### **SBus Settings and Change Control Method**

# 1. How to use USB to TTL cable to connect gimbal series port? (All tests should be performed when gimbal power on )

1) Find a cable of USB to TTL, connect USB port to computer and a port number will be recognized on computer device manager.

2) For the TTL end (Red 5V, Black GND, White RXD, Green TXD), RX, TX and GND are required when connecting the gimbal

3) Connection method: Wire GND ----- Gimbal GND

Wire TX ------ TX silk printed on the gimbal controller Z-3D Wire RX ------ RX silk printed on the gimbal controller Z-3D

As picture:





USB to TTL cable



### 2. Software setting and test:

1) Software setting:

Baud rate: 115200 or 9600. Data bit: 8. Stop bit: 1. Checksum: None. Click: HEX sent and HEX display.

| L SSCOM3.2 (作者:聂小廷(丁丁), 主页http://www.mcu51.com, Email: mcu52@163.com)2003.6.24 | - |                         |   | X                    |
|--|---|-------------------------|---|----------------------|
| 1  | * | 3                       | ·条字符串定义   串口资料  |                      |
|  |   | HE                      | x 字符串   | 发送                   |
|  |   | •                       | FF 01 00 40 00 00 41  | 1                    |
|  |   | ~                       | FF 01 00 20 00 00 21  | 2                    |
|  |   | $\overline{\mathbf{v}}$ | 81 01 04 07 00 ff   | 3                    |
|  |   | ~                       | 81 09 04 47 ff  | 4                    |
|  |   |                         | FF 01 01 00 00 00 02  | 5                    |
|  |   |                         | FF 01 00 80 00 00 81  | 6                    |
|  |   |                         | FF 01 00 00 00 00 01  | 7                    |
|  |   |                         | FF 01 00 07 00 67 6F<br>FF 01 00 07 00 55 5D  | 8                    |
|  |   |                         | AA 55 08 06 FF  | 10                   |
|  |   |                         | and the second se | - 11                 |
|  |   |                         | AA 55 OD 02 FF  | 12                   |
|  |   |                         | 3E 1F 06 25 01 1F 00 00 00  |                      |
|  |   |                         | 3E 1F 06 25 01 1F 01 00 00  |                      |
|  |   |                         | 55 01 00 00 00 00 02 58   | 15                   |
|  |   | 7                       | 81 01 06 01 00 00 03 03 ff  | in the second second |
|  |   |                         | 81 01 0A 01 00 00 03 03 FF  |                      |
|  |   |                         | FF 01 00 08 00 0a 13  | 18                   |
|  |   |                         |   | 19                   |
|  |   |                         | FF 01 00 00 00 00 01  | 20                   |
|  |   |                         | FF 01 00 08 00 50 59  | 21                   |
|  |   |                         | 55 01 F4 01 F4 01 02 42<br>81 01 04 06 03 ff  | 23                   |
|  |   |                         | 81 01 04 51 03 FF   | 24                   |
|  |   |                         | F8 00 30 01 00 00 00 31   | 25                   |
|  |   |                         | F8 00 30 02 00 00 00 32   | 26                   |
|  |   |                         | 81 01 04 01 03 FF   | 27                   |
|  |   | ~                       | 81 01 04 3F 01 7F FF  | 28                   |
|  |   | ~                       | F8 00 22 03 00 00 00 25   | 29                   |
|  |   | ~                       | 3e 40 02 42 01 1F 21  | 30                   |
|  |   |                         | AA 55 Oc 01 ff  | 31                   |
|  |   | 2                       | 3e 3d 00 3d 00  | 32                   |
|  |   |                         |   |                      |
|  |   |                         |   |                      |
|  |   |                         |   |                      |
|  |   |                         |   |                      |
|  | - | 1                       | 「自动循环发送, 间隔: 500  | ms                   |
| 打开文件  文件名发送文件 保存窗口 清除窗口 / HEX显示  |   |                         |   |                      |
| 11<br>田口号 COM7 ▼ ● 美闭串口 帮助 WWW.MCU51.COM 隐蔽                                    |   |                         |   |                      |
|  | - | -                       |   |                      |
| 波行率 13200 P P P P P P P P P P P P P P P P P P                                  |   |                         |   |                      |
| 数据位 8 _ □ 定时发送 1000 ms/次 【下载升级版SSCOM5 13】功能更强大1                                |   |                         |   |                      |
| 停止位 1 ▼ FEX发送 □ 发送新行 bbs. afui ot. com开放物联网论坛                                  |   |                         |   |                      |
| 校验位 None 🔽 字符串输入框: 发送 RT-Thread来白中国的开源免费商用物联网操作到                               |   |                         |   |                      |
| 流控制 None 🔽 3e 3d 00 3d 00  |   |                         |   |                      |
| ww.mcu51.cor S:0 R:0 COM7已打开 115200bps CTS=0 DSR=0 RLSD=0                      |   |                         |   | /                    |
|  |   | _                       |   |                      |

