Channel in a box

Device Control Protocol

Version 0.8

1. **Introduction**

Defines a protocol for a device to be used in a channel in a box (CIB).

CIB Device consists of Video Encoder / Decoder, CG (Cut & Page), Sequence CG, Scroll CG, Logo, Closed Caption & Sub Title, and describes control protocol for each device in this document.

1. **Interface System Overview**

* The protocol is based on JSON
* Confirming to UDP & RS-422
* Data is transmitted asynchronously, with data exchange between devices.
* Standard transmission UDP port on see the below :

Video Encoder/Decoder : 1000 ~ 1099

CG (Cut & Page) : 1100 ~ 1199

Sequence CG : 1200 ~ 1299

Scroll CG : 1300 ~ 1399

Logo : 1400 ~ 1499

Closed Caption & Sub Title : 1500 ~ 1599

1. **JSON Protocol Format**

* Command Default  
  {  
   “command” : “”   
  }
* Response Default  
  If success  
  {  
   “response” : “success”  
  }  
    
  If fail  
  {  
   “response” : “fail”,  
   “errorcode” : 0  
  }
* Depending on the type of command, the convention for JSON objects is different.
* Response also define additional JSON objects depending on the type of command.
* The command is classified according to the mode of operation. See the below :  
  System Control  
  Immediate Control  
  Preset/Select Control  
  Sens Request

1. **Command**
2. **Command Table (Video Encoder/Decoder)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Command** | | **Response** | |
| **JSON Object** | **Description** | **JSON Object** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play or Record | Success | Command success |
| pause | Pause | Success | Command success |
| set\_rate | Set play rate | Success | Command success |
| set\_timecode | Go to timecode position | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play cue | Success | Command success |
| play\_cue\_data | Play cue & Start & Duration | Success | Command success |
| record\_cue | Record cue | Success | Command success |
| record\_cue\_data | Record cue & Duration | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |
| get\_timecode | Get timecode | Success & Data | Command success & timecode data |

1. **Command Table (CG – Cut & Page)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Command** | | **Response** | |
| **JSON Object** | **Description** | **JSON Object** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play | Success | Command success |
| set\_page | Go to CG cut page | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play cue | Success | Command success |
| template\_data | Set template data | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |

1. **Command Table (Sequence CG)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Command** | | **Response** | |
| **JSON Object** | **Description** | **JSON Object** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play | Success | Command success |
| pause | Pause | Success | Command success |
| set\_rate | Set play rate | Success | Command success |
| set\_timecode | Go to timecode position | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play Cue – Sequence name | Success | Command success |
| play\_cue\_data | Play Cue & Start & Duration | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |
| get\_timecode | Get timecode | Success & Data | Command success & timecode data |

1. **Command Table (Scroll CG)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Command** | | **Response** | |
| **JSON Object** | **Description** | **JSON Object** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play on scroll | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play Cue – Scroll template name | Success | Command success |
| set\_data | Set scroll data | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |

1. **Command Table (Logo)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Command** | | **Response** | |
| **JSON Object** | **Description** | **JSON Object** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play Cue – Logo name | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |

1. **Command Table (Closed Caption & Sub Title)**

|  |  |  |  |
| --- | --- | --- | --- |
| **“Command” JSON Object** | | **“Response” JSON Object** | |
| **JSON Value** | **Description** | **JSON Value** | **Description** |
| **System Control** | | | |
| open | Device open | Success | Command success |
| close | Device close | Success | Command success |
| **Immediate Control** | | | |
| stop | Stop | Success | Command success |
| play | Play | Success | Command success |
| pause | Pause | Success | Command success |
| set\_on | Set screen display on | Success | Command success |
| set\_off | Set screen display off | Success | Command success |
| **Preset/Select Control** | | | |
| play\_cue | Play Cue – preset or smi | Success | Command success |
| play\_cue\_data | Play Cue & Start & Duration | Success | Command success |
| **Sense Request** | | | |
| get\_status | Get device status | Success & Data | Command success & status data |
| get\_timecode | Get timecode | Success & Data | Command success & timecode data |

1. **Command Description**
2. **Video Encoder/Decoder**

**System Control**

* **open**Open to use device.  
  No other commands can be executed before this command is executed.  
    
  {   
   “command” : “open”  
  }
* **close**  
  Close the device.  
  No other commands can be executed after this command.  
    
