SL 651G Master Facilities Module and The Centre Section

The centre section of a G Series console is fitted, as standard, with three centre divisions, each four faders wide.

Located to the right of the centre section, the SL 651G Master Facilities Module houses the master logic controls, monitoring and metering controls, aux send and echo return masters, communications facilities, power supply rail indicators and a test oscillator. There are four stereo, patchable, VCA faders below the module.

A full-sized keyboard is located to the left of the SL 651G and spans two centre section widths. Eight VCA Group Faders are located directly below the keyboard. The Local Aux Sends panel is situated to the left of the SL 651G at the top of the section and an in-built TV monitor is fitted directly above the keyboard.
The SL 651G Master Facilities Module

While reading this section it may help to refer to the foldout drawing of the console layout, located at the back of this manual.

Power Supply Indicators

![Power Supply Indicators](image)

Working down from the top of the module, the first section you will meet has four LEDs which display the present state of power rails within the console.

The 48 volt supply provides phantom power to the mic lines and the bipolar 18 volt and the 11 volt supplies are for audio and logic circuitry respectively. The CMOS logic actually works between +18 and +11 volts so that it does not interfere with the audio 0 volt rail.

All LEDs should be illuminated, if not then PANIC!
Oscillator Control Panel

The oscillator section contains controls for frequency, level and routing of the oscillator to the main Quad Outputs and/or the multitrack Groups.

GROUPS - Routes the oscillator to all multitrack Group Outputs.

QUAD BUS - Routes the oscillator to the main Quad Outputs.

ON - Switches the oscillator on, would you believe. You should ensure that the oscillator is off during recording to prevent leakage onto the output groups.

The FREQUENCY SELECT switch provides eight preset frequencies. The LEVEL control adjusts the output level from -25dB to +20dB. When fully anticlockwise, a preset level is presented which can be calibrated with the small multturn pot located to the left of the main level control.

The oscillator output is available on the patch (Jack L16) and is normalled to the tone distribution system (Jack M16). This allows an external oscillator to be fed into the tone routing switches; very useful for those odd frequencies or for pink or red noise.
Talkback Level Controls

This panel controls the level of Talkback from the built-in microphone to the studio loudspeakers and headphones, Slate level and incoming Listen Mic levels.

**TB TO CANS & TB TO STUDIO** - These controls set the level of talkback to the CUES (CUE Stereo, CUE 1 and CUE 2) and the SLS (Studio Loudspeakers). Note that talkback is inserted after the Cues and SLS level controls (see Page 4-10).

**SLATE LEVEL** - This control allows talkback to tape via the OMNI button and the LISTEN MIC TO TAPE signal to be adjusted. A low level 30Hz tone is added to the slate signal so that an ident may be easily located at high tape wind speeds.

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![Diagram of Talkback Level Controls](image-url)
LISTEN 1 & 2 - The Listen Mic gain controls have pull-off switches built in. Two listen mics can be placed in the studio and fed to the Listen Mic inputs on the patch (Jacks R & S 38-39 on consoles with 48 channels or less, L & M 49-50 on consoles with frames larger than 48). The mic signals are mixed with the level controls and fed to a compressor. The LISTEN MIC button, found in the group of COMMUNICATIONS switches (Page 4-19), allows the resultant signal to be fed to the Mini LS whilst dimming the Main monitors.

Cue-Aux Sends

Each channel is fitted with one stereo and four mono auxiliary sends for use as foldback, echo sends or as mix minus feeds. The master controls allow final level adjustment, together with +/- 15dB of HF (10Khz) and LF (100Hz) equalisation. They are always fed from the I/O module sends to the right of the centre section. If the split buttons on the Local Aux Sends Panel are not pressed, sends to the left of the centre section will also feed through these controls.

Auxiliary sends 1 to 4 appear on the patch N1-4 where they are normalled to outgoing Jacks P1-4 to be used as feeds to effects units.

Aux 1 and 2, together with the Stereo send, are simultaneously fed back into the Master Facilities Module where talkback (via the COMMUNICATIONS section), stereo reverb (via the ECHO RETURNS) and external stereo feeds (via the EXTERNAL TO STUDIO selector) can be added.

Three Stereo Cue Outputs then emerge on the patch N9-14 for use as headphone foldback. Note that Cue Stereo is derived from the Stereo send on each channel, Cue 1L & 1R are derived from AUX 1 and CUE 2L & 2R are derived from AUX 2. See page 9-5.
Stereo Echo Returns

The four stereo echo returns are designed to be driven by the outputs of devices which have been fed from the corresponding mono aux busses described above.

