

# **AEG**

Power Solutions

## **User Manual**

## **RS-485 Card**

Version 1.2.2 2009.12

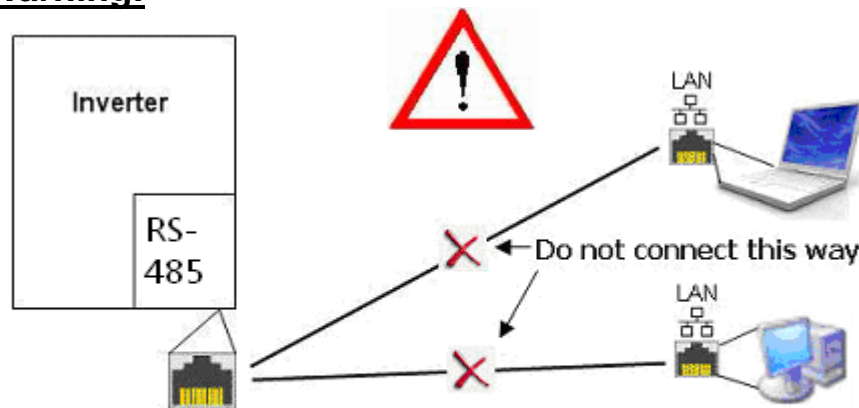
AEG Power Solutions GmbH  
Department: PS TED  
Name: Schenit  
Revision: 01  
Date: 10.12.2009

## Table of Contents:

1. Safety Instructions for installation and application .....	3
2. Features .....	4
3. Appearance .....	5
3.1 RJ-45 pin definition .....	6
4. Installation .....	7
4.1. Setting DIP switch for Terminating Resistor.....	7
4.2.1. Multiple connection - Usage of Ethernet cable .....	8
4.2.2. Multiple connection - Combination Usage.....	9
4.2.3. Multiple connection - Terminal Block Usage.....	9
4.2.4. Installing RS-485 Card to Inverter with Ethernet cable.....	10
4.2.5. Installing RS-485 Card to Inverter with twisted wire pair .....	12
4.3. Connect to Data Logger .....	14
4.4. Connect to PC via RS-485 to RS-232 converter .....	15
Specification.....	15
Troubleshooting.....	16

**1. Safety Instructions for installation and application**

**Warning!**



**1. Do not connect Ethernet cable from RJ-45 port of RS-485 card to PC or laptop. The RJ-45 socket on card is not designed for Ethernet or LAN. We will not be responsible for any damages caused by this action.**

**2. Do not wire 2 RJ-45 ports and 2 Terminal blocks on RS-485 card at the same time, you can only wire any 2 ports of 4 communication ports(see Chapter 4.2.2.), otherwise malfunction of communication may happen.**



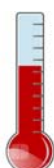
**Make sure inverters are shut down before installation**

To avoid risk of electric shock during installation, disconnect both AC and DC power before installation



Do not expose this card to rain or sunshine directly. This card should be installed with specific inverters

Check the card carefully before installation. Any damage or scratch could cause malfunction



Take care of ambient temperature of inverter. Refer to specification of temperature range of inverter

Read this User Manual before you start



Thanks for choosing this product made by AEG Power Solutions with its innovative design and perfect quality.

This User manual contains important Safety Instructions, Installation and Operation guides. Please read this manual carefully in advance.

If you encounter any problem during installation and usage, please check with this manual before contacting the local Dealer or distributor. Most of the problems will be solved by instruction inside this manual.

