MODEL NO.: MKF-JS02 Joystick

This joystick controller is suitable for imaging equipment, three-dimensional, laser cutting, laser welding and other equipment, ergonomic design, adopts the most advanced 3D Hall sensor in the world, high reliability Sex.

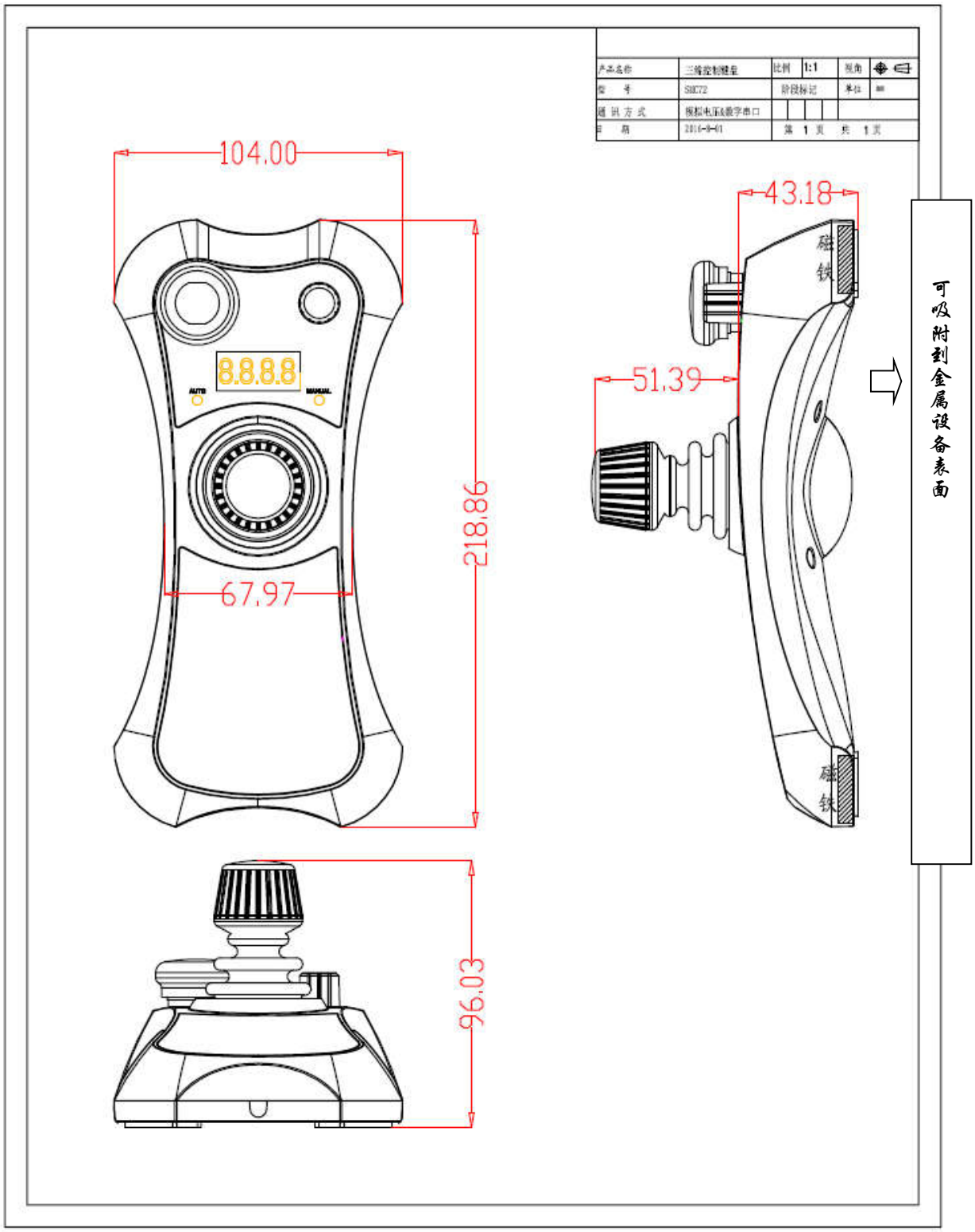
Features:

- ✧ 1. Adopt 3-axis Hall type joystick
- ✧ 2. Ergonomic design
- ✧ 3. It has a strong magnetic adsorption function, which can be directly attached to the surface of the equipment to prevent it from being dropped and broken.
- ✧ 4. 4 LED display, 1 knob, 15 buttons
- ✧ 5. High quality emergency stop switches and buttons
- ✧ 6. Multiple interface models: RS232 interface, RS485 interface
- ✧ 7. Power supply: DC5V or DC12V

