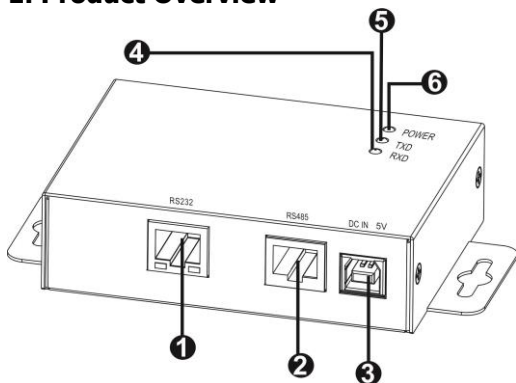


Thank you for purchasing Modbus box. This manual contains instructions and warnings that should be followed during the installation, operating and storage of the card. Please keep this manual for further reference.

## Special Precautions

- If the Modbus box must be stored prior to installation; storage must be in a dry place
- The admissible storage temperature range is from -10°C to +70°C.

## 1. Product Overview



- ❶ RS-232 port
- ❷ RS-485 port
- ❸ 5V DC input
- ❹ RS232 TXD LED
- ❺ RS232 RXD LED
- ❻ Power indicator

## 2. Product Introduction

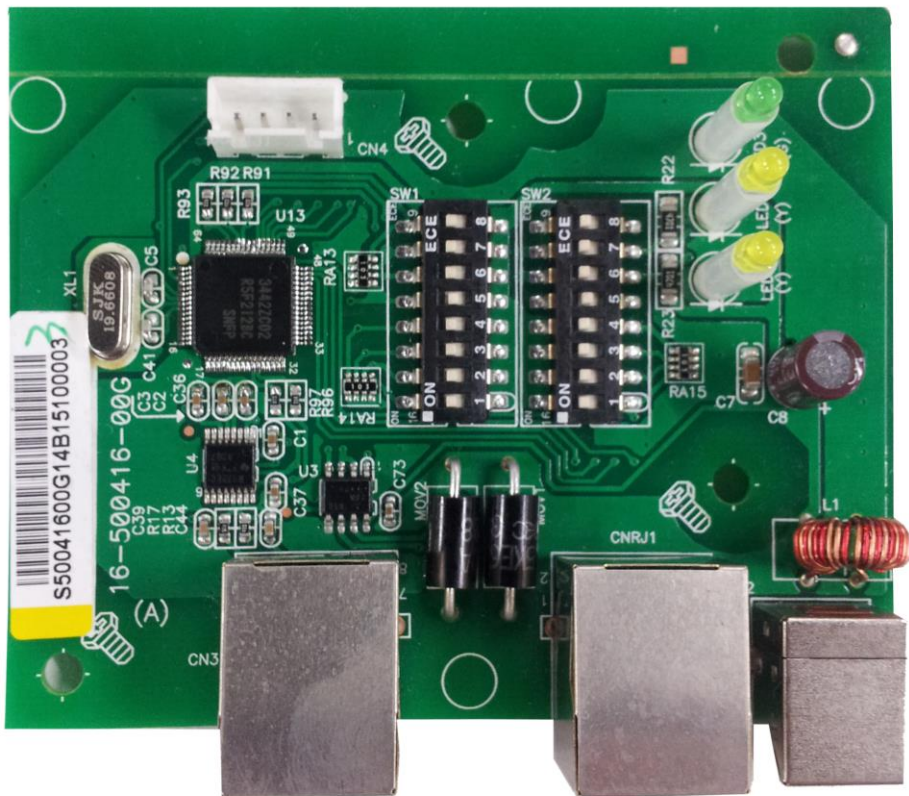
The Modbus box provides inverter with the functionality of communication with PCs through MODBUS protocol:

- Implements MODBUS RTU protocol
- Provides MODBUS functions including read Holding Registers and write Registers.
- Provides RS485 interface
- Provides surge protection

## 3. Installation and Operation

Follow below steps to install and use this modbus box:

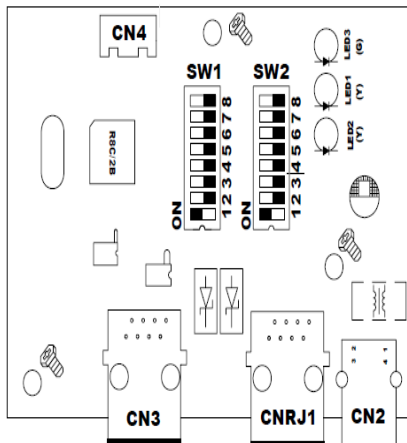
1. Remove top case by removing screws. See below chart.