2) Send: 3e 3d 00 3d 00 under normal circumstances, then get feedback as below, means the serial communication is connected.

| ile SSCOM3.2 (作者:聂小猛(丁丁), 主页http://www.mcu51.com, Email: mcu52@163.com)2003.6.24 |  | - C X  |
|--|--|--|
| 3E 3D 36 73 00 00 00 1A 00 00 00 00 00 00 00 00 00 00 00 00 00                   | 多条字符串定义 串口   | 资料   |
|  | HEX 字符串  | 发送   |
|  | FF 01 00 40 00 00  | and the second s |
|  | FF 01 00 20 00 00  |  |
|  | ₩ 81 01 04 07 00 ff  |  |
|  | ₩ 81 09 04 47 ff   | 4  |
| 1  | FF 01 01 00 00 00  | 02 5   |
|  | FF 01 00 80 00 00  |  |
|  | FF 01 00 00 00 00  |  |
|  | FF 01 00 07 00 67  |  |
| A A A A A A A A A A A A A A A A A A A  | FF 01 00 07 00 55  |  |
|  | AA 55 08 06 FF   | 10   |
| 1  | ₩ 81 09 04 47 ff   | 11 12  |
|  | ✓ AA 55 0D 02 FF<br>✓ 3E 1F 06 25 01 1F                              |  |
| 1  | ✓ 3E 1F 06 25 01 1F<br>✓ 3E 1F 06 25 01 1F                           |  |
|  | ▼ 55 01 00 00 00 00  | the second se  |
| 1  | ▼ 81 01 06 01 00 00  |  |
|  | ▼ 81 01 0A 01 00 00  |  |
|  | ▼ FF 01 00 08 00 0a  |  |
|  | ▼ FF 01 00 10 00 0a  | to the second se |
|  | FF 01 00 00 00 00  | 01 20  |
|  | ▼ FF 01 00 08 00 50  | 59 21  |
|  | ▼ 55 01 F4 01 F4 01  |  |
|  | ▼ 81 01 04 06 03 ff  |  |
|  | ₩ 81 01 04 51 03 FF  | 24   |
|  | F8 00 30 01 00 00  |  |
|  | ₩ F8 00 30 02 00 00  |  |
|  | <ul> <li>✓ 81 01 04 01 03 FF</li> <li>✓ 81 01 04 3F 01 7F</li> </ul> | 27<br>FF 28  |
|  | <ul> <li>✓ 81 01 04 3F 01 7F</li> <li>✓ F8 00 22 03 00 00</li> </ul> |  |
| 1  | ▼ 3e 40 02 42 01 1F  |  |
|  | ▼ AA 55 0c 01 ff   | 31   |
| \<br>\   | ₩ 3e 3d 00 3d 00   | G3ZD   |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  | □ 自动循环发送, 间  | IF鬲: 500 ms  |
| 打开文件  文件名发送文件  保存窗口   清除窗口    HEX显示  |  |  |
| 串口号 [COM7 ▼ ● <u>关闭串口</u> 帮助 WWW.MCU5(.COM <u>隐藏</u>                             |  |  |
| 波特率 115200 ▼ □ DTR □ RTS ▲PCB打样降至每款30元顺丰包邮!【官网】                                  |  |  |
| 数据位 8 _ C 定时发送 1000 ms 次 【下载升级版SSCOM5.13】 功能更得大!                                 |  |  |
| 傳止位 1 ▼ ▼ HEX发送 「发送新行」 bbs. afuiot. com开放物联网论坛                                   |  |  |
| 核验位 None ▼ 字符串输入框: 发送 ▼ RT-Thread来自中国的开源分费商用物联网操作到                               |  |  |
| · None ▼ 3e 3d 00 3d 00  |  |  |
| www.mcu51.cor S:40 R:59 COM7已打开 115200bps CTS=0 DSR=0 RLSD=0                     |  |  |



