

# Lumens LC200 RS-232/RS-485/TCP-IP Command List

Revision: 1.1

2020/02/17

## History

| Version | Issue Date | Description  | Apply Firmware |
|---------|------------|--|----------------|
| 1.0     | 2019/07/02 | LC200 1 <sup>st</sup> release  | NA             |
| 1.1     | 2020/02/17 | <ul style="list-style-type: none"> <li>Fix : get stream type : type "off" was return "sync"</li> </ul> | 4.3.0.41       |
|         |            |  |                |
|         |            |  |                |
|         |            |  |                |
|         |            |  |                |
|         |            |  |                |

**\*Notice:**

1. The RS-232/RS-485/TCP-IP command list is for LC200.
2. The yellow highlight means the latest update.
3. The blue highlight means the deleted item.

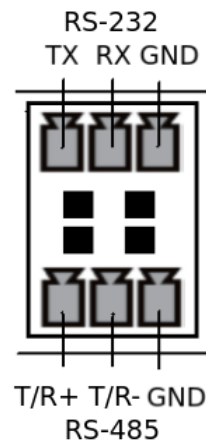
# 1 Interface

## 1.1 Hardware

### ■ RS-232 / RS-485

Connect the RS-232 cable to the RS-232 upper port of the media station.  
Connect the RS-485 cable to the RS-485 lower port of the media station.

The pin definition of the RS-232 / RS-485 port :



### ■ GND : Ground

RX : Receive Data

TX : Transmit Data

T/R+ : D+

T/R- : D-

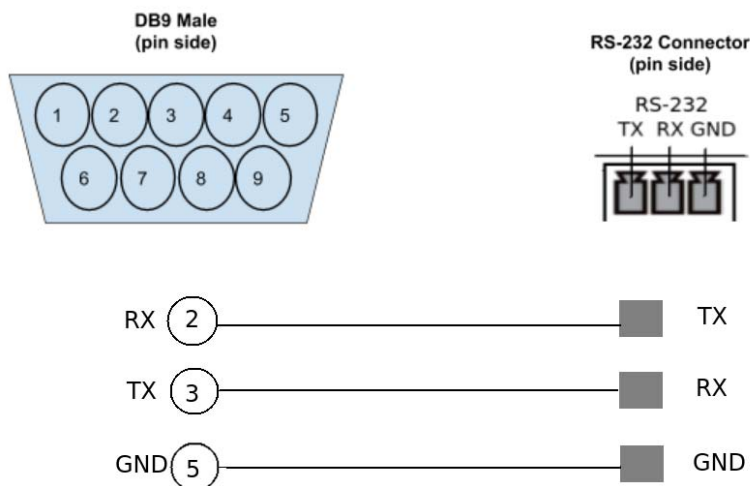
### ■ TCP

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 :



### ■ RS-485

Connect the GND, T/R+, T/R- pins of the RS-485 port with external control equipment.

The media station will be controlled by RS-485 protocol. For example:



### ■ 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 / RS-485

Baud rate : 9600

Data length : 8

Parity : none

Stop bit : 1

Flow control : none

### ■ TCP

IP address : Media Station's WAN IP address

Port : 5080

## 2 Control Protocol

### 2.1 Description

#### ■ RS-232 / RS-485

The media station can be controlled from an external controller through a serial RS-232 / RS-485 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.

### 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**

no checksum in format

#### 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 |

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

Total length = 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 is 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't 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.

Example:

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x73   | 0x4c 0x4f | 0x01       | 0x0d |

### **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        |
| Record        | RC    | 0x52 0x43 | Record               |
| Stop record   | SP    | 0x53 0x50 | Stop record          |
| Snapshot      | SS    | 0x53 0x53 | Snapshot             |
| Layout        | LO    | 0x4c 0x4f | Layout control       |
| Background    | BG    | 0x42 0x47 | Background control   |
| Overlay       | OL    | 0x4f 0x4c | Overlay control      |
| Scene         | TE    | 0x54 0x45 | Scene control        |
| Audio Volume  | AV    | 0x41 0x56 | Audio volume control |
| Audio Mute    | AM    | 0x41 0x4d | Audio mute control   |
| Audio Type    | AT    | 0x41 0x54 | Audio type control   |
| Stream        | SC    | 0x53 0x43 | Stream control       |
| Camera Preset | CP    | 0x43 0x50 | Camera go to preset  |
| Camera Move   | CM    | 0x43 0x4d | Camera pan/tilt move |
| Camera Zoom   | CZ    | 0x43 0x5a | Camera zoom control  |

