



Media Station RS-232/TCP Protocol Specification

Revision: 2.2

2020/09/29

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4.3 Event Code and Parameters

5 Note

5.1 Format (Enable Checksum)

5.2 Set Audio Type Input

5.3 Get Audio Type Input

History

Version	Date	FW ver.	Comment
0.0	2020/01/17	2.7.x.7	Inherit from v2.7 series v2.3 file <ul style="list-style-type: none"> ● Modify <ul style="list-style-type: none"> ○ Hardware info ○ Set Audio Input Type ○ Set / Get Audio Volume ○ Set / Get Audio Mute
1.0	2020/03/31	5.2.0.5	For v5.2.0.x 1st release
1.1	2020/06/18	5.2.0.15	<ul style="list-style-type: none"> ● New <ul style="list-style-type: none"> ○ support TCP event notification ● Modify: <ul style="list-style-type: none"> ○ TCP connection procedure in 2.1 Description
1.2	2020/07/07	5.2.0.17	<ul style="list-style-type: none"> ● New command <ul style="list-style-type: none"> ○ Set Standby / Wake up ○ Set GUI show / hide
1.2.1	2020/08/24		<ul style="list-style-type: none"> ● Modify: <ul style="list-style-type: none"> ○ Add Table of Contents ○ Format remove checksum but still support ○ Control Protocol command add example ○ separate audio input / output description and add detail audio input / output ○ Event Notification add example
2.1	2020/09/10	5.3.0.1	<ul style="list-style-type: none"> ● Fix <ul style="list-style-type: none"> ○ 4.3.1 Ntfy Media State add Stopping state ● Modify: <ul style="list-style-type: none"> ○ 2.1 Description ○ 2.2 Format & 5.1 Format for using checksum and adding NTFY action ○ 2.3.10 Set Display <ul style="list-style-type: none"> ■ Rename as 2.3.10 Set Display Layout ■ Add display layout figure ■ Modify parameter ○ 2.3.12 Set Audio Volume Input <ul style="list-style-type: none"> ■ Add USB Audio(UAC) in parameter 2 ■ Add RTP/RTMP Encoder in parameter 2 ■ Description

			<ul style="list-style-type: none"> ○ 2.3.14 Set Audio Mute Input <ul style="list-style-type: none"> ■ Add USB Audio(UAC) in parameter 2 ■ Add RTP/RTMP Encoder in parameter 2 ■ Description ○ 2.3.16 Set Audio Type Input <ul style="list-style-type: none"> ■ Add parameter to separate input/output ■ Add 5.2 Set Audio Type Input ■ Example ○ 2.3.24 Set Standby / Wake up <ul style="list-style-type: none"> ■ Description ○ 2.4.5 Get Display <ul style="list-style-type: none"> ■ Rename as 2.4.5 Get Display Layout ■ Modify parameter & description ○ 2.4.6 Get Audio Volume Input <ul style="list-style-type: none"> ■ Add USB Audio(UAC) in parameter 2 ■ Add RTP/RTMP Encoder in parameter 2 ■ Description ○ 2.4.8 Get Audio Mute Input <ul style="list-style-type: none"> ■ Add USB Audio(UAC) in parameter 2 ■ Add RTP/RTMP Encoder in parameter 2 ■ Description ○ 2.4.10 Get Audio Type Input <ul style="list-style-type: none"> ■ Add parameter to separate input/output ■ Add 5.3 Get Audio Type Input ■ Example ○ 4.1 Event Notification Description <ul style="list-style-type: none"> ■ Description ● New <ul style="list-style-type: none"> ○ 2.4.13 Get Model Name ○ 2.4.14 Get Network Configuration ○ 2.5 Command Notification and Parameters <ul style="list-style-type: none"> ■ 2.5.1 Ntfy State ■ 2.5.2 Ntfy Layout ■ 2.5.3 Ntfy Background ■ 2.5.4 Ntfy Overlay ■ 2.5.5 Ntfy Display Layout ■ 2.5.6 Ntfy Audio Volume Mute Input ■ 2.5.7 Ntfy Audio Volume Mute Output ■ 2.5.8 Ntfy Audio Type Input ■ 2.5.9 Ntfy Audio Type Output ■ 2.5.10 Ntfy Stream Type ■ 2.5.11 Ntfy USB Copy State ■ 2.5.12 Ntfy USB Mount State ■ 2.5.13 Ntfy USB Record State ○ 4.3.1 Ntfy Media State add standby and reboot state
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2.2	2020/09/29	5.3.0.3	<ul style="list-style-type: none"> ● Modify <ul style="list-style-type: none"> ○ 2.3.20 Set Camera Preset <ul style="list-style-type: none"> ■ Available maximum PresetID change to 0xFF ○ 2.3.13 Set Audio Volume Output <ul style="list-style-type: none"> ■ Change “Lint-out” to “Line and HDMI output” ○ 2.3.15 Set Audio Mute Output <ul style="list-style-type: none"> ■ Change “Lint-out” to “Line and HDMI output” ○ 2.4.7 Get Audio Volume Output <ul style="list-style-type: none"> ■ Change “Lint-out” to “Line and HDMI output” ○ 2.4.9 Get Audio Mute Output <ul style="list-style-type: none"> ■ Change “Lint-out” to “Line and HDMI output” ○ 2.5.7 Ntfy Audio Volume Mute Output <ul style="list-style-type: none"> ■ Change “Lint-out” to “Line and HDMI output” ● New <ul style="list-style-type: none"> ○ 2.3.21 Set Save Camera Preset
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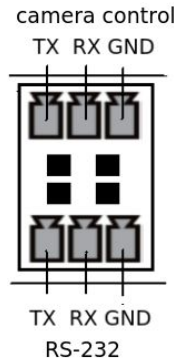
1 Interface

1.1 Hardware

- **RS-232**

Connect the RS-232 cable to the RS-232 port of the media station.