Technical parameters:

- ✧ Manipulation lever: 3-axis, Hall sensor
- ✧ Display: 4-digit blue LED display
- ✧ Button: 15 OMRON keys
- ✧ Power supply: DC12V (DC5V can be customized)
- ✧ Power consumption: less than 1W,
- ✧ Signal output: RS232, RS485 baud rate 115200,
- ✧ Operation life: more than 1 million times;
- ✧ Connector: DB9 male connector, lead length 3M
- ✧ Maximum limit of power supply input voltage: MAX 13.5V
- ✧ Minimum limit of power supply input voltage: MIN 7V

DRAWING:


104.00
218.86
67.97
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AUTO
MANUAL
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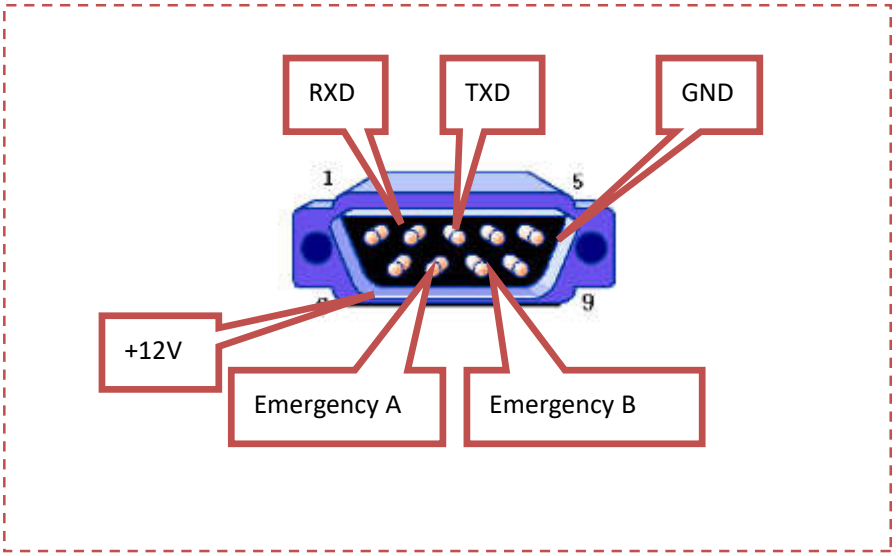
磁铁
磁铁
可吸附到金属设备表面
96.03

Definition of RS232 communication

1. 6-core shielded wire, 3M or 5M long, the connector is as shown in the figure below: (DB9 male connector)

