RS-232 & IP Control Protocol

(For firmware version UDP20X-54-1127 or above. Last Updated December 15, 2017.)

RS-232:

The OPPO UDP-203/UDP-205 is equipped with an RS-232 port for wired remote control. The RS-232 port is configured as a DCE device using a female 9-pin D-Sub type connector. The pin out of the UDP-203/UDP-205 RS-232C port is as the following:

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | 2 | 3 | 5 |
| Signal | TXD | RXD | GND |

This pin configuration allows a PC running a serial terminal program (such as Hyper Terminal) to communicate with the player using a straight-through DB9 9-pin RS-232 serial cable. Do NOT use a “Null-Modem” type cable for PC connection. For connection to a remote control system, please refer to the documentation that comes with the remote control system.

RS-232 Communication Settings:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Baud Rate | Data Bits | Parity | Stop Bit | Flow Control |
| 9600 | 8 | None | 1 | None |

IP Control:

The OPPO UDP-203/UDP-205 supports IP control. This feature allows a network-connected device such as a PC or a smartphone to control the player. The player functions as a Server, which broadcasts a discovery message, waits and listens to the control port, responds to the client’s connection, receives the client’s commands, and performs the action. The network device functions as a Client, which receives and processes the discovery message, sets up the TCP connection with the Server, and sends the control commands. In the remainder of this document, we use “Server” for the Player and “Client” for the controlling device.

Once the Server is running, it will automatically broadcast a discovery UDP message every 10 seconds to notify any interested Client about its availability, as well as the IP address, the port number, and the Server’s name. The Client needs to receive this broadcasting message, extract the IP address, port number, Server name, and establish the connection with the Server. Once the connection is done, the Client should also discard any future broadcasting messages.

The address used for the Server’s message broadcast is: 239.255.255.251:7624

The format of the broadcasting message is:

Notify: OPPO Player Start  
 Server IP:  
 Server Port:   
 Server Name:

For example:

Notify: OPPO Player Start  
 Server IP: 192.168.0.2  
 Server Port: 23  
 Server Name: OPPO UDP-203

The Client will use the IP address and port number extracted from the broadcasting message to establish the TCP connection with the Server. If the IP address of the player is already known, the Client can omit the discovery step and try connecting directly to the Server at TCP port 23 on the player’s IP address.

Please note that the IP control protocol is carried over as TCP packets. Although the TCP port number 23 is commonly used for “telnet” programs, the Server is not a telnet server. A telnet program will break the keystrokes of the commands into smaller packets, which cannot be accepted by the IP control Server. If one needs to test the IP control protocol using an existing program, the “Packet Sender” program (<https://packetsender.com/>) is recommended.

Command Structure:

Each command starts with a # sign (ASCII 0x23), followed by a 3-character command code. If there are any parameters for the command, the parameters are given in text format, separated by a space (ASCII 0x20) from the command code. The # character (ASCII 0x23) must never appear in the parameters. A carriage return (ASCII 0x0d) indicates the end of the command. A line feed (ASCII 0x0a) can optionally follow the carriage return and will be ignored. Each command generally may not exceed 25 bytes including the start of command and end of command bytes.

The illustration of the command structure is as follows:

<Command> = <Start of Command><Command Code>[<sp><Parameters>]<End of Command>

<Start of Command> = #, ASCII 0x23

<Command Code> = <byte><byte><byte>

<sp> = space, ASCII 0x20

<Parameters> = command-specific

<End of Command> = CR, ASCII 0x0d LF, ASCII 0x0a

Response Structure:

Upon receiving a command, the player will try to execute the command and send back a response. The response starts with an “@” sign (ASCII 0x23), followed by the original command code and a space (ASCII 0x20), and a result code, either “OK” or “ER”. If there are any parameters or additional messages, the parameters or messages are given in text format, separated by a space (ASCII 0x20) from the result code. The “@” character (ASCII 0x40) must never appear in the parameters or message. A carriage return (ASCII 0x0d) indicates the end of response. Each response generally may not exceed 25 bytes including the start of response and the end of response bytes.

