



Media Station RS-232/TCP Protocol Specification

Revision: 2.0

2021/07/02

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History

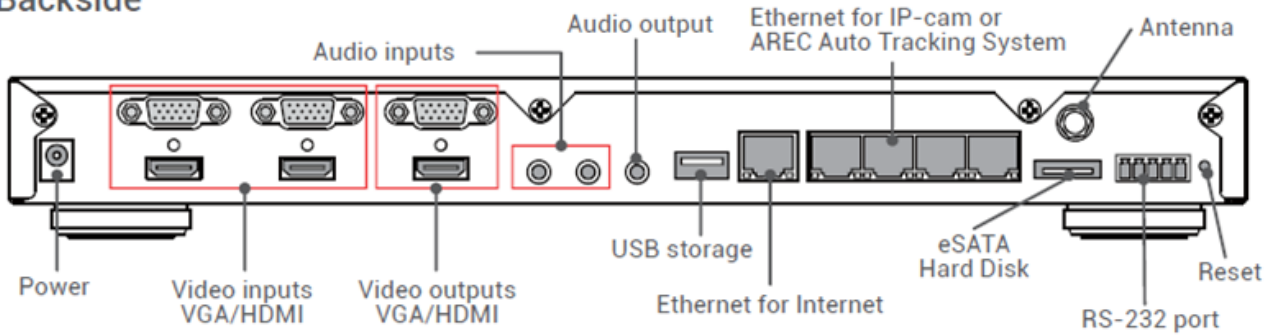
Version	Date	FW ver.	Comment
0.0			<ul style="list-style-type: none">• For FWv6.0.10 series 1st release, from FWv6.0 series rev1.5 release
2.0	2021/07/02	v6.0.10.4	<ul style="list-style-type: none">• Modify:<ul style="list-style-type: none">○ 1.1 Hardware○ 1.2 Connection

1 Interface

1.1 Hardware

- RS-232

■ Backside



Connect the RS-232 cable to the RS-232 port of the media station.
The pin definition of the RS-232 port:



- 1: Ground (GND)
- 2: Receive Data 1 (RX_1)
- 3: Receive Data 2 (RX_2)
- 4: Transmit Data 1 (TX_1)
- 5: Transmit Data 2 (TX_2)