2. Configure Modbus ID (Refer to section 4.1 for the details).
3. Configure communication format (Refer to section 4.2 for the details).
4. Connect modbus box to inverter with RS232 cable.
5. Connect modbus box to RS-485 adapter with RJ45 cable.

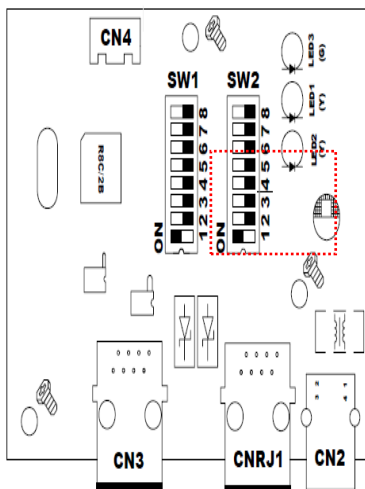
## 4. Configuration

### 4.1 Machine ID Configuration



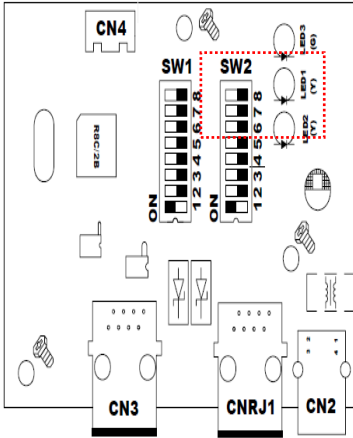
There are eight bits to present ID of each card. Use SW1 to set machine ID. From left to right, it's 8 to 1. As shown, when the switch is pushed down, the bit is set to "one". Otherwise, the bit is set as zero. The ID of modbus card is set to 0x01 as chart. Please check appendix for detailed ID no. and SW1 setting.

### 4.2 Communication Format Configuration



Function	Bit Setting		Meaning
Baud rate	# 2	# 1	
	OFF	OFF	2400bps
	OFF	ON	4800bps
	ON	OFF	9600bps
	ON	ON	19200bps(default)
Parity check	# 4	# 3	
	OFF	OFF	Even parity
	ON	OFF	Odd parity
	OFF	ON	No parity check 1 stop bits (Default)
	ON	ON	No parity check 2 stop bits

## 4.3 RS-485 Resistance Configuration

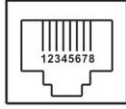


Function	Bit #	Setting	Meaning
Push up resistance	# 6	ON	Enable (Default)
		OFF	Disable
Push down resistance	# 7	ON	Enable (Default)
		OFF	Disable
Terminate resistance	# 8	ON	Enable (Default)
		OFF	Disable

## 4.4 Interface Configuration



RS-232



RS-485



5V DC

- RS-485 Pin Configuration

Pin	Function
4	RS-485 - B
5	RS-485 - A
8	GND

- RS232 Pin Configuration:

Pin	Function
1	Txd
2	Rxd
8	GND

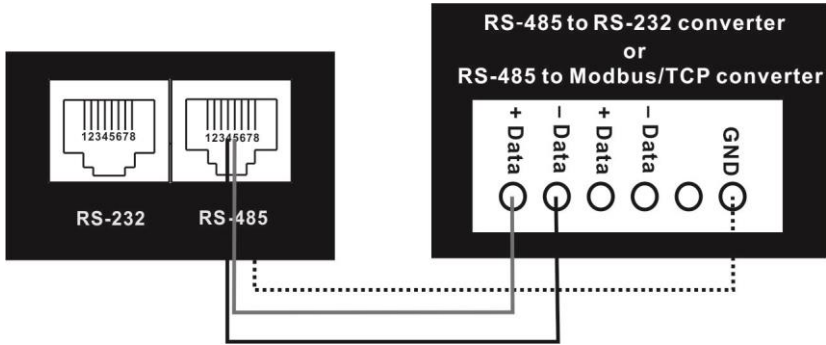
- USB spec

Voltage	5V DC
Current	500 mA

USB port is used as input power source, not for communication purpose.

