M5Stack Chain Buzzer Protocol

All packets start with 0xAA 0x55 and end with 0x55 0xAA

V1 (Version)

2026/5/25

Command Set	Byte / Command Format	0	1	2	3	4	5	6	7	8	9	10
		Length_low	Length_high	Index	Cmd	Data1	Data2	Data3	Data4	Data5	Data6	Data7
Set RGB Values	Command Packet Format	0x05+Num*3	0x00	Index_id	0x20	Index	Num	R	G	B	...	CRC
	Response Packet Format	0x04	0x00	Index_id	0x20	Operation_status	CRC					
	Command Details	(1) Function: Sets the RGB value. (2) Input parameters: Index_id (device index ID), Index (starting RGB LED index), Num (number of RGB LEDs to set), RGB values (3) Return parameter: Operation_status (4) Command code: 0x20 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Index is the starting RGB LED index and starts at 0. The Buzzer device has only one RGB LED, so Index = 0 and Num = 1.										
Get RGB Values	Command Packet Format	0x05	0x00	Index_id	0x21	Index	Num	CRC				
	Response Packet Format	0x04+Num*3/ 0x04	0x00	Index_id	0x21	Operation_status	R	G	B	...	CRC	
	Command Details	(1) Function: Gets RGB values. (2) Input parameters: Index_id (device index ID), Index (starting RGB LED index), Num (number of RGB LEDs to read) (3) Return parameters: RGB values (4) Command code: 0x21 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Index is the starting RGB LED index and starts at 0. The Buzzer device has only one RGB LED, so Index = 0 and Num = 1. Note 3: If the operation fails, the response packet does not contain RGB values.											
Set RGB LED Brightness	Command Packet Format	0x05	0x00	Index_id	0x22	Light	Save_to_flash	CRC				
	Response Packet Format	0x04	0x00	Index_id	0x22	Operation_status	CRC					
	Command Details	(1) Function: Sets the RGB LED brightness. (2) Input parameters: Index_id (device index ID), Light (RGB brightness, 0-100, default: 40), Save_to_flash (whether to save to internal flash) (3) Return parameter: Operation_status (4) Command code: 0x22 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Save_to_flash controls whether the setting is saved to internal flash. 0: Do not save 1: Save Note 3: A successful setting takes effect immediately. Note 4: Saving to internal flash requires erasing a page. This takes approximately 20 ms, during which UART interrupts are disabled. Frequent writes also shorten the device lifespan. If brightness must be adjusted frequently, avoid saving every adjustment to internal flash.											
Get RGB LED Brightness	Command Packet Format	0x03	0x00	Index_id	0x23	CRC						
	Response Packet Format	0x04	0x00	Index_id	0x23	Light	CRC					
	Command Details	(1) Function: Gets the RGB LED brightness. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Light (RGB brightness) (4) Command code: 0x23										

