



Media Station RS-232/TCP Protocol Specification

Revision: 1.1

2019/10/30

History

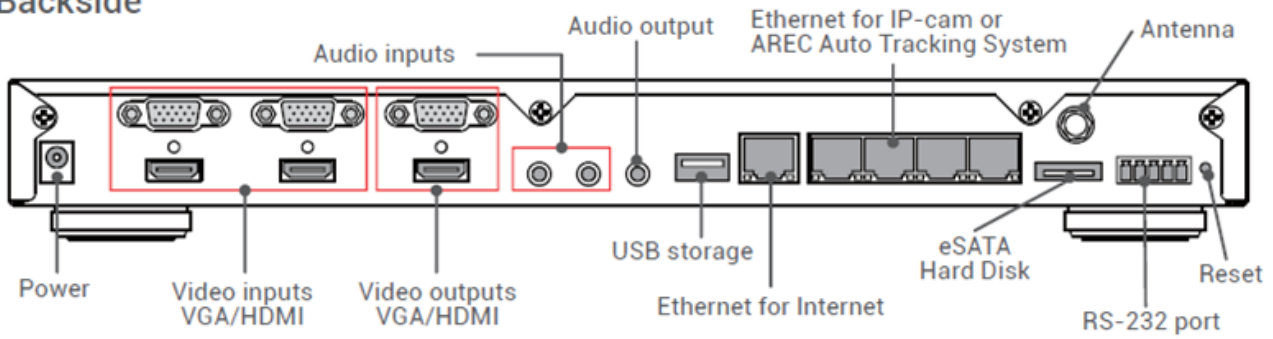
Version	Date	Comment
1.0	2019/05/13	For DS-X01 series 1st release
1.1	2019/10/30	Remove Audio Input Type

1 Interface

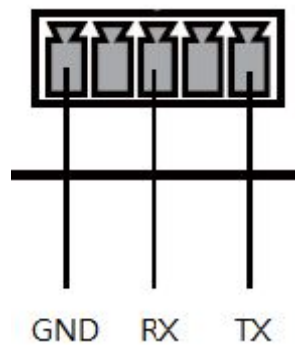
1.1 Hardware

- 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 :



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

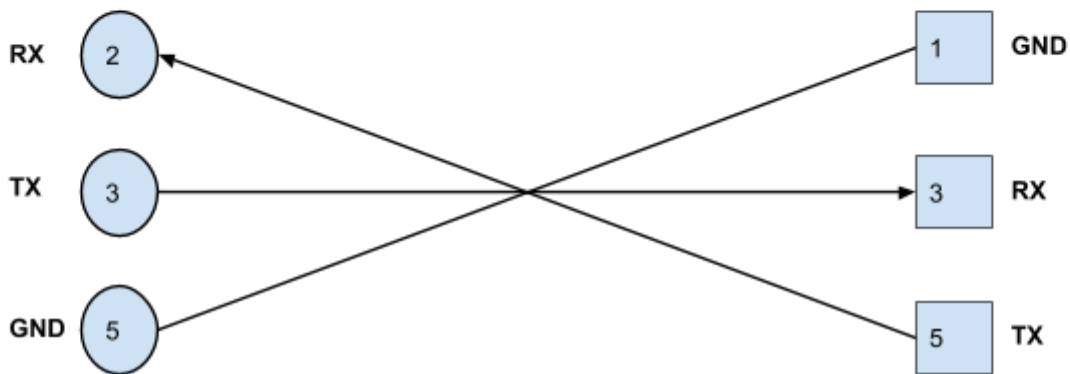
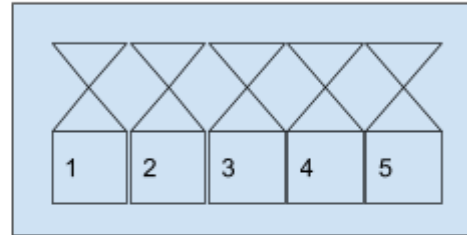
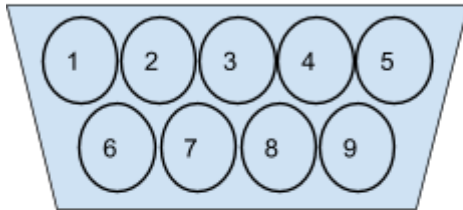
Connect the GND, RX, TX pins of the RS-232 port with external control equipment. The media station will be controlled by RS-232 protocol. For example, use the standard 9 pin DB9 serial cable as follows :

Control equipment

Media station

**DB9 Male
(pin side)**

**RS-232 Connector
(pin side)**



- 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.