2. Schematic diagram of the connector

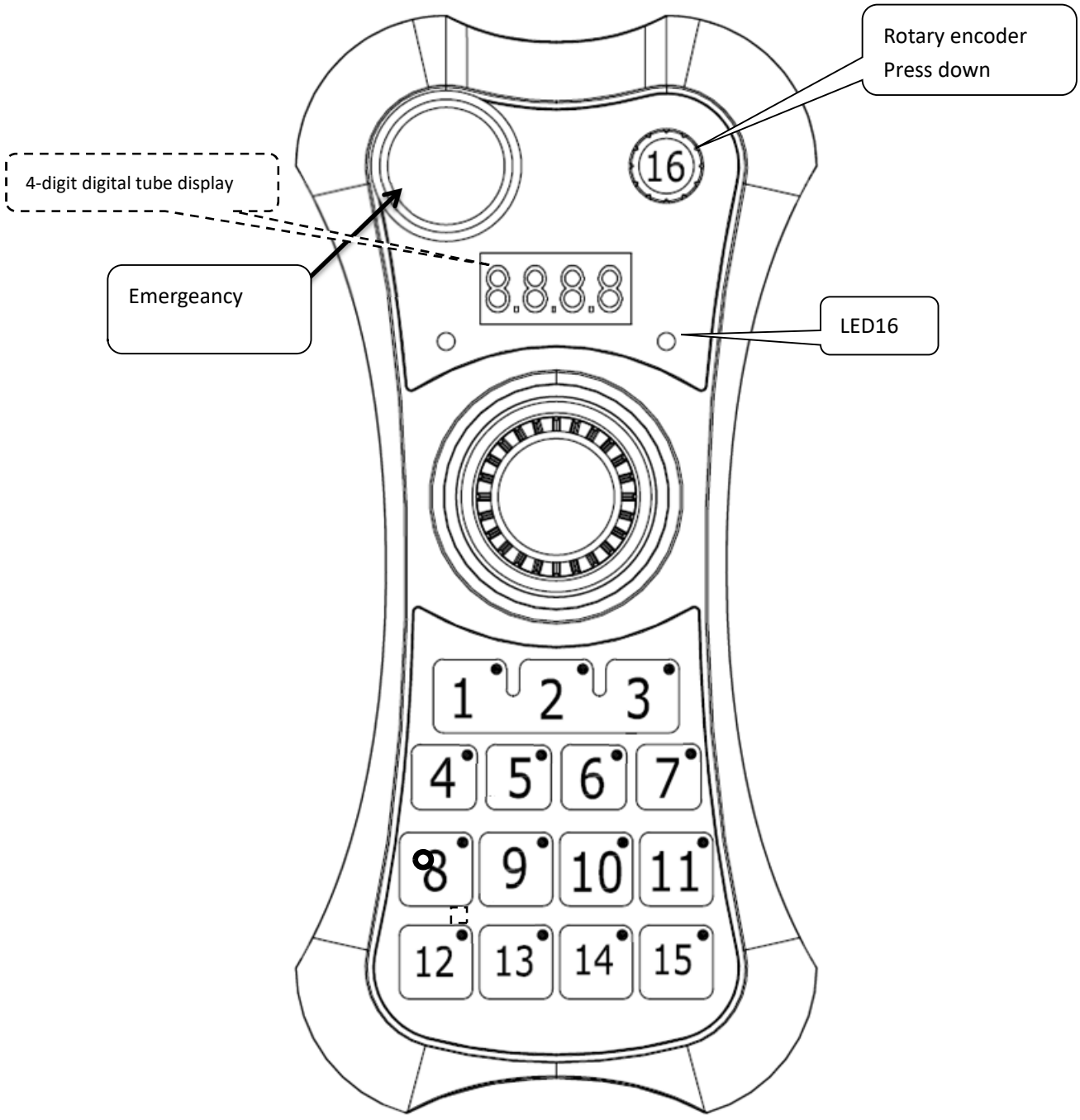


3. Pin definition: DB9 male

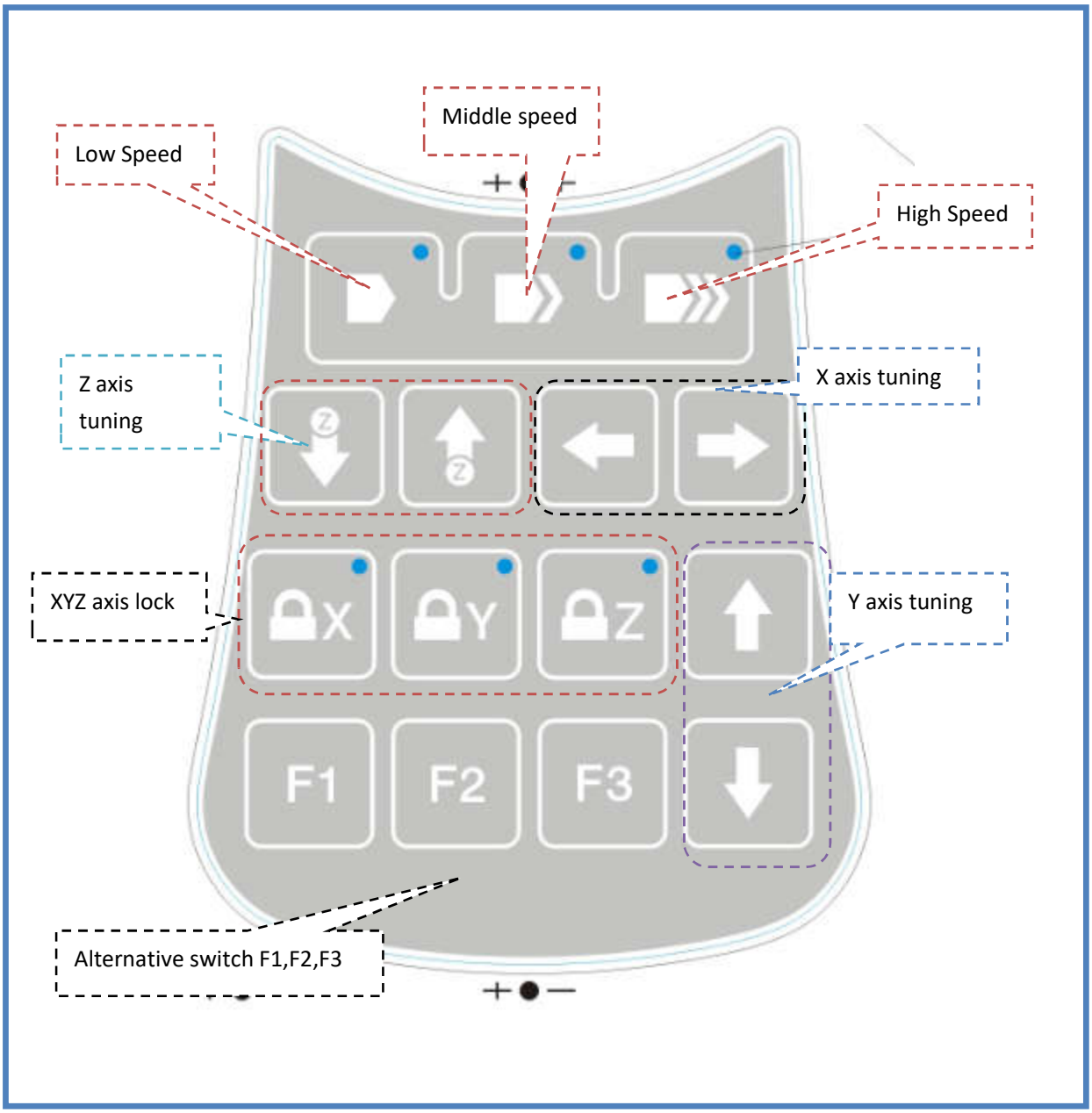
DB9 male	Symbol	Specification	Inner color	Remark
1	NC			
2	RXD	RS232 Joystick data reception	Grey Red	HOST TXD
3	TXD	RS232 Joystick data transmission	Grey Black	RXD
4	NC			
5	GND	GND	Orange Black	GND
6	+12V	Positive power VDD	Orange Red	Input Power: 7-12V
7	ESTOPA	Emergency stop switch pin A	White Black	