### ■ Power

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

### ■ Record

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

### ■ Stop

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

### ■ Snapshot

|              | ASCII | Hex       | Description     |
|--------------|-------|-----------|-----------------|
| Command code | SS    | 0x53 0x53 | Insert snapshot |
| Parameter    |       |           |                 |

### ■ Layout

|              | ASCII | Hex       | Description   |
|--------------|-------|-----------|---------------|
| Command code | LO    | 0x4c 0x4f | Set layout ID |
| Parameter 1  |       | 0x01~0x12 | Layout ID     |

### ■ Background

|              | ASCII | Hex       | Description                           |
|--------------|-------|-----------|---------------------------------------|
| Command code | BG    | 0x42 0x47 | Set background ID                     |
| Parameter 1  |       | 0x00~0x09 | Background ID<br>0x00: Background off |

### ■ Overlay

|              | ASCII | Hex       | Description                     |
|--------------|-------|-----------|---------------------------------|
| Command code | OL    | 0x4f 0x4c | Set overlay ID                  |
| Parameter 1  |       | 0x00~0x09 | Overlay ID<br>0x00: Overlay off |

### ■ Scenes

|              | ASCII | Hex       | Description  |
|--------------|-------|-----------|--------------|
| Command code | TE    | 0x54 0x45 | Set scene ID |
| Parameter 1  |       | 0x01~0x09 | Scene ID     |

### ■ Audio Volume

|              | ASCII            | Hex                          | Description  |
|--------------|------------------|------------------------------|--|
| Command code | AV               | 0x41 0x56                    | Set audio volume   |
| Parameter 1  | I<br>O           | 0x49<br>0x4f                 | Set input volume<br>Set output volume  |
| Parameter 2  | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Input: Audio input 1; Output: Audio output 1<br>Input: Audio input 2; Output: None<br>Input: Audio input 3; Output: None<br>input: Audio input 4; Output: None |
| Parameter 3  |                  | 0x00~0x7d                    | Audio volume(0~125)  |

### ■ Audio Mute

|              | ASCII            | Hex                          | Description  |
|--------------|------------------|------------------------------|--|
| Command code | AM               | 0x41 0x4d                    | Set audio mute/unmute  |
| Parameter 1  | I<br>O           | 0x49<br>0x4f                 | Set input mute/unmute<br>Set output mute/unmute  |
| Parameter 2  | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Input: Audio input 1; Output: Audio output 1<br>Input: Audio input 2; Output: None<br>Input: Audio input 3; Output: None<br>input: Audio input 4; Output: None |
| Parameter 3  | 0<br>1           | 0x30<br>0x31                 | Audio unmute<br>Audio mute   |



### ■ Audio Type

|              | ASCII            | Hex                          | Description  |
|--------------|------------------|------------------------------|--|
| Command code | AT               | 0x41 0x54                    | Set audio input type   |
| Parameter 1  | I<br>O           | 0x49<br>0x4f                 | Set audio input type<br>Set audio output type  |
| Parameter 2  | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Input: Audio input 1; Output: Audio output 1<br>Input: Audio input 2; Output: None<br>Input: Audio input 3; Output: None<br>input: Audio input 4; Output: None |
| Parameter 3  | 1<br>2<br>3      | 0x31<br>0x32<br>0x33         | Input:Line in      Output:ALL<br>Input:Mic in      Output:Line out + PGM<br>Input:HDMI in     Output:MultiView   |

### ■ Stream

|              | ASCII       | Hex                  | Description                      |
|--------------|-------------|----------------------|----------------------------------|
| Command code | SC          | 0x53 0x43            | Set stream ready/streaming       |
| Parameter 1  | 1<br>2<br>3 | 0x31<br>0x32<br>0x33 | Stream 1<br>Stream 2<br>Stream 3 |
| Parameter 2  |             | 0x01<br>0x02         | Ready<br>Streaming               |