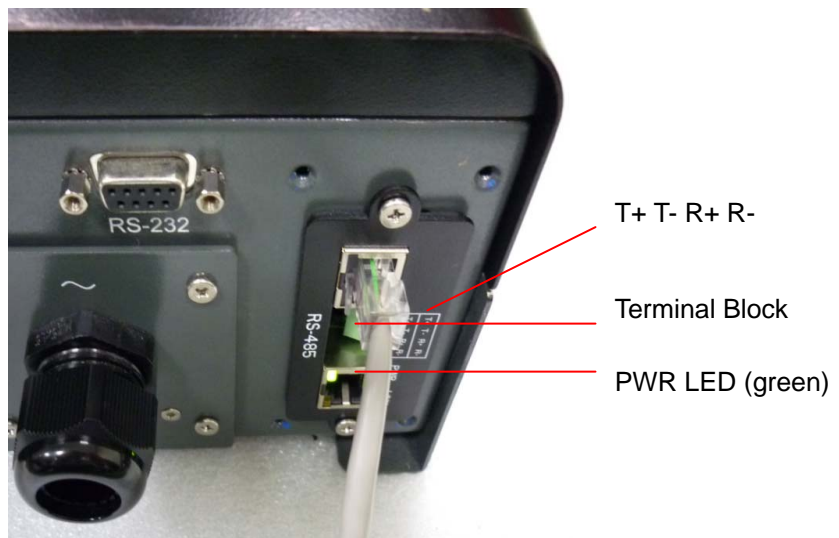
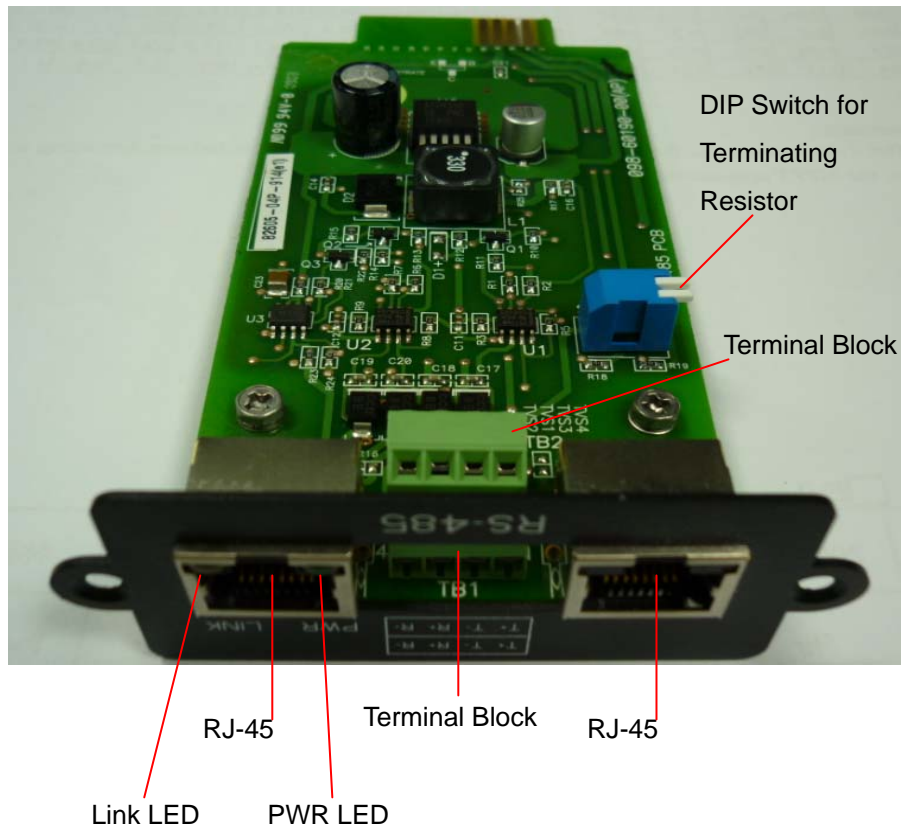
Thank you for choosing this product again. Please keep this User Manual with you.

## **2. Features**

- (1) Compatible with all Inverters and data loggers manufactured by AEG Power Solutions.
  
- (2) Compact and easy for installation  
It is compact and easy for installation into the inverters.
  
- (3) No external power needed
  
- (4) Data transmitting rate is up to 9600bps.

### 3. Appearance

Top front view of RS-485 card



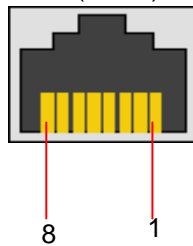
1. PWR(Power) LED: It indicates the connectivity of RS-485 card; it will light up in green when inverter is active.



2. Link LED: When you insert Ethernet cable in any RJ-45 port, Link LED will light up in yellow and blink in 2Hz during signal transferring.