8	ESTOPB	Emergency stop switch pin B	White Red	
9	NC			
SHEILD		Shield		

Front panel function:

The black dot on the corner of the button in the picture above is the indicator light



Reference standard panel diagram



Align the center point of the joystick:

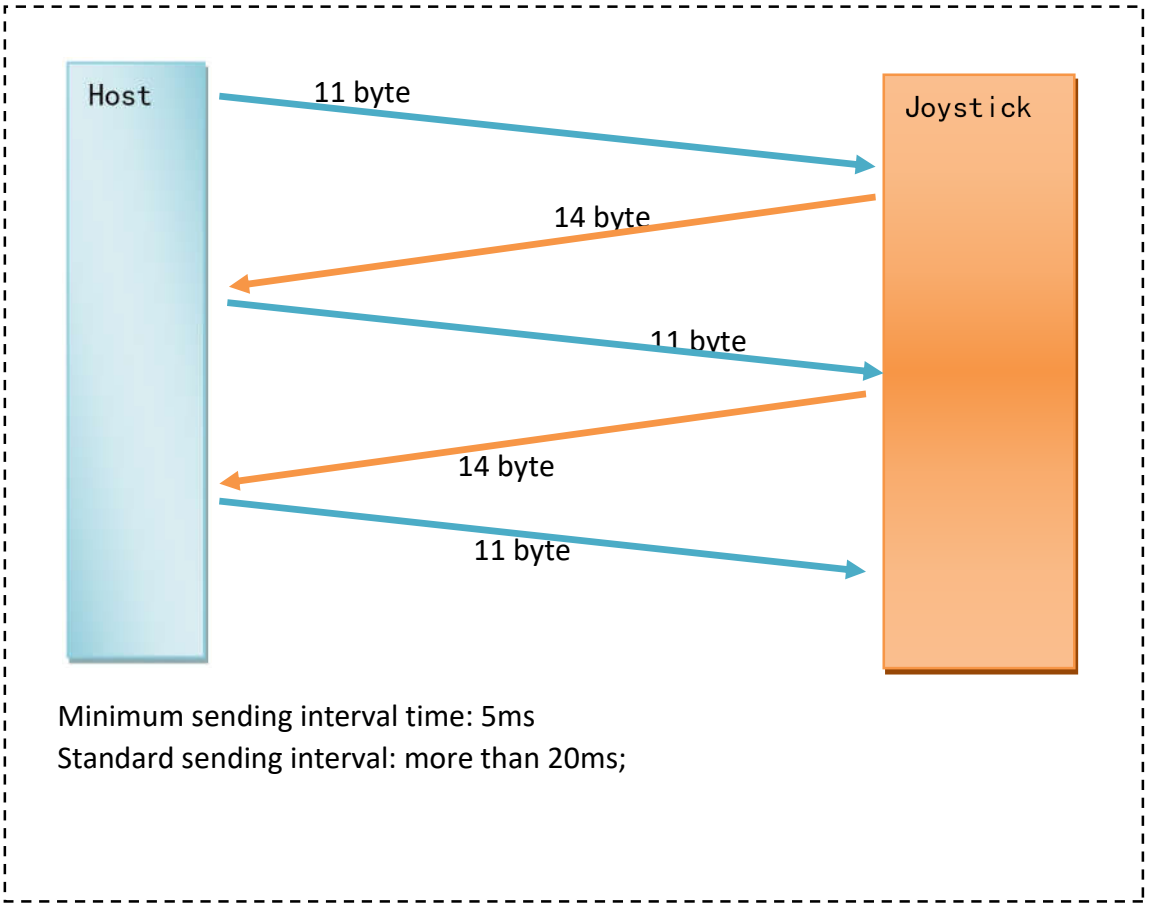
F1+X lock+knob press (press 3 at the same time)
After pressing successfully, the digital tube screen displays 5678

