# mc²66 MKII Quick Start: The Channel Strip

**Channel Display** – a high resolution touch-screen display with up to two metering rows. The lower row always meters the active bank/layer and shows:

- **AFV** – the Audio Follow Video event number (if assigned) plus a camera icon (if the event is active).
- **Master** – the name and colour coding of VCA or Surround masters.
- **Link group Name** – the name and colour coding of link groups.
- **N-1** - the name and colour coding of the N-1 bus.
- **Bus Assignment Indication** – to the Group, Track, Aux and Sum buses.
- **Channel Metering** – bargraphs can include peak metering, loudness metering or both (see below).
- **Gain Reduction Metering** – for the **G**ate, **E**xpander, **C**ompressor, **L**imiter and **A**utomix function.
- **Automix group Name** – the name and colour coding of Automix groups.
- **Mini display** – graphical feedback on the channel's signal processing and parameter values (e.g. EQ, Panning, Dynamics).
- **Name or Label** – of the DSP channels assigned to LAYER 1 and LAYER 2 fader strips. See Fader Label (below).
- **Input GAIN** – mic, line or digital gain depending on the type of source.

The upper metering row includes **Channel Metering** and **Name/Label**, and can be assigned to any "hidden" bank/layer. Row 2 can be switched on-the-fly to meter different sets of channels, or disabled (to view only the active bank/layer).

Peak metering bargraphs are mono, stereo or multi-channel according to the channel format. Different scales, pickup points and characteristics are supported.

Loudness metering conforms to the ITU-R BS1770. The single bargraph represents the average energy of the summed component channels: mono, stereo or surround. The colour indicates whether loudness is above (dark blue) or below (light blue) the Target Level. The integration time can be either Momentary or Short term. In addition, on summing channels, you may start an integrated loudness measurement; the result is displayed above the bargraph,

**Tip**: use Automix groups to automatically balance active and inactive microphones (e.g. in a panel discussion), or balance commentators against international sound.

**FC 1 to FC 4** - Assignable Free Controls

The Free Controls may be assigned to any DSP parameter, providing local control of key functions. Controls are colour-coded, making it easy to distinguish between Auxes (green), EQ (blue), etc. They are touch sensitive with an on/off button and dedicated display. Turn the control for fine adjustment; push down and turn for coarse adjustment.

At any time, you can temporarily override the default assignments, by recalling a Free Control preset from the centre section. Each preset changes the Free Control assignments globally across the console. This is a great way to access say Aux Sends 1 and 2 across the console with one button press.

**FC 4 / 2nd Layer Control -** FC4 can operate either as one of the four assignable Free Controls (see above), or be switched globally to the alternate layer. This provides access to level, mute and **SEL** for layer 2; ideal when using two layers for a live production or input and monitor channels during recording.

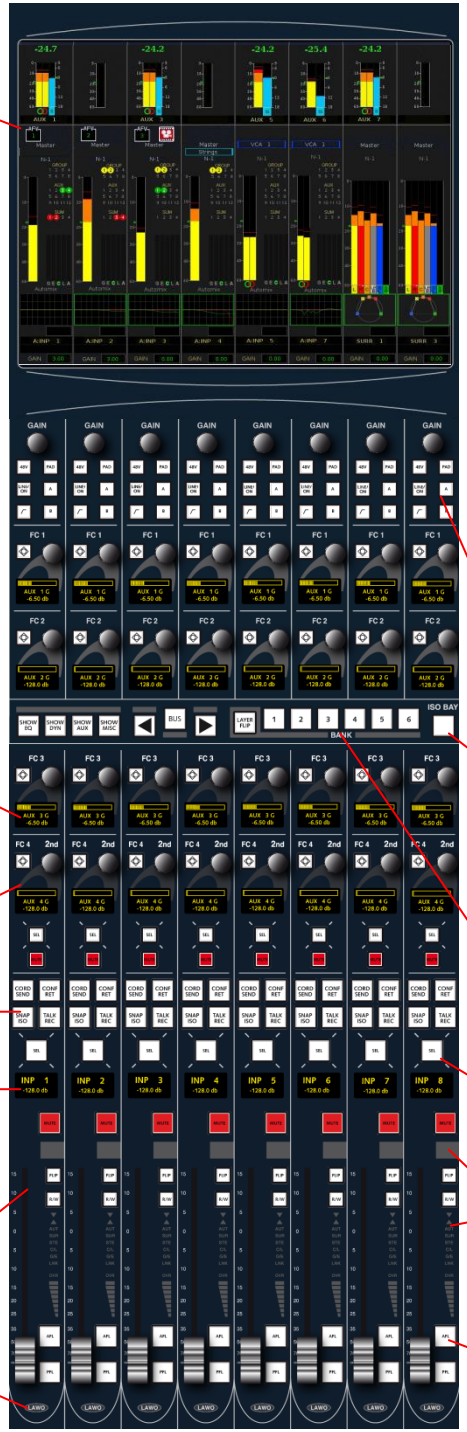
**User Buttons** - the four "User Buttons" are programmed from the **Custom Functions** display. Applications include mix minus control, snapshot isolate, talkback, "Left/Right to Both" and tone switching.