SPIN - The spin control feeds that return back to its corresponding send when the IN button is latched, i.e. The spin control on STEREO RETURN 4 will feed a mono sum of the return onto the AUX 4 bus.

CANS - This level control and the buttons associated with it, allow the return to be routed to the other Cue sends for reverb on foldback.

WIDTH - Controls the stereo width of the return. Can be adjusted from full stereo to mono.
F/B PAN - When this switch is up, the WIDTH control acts as described above. When the button is down, the Width control will pan the return between the front and back busses.

L/R PAN - When this switch is up, the BALANCE control will provide a balance between the left and right return signals. When the switch is down, the inputs are summed in mono and the Balance control now acts as a pan control. Very useful when you have a mono return, such as a delay line, as it saves having to parallel the inputs on the patch.

L CUT - Cuts the left return input.

R CUT - Cuts the right return input.

AFL - Feeds the stereo return, in mono, to the AFL bus and switches the bus output to the main monitors via the AFL level control.

The controls at the bottom of this section set the levels of the returns to the Quad mix busses.

This space is left intentionally blank
Control Room Monitoring System

Monitor Selection and Control

The large knob marked MONITOR controls the level of the MAIN control room monitors. The monitors are usually fed from the console's Quad Output but alternative sources may be selected by the EXTERNAL TO MONITORS button. This button allows any one of the sources on the 13 way switch matrix above, to be monitored.

The group of buttons labelled MONITOR MATRIX act as follows:

MONO - Feeds a mono sum of the Quad bus to all monitor outputs.

STEREO - Selects only the LF and RF Quad bus signals to the monitor outputs. When STEREO and QUAD are both pressed, the Quad signal is folded down (LB to LF and RB to RF) to the front pair of monitor outputs.

QUAD - Sends the Quad bus directly to the four monitor outputs LF, RF, LB and RB.

The MONITORS buttons:

ALT - This button is provided to switch the MINI (or MAIN) monitor feeds to a third pair of speakers via an external
relay box. This switch may, or may not, be wired in your studio.

**MINI** - When selected, the monitor bus is fed to the Mini LS output via the MINI LS pot.

**DIM** - The DIM button dims both Main and Mini speaker outputs to a level preset by the DIM LEVEL pot. The DIM circuit is automatically activated when any of the following buttons are pressed: LISTEN MIC, CUES, CUE STEREO, CUE 1, CUE 2, MD, Oscillator to QUAD BUS and GROUPS.

**CUT** - Cuts whichever pair of monitors have been selected. Activated automatically by the OMNI and the LISTEN MIC TO TAPE buttons.

### Monitor Cuts and Trims

![Diagram of monitor cuts and trims](image)

Two separate control room loudspeaker outputs are provided for the MAIN monitors and for a second pair of speakers designated MINI LS. The four Main monitor outputs can be muted individually with the Cut switches. The multiturn pots mounted above these switches allow speaker centering with +/- 3dB of gain offset.
Studio Loudspeakers and External Sources to Cue Sends

The STUDIO LOUDSPEAKER (SLS) output is an additional speaker feed provided for foldback or playback in the studio area.

The EXTERNAL TO STUDIO button provides a means of routing to the studio loudspeakers or headphones (Cue Stereo and Cue 1 & 2), any of the sources named on the 13 switches situated directly above. The SLS control feeds the selected source to the Studio Loudspeakers. The CUES control adds the selected source to the existing Cue feeds, rather than being an exclusive alternative source.

The CUES control allows, for example, a stereo tape source to be added to the headphone feed so that a musician can play along. It can also enable an announcer to be cued, over headphones, from an external source.

Note that the SLS feed is normally disallowed when the console is in the RECORD status, to prevent speaker howlround. This safety feature has been disabled by some studios.
Quad Compressor

This compressor uses the same VCAs that are used by the main output fader and the Autofade circuit on the Quad bus. Hence switching the compressor IN introduces no additional audio circuitry to the Quad Outputs.

It is a high quality Quad compressor with straightforward controls. The gain MAKE-UP simply acts as a level control to compensate for the lowered level which is a consequence of compressing the signal. This control may be set so as not to change the overall programme level when the compressor is switched in. The meter reads Gain Reduction.

