Operating Steps for the QL

1. Select the Rate

Select the timecode rate by adjusting the left rotary control on the front of the QL. The rate switch
positions are:

0 – 23.976 FPS
1 - 24 FPS
2 – 25 FPS
3 – 29.97 FPS
4 – 29.97 FPS DF
5 – 30 FPS
6 – 30 FPS DF

*__Note__: The rate can only be changed when the QL is powered OFF. Any attempt to change the rate
while powered ON will cause the LED to flash rapidly. This indicates the timecode rate being
generated
is not the same as that which is displayed on the switch. If the rate switch is adjusted while the
QL is ON, no change or interruption to the timecode's output will occur.
(Important: Do not use positions 8 and 9. Position 7 is for the Show position.)*

2. Power ON

To power on the QL, slide the switch on the main front panel towards the center of the QL.
To power OFF, slide the switch towards the outside.

3. Jamming

To jam with the mini connector
To use the audio input as the jam input, the jam signal needs to be on the tip and ground on
the sleeve,
(ring is not used). Before doing anything else, set the output level desired for the camera and
then switch
the QL off. Now set the output level switch to position 0. When the QL is switched on, the
output level
will be as was previously selected but the audio input (tip) will be the jam input. As soon as
the QL locks

to the jam signal, the audio input will revert back to being a left and right summed audio signal*. The
output level control may be left in position 0 and only moved if a change in output level is required. The
QL will automatically switch the jam input as required.

> **Note 1* - As soon as a lock is acquired, the jam signal will be passed as an audio signal and will be very
> loud in any audio system connected to the QL audio output. We recommend that the audio signal is disconnected from the camera while the jam signal is connected.
> **Note 2* - If the Tig is free running and the output level switch is left in position 0, then the QL will draw
> more current than normal and the batteries won't last as long.

4. Jamming and Cross Jamming the QL

The QL can be jammed to another timecode device by connecting an external timecode source to the 3.5mm connector closest to the middle of the device (see 3B above). Timecode can be
jammed by doing one of the following:
1.) switch on the QL with external timecode connected
2.) plug in an external device to the QL while it is free running
3.) switch on an external timecode device already connected to the QL jam input. When locked to the
external timecode, the LED will flash one second on and one second off.
When cross jammed, the LED will flash ON and OFF at a rate of two seconds on, two seconds off, to indicate
the QL is cross jammed. The input rate can be discovered in the case of cross jamming by rotating the rate switch until the LED shows almost continuously, and blinking off briefly each second to indicate the switch
is at the jam input rate. The rate should then be returned to the original position. When rotating the switch,
no change will occur in the timecode being output. (*Important note*: It is NOT recommended to leave the jam input connected.)

5. Set the Timecode Output Level

The timecode output level is variable between approximately 6mV and 3V peak-to-peak. To change the timecode level, simply adjust the right rotary control on the front of the QL.

6. Set Flow Through Audio

The QL was designed to generate timecode for DLSR cameras with an audio input or to a recorder that
does not have timecode. To aid this use, stereo audio can be connected to the center 3.5mm jack. The audio
is then summed and output with timecode to the 3.5mm jack towards the edge. (Summed audio is sent to
the right or the ring and timecode is sent to the left or the tip).

7. Connect Output Cable

The "outside edge" 3.5mm can also be used as a timecode only output or timecode and audio.

Other Functions

Battery Life and Indication.

The battery life should last for about 15 hours. A low battery level is indicated when the LED flashes twice at short intervals. When the LED light is solid, this indicates the battery voltage is too low and will NOT produce timecode.

Show Position

The timecode is shown by flashes of the LED in hours and minutes. Zero is indicated by a short blip. A timecode of 01:00 would be shown by, "blip --pause -- 1 flash -- pause -- blip -- pause -- blip -- long pause." 12:03 would be shown as "1 flash -- pause -- 2 flashes -- pause -- blip -- pause -- 3 flashes -- long pause". It is best to watch this a few times to get used to how it works and you will find it very easy to interpret. DO NOT start the QL in
position 7. No timecode will be output and the LED will show "blip -- pause -- flash continuously"

LED Indications Quick Guide

LED flashes one frame at the beginning of each second
When the QL powers ON, it will generate timecode at the selected rate. It will flash one frame at the beginning of each second (frame zero) to indicate that timecode is being produced. A second camera can shoot this LED to get some indication of sync. This can be done even if it does not have any timecode connected. Timecode begins at 01:00:00:00 and all user bits are

zero.

LED flashes one second ON, one second OFF
When jamming, the LED on the QL will blink at a rate of one second ON, one second OFF to show it is jammed.

LED flashes two seconds ON, two seconds OFF
When cross jamming, the LED on the QL will blink at a rate of two seconds ON, two seconds OFF to show it is cross jammed.

LED flashes twice at short intervals
A low battery level is indicated when the LED flashes twice at short intervals. Timecode output
is still produced at a correct rate while battery low level indicator is operating. If you are trying
to jam while the battery warning is active, the battery warning will cease for approximately one
to two minutes when the jam timecode is locked. This is done so that the jam indication can be
seen. After this time the battery warning will reappear.

LED full ON
If the LED is fully ON, this indicates that the battery voltage is too low to produce timecode.
Short Blip Followed by Flash
If the QL was started in position 7, no timecode is being output.

Cable Wiring

Pin 1 - Ground
Pin 2 - Timecode in (jam)
Pin 5 - Timecode out
Connector is FGG.0B.305.CLAD...

3.5mm Audio Input
Tip - Audio Left (Additional jam input when level control is at position zero)
Ring - Audio Right
Sleeve - Ground

3.5mm Output
Tip - Timecode
Ring - Summed Audio
Sleeve - Ground