

PCMINV

CAN Communication Protocol

Old base map total number							Communication Protocol Specification	Catalog covers I pages				Main text consists of 9 pages				
Base map total number		Mark	Numb er	Modify tracking	Signat ure	Date		Pattern marks						Total area		
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PCM Series Communication Protocol

1 Purpose of Protocol Compilation

The provisions of this agreement between upper desktop module and power module CAN communication protocol.

2 Communication Specification

- 1) Use data frames and extension frames in the CAN 2.0 standard, the communication data format is arranged according to the low byte before and the high byte after;
- 2) Communication baud rate is 250kbps;

3 Communication Between Equipment Structure

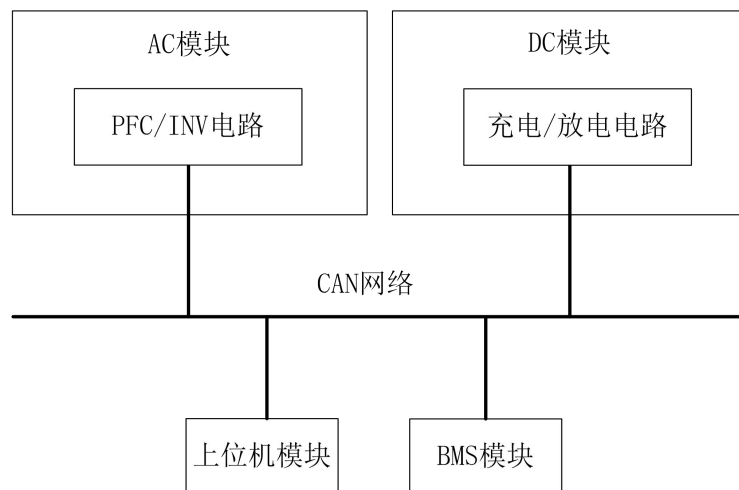


Figure 1 Communication Between Equipment structure

4 Data Format And Definition

4.1 Data Frame Structure

Table 1 Data frame structure

Identifier	Data field (1 to 8 bytes)							
29 bit identifier	1	2	3	4	5	6	7	8

Data frame is divided into 29 bit identifier and the data fields of two parts, the data field less than 8 bytes.

4.2 Identifier Definition

4.2.1 Identifier Format

The 29 bit identifier divided into message type, destination address, source address, function definition, specifier definition is as follows (Bit 0~28, in turn, on

behalf of 29 identifier):

Table 2 Identifier format

Bit field	Bit28-24	Bit23-16	Bit15-8	Bit7-0
Length	5	8	8	8
Instructions	Message type	Destination address	Source address	Function Definition

4.2.2 Packet Type

Table 3 Packet Type

value	Instructions
0	Heartbeat packets (reserved)
1	State feedback
2	Controls and parameter settings
3	Inquire
...	...
3~31	reserve

4.2.3 Device Address

Table 4 Device Address

Number	Device address	Device name
1	0x0A	Upper module
2	0x0B	BMS
3	0x00	Power module (AC+DC)

4.2.4 Function Definition

Table 5 Function definition

	Function definition Bit0~Bit4		Instructions
Sets/ inquire		0x01	Power On/Off instruction
		0x02	Grid-connected mode switch(Reserved)
		0x03	Off-grid mode switch(Reserved)
		0x05	Set SN Code
	AC	0x11	Set frequency
		0x12	Set AC voltage type
		0x13	Set AC voltage protection value
		0x14	Set AC voltage alarm value
	DC	0x31	Set charging parameter
		0x32	Set discharging parameter
		0x33	Set battery voltage protection value
		0x34	Set battery voltage alarm value
Feedback		0x51	AC circuit parameter 1
		0x52	AC circuit parameter 2
		0x53	AC circuit running status feedback
		0x61	DC circuit parameters feedback
		0x62	DC circuit running status feedback

4.3 Data Message Definition

4.3.1 Power On/Off Instruction

Table 6 Power On/Off Instruction (set:0x02000A01/ inquire:0x03000A01)

Byte	Description	Note	Default Values
Byte0	Address	0: broadcast; 1-4module address	
Byte1			
Byte2	Turn On/Off Instruction	0: Turn Off; 1: Turn On; 2: Reset.	1
Byte3	-		
Byte4	-		
Byte5	-		
Byte6	-		
Byte7	-		

Note: After failure, “Reset” must be sent first, and then sent “TurnOn” can be restarted.