3) Change the baud rate of gimbal

Send: AA 55 08 07 FF, NO software feedback, then restart gimbal

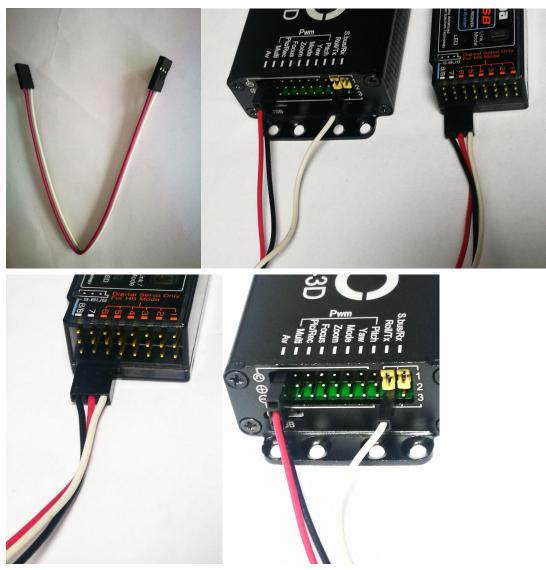
| NSCOM3.2 (作者:聂小猛(丁丁), 主页http://www.mcu51.com, Email: mcu52@163.com)2003.6.24   |  |   | X   |
|--|--|---|---|
| E 35001152 (1=1.50132 (1=1.50132 (15.001)2005.0.24<br>32 30 36 73 00 00 00 00 1A 00 00 00 00 00 00 00 00 00 00 00 00 00  | ◆ 多条字符串定义<br>HEX 字<br>FF 01 00 40 C<br>FF 01 00 00 20 C<br>FF 01 00 40 C<br>FF 01 00 40 C<br>FF 01 00 40 C<br>FF 01 00 00 C<br>FF 01 00 00 C<br>FF 01 00 00 C<br>FF 01 00 00 C<br>FF 01 00 07 C<br>FF 01 00 00 C<br>FF 01 | 串口资料  <br>符串<br>00 00 41<br>00 00 21<br>00 00 21<br>00 00 22<br>00 00 02<br>00 00 02<br>00 00 01<br>00 00 01<br>00 00 05<br>F   | 发送<br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11 |
|  | ▼ 3E 1F 06 25 0<br>▼ 55 01 00 00 0   | 11         1F         00         00         01           11         1F         01         00         00         10           10         00         00         00         01         00         10         00         00         00         00         01         00         00         00         03         3         Ff         00         0         00         00         01         00 |   |
| 打开文件       文件名       发送文件       保存窗口       清除窗口       HEX显示         串口号       COM7         送文件       保存窗口       清除窗口       HEX显示         虚特率       115200 ✓        DTR       RTS |  |   |   |

4) Then resend: 3e 3d 00 3d 00, no feedback, means SBus set is finished.

