

AUPS UART PROTOCOL SPECIFICATION

Programmer Reference Manual
Version 1.5

Revision History

Revision	Issue Date	Comments
V1.0	2007/6/5	Initial release
V1.1	2008/6/20	Add protocol
V1.2	2008/8/11	Add LAN function protocol
V1.3	2008/12/10	Modify read protocol and add Board type command(0x6A)
V1.4	2009/10/15	Add COM port configuration
V1.5	2010/03/30	Add Example of temperature

Agenda

- **Communication Protocol**
- **Command List**
- **COM port configuration**
- **Example**

Communication Protocol

- Commands to MCU and data returned from MCU are conveyed in the following communication format :

Communication Protocol

STX	Length	Command / Data	Checksum	CR
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Write :

Name	Description		Size
STX	Start of text → 0x02		1
Length	Length of data	<i>Ex : 1 byte is 0x01 2 bytes is 0x02</i>	1
Command	Command		1
Data	data		0 ~ 16
Checksum	Checksum = (STX + Length + Command + Data) MOD 0x100		1
CR	Carriage return → 0x0D		1

Read:

Name	Description		Size
STX	Start of text → 0x02		1
Length	Length of data	<i>Ex : 1 byte is 0x01 2 bytes is 0x02</i>	1
Command	Command		1
Data	returned data		0 ~ 16
Checksum	Checksum = (STX + Length + Command + Data) MOD 0x100		1
CR	Carriage return → 0x0D		1

- You can use following pre-defined commands un the application to communicate with MCU and to receive data returned from MCU.

Command List:

Command	Description	Return bytes
0x01	Select Smart Battery A	None
0x02	Select Smart Battery B	None
0x22	Read Smart Battery Type (LION: 4C and NIMH: 4E)	1 byte
0x09	Read Smart Battery Output Voltage (mV)	2byte
0x0A	Read Smart Battery Electric Current (mA)	2byte
0x08	Read Smart Battery Internal Temperature (°C)	2byte
0x0F	Read Smart Battery Capacity (%)	2byte
0x11	Read Smart Battery Discharging Time (Minute)	2byte
0x40	Read Smart Battery Status 1	2byte
0x41	Read Smart Battery Status 2	2byte
0x42	Read MCU Firmware Version	1byte
0x43	Enable Buzzer	None
0x44	Disable Buzzer	None
0x45	Turn On UPS Output	None
0x46	Turn Off UPS Output	None
0x47	Enable LAN	None
0x48	Disable LAN	None
0x50	Read IP Address	4byte
0x51	Write IP Address	4byte
0x52	Read Gateway	4byte
0x53	Write Gateway	4byte
0x54	Read Primary DNS	4byte
0x55	Write Primary DNS	4byte
0x56	Read Secondary DNS	4byte
0x57	Write Secondary DNS	4 bytes

0x58	Read Host Name	16 bytes
0x59	Write Host Name	16 bytes
0x60	Read DHCP (If 1 = DHCP is enabled else is disabled)	1 bytes
0x61	Write DHCP (If 1 = DHCP is enabled else is disabled)	1 bytes
0x62	Read Subnet MASK	4 bytes
0x63	Write Subnet MASK	4 bytes
0x64	Read MAC Address	6 bytes
0x65	Write MAC Address	6 bytes
0x66	Read Save LAN Setup Result ,(if 0=ok else saving now)	1 bytes
0x68	Set SOFT_OFF=0 (If 1 =window OS is Shut Down)	None
0x6A	Read Board TYPE(if 0=no LAN, if 1=A/D board, if 2=main board)	1 bytes
0x30	Read Protected NAME	10 bytes
0x31	Write Protected NAME	10 bytes
0x32	Read Protected Pass Word	10 bytes
0x33	Write Protected Pass Word	10 bytes
0x34	Load Default LAN Setup	None

AUPS
COM port configuration

IEI Technology Corp.

Com port configuration setting	
Baud rate	9600
Data bit	8
Parity check bit	None
Stop bit	1

➤ Read Smart Battery Alarm (Command :0x40),and return 2 bytes

High byte :

Return byte	Name	Description
Bit 0	ADIN_ACTF	If 1 = DC Power is connected to AUPS module
Bit 1	BUZZER_ACTF	If 1 = Buzzer is enabled
Bit 2	UPSONOFF_ACTF	If 1 = UPS output is turned on
Bit 3	LAN_ACTF	If 1 = LAN is enabled
Bit 4	BATB_ACTF	If 1 = Battery B is connected
Bit 5	BATA_ACTF	If 1 = Battery A is connected
Bit 6	None	Don't Care
Bit 7	None	Don't Care

Low byte :