4.3.2 Set Grid-Connected Mode(Reserved)

Table 7 Grid-Connected Mode(set:0x02000A02/ inquire:0x03000A02)

Byte	Description	Note	Default Values
Byte0	Address	0: broadcast; 1-4 module address	
Byte1			
Byte2	Grid-Connected mode Switch	0: Disable Grid-connected mode; 1: Grid-connected charging; 2: Grid-connected discharge.	1
Byte3	-		
Byte4	-		
Byte5	-		
Byte6	-		
Byte7	-		

4.3.3 Set Off-Grid Mode(Reserved)

Table 8 Off-Grid Mode(set:0x02000A03/ inquire:0x03000A03)

Byte	Description	Note	Default Values
Byte0	Address	0: broadcast; 1-4 module address	
Byte1			
Byte2	Off-Grid Mode	0: Disable off-grid mode; 1: The off- grid mode is enabled.	1

	Switch		
Byte3	-		
Byte4	-		
Byte5	-		
Byte6	-		
Byte7	-		

4.3.4 Set SN Code

Table 9 Set SN Code (set:0x02000A05/ inquire:0x03000A05)

Byte	Description	Note
Byte0	Address	1-4 module address
Byte1		
Byte2	SN Code (low)	
Byte3	SN Code (high)	
Byte4	-	
Byte5	-	
Byte6	-	
Byte7	-	

4.3.5 Set Frequency

Table 10 Frequency Setting Instruction (set:0x02000A11/ inquire:0x03000A11)

Byte	Description	Note
Byte0	Address	0: broadcast; 1-4 module address
Byte1		
Byte2	Frequency	0:50 Hz; 1:60Hz
Byte3	-	
Byte4	-	
Byte5	-	
Byte6	-	
Byte7	-	

Note: The frequency will take effect after the next power on.

4.3.6 Set AC Voltage Type

Type 11 Set AC Voltage Type Instruction (set:0x02000A12/ inquire:0x03000A12)

Byte	Description	Note
Byte0	Address	0: broadcast; 1-4 module address
Byte1		
Byte2	AC voltage	0: 220V; 1: 110V

Byte3	-	
Byte4	-	
Byte5	-	
Byte6	-	
Byte7	-	

4.3.7 Set AC Voltage Protection Value

Table 12 Set AC Voltage Protection Value (set:0x02000A13/ inquire:0x03000A13)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0 : broadcast ; 1-4 module address		
Byte1				
Byte2	AC overvoltage protection value (low)	220V system : 220~270V adjustable.	0.1	220V system: 258V
Byte3	AC overvoltage protection value (high)			
Byte4	AC under-voltage protection value (low)	170~220V adjustable	0.1	220V system: 183V
Byte5	AC under-voltage protection value (high)			
Byte6				
Byte7				

4.3.8 Set AC Voltage Alarm Value

Table 13 Set AC Voltage Alarm Value (set:0x02000A14/ inquire:0x03000A14)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0 : broadcast ; 1-4 module address		
Byte1				
Byte2	AC overvoltage alarm value (low)	220V system : 220~260V adjustable	0.1	220V system: 250V
Byte3	AC overvoltage alarm value (high)			
Byte4	AC under-voltage alarm value (low)	220V system : 180~220V adjustable	0.1	185V
Byte5	AC under-voltage			

	alarm value (high)			
Byte6				
Byte7				

4.3.9 Set Charging Parameters

Table 14 Set Charging Parameters(set:0x02000A31/ inquire: 0x02000A31)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0 : broadcast ; 1-4 module address	0.1	
Byte1				
Byte2	Charging voltage (low)	24V system: 20~30V adjustable	0.1	24V system: 24V 36V system: 36V 48V system: 48V
Byte3	Charging voltage (high)	36V system: 30~45V adjustable 48V system: 40~59V adjustable		
Byte4	Charging current-limiting value (low)	24V system : 10~100A adjustable	0.1	100A
Byte5	Charging current-limiting value (high)	36V system : 10~100A adjustable 48V system : 10~100A adjustable		
Byte6				
Byte7				