Serial communication protocol:

Communication interface: RS232 and RS485,
Baud rate: 115200.8.1.N

Serial communication joystick RS232, RS485

Communication:



Send the display once, and return the data once, usually sending the display frequency 40 times per second.

Data sent by the host to the joystick:

(1) The host sends a data packet (11 bytes) to the joystick (PC→Joystick):
Function: The host sends data to the joystick, and controls the indicator light and digital tube display of the joystick;
The joystick receives this data from the host and responds to the host's current status (14 bytes).
Data format: Hexadecimal HEX data

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10
帧头	命令 CMD	功能 FUN	指示灯 高位	指示灯 低位	数码管 显示 1	数码管 显示 2	数码管 显示 3	数码管 显示 4	较验和 CH	帧尾
0XFF	0X01	00	LED-H	LED-L						0XA5

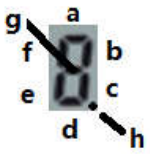
CH =Byte1+Byte2+ Byte3+Byte4+ Byte5+Byte6+ Byte7+Byte8

The above formula, add the low byte of 2 bytes (00-FF)
Frame head and frame end do not participate in the checksum
For example: FF 01 00 00 00 06 db cf e6 97 A5 digital tube display
Data hexadecimal: 01+00+ 00+ 00+ 06+ db+ cf+ e6=297 Checksum=97

Digital tube display:

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
h	g	f	e	d	c	b	a

0=0x3f
1=0x06
2=0x5b
3=0x4f
4=0x66
5=0x6d
6=0x7d
7=0x07
8=0x7f
9=0x6f



The format of the LED indicator:

LED-H

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
LED16	LED15	LED14	LED13	LED12	LED11	LED10	LED9

LED-L

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
LED8	LED7	LED6	LED5	LED4	LED3	LED2	LED1

Set the encoder value (11 bytes) (PC→Joystick): Added on 2017-12-29

Function: The host sends data to the joystick to set the current value of the encoder's memory;

This only needs to send data to the joystick when the host needs to change the value of the joystick's encoder. The joystick will not respond when receiving this data.

Data format: Hexadecimal HEX data

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10
帧头	命令 CMD	功能 FUN	编码器 高位	编码器 低位	备用	备用	备用	备用	较验和 CH	帧尾
0XFF	0X05	00	EEH	EEL	00	00	00	00		0XA5

CH =Byte1+Byte2+ Byte3+Byte4+ Byte5+Byte6+ Byte7+Byte8

The above formula, add the low byte of 2 bytes (00-FF)

Frame head and frame end do not participate in the checksum

For example: FF 05 00 00 10 00 00 00 00 15 A5

Set the memory value of the encoder=16 (decimal)

