Matrix Protocol Serial Keyboard

Control Command

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Chapter 1 Overview

1.1 Introduction

The user can log in to the device and send the command provided by this document to the device to control the device. Serial port control commands start with # (0x23) and end with return CR (0x0D). The user name is a digit, it must be included in all serial port commands after user login, and it must be set to 0 when logging in. The command code contains one byte and the current supported command codes and the parameter formats of different commands are shown below.

CRC is the verification code, it is the value obtained by adding the characters except the start character, the CRC character, and the end character.

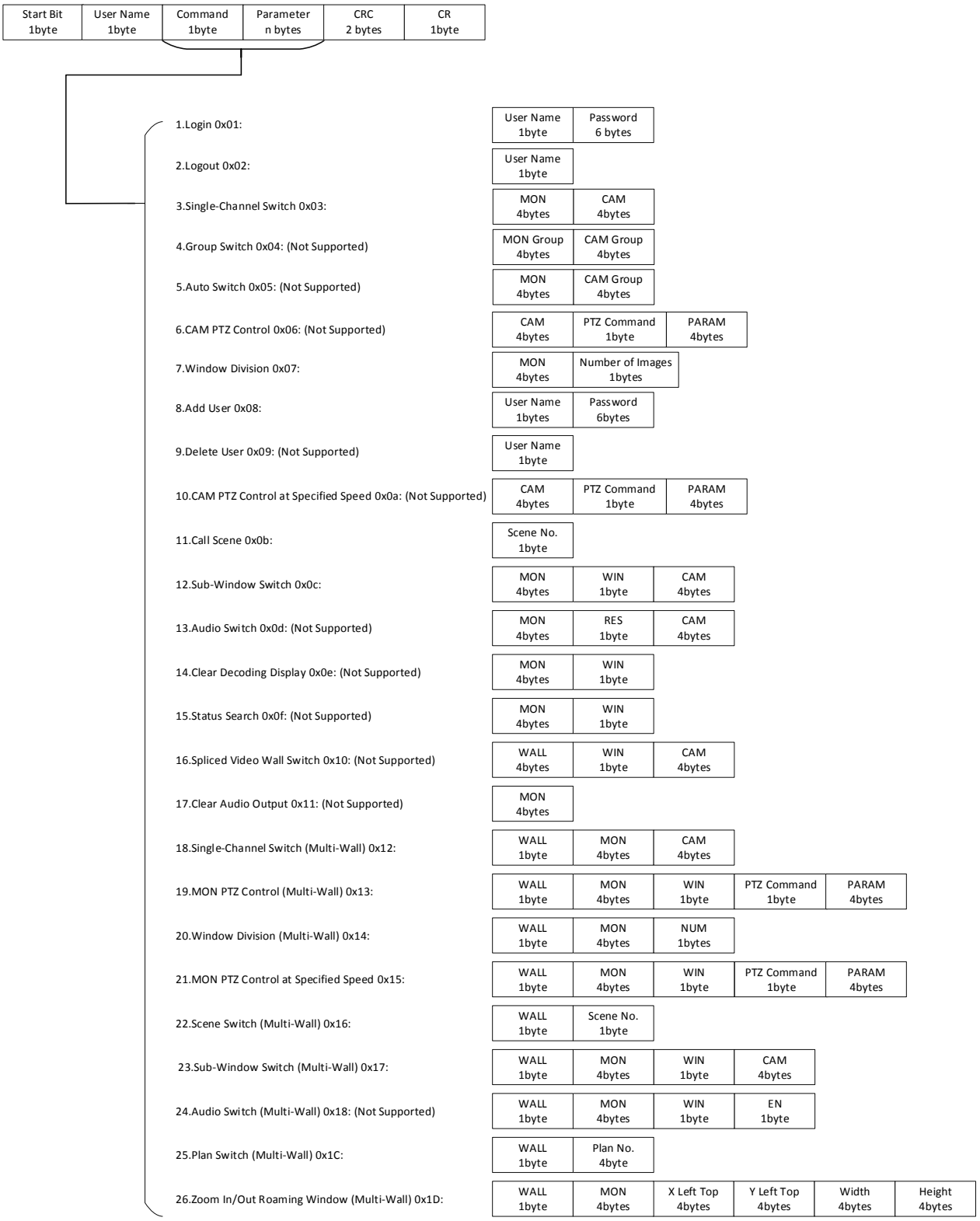

Figure 1-1 Command Format Description

User 0 is a privileged user for serial port control commands. You must log in to the device using privileged user and add a user to perform other operations. For login and adding the privileged user, see command codes 0x01 and 0x08.