The illustration of the response structure is as follows:

<Response> = <Start of Response><Command Code><sp><Result Code>

[<sp><Parameters>]<End of Response>

<Start of Response> = @, ASCII 0x40

<Command Code> = <byte><byte><byte>

<Result Code> = OK|ER

<sp> = space, ASCII 0x20

<Parameters> = command-specific

<End of Response> = CR, ASCII 0x0d

Please note that when the verbose mode is 0 (default), the command code and the following space are omitted from the response. This is to maintain compatibility with control programs using older control protocol form the BDP-8x/9x/10x series. To ensure that the command code is included in the response, please set the verbose mode to 1 or above.

Status Update Messages Structure:

If the verbose mode is set to 2 or 3, the player will send status update messages automatically. These messages are not a response to any particular command. Any status change caused by commands from RS232 control, front panel buttons, IR remote control, or playback progress may trigger status update messages.

The status update messages have the following structure:

<Update> = <Start of Update><Status Code>[<sp><Parameters>]<End of Update>

<Start of Update> = @, ASCII 0x40

<Status Code> = <byte><byte><byte>

<sp> = space, ASCII 0x20

<Parameters> = status-specific

<End of Response> = CR, ASCII 0x0d

Command Sequence:

Commands are executed in the order they are received. The control client should wait for a response from the player before sending the next command.

If the player receives a new command before executing the previous command, the player may execute the commands in sequence or discard the previous command, depending on the internal processing of the player. The control client should avoid sending multiple commands in sequence without waiting for a response.

If the host does not receive a response from the player 10 seconds after the command is issued, the host may consider the command or response lost during transmission, and can retransmit the command.

Command List:

1. **Commands that are mapped to a remote control button**

This group of commands maps directly to the infrared remote control keys. No parameters are needed for these commands. The player handles the commands as if it receives the same IR remote commands. For actions that require a multiple-key sequence, such as go to a certain chapter (GOT command followed by multiple numeric key commands and the SEL command), the player responds to each command individually until the last command is received. At that time the player will respond with either OK or ER depending on the result of the action.

