

# RCSS USB

# Communication Protocol

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**Version History:**

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| 2014.8.19 | 1.0 | Hsinmo.Lin | \* | New Protocol |
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| **1 USB通訊協定**  USB接口採用虛擬COM Port協定(Virtual Com Port)  - BaudRate = 9600 baud rate  - Data Bit Length = 8 Bits  - One Stop Bit  - None parity  **2 通訊格式**  **2.1 PC主機發送命令到 RCSS Tool通訊格式: (Sending Cmd from PC Master to RCSS Tool)**    **封包結構:**  typedef struct{  static char cStart = 0x3A; //起始字元  unsigned char SlAdd = 0xA6; //RCSS Tool Slave Address  unsigned char Command; //命令  unsigned char DataLenExpected\_Low; //數據長度(Lo-Byte),  unsigned char DataLenExpected\_High; //數據長度(Hi-Byte),  unsigned char DataBuf[Transmitting\_Data\_Length];//數據內容(Max:65535 bytes)  unsigned char csum16\_Low; //checkSum16 Lo-byte,  unsigned char csum16\_High; //checkSum16 Hi-byte,  static char cEND1= 0X0D; //結束字元 1  static char cEND1= 0X0A; //結束字元 2  }USB\_Transmitting\_Protocol\_Packet;  **Example:** 讀取RCSS Tool FW and HW Version 的命令。(0xE5)   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 起始字元 | RCSS Tool 位址 | 命令字元 | 數據長度(Lo-byte) | 數據長度(Hi-byte) | 數據內容(依據數據長度變化) | CheckSum16 Lo-byte | CheckSum16 Hi-byte | 結束字元1 | 結束字元2 | | 0x3A | 0xA6 | 0xE5 | 0x00 | 0x00 | -- | 0x8B | 0x01 | 0x0D | 0x0A |   說明:  起始字元 : 0x3A  RCSS Tool Address: 0xA6  命令字元 : 0xE5 (讀取RCSS Tool FW and HW Version命令)  數據長度 : 0x00 (代表 數據內容只有 0 byte)  數據內容 : N/A (依據數據長度設定)  CheckSum16 計算，排除起始字元及結束字元。  CheckSum16 = 0xA6 + 0xE5 + 0x00 + 0x0B = 0x018B. (發送時Lo-byte在前，Hi-byte在後)  起始字元及結束字元為固定值。  **2.2 RCSS Tool回應命令並傳送資料至PC之通訊格式: (PC Master Receiving Data from RCSS Tool Responses)**  **封包結構:**  typedef struct{  static char cStart = 0x3A; //起始字元  unsigned char SlAdd = 0xA6; //RCSS Tool Slave Address  unsigned char Command; //應回應的命令  unsigned char DataLenExpected\_Low; //數據長度(Lo-Byte),  unsigned char DataLenExpected\_High; //數據長度(Hi-Byte),  unsigned char DataBuf[Receiving\_Data\_Length];// 回應數據內容(Max:65535 bytes)  unsigned char csum16\_Low; //checkSum16 Lo-byte,  unsigned char csum16\_High; //checkSum16 Hi-byte,  static char cEND1= 0X0D; //結束字元 1  static char cEND1= 0X0A; //結束字元 2  }USB\_Transmitting\_Protocol\_Packet;  **Example:** 回傳RCSS Tool FW and HW Version 的資料。   