#### 3. SBus wiring diagram

Use a 3-PIN DUPONT cable to connect the two part, connect as below Notice: The GND of Sbus signal should connect to the GND of PWM control box

| Sbus Default channels and functions |
|-------------------------------------|
| Ch1yaw                              |
| Ch2pitch                            |
| Ch3mode                             |
| Ch4zoom                             |
| Ch5focus                            |
| Ch6pic/rec                          |
| Ch7multi                            |



#### 4. Cancel the SBus control, restore the PWM or Serial port control

1) When gimbal is controlled by Subs, If send gimbal query command: 3e 3d 00 3d 00, no feedback command display.

2) Unplug a jump cap as shown (The yellow part in the red box is one jump cap)





3) Input 1115200 as baud rate on the serial port software. Then click send: AA 55 08 06 ff. As shown :

|                                   | 多条字符串定义 串口资料   |
|-----------------------------------|--|
|                                   |  |
|                                   | FF 01 00 40 00 00 41 1   |
|                                   | Image: FF 01 00 40 00 00 41         1           Image: FF 01 00 20 00 00 21         2  |
|                                   | ▼ 11 01 00 20 00 00 21 2<br>▼ 81 01 04 07 00 ff 3  |
|                                   | ▼ 81 09 04 47 ff 4   |
|                                   | $\overrightarrow{FF}$ 01 01 00 00 00 02 5  |
|                                   | Image: FF 01 00 00 00 00 00 00 00 00 00 00 00 00   |
|                                   | IF 01 00 00 00 00 01         0           IF 01 00 00 00 00 01         7  |
|                                   | ▼ FF 01 00 07 00 67 6F 8   |
|                                   | ▼ FF 01 00 07 00 55 5D 9   |
|                                   | ▼ AA 55 08 07 FF 10  |
|                                   | Image: Weight of the state of the |
|                                   | ▼ AA 55 0D 02 FF 12  |
|                                   | ▼ 3E 1F 06 25 01 1F 00 00 00 1 13  |
|                                   | ▼ 3E 1F 06 25 01 1F 01 00 00 1 14  |
|                                   | ▼ 55 01 00 00 00 02 58 15  |
|                                   | ▼ 81 01 06 01 00 00 03 03 ff 16  |
|                                   | ▼ 81 01 0A 01 00 00 03 03 FF 17  |
|                                   | FF 01 00 08 00 0a 13 18  |
|                                   | FF 01 00 10 00 0a 1b 19  |
|                                   | FF 01 00 00 00 01 20   |
|                                   | FF 01 00 08 00 50 59 21  |
|                                   | ▼ 55 01 F4 01 F4 01 02 42 22   |
|                                   | ▼ 81 01 04 06 03 ff 23   |
|                                   | ▼ 81 01 04 51 03 FF 24   |
|                                   | ₩ F8 00 30 01 00 00 00 31 25   |
|                                   | <b>▼ F8 00 30 02 00 00 00 32</b> 26  |
|                                   | ▼ 81 01 04 01 03 FF 27   |
|                                   | ▼ 81 01 04 3F 01 7F FF 28  |
|                                   | ▼ F8 00 22 03 00 00 00 25 29   |
|                                   | ▼ 3e 40 02 42 01 1F 21 30  |
|                                   | 🔽 🗛 55 08 06 ff  |
|                                   | I 3e 3d 00 3d 0032   |
|                                   |  |
|                                   | - 「 自动循环发送, 间隔: 500 ms   |
| [开文件] 文件名 发送文件 /                  | 保存窗口   清除窗口   ┏ HEX显示  |
|                                   | MCU51.COM _ 隐藏   |
| 据位 8 ▼ □ 定时发送 1000 ms/次 PCB打样请加PI | 每款30元顺丰包邮!【 ( 官  |
| 验位 None 🛫 字符串輸入框・ 岩洋 RT-Thread来自  | 中国的开源全弗商用物联网操作到  |
| 控制 None 🔽 🗚 55 08 06 ff           |  |