1.2 Terms and Abbreviations

Table 1-1 Terms and Abbreviations

Terms/Abbreviations	Description
CAM	Signal source No., obtained by the platform configuration tool.
MON	Window No., the order is determined by opening window.
WIN	Sub window No.
CRC	Parity bit, which consists of 2 bytes.
CR	End character, 1 byte.
WALL	Wall No., which exists in multi-wall protocol.

Chapter 2 Command Description

2.1 Login (Command Code 0x01)

2.1.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	User Name 1byte	Password 6 bytes	CRC 2 bytes	CR 1byte

The first user name in this command must be 0, and the second user name is the one used for login. The user name is a digit, which occupies one byte (if the user is “12”, 0x0C should be sent). The six-byte password should be represented by ASCII code (if the password is 123456, 0x31 0x32 0x33 0x34 0x35 0x36 should be sent). The user 0x01 and 0xff are special users that can do other operations without login. User names larger than and equal to 0xfe are isolated users that cannot be added.

2.1.2 Command Example

Privileged User Login:
0x23 0x00 0x01 0x00 0x31 0x31 0x31 0x31 0x31 0x31 0x31 0x01 0x27 0x0d

Normal Login:
(User Name: 0x33)
0x23 0x00 0x01 0x33 0x31 0x32 0x33 0x34 0x35 0x36 0x01 0x69 0x0d

2.2 Logout (Command Code 0x02)

2.2.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	User Name 1byte	CRC 2 bytes	CR 1byte

The first user name in the command must be the user name used to log in before sending the command. The second user name is the user name for logout, and the two user names must be the same.

2.2.2 Command Example

Privileged User (0x00 User) Logout:
0x23 0x00 0x02 0x00 0x00 0x02 0x0d

2.3 Single-Channel Switch (Command Code 0x03)

2.3.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	MON 4bytes	CAM 4bytes	CRC 2 bytes	CR 1byte

The command is used to switch a camera to a monitor for display. MON: window No.; CAM: camera No., including the analog input and network camera of device. MON and CAM must be configured for the device in advance through configuration files.

2.3.2 Command Example

Switch CAM6 to MON1 via User 0x0d:
0x23 0x0d 0x03 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x06 0x00 0x00 0x17 0x0d

2.4 Window Division (Command Code 0x07)

2.4.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	MON 4bytes	Number of Images 1bytes	CRC 2 bytes	CR 1byte

The command is used to set the window division for the BNC/DVI/VGA/HDMI video output. MON is the window No. of the device, and Number of Images is that of windows to be divided.

2.4.2 Command Example

Divide MON (Window 1) to 4 Windows via User 0x33:
0x23 0x33 0x07 0x00 0x00 0x00 0x01 0x04 0x00 0x3f 0x0d

2.5 Add User (Command Code 0x08)

2.5.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	User Name 1bytes	Password 6bytes	CRC 2 bytes	CR 1byte

The command is used to add users for controlling the device via serial port commands and change user passwords.

The second user name is the name to be added and the password is the corresponding one of the user. If the user name already exists, change the corresponding password.
This command is available only when login via the privileged user, that is, the first user name must be 0 (privileged user).

2.5.2 Command Example

Add User 0x33 and Set Password to 123456 via Privileged User:
0x23 0x00 0x08 0x33 0x31 0x32 0x33 0x34 0x35 0x36 0x01 0x70 0x0d

2.6 Delete User (Command Code 0x09)

2.6.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	User Name 1bytes	CRC 2 bytes	CR 1byte

The command is used to delete users that control the device via serial port commands. The second user name specifies the user name to be deleted. This command is available only when login via the privileged user.

2.6.2 Command Example

Delete User 0x33 via Privileged User:
0x23 0x00 0x09 0x33 0x00 0x3c 0x0d

2.7 Call Scene (Command Code 0x0b)

2.7.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	Scene No. 1byte	CRC 2 bytes	CR 1byte

The scene No. ranges from 1 to 16 (specify the range according to the actual product).