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 起始字元 | RCSS Tool 位址 | 回應命令字元 | 數據長度(Lo-byte) | 數據長度(Hi-byte) | 數據內容(依據數據長度變化) | CheckSum16 Lo-byte | CheckSum16 Hi-byte | 結束字元1 | 結束字元2 | | 0x3A | 0xA6 | 0xE5 | 0x06 | 0x00 | **0x03 0x00 0x03 0x01 0x03 0x00** | 0x9B | 0x01 | 0x0D | 0x0A |   說明:  起始字元 : 0x3A  RCSS Tool Address: 0xA6  回應命令字元 : 0xE5 (回應讀取RCSS Tool FW and HW Version命令)  回應數據長度 : 0x06 (代表 回應數據內容有6bytes)  回應數據內容 : 0x03 0x00 0x03 0x01 0x03 0x00 (FW:V3.0.3.1 HW:V3.0)  CheckSum16 計算，排除起始字元及結束字元。  CheckSum16 = 0xA6 + 0xE5 + 0x06 + 0x00 + 0x03 + 0x00 + 0x03 + 0x01 + 0x03 + 0x00 = 0x019B (發送時Lo-byte在前，Hi-byte在後)  起始字元及結束字元為固定值。  **2.3 RCSS Tool回應相關設定值命令**  相關設定命令 如:0xD0 - 0xD9,  其回應之數據內容: 0xF0 🡺 設定成功  0xF3 🡺 設定失敗  **3 通訊命令**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 命令字元 | 定義 | | 說明 | | 備註說明 | | **RCSS TOOL H/W CONTROL** | |  | |  | | | 0x70 | Cmd\_Set\_DSG\_Load\_Gate | |  | |  | | 0x71 | Cmd\_Set\_CHG\_Shiftet\_Gate | |  | |  | | 0x72 | Cmd\_Set\_ADC\_VPC\_Gate | |  | |  | | 0x73 | Cmd\_Set\_ADC\_VPD\_Gate | |  | |  | |  |  | |  | |  | | 0x80 | Cmd\_Communi\_Multiplex\_Reset | |  | |  | | 0x81 | Cmd\_Communi\_Multiplex\_Set\_Channel | |  | |  | | 0x82 | Cmd\_UART\_Set\_Baud\_Rate | |  | |  | | 0x83 | Cmd\_UART\_Set\_Default\_Baud\_Rate | |  | |  | | 0x84 | Cmd\_UART\_RS485\_Enable | |  | |  | | 0x85 | Cmd\_UART\_RS485\_Disable | |  | |  | | 0x86 | Cmd\_One\_Wire\_Commu\_Enable | |  | |  | | 0x87 | Cmd\_One\_Wire\_Commu\_Disable | |  | |  | | 0x88 | Cmd\_I2C\_Reset | |  | | No longer to used on H/W ver 2.0 and more | | 0x89 | Cmd\_I2C\_Set\_Address | |  | | No longer to used on H/W ver 2.0 and more | |  |  | |  | |  | | **Data Transmitting CMD** | |  | |  | | | 0x90 | Cmd\_I2C\_Transmit\_Data | |  | |  | | 0x91 | Cmd\_I2C\_Receive\_Data | |  | |  | | 0x92 | Cmd\_UART\_RS485\_Transmit\_Data | |  | |  | | 0x93 | Cmd\_UART\_RS485\_Receive\_Data | |  | |  | | 0x94 | Cmd\_One\_Wire\_Transmit\_Data | |  | |  | | 0x95 | Cmd\_One\_Wire\_Receive\_Data | |  | |  | |  |  | |  | |  | | **Charger Function Control** | |  | |  | | | 0x8A | Cmd\_Charger\_24V\_Channel\_Set\_ID | | switch Mux, set input gate and set ID Levels | |  | | 0x8B | Cmd\_Charger\_36V\_Channel\_Set\_ID | | switch Mux, set input gate and set ID Levels | |  | | 0x8C | Cmd\_Charger\_48V\_Channel\_Set\_ID | | switch Mux, set input gate and set ID Levels | |  | | 0x8D | Cmd\_Get\_Charger\_24V\_Voltage\_Auto | | auto switching three levels | |  | | 0x8E | Cmd\_Get\_Charger\_36V\_Voltage\_Auto | | auto switching three levels | |  | | 0x8F | Cmd\_Get\_Charger\_48V\_Voltage\_Auto | | auto switching three levels | |  | |  |  | |  | |  | | 0xA0 | Cmd\_Charger\_24V\_Channel\_Set\_Vin | | switch Mux, set input gate but set ID Levels