



GINLONG

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RS485 Communication Protocol for Three-Phase Inverter

(GCI-6K/GCI-10K/GCI-15K)

Dec. 10, 2014 Ver.7

1. Communication Base Format

The baud rate is 9600; no check bit; data bit is 8; the stop bit is 1.

2. Communication Protocol Format

2.1 Query Information Command

PC→Inverter				Inverter→PC			
Item	Code	Length	Example	Item	Code	Length	Example
Symbol	SDLC/HDLC	1	7E	Symbol	SDLC/HDLC	1	7E
Slave Address	ADDR	1	01	Slave Address	ADDR	1	01
Control Command	Function Code	1	A1	Control Command	Function Code	1	A1
Data Length	LEN	1	00	Data Length	LEN	1	1C
Data	DATA (D00-D49)	50	00	Data	DATA (D00-D49)	50	Data
Check Bit	Check Sum	1	ACCL	Check Bit	Check Sum	1	ACCL

2.1.1 PC Sent to Inverter Format

Item	Parameter	Length	Example
Symbol	SDLC/HDLC	1	7E
Slave Address	Slave Address	1	01
Control Command	Command	1	A1
Data Length	Length	1	00
Data	Data	50	D0-D49
Check Bit	Check	1	ACCL



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Symbol: When receive the data 7E (symbol data), the data frames is beginning.

Slave Address: Different inverter have the different address. The range is 01-14H.

Control Command: Different control have the different command, query information control command is A1.

Data Length: The available data length.

Data: All is 0.

Check Bit : The summation of slave address bit, control bit, data length and 50 data.

NOTE: only the low 8 bit is check.

2.1.2 Inverter Receiving from PC Format

Item	Parameter	Length	Example
Symbol	SDLC/HDLC	1	7E
Slave Address	Slave Address	1	01
Control Command	Command	1	A1
Data Length	Length	1	1C
Data	Data	50	D0-D49
Check Bit	Check	1	ACCL

2.1.3 Data Definition

Data	Means
D0	DC Input Voltage1 Low 8 Bit (×10)
D1	DC Input Voltage1 High 8 Bit (×10)
D2	DC Input Current1 Low 8 Bit (×10)
D3	DC Input Current1 High 8 Bit (×10)
D4	Grid Voltage Low 8 Bit (×10)
D5	Grid Voltage High 8 Bit (×10)
D6	Grid Current Low 8 Bit (×10)
D7	Grid Current High 8 Bit (×10)
D8	Inverter Temperature Low 8 Bit (×10)
D9	Inverter Temperature High 8 Bit (×10)
D10	Total Energy kWh 1
D11	Total Energy kWh 2
D12	Total Energy kWh 3



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D13	Total Energy kWh 4
D14	The Inverter State Low 8 Bit
D15	The Inverter State High 8 Bit
D16	None
D17	None
D18	Model NO.
D19	DSP Software Version
D20	The Grid Frequency Low 8 bit (×100)
D21	The Grid Frequency High 8 Bit (×100)
D22	The Country Standard
D23	Power Curve NO.
D24	DC Input Voltage 2 Low 8 Bit (×10)
D25	DC Input Voltage 2 High 8 Bit (×10)
D26	DC Input Current 2 Low 8 Bit (×10)
D27	DC Input Current 2 High 8 Bit (×10)
D28	Grid On/Off Status
D29	This Month kWh Low 8 Bit
D30	This Month kWh High 8 Bit
D31	Last Month kWh Low 8 Bit
D32	Last Month kWh High 8 Bit
D33	This Day kWh Low 8 Bit (×10)
D34	This Day kWh High 8 Bit (×10)
D35	Last Day kWh Low 8 Bit (×10)
D36	Last Day kWh High 8 Bit (×10)
D37-D49	0

2.1.4 The State Parameter

D15D14	Means	Display
0000	Stop Run	Stop
0001	Open Run	OpenRun
0002	Soft Run	SoftRun
0003	Operation OK	Generating
1010	Grid Over Voltage	OV-G-V
1011	Grid Under Voltage	UN-G-V
1012	Grid Over Frequency	OV-G-F



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1013	Grid Under Frequency	UN-G-F
1014	Grid Impedance Over	G-IMP
1015	No Grid	NO-Grid
1016	Grid Unbalance	G-PHASE
1017	Grid Frequency Fluctuation	G-F-FLU
1018	Grid Over Current	OV-G-I
1020	DC Over Voltage	OV-DC
1021	DC Bus Over Voltage	OV-BUS
1022	DC Bus Unbalance	UNB_BUS
1023	DC Bus Under Voltage	UN_BUS
1024	DC Bus Unbalance 2	UNB2_BUS
1030	Short Circuit Protection	GRID-INTF.
1031	The Initial Protection	INI-FAULT
1032	Temperature Protection	OV-TEM
1033	Ground Fault	GROUND-FAULT
1034	Leakage Current Protection	ILeak-FAULT
1035	Relay Protection	Relay-FAULT
1036	DSP_B Protection	DSP-B-FAULT
1037	DC Injection Protection	DCInj-FAULT
1038	12V Under Voltage Faulty	12Power-FAULT
1039	Leakage Current Check Protection	ILeak-Check
1040	AFCI Check Fault	AFCI-Check
1041	AFCI Fault	AFCI-FAULT