### 3.1 RJ-45 pin definition

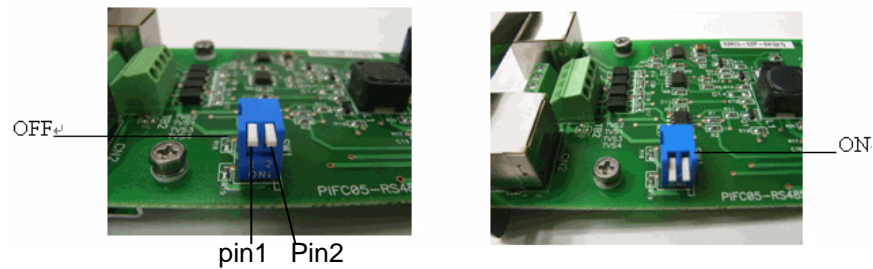
8 pin RJ-45 (8P8C) female



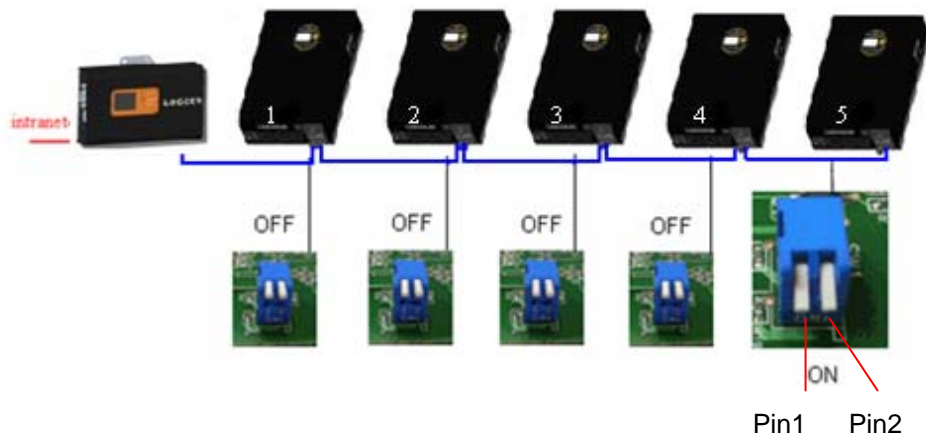
PIN	NAME	Voltage
1	<b>GND</b>	Ground
2	N/A	N/A
3	<b><u>Rx+</u></b>	+400mVp-p~+15Vp-p
4	<b><u>Rx-</u></b>	-400mVp-p~-15Vp-p
5	<b><u>Tx-</u></b>	-400mVp-p~-15Vp-p
6	<b><u>Tx+</u></b>	+400mVp-p~+15Vp-p
7	N/A	N/A
8	N/A	

## 4. Installation

### 4.1. Setting DIP switch for Terminating Resistor



Please press pin 1 and pin 2 to set DIP Switch “on” for card in the terminal inverter (farthest from Data Logger or PC as number 5 inverter in below figure). For the others, please set it to “off”.



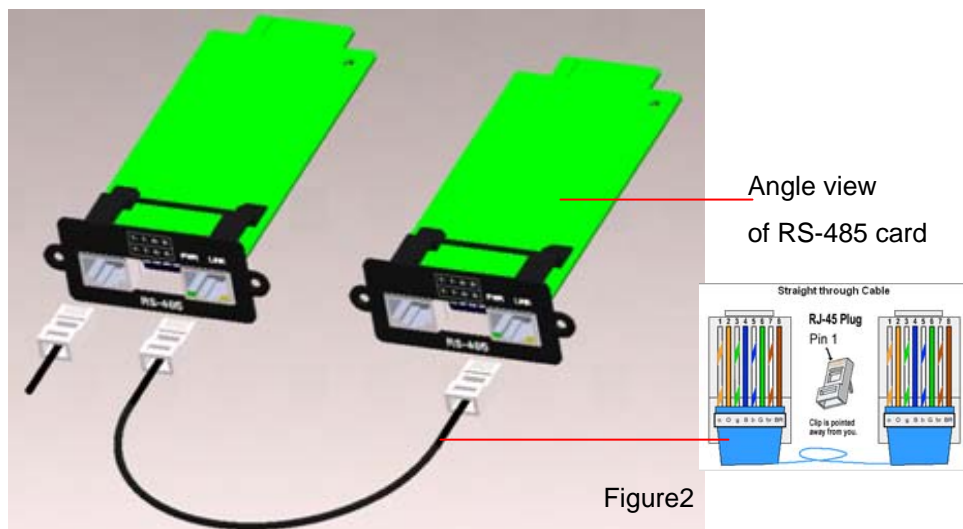
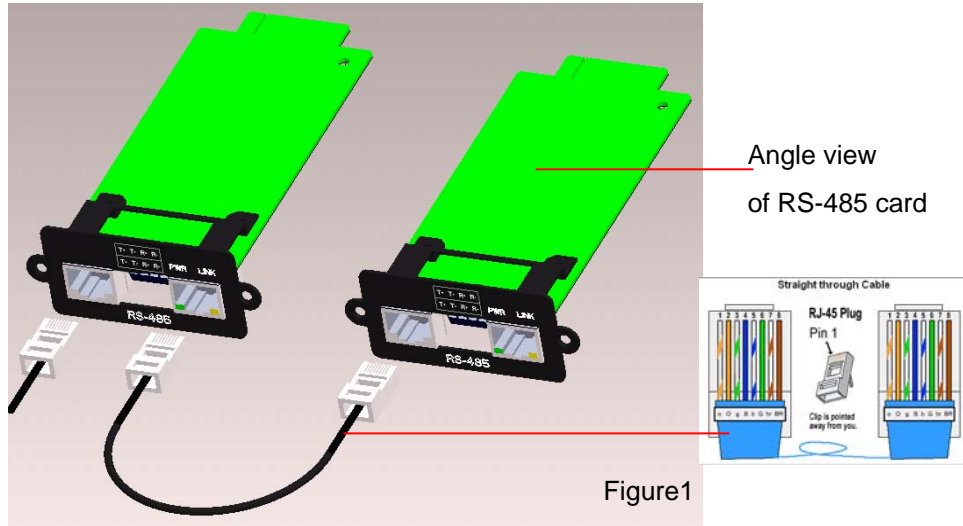
1. Figure above illustrates the connection of 5 inverters and one Data Logger
2. For Inverter 1, 2, 3, 4, please set DIP Switch “off”; for inverter 5, please press pin 1 and pin 2 to set DIP Switch “on”.