|  |  |  |  |
| --- | --- | --- | --- |
| Command Code | Remote Key | Function | Response Example |
| POW | POWER | Toggle power STANDBY and ON | OK ON  OK OFF |
| EJT | OPEN | Open/close the disc tray | OK OPEN OK CLOSE |
| PON | ON | Discrete on | OK ON |
| POF | OFF | Discrete off | OK OFF |
| DIM | DIMMER | Dim front panel display | OK ON  OK DIM  OK OFF |
| PUR | PURE AUDIO | Pure Audio mode (no video) | OK ON  OK OFF |
| VUP | VOL + | Increase volume | OK n (n is the volume number, 0 – 100) |
| VDN | VOL - | Decrease volume | OK n (n is the volume number, 0 – 100) |
| MUT | MUTE | Mute audio | OK MUTE  OK UNMUTE |
| NU1 | 1 | Numeric key 1 | OK |
| NU2 | 2 | Numeric key 2 | OK |
| NU3 | 3 | Numeric key 3 | OK |
| NU4 | 4 | Numeric key 4 | OK |
| NU5 | 5 | Numeric key 5 | OK |
| NU6 | 6 | Numeric key 6 | OK |
| NU7 | 7 | Numeric key 7 | OK |
| NU8 | 8 | Numeric key 8 | OK |
| NU9 | 9 | Numeric key 9 | OK |
| NU0 | 0 | Numeric key 0 | OK |
| CLR | CLEAR | Clear numeric input | OK |
| GOT | GOTO | Play from a specified location | OK |
| HOM | HOME | Go to Home Menu to select media source | OK |
| PUP | PAGE UP | Show previous page | OK |
| PDN | PAGE DOWN | Show next page | OK |
| OSD | INFO | Show/hide on-screen display | OK |
| TTL | TOP MENU | Show BD top menu or DVD title menu | OK |
| MNU | POP-UP MENU | Show BD pop-up menu or DVD menu | OK |
| NUP | Up Arrow | Navigation | OK |
| NLT | Left Arrow | Navigation | OK |
| NRT | Right Arrow | Navigation | OK |
| NDN | Down Arrow | Navigation | OK |
| SEL | ENTER | Navigation | OK |
| SET | SETUP | Enter the player setup menu | OK |
| RET | RETURN | Return to the previous menu or mode | OK |
| RED | RED | Function varies by content | OK |
| GRN | GREEN | Function varies by content | OK |
| BLU | BLUE | Function varies by content | OK |
| YLW | YELLOW | Function varies by content | OK |
| STP | STOP | Stop playback | OK |
| PLA | PLAY | Start playback | OK |
| PAU | PAUSE | Pause playback | OK |
| PRE | PREV | Skip to previous | OK |
| REV | REV | Fast reverse play | OK 1X |
| FWD | FWD | Fast forward play | OK 1X |
| NXT | NEXT | Skip to next | OK |
| AUD | AUDIO | Change audio language or channel | OK |
| SUB | SUBTITLE | Change subtitle language | OK |
| ANG | ANGLE | Change camera angle | OK a/b (a: current angle number, b: total available angles) |
| ZOM | ZOOM | Zoom in/out and adjust aspect ratio | OK (zoom ratio text) |
| SAP | SAP | Turn on/off Secondary Audio Program | OK (audio track information)  OK Off |
| ATB | AB REPLAY | Repeat play the selected section | OK A-  OK A-B  OK OFF |
| RPT | REPEAT | Repeat play | OK Repeat Chapter  OK Repeat Title  OK OFF |
| PIP | PIP | Show/hide Picture-in-Picture | OK (PIP program info)  OK Off |
| HDM | RESOLUTION | Switch output resolution | OK |
| SUH | SUBTITLE (hold) | Press and hold the SUBTITLE key. This activates the subtitle shift feature | OK |
| OPT | OPTION | Show/hide the Option menu | OK |
| M3D | 3D | Show/hide the 2D-to-3D Conversion or 3D adjustment menu | OK |
| SEH | PIC | Display the Picture Adjustment menu | OK |
| HDR | HDR | Display the HDR selection menu | OK |
| INH | INFO (hold) | Show on-screen detailed information | OK |
| RLH | RESOLUTION (hold) | Set resolution to Auto (default) | OK |
| AVS |  | Display the A/V Sync adjustment menu | OK |
| GPA |  | Gapless Play. This functions the same as selecting Gapless Play in the Option Menu. | OK |
| NOP |  | No operation. | OK |
| SRC | INPUT | Display the Input menu. Input selection can be made with visual cursor, or by following the SRC command with a numeric key command (e.g. #SRC followed by #NU1) | OK |

1. **Query Commands**

This group of commands issues queries to the player. The player will respond according to its current status.

