Alpha1 Series PC Communication Protocol

Version: V20151215

Command format:

PC->DEV:
Header ＋ DATA ＋ CHECK ＋ end character

DEV->PC:
Header ＋ DATA ＋[CHECK] ＋ end character
Note: [] indicates dispensable fields and can be decided based on specific commands.

Field description:
Header (2B): two bytes that can switch places
DATA (nB): content data
CHECK (1B): DATA accumulates by byte, taking the byte with the lowest results.
End character (1B): fixed to 0XED

Note:
(1) This protocol is applicable to communication between Alpha1 products and PCs only. The embedded firmware version of Alpha1 must be later than 2015121519; earlier versions may result in compatibility issues due to the new commands.

Command Description	Attribute	Command header 1 (1B)	Command header 2 (1B)	DATA(nB)	CHECK (1B)	End Character (1B)	Remark	Command header 1 (1B)	Command header 2 (1B)	DATA (nB)	CHECK (1B)	End Character (1B)	Remark
				PC->DEV Transmit						**DEV->PC Response**			
Reading the hardware version number of the robot	R	0XF1	0X1F					0XF1	0X1F	Version number length (1B); version number ((n-1)B)	*		
Reading the running status of the servo	R	0XEF	0XFE	0X00 , 0X00 , 0X00 , 0X00 , 0X00 , 0X00				0XEF	0XFE	Running state (4B), composed of 32 bits, the least significant bit indicates number 1 servo and the most significant bit indicates number 32 servo. 1: The servos are running. 0: The servos are powered off (angle read back).	*		
Stop playing	W	0XF2	0X2F					0XF2	0X2F	Success: 0XAA Failure: 0XEE			
Reading the embedded firmware version of the robot	R	0XF5	0X5F	0X01,0X00,0X00,0X00,0X00,0X00				0XF5	0X5F	Success: 0XAA, version character string (10B) Failure: 0XEE, any value (10B)	*		
Debugging robot actions	W	0XFB	0XBF	0X01, 0X00, 0X00, 0X00, 0X00, 0X00, angle value (20B), motion duration (1B), receiving interval of two frames (2B). Angle value: unit degree (°). Motion duration: unit 20 ms. This duration indicates the time the servo spends on moving from current angle to a specified angle. Receiving interval of two frames: unit 20 ms. This time indicates the period from the end of receiving the current frame to the start of receiving next frame.	CHECK = DATA accumulates by byte, taking the byte with the lowest results. (use "*" in the reply message to indicate whether to use the parity check algorithm)	0XED	20 servos at most	0XFB	0XBF	0X01, state (1B), 0X00, 0X00, 0X00, 0X00 State: success: 0XAA failure: 0XEE	*	0XED	
Connecting to the servo offset debugging tool	W	0XF4	0X4F	0X01, connection state, 0X00, 0X00, 0X00, 0X00 Connection state: 0x01 connected (in connection mode, the Bluetooth function shall not be enabled) 0x00 disconnected (in disconnection mode, the Bluetooth function can be enabled				0XF4	0X4F	Success: 0XAA Failure: 0XEE			
USB device type	W	0XF9	0X9F	MM, 0X00, 0X00, 0X00, 0X00, 0X00 MM: MM = 0x01: converted to a USB disk MM = 0x02: converted to a VCP MM = 0x03: converted to an HID			PC and robot communication is implemented based on VCP or HID. HID is recommended.	0XF9	0X9F	Success: 0XAA Failure: 0XEE			
Start playing	W	0XF3	0X3F	Command length (1B), action name: (nB) Command length = 1+ n				0XF3	0X3F	Success: 0XAA Failure: 0XEE			
Other commands related to the servo		0XFA	0XAF	Please refer to Servo_UBT12HC_User Manual_V1.02									
		0XFC	0XCF										