Insert points are provided before (L&M 1-4) and after (L&M 5-8) the VCAs. This can be useful for overplugging the main fader VCAs so that the Quad compressor may be used elsewhere in the console.

Note of warning: Be careful when mixing with the compressor switched in, as you may end up pushing the faders up too far if you forget that it is in circuit.
Status Buttons

This group of buttons is extremely important as they control signal routing paths within the I/O modules. Four different status configurations can be obtained. They are described in detail in Section 7 and briefly they are:

**RECORD** - This status is designed for recording sources to a multitrack machine. It switches all channel inputs to Mic and the multitrack machine to Sync (if connected). The inputs are fed via the Large faders, to the multitrack Routing Matrix and thus to the multitrack. The Small Faders take the multitrack returns and/or the group sends (depending on READY GROUP and READY TAPE button selection) and feed these to the main output busses for control room and cue monitoring.

**REPLAY** - The same routing configuration as RECORD status but switches the multitrack to Replay (if connected) and all Small Fader inputs to TAPE, overriding any GROUP selections. This allows quick monitor mixes of the recorded tracks via the main outputs.

**MIX** - This status switches the multitrack to Replay (if connected). All channel inputs are switched to Line to pick up the multitrack returns and feed them to the Large Faders and then to the main Quad Output busses for remixing. The Small Faders take their input as before but now feed the multitrack Routing Matrix and can be used for additional
inputs to the mix. The Routing Matrix at the top of each channel allows these faders to feed the Group and Quad Output busses. The Small Faders can also be used as additional inputs, which can be subgrouped via the Routing Matrix, or as additional stereo or mono sends from each channel.

**MIX + RECORD** - When the MIX and RECORD buttons are pressed together, the multitrack switches to Sync for overdubbing. All channels behave as if they were in MIX status unless a module's READY TAPE or READY GROUP button is pressed, which then makes that particular channel behave as if it were in RECORD status. Useful for overdubbing tracks.

The additional buttons within this section function as follows:

**MASTER CH INPUT FLIP** - Flips all channel inputs between Mic and Line.

**VCAs TO MONITOR** - In RECORD or REPLAY status, this flips the Small and Large Faders so that the Small Faders feed sources to the multitrack Routing Matrix and the Large Faders are used for the monitor mix to the Quad busses.

**QUAD TO CUES** - Provides an easy way of sending the Quad bus to the Cue sends via the CUES rotary level control. This selection replaces whatever was on the Cue send busses with the LF and RF Quad bus mix, unlike the EXTERNAL TO STUDIO button which is additive. This may be useful at the beginning of a session to provide a quick workable mix to headphones, while spending some time sorting out the finer points of the Cue mix in the control room.

**AUTOCUE** - This activates an autocueing system which is very useful in an overdubbing situation. Talkback and optionally the Listen Mic switches, which are normally non-latching, can be latched on for constant two way communication and are automatically switched off when the multitrack machine is in PLAY or RECORD.
STATUS LOCK - For use in broadcast or live applications when changing statuses would cause havoc! It disables the following functions:

- STATUS BUTTONS -
  - RECORD
  - MIX
  - REPLAY
  - VCA's TO MONITOR
- MASTER CH INPUT FLIP
- OSCILLATOR ON
- OMNI TALKBACK
- LISTEN MIC TO TAPE
- AUTOCUE
- SOLO IN PLACE
- SLS OUTPUT

- AFL is selected and the RED LIGHT is switched on.
VCA Trim, Auto Fade and AFL

**VCA TRIM** - The button switches in the VCA TRIM control above. This raises or lowers the level (by +/- 15dB) of all VCA faders (except the main Quad VCAs) which have been selected to Group 0 on their thumbwheel switch. Position I (Independent) disables the trim effect on the fader if it has not been selected to a VCA Group.

**AUTO FADE** - is an automatic fade in/out facility operating on the main Quad VCAs. It will fade up, or down, the main fader output over a period of time selected on the control above. This can vary from 1 to 60 seconds and is recorded by the computer automation system if this is active. When the button is pressed, the fade down will start. After fading out, the master fader will fade up at the same rate, as soon as the button is released. If this button is left on by mistake the main fader will stay down - a common cause of frustration as the engineer tries to figure out where the main output has gone!