### **Caution:**

**Incorrect setting of DIP Switch will lead unstable data transferring**

### 4.2.1. Multiple connection - Usage of Ethernet cable

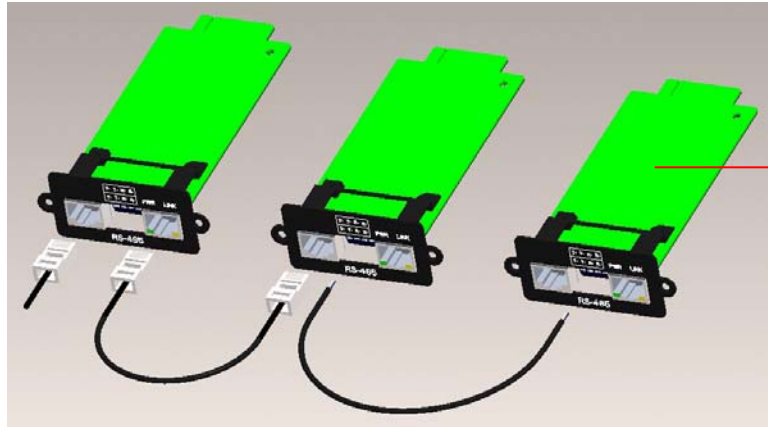
See Figure1 and Figure2, You can use Ethernet cable to connect either port of other RS-485 Card. The cable must be Straight Through Cable.





### 4.2.2. Multiple connection - Combination Usage

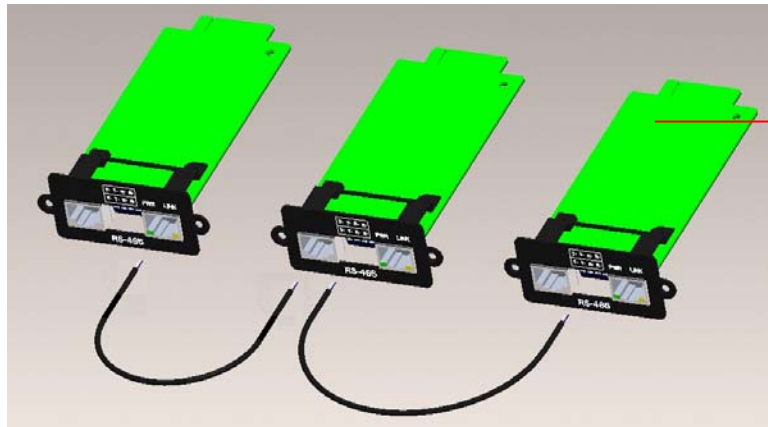
The combined connection of RJ-45 and Terminal block can be implemented, but not recommended.



Top front view of  
RS-485 Cards

### 4.2.3. Multiple connection - Terminal Block Usage

You can merely use twisted wire pairs for Terminal Blocks.