4) Power off the gimbal, re-plug the jump cap, restart the gimbal. Then send command to query feedback. If there is feedback, it means gimbal serial port is working well. Send: 3e 3d 00 3d 00, get the feedback as below, means the serial port is connected and PWM available.

| ▶ SSCOM3.2 (作者:聂小猛(丁丁), 主页http://www.mcu51.com, Email: mcu52@163.com)2003.6.24  |   | X      |
|---|---|--------|
| 38 30 36 73 00 00 00 14 00 00 00 00 00 00 00 00 00 00 00 00 00  | 多条字符串定义】串口资料】   |        |
| 32 3D 36 73 00 00 00 01 1A 00 00 00 00 00 00 00 00 00 00 00 00 00   |   | 发送     |
|   | HEX 字符串   |        |
|   | ▼         FF 01 00 40 00 00 41           ▼         FF 01 00 20 00 00 21 | 1 2    |
|   | ▼ 81 01 04 07 00 ff   | 3      |
|   | ₩ 81 09 04 47 ff  | 4      |
| 1   | FF 01 01 00 00 00 02  | 5      |
|   | FF 01 00 80 00 00 81  | 6      |
|   | FF 01 00 00 00 00 01  | 7      |
|   | ▼ FF 01 00 07 00 67 6F  | 8      |
|   | ▼ FF 01 00 07 00 55 5D  | 9      |
|   | AA 55 08 06 FF  | 10     |
| 1   | ▼ 81 09 04 47 ff  | 11     |
|   | AA 55 0D 02 FF  | 12     |
| 1   | ▼ 3E 1F 06 25 01 1F 00 00 0   | n i 13 |
| 1   | ▼ 3E 1F 06 25 01 1F 01 00 0   |        |
|   | 55 01 00 00 00 00 02 58   | 15     |
|   | ▼ 81 01 06 01 00 00 03 03 f   | f 16   |
| N N   | ₩ 81 01 0A 01 00 00 03 03 F   | F 17   |
|   | FF 01 00 08 00 0a 13  | 18     |
| 1   | FF 01 00 10 00 0a 1b  | 19     |
| N N   | FF 01 00 00 00 00 01  | 20     |
|   | FF 01 00 08 00 50 59  | 21     |
|   | ▼ 55 01 F4 01 F4 01 02 42   | 22     |
|   | ▼ 81 01 04 06 03 ff   | 23     |
|   | 🔽 81 01 04 51 03 FF   | 24     |
|   | F8 00 30 01 00 00 00 31   | 25     |
|   | F8 00 30 02 00 00 00 32   | 26     |
|   | 81 01 04 01 03 FF   | 27     |
|   | 81 01 04 3F 01 7F FF  | 28     |
|   | F8 00 22 03 00 00 00 25   | 29     |
|   | 3e 40 02 42 01 1F 21  | 30     |
|   | AA 55 Oc 01 ff  | 31     |
|   | I 3e 3d 00 3d 00  | 0320   |
|   | 「自动循环发送, 间隔: 500  | ms     |
| 1<br>打开文件│文件名   |   |        |
| 串口号 [COM7] ▼ ● <u>关闭串口</u> 帮助 WWW. MCU51.COM 隐藏   |   |        |
| 波特率     115200 ▼     DTR     RTS     APCB打样路至每款30元城丰包邮!【官网】       数据位     8     ▼     □ 定时发送     1000     ms/x       停止位     1     ▼     FXEX发送     大学新台       校验位     None     ▼     安存串输入框:     发送       流控制     None     ▼     34 00 34 00 |   |        |
| www.mcu51.cor S:40 R:59 COM7已打开 115200bps CTS=0 DSR=0 RLSD=0  |   | 1      |