

Live Mode Protocol

Live Mode communication is used by the show controllers to give updated information on the state of variables, inputs, outputs and other resources. This information is not polled, but instead requested once and then the show controller will send updated information as that resource changes. This method is used by Touch to retrieve status information and can also be used by third party drivers.

Note: All messages described in this section (such as "ILV") will be printable ascii messages and will always have a carriage return (hex 0D) at the end of the message.

Timing Information

Live information will be sent as often as possible, but there is no guarantee of frame accuracy. Live mode communication is considered a "Low Priority", and can be delayed by several frames if there are higher priority items to be done (like processing incoming ethernet messages, running a sequence, etc). Typical delay will be between 1 and 5 frames. (1 frame ~33ms).

Connection Information

The connection is on UDP port 2638 or 2639. To initiate a Live Mode connection, the show controller must be fully booted and a script must be running. All messages end in a carriage return (hex 0D).

To start the connection, send: 1LV

To stop the live connection, send: 0LV

A "heartbeat" packet must be sent to the controller every 2 seconds or less.

Heartbeat packet: 3LV

Heartbeat packets will not be acknowledged by the show controller.

After a connection is established using the above method, the show controller will send a heartbeat response packet of: LV

This "LV" heartbeat response packet will be sent approximately every 1 second. This packet is only sent if no other resource response packets are being sent from the show controller. In other words, heartbeat response packets will be sent if no watched resources have changes that need to be sent.

Sequence Status

The sequence status (stopped, paused, running) is always sent when a live connection is established. It is sent in the following format:

```
s<index of sequence>|<sequence state>|<frames>|<event1>|<event2>|...|<eventN>|LV
```

s - the ASCII letter 's'

<index of sequence> - the zero indexed number of the sequence in the "sequences" view of WinScriptLive

<sequence state> - The sequence running state: Stopped =0, Running = 1, Paused = 2

<frames> - The sequence's current time (in frames)

<event1>....<eventN> - The event indexes most recently executed by the sequence.

Note: <frames> and <event> items are sent if the show controller has received a "resource request" for that particular sequence. Otherwise, only the sequence state is sent along with "0" for <frames>.

Resource Requests

To request the status of a variable, input, output, or sequence, use the following format. (All messages end in a carriage return 0x0D).

<type>|<bool>|<index>|<device>|<listIndex>LV

- <type> = single ascii character the item type (see Resource Type Lookup)
- <bool> = 0/1, Don't watch or turn off / Watch or turn on
- <index> = zero indexed resource number: Example input7 = 6
- <device> = zero indexed device number (for device variables, inputs, etc.) from the "devices" table in WinScript
- <listIndex> = if this variable is a "list" type variable (array), the position in the array to retrieve. Zero indexed only if the variable itself uses zero indexing, otherwise 1 indexed.

If <listindex> is unused, use "-1" as a placeholder. If <listIndex> does not apply (in the case of inputs, outputs, etc), remove from command.

Currently there is no ability to watch only a specific bit of an integer variable. If watching a specific bit, watch the entire integer variable and filter on the application/PC side.

Resource Type Lookup

Sequence	s
Variable	v
Input	i
Output	o
Button	b
Display	d
Event	e
Device	c
Watch	w
Trigger	t
Analog Input	a
Analog Output	g

Example Resource Requests

Watch "Input5"

Command: i1|4|0LV

Message Ack Response: R

Watch Sequence #100 (To get frame counter and events recently executed)

Command: s11991-11-1LV

Message Ack Response: R

Watch V16Pro's integer variable V16Pro.Hours (variable #12 in V16pro's "Device Variables" list)

Command: v1111101-1LV

Message Ack Response: R

Watch V16Pro's Timecode variable V16Pro.LTC (variable #1 in V16pro's "Device Variables" list)

Command: v1110101-1LV

Message Ack Response: R

Watch a string variable named "myVar" (variable #8 in "User Variables")

Command: v11171-11-1LV

Message Ack Response: R

Stop Watching a string variable named "myVar" (variable #8 in "User Variables")

Command: v10151-11-1LV

Message Ack Response: R

Resource Status

Resource status is returned in the following format:

<type>|<index>|<device index>|<value>LV

- **<type>** = single ascii character the item type (see Resource Type Lookup)
- **<index>** = zero indexed resource number: Example input7 = 6
- **<device>** = zero indexed device number (for device variables, inputs, etc.) from the "devices" table in WinScript

For **Variables**, the status is returned as:

<type>|<index>|<device index>|<value>|<listIndex>LV

- **<listIndex>** = if this variable is a "list" type variable (array), the position in the array to retrieve. Zero indexed only if the variable itself uses zero indexing, otherwise 1 indexed.

Resource Status Examples

V16Pro's LTC Timecode Variable #1 is 00:00:00.02:
v1010100:00:00.021-1LV

Device #8 variable number #100 is 1234
v19917112341-1LV

User variable number #100, list (array) position 8 is 456
v1991-1145617LV

Input #5 status is "Off"
i141-110LV

Input #5 status is "On"
i141-111LV

Resource Status Frequency

Resource status is sent immediately following a "resource request" for that resource, or whenever that resource's value has changed.

In the case of sequences, the sequence status is always sent when the state (paused, stopped, running) has changed.