|  |  |  |
| --- | --- | --- |
| Command Code | Function | Response Example |
| QVM | Query verbose mode | OK 0  OK 1  OK 2  OK 3 |
| QPW | Query power status | OK ON  OK OFF |
| QVR | Query firmware version | OK UDP20X-xx-xxxx |
| QVL | Query volume | OK 100  OK MUTE |
| QHD | Query HDMI resolution | OK 480I  OK 480P  OK 576I  OK 576P  OK 720P50  OK 720P60  OK 1080I50  OK 1080I60  OK 1080P24  OK 1080P50  OK 1080P60  OK 1080PAUTO  OK UHD24  OK UHD50  OK UHD60  OK UHD\_AUTO  OK AUTO  OK Source Direct |
| QPL | Query playback status | OK PLAY  OK PAUSE  OK STOP  OK STEP  OK FREV  OK FFWD  OK SFWD  OK SREV  OK SETUP  OK HOME MENU  OK MEDIA CENTER  OK SCREEN SAVER  OK DISC MENU |
| QTK | Query Track/Title | OK 02/10 |
| QCH | Query Chapter | OK 03/03 |
| QTE | Query Track/Title elapsed time | OK 00:01:34 |
| QTR | Query Track/Title remaining time | OK 01:20:23 |
| QCE | Query Chapter elapsed time | OK 00:01:34 |
| QCR | Query Chapter remaining time | OK 00:12:22 |
| QEL | Query Total elapsed time | OK 00:05:12 |
| QRE | Query Total remaining time | OK 01:34:44 |
| QDT | Query disc type | OK BD-MV  OK DVD-VIDEO  OK DVD-AUDIO  OK SACD  OK CDDA  OK DATA-DISC  OK UHBD  OK NO-DISC  OK UNKNOW-DISC |
| QAT | Query audio type | OK DD 1/1  OK DD 1/5 English  OK DTS 2/5 English  OK LPCM  OK DTS-HD 1/4 English |
| QST | Query subtitle type | OK OFF  OK 1/1 English |
| QSH | Query subtitle shift | OK -10  (valid returns are -10 .. 0 .. 10) |
| QOP | Query OSD position | OK 0  (valid returns are 0 .. 5) |
| QRP | Query Repeat Mode | OK 00 Off  (OK followed by a repeat mode code and text:  00 Off  01 Repeat One  02 Repeat Chapter  03 Repeat All  04 Repeat Title  05 Shuffle  06 Random) |
| QZM | Query Zoom Mode | OK 00  (OK followed by a zoom mode code:  00 Off  01 Stretch  02 Full  03 Underscan  04 1.2x  05 1.3x  06 1.5x  07 2x  08 3x  09 4x  10 1/2  11 1/3  12 1/4) |
| QHR | Query HDR Setting | OK Auto  OK On  OK Off  OK StripMetadata |
| Q3D | Query 3D Status | OK 2D  OK 3D  (returns the actual video output status) |
| QHS | Query HDR Status | OK HDR  OK SDR  OK DOV  (returns the actual video output status) |
| QIS | Query Input Source | OK 0 BD-PLAYER  OK 1 HDMI-IN  OK 2 ARC-HDMI-OUT  OK 3 OPTICAL-IN OK 4 COAXIAL-IN  OK 5 USB-AUDIO-IN (Return the currently selected input source) |
| QCD | Query CDDB number | QC1 OK XXYY  QC2 OK YYZZ ER INVALID  (OK followed by the CDDB number of the CD being played) |
| QFT | Query media file format | OK FLAC OK WAV  OK MKV OK JPG (OK followed by the media file format) ER INVALID |
| QFN | Query media file name | OK Rocky Mou\*.wav  (OK followed by the file name)  ER INVALID |
| QTN | Query track name | OK Rocky Mountain\*  (OK followed by the current track name)  ER INVALID |
| QTA | Query track album | OK Rise And Fall,Rage\*  (OK followed by the current track album)  ER INVALID |
| QTP | Query track performer | OK The Offspring  (OK followed by the current track performer)  ER INVALID |
| QDS | Query directory size | OK 120  (OK followed by the number of entries in the current directory. This command is only valid when the player is navigating a data disc, USB drive or network share.)  ER INVALID |
| QAR | Query aspect ratio setting | OK 16WW (16:9 Wide) OK 16AW (16:9 Wide Auto, currently wide)  OK 16A4 (16:9 Wide Auto, currently playing 4:3) OK 21M0 (21:9 Movable, currently full screen mode)  OK 21M1 (21:9 Movable, currently playing 16:9 or 4:3 content)  OK 21M2 (21:9 Movable, currently playing 21:9 content)  OK 21F0 (21:9 Fixed, currently full screen mode)  OK 21F1 (21:9 Fixed, currently playing 16:9 or 4:3 content)  OK 21F2 (21:9 Fixed, currently playing 21:9 content)  OK 21C0 (21:9 Cropped, currently full screen mode)  OK 21C1 (21:9 Cropped, currently playing 16:9 or 4:3 content) OK 21C2 (21:9 Cropped, currently playing 21;9 content) |

1. **Advanced Commands**

This group of commands instructs the player to perform an advanced operation in a single step.