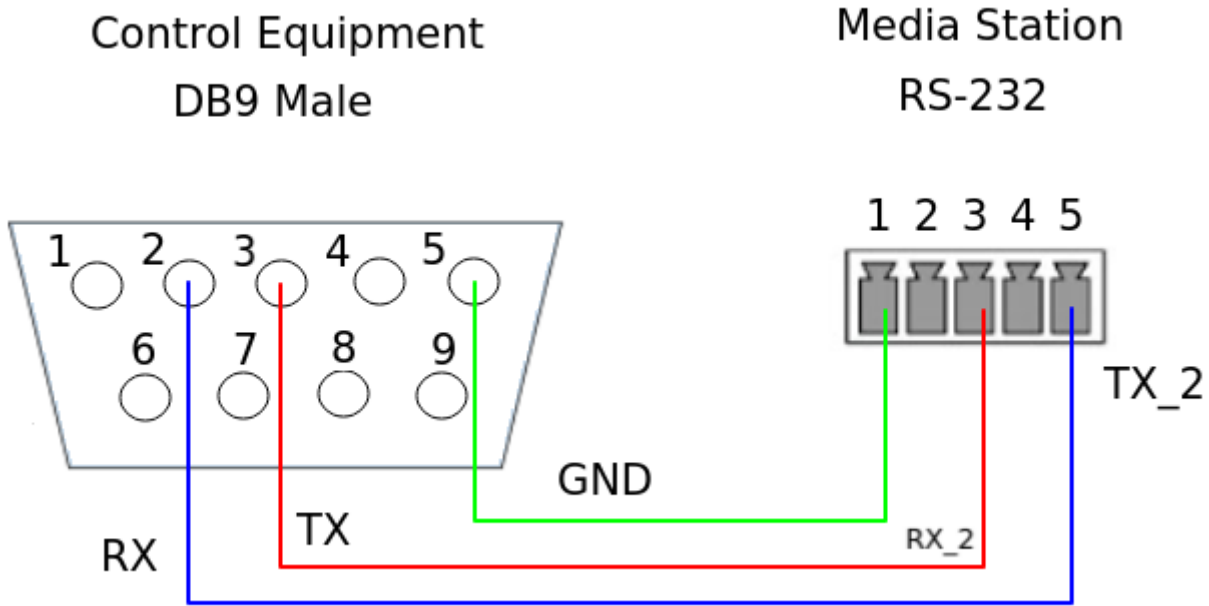
- TCP

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

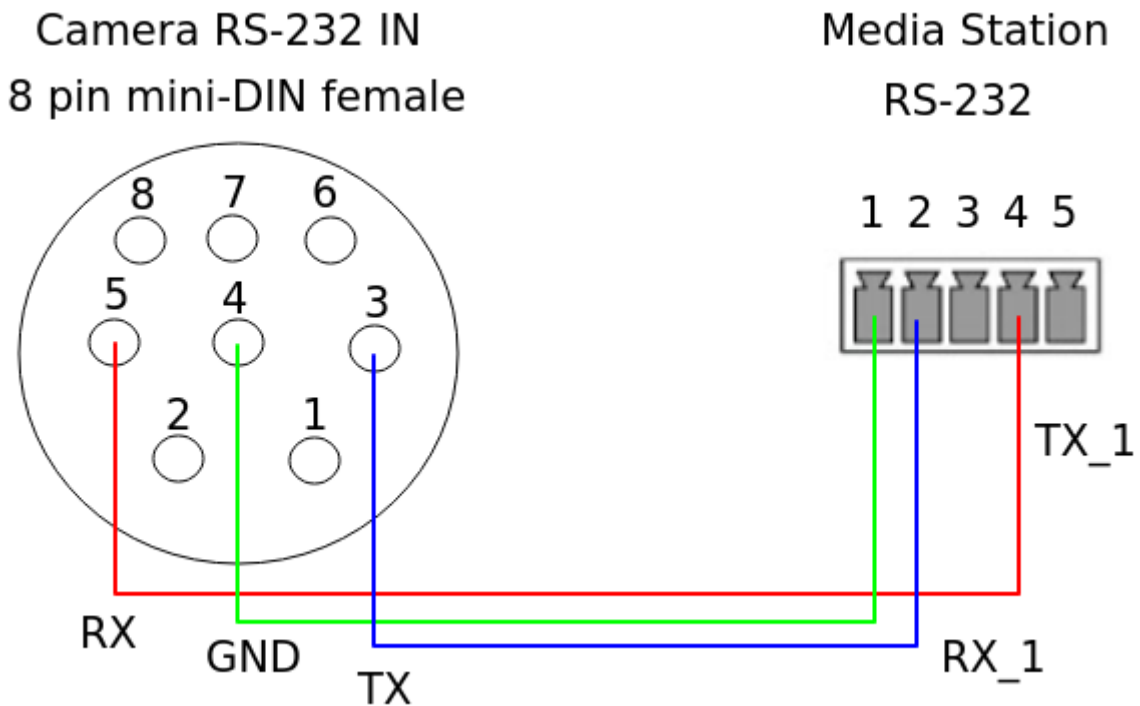
1.2 Connection

- 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:



The RX_1 & TX_1 of the media station RS232 port is used to be connected to the camera which contains RS-232 IN port. The media station will control the camera used webpage by RS-232 protocol. For example, use the mini din 8pin 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.