**Fader Label** - this 8-character display shows the name or label of the channel assigned to the fader strip. The LABEL buttons in the centre section switch between:

- **Channel Name** – the DSP channel assigned to the fader strip (**INP 1**).
- **User Label** – the user label given to the channel (**GUEST**).
- **Source Label** – the user label given to the Source routed to the channel (**MIC 1**).

**Fader, Mute, Flip and R/W -** the fader is touch sensitive providing gain control from –128dB to +15dB. Press the **MUTE** button to mute (cut) the channel. Press **FLIP** to toggle the channel strip between Layer 1 and Layer 2. The **R/W** button provides dynamic automation Read/Write access.

**LAWO Backlight** – the **LAWO** backlight is colour-coded to indicate the channel type. Colour codes may be customized - the defaults are: input channels (white); groups (yellow); aux masters (green); VCA masters (blue) and sums (red).



## System Concepts

### DSP Configuration

The **mc²56** provides a pool of DSP resource which can be configured for input channels, monitor return channels, groups, sums (main mix outputs) and auxiliary sends. Each channel comes with either full signal processing or reduced signal processing (known as tiny channels). This enables EQ, Dynamics, Delay, etc. to be applied to both inputs and outputs.

The DSP configuration is selected from a predefined list and offers 2 channel types:

- **Broadcast Channels** – provide twice as many channels per DSP board; each channel has a simplified signal flow (no track bus send, no independent filter section and simpler dynamics).
- **Recording Channels** – less channels per DSP board; each channel provides more processing and increased flexibility.

### Control Surface Assignment, Banks and Layers

Once you have configured your DSP, you can assign any input, monitor, group, sum, aux or VCA channel to any fader strip on the surface.

The console supports six control surface banks (1 to 6), each with two layers - Layer 1 and Layer 2. Think of each bank as a separate console, with fast global or fader bay switching from one bank to another. Banks may be used to access different sets of music channels, or to separate live and post production channels during a sports production.

Within each bank, layers can be switched globally, within the fader bay, or individually. This makes layers ideal for related sources - for example, to switch between a presenter's input channel and mix minus return.

### Signal Routing

In addition to powerful mixing features, the console includes an integrated digital routing matrix. Any source may be routed to any channel, and any output mix routed to any destination. In addition, you may route sources directly to destinations, for example to feed a Mic/Line input to an AES output for backup recording.

**Input Control** - these controls *always* adjust the input section; parameters vary depending on the type of source. For example, on a Mic/Line channel you can control analogue gain, 48V, PAD and a high-pass filter. The amount of **GAIN** is shown, above the GAIN control, on the **Channe**l display.

**A/B Input Switching** - for any input channel, you may assign a back up source (B) from the **Signal List** display. Press the **A** or **B** input select buttons to change between the main and backup source.

**ISO BAY** – isolates a fader bay (of 16 channel strips)

The ISO BAY **ON** button isolates the 16-fader bay from the main console's bank/layer switching. You can then **BANK** or **LAYER FLIP** the 16 faders independently from the rest of the console, split the AFL and PFL bus (ideal for multiple operators) or use the **DISP** buttons to expand local parameters across the 32 Free Controls (for example, isolate the bay, select a fader, and then press **DISP EQ** to view all EQ parameters for the selected channel). The **BUS** button displays bus assignments from the selected channel (in the FC displays).