The Media Station terminates the TCP connection if it doesn't receive command within 30 seconds after connection is established.

2.2 Format

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**
0xff
reserved for future use.
- **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

Counter = address 1 byte+action 1 byte+command 2 bytes+parameter 1 byte+checksum 1

byte

Total length = 6 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.

- **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.

- **Checksum**

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

Example:

Name	Header	Extended Header	Length	Address	Action	Command	Parameters	Checksum	End
Hex	0x55	0xff	0x07	0x01	0x73	0x43 0x48	0x31 0x01	0x38	0x0d

Sum = 0x07+0x01+0x73+0x43+0x48+0x31+0x01 = 0x138

Discarding overflow bits. Checksum = 0x38

- **End**

0x0d

Protocol end code

2.3 Command Set and Parameters

“Set” Action Command List

Command	ASCII	Hex	Description
Power	PW	0x50 0x57	Power control
Channel	CH	0x43 0x48	Channel control
Audio Volume	AV	0x41 0x56	Audio volume control
Audio Mute	AM	0x41 0x4d	Audio mute control

Power

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

Channel

	ASCII	Hex	Description
Command code	CH	0x43 0x48	Set Channel ID
Parameter 1	1 2	0x31 0x32	Set channel type source Set channel type stream
Parameter 2		0x00~0xff	Channel ID

Audio Volume

	ASCII	Hex	Description
Command code	AV	0x41 0x56	Set audio volume
Parameter 1	I O	0x49 0x4f	Set input volume Set output volume
Parameter 2	1 2 3	0x31 0x32 0x33	Input: Audio input 1; Output: Line out Input: Audio input 2; Output: HDMI out Input: BT MIC; Output: None
Parameter 3		0x00~0x7d 0x00~0x0f	Audio volume(0~125) BT MIC volume(0~15)

Audio Mute

	ASCII	Hex	Description
Command code	AM	0x41 0x4d	Set audio mute/unmute
Parameter 1	I O	0x49 0x4f	Set input mute/unmute Set output mute/unmute
Parameter 2	1 2 3	0x31 0x32 0x33	Input: Audio input 1; Output: Line out Input: Audio input 2; Output: HDMI out Input: BT MIC; Output: None
Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

“Get” Action Command List

Command	ASCII	Hex	Description
Audio Volume	AV	0x41 0x56	Audio volume control
Audio Mute	AM	0x41 0x4d	Audio mute control

Audio Volume

	ASCII	Hex	Description
Command code	AV	0x41 0x56	Get audio volume
Command/Response Parameter 1	I O	0x49 0x4f	Get input volume Get output volume
Command/Response Parameter 2	1 2 3	0x31 0x32 0x33	Input: Audio input 1; Output: Line out Input: Audio input 2; Output: HDMI out Input: BT MIC; Output: None
Response Parameter 3		0x00~0x7d 0x00~0x0f	Audio volume(0~125) Bluetooth microphone volume(0~15)

Audio Mute

	ASCII	Hex	Description
Command code	AM	0x41 0x4d	Get audio mute/unmute
Command/Response Parameter 1	I O	0x49 0x4f	Get input mute/unmute Get output mute/unmute
Command/Response Parameter 2	1 2 3	0x31 0x32 0x33	Input: Audio input 1; Output: Line out Input: Audio input 2; Output: HDMI out Input: BT MIC; Output: None
Response Parameter 3	0 1	0x30 0x31	Audio unmute Audio mute

3 Note

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