2.7.2 Command Example

Call Scene No.1:
0x23 0x01 0x0b 0x01 0x00 0x0d 0x0d

2.8 Sub Window Switch (Command Code 0x0c)

2.8.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	MON 4bytes	WIN 1byte	CAM 4bytes	CRC 2 bytes	CR 1byte

2.8.2 Command Example

Switch CAM2 to Sub Window No.3 of Window No. 1 via User 0x1:

0x23 0x01 0x0c 0x00 0x00 0x01 0x03 0x00 0x00 0x00 0x00 0x00 0x00 0x02 0x00 0x13 0x0d

2.9 Single-Channel Switch (Command Code 0x12, Compatible with Multiple Walls)

2.9.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	MON 4bytes	CAM 4bytes	CRC 2 bytes	CR 1byte

The command is used to switch multiple video walls with wall No. in a single channel.

The value of WALL (wall No.) is 1 by default, MON indicates the monitor No., and CAM represents the camera No.

2.9.2 Command Example

Switch CAM1 to MON4 via User 0x01:

0x23 0x01 0x12 0x01 0x00 0x00 0x04 0x00 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x19 0x0d

2.10 MON PTZ Control (Command Code 0x13, Compatible with Multiple Walls)

2.10.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	MON 4bytes	WIN 1byte	PTZ Command 1byte	PARAM 4bytes	CRC 2 bytes	CR 1byte

The command is used to control PTZ. MON indicates the layer No. to be controlled, and PTZ Command is used to define PTZ command codes as follows:

```
#define LIGHT_PWRON 2 /* Enable Light - Not Supported*/
#define WIPER_PWRON 3 /* Enable Wiper - Not Supported*/
#define FAN_PWRON 4 /* Enable Fan - Not Supported*/
#define HEATER_PWRON 5 /* Enable Heater - Not supported*/
#define AUX_PWRON1 6 /* Enable Auxiliary Device - Not Supported*/
#define AUX_PWRON2 7 /* Enable Auxiliary Device - Not Supported*/
#define SET_PRESET 8 /* Set Preset */
#define CLE_PRESET 9 /* Clear Preset */
#define ZOOM_IN 11 /* Zoom In at Specified Speed */
#define ZOOM_OUT 12 /* Zoom Out at Specified Speed */
#define FOCUS_NEAR 13 /* Focus Near at Specified Speed */
#define FOCUS_FAR 14 /* Focus Far at Specified Speed */
#define IRIS_OPEN 15 /* Iris Expands at Specified Speed */
#define IRIS_CLOSE 16 /* Iris Narrows at Specified Speed */
#define TILT_UP 21 /* Tilt Up at Specified Speed */
#define TILT_DOWN 22 /* Tilt Down at Specified Speed */
#define PAN_LEFT 23 /* Pan Left at Specified Speed*/
#define PAN_RIGHT 24 /* Pan Right at Specified Speed */
#define UP_LEFT 25 /* Tilt Up and Pan Left at Specified Speed */
#define UP_RIGHT 26 /* Tilt Up and Pan Right at Specified Speed */
#define DOWN_LEFT 27 /* Tilt Down and Pan Left at Specified Speed */
#define DOWN_RIGHT 28 /* Tilt Down and Pan Right at Specified Speed */
#define PAN_AUTO 29 /* Auto Pan at Specified Speed*/
#define FILL_PRE_SEQ 30 /* Add Preset to Patrol */
#define SET_SEQ_DWELL 31 /* Set Dwell Time of Patrol*/
#define SET_SEQ_SPEED 32 /* Set Patrol Speed - Use 0x15 Command*/
#define CLE_PRE_SEQ 33 /* Remove Preset from Patrol */
#define STA_MEM_CRIUSE 34 /* Start Recording Pattern */
#define STO_MEM_CRIUSE 35 /* Stop Recording Pattern */
#define RUN_CRUISE 36 /* Call Pattern */
#define RUN_SEQ 37 /* Start Patrol */
#define Stop_SEQ 38 /* Stop Patrol */
#define GOTO_PRESET 39 /* Go to Preset */
```

PARAM refers to parameters of different PTZ commands. For the preset command (SET_PRESET, CLE_PRESET, GOTO_PRESET), it contains 4-byte value of preset No. For the patrol command (FILL_PRE_SEQ, SET_SEQ_DWELL, SET_SEQ_SPEED, CLE_PRE_SEQ), it contains 1-byte value of patrol, 1-byte value of patrol point, and 2-byte value of speed or dwell time. For other commands, 4 bytes will be reserved.