## 4.5 Connection

First, please use one RS485 to RS 232 converter or RS-485 to Modbus/TCP converter as media converter between Modbus card and computer. Please follow below chart for wiring connection between RJ45 and media converter:



Wiring connection between RJ45 and media converter

## APPENDIX: Machine ID Configuration Table (SW1) √=ON ×=OFF

SW1 ID	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
1	√	×	×	×	×	×	×	×
2	×	√	×	×	×	×	×	×
3	√	√	×	×	×	×	×	×
4	×	×	√	×	×	×	×	×
5	√	×	√	×	×	×	×	×
6	×	√	√	×	×	×	×	×
7	√	√	√	×	×	×	×	×
8	×	×	×	√	×	×	×	×
9	√	×	×	√	×	×	×	×
10	×	√	×	√	×	×	×	×
11	√	√	×	√	×	×	×	×
12	×	×	√	√	×	×	×	×
13	√	×	√	√	×	×	×	×
14	×	√	√	√	×	×	×	×
15	√	√	√	√	×	×	×	×
16	×	×	×	×	√	×	×	×
17	√	×	×	×	√	×	×	×
18	×	√	×	×	√	×	×	×
19	√	√	×	×	√	×	×	×
20	×	×	√	×	√	×	×	×

21	√	x	√	x	√	x	x	x
22	x	√	√	x	√	x	x	x
23	√	√	√	x	√	x	x	x
24	x	x	x	√	√	x	x	x
25	√	x	x	√	√	x	x	x
26	x	√	x	√	√	x	x	x
27	√	√	x	√	√	x	x	x
28	x	x	√	√	√	x	x	x
29	√	x	√	√	√	x	x	x
30	x	√	√	√	√	x	x	x
31	√	√	√	√	√	x	x	x
32	x	x	x	x	x	√	x	x
33	√	x	x	x	x	√	x	x
34	x	√	x	x	x	√	x	x
35	√	√	x	x	x	√	x	x
36	x	x	√	x	x	√	x	x
37	√	x	√	x	x	√	x	x
38	x	√	√	x	x	√	x	x
39	√	√	√	x	x	√	x	x
40	x	x	x	√	x	√	x	x
41	√	x	x	√	x	√	x	x
42	x	√	x	√	x	√	x	x
43	√	√	x	√	x	√	x	x
44	x	x	√	√	x	√	x	x
45	√	x	√	√	x	√	x	x
46	x	√	√	√	x	√	x	x
47	√	√	√	√	x	√	x	x
48	x	x	x	x	√	√	x	x
49	√	x	x	x	√	√	x	x
50	x	√	x	x	√	√	x	x
51	√	√	x	x	√	√	x	x
52	x	x	√	x	√	√	x	x
53	√	x	√	x	√	√	x	x
54	x	√	√	x	√	√	x	x
55	√	√	√	x	√	√	x	x
56	x	x	x	√	√	√	x	x
57	√	x	x	√	√	√	x	x
58	x	√	x	√	√	√	x	x
59	√	√	x	√	√	√	x	x
60	x	x	√	√	√	√	x	x
61	√	x	√	√	√	√	x	x
62	x	√	√	√	√	√	x	x