**AFL** - When AFL is selected, the normal SOLO mode is overridden and pressing a SOLO button will now send an After Fader Listen signal from the selected Channel or Monitor to the separate AFL bus and on to the main monitors. This allows non-destructive monitoring of the selected signal. The AFL signal is mono.
Plasma Bargraph Controls

These buttons are only found on consoles fitted with Plasma meters. If Plasma meters are *not* fitted then only the VCAs button is used; the other eight buttons are then free for use by the studio for custom functions.

A peak storage facility is built into the Plasma meter system. Each meter has two displays; one side is used for the PPM or VU level reading and the other for the stored peak level reading, when this facility is used.

**STORE PEAK** - The peak level reaching each meter is stored whenever this button is pressed.

**DISPLAY PEAK** - When selected, the peak levels stored by the STORE PEAK button are displayed next to the Group/ Tape level reading. This peak reading is updated as long as the STORE PEAK button is latched.

**CLEAR PEAK** - Clears the stored peak readings and hence DISPLAY PEAK if this has also been selected.
The Plasma meter system also provides a third octave, 15 band, stereo, spectrum analysis of whatever signal is being metered by the main output meters. Note that on consoles with a frame size of less than 32 modules, a mono spectrum is displayed.

**SPECTRA** - Selects the spectrum display.

**SPECTRA ON SOLO** - A very useful feature which allows the meters to show Group/Tape levels until a SOLO button is pressed. When this happens, the spectrum display is automatically switched on to allow the spectral content of the soloed channel(s) to be monitored. E.g. The vocalist sounds very muddley so you solo the channel and equalise out the peak, while referring to the display. Awesome!

**+10dB ON SPECTRA** - Used to increase the gain of the spectrum display. This is often required when using the SPECTRA ON SOLO facility, to allow sufficient level from a single module to drive the display.

**PPM** - Selects Peak Programme Meter scale and ballistics.

**VU** - Selects VU scale and ballistics.

**VCAs** - Selects the meters to display the levels of the channel VCAs. This can be very useful during an automated mix as the meters can supplement the computer bargraph display. This also applies to mechanical VU or PPM meters if fitted.
Meters

Three buttons assign signals to the the main Quad meters.

**DESK OUTPUT** - Selects the Quad Output to the main meters.

**FOLLOW MONITOR** - Whatever signal has been selected to the monitor loudspeakers will be displayed on the main meters.

**EXTERNAL SOURCE** - The main meters will display the level of whichever external source (from the 13 buttons above the EXTERNAL TO MONITORS button) is selected, irrespective of whether it is being monitored or not. e.g. the console main output can be monitored while the meters are used to check the returns from the stereo tape machine which is recording the output. This facility can also be used to meter the Cue sends if the main meters are not required to meter the Quad Output.
Communications

The group of COMMUNICATIONS switches control the switching and routing of the Talkback and Listen systems, as well as controlling the operation of a Red Light.

LISTEN MIC - Feeds the Listen Mics to the Mini LS, dimming the Main LS.

LISTEN MIC TO TAPE - Feeds the Listen Mics to multitrack and main output groups. Cuts the Main monitors. Useful for capturing count-ins from the studio.

RED LIGHT - Provides isolated contact closure for hooking up to a studio red light or transmission light via an external relay box. When the AUTOCUE button is on, the red light can be activated automatically when the multitrack goes into Record. (Internal links can be set to select this option from machine PLAY or RECORD)

M.D. - Provides switched talkback which appears on the patchbay at N41, for use as an additional talkback send to the Musical Director, the studio floor or the machine room.

OMNI - Cuts all loudspeakers and feeds the talkback mic to multitrack, Quad bus, Cue sends and Studio LS. A low level 30Hz tone is mixed in with the signal to tape so that the slate may be easily located at high wind speeds.

CUES - Feeds the talkback mic to Stereo Cue, Cue 1L & 1R and Cue 2L & 2R.

CUE STEREO, CUE 1 and CUE 2 buttons send talkback to those respective outputs.

TALKBACK MICROPHONE - This is fitted flush into the control surface between the CUES and SLS level controls.
Stereo Patchable VCAs

These four stereo VCAs (not fitted to E Series consoles) are controlled by the faders located below the SL 651G. Fader and mute automation is provided so that they can be used to automate the Stereo Echo Returns, Aux Sends, Small Fader inputs etc., simply by patching the signal through the VCA. By patching across the LB and RB main VCA inserts, the front two main outputs of the console can be controlled by the main fader and the rear outputs by one of the patchable VCAs. This is especially useful if the rear outputs are being used as a mix-minus feed. Patchable VCAs can be picked up on N and P 41-48 on the patch.