### ■ Camera Preset

|              | ASCII            | Hex                          | Description                                      |
|--------------|------------------|------------------------------|--|
| Command code | CP               | 0x43 0x50                    | Set camera of channel goto preset                |
| Parameter 1  | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Channel 1<br>Channel 2<br>Channel 3<br>Channel 4 |
| Parameter 2  |                  | 0x01~0x09                    | Preset ID  |

### ■ Camera Move

|              | ASCII            | Hex                          | Description  |
|--------------|------------------|------------------------------|--|
| Command code | CM               | 0x43 0x4d                    | Set camera move  |
| Parameter 1  | S<br>U<br>D<br>L | 0x53<br>0x55<br>0x44<br>0x4c | Camera stop move<br>Camera move up<br>Camera move down<br>Camera move left |

|             |                  |                              |  |
|-------------|------------------|------------------------------|--|
|             | R                | 0x52                         | Camera move right  |
| Parameter 2 | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Channel 1<br>Channel 2<br>Channel 3<br>Channel 4           |
| Parameter 3 |                  | 0x01~0x18                    | Move speed , this parameter in stop command is dispensable |

### ■ Camera Zoom

|              | ASCII            | Hex                          | Description  |
|--------------|------------------|------------------------------|--|
| Command code | CZ               | 0x43 0x5a                    | Set camera zoom  |
| Parameter 1  | S<br>I<br>O      | 0x53<br>0x49<br>0x4f         | Camera stop zoom<br>Camera zoom in<br>Camera zoom out      |
| Parameter 2  | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Channel 1<br>Channel 2<br>Channel 3<br>Channel 4           |
| Parameter 3  |                  | 0x01~0x07                    | Zoom speed , this parameter in stop command is dispensable |

### Example :

1. Record start

#### Controller send to Media station

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x73   | 0x52 0x43 |            | 0x0d |

#### Media station response to Controller

##### Success:

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x06   | 0x52 0x43 |            | 0x0d |

##### Failed:

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x15   | 0x52 0x43 |            | 0x0d |

2. Set layout ID 1

#### Controller send to Media station

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x73   | 0x4c 0x4f | 0x01       | 0x0d |

**Media station response to Controller**

**Success:**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x06   | 0x4c 0x4f | 0x01       | 0x0d |

**Failed:**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x15   | 0x4c 0x4f | 0x01       | 0x0d |

### “Get” Action Command List

| Command      | ASCII | Hex       | Description          |
|--------------|-------|-----------|----------------------|
| State        | ST    | 0x53 0x54 | System state         |
| Layout       | LO    | 0x4c 0x4f | Layout control       |
| Background   | BG    | 0x42 0x47 | Background control   |
| Overlay      | OL    | 0x4f 0x4c | Overlay control      |
| Audio Volume | AV    | 0x41 0x56 | Audio volume control |
| Audio Mute   | AM    | 0x41 0x4d | Audio mute control   |
| Audio Type   | AT    | 0x41 0x54 | Audio type control   |
| Stream       | SC    | 0x53 0x43 | Stream type          |

#### ■ State

|                         | ASCII                      | Hex  | Description  |
|-------------------------|----------------------------|--|--|
| Command code            | ST                         | 0x53 0x54                                    | Get system state   |
| Response<br>Parameter 1 | 0<br>1<br>2<br>3<br>4<br>5 | 0x30<br>0x31<br>0x32<br>0x33<br>0x34<br>0x35 | Uninitialize<br>Ready<br>Stopped<br>Recording<br>Paused<br>Waiting |

#### ■ Layout

|                         | ASCII | Hex       | Description   |
|-------------------------|-------|-----------|---------------|
| Command code            | LO    | 0x4c 0x4f | Get layout ID |
| Response<br>Parameter 1 |       | 0x01~0x12 | Layout ID     |

#### ■ Background

|                         | ASCII | Hex       | Description                           |
|-------------------------|-------|-----------|---------------------------------------|
| Command code            | BG    | 0x42 0x47 | Get background ID                     |
| Response<br>Parameter 1 |       | 0x00~0x09 | Background ID<br>0x00: Background off |

### ■ Overlay

|                      | ASCII | Hex       | Description                     |
|----------------------|-------|-----------|---------------------------------|
| Command code         | OL    | 0x4f 0x4c | Get overlay ID                  |
| Response Parameter 1 |       | 0x00~0x09 | Overlay ID<br>0x00: Overlay off |