For the stop command, the value of the corresponding PTZ Command should be inverted, and CRC should be recalculated to send.

2.10.2 Command Example

Note:

The following commands are all in hexadecimal format, and “0x” is omitted.

Pan Left in Window No.1:

233313010000000101170000000000600d

Stop Panning Left Window No.1:

2333130100000001101e80000000001310d

Pan Right in Window No.1:

233313010000000101180000000000610d

Stop Panning Right in Window No.1:

2333130100000001101e70000000001300d

Tilt Up in Window No.1:

23331301000000010115000000000005E0d

Stop Tilting Up in Window No.1:

2333130100000001101ea0000000001330d

Tilt Down in Window No.1:

23331301000000010116000000000005F0d

Stop Tilting Down in Window No.1:

2333130100000001101e90000000001320d

Zoom In in Window No.1:

233313010000000101010b0000000000540d

Stop Zooming In in Window No.1:

2333130100000001101f400000000013D0d

Zoom Out in Window No.1:

233313010000000101010c0000000000550d

Stop Zooming Out in Window No.1:

2333130100000001101f300000000013C0d

Focus Near in Window No.1:

233313010000000101010d0000000000560d

Stop Focusing Near in Window No.1:

233313010000000101f200000000013B0d

Focus Far in Window No.1:
233313010000000101 0e0000000000570d

Stop Focusing Far in Window No.1:
233313010000000101f100000000013A0d

Tilt Up and Pan Left in Window No.1:
2333130100000001011900000000000620d

Stop Tilting Up and Panning Left in Window No.1:
233313010000000101e600000000012F0d

Tilt Up and Pan Right in Window No.1:
233313010000000101 1a0000000000630d

Stop Tilting Up and Panning Right in Window No.1:
233313010000000101e500000000012E0d

Tilt Down and Pan Left in Window No.1:
233313010000000101 1b00000000006A0d

Stop Tilting Down and Panning Left in Window No.1:
233313010000000101e400000000012D0d

Tilt Down and Pan Right in Window No.1:
233313010000000101 1c00000000006B0d

Stop Tilting Down and Panning Right in Window No.1:
233313010000000101e300000000013C0d

Auto Pan in Window No.1:
233313010000000101 1d0000000000660d

Stop Auto Panning in Window No.1:
233313010000000101e200000000013B0d

Set Preset No.1 in Window No.1:
2333130100000001010800000000100520d

Set Preset No.2 in Window No.1:
2333130100000001010800000000200530d

Clear Preset No.1 in Window No.1:
233313010000000101090000000100530d

Call Preset No.1 in Window No.1:
233313010000000101270000000100710d

Add Preset No.1 as Patrol Point No.1 to Patrol No.1 in Window No.1:
(8-Bit Patrol, 8-Bit Patrol Point, and 16-Bit Patrol Parameters)
23331301000000001011e01010001006A0d

Add Preset No.2 as Patrol Point No.2 to Patrol No.1 in Window No.1:
23331301000000001011e0102000200770d

Dwell at Patrol Point No.1 of Patrol No.1 for 5 Seconds in Window No.1:
23331301000000001011f01010002006C0d

Dwell at Patrol Point No.2 of Patrol No.1 for 5 Seconds in Window No.1:
23331301000000001011f01020002006D0d

Patrol Speed at Patrol Point No.1 of Patrol 1 in Window No.1 is 2 (Command Code: 0x15):
233315010000000101200101000 2006f0d

Patrol Speed at Patrol Point No.2 of Patrol 1 in Window No.1 is 5 (Command Code: 0x15):
233315010000000101200102000500730d

Start Patrolling by Patrol No.1 in Window No.1:
233313010000000101250100000000 6F0d

Stop Patrolling by Patrol No.1 in Window No.1:
233313010000000101260100000000700d

2.11 Window Division (Command Code 0x14, Compatible with Multiple Walls)

2.11.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	MON 4bytes	NUM 1bytes	CRC 2 bytes	CR 1byte

The command is used to set the window division for the BNC/DVI/HDMI video output. WALL refers to the video wall No., MON is the window No., and NUM is the number of windows to be divided (the value can be 1, 4, 6, 8, 9, 16, 25; the value 1 refers to the single-window status, and the detailed value depends on the actual product).

