



AC/DC Power Supply

RACM3000-M Series

(Valid for: RACM3000-24SM/RF, RACM3000-36SM/RF, RACM3000-48SM/RF)

CAN Communication



For product datasheet refer to: [RACM3000-M datasheet.pdf](#)

DESCRIPTION

The specification provides a means for PSUs to use for external communication. And this document describes communication protocols and its utilized methods. All commands mentioned in this document follow CAN2.0 protocol standard. Following pins of the RACM3000-M PSU control connector (CON5) are used for CANBus communication:

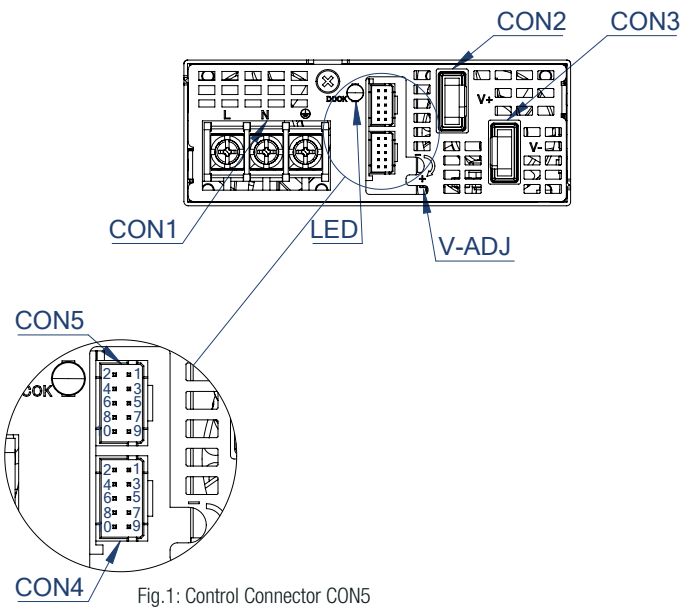


Fig.1: Control Connector CON5

Control Connector

Mating with CJT Connector A2008H -2X5P or Equivalent

#	Assignment	Usage
1	DC_OK-	provide DC_OK output signal to system side
2	DC_OK+	
3	Remote ON/OFF-	input signal to turn on or turn off the PSU main output
4	Remote ON/OFF+	
5	Reserve no connection	No connection, leave open.
6	Reserve no connection	
7	CAN_L	CANBus communication ports.
8	CAN_H	
9	CAN_5V+	5V control supply for communication port
10	CAN_5V return	

Table1: Control Connector CON5 Pin assignment

CHARACTERISTICS

Baud rate is 250Kbps, voltage level is 5V, and there is no terminal resistance in PSU.

Detail is shown in figure below.

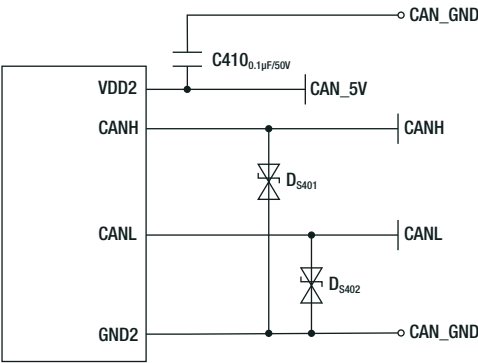


Fig.2: CAN characteristics

ADDRESS

Each node in CAN net shall have a unique address. If there are several PSUs on this net, the address range is from 224 to 239, therefore the maximum number of PSUs is 16.

The table below defines detail address.

Node Name	Source Address (SA)
Meter	243(0XF3)
PSU1	224(0xE0) default
...	...
PSU16	239(0xEF)

Table2: Detail address

COMMAND STRUCTURE

Bit and Byte Instruction

The transmission of bits and bytes is illustrated in this section. In all cases, a byte contains 8 bits and is transferred from MSB to LSB. The LSB is always bit 0, and MSB is always bit 7, as shown below.

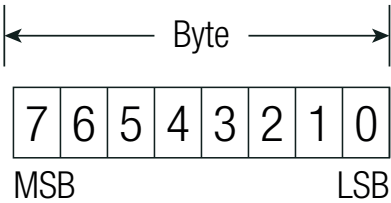


Fig.3: Byte instruction

COMMAND STRUCTURE

Message Structure

The table below is the typical format of CAN data frame with extended ID. Normally message is cycle sent onto bus.

From	To	Extend ID	Cycle (MS)
Meter	PSU	0x1810F4F3	200
Data (Byte1 - Byte8)			

Table3: typical format of CAN data frame

The table below describes detailed composition of extend ID.

Extend ID						
No.	P	R	DP	PF	PS	SA
	Priority, from highest 0 to lowest 7	Reserverd bit for future. fixed 0	Data page, Reserverd bit for future. fixed 0	PDU format	Target address	Source address
000b	3bit	1bit	1bit	8bit	8bit	8bit

Table4: Detailed extend ID & Symbol Description

PSU TO METER

Report Reference Values

This message is for PSU to report control related information.