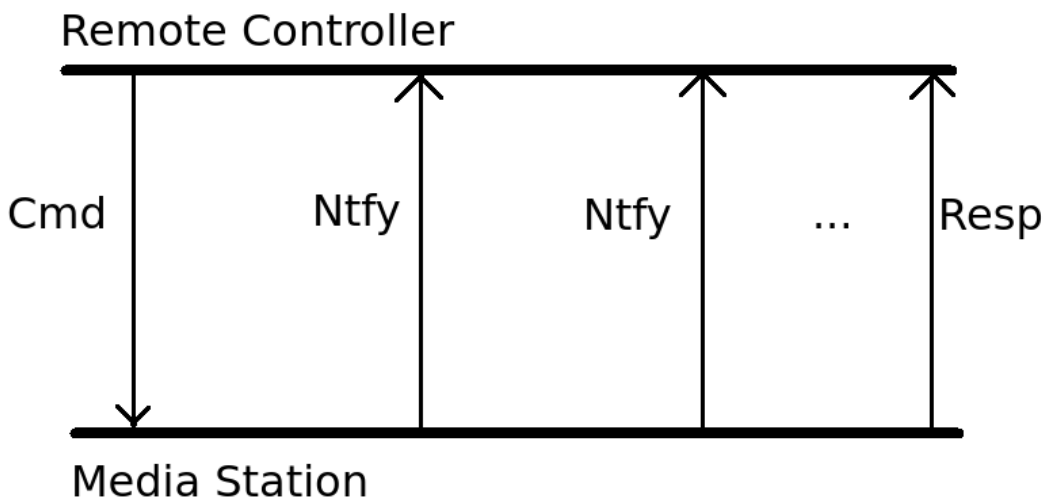
1.3 Configuration

- 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 network connection, the Media Station can be controlled by a command described in Control Protocol. If connection is not closed by client, connection will keep and get event notification until new connection established.
- Cmd 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. [2.3.2.1 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”.



- Event Notification
As described above, after receiving the Set cmd or any change of media station, the Ntfy cmd will be sent to the remote controller.

2.2 Format

Name	Header	Extended Header	Length	Address	Action	Cmd	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 [3.1](#)
- **Length**
 Length is a byte counter from **address to Parameters** field.

Example:

Name	Header	Extended Header	Length	Address	Action	Cmd	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 corresponding command successfully. It replaces the action field with ACK in the received protocol format and returns to the controller.

NAK: 0x15

When the media station receives the protocol data correctly but there is something wrong while the media station executes the corresponding command. It replaces the action field with NAK in the received protocol format and returns to the 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 layout changing state. The system state is defined the same as the “State” command in Get Action Cmd List. Please refer to 4.3 Event Code and Parameters for more information.

- **Cmd**
Two bytes. Please refer to [2.3 Cmd & Example](#) for more information.
- **Parameters**
Please refer to [2.3 Cmd & Example](#) for more information.
- **End**
0x0d
Protocol end code

2.3 Cmd & Example

2.3.1 Cmd Power

2.3.1.1 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	Cmd	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x50 0x57	0x30	0x0D
ACK					0x06			
FAILED					0x15			

2.3.2 Cmd Theme (Scene)

2.3.2.1 Set Layout


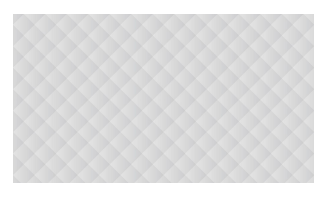


	ASCII	Hex	Description
Command code	LO	0x4c 0x4f	Set layout ID
Parameter 1		0x01~0xff	Layout ID

Example

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

2.3.2.2 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	Cmd	Parameters	End
SET	0x55	0xF0	0x05	0x01	0x73	0x42 0x47	0x01	0x0D
ACK					0x06			
FAILED					0x15			

2.3.2.3 Set Overlay

	ASCII	Hex	Description
Command code	OL	0x4f 0x4c	Set overlay ID
Parameter 1		0x00~0xff	Overlay ID 0x00: Overlay off

Example

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

2.3.2.4 Ntfy Layout

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

Example

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

2.3.2.5 Ntfy Background

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

Example

Name	Header	Extended Header	Length	Address	Action	Cmd	Parameters	End
NTFY	0x55	0xF0	0x05	0x01	0x6E	0x42 0x47	0x00	0x0D

2.3.2.6 Ntfy Overlay

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

Example

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

2.3.3 Cmd Tracking System

2.3.3.1 Set Remote Media Station IP

There's two kinds accepting format for command, first is ip address separated by comma and transformed to hex in 4 parameters, and second is accepting ip address as string in ascii.