|  |  |  |  |
| --- | --- | --- | --- |
| Command Code | Parameters | Function | Response Example |
| SVM | 0  1  2  3 | 0 – Set Verbose Mode to off  1 – Not in use (for backwards compatibility)  2 – Enable unsolicited status updates. Only major status changes are reported.  3 – Enable detailed status updates. When content is playing, the player sends out playback time updates every second. | OK 0  OK 1  OK 2  OK 3 |
| SHD | AUTO  SRC  UHD\_AUTO  UHD24  UHD50  UHD60  1080P\_AUTO  1080P24  1080P50  1080P60  1080I50  1080I60  720P50  720P60  576P  576I  480P  480I | Set HDMI output resolution. If a custom resolution parameter is given, this command changes the “Custom Resolution” setting in the Setup Menu and sets the “Output Resolution” to “Custom” at the same time. | OK 480P  (OK followed by the original parameter) |
| SZM | 1  AR  FS  US  1.2  1.3  1.5  2  1/2  3  4  1/3  1/4 | Set zoom ratio.  AR – Aspect ratio correction (Stretch, Letterbox or Pillarbox)  FS – Full Screen  US – Under scan  1, 1.2, 1.3, 1.5, 2, 1/2 – Specified zoom ratio. (When the TV Aspect Ratio is set to 21:9 Movable/Fixed/Cropped in the Setup Menu, the only valid parameters are 1, AR, and FS. 1 for 16:9 mode, AR for 21:9 mode, and FS for full screen mode.) | OK 1.2  (OK followed by the zoom ratio)  ER INVALID |
| SVL | 0 – 100  MUTE | Set volume control | OK 100  OK MUTE |
| SRP | CH  TT  ALL  OFF  SHF  RND | Repeat chapter  Repeat title or CD track  Repeat all  Repeat off  Shuffle  Random | OK CH  (OK followed by the repeat mode)  ER INVALID |
| SRH | T3  C10  C 0:00:34  T 0:12:13  0:12:13 | Search to Title 3  Search to Chapter 10  Search to 0:00:34 of the current chapter or track  Search to 0:12:13 of the current title or disc  Search to 0:12:13 of the current title or disc | OK  ER INVALID |
| DPL |  | Direct play | OK |
| RST |  | Reset Command – Clean all command buffers, do not wait for any pending/executing commands. Start over again. | OK |
| SSH | -10 ... 10 | Set subtitle shift | OK -10 (OK followed by the shift level)  ER INVALID |
| SOP | 0 … 5 | Set OSD position | OK 5 (OK followed by the position value)  ER INVALID |
| STC | E  R  T  X  C  K | Set the time information display:  E – Total Elapsed time  R – Total Remaining time  T – Title Elapsed time  X – Title Remaining time  C – Chapter/track Elapsed time  K – Chapter/track Remaining time | OK E  (OK followed by the display type)  ER INVALID |
| SHR | Auto  On  Off | Set HDR setting | OK Auto |
| SIS | 0  1  2 3 4 5 | Select the input source:  0 – Blu-ray player  1 – HDMI IN  2 – ARC: HDMI OUT 3 – OPTICAL IN 4 – COAXIAL IN 5 – USB AUDIO IN (Parameters 3 – 5 are only available for UDP-205) | OK 0 BD-PLAYER  OK 1 HDMI-IN  OK 2 ARC-HDMI-OUT OK 3 OPTICAL-IN OK 4 COAXIAL-IN  OK 5 USB-AUDIO-IN  ER INVALID |
| SSA | ON  OFF  SAVE | Set the parameters for Screen Saver in the Setup Menu – Playback Setup – Screen Saver. | OK ON  OK OFF  OK SAVE  ER INVALID |
| APP | DIS MUS PHO MOV NET SET | Stop current playback and start the corresponding application from the home menu:  DIS – Disc  MUS – Music  PHO – Photo  MOV – Movie  NET – Network  SET – Setup | OK DIS  (OK followed by the application)  ER INVALID |
| SSD | M  S  C | Set SACD Priority. Possible parameters are:  M – Multi-channel  S – Stereo  C – CD Mode  (This command changes the Setup Menu setting for SACD Priority. The setting takes effect the next time an SACD is loaded into the player. If an SACD is already in the player, this setting does not immediately change the playback priority.) | OK M  (OK followed by the set value)  ER INVALID |
| SDP | D P  A | Set the SACD output mode:  D – Output DSD  P – Output PCM  A – Automatically decides between PCM or DSD based on connected devices’ compatibility.  (This command changes the Setup Menu setting for SACD Output. If an SACD is playing, the output will be changed on the fly.) | OK D  (OK followed by the output mode)  ER INVALID |
| FWD | 1/32  1/16  1/8  1/4  1/2  1  2  3  4  5 | Set Fast/Slow Forward Play speed. | OK 1/32  (OK followed by the forward speed)  ER INVALID |
| REV | 1/32  1/16  1/8  1/4  1/2  1  2  3  4  5 | Set Fast/Slow Reverse Play speed. | OK 1/32  (OK followed by the forward speed)  ER INVALID  (Slow reverse is not available for UHD content) |
| QDR | 1 … xxx | Query directory item. The parameter is the index number of the file or item in the current directory listing. | OK U USB1 (USB Device)  OK O CDDA (Optical Disc)  OK 0 .. (Upper Level)  OK F Rocky-mou\*.wav (File) OK D My Music (Directory)  OK 0 My Network Search (Network)  OK L oShare\_MediaSer\* (DLNA server)  OK S MyPC (SMB server)  OK N MyNFS (NFS server) |

