 communication cables

Connect RS485 communication cables to P11 terminal through “RS485” waterproof terminal on the BOX. The corresponding relationship between 485 communication cable core wires and P11 terminal is shown in the table below:

Signal cables	P11 connection No.	Remarks
White-orange	D+	RS485 +
White-green	D-	RS485 -
White-brown	GND	RS485 grounding

Fig 4-7 Wiring of RS485 communication

*Configuration of communication parameters: The default communication address is 31 when the product is released from the factory. The communication baud rate is 9600bps.

4.7 Connect DC power cable

Connect 24V DC power cable to P1 terminal through “POWER” waterproof terminal on the BOX. Pay attention to the corresponding relationship of various signal cables. Otherwise, the SMD fuse on the main circuit board will burn out. The corresponding relationship of the core wires compression connections are shown in the table below:

Core wires	P1 connection No.	Remarks
Yellow-white	+24V	24V +
Black	GND	24V -

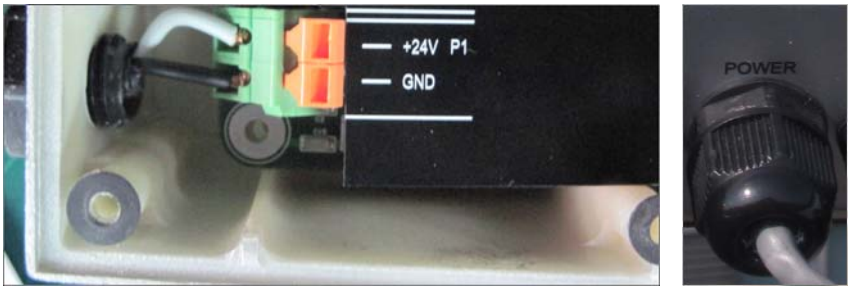


Fig 4-8 Wiring of DC power

4.8 Sealing of waterproof terminals

(1) Close the Intersensor BOX after cables are well connected. Make sure that the BOX is sealed with strips before the screws on the back are tightened.

(2) Confirm that the waterproof terminals are tightened properly after Intersensor BOX is closed. Plug the vacant terminals with waterproof plugs.

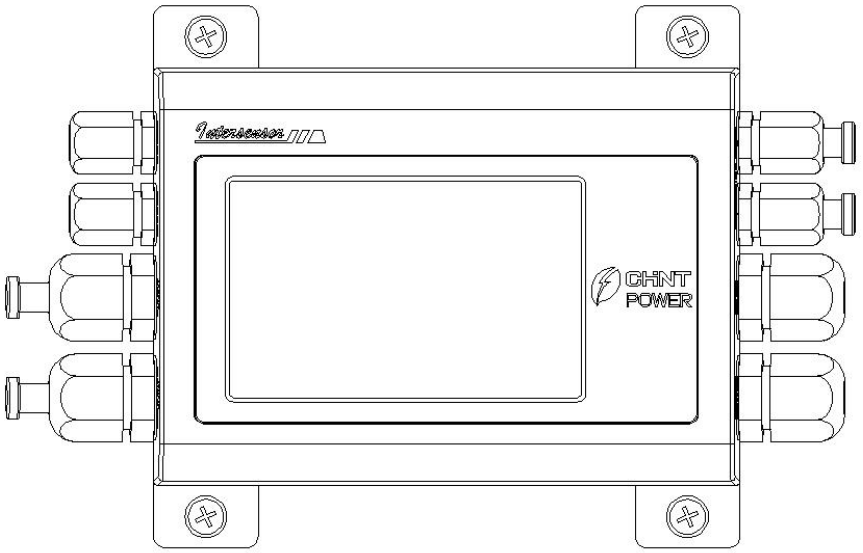


Fig 4-9 Installing waterproof terminals

Chapter 5 Troubleshooting

Please call after-sales service hotline of Chint Power Systems Co., Ltd. if you encounter any malfunctions not covered in this section.

Malfunctions	Possible causes	Troubleshooting
Background monitor cannot detect Intersensor device	Intersensor's communication parameters are not configured properly	Configure according to "communication parameters configuration"
Background monitor indicates ambient temperature 555.5	Ambient temperature sensor is not connected properly	Open the BOX and check whether the connection of temperature sensor is correct.
Background monitor indicates panel temperature 555.5	Panel temperature sensor is not connected properly	Open the BOX and check whether the connection of temperature sensor is correct.

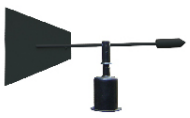
Chapter 6 Technical Parameters

6.1 Intersensor parameters

Communication	
Data Logger Communication	RS485
Power Supply	
Power Supply	Power Adapter
Input Voltage (Adapter)	100 ~ 240Vac, 50/60Hz
Input Voltage (Intersensor)	24Vdc / 14~28Vdc
Power Consumption	1.44W
Environmental Conditions in Operation	
Ambient Temperature	-20℃ ~ +50℃
Ingress Protection	IP65
Mechanical Data	
WXDXH(mm)	140×43×100
Weight(g)	950
Accessories	
Irradiation Sensor	●
Module Temperature Sensor	●
Ambient Temperature Sensor	●
Wind Speed Sensor	○
Wind Direction Sensor	○
Sensor Frame	○
Power Adapter	●

● Standard configuration ○ Optional configuration

6.2 Sensor parameters

Sensor Type	Irradiation Sensor	Module Temp. Sensor	Ambient Temp. Sensor	Wind Speed Sensor	Wind Direction Sensor
					
Technical Data					
Material	Polysilicon	PT100		Plastic	Plastic
Working Temp.	-40 ~ +85℃	-20 ~ +110℃		-40 ~ +80℃	-40 ~ +80℃
Measuring Range	0~1500W/m^2	-20 ~ +100℃	-20 ~ +85℃	0~70m/s	0 ~ 360°
Measuring Accuracy	±5%	±0.1℃		±0.1 m/s	0.1%

6.3 DC power supply parameters

Input Parameter	100-240V AC/47-63Hz
Output Parameter	24V DC/1.25A
W x H x L	43.5x88.5x115 mm
Weight	0.29kg
Installation Type	Wall type guide rail mounting
Mounting location	Indoors
Operating Temperature Range	-25~70℃
Protection Degree	IP20

Chapter 7 Quality warranty

7.1 Warranty period

The warranty period of this product is 24 months, i.e. 24 months after the installation date. Specific warranty period abides by the contract agreement.

7.2 Disclaimer

1. Damage during transportation;

2. Operating in conditions beyond those specified in this manual;

3. Product used incorrectly or improperly (including installation and operation);

4. Modify the product or software without prior authorization;

5. Neglect the safety warnings in the product and documents and safety specifications in the applicable laws and regulations;

6. Occurrence of unforeseen disasters or force majeure;

7.3 Quality terms (warranty terms)

1. We will repair for free or replace with new products for products that have malfunctions within the warranty period.

2. The replaced non-conformance product should be returned to our company.

3. Reasonable time should be provided for us to repair the equipment.

Please do not hesitate to contact us if you have any question about the Intersensor. We are willing to provide the best service for you.

SHANGHAI CHINT POWER SYSTEMS CO., LTD.
Headquarters: Building 4, No. 855, Wenhe Road,
Songjiang District, Shanghai, China
Service hotline: +86-021-37791222-6300
Email: service.cps@chint.com
Fax: +86-021-37791222-6001
Website: www.chintpower.com

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