4.3.10 Set Discharge Parameters

Table 15 Set Discharge Parameters (set:0x02000A32/ inquire: 0x02000A32)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0 : broadcast ; 1-4 module address		
Byte1				
Byte2	Discharge cutoff voltage (low)	24V system: 20~30V adjustable	0.1	24V system:20V 36V system:30V 48V system:40V
Byte3	Discharge cutoff voltage (high)	36V system: 30~45V adjustable 48V system: 40~59V adjustable		
Byte4	Constant discharge current (low)	24V system : 10~100A adjustable	0.1	24V system : 100A 36V system: 67A
Byte5	Constant discharge	36V system: 10~67A		

	current (high)	adjustable 48V system: 10~50A adjustable		48V system : 50A
Byte6				
Byte7				

4.3.11 Set DC Voltage Protection Value

Table 16 Set DC Voltage Protection Value (set:0x02000A33/ inquire: 0x02000A33)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0 : broadcast ; 1-4 module address		
Byte1				
Byte2	DC over-voltage protection value (low)	24V system: 25~35V adjustable 36V system: 35~50V adjustable	0.1	24V system : 35V 36V system : 50V
Byte3	DC over-voltage protection value (high)	48V system: 45~64V adjustable		48V system : 64V
Byte4	DC under-voltage protection value (low)	24V system: 15~25V adjustable 36V system: 25~40V adjustable	0.1	24V system : 15V。 36V system : 25V。
Byte5	DC under-voltage protection value (high)	48V system: 35~54V adjustable		48V system: 35V。
Byte6				
Byte7				

4.3.12 Set DC Voltage Alarm Value

Table 17 Set DC Voltage Alarm Value (set:0x02000A34/ inquire: 0x02000A34)

Byte	Description	Note	Precision	Default Values
Byte0	Address	0: broadcast; 1-4 module address		
Byte1				
Byte2	DC Over-voltage alarm value (low)	24V system: 22~32V adjustable。 36V system: 32~47V adjustable。	0.1	24V system : 32V 36V system : 47V
Byte3	DC Over-voltage alarm value (high)	48V system: 42~61V		48V system :

		adjustable。		61V
Byte4	DC Under-voltage alarm value (low)	24V system: 18~28V adjustable。	0.1	24V system : 18V
Byte5	DC Under-voltage alarm value (high)	36V system: 28~43V adjustable。 48V system: 38~57V adjustable。		36V system : 28V 48V system : 38V
Byte6				
Byte7				

Note:

1) The display and control module sends query instructions, and the module replies to the corresponding parameter setting values defined by this function。

2) Query instruction data bit is 0。

4.3.13 AC Circuit Parameters Feedback 1

Table 18 AC Circuit Parameters Feedback (0x010A0051)

Byte	Description	Note
Byte0	Address	0: broadcast; 1-4module address
Byte1	Run mode	0: initialization; 1: standby; 2: charging; 3: grid-connected discharge; 4: off-grid; 5: fault
Byte2	AC voltage-U _{in} (low)	
Byte3	AC voltage-U _{in} (high)	
Byte4	AC current-I _{in} (low)	
Byte5	AC current-I _{in} (high)	
Byte6		
Byte7		

Note: Voltage (V)、current (A) are all unsigned short type, 1/10 of the actual value for the message.

4.3.14 AC Circuit Parameters Feedback 2

Table 19 AC Circuit Parameters Feedback (0x010A0052)

Byte	Description	Note
Byte0	Address	0: broadcast; 1-4module address
Byte1	Run mode	0: initialization; 1: standby;

		2: charging; 3: grid-connected discharge; 4: off-grid; 5: fault。
Byte2	Bus voltage-Ubus (low)	
Byte3	Bus voltage-Ubus (high)	
Byte4	Temperature (low)	
Byte5	Temperature (high)	
Byte6		
Byte7		

Note: Voltage (V)、Temperature (°C) are all unsigned short type, 1/10 of the actual value for the message.