Top front view of  
RS-485 Cards

#### 4.2.4. Installing RS-485 Card to Inverter with Ethernet cable

(1) Get Inverter ready.

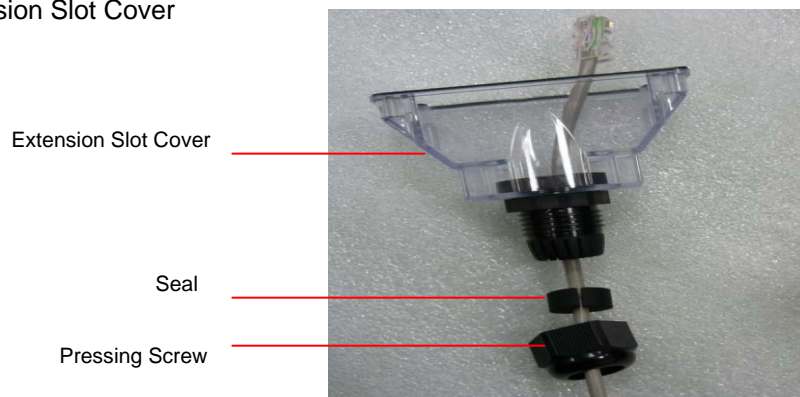


(2) Remove the 4 screws  
from Extension Slot Cover.



(3) Insert Ethernet cable through

1. Pressing Screw
2. Seal
3. Extension Slot Cover



(4) Insert RS-485 card to Inverter and connect Ethernet cable.



(5) Lock the Extension Slot Cover to the Inverter with the screws.



(6) Lock the Seal to Extension Slot Cover.



The Seal will protect the cable from pulling out.

### 4.2.5. Installing RS-485 Card to Inverter with twisted wire pair

(1) Get Inverter ready.

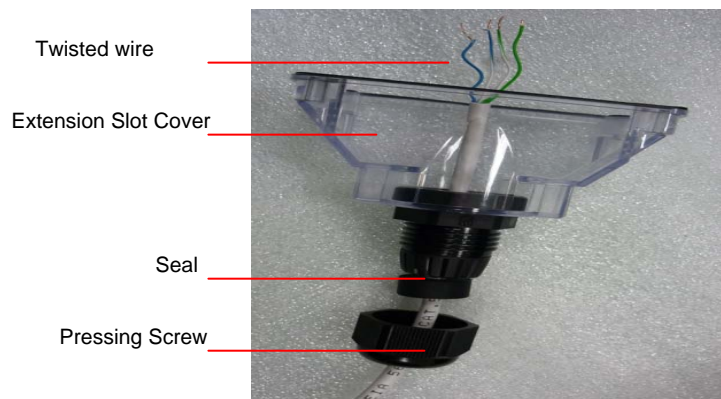


(2) Remove the 4 screws  
from Extension Slot Cover.

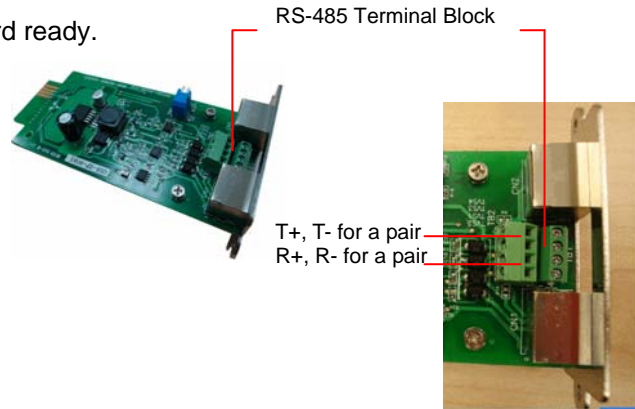


(3) Insert twisted-pair cable through

1. Pressing Screw
2. Seal
3. Extension Slot Cover



(4) Get RS-485 card ready.



(5) Insert wires to RS-485 Terminal Block and lock them firmly with the screws on the block.



(6) Then insert RS-485 card into the RS-485 Extension Slot.



- (7) Lock the Extension Slot Cover to the Inverter with the screws.



- (8) Lock the Seal to Extension Slot Cover.