The pin definition of the RS-232 port :



GND : Ground
 RX : Receive Data
 TX : Transmit Data

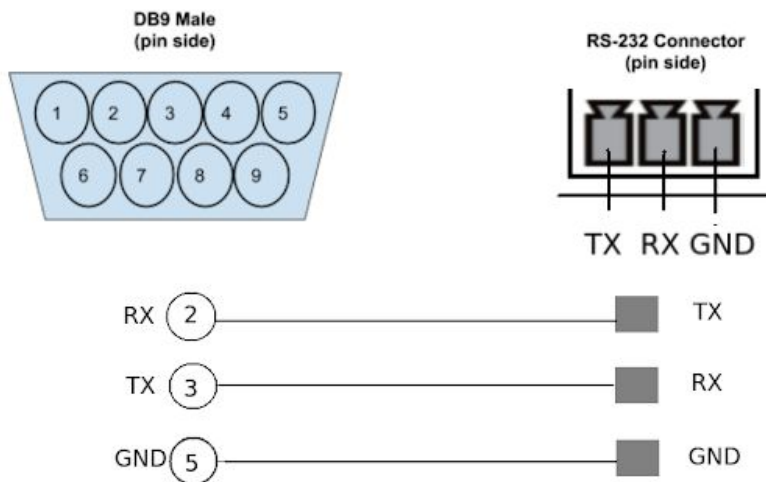
- **TCP**

Connect the CAT-5 (or greater) cable to WAN (or LAN) RJ-45 port of Media Station.

1.2 Connection

- **RS-232**

Connect the GND, RX, TX pins of the RS-232 port with external control equipment. The media station will be controlled by RS-232 protocol. For example, use the standard 9 pin DB9 serial cable as follows :



- **TCP**

Connect the Media Station's WAN port (or LAN port) and an external control equipment's ethernet port with a CAT-5 (or greater) cable.

1.3 Configuration

- RS-232

- Baud rate : 9600
- Data length : 8
- Parity : none
- Stop bit : 1
- Flow control : none

- TCP

- IP address : Media Station's WAN IP address / Media Station's LAN IP address (static IP address: 192.168.11.254)
- Port : 5080

2 Control Protocol

2.1 Description

- RS-232

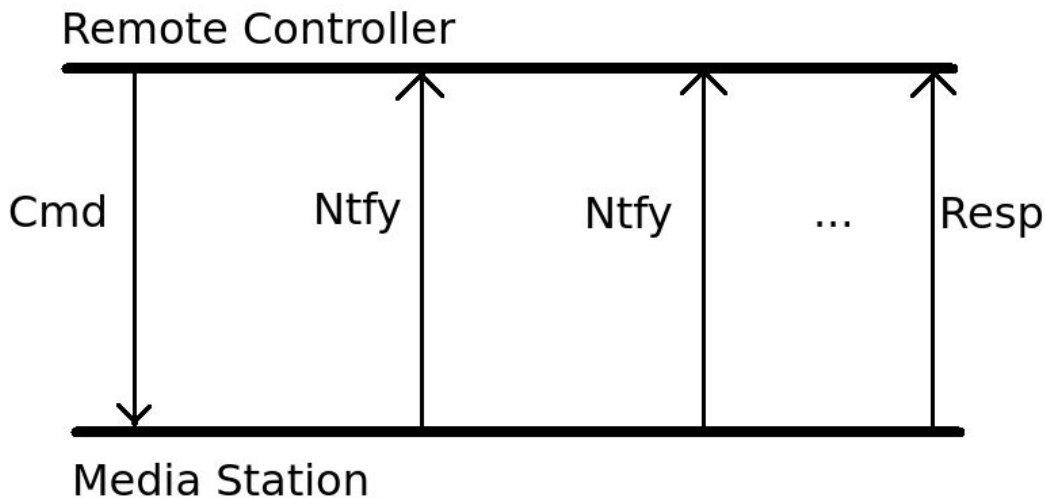
The media station can be controlled from an external controller through a serial RS-232 connection. Control protocol is used for the communication between the media station and controller.

- TCP

When an external controller connects Media Station through networks connection, the Media Station can be controlled by command described in Control Protocol. If connection is not closed by client, connection will keep and get event notification until new connection established.

- Command Execution

When the remote controller sends a command which is “set” type request to the media station. After the transmission, the remote controller must wait for the response coming from the media station. During the execution of command in the media station, the media state of e.g. [2.3.7 Set Layout](#). This results in the generation of update notifications, which are transmitted to the remote controller immediately. After the completion of command execution, the response of that command is sent back to the remote controller. This flow is shown as below. If the command type is “get”, the information is contained in response. So there’s no notification when the command type is “get”.



- Two kinds of Event Notification

There are two different types of protocol for Event Notification [2.5 Command Notification and Parameters](#) and [4 Event Notification](#) in the media station. The Chapter 4 Event Notification is for previous protocol. The Chapter 2.5 Event Notification is new support protocol, which is more complete and familiar with set and get commands. It is recommended to use Chapter 2.5 protocol for getting Event Notification.

2.2 Format

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
Byte count	1	1	1	1	1	2	n	1

- **Header**
0x55 : Protocol header.
- **Extended header**
0xF0 : disable checksum
0xFF : enable checksum, please reference to [5.1](#)
- **Length**
Length is a byte counter from **address to Parameters** field.