4.3.15 AC Circuit Operation State Feedback

Table 20 AC Circuit Operation State Feedback (0x010A0053)

Byte	Description	Note
Byte0	Address	0 : broadcast ; 1-4module address
Byte1	Run mode	0: initialization; 1: standby; 2: charging; 3: grid-connected discharge; 4: off-grid; 5: fault。
Byte2	SN code (low)	
Byte3	SN code (high)	
Byte4	AC fault 1	
Byte5	AC fault 2	
Byte6	Grid status	0: normal; 1: abnormal
Byte7		

Table 21 AC fault 1 Instructions

Bit	Definition	Instructions
bit0	Soft start timeout	1: fault; 0: normal
bit1	BUS voltage over-voltage	1: fault; 0: normal
bit2	BUS voltage under-voltage	1: fault; 0: normal
bit3	Inverter over-voltage	1: fault; 0: normal
bit4	Inverter under-voltage	1: fault; 0: normal
bit5	Over-frequency	1: fault; 0: normal
bit6	Under-frequency	1: fault; 0: normal
bit7	Power grid loss	1: fault; 0: normal

Table 22 AC fault 2 Instructions

Bit	Definition	Instructions
bit0	Transient over-current	1: fault; 0: normal
bit1	Medial over-current	1: fault; 0: normal
bit2	Overload	1: fault; 0: normal
bit3	Short circuit	1: fault; 0: normal
bit4	Fan fault	1: fault; 0: normal
bit5	Over temperature	1: fault; 0: normal
bit6	Address duplication	1: fault; 0: normal
bit7	Fault overflow lock	1: fault; 0: normal

4.3.16 DC Circuit Parameters Feedback

Table 23 DC Circuit Parameters Feedback (0x010A0061)

Byte	Description	Note
Byte0	Address	0: broadcast; 1-4 module address
Byte1	Run mode	0: initialization; 1: standby; 2: charging; 3: grid-connected discharge; 4: off-grid; 5: fault.
Byte2	Output voltage Udc (low)	
Byte3	Output voltage Udc (high)	
Byte4	Output current Idc (low)	
Byte5	Output current Idc (high)	
Byte6	DC BUS voltage Ubus (low)	
Byte7	DC BUS voltage Ubus (high)	

Note: Voltage (V)、current (A) are all unsigned short type, 1/10 of the actual value for the message.

4.3.17 DC Circuit Running State Feedback

Table 24 DC Circuit Running State Feedback (0x010A0062)

Byte	Description	Note
Byte0	Address	0 : broadcast ; 1-4 module address
Byte1	Run mode	0: initialization; 1: standby; 2: charging; 3: grid-connected discharge; 4: off-grid; 5: fault.
Byte2	SN Code (low)	
Byte3	SN Code (high)	
Byte4	DC fault 1	
Byte5	DC fault 2	
Byte6		
Byte7		

Table 25 DC fault 1 Instruction

Bit	Description	Instructions
bit0	Soft start timeout	1: fault; 0: normal
bit1	BUS voltage over-voltage	1: fault; 0: normal
bit2	BUS voltage under-voltage	1: fault; 0: normal
bit3	Output over-voltage	1: fault; 0: normal
bit4	Output under-voltage	1: fault; 0: normal
bit5	Output over-current	1: fault; 0: normal
bit6	Output overload	1: fault; 0: normal
bit7	Over temperature	1: fault; 0: normal

Table 26 DC fault 2 Instruction

位	Description	Instructions
bit0	Fault overflow lock	1: fault; 0: normal
bit1	Medial over-current	1: fault; 0: normal
bit2	Transient over-current	1: fault; 0: normal
bit3	Soft start short circuit	1: fault; 0: normal
bit4	Address duplication	1: fault; 0: normal
bit5		
bit6		
bit7		