**Bank and Layer Switching**

Press one of the **BANK 1** to **6** buttons to change fader bank, or press **LAYER FLIP** to invert the status of the current layers. These buttons change bank or layer for all fader strips within the bay, and are overridden by the centre section BANK and LAYER buttons unless ISO BAY is active.

You can also invert the Layer of an individual fader strip using the **FLIP** button.

**SEL** – Fader Select. This button selects the channel (places the channel in access). You will use it for a variety of operations, including adjusting EQ, Dynamics and other parameters (from the Central Control Section), making bus assignments, etc.

**VCA Grouping, Confidence Input Meter and Status Indicators**

The figure of eight display indicates VCA grouping assignments. Beside the fader is a confidence level meter which *always* meters input level regardless of the meter point selection. In addition, there are status indicators for: the direction of the automation read pass (Up/Down arrows); automation enable (**AUT**); stereo or surround channels (**SUR** or **STE**); Compressor/Limiter and Gate/Expander activity (**C/L** and **G/E**); channel linking (**LNK**); input overload (**OVR**).

**AFL and PFL** - press **AFL** to listen to the post-fade channel signal, and **PFL** to listen to the pre-fade channel signal. If you don't hear anything, check the **MO**N buttons on the central touch-screen – and enable **AFL/PFL to Main**.

# mc²66 MKII Quick Start: The Centre Section

**The Central Control Section** – select a channel by pressing its fader select (**SEL**) button. Then adjust parameters as follows:

- **INPUT MIXER** - input gain, mic preamp settings, tone, stereo input balance/controls.
- **IMAGE** – width and positioning for a stereo channel.
- **DIGAMP** (digital gain), **DELAY** (channel delay), **INSERT** (insert switching), **DIROUT** (channel direct output).
- **METER** – meter point selection (input, pre-fade, etc.)
- **DYNAMICS** - gate, expander, compressor and limiter.
- **SCF/FILTER/EQ** – 4-band EQ (+ Filters + Sidechain Filters).
- **PAN/HYP-PAN** – multi-channel panning onto the channel's mix bus outputs. Includes Hyper Pan modes (ideal for surround sources) and independent LFE level control. The PANNING section (above SCREEN CONTROL) provides a joystick.
- **FADER** – local fader level, mute, AFL and PFL.
- **CHANNEL** – monitor channel input switching, snapshot isolate, mix minus control, AFL for individual modules (LISTEN), and automation controls (ABS/TRIM).
- **AUX SENDS/ AUDIO FOLLOW VIDEO** – 32 aux sends; AFV parameters.

Press **SHOW** to page functions onto the front panel controls. Remember to turn **ON** the DSP section and select the SCREEN CONTROL **CHAN CONFIG** button for visual feedback on the GUI. Every module includes a selection (**SEL**) button for copy/reset of parameters, linking modules or selecting modules for timecode automation/sequence cross fades. **SEL ALL** selects all modules.

**PARAMETER COPY/ASSIGN** – used to copy or reset DSP parameters, and to assign parameters to free controls.

**Free Control Assignments** - first touch the control – for example, touch EQ Band 4 Q; you will see its name appear in the PARAMETER clipboard. Then touch the free control on the destination channel strip.

**Copy or Reset Audio Parameters** – e.g. to copy an EQ setting from one channel to another: select the fader strip you wish to copy from (press its fader strip **SEL**); then press **COPY**, **ONE** and the **SEL** button on the EQ module. Now select the destination channel by pressing its fader strip **SEL** button; the setting is copied.

**FC PRESETS** – Free Control Presets**.** These buttons override the default channel Free Control assignments. For example, press **EQ/FIL** to assign EQ Band 1 on/off, Gain, Frequency and Q to the Free Controls on every channel. Press the button again to assign EQ Band 2, and so on. Press **FC4/2nd** to switch Free Control 4 to the second layer.