AFL - When pressed, switches the console into After Fader Listen mode and feeds a stereo post-fader (VCA) signal to the main monitors.

CUT - Will mute the VCA. This is automated together with the fader level.
The Keyboard

This is a full sized Qwerty keyboard with numeric keypad and function keys. For details see the G Series Computer Operator's Manual. Twenty-two customer option switches are also provided on the right of the keyboard. These buttons are usually wired with standard SSL options.

The Option Switches

VCA TO MONITOR INHIBIT 25-56 - Prevents the faders of Modules 25-56 from reversing position when RECORD (or REPLAY) + VCA TO MONITOR status is selected. This is useful when tracking, with the Large Faders on Modules 1-24 acting as Monitor faders to the Quad bus and the Large Faders from 25-56 acting as Channel faders to the multitrack Routing Matrix. Further switches may be provided to select this facility in groups of eight modules i.e. 25-32, 33-40 etc.

MASTER READY GROUP - Selects all modules to READY GROUP. This allows the engineer to quickly set the desk so that the Monitor faders and meters are fed from the module's Group Output. It also provides a quick way to check the desk outputs when aligning the multitrack.

CUT 0 - Cuts all VCA Faders which are selected to VCA Group 0.

SOLO 0 - Cuts all VCA Faders not selected to VCA Group 0.

SOLO LINK - Links the Small and Large Fader Solo Cut busses.

CHANNEL INTO METERS - The meters are normally fed from the Monitor input. This buttons switches the Channel Input to the meters to allow the engineer to read Mic or Line input levels. This mode is extremely useful when mixing, as the metering will follow any cross patching to the Channel Line Inputs.
VCA Group Faders

Eight VCA Group Faders are located below the keyboard and details about them can be found in Section 2. Basically, these faders will control any other fader that has its thumbwheel selected to a VCA Group number 1-8. Any VCA Group may be assigned to another Group. For example, all Drum channels may be grouped to VCA 1, Basses to VCA 2, Keyboards to VCA 3 and Guitars to VCA 4. These four groups may then all be assigned to VCA Group fader 5, which will now act as an overall backing level control.

CUT - Will mute all faders assigned to that VCA Group.

SOLO - The VCA Group Solo works slightly differently to the Solo function on an I/O module, in that it cuts all VCA Groups which are not soloed. The cuts thus generated are stored by the computer during an automated mix (Note that an I/O or Stereo module SOLO will cut all other channels not soloed but these cuts are not recorded by the computer). This is extremely useful as it is possible to 'play' the VCA Group Solo buttons during a mix and store the results. For example, if VCA Groups 1 and 2 (as above) are soloed during an automated mix, the computer will store the cutting of all the other VCAs. This will have the effect of reducing the backing to Bass and Drums only.
Local Aux Sends Panel

This panel is unique to G Series consoles. Sends from the left hand side of the console always feed through these controls to the six outputs on the patch (R 1-6) and may be normalled to effects devices (S 1-6). If the Split buttons are pressed then the left hand sends will only appear on these jacks. If the Split buttons are *not* pressed then the left hand sends will also feed through the main send controls found on the SL 651G. See Section 9 for further details. The sends are provided with HF and LF cut and boost together with overall level control.
In-board Video Monitor

This is a specially screened video monitor, fed from the G Series Studio Computer. Four multturn controls will adjust:

B - Brightness  
C - Contrast  
V - Vertical Hold  
H - Horizontal Hold

The five switches located above the monitor are for use with the SSL Video Switcher which may or may not be fitted. (SSL usually recommends that the video switcher be supplied if Total Recall™ is fitted, as it provides isolated video feeds to the external monitor).

SSL - Toggles between the G Series Computer primary display and the RGB Total Recall™ display, during Total Recall™ operation. It also selects RGB (if the remote connections supplied by SSL have been wired) on the main video monitor. When Total Recall™ is not in use, the Red and Blue guns are switched off to provide a Green screen version of the computer primary display.

1, 2, 3, 4 - These buttons remotely select one of four composite video sources to the main monitor. Usually these inputs are wired to a VTR output and CCTV cameras but any video source may be connected.

Blank 682 Panels

Two panels are available for customer options. It is usual for SSL to provide audio tape machine remotes in one of the panels but this will vary from console to console.