Status Update Messages:

The following status update messages are sent by the player automatically when the verbose mode is set to 2 or 3.

1. **Verbose Mode 2:**

**UPW** - Power Status Update:

Sent when there is a change of power on/off status.

Possible parameters: 1 digit

1 – Player is turned on

0 – Player is going off

Example: UPW 1

**UPL** - Playback Status Update:

Sent when there is a change of playback status.

Possible Parameters: 4 chars

DISC – No disc

LOAD – Loading disc

OPEN – Tray is open

CLOS – Tray is closing

PLAY – Playback is starting

PAUS – Playback is paused

STOP – Playback is stopped

STPF – Forward frame-by-frame step mode

STPR – Reverse frame-by-frame step mode

FFWn – Fast forward mode. Where n is a number of 1... 5 to indicate the speed level

FRVn – Fast reverse mode. Where n is a number of 1… 5 to indicate the speed level

SFWn – Slow forward mode. Where n is a number of 1…5 to indicate the speed level (1 = 1/2, 2 = 1/4, 3 = 1/8, 4 = 1/16, 5 = 1/32)

SRVn – Slow reverse mode. Where n is a number of 1…5 to indicate the speed level (1 = 1/2, 2 = 1/4, 3 = 1/8, 4 = 1/16, 5 = 1/32)

HOME – in home menu

MCTR – in media center

SCSV – Screen saver is active

MENU – Disc menu is showing

Example: UPL PLAY

**UVL** - Volume Level Update:

Sent when there is a change in volume level or mute status.

Possible Parameters: 3 chars

MUT – Mute is engaged

000 .. 100 – Current volume level. (Also sent when mute is cancelled.)

Example: UVL 095

**UDT** - Disc Type Update:

Sent when a new disc type is detected.

Possible Parameters: 4 chars

UHBD – Ultra HD Blu-ray Disc

BDMV – Blu-ray Disc

DVDV – DVD-Video

DVDA – DVD-Audio

SACD

CDDA

DATA – Data disc

VCD2 – VCD 2.0

SVCD – SVCD

UNKW – Unknown disc

Example: UDT DVDV

**UAT** - Audio Type Update:

Sent when a new audio track is encountered.

Parameters: Type (2 chars), space, number (01/99, 5 chars), space, language (3 chars), space, channels (2 chars)

Type code:

DD – Dolby Digital

DP – Dolby Digital Plus

DT – Dolby TrueHD

TS – DTS

TH – DTS-HD High Resolution

TM – DTS-HD Master Audio

PC – LPCM

MP – MPEG Audio

CD – CD Audio

UN – Unknown

Number: current audio track / available audio tracks in 2-digit number format. For example, 01/99 means the first of 99 available tracks; 02/05 means the second of 5 available tracks. If only one track is available, it is 01/01.