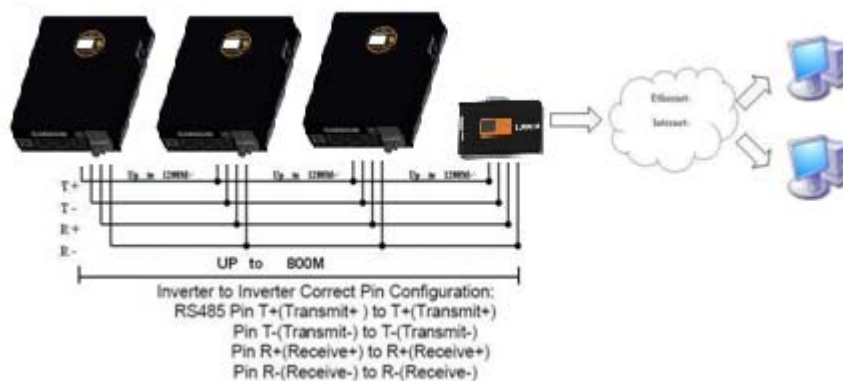
The Seal will protect the cable from pulling out.

**Caution: Make sure inverters are shut down before installation, this card does not support Hot Swap.**

To avoid risk of electric shock during installation, disconnect both AC and DC power before installation.

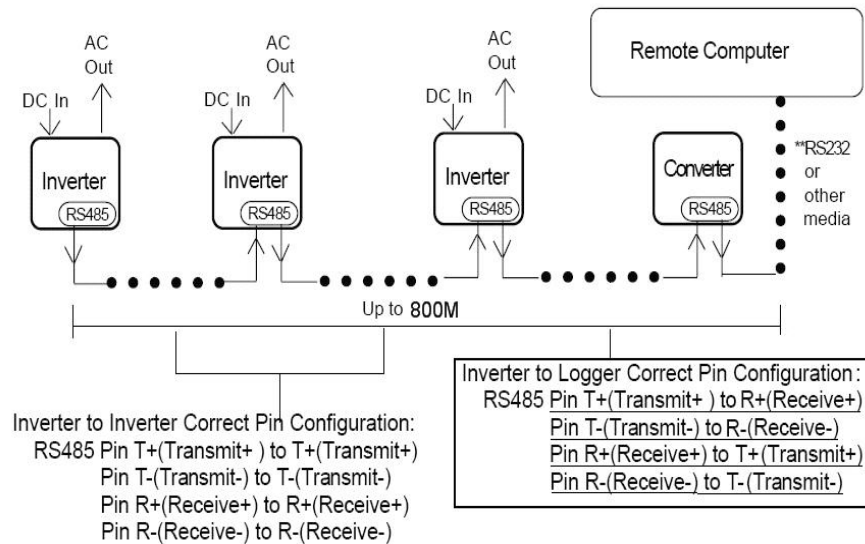
### 4.3. Connect to Data Logger

When wiring RS-485 card from inverter to inverter, we connect same pins of RS-485 which means Receive Pin to Receive Pin, and Transmit Pin to Transmit Pin.



#### 4.4. Connect to PC via RS-485 to RS-232 converter

When wiring RS-485 card from Inverter to RS-485 to RS-232 Converter, we connect opposite pins of RS-485 which means Receive Pin to Transmit Pin, and Transmit Pin to Receive Pin. See framed area below.



#### Specification

Specification	RS485 Card
Dimension (mm) WxHxD	81 x 34 x 133
Frame	High quality stainless steel Frame for configuring the card into inverter
LED	Power LED:Green, Link LED:Yellow; Blinking in 2Hz frequency
Connector	4 pin Terminal Block X 2 RJ-45 Connectors X 2
Transmission mode & Baud Rate	full duplex; 9600 bps
Golden Finger	1x4 pin golden edge interface for 2 sets of RS485 transfer
Cables for connection	2 x twisted-pair shielded cables or 2 x 8 pin cables
Weight(g)	72.5
Operting Temperature	-10 ~ 70° C

## Troubleshooting

In most situations, the RS-485 card requires very little care. However, if RS-485 card is not able to work perfectly, please refer the following instruction before calling your local dealer.

	Possible actions
PWR(Power) LED is off	RS-485 card is not inserted well, please insert it again
	Check whether inverter is active
	Check whether Inverter is shut down
	Check whether RS-485 card is damaged
Yellow LED is off	Check whether Inverter runs normally.
	Check whether the cables and wiring are set up properly, please refer to chapter 3.1 RJ-45 pin definition
	Check whether the cables are too long for proper transmission, total distance should be less than 800M
	Check whether the ambient temperature is within -10 °C ~ 70 °C.