Return byte	Name	Description
Bit 0	BATA3_ACTF	If 1 = Battery A type is 3 packs in serial
Bit 1	BATB3_ACTF	If 1 = Battery B type is 3 packs in serial
Bit 2	BATA4_ACTF	If 1 = Battery A type is 4 packs in serial
Bit 3	BATB4_ACTF	If 1 = Battery B type is 4 packs in serial
Bit 4	BATA2_ACTF	If 1 = Battery A type is 2 packs in serial
Bit 5	BATB2_ACTF	If 1 = Battery B type is 2 packs in serial
Bit 6	SOFT_OFF	If 1 =window OS is Shut Down
Bit 7	None	Don't Care

Note: None : Read as '0'

- Read Smart Battery Status (Command :0x41),and return 2 bytes

High byte :

Return byte	Name	Description
Bit 0	TEMPOVER_A	If 1 = Battery A is not charging , temperature > 60 °C
Bit 1	TEMPOVER_B	If 1 = Battery B is not charging, temperature > 60 °C
Bit 2	TEMPGOVER_A	If 1 = Battery A is charging, temperature > 45 °C
Bit 3	TEMPGOVER_B	If 1 = Battery B is charging, temperature > 45 °C
Bit 4	VOLOW_A	If 1 = Battery A Output Voltage < normal rated voltage
Bit 5	VOLOW_B	If 1 = Battery B Output Voltage < normal rated voltage
Bit 6	VOLOVER_A	If 1 = Battery A Output Voltage > normal rated voltage
Bit 7	VOLOVER_B	If 1 = Battery B Output Voltage > normal rated voltage

Low byte :

Return byte	Name	Description
Bit 0	BATTERYFULL_A	If 1 = Battery A Full
Bit 1	BATTERYFULL_B	If 1 = Battery B Full
Bit 2	BATA_CHGF	If 1 = Battery A is charging
Bit 3	BATB_CHGF	If 1 = Battery B is charging
Bit 4	BATA_STANDBY	If 1 = Battery A is standby
Bit 5	BATB_STANDBY	If 1 = Battery B is standby
Bit 6	BATA_USE	If 1 = Battery A is discharging
Bit 7	BATB_USE	If 1 = Battery B is discharging

AP SEND MCU RAED Voltage Command:

AP->MCU:

Command : <02><01><09><0C><0D>
STX : 0x02 Length : 0x01 Command : 0x09 CR : 0x0D
Checksum : (0x02 + 0x01 + 0x09) MOD 0x100 = 0x0C

MCU Response AP Voltage Value:

MCU->AP:

Response : <02><03><09><3E><80><CC><0D>
STX : 0x02 Length : 0x03 Command : 0x09 Data : 0x3E80 CR : 0x0D
Checksum : (0x02 + 0x03 + 0x09 + 0x3E + 0x80) MOD 0x100 = 0Xcc
Return Value:0x3E80(16000mV)

AP SEND MCU RAED IP Address Command:

AP->MCU:

Command : <02><01><50><53><0D>
STX : 0x02 Length : 0x01 Command : 0x50 CR : 0x0D
Checksum : (0x02 + 0x01 + 0x50) MOD 0x100 = 0x53

MCU Response AP IP Address:

MCU->AP:

Response : <02><05><50><A9><FE><01><01><00><0D>
STX : 0x02 Length : 0x05 Command : 0x50 Data1:0xA9
Data2:0xFE Data3: 0x01 Data4 :0x01 CR : 0x0D
Checksum : (0x02 + 0x05 + 0x50 + 0xA9 + 0xFE + 0x01 + 0x01) MOD 0x100 = 0x00
Return IP Address: A9: FE: 01: 01

AP SEND MCU Write IP Address Command:

AP->MCU:

Command+ data : <02><05><51><A9><FE><01><01><01><0D>
STX : 0x02 Length : 0x05 Command : 0x51 Data1:0xA9
Data2:0xFE Data3: 0x01 Data4 :0x01 CR : 0x0D
Checksum : (0x02 + 0x05 + 0x51 + 0xA9 + 0xFE + 0x01 + 0x01) MOD 0x100 = 0x01

Notes: Angle brackets < > : indicate data in hex value.

AP SEND MCU RAED **Temperature** Command:**AP->MCU:**

Command : <02><01><08><0B><0D>

STX : 0x02 Length : 0x01 Command : 0x08 CR : 0x0D

Checksum : (0x02 + 0x01 + 0x08) MOD 0x100 = 0x0B

MCU Response AP **Temperature** Value:**MCU->AP:**

Response : <02><03><08><0B><A5><BD><0D>

STX : 0x02 Length : 0x03 Command : 0x08 Data : 0x0BA5 CR : 0x0D

Checksum : (0x02 + 0x03 + 0x08 + 0x0B + 0xA5) MOD 0x100 = 0XBD

Return Value:0x0BA5(2981 °K)

°K → Absolute temperature

°C → Celsius temperature

[°K -> °C] Formula [°K / 10 - 273 = °C]

Example

25.1 °C = 2981/10 - 273