**SNAPSHOT/SEQUENCE** – a sequence is a list of snapshots which can be played out in sequence during a live show. The transition between snapshots can be cross faded, and offsets can be applied to deal with last minute changes such as a new artist.

**BUS ASSIGNMENT** – assigns channels to buses:

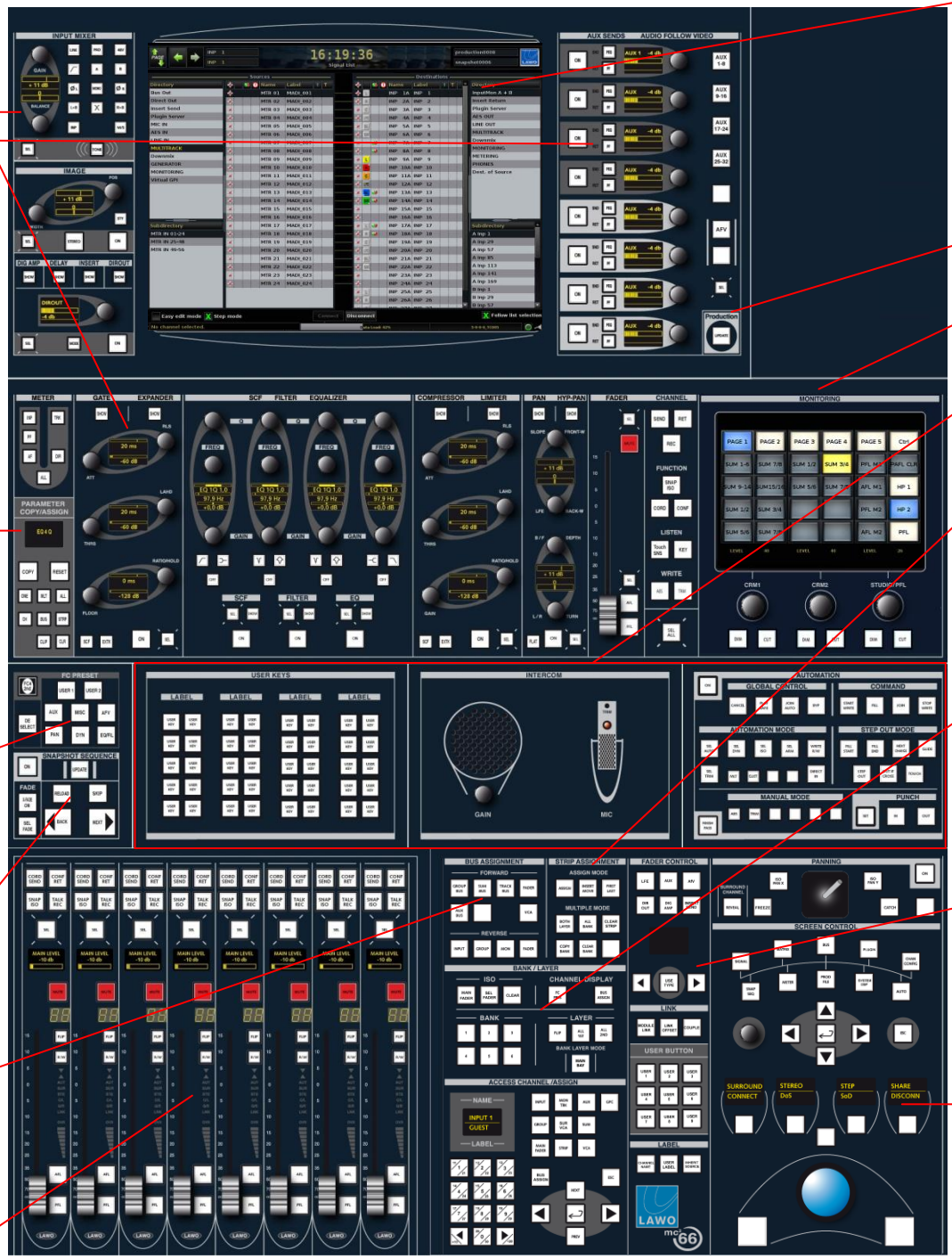
**FORWARD** – routes a single channel to multiple bus outputs.