Language: Three-character language code: ENG for English, FRA for French, and so on (ISO3166). UNK for unknown.

Channels: 1.0 for mono, 2.0 for stereo, 5.1 or 7.1 for 5.1-channel or 7.1-ch surround, 0.0 for unknown.

Example: UAT DD 01/05 ENG 5.1

**UST** - Subtitle Type Update:

Sent when a new subtitle is selected.

Parameters: number (01/99, 5 chars), space, language (3 chars)

Number: current subtitle track / available subtitle tracks in 2-digit number format. For example, 01/99 means the first of 99 available tracks; 02/05 means the second of 5 available tracks. If subtitle is set to off, use 00/xx where xx is the number of available subtitle tracks. If no subtitle is available, use 00/00.

Language: Three-character language code: ENG for English, FRA for French, and so on (ISO3166). UNK for unknown.

Example: UST 02/05 ENG

**UIS** – Input Source Update:

Sent when there is a change in the input source selection.

Possible Parameters: source number (1 digit), space, source name

(See SIS command for the source number and the corresponding input source.)

Example: @UIS 0 BD-PLAYER

@UIS 2 ARC-HDMI-OUT

**U3D** - 3D status Update:

Sent when there is a change of 3D output Status.

Possible Parameters: 3D output status (2 chars)

3D - Output 3D Video

2D - Output 2D Video

Example: @U3D 3D

@U3D 2D

**UAR** – Aspect Ratio Status Update:

Sent when Home Menu is displayed, when a program starts playing, or when the user changes the aspect ratio.

Possible Parameters: aspect ratio status (4 chars)

16WW (16:9 Wide)

16AW (16:9 Wide Auto, currently wide)

16A4 (16:9 Wide Auto, currently playing 4:3)

21M0 (21:9 Movable, currently full screen mode)

21M1 (21:9 Movable, currently playing 16:9 or 4:3 content)

21M2 (21:9 Movable, currently playing 21:9 content)

21F0 (21:9 Fixed, currently full screen mode)

21F1 (21:9 Fixed, currently playing 16:9 or 4:3 content)

21F2 (21:9 Fixed, currently playing 21:9 content)

21C0 (21:9 Cropped, currently full screen mode)

21C1 (21:9 Cropped, currently playing 16:9 or 4:3 content)

21C2 (21:9 Cropped, currently playing 21:9 content)

Example: @UAR 16WW

@UAR 21M2

1. **Verbose Mode 3:**

**UTC** - Time Code Update:

Sent every second when the playback time advances. The time information is the same as the front panel display. To switch to a different type of time information, please refer to the STC command.

Parameters: Title (3 digits), space, Chapter (3 digits), space, Type (1 chars), space, time (8 chars HH:MM:SS)

Title: Current title number. For example: 001. For discs without title numbers (CD), 001 is always used.

Chapter: Current chapter or track number. For example: 003.

Type Code:

E – Total Elapsed time

R – Total Remaining time

T – Title Elapsed time

X – Title Remaining time

C – Chapter/track Elapsed time

K – Chapter/track Remaining time

Example: UTC 001 001 C 00:01:23

**UVO** - Video Resolution Update:

Sent when the source content resolution or the output resolution is changed.

Parameters: Source resolution (7 chars), space, Output resolution (7 chars)

Resolution Names:

\_480I60 – 480i 60/59.94Hz

\_480P60 – 480p 60/59.94Hz

\_576I50 – 576i 50Hz

\_576P50 – 576p 50Hz

\_720P60 – 720p 60/59.94Hz

\_720P50 – 720p 50Hz

1080I60 – 1080i 60/59.94Hz

1080I50 – 1080i 50Hz

1080P60 – 1080p 60/59.94Hz

1080P50 – 1080p 50Hz

1080P24 – 1080p 24Hz

1080P23 – 1080p 23.97Hz

\_UHD60\_ - UHD 60Hz/59.94Hz

\_UHD24\_ - UHD 24Hz/23.97Hz

\_UHD50\_ - UHD 50Hz

\_OTHER\_ - Other