Example:

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
Hex	0x55	0xF0	0x05	0x01	0x73	0x4C 0x4F	0x01	0x0D

Total length = address 1 byte+action 1 byte+command 2 bytes+parameter 1 byte = 5 bytes

- **Address**
Identification of device. Range is 0x01 ~ 0xFF.(0 is reserved)
*Address is reserved for future use. Don't care

- **Action**
Get: 0x67
“Query” operation for the media station.
Set: 0x73
“Set” operation for the media station.

ACK: 0x06

When the media station receives the protocol data correctly and executes the correspond command successfully. It replaces the action field with ACK in the received protocol format and return to controller.

NAK: 0x15

When the media station receives the protocol data correctly but there are something wrong while the media station executes the correspond command.It replaces the action field with NAK in the received protocol format and return to controller.

In addition, when the media station receives the invalid protocol data(ie. the protocol data that the media station can not understand). It returns NAK code and End code only.

NTFY: 0x6E

The event message sent to an external controller from the media station for notifying system state change such as entering recording state while recording. The system state is defined the same as the “State” command in Get Action Command List. Please refer to 4.3 Event Code and Parameters for more information.

- **Command**
Two bytes. Please refer to 2.3 Command Set and Parameters for more information.
- **Parameters**
Please refer to 2.3 Command Set and Parameters for more information.
- **End**
0x0d
Protocol end code

2.3 Command Set and Parameters

2.3.1 Set Power

	ASCII	Hex	Description
Command code	PW	0x50 0x57	
Parameter 1	0 1	0x30 0x31	Power off Power on(NOT supported. Hardware limitation)

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x50 0x57	0x30	0x0D
ACK					0x06			
FAILED					0x15			

2.3.2 Set Record Start

	ASCII	Hex	Description
Command code	RC	0x52 0x43	Start record process

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x52 0x43	None	0x0D

ACK					0x06			
FAILED					0x15			

2.3.3 Set Pause Record

	ASCII	Hex	Description
Command code	PS	0x50 0x53	Pause record process

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x50 0x53	None	0x0D
ACK					0x06			
FAILED					0x15			

2.3.4 Set Stop Record

	ASCII	Hex	Description
Command code	SP	0x53 0x50	Stop record process

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x53 0x50	None	0x0D
ACK					0x06			
FAILED					0x15			

2.3.5 Set Snapshot

	ASCII	Hex	Description
Command code	SS	0x53 0x53	Insert snapshot

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x53 0x53	None	0x0D
ACK					0x06			

FAILED					0x15			
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2.3.6 Set Bookmark


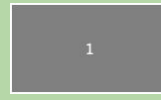


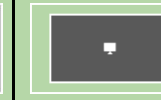
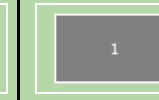

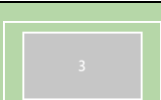
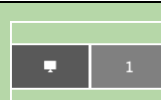
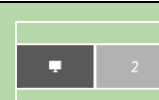
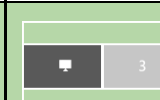



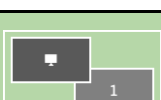
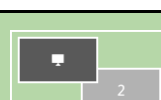



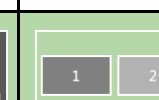








	ASCII	Hex	Description
Command code	BM	0x42 0x4D	Insert bookmark

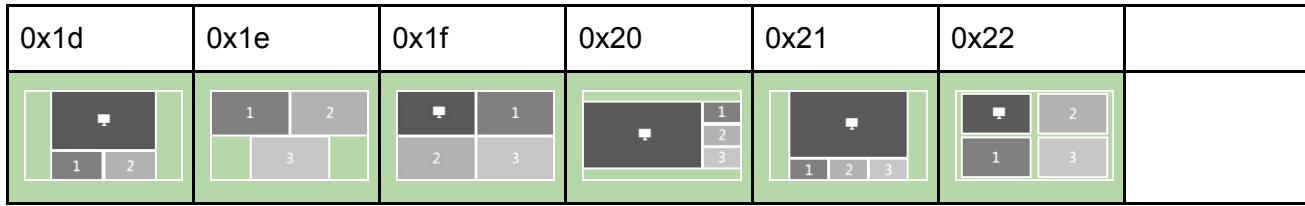
Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x42 0x4D	None	0x0D
ACK					0x06			
FAILED					0x15			

2.3.7 Set Layout

	ASCII	Hex	Description
Command code	LO	0x4C 0x4F	Set layout ID
Parameter 1		0x01~0xFF	Layout ID Default layout as below

0x01	0x02	0x03	0x04	0x05	0x06	0x07
						
0x08	0x09	0x0a	0x0b	0x0c	0x0d	0x0e
						
0x0f	0x10	0x11	0x12	0x13	0x14	0x15
						
0x16	0x17	0x18	0x19	0x1a	0x1b	0x1c
						



Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x4C 0x4F	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.8 Set Background

	ASCII	Hex	Description
Command code	BG	0x42 0x47	Set background ID
Parameter 1		0x00~0xFF	Background ID 0x00: Background off Default background as below

0x00	0x01	0x02	0x03

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x42 0x47	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.9 Set Overlay

	ASCII	Hex	Description
Command code	OL	0x4F 0x4C	Set overlay ID






Parameter 1		0x00~0xFF	Overlay ID 0x00: Overlay off
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Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x4F 0x4C	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.10 Set Display Layout

	ASCII	Hex	Description
Command code	DP	0x44 0x50	Set display layout ID
Parameter 1		0x01~0x06	Display layout ID

0x01	0x02	0x03	0x04	0x05	0x06
					Record Layout

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x44 0x50	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.11 Set Theme