### ■ Audio Volume

|                              | ASCII            | Hex                          | Description  |
|------------------------------|------------------|------------------------------|--|
| Command code                 | AV               | 0x41 0x56                    | Get audio volume   |
| Command/Response Parameter 1 | I<br>O           | 0x49<br>0x4f                 | Get input volume<br>Get output volume  |
| Command/Response Parameter 2 | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Input: Audio input 1; Output: Audio output 1<br>Input: Audio input 2; Output: None<br>Input: Audio input 3; Output: None<br>input: Audio input 4; Output: None |
| Response Parameter 3         |                  | 0x00~0x7d                    | Audio volume(0~125)  |

### ■ Audio Mute

|                              | ASCII            | Hex                          | Description  |
|------------------------------|------------------|------------------------------|--|
| Command code                 | AM               | 0x41 0x4d                    | Get audio mute/unmute  |
| Command/Response Parameter 1 | I<br>O           | 0x49<br>0x4f                 | Get input mute/unmute<br>Get output mute/unmute  |
| Command/Response Parameter 2 | 1<br>2<br>3<br>4 | 0x31<br>0x32<br>0x33<br>0x34 | Input: Audio input 1; Output: Audio output 1<br>Input: Audio input 2; Output: None<br>Input: Audio input 3; Output: None<br>input: Audio input 4; Output: None |
| Response Parameter 3         | 0<br>1           | 0x30<br>0x31                 | Audio unmute<br>Audio mute   |

### ■ Audio Type

|              | ASCII  | Hex          | Description                                   |
|--------------|--------|--------------|---|
| Command code | AT     | 0x41 0x54    | Get audio input type                          |
| Parameter 1  | I<br>O | 0x49<br>0x4f | Set audio input type<br>Set audio output type |

|                                 |   |      |  |
|---------------------------------|---|------|--|
| Command/Response<br>Parameter 2 | 1 | 0x31 | Input: Audio input 1; Output: Audio output 1 |
|                                 | 2 | 0x32 | Input: Audio input 2; Output: None           |
|                                 | 3 | 0x33 | Input: Audio input 3; Output: None           |
|                                 | 4 | 0x34 | input: Audio input 4; Output: None           |
| Response<br>Parameter 3         | 1 | 0x31 | Input:Line in      Output:ALL                |
|                                 | 2 | 0x32 | Input:Mic in      Output:Line out + PGM      |
|                                 | 3 | 0x33 | Input:HDMI in      Output:MultiView          |

### ■ Stream

|                         | ASCII | Hex       | Description     |
|-------------------------|-------|-----------|-----------------|
| Command code            | SC    | 0x53 0x43 | Get Stream type |
| Parameter               | 1     | 0x31      | Stream 1        |
|                         | 2     | 0x32      | Stream 2        |
|                         | 3     | 0x33      | Stream 3        |
| Response<br>Parameter 2 |       | 0x00      | Sync            |
|                         |       | 0x01      | Ready           |
|                         |       | 0x02      | Streaming       |

### Example :

1. Get system state of media station

#### **Controller send to Media station**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x67   | 0x53 0x54 |            | 0x0d |

#### **Media station response to Controller**

#### **Success: system state is Ready**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x06   | 0x53 0x54 | 0x31       | 0x0d |

#### **Failed:**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x15   | 0x53 0x54 |            | 0x0d |

2. Get layout ID of media station

#### **Controller send to Media station**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x67   | 0x4c 0x4f |            | 0x0d |

**Media station response to Controller**

**Success: ID is 1**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x05   | 0x01    | 0x05   | 0x4c 0x4f | 0x01       | 0x0d |

**Failed:**

| Name | Header | Extended Header | Length | Address | Action | Command   | Parameters | End  |
|------|--------|-----------------|--------|---------|--------|-----------|------------|------|
| Hex  | 0x55   | 0xf0            | 0x04   | 0x01    | 0x15   | 0x4c 0x4f |            | 0x0d |

## 3 Event Notification

### 3.1 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.

### 3.2 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.

### 3.3 Event Code and Parameters

#### ■ 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      |



## 4 Note

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