Set Buzzer Mode	Command Packet Format	0x04	0x00	Index_id	0x30	Mode	CRC					
	Response Packet Format	0x04	0x00	Index_id	0x30	Operation_status	CRC					
	Command Details	(1) Function: Sets the buzzer mode. (2) Input parameters: Index_id (device index ID), Mode (buzzer mode) (3) Return parameter: Operation_status (4) Command code: 0x30 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Mode selects the buzzer mode (default: 0). 0: Auto playback mode 1: Manual playback mode 2: Note playback mode										
Get Buzzer Mode	Command Packet Format	0x03	0x00	Index_id	0x31	CRC						
	Response Packet Format	0x04	0x00	Index_id	0x31	Mode	CRC					
	Command Details	(1) Function: Gets the buzzer mode. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Mode (buzzer mode) (4) Command code: 0x31 Note 1: Mode indicates the buzzer mode (default: 0). 0: Auto playback mode 1: Manual playback mode 2: Note playback mode										
Configure Buzzer Auto Playback	Command Packet Format	0x08	0x00	Index_id	0x32	Freq_Low	Freq_High	Duty	TIme_low	TIme_High	CRC	
	Response Packet Format	0x04	0x00	Index_id	0x32	Operation_status	CRC					
	Command Details	(1) Function: Configures automatic buzzer playback. (2) Input parameters: Index_id (device index ID), Freq (playback frequency), Duty (playback duty cycle), Time (playback duration) (3) Return parameter: Operation_status (4) Command code: 0x32 Note 1: Operation_status 0: Operation failed 1: Operation succeeded 2: Mode mismatch (auto playback mode is required) Note 2: Set the buzzer to auto playback mode before using this command. Note 3: Freq = (uint16_t)((Freq_High << 8) | Freq_Low); range: 100-10000 Hz. Note 4: Duty range: 0-100. Note 5: Time = (uint16_t)((Time_High << 8) | Time_Low); range: 0-65535 ms.										
Set Buzzer Frequency	Command Packet Format	0x05	0x00	Index_id	0x33	Freq_Low	Freq_High	CRC				
	Response Packet Format	0x04	0x00	Index_id	0x33	Operation_status	CRC					
	Command Details	(1) Function: Sets the buzzer frequency. (2) Input parameters: Index_id (device index ID), Freq (playback frequency) (3) Return parameter: Operation_status (4) Command code: 0x33 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Freq = (uint16_t)((Freq_High << 8) | Freq_Low); range: 100-10000 Hz (default: 2700 Hz).										
Get Buzzer Frequency	Command Packet Format	0x03	0x00	Index_id	0x34	CRC						
	Response Packet Format	0x05	0x00	Index_id	0x34	Freq_Low	Freq_High	CRC				
	Command Details	(1) Function: Gets the buzzer frequency. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Freq (playback frequency) (4) Command code: 0x34 Note 1: Freq = (uint16_t)((Freq_High << 8) | Freq_Low); range: 100-10000 Hz (default: 2700 Hz).										

Set Buzzer Duty Cycle	Command Packet Format	0x04	0x00	Index_id	0x35	Duty	CRC					
	Response Packet Format	0x04	0x00	Index_id	0x35	Operation_status	CRC					
	Command Details	(1) Function: Sets the buzzer duty cycle. (2) Input parameters: Index_id (device index ID), Duty (playback duty cycle) (3) Return parameter: Operation_status (4) Command code: 0x35 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Duty range: 0-100 (default: 50).										
Get Buzzer Duty Cycle	Command Packet Format	0x03	0x00	Index_id	0x36	CRC						
	Response Packet Format	0x04	0x00	Index_id	0x36	Duty	CRC					
	Command Details	(1) Function: Gets the buzzer duty cycle. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Duty (playback duty cycle) (4) Command code: 0x36 Note 1: Duty range: 0-100.										
Set Buzzer State	Command Packet Format	0x04	0x00	Index_id	0x37	Status	CRC					
	Response Packet Format	0x04	0x00	Index_id	0x37	Operation_status	CRC					
	Command Details	(1) Function: Sets the buzzer state. (2) Input parameters: Index_id (device index ID), Status (buzzer state) (3) Return parameter: Operation_status (4) Command code: 0x37 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: Status indicates the buzzer state (power-on default: 0). 0: Off 1: On Note 3: The buzzer playback frequency and duty cycle can be set with commands 0x33 and 0x35. Note 4: This setting takes effect only when the buzzer is in manual playback mode.										
Get Buzzer State	Command Packet Format	0x03	0x00	Index_id	0x38	CRC						
	Response Packet Format	0x04	0x00	Index_id	0x38	Status	CRC					
	Command Details	(1) Function: Gets the buzzer state. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Status (buzzer state) (4) Command code: 0x38 Note 1: Status indicates the buzzer state (power-on default: 0). 0: Off 1: On										
Play Buzzer Note	Command Packet Format	0x06	0x00	Index_id	0x39	Note_index	TIme_low	TIme_High	CRC			
	Response Packet Format	0x04	0x00	Index_id	0x39	Operation_status	CRC					
	Command Details	(1) Function: Plays a buzzer note. (2) Input parameters: Index_id (device index ID), Note_index (note index), Time (playback duration) (3) Return parameter: Operation_status (4) Command code: 0x39 Note 1: Operation_status 0: Operation failed 1: Operation succeeded 2: Mode mismatch (note playback mode is required) Note 2: Set the buzzer to note playback mode before using this command. Note 3: Note_index 0 : REST (0 Hz) 1-12 : Octave 3 (C3, C#3, D3, D#3, E3, F3, F#3, G3, G#3, A3, A#3, B3) 13-24 : Octave 4 (C4, C#4, D4, D#4, E4, F4, F#4, G4, G#4, A4, A#4, B4) 25-36 : Octave 5 (C5, C#5, D5, D#5, E5, F5, F#5, G5, G#5, A5, A#5, B5) 37-48 : Octave 6 (C6, C#6, D6, D#6, E6, F6, F#6, G6, G#6, A6, A#6, B6) 49-60 : Octave 7 (C7, C#7, D7, D#7, E7, F7, F#7, G7, G#7, A7, A#7, B7) 61 : Octave 8 (C8 only) Note 4: Time = (uint16_t)((Time_High << 8) | Time_Low); range: 0-65535 ms.										