  {   
   “command” : “close”  
  }

**Immediate Control**

* **stop**The [stop] command stops playback or recording.  
    
  {   
   “command” : “stop”  
  }
* **play**Start playback or recording.  
  If the decoder in PAUSE state, the [play] command start playback or recording at current position.
* Play Cue before you start playback.
* Record Cue before you start record.

{   
 “command” : “play”  
}

* **pause**The [pause] command pause playback or recording.  
  If the decoder in PLAY or PLAY CUE state, the [pause] command causes the currently playing ID to pause and display a still video frame.  
  If the encoder in RECORD or RECORD CUE state, the PAUSE command causes the currently recording ID to pause.  
    
  {   
   “command” : “pause”  
  }
* **set\_rate**Specifies the playback speed  
  If it is positive, it is forward.  
  If it is negative, it is rewind.  
  If it is 0, it is pause.  
  This command can be used to implement the Jog & Shuttle function.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_rate | String |  |
| rate | 0 | Number (float) | 0 : pause  Greater then 0 : forward play  Less then 0 : rewind play |

{   
 “command” : “set\_rate”,  
 “rate” : 0  
}

* **set\_timecode**If playback is in progress, position the video in timecode.  
  If the time code is larger than the video duration, it moves to the back of the video.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_timecode | String |  |
| timecode | 00:00:00:00 | String | Timecode (DF & NDF) |

{   
 “command” : “set\_timecode”,  
 “timecode” : “00:00:00:00”  
}

**Preset/Select Control**

* **play\_cue**The [play\_cue] command prepares for playback.  
  If the ID is not found, an error occurs and state returns STOP.  
  When the CUE is complete, the CUE-DONE flag is set in status.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue | String |  |
| id | id | String | Video material id |

{   
 “command” : “play\_cue”,  
 “id” : “id”  
}

* **play\_cue\_data**Performs similar to [play\_cue].  
  In addition, you can specify playback start timecode and playback duration.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue\_data | String |  |
| id | id | String | Video material id |
| start | 00:00:00:00 | String | Playback start timecode |
| duration | 00:59:59:29 | String | Playback duration timecode |

{   
 “command” : “play\_cue\_data”,  
 “id” : “id”,  
 “start” : “00:00:00:00”,  
 “duration” : “00:59:59:29”  
}

* **record\_cue**The [record\_cue] command prepares for record.  
  If there is an existing ID, it overwrites it, and immediately the ID has a length of 0.  
  When the CUE is complete, the CUE-DONE flag is set in status.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | record\_cue | String |  |
| id | id | String | Video material id |

{   
 “command” : “record\_cue”,  
 “id” : “id”  
}

* **record\_cue\_data**Performs similar to [record\_cue].  
  In addition, you can specify record duration.  
  When recording is done for the specified duration, it stops automatically.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue\_data | String |  |
| id | id | String | Video material id |
| duration | 00:59:59:29 | String | Playback duration timecode |

{   
 “command” : “play\_cue\_data”,  
 “id” : “id”,  
 “duration” : “00:59:59:29”  
}

**Sense Request**

* **get\_status**The [get\_status] command get device status.  
    
  {   
   “command” : “get\_status”  
  }  
    
  **Response**

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| response | success | String | Success or Fail |
| * status idle cueing cue\_done play pause | true  false  false  false  false | Boolean  Boolean  Boolean  Boolean  Boolean | Not doing anything or stopped  Preparing play or record  Completed prepare play or record  Playing  Paused |

* **get\_timecode**The [get\_timecode] command get current timecode.  
    
  {   
   “command” : “get\_timecode”  
  }  
    
  **Response**

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| response | success | String | Success or Fail |
| timecode | 00:00:00:00 | String |  |

1. **CG – Cut & Page**

**System Control**

* **open**Open to use device.  
  No other commands can be executed before this command is executed.  
    
  {   
   “command” : “open”  
  }
* **close**  
  Close the device.  
  No other commands can be executed after this command.  
    
  {   
   “command” : “close”  
  }

**Immediate Control**

* **stop**The [stop] command stops playback.  
    
  {   
   “command” : “stop”  
  }
* **play**Start playback CG.
* Play Cue before you start playback.