	ASCII	Hex	Description
Command code	TE	0x54 0x45	Set theme ID
Parameter 1		0x01~0xff	Theme ID

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
------	--------	-----------------	--------	---------	--------	---------	------------	-----

SET	0x55	0xF0	0x05	0x01	0x73	0x54 0x45	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.12 Set Audio Volume Input

	ASCII	Hex	Description
Command code	AV	0x41 0x56	Set audio volume
Parameter 1	I	0x49	Set input volume
Parameter 2	1 2 3 4 5 6 7 8 9 : ; < =	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x3A 0x3B 0x3C 0x3D	HDMI input 1 HDMI input 2 HDMI input 3 HDMI input 4 Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4 USB Audio (UAC) RTP/RTMP Encoder 1 RTP/RTMP Encoder 2 RTP/RTMP Encoder 3 RTP/RTMP Encoder 4
Parameter 3		0x00~0x7D	Audio volume(0~125)

HDMI input only available when video input set HDMI

RTP/RTMP Encoder : Only available when video input set to RTP/RTMP

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x41 0x56	0x49 0x31 0x00	0x0D
ACK					0x06			
FAILED					0x15			

2.3.13 Set Audio Volume Output

	ASCII	Hex	Description
Command code	AV	0x41 0x56	Set audio volume
Parameter 1	O	0x4F	Set output volume
Parameter 2	1	0x31	Line and HDMI output

	2	0x32	Rec/Stm out
Parameter 3		0x00~0x7D	Audio volume(0~125))

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x41 0x56	0x4F 0x31 0x00	0x0D
ACK					0x06			
FAILED					0x15			

2.3.14 Set Audio Mute Input

	ASCII	Hex	Description
Command code	AM	0x41 0x4D	Set audio mute/unmute, detail of parameter 2 please reference to 2.3.12 Set Audio Volume Input
Parameter 1	I	0x49	Set input mute/unmute
Parameter 2	1 2 3 4 5 6 7 8 9 : ; < =	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x3A 0x3B 0x3C 0x3D	HDMI input 1 HDMI input 2 HDMI input 3 HDMI input 4 Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4 USB Audio (UAC) RTP/RTMP Encoder 1 RTP/RTMP Encoder 2 RTP/RTMP Encoder 3 RTP/RTMP Encoder 4
Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x41 0x4D	0x49 0x31 0x30	0x0D
ACK					0x06			
FAILED					0x15			

2.3.15 Set Audio Mute Output

	ASCII	Hex	Description
Command code	AM	0x41 0x4D	Set audio mute/unmute
Parameter 1	O	0x4F	Set output mute/unmute
Parameter 2	1 2	0x31 0x32	Line and HDMI output Rec/Stm out
Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x41 0x4D	0x4F 0x31 0x30	0x0D
ACK					0x06			
FAILED					0x15			

2.3.16 Set Audio Type Input

	ASCII	Hex	Description
Command code	AT	0x41 0x54	Set audio input type, type HDMI cannot Set/Get. Please use first this cmd rather than 5.2 .
Parameter 1	I	0x49	Set audio input type. The old cmd which refer to 5.2 did not contain this parameter but the system still can recognize and execute.
Parameter 2	5 6 7 8	0x35 0x36 0x37 0x38	Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4
Parameter 3	1 2	0x31 0x32	Line in Mic in

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x41 0x54	0x49 0x35 0x31	0x0D
ACK					0x06			

FAILED					0x15			
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2.3.17 Set Stream

	ASCII	Hex	Description
Command code	SC	0x53 0x43	Set stream start/stop streaming Only work in “Enable streaming button”
Parameter 1	1 2	0x31 0x32	Stream 1 Stream 2
Parameter 2		0x01 0x02	Stop Streaming Start Streaming

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x06	0x01	0x73	0x53 0x43	0x31 0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.18 Set Record Stream

	ASCII	Hex	Description
Command code	RS	0x52 0x53	Set record stream start/stop Stream Only work in “Enable streaming button”
Parameter 1		0x01 0x02	Record and stream stop Record and stream start

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x52 0x53	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.19 Set Playback

	ASCII	Hex	Description
Command code	PB	0x50 0x42	Set Playback function

Parameter 1		0x01 0x02 0x03 0x04	Play latest movie Pause/Continue playback Stop playback Switch playback source
-------------	--	------------------------------	---

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x50 0x42	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.20 Set Camera Preset

	ASCII	Hex	Description
Command code	CP	0x43 0x50	Set camera of channel goto preset
Parameter 1	1 2 3 4	0x31 0x32 0x33 0x34	Channel 1 Channel 2 Channel 3 Channel 4
Parameter 2		0x00~0xFF	Preset ID

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x06	0x01	0x73	0x43 0x50	0x31 0x00	0x0D
ACK					0x06			
FAILED					0x15			

2.3.21 Set Save Camera Preset

	ASCII	Hex	Description
Command code	CS	0x43 0x53	Set camera of channel save preset
Parameter 1	1 2 3 4	0x31 0x32 0x33 0x34	Channel 1 Channel 2 Channel 3 Channel 4
Parameter 2		0x00~0xFF	Preset ID

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x06	0x01	0x73	0x43 0x53	0x31 0x00	0x0D
ACK					0x06			
FAILED					0x15			

2.3.22 Set Camera Move

	ASCII	Hex	Description
Command code	CM	0x43 0x4D	Set camera move
Parameter 1	S U D L R	0x53 0x55 0x44 0x4c 0x52	Camera stop move Camera move up Camera move down Camera move left Camera move right
Parameter 2	1 2 3 4	0x31 0x32 0x33 0x34	Channel 1 Channel 2 Channel 3 Channel 4
Parameter 3		0x01~0x18	Move speed , this parameter in stop command is dispensable