63	√	√	√	√	√	√	√	x	x
64	x	x	x	x	x	x	x	√	x
65	√	x	x	x	x	x	x	√	x
66	x	√	x	x	x	x	x	√	x
67	√	√	x	x	x	x	x	√	x
68	x	x	√	x	x	x	x	√	x
69	√	x	√	x	x	x	x	√	x
70	x	√	√	x	x	x	x	√	x
71	√	√	√	x	x	x	x	√	x
72	x	x	x	√	x	x	x	√	x
73	√	x	x	√	x	x	x	√	x
74	x	√	x	√	x	x	x	√	x
75	√	√	x	√	x	x	x	√	x
76	x	x	√	√	x	x	x	√	x
77	√	x	√	√	x	x	x	√	x
78	x	√	√	√	x	x	x	√	x
79	√	√	√	√	x	x	x	√	x
80	x	x	x	x	√	x	x	√	x
81	√	x	x	x	√	x	x	√	x
82	x	√	x	x	√	x	x	√	x
83	√	√	x	x	√	x	x	√	x
84	x	x	√	x	√	x	x	√	x
85	√	x	√	x	√	x	x	√	x
86	x	√	√	x	√	x	x	√	x
87	√	√	√	x	√	x	x	√	x
88	x	x	x	√	√	x	x	√	x
89	√	x	x	√	√	x	x	√	x
90	x	√	x	√	√	x	x	√	x
91	√	√	x	√	√	x	x	√	x
92	x	x	√	√	√	x	x	√	x
93	√	x	√	√	√	x	x	√	x
94	x	√	√	√	√	x	x	√	x
95	√	√	√	√	√	x	x	√	x
96	x	x	x	x	x	x	√	√	x
97	√	x	x	x	x	x	√	√	x
98	x	√	x	x	x	x	√	√	x
99	√	√	x	x	x	x	√	√	x
100	x	x	√	x	x	x	√	√	x
101	√	x	√	x	x	x	√	√	x
102	x	√	√	x	x	x	√	√	x
103	√	√	√	x	x	x	√	√	x
104	x	x	x	√	x	x	√	√	x

105	√	×	×	√	×	√	√	×
106	×	√	×	√	×	√	√	×
107	√	√	×	√	×	√	√	×
108	×	×	√	√	×	√	√	×
109	√	×	√	√	×	√	√	×
110	×	√	√	√	×	√	√	×
111	√	√	√	√	×	√	√	×
112	×	×	×	×	√	√	√	×
113	√	×	×	×	√	√	√	×
114	×	√	×	×	√	√	√	×
115	√	√	×	×	√	√	√	×
116	×	×	√	×	√	√	√	×
117	√	×	√	×	√	√	√	×
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147	√	√	x	x	√	x	x	√
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186	x	√	x	√	√	√	x	√
187	√	√	x	√	√	√	x	√
188	x	x	√	√	√	√	x	√

189	√	×	√	√	√	√	×	√
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191	√	√	√	√	√	√	×	√
192	×	×	×	×	×	×	√	√
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207	√	√	√	√	×	×	√	√
208	×	×	×	×	√	×	√	√
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213	√	×	√	×	√	×	√	√
214	×	√	√	×	√	×	√	√
215	√	√	√	×	√	×	√	√
216	×	×	×	√	√	×	√	√
217	√	×	×	√	√	×	√	√
218	×	√	×	√	√	×	√	√
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220	×	×	√	√	√	×	√	√
221	√	×	√	√	√	×	√	√
222	×	√	√	√	√	×	√	√
223	√	√	√	√	√	×	√	√
224	×	×	×	×	×	√	√	√
225	√	×	×	×	×	√	√	√
226	×	√	×	×	×	√	√	√
227	√	√	×	×	×	√	√	√
228	×	×	√	×	×	√	√	√
229	√	×	√	×	×	√	√	√
230	×	√	√	×	×	√	√	√

231	√	√	√	x	x	√	√	√
232	x	x	x	√	x	√	√	√
233	√	x	x	√	x	√	√	√
234	x	√	x	√	x	√	√	√
235	√	√	x	√	x	√	√	√
236	x	x	√	√	x	√	√	√
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238	x	√	√	√	x	√	√	√
239	√	√	√	√	x	√	√	√
240	x	x	x	x	√	√	√	√
241	√	x	x	x	√	√	√	√
242	x	√	x	x	√	√	√	√
243	√	√	x	x	√	√	√	√
244	x	x	√	x	√	√	√	√
245	√	x	√	x	√	√	√	√
246	x	√	√	x	√	√	√	√
247	√	√	√	x	√	√	√	√