Query Unique Device UID	Command Packet Format	0x04	0x00	Index_id	0xF8	UID_Type	CRC					
	Response Packet Format	0x04+4/12	0x00	Index_id	0xF8	Operation_status	UID (multi-byte)	CRC				
	Command Details	(1) Function: Queries the device's unique UID. (2) Input parameters: Index_id (device index ID), UID_Type (3) Return parameters: Operation_status, UID (4) Command code: 0xF8 Note 1: Operation_status 0: Operation failed 1: Operation succeeded Note 2: UID_Type selects the UID type. 0: 4-byte UID 1: 12-byte UID										
Query Bootloader Version	Command Packet Format	0x03	0x00	Index_id	0xF9	CRC						
	Response Packet Format	0x04	0x00	Index_id	0xF9	Bootloader_version	CRC					
	Command Details	(1) Function: Queries the bootloader version. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Bootloader_version (4) Command code: 0xF9										
Query Device Firmware Version	Command Packet Format	0x03	0x00	Index_id	0xFA	CRC						
	Response Packet Format	0x04	0x00	Index_id	0xFA	Firmware_version	CRC					
	Command Details	(1) Function: Queries the device firmware version. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Firmware_version (4) Command code: 0xFA										
Query Device Type	Command Packet Format	0x03	0x00	Index_id	0xFB	CRC						
	Response Packet Format	0x05	0x00	Index_id	0xFB	Device_type_low	Device_type_high	CRC				
	Command Details	(1) Function: Queries the device type. (2) Input parameter: Index_id (device index ID) (3) Return parameter: Device_type (4) Command code: 0xFB Note 1: Device_type = (uint16_t)((Device_type_high << 8) | Device_type_low) Note 2: The device type code for Buzzer is 0x000B.										
Enumeration Request	Command Packet Format	None										
	Response Packet Format	0x03	0x00	Index_id	0xFC	CRC						
	Command Details	(1) Function: Enumeration request. The last device sends this packet when the Chain topology changes and each device sends it at power-on, notifying the host to update the state of devices on the Chain. (2) Input parameters: None (3) Return parameters: None (4) Command code: 0xFC										
Heartbeat Packet	Command Packet Format	0x03	0x00	0xFF	0xFD	CRC						
	Response Packet Format	0x03	0x00	0xFF	0xFD	CRC						
	Command Details	(1) Function: Heartbeat packet. Chain devices communicate periodically to determine whether they are the last device. The host can also use heartbeat packets to determine whether any Chain devices are connected. (2) Input parameters: None (3) Return parameters: None (4) Command code: 0xFD										

Enumerate Devices	Command Packet Format	0x04	0x00	0xFF	0xFE	Send_num	CRC					
	Response Packet Format	0x04	0x00	0xFF	0xFE	Receive_num	CRC					
	Command Details	(1) Function: Enumerates the number of devices on the Chain. (2) Input parameter: Send_num (default: 0; used to count devices) (3) Return parameter: Receive_num (the number of devices) (4) Command code: 0xFE										

Note 1: The maximum packet length is 256 bytes.
Note 2: The data length covers Index_id through CRC, including both Index_id and CRC, but excluding the length field itself.
Note 3: To calculate the CRC, exclude the packet header, packet footer, length field, and CRC field itself, then sum all remaining data bytes.
Note 4: UART settings: 115200 baud, 8 data bits, 1 stop bit, no parity.

```
uint8_t calculateCRC(const uint8_t *buffer, uint16_t size)
{
    uint8_t crc8 = 0;
    for (uint8_t i = 4; i < (size - 3); i++) {
        crc8 += buffer[i];
    }
    return crc8;
}
```