2.11.2 Command Example

Set Window Division to 4 and 16 on Video Wall No.1 via User 0x01:
0x23 0x01 0x14 0x01 0x00 0x00 0x00 0x04 0x10 0x00 0x2a 0x0d

2.12 MON PTZ Control at Specified Speed (Command Code 0x15, Compatible with Multiple Walls)

2.12.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	MON 4bytes	WIN 1byte	PTZ Command 1byte	PARAM 4bytes	CRC 2 bytes	CR 1byte

Please refer to *MON PTZ Control (Command Code 0x13, Compatible with Multiple Walls)*.

2.12.2 Command Example

Pan Left at Specified Speed in Window 1:
23 33 15 01 0001 01 17 00000001 00630d
For more details, please refer to *MON PTZ Control (Command Code 0x13, Compatible with Multiple Walls)*.

2.13 Scene Switch (Command Code 0x16, Compatible with Multiple Walls)

2.13.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	Scene No. 1byte	CRC 2 bytes	CR 1byte

The command is used to switch scenes on the specified video wall.

2.13.2 Command Example

Switch to Scene No. 4 on Video Wall No.1 via User 0x01:
0x23 0x01 0x16 0x01 0x04 0x00 0x1c 0x0d

2.14 Sub Window Switch (Command Code 0x17, Compatible with Multiple Walls)

2.14.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	MON 4bytes	WIN 1byte	CAM 4bytes	CRC 2 bytes	CR 1byte

The command is used to switch sub windows on the specified video wall. WALL refers video wall No. (the default No. is 1), MON refers to the window No., WIN refers to the sub window No., and CAM refers to the camera No.

2.14.2 Command Example

Switch CAM2 to Sub Window No.1 of Window No.4 on Video Wall No.1 via User 1:
0x23 0x01 0x17 0x01 0x00 0x00 0x04 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x02 0x00 0x20 0x0d

2.15 Plan Switch (Command Code 0x1C, Compatible with Multiple Walls)

2.15.1 Command Format

Start Bit 1byte	User Name 1byte	Command 1byte	WALL 1byte	Plan No. 4byte	CRC 2 bytes	CR 1byte

- WALL: Video wall No., which ranges from 1 to 6
- Plan No.: Ranges from 1 to number of video walls (depends on the actual product). When the plan No. is 0, it indicates that the plan executing on the current video wall will be stopped.

2.15.2 Command Example

Switch Plan No.4 on Video Wall 1 via User 0x01:
0x23 0x01 0x1c 0x01 0x00 0x00 0x00 0x04 0x00 0x22 0x0d

2.16 Zoom In/Out Roaming Window (Command Code 0x1D, Compatible with Multiple Walls)

2.16.1 Command Format

Start Bit 1byte	User Name 1byte	Comand 1byte	WALL 1byte	MON 4bytes	X Left Top 4bytes	Y Left Top 4bytes	Width 4bytes	Height 4bytes	CRC 2 bytes	CR 1byte

- WALL: Wall No.
- MON: Window No.
- XleftTop: X-coordinate of the upper-left corner of the window.
- YleftTop: Y-coordinate of the upper-left corner of the window.
- Width: Window width
- Height: Window height

Note:

- For a single video wall of device, only LED mode or LCD mode is supported, mixed mode is not supported.
- In LCD mode, the unified coordinates are used, and the size of a single output is 1920 × 1920.
- In LED mode, the resolution coordinates are used, and the size of a single output is the corresponding resolution.

2.16.2 Command Example

Adjust Window No.1 of Video Wall No.1 to Size of 960*960 and Coordinates of (5760, 0) via User 0x33:

0x23 0x33 0x1D 0x01 0x00 0x00 0x01 0x00 0x00 0x16 0x80 0x00 0x00 0x00 0x00 0x00 0x00 0x03 0x0 0x00 0x03 0x03 0x0 0x0 0x02 0x6e 0x0d


See Far, Go Further