**REVERSE** – routes a destination (e.g. a sum) from multiple inputs.

e.g, press the **SEL** button on the fader strip controlling Sum 1. Then press **REVERSE FADER**, followed by the **SEL** buttons on the source channels; assigned channels are shown in red; unassigned channels in green. If the bus is configured for stereo or surround, then the corresponding pan law is applied.

**Tip:** use an AMBIT group to upmix stereo sources to 5.1.

**8 Main Fader Strips** - the main fader strips may control any channel type – input channels, monitor return channels, groups, sums, auxiliary masters, VCAs – in exactly the same way as a channel fader strip. The only differences are that main fader strips do not have input gain or free controls.




**Central GUI** – a touch-screen display with:

- **Title Bar** – shows the channel "in access" (**INP 1**), the time (local time, timecode or integrated loudness), the display title (**Signal List**) and the name of the active production and snapshot.
- **SCREEN CONTROL** – the main GUI area works in conjunction with the SCREEN CONTROL panel. Here you can page through displays for Signal routing, Snapshots, Productions, etc
- **Status Bar** - feedback on the used data storage space (%), the software release, the console PSU and connection status.

The central GUI may be operated via the touch-screen, trackball, SCREEN CONTROL panel or console keyboard. There is space to the right of the GUI for either RTW metering or a dummy panel.

**PRODUCTION** – the **UPDATE PROD** button stores settings into the active production; the button flashes as a reminder to save.

**MONITORING** – this touch-screen panel provides monitor source selection, monitoring options, and level, dim and cut for the Control Room 1, Control Room 2 and Studio/PFL monitor outputs.

**USER PANELS** – space for a single 19" 2RU rack mounting kit or up to three Lawo user panels. User Panel options include User Buttons, Intercom, Dynamic Automation, Fader Reveal (for surround channels) and Machine Control.

**STRIP ASSIGNMENT** and **ACCESS CHANNEL/ASSIGN**

To assign a channel to a fader strip, first place the channel in access (press **INP** and then **008** on the numeric keypad to put INP 8 into access; its name appears in the NAME display). Then press **ASSIGN**, followed by the fader **SEL** button on the destination fader strip. Deselect **ASSIGN** to end the operation.

Several short cuts are available to make multiple fader strip assignments in one operation (**FIRST LAST**), insert a channel into the existing desk layout (**INSERT MOVE**), or make assignments to **BOTH LAYERS**, **ALL BANKS**, etc.

**BANK and LAYER Switching** - press one of the BANK **1** to **6** buttons to switch all fader strips to a new control surface bank. Press LAYER **FLIP** to invert the layers for *all* fader strips. Press **ALL 1ST** or **ALL 2ND** to switch *all* fader strips to Layer 1 or Layer 2. Use the **MAIN BAY** button to apply BANK or LAYER switching only to the 8 main faders. Use the ISO buttons to isolate a fader strip from bank switching – press **SEL FADER**, then select the fader strip to isolate.

**FADER CONTROL, LINK, USER BUTTON** and **LABEL** switching

The FADER CONTROL panel allows you to control variable levels from the faders. For example, to control auxiliary send levels, press **AUX** and then use the left/right arrow buttons to select the aux send.

The LINK buttons can be used to link processing sections across multiple channels or create a temporary COUPLE group.

Nine USER BUTTONS are programmed from the **Custom Functions** display. Applications include meter row switching and machine ctrl.

The LABEL buttons switch the fader strip labels between the channel system name, channel user label or inherited source label.

**SCREEN CONTROL** – access to the console's displays.

10 screen selection buttons provide access to displays such as signal routing (**SIGNAL**), snapshots (**SNAP SEQ**), productions (**PROD**) etc. Some displays feature more than one page, so press a button multiple times to cycle through the pages.

Within each display, there are four possible ways to perform operations: touch the screen, use the trackball, use the console keyboard or press the SCREEN CONTROL navigation/soft keys. For example, to route an input to an output from the **Signals List** - press **SIGNAL**; select a source and a destination using the trackball; then press the **CONNECT** soft key to connect the signals.