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x43 0x4D	0x55 0x31 0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.23 Set Camera Zoom

	ASCII	Hex	Description
Command code	CZ	0x43 0x5A	Set camera zoom
Parameter 1	S I O	0x53 0x49 0x4f	Camera stop zoom Camera zoom in Camera zoom out
Parameter 2	1	0x31	Channel 1

	2	0x32	Channel 2
	3	0x33	Channel 3
	4	0x34	Channel 4
Parameter 3		0x01~0x07	Zoom speed , this parameter in stop command is dispensable

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x07	0x01	0x73	0x43 0x5A	0x49 0x31 0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.24 Set Video Metadata

	ASCII	Hex	Description
Command code	MT	0x4D 0x54	Set metadata of video content in webpage
Parameter 1		0x01 0x02 0x03 0x04 0x05 0x06 0x07 0x08 0x09 0x0a 0x0b 0x0c 0x0d	Title Organization Department Event_data Semester Topic Level Audience Room Category Presenter Section Description The above descriptions is default. The hex value is corresponding to sequence of metadata. Not corresponding to the name of metadata.
String 2		0x00~0xFF	The string which want to be set as metadata The maximum length of sting according to protocol is 255 bytes.

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x08	0x01	0x73	0x4D 0x54	0x01 0x31	0x0D

ACK					0x06		0x32 0x33	
FAILED					0x15			

2.3.25 Set Standby / Wake up

	ASCII	Hex	Description
Command code	SR	0x53 0x52	Set power mode to Standby or Wake up When get in Standby mode, only accept command including "get status" and "set Standby/Wakeup"
Parameter 1	1 2	0x31 0x32	Set power mode to Standby Wake up, active only power mode was Standby

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x53 0x52	0x31	0x0D
ACK					0x06			
FAILED					0x15			

2.3.26 Set GUI show / hide

	ASCII	Hex	Description
Command code	HG	0x48 0x47	Set GUI bar show / hide control
Parameter 1	1 2	0x31 0x32	Show GUI bar Hide GUI bar

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x48 0x47	0x31	0x0D
ACK					0x06			
FAILED					0x15			

2.4 Command Get and Parameters

2.4.1 Get State

	ASCII	Hex	Description
Command code	ST	0x53 0x54	Get system state
Response Parameter 1	0	0x30	Uninitialize
	1	0x31	Ready
	2	0x32	Stopped
	3	0x33	Recording
	4	0x34	Paused
	5	0x35	Waiting
	6	0x36	Stopping
	7	0x37	Standby

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x04	0x01	0x67	0x53 0x54	None	0x0D
ACK			0x05		0x06		0x31	
FAILED			0x04		0x15		None	

2.4.2 Get Layout

	ASCII	Hex	Description
Command code	LO	0x4C 0x4F	Get layout ID
Response Parameter 1		0x01~0xFF	Layout ID

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x04	0x01	0x67	0x4C 0x4F	None	0x0D
ACK			0x05		0x06		0x01	
FAILED			0x04		0x15		None	

2.4.3 Get Background

	ASCII	Hex	Description
Command code	BG	0x42 0x47	Get background ID
Response Parameter 1		0x00~0xFF	Background ID 0x00: Background off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x04	0x01	0x67	0x42 0x47	None	0x0D
ACK			0x05		0x06		0x01	
FAILED			0x04		0x15		None	

2.4.4 Get Overlay

	ASCII	Hex	Description
Command code	OL	0x4F 0x4C	Get overlay ID
Response Parameter 1		0x00~0xFF	Overlay ID 0x00: Overlay off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x04	0x01	0x67	0x4F 0x4C	None	0x0D
ACK			0x05		0x06		0x01	
FAILED			0x04		0x15		None	

2.4.5 Get Display Layout

	ASCII	Hex	Description
Command code	DP	0x44 0x50	Get display layout ID
Response Parameter 1		0x01~0x06	Display layout ID

Example

Name	Header	Extended	Length	Address	Action	Command	Parameters	End
------	--------	----------	--------	---------	--------	---------	------------	-----

		Header						
GET	0x55	0xF0	0x04	0x01	0x67	0x44 0x50	None	0x0D
ACK			0x05		0x06		0x01	
FAILED			0x04		0x15		None	

2.4.6 Get Audio Volume Input

	ASC II	Hex	Description
Command code	AV	0x41 0x56	Get audio volume, detail of parameter 2 please reference to 2.3.12 Set Audio Volume Input
Command/Response Parameter 1	I	0x49	Get input volume
Command/Response Parameter 2	1 2 3 4 5 6 7 8 9 : ; < =	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x3A 0x3B 0x3C 0x3D	HDMI input 1 HDMI input 2 HDMI input 3 HDMI input 4 Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4 USB Audio (UAC) RTP/RTMP Encoder 1 RTP/RTMP Encoder 2 RTP/RTMP Encoder 3 RTP/RTMP Encoder 4
Response Parameter 3		0x00~0x7D	Audio volume(0~125)

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x06	0x01	0x67	0x41 0x56	0x49 0x31	0x0D
ACK			0x07		0x06		0x49 0x31 0x00	
FAILED			0x06		0x15		0x49 0x31	

2.4.7 Get Audio Volume Output

	ASC II	Hex	Description
--	--------	-----	-------------

Command code	AV	0x41 0x56	Get audio volume
Command/Response Parameter 1	0	0x4F	Get output volume
Command/Response Parameter 2	1 2	0x31 0x32	Line and HDMI output Rec/Stm out
Response Parameter 3		0x00~0x7D	Audio volume(0~125)