2.1.5 The Country Standard

Country Standard	Date D22
G59-3	01
UL1741	02
VDE0126	03
AS4777	04
AS4777-NQ	05



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CQC	06
ENEL	07
UL-380V	08
MEX-CFE	09
Defined by User	0A
VDE4105	0B
EN50438DK	0C
EN50438IE	0D
EN50438NL	0E
EN50438T	0F
EN50438L	10
UL-240V-A	11
UL-208V-A	12
BRAZIL	13
AUS-Q-0.9	14
AUS-Q-0.8	15
G83/1	16
RD1699B	17
IEC61727	18

2.1.6 Example

The PC sends data:

```
7E 02 A1 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 A3
```

And receives data:

```
7E 02 A1 1C
72 06 21 00 FF 08 18 00 20 01
61 10 00 00 00 00 71 71 01 02
88 13 01 01 3B 0B 00 00 00 00
00 01 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 D2
```

It means:

DC voltage1 is 0672H----1650----165V.

DC current1 is 0021H---33----3.3A



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Grid voltage is 08FFH---2303---230.3V
 Grid current is 0018H---24---2.4A
 The total kWh is 00001061H---4193kWh.
 The stage is 0000H---Generating
 The grid frequency is 1388H---5000---50Hz
 The country standard is 01---G83.
 DC voltage2 is 0000H---0000---0V.
 DC current2 is 0000H---0000---0A

2.2 Grid On Control Command

PC→Inverter				Inverter→PC			
Item	Code	Length	Example	Item	Code	Length	Example
Symbol	SDLC/HDLC	1	7E	Symbol	SDLC/HDLC	1	7E
Slave Address	ADDR	1	01	Slave Address	ADDR	1	01
Control Command	Function Code	1	02	Control Command	Function Code	1	02
Data Length	LEN	1	00	Data Length	LEN	1	00
Data	DATA-D00	1	BE	Data	DATA (D00-D49)	/	/
	DATA (D01-D49)	49	00				
Check Bit	Check Sum	1	ACCL	Check bit	Check Sum	/	/

2.2.1 Example

When you want to grid on the inverter, the PC sends data:

```
7E 02 02 00
BE 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 C2
```

And receives data:

```
7E 02 02 00 00
```



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2.3 Grid Off Control Command

PC→Inverter				Inverter→PC			
Item	Code	Length	Example	Item	Code	Length	Example
Symbol	SDLC/HDLC	1	7E	Symbol	SDLC/HDLC	1	7E
Slave Address	ADDR	1	01	Slave Address	ADDR	1	01
Control Command	Function Code	1	03	Control Command	Function Code	1	03
Data Length	LEN	1	00	Data Length	LEN	1	00
Data	DATA-D00	1	DE	Data	DATA (D00-D49)	/	/
	DATA (D01-D49)	49	00				
Check Bit	Check Sum	1	ACCL	Check Bit	Check Sum	/	/

2.3.1 Example

When you want to grid off the inverter, the PC sends data:

```
7E 02 03 00
DE 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 E3
```

And receives data:

```
7E 02 03 00 00
```

2.4 Power Limit Control Command

PC→Inverter				Inverter→PC			
Item	Code	Length	Example	Item	Code	Length	Example
Symbol	SDLC/HDLC	1	7E	Symbol	SDLC/HDLC	1	7E
Slave Address	ADDR	1	01	Slave Address	ADDR	1	01



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Control Command	Function Code	1	B1	Control Command	Function Code	1	B1
Data Length	LEN	1	32	Data Length	LEN	1	32
Data	DATA-D00	1	10	Data	DATA (D00-D49)	50	Data
	DATA-D01	1	27				
	DATA (D02-D49)	48	00				
Check Bit	Check Sum	1	ACCL	Check Bit	Check Sum	1	ACCL

2.4.1 Example

When you want to grid off the inverter, the PC sends data:

```
7E 02 B1 32
10 27 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 1C
```

It means:

The power limit value is 2710H---10000—100%

And receives data:

```
7E 02 B1 32
72 06 21 00 FF 08 18 00 20 01
61 10 00 00 00 00 71 71 01 02
88 13 01 01 3B 0B 00 00 00 00
00 01 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 F8
```