From	To	ID	Cycle (MS)
PSUx	Meter	0x1820F3xx ⁽¹⁾	200
Data			
No.	Name	Description	
Byte1	Control Mode	0x00 -- Local / 0x01 -- Remote	
Byte2	Operation	0x00 -- Off / 0x80 -- On	
Byte3	Voltage Reference Value High Byte	0.1V/bit, offset is 0	
Byte4	Voltage Reference Value Low Byte		
Byte5	Voltage Reference Max Value High Byte	0.1V/bit, offset is 0	
Byte6	Voltage Reference Max Value Low Byte		
Byte7	Voltage Reference Min Value High Byte	0.1V/bit, offset is 0	
Byte8	Voltage Reference Min Value Low Byte		

Note1: Refer to „Address“ , for example if PSU1 sends data to meter, then xx is 0xE0.

Report Output Values

This message is for PSU to report output related information.

From	To	ID	Cycle (MS)
PSUx	Meter	0x1821F3xx	200
Data			
No.	Name	Description	
Byte1	Output Voltage Value High Byte	0.1V/bit, offset is 0	
Byte2	Output Voltage Value Low Byte		
Byte3	Output Current Value High Byte	0.1A/bit, offset is 0	
Byte4	Output Current Value Low Byte		
Byte5	Output Power Value High Byte	0.1W/bit, offset is 0	
Byte6	Output Power Value Low Byte		
Byte7	Protection Status High Byte	Bit0 Hardware fault 0--Normal/1--Fault Bit2 Software UVP 0--Normal/1--Fault Bit3 Software OTP 0--Normal/1--Fault Bit4 Software UTP 0--Normal/1--Fault Bit5 Software OCP 0--Normal/1--Fault Bit6 Software SCP 0--Normal/1--Fault Bit7 Software OPP 0--Normal/1--Fault Bit8 Software Fan 0--Normal/1--Fault	
Byte8	Protection Status Low Byte		

PSU TO METER

Report Temperature Values

This message is for PSU to report temperature related information.

From	To	ID	Cycle (MS)
PSUx	Meter	0x1822F3xx	200
Data			
No.	Name	Description	
Byte1	PSU Temperature Value High Byte ⁽²⁾	1°C/bit, offset is 0	
Byte2	PSU Temperature Value Low Byte		
Byte3	Fan1 Speed Value High Byte	1RPM/bit, offset is 0	
Byte4	Fan1 Speed Value Low Byte		
Byte5	Fan2 Speed Value High Byte	1RPM/bit, offset is 0	
Byte6	Fan2 Speed Value Low Byte		
Byte7-8	Reserved 0x00	-	

Note2: When data is over 32767, that means temperature is below 0. Using data - 65536 can get real temperature.

Report Firmware Version

This message is for PSU to report firmware version.

From	To	ID	Cycle (MS)
PSUx	Meter	0x1823F3xx	200
Data			
No.	Name	Description	
Byte1	Firmware version1	All data is using ASCII format	
Byte2	Firmware version2		
Byte3	Firmware version3		
Byte4	Firmware version4		
Byte5	Firmware version5		
Byte6	Firmware version6		
Byte7-8	Reserved 0x00	-	

Report Running Time

This message is for PSU to report its running time.

From	To	ID	Cycle (MS)
PSUx	Meter	0x1825F3xx	200
Data			
No.	Name	Description	
Byte1	Running Time 1st Byte(high) ⁽³⁾	1minute/bit, offset is 0	
Byte2	Running Time 2nd Byte		
Byte3	Running Time 3rd Byte		
Byte4	Running Time 4th Byte(low)		
Byte5	Total Running Time 1st Byte(high)	1minute/bit, offset is 0	
Byte6	Total Running Time 2nd Byte		
Byte7	Total Running Time 3rd Byte		
Byte8	Total Running Time 4th Byte(low)		

Note3: Take running time as example, if 4bytes data are 0x00 0x01 0x00 0x20, which is 65568, that means PSU has worked 65568 minutes.

METER TO PSU

Control PSU

This message is for a meter to control PSU.

From	To	ID	Cycle (MS)
Meter	PUSx	0x1810xxF3	NA ⁽⁴⁾
Data			
No.	Name	Description	
Byte1	Control Mode ⁽⁵⁾	0x00 -- Local / 0x01 -- Remote	
Byte2	Operation ⁽⁶⁾	Bit7: 0 -- Off / 1 -- On	
Byte3	Voltage Reference Value High Byte	0.1V/bit, offset is 0 Range: 23.2V - 28.5V	
Byte4	Voltage Reference Value Low Byte		
Byte5-8	Reserved 0x00	-	

Note4: NA means this command should not be sent repeatedly.

Note5: The Vout is controlled by local VR when PSU is in local control mode. If users want to modify Vout via CAN message, please switch to remote control first.

Note6: Also, if users want to turn on or off PSU via CAN message, please switch to remote control first.

Set Address

This message is for a meter to set PSU's address.

From	To	ID	Cycle (MS)
Meter	PUSx	0x1811xxF3	NA ⁽⁴⁾
Data			
No.	Name	Description	
Byte1	PSU's address ⁽⁷⁾	Range: 0xE0-0xEF	
Byte2-8	Reserved 0x00	-	

Note7: When setting address, please make sure only one PSU is in this net. And this new address will take effect on the next power up.