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x06	0x01	0x67	0x41 0x56	0x4F 0x31	0x0D
ACK			0x07		0x06		0x4F 0x31 0x00	
FAILED			0x06		0x15		0x4F 0x31	

2.4.8 Get Audio Mute Input

	ASCII	Hex	Description
Command code	AM	0x41 0x4D	Get audio mute/unmute, detail of parameter 2 please reference to 2.3.12 Set Audio Volume Input
Command/Response Parameter 1	1	0x49	Get input mute/unmute
Command/Response Parameter 2	1 2 3 4 5 6 7 8 9 : ; < =	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x3A 0x3B 0x3C 0x3D	HDMI input 1 HDMI input 2 HDMI input 3 HDMI input 4 Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4 USB Audio (UAC) RTP/RTMP Encoder 1 RTP/RTMP Encoder 2 RTP/RTMP Encoder 3 RTP/RTMP Encoder 4
Response Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x06	0x01	0x67	0x41 0x4D	0x49 0x31	0x0D
ACK			0x07		0x06		0x49 0x31 0x30	
FAILED			0x06		0x15		0x49 0x31	

2.4.9 Get Audio Mute Output

	ASCII	Hex	Description
Command code	AM	0x41 0x4D	Get audio mute/unmute
Command/Response Parameter 1	O	0x4F	Get output mute/unmute
Command/Response Parameter 2	1 2	0x31 0x32	Line and HDMI output Rec/Stm out
Response Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x06	0x01	0x67	0x41 0x4D	0x4F 0x31	0x0D
ACK			0x07		0x06		0x4F 0x31 0x30	
FAILED			0x06		0x15		0x4F 0x31	

2.4.10 Get Audio Type Input

	ASCII	Hex	Description
Command code	AT	0x41 0x54	Get audio input type, only Line/Mic input can get Please use first this cmd rather than 5.3 .
Command/Response Parameter 1	I	0x49	Get audio input type, type HDMI cannot Set/Get The old cmd which refer to 5.3 did not contain this parameter but the system still can recognize and execute.
Command/Response Parameter 2	5 6 7 8	0x35 0x36 0x37 0x38	Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4

Response	1	0x31	Line in
Parameter 3	2	0x32	Mic in

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x06	0x01	0x67	0x41 0x54	0x49 0x31	0x0D
ACK			0x07		0x06		0x49 0x31 0x31	
FAILED			0x06		0x15		0x49 0x31	

2.4.11 Get Stream

	ASCII	Hex	Description
Command code	SC	0x53 0x43	Get Stream type
Command/Response Parameter 1	1 2	0x31 0x32	Stream 1 Stream 2
Response Parameter 2		0x00 0x01 0x02 0x03 0x04	Together with recording Ready (enable) Streaming (enable) Streaming Always Off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x05	0x01	0x67	0x53 0x43	0x31	0x0D
ACK			0x06		0x06		0x31 0x01	
FAILED			0x05		0x15		0x31	

2.4.12 Get Video Metadata

	ASCII	Hex	Description
Command code	MT	0x4D 0x54	Get metadata of video content in webpage
Command/Response Parameter 1		0x01 0x02 0x03 0x04 0x05 0x06	Title Organization Department Event_data Semester Topic

		0x07 0x08 0x09 0x0a 0x0b 0x0c 0x0d	Level Audience Room Category Presenter Section Description The above descriptions is default. The hex value is corresponding to sequence of metadata. Not corresponding to the name of metadata.
Response String 2		0x00~0xFF	The string which get from metadata The maximum length of string according to protocol is 255 bytes. If string length exceeds the maximum length, return error.

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x05	0x01	0x67	0x4D 0x54	0x01	0x0D
ACK			0x08		0x06		0x01 0x31 0x32 0x33	
FAILED			0x05		0x15		0x01	

2.4.13 Get Model Name

	ASCII	Hex	Description
Command code	GM	0x47 0x4D	Get model name

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x04	0x01	0x67	0x47 0x4D		0x0D
ACK			0x0A		0x06		0x4C 0x53 0x2D 0x38 0x36 0x30	
FAILED			0x04		0x15			

The parameters of ACK change to ASCII is LS-860

2.4.14 Get Network Configuration

	ASCII	Hex	Description
Command code	NC	0x4E 0x43	Get network interface configuration ex:eth0 Each parameter is separate by comma
Command/Response Parameter 1	0 1	0x30 0x31	eth0 eth1
Response parameter 2	0 1	0x30 0x31	Static DHCP
Response string 3			IP address
Response string 4			netmask address
Response string 5			broadcast address

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters (ASCII)	End
GET	0x55	0xF0	0x05	0x01	0x67	0x4E 0x43	1	0x0D
ACK			0x32		0x06		10,192.168.11 .254,255.255. 255.0,192.168 .11.255	
FAILED			0x05		0x15		1	

Since the ACK parameter for HEX is too long to read, so use the ASCII code for example.

The ACK parameter string can be separate by comma to 5 parts:

1. 1 : the network interface, here means eth1
2. 0 : the ip address is assigned by DHCP or static, here means static
3. 192.168.11.254 : the ip address
4. 255.255.255.0 : the netmask address
5. 192.168.11.255 : the broadcast address

2.5 Command Notification and Parameters

The event message sent to an external controller from the media station for notifying system change such as entering the recording state while recording.

Change video compression or streaming settings or any action that will restart the media function, system will send event notification including state-layout-background.overlay-display layout.