	ASCII	Hex	Description
Command code	MI	0x4d 0x49	Setup Mediastation IP
Parameter 1		0x00~0xff	IPv4, first byte in Hex
Parameter 2		0x00~0xff	IPv4, second byte in Hex
Parameter 3		0x00~0xff	IPv4, third byte in Hex
Parameter 4		0x00~0xff	IPv4, fourth byte in Hex

Example 1

Name	Header	Extended Header	Length	Address	Action	Cmd	Parameters	End
SET	0x55	0xF0	0x08	0x01	0x73	0x4d 0x49	0x0A 0x02 0x32 0xAF	0x0D
ACK					0x06			
FAILED					0x15			

The above example is the ip address separated by comma and transformed to hex in 4 parameters.

parameters: 0x0A 0x02 0x32 0xAF means setup remote media station ip as 10.2.50.175

Example 2

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

		Header						
SET	0x55	0xF0	0x0F	0x01	0x73	0x4d 0x49	0x31 0x30 0x2E 0x32 0x2E 0x35 0x30 0x2E 0x31 0x37 0x35	0x0D
ACK					0x06			
FAILED					0x15			

The above example is the ip address string transformed to ascii. Please note the length when send this type command

parameters: 0x31 0x30 0x2E 0x32 0x2E 0x35 0x30 0x2E 0x31 0x37 0x35 means setup remote media station ip as 10.2.50.175

2.3.3.2 Set Camera Goto Preset

	ASCII	Hex	Description
Command code	CP	0x43 0x50	Goto camera preset
Parameter 1		0x31~0x34	Camera channel ID
Parameter 2		0x00~0xff	Preset ID 0x00: Default preset

The maximum value of parameter 2 is dependent on the camera and what kind of PTZ control protocol used connected with the camera from the media station.

Example

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

2.3.3.3 Set Camera Theme (Group ID)

	ASCII	Hex	Description
Command code	CT	0x43 0x54	Set Camera Preset & Theme control & Ext. Recorder Theme. Also can do at GUI GX-X & Web -> Speaker Tracking -> Camera Control
Parameter 1		0x00~0xff	microphone group
Parameter 2		0x00~0xff	microphone id

Example

Name	Header	Extended Header	Length	Address	Action	Cmd	Parameters	End
SET	0x55	0xF0	0x06	0x01	0x73	0x43 0x54	0x00 0x01	0x0D
ACK					0x06			
FAILED					0x15			

The above example, group and id parameter each use one byte for command.
 parameters: 0x00 0x01 means setup group with 0 and id with 1

	ASCII	Hex	Description
Command code	CT	0x43 0x54	As above
String 1			microphone group in ascii string
String 2			microphone id in ascii string

Example

Name	Header	Extended Header	Length	Address	Action	Cmd	Parameters	End
SET	0x55	0xF0	0x0a	0x01	0x73	0x43 0x54	0x30 0x31 0x2c 0x32 0x33 0x54	0x0D
ACK					0x06			
FAILED					0x15			

The above example, group and id parameter each use one string separated by comma with
 ascii(0x2c) for command.
 parameters: 0x30 0x31 0x2c 0x32 0x33 0x54 means setup group with 01 and id with 23T

2.3.3.4 Set Camera Theme Default

	ASCII	Hex	Description
Command code	CC	0x43 0x43	Set Camera Preset & Theme control & Ext. Recorder Theme to default. Also can do at GUI home & Web -> Speaker Tracking -> Control Setting

Example

Name	Header	Extended Header	Length	Address	Action	Cmd	Parameters	End
SET	0x55	0xF0	0x04	0x01	0x73	0x43 0x43		0x0D

ACK					0x06			
FAILED					0x15			

3 Note

- 1. Commands are not accepted during media station boot-up.

3.1 Format (Enable Checksum)

System supports both checksum and non-checksum commands.

Name	Header	Extended Header	Length	Address	Action	Cmd	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	Cmd	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](#)
- **Cmd**
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:

Sum = $0x06+0x01+0x73+0x4c+0x4f+0x01 = 0x116$

Discarding overflow bits. Checksum = $0x16$

- **End**

0x0d : Protocol end code