Off | |  | | 0xA1 | Cmd\_Charger\_36V\_Channel\_Set\_Vin | | switch Mux, set input gate but set ID Levels Off | |  | | 0xA2 | Cmd\_Charger\_48V\_Channel\_Set\_Vin | | switch Mux, set input gate but set ID Levels Off | |  | | 0xA3 | Cmd\_Charger\_All\_Channel\_ID\_Set\_OFF | | switch Mux empty, set input gate off and set ID Levels Off | |  | | 0xA4 | Cmd\_Charger\_All\_Channel\_Set\_Vin | |  | | No longer to used on H/W ver 2.0 and more | | 0xA5 | Cmd\_Get\_All\_Charger\_Channel\_Voltage | |  | | No longer to used on H/W ver 2.0 and more | | 0xA6 | Cmd\_Auto\_Charger\_Checking | |  | | No longer to used on H/W ver 2.0 and more | | 0xA7 | Cmd\_Fast\_Auto\_Charger\_Checking | |  | | No longer to used on H/W ver 2.0 and more | |  |  | |  | |  | | **Get Data Status** | |  | |  | | | 0xA8 | Cmd\_Get\_PACK\_DSG\_Voltage\_Auto | |  | |  | | 0xA9 | Cmd\_Get\_PACK\_CHG\_Voltage\_Auto | |  | |  | | 0xAA | Cmd\_Get\_Channel\_Raw\_ADC | |  | |  | | 0xAB | Cmd\_Get\_Direct\_PackDSG\_Voltage | |  | |  | | 0xAC | Cmd\_Get\_Direct\_PackCHG\_Voltage | |  | |  | | 0xAD | Cmd\_Get\_Direct\_Chger\_24Voltage | |  | |  | | 0xAE | Cmd\_Get\_Direct\_Chger\_36Voltage | |  | |  | | 0xAF | Cmd\_Get\_Direct\_Chger\_48Voltage | |  | |  | | 0xB0 | Cmd\_Get\_Direct\_DSG\_Current | |  | |  | | 0xB1 | Cmd\_Get\_Direct\_CHG\_Current | |  | |  | | 0xB2 | Cmd\_Get\_Charger\_Is\_ID\_Level | |  | |  | |  |  | |  | |  | | **Calibration Setting** | |  | |  | | | 0xD0 | Cmd\_Cal\_Set\_Charger\_24V\_Channel\_Offset | |  | |  | | 0xD1 | Cmd\_Cal\_Set\_Charger\_36V\_Channel\_Offset | |  | |  | | 0xD2 | Cmd\_Cal\_Set\_Charger\_48V\_Channel\_Offset | |  | |  | | 0xD3 | Cmd\_Get\_All\_Calibration\_Data | |  | |  | | 0xD4 | Cmd\_Get\_All\_Flash\_Data | |  | |  | | 0xD5 | Cmd\_Set\_Cal\_Data\_To\_Flash | |  | |  | | 0xD6 | Cmd\_Cal\_Set\_PACK\_DSG\_Vol\_CAL\_ADC\_offset | |  | |  | | 0xD7 | Cmd\_Cal\_Set\_PACK\_CHG\_Vol\_CAL\_ADC\_offset | |  | |  | | 0xD8 | Cmd\_Cal\_Set\_DSG\_Current\_CAL\_ADC\_offset | |  | |  | | 0xD9 | Cmd\_Cal\_Set\_CHG\_Current\_CAL\_ADC\_offset | |  | |  | |  |  | |  | |  | | **Test/Debug Setting** | |  | |  | | | 0xE0 | Cmd\_Error\_Cmd | |  | |  | | 0xE1 | Cmd\_For\_Connect\_Detection | |  | |  | | 0xE2 | Cmd\_Test\_Data\_Send\_Back | |  | |  | | 0xE3 | Cmd\_Test\_Get\_All\_Raw\_ADC\_Data | |  | |  | | 0xE5 | Cmd\_FW\_HW\_Version | |  | |  | | 0xE6 | Cmd\_SetDetectCharger\_DelayCycle | |  | |  | |  |  | |  | |  | |  |  | |  | |  | |  |  | |  | |  | |  |  | |  | |  | |  |  | |  | |  | |  |  | |  | |  | |  |