2.5.1 Ntfy State

	ASCII	Hex	Description
Command code	ST	0x53 0x54	Notify system state
Parameter 1	0 1 2 3 4 5 6 7 8	0x30 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38	Uninitialize Ready Stopped Recording Paused Waiting Stopping Standby Reboot, only available when state was standby

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x53 0x54	0x31	0x0D

2.5.2 Ntfy Layout

	ASCII	Hex	Description
Command code	LO	0x4C 0x4F	Notify layout ID
Parameter 1		0x01~0xFF	Layout ID

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x4C 0x4F	0x01	0x0D

2.5.3 Ntfy Background

	ASCII	Hex	Description
Command code	BG	0x42 0x47	Notify background ID
Parameter 1		0x00~0xFF	Background ID 0x00: Background off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
------	--------	-----------------	--------	---------	--------	---------	------------	-----

NTFY	0x55	0xF0	0x05	0x01	0x6E	0x42 0x47	0x00	0x0D
------	------	------	------	------	------	-----------	------	------

2.5.4 Ntfy Overlay

	ASCII	Hex	Description
Command code	OL	0x4F 0x4C	Notify overlay ID
Parameter 1		0x00~0xFF	Overlay ID 0x00: Overlay off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x4F 0x4C	0x01	0x0D

2.5.5 Ntfy Display Layout

	ASCII	Hex	Description
Command code	DP	0x44 0x50	Notify display LayoutID
Parameter 1		0x01~0x06	Display Layout ID, detail of parameter 1 please reference to 2.3.10

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x44 0x50	0x01	0x0D

2.5.6 Ntfy Audio Volume Mute Input

	ASCII	Hex	Description
Command code	AV	0x41 0x56	Notify audio input volume and mute
Parameter 1	I	0x49	Audio Input
Parameter 2	1 2 3 4 5 6 7 8 9	0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39	HDMI input 1 HDMI input 2 HDMI input 3 HDMI input 4 Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4 USB Audio (UAC)

	:	0x3A	RTP/RTMP Encoder 1
	;	0x3B	RTP/RTMP Encoder 2
	<	0x3C	RTP/RTMP Encoder 3
	=	0x3D	RTP/RTMP Encoder 4
Parameter 3		0x00~0x7D	Audio volume(0~125)
Parameter 4	0	0x30	Audio unmute
	1	0x31	Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x08	0x01	0x6E	0x41 0x56	0x49 0x31 0x7D 0x30	0x0D

2.5.7 Ntfy Audio Volume Mute Output

	ASC II	Hex	Description
Command code	AV	0x41 0x56	Notify audio output volume and mute
Parameter 1	0	0x4F	Get output volume
Parameter 2	1 2	0x31 0x32	Line and HDMI output Rec/Stm out
Parameter 3		0x00~0x7D	Audio volume(0~125)
Parameter 4	0 1	0x30 0x31	Audio unmute Audio mute

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x08	0x01	0x6E	0x41 0x56	0x4F 0x31 0x7D 0x30	0x0D

2.5.8 Ntfy Audio Type Input

	ASCII	Hex	Description
Command code	AT	0x41 0x54	Notify audio input type
Parameter 1	I	0x49	Audio Input
Parameter 2	5	0x35	Line/Mic input 1

	6	0x36	Line/Mic input 2
	7	0x37	Line/Mic input 3
	8	0x38	Line/Mic input 4
Parameter 3	1	0x31	Line in
	2	0x32	Mic in

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x07	0x01	0x6E	0x41 0x54	0x49 0x31 0x34	0x0D

2.5.9 Ntfy Audio Type Output

Reserve

2.5.10 Ntfy Stream Type

	ASCII	Hex	Description
Command code	SC	0x53 0x43	Notify Stream type
Command/Response Parameter 1	1 2	0x31 0x32	Stream 1 Stream 2
Response Parameter 2		0x00 0x01 0x02 0x03 0x04	Together with recording Ready (enable) Streaming (enable) Streaming Always Off

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x06	0x01	0x6E	0x53 0x43	0x31 0x04	0x0D

2.5.11 Ntfy USB Copy State

	ASCII	Hex	Description
Event code	UC	0x55 0x43	USB copy event
Event Parameter 1	0 1 2	0x30 0x31 0x32	USB start copy USB copy finished USB copy error

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x55 0x43	0x30	0x0D

2.5.12 Ntfy USB Mount State

	ASCII	Hex	Description
Event code	UM	0x55 0x4D	USB mount event
Event Parameter 1	0 1 2	0x30 0x31 0x32	Add USB Remove USB Unsupport

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x55 0x4D	0x30	0x0D

2.5.13 Ntfy USB Record State

	ASCII	Hex	Description
Event code	UR	0x55 0x52	USB Record event
Event Parameter 1	0 1 2	0x30 0x31 0x32	USB start record USB record finished USB record error

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x55 0x52	0x30	0x0D

3 Key Pass-Through Protocol

3.1 Description

Key pass-through protocol is used for an external device that want to simulate as the keypad button of the media station. The operation transition with Key data field of the protocol is the same as key code from the keypad button.

3.2 Format

3.2.1 Command

Name	Header	Length	Key data	End
Byte count	1	1	n	1

- **Header**
0x36
Key pass-through protocol.
- **Length**
Length is a byte counter in Key data field.
- **Key data**
Key code. Please refer to 3.3 Key code for more information.
- **End**
0x0d
End code of command.

3.2.2 Response

Name	ACK/NAK	End
Byte count	1	1

- **ACK**
0x06
The command is accepted in the media station.
- **NAK**
0x15
The command is not accepted in the media station.
- **End**
0x0d
End code of response.