Set boot display (11 bytes) (PC→Joystick): Added on 2020-04-10

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10
帧头	命令 CMD	功能 FUN	指示灯 高位	指示灯 低位	数码管 显示 1	数码管 显示 2	数码管 显示 3	数码管 显示 4	较验和 CH	帧尾
0XFF	0X05	02			aa	bb	cc	dd		0XA5

CH =Byte1+Byte2+ Byte3+Byte4+ Byte5+Byte6+ Byte7+Byte8

The above formula, add the low byte of 2 bytes (00-FF)

AA BB CC DD is the content displayed on the digital tube

For example, boot display: 8359

FF 05 02 00 00 7f 4f 6d 6f b1 A5

Joystick sends data packet (14 bytes) (Joystick→PC):
Function: Give the position data of the 3-axis joystick, button state, and encoder data;
Data format: Hexadecimal HEX data

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11	Byte12	Byte13
帧头	命令	X 轴 高位 XXH	X 轴 低位 XXL	Y 轴 高位 YYH	Y 轴 低位 YYL	Z 轴 高位 ZZH	Z 轴 低位 ZZL	按钮 高位 BBH	按钮 低位 BBL	编码器 高位 EEH	编码器 低位 EEL	较验和 CH	帧尾
0XFF	0X01											00-FF	0XA5

CH =Byte1+Byte2+ Byte3+Byte4+ Byte5+Byte6+ Byte7+Byte8+ Byte9+Byte10+ Byte11
The above formula, add the low byte of 2 bytes (00-FF)
Frame head and frame end do not participate in the checksum

X axis parameter

MAX right MIN	STOP	MIN LEFT MAX
0X00ff- -- -- 0X07ff	0800	0X0801- -- -- 0X0f00

Y axis parameter

MAX Down MIN	Stop	MIN Up MAX
0X00ff- -- -- 0X07ff	0800	0X0801- -- -- 0X0f00

Z axis parameter

MAX （WIDE CCW) MIN	STOP	MIN (TELE CW) MAX
0X00ff- -- -- 0X07ff	0800	0X0801- -- -- 0X0f00

Button BBH parameter

Bit7	Biy6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
16	15	14	13	12	11	10	9

1=Press, O=Release

Button BBL parameter

Bit7	Biy6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
8	7	6	5	4	3	2	1

1=Press, O=Release

For example： FF 01 08 00 08 00 08 00 00 00 00 a0 b9 A5

FF 01 08 00 08 00 08 00 00 00 01 99 B3 A5

Setting of other parameters

Change to continuous sending:

FF 09 00 00 00 00 00 00 00 09 A5

When the joystick controller receives this command, the communication mode is changed to the automatic data transmission mode. When the state changes, the data is automatically sent, and the same data is only sent once. This will require the host to receive data with high reliability. After the power is turned on, the number will be sent to the joystick after 100MS, and it will only be sent once. This method is usually not used.

Modify the baud rate

FF 0b 00 xx 00 00 00 00 00 CH A5

xx=00 115200 (Default)

xx=01 57600

xx=02 38400

xx=03 19200

xx=04 9600

115200 ： FF 0b 00 00 00 00 00 00 00 0B A5

57600 ： FF 0b 00 01 00 00 00 00 00 0C A5

38400 ： FF 0b 00 02 00 00 00 00 00 0D A5

19200 ： FF 0b 00 03 00 00 00 00 00 0E A5

9600 ： FF 0b 00 04 00 00 00 00 00 0F A5

It has been set already before delivery

Communication protocol

FF 0C 00 xx 00 00 00 00 00 09 A5

xx=00 XL (Default)

xx=01 Modbus Master

xx=02 Modbus Slave

XL protocol ： FF 0C 00 00 00 00 00 00 00 0C A5 (default)

Modbus Master ： FF 0C 00 01 00 00 00 00 00 0D A5

Modbus Slave ： FF 0C 00 02 00 00 00 00 00 0E A5

It has been set already before delivery

Modbus(ID)：

FF 0D 00 ID 00 00 00 00 00 CH A5

Set device address 01 ： FF 0D 00 01 00 00 00 00 00 0E A5 (Default 01)

ID=02 ： FF 0D 00 02 00 00 00 00 00 0F A5

ID=03 ： FF 0D 00 03 00 00 00 00 00 10 A5

Modbus register address: (read the address of joystick register)

FF 0E 00 RegH RegL 00 00 00 00 CH A5

Set register address 0X4001 ： FF 0E 00 40 01 00 00 00 00 4F A5 (Defaul 4001)