{   
 “command” : “play”  
}

* **set\_page**If there are several cut pages, specify the page number.  
  If playback is in progress, specify the page number then immediately display on screen.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_page | String |  |
| page | 0 | Number | Start page number of 0 |

{   
 “command” : “set\_page”,  
 “page” : 0  
}

**Preset/Select Control**

* **play\_cue**The [play\_cue] command prepares for playback.  
  If the ID is not found, an error occurs and state returns STOP.  
  When the CUE is complete, the CUE-DONE flag is set in status.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue | String |  |
| id | id | String | CG template id |

{   
 “command” : “play\_cue”,  
 “id” : “id”  
}

* **set\_data**Set the data of the cued template.  
  Template data is separate ‘;’ character.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_data | String |  |
| data | data | String array | Template data, separate ‘;’ |

{   
 “command” : “play\_cue\_data”,  
 “data” : [  
 “data1”,  
 “data2”,  
 “data3”  
 ]  
}

**Sense Request**

* **get\_status**The [get\_status] command get device status.  
    
  {   
   “command” : “get\_status”  
  }  
    
  **Response**

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| response | success | String | Success or Fail |
| * status idle cueing cue\_done play page | true  false  false  false  0 | Boolean  Boolean  Boolean  Boolean  Number | Not doing anything or stopped  Preparing play  Completed prepare play  Playing  Paused |

1. **Sequence CG**

**System Control**

* **open**Open to use device.  
  No other commands can be executed before this command is executed.  
    
  {   
   “command” : “open”  
  }
* **close**  
  Close the device.  
  No other commands can be executed after this command.  
    
  {   
   “command” : “close”  
  }

**Immediate Control**

* **stop**The [stop] command stops playback.  
    
  {   
   “command” : “stop”  
  }
* **play**Start playback.  
  If the decoder in PAUSE state, the [play] command start playback at current position.
* Play Cue before you start playback.

{   
 “command” : “play”  
}

* **pause**The [pause] command pause playback.  
  If the device in PLAY or PLAY CUE state, the [pause] command causes the currently playing ID to pause and display a still video frame.  
    
  {   
   “command” : “pause”  
  }
* **set\_rate**Specifies the playback speed  
  If it is positive, it is forward.  
  If it is negative, it is rewind.  
  If it is 0, it is pause.  
  This command can be used to implement the Jog & Shuttle function.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_rate | String |  |
| rate | 0 | Number (float) | 0 : pause  Greater then 0 : forward play  Less then 0 : rewind play |

{   
 “command” : “set\_rate”,  
 “rate” : 0  
}

* **set\_timecode**If playback is in progress, position the video in timecode.  
  If the time code is larger than the video duration, it moves to the back of the video.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | set\_timecode | String |  |
| timecode | 00:00:00:00 | String | Timecode (DF & NDF) |

{   
 “command” : “set\_timecode”,  
 “timecode” : “00:00:00:00”  
}

**Preset/Select Control**

* **play\_cue**The [play\_cue] command prepares for playback.  
  If the ID is not found, an error occurs and state returns STOP.  
  When the CUE is complete, the CUE-DONE flag is set in status.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue | String |  |
| id | id | String | Sequence id or name |

{   
 “command” : “play\_cue”,  
 “id” : “id”  
}

* **play\_cue\_data**Performs similar to [play\_cue].  
  In addition, you can specify playback start timecode and playback duration.

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| command | play\_cue\_data | String |  |
| id | id | String | Sequence id or name |
| start | 00:00:00:00 | String | Playback start timecode |
| duration | 00:59:59:29 | String | Playback duration timecode |

{   
 “command” : “play\_cue\_data”,  
 “id” : “id”,  
 “start” : “00:00:00:00”,  
 “duration” : “00:59:59:29”  
}

**Sense Request**

* **get\_status**The [get\_status] command get device status.  
    
  {   
   “command” : “get\_status”  
  }  
    
  **Response**

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| response | success | String | Success or Fail |
| * status idle cueing cue\_done play pause | true  false  false  false  false | Boolean  Boolean  Boolean  Boolean  Boolean | Not doing anything or stopped  Preparing play or record  Completed prepare play or record  Playing  Paused |

* **get\_timecode**The [get\_timecode] command get current timecode.  
    
  {   
   “command” : “get\_timecode”  
  }  
    
  **Response**

|  |  |  |  |
| --- | --- | --- | --- |
| **JSON Object** | **JSON Value** | **Value Type** | **Description** |
| response | success | String | Success or Fail |
| timecode | 00:00:00:00 | String |  |