3.2.3 Key code

The Key code in the data field will be passed to media station such as key code while keypad button pressed. The byte counts of the Key data field must record in length field. There is 1 second latency between two Key codes passed to media station.

The Key codes list as below:

Key code	Function
0x5c	Power
0x50	Record stop
0x51	Record pause
0x52	Record start
0x53	Display
0x54	Overlay
0x55	Layout
0x56	Background

Example :

1. Record :

Controller send to Media station

Name	Header	Length	Key Data	End
Hex	0x36	0x01	0x52	0x0d

Media station response ACK to Controller

Name	ACK/NAK	End
Hex	0x06	0x0d

4 Event Notification

4.1 Description

The event message sent to an external controller from media station for notifying system state change such as entering recording state while recording. The system state is defined same as the “State” command in Get Action Command List. Please refer to 4.3 Event Code and Parameters for more information.

This chapter of Event Notification is old format, it is recommended that use [2.5 Command Notification and Parameters](#) for getting events cmd from the media station.

4.2 Format

Name	Header	Event Code	Parameters	End
Byte count	1	2	n	1

- **Header**
0x23 (ASCII code: #)
Protocol header.
- **Event Code**
Two bytes event code. Please refer to 4.3 Event Code and Parameters for more information.
- **Parameters**
Please refer to 4.3 Event Code and Parameters for more information.
- **End**
0x0d
End code of event.

4.3 Event Code and Parameters

4.3.1 Ntfy Media State

	ASCII	Hex	Description
Event code	ST	0x53 0x54	System event
Event Parameter 1	0	0x30	Uninitialize
	1	0x31	Ready
	2	0x32	Stopped
	3	0x33	Recording
	4	0x34	Paused
	5	0x35	Waiting

	6	0x36	Stopping
	7	0x37	Standby
	8	0x38	Reboot, only available when state was standby

Example

Name	Header	Event Code	Parameters	End
NTFY	0x23	0x53 0x54	0x31	0x0D

4.3.2 Ntfy USB Copy State

	ASCII	Hex	Description
Event code	UC	0x55 0x43	USB copy event
Event Parameter 1	0	0x30	USB start copy
	1	0x31	USB copy finished
	2	0x32	USB copy error

Example

Name	Header	Event Code	Parameters	End
NTFY	0x23	0x55 0x43	0x30	0x0D

4.3.3 Ntfy USB Mount State

	ASCII	Hex	Description
Event code	UM	0x55 0x4D	USB mount event
Event Parameter 1	0	0x30	Add USB
	1	0x31	Remove USB
	2	0x32	Unsupport

Example

Name	Header	Event Code	Parameters	End
NTFY	0x23	0x55 0x4D	0x30	0x0D

4.3.4 Ntfy USB Record State

	ASCII	Hex	Description
Event code	UR	0x55 0x52	USB Record event
Event Parameter 1	0	0x30	USB start record
	1	0x31	USB record finished
	2	0x32	USB record error

Example

Name	Header	Event Code	Parameters	End
NTFY	0x23	0x55 0x52	0x30	0x0D

5 Note

Commands are not accepted during media station boot-up.

5.1 Format (Enable Checksum)

System supports both checksum and non-checksum commands.

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	Checksum	End
Byte count	1	1	1	1	1	2	n	1	1

- **Header**
0x55 : Protocol header.
- **Extended header**
0xF0 : disable checksum, please reference to [2.2](#)
0xFF : enable checksum
- **Length**
Length is a byte counter from **address to Checksum** field.

Example:

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	Checksum	End
HEX	0x55	0xFF	0x06	0x01	0x73	0x4C 0x4F	0x01	0x16	0x0D

Total length = address 1 byte + action 1 byte + command 2 bytes + parameter 1 byte + checksum 1 byte = 6 bytes

- **Address**
please reference to [2.2](#)
- **Action**
please reference to [2.2](#)
- **Command**
please reference to [2.2](#)

- **Parameters**

please reference to [2.2](#)

- **Checksum**

Checksum is a byte sum. Add the data that from **length to parameters** field as unsigned binary numbers, discarding any overflow bits.

Example:

$$\text{Sum} = 0x06 + 0x01 + 0x73 + 0x4c + 0x4f + 0x01 = 0x116$$

Discarding overflow bits. Checksum = 0x16

- **End**

0x0d : Protocol end code

5.2 Set Audio Type Input

	ASCII	Hex	Description
Command code	AT	0x41 0x54	Set audio input type, type HDMI cannot Set/Get This cmd is an old type of 2.3.16 . System can recognize both type and execute, but please use the new type cmd first.
Parameter 1	5 6 7 8	0x35 0x36 0x37 0x38	Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4
Parameter 2	1 2	0x31 0x32	Line in Mic in

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
SET	0x55	0xF0	0x06	0x01	0x73	0x41 0x54	0x35 0x31	0x0D
ACK					0x06			
FAILED					0x15			

5.3 Get Audio Type Input

	ASCII	Hex	Description
Command code	AT	0x41 0x54	Get audio input type, only Line/Mic input can get This cmd is an old type of 2.4.10 . System can recognize both type and execute, but please use the

			new type cmd first.
Command/Response Parameter 1	5 6 7 8	0x35 0x36 0x37 0x38	Line/Mic input 1 Line/Mic input 2 Line/Mic input 3 Line/Mic input 4
Response Parameter 2	1 2	0x31 0x32	Line in Mic in

Example

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	End
GET	0x55	0xF0	0x05	0x01	0x67	0x41 0x54	0x31	0x0D
ACK			0x06		0x06		0x31 0x31	
FAILED			0x05		0x15		0x31	