```
/*********************************************************************************************
 *
 * Project      : Switch_Matrix_Controller
 *
 * File name    : prototcol.txt
 *
 * Description  : To describe the "Protocol User Manual Guide and Design Regulations" in this file.
 *
 * Author       : XU ZAN
 *
 * Date         : Sun.   Aug. 19, 2012
 *
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 *
 *********************************************************************************************/
```
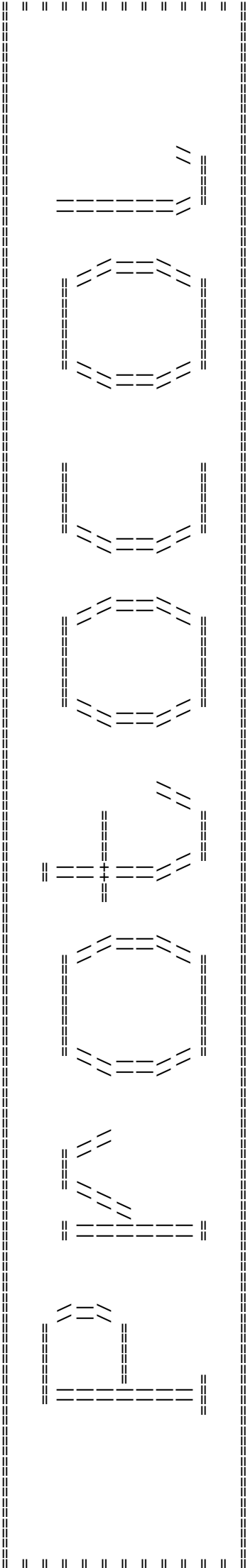
```
                                  Protocol
```

                              USER  MANUAL  GUIDE
                                     and
                              DESIGN  REGULATIONS


How to design the protocol?

    Design regulation : Reference to the syntax of GPIB IEEE-488.2 SCPI command programming language.
                        ==================================================================

    (1) Command Groups :
            Actions                 Systems

    (2) Actions Catalogues :
            a.  CAN
            b.  LIN
            c.  ADC (alias : AIN)
            d.  DAC (alias : AOUT)
            e.  DIN
            f.  DOUT
            g.  Switch
            h.  PWM*

    (3) Command type :
            i. Request              ii. Query (append "?" at the end of cmmand)

    (4) Command prefix and suffix :
            Command Starding indicator : $
            Command Ending indicator   : !

    (5) Command separator :
            # Colon     (:)   to separate a command keyword from a lower level keyword
            # Blank     ( )   to separate a parameter from a command keyword
            # Comma     (,)   is used if a command requires more than 1 parameter
            # Semicolon (;)   to combine commands from the same subsystem into one message string

Enumerate alomost all command here :

    ACTIon :
        SWITCH catalog :
            $ACTIon:SWITch 0x01:12 ON!
            $ACTIon:SWITch 0x5F:05 OFF;SWITch 0x03:24 ON;SWITch 0x07:01 OFF;SWITch 0x80:15 ON!
            $ACTIon:SWITch 0x01:05 ON;SWITch 0x01:21 ON;SWITch 0x01:11 ON;SWITch 0x01:16 ON;SWITch 0x01:23 ON!
            $ACTIon:SWITch 0x01:05 OFF;SWITch 0x01:21 OFF;SWITch 0x01:01 OFF;SWITch 0x01:10 OFF;SWITch 0x01:17 OFF;SWITch 0x01:23 OFF!
            $ACTIon:SWITch 0x01:17 OFF,09 OFF,11 ON,07 OFF,21 OFF,15 OFF,23 OFF!
            $ACTIon:SWITch 0x01:17 ON,09 ON,11 OFF,07 ON,21 ON,15 ON,23 ON!
            $ACTIon:SWITch 0x01:XXXX1XXXX0XX1X011X1001X!
            $ACTIon:SWITch 0x01:XXXXX1XXXX0XX1X011X1001X;SWITch 0x01:101XX0XXXX1XX10100X1XXXX!

            $ACTIon:SWITch 0x01:000000000000000000000000!
            $ACTIon:SWITch 0x01:111111111111111111111111!

    ADC catalog :
            $ACTIon:ADC 2:VOLT?!
            $ACTIon:ADC *:VOLT?!
            $ACTIon:ADC 1:VOLT?;ADC 3:VOLT?;ADC 7:VOLT?!
            $ACTIon:ADC 5:CURRent 82.5?!
            $ACTIon:ADC 7:CURRent 128.35?;ADC 8:CURRent 65.80?!

    DAC catalog :
            $ACTIon:DAC:VOLT 5!
            $ACTIon:DAC:VOLT -12.5!

    DIN catalog :
            $ACTIon:DIN 2:STATe?!
            $ACTIon:DIN 5:STATe?;DIN 8:STATe?;DIN 7:STATe?;DIN 24:STATe?!

    DOUT catalog :
            $ACTIon:DOUT 0x05:16 HIGH!
            $ACTIon:DOUT 0x08:21 LOW;DOUT 0x03:19 LOW;DOUT 0x10:04 HIGH!
            $ACTIon:DOUT 0x01:XXXXXX1X0X10XX111X000X1!

    PWM catalog :
            $ACTIon:PWM CH#:Freq DutyCycle!

    SYSTem :
        Error catalog :
            $SYSTem:ERR?!
            $SYSTem:IDN?!