S2

TECHNICAL SALES DATA

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1.0 Principal Features & Introduction

PRINCIPAL FEATURES:

- **Mono, Stereo and Stereo Mic modules**
- **Dual inputs on all channels**
- **Can be configured for up to 72 channels / 8 groups**
- **8 Auxiliaries (2 Stereo)**
- **Optional 24 / 32 Track Routing**
- **2 independent Mix Minus systems**
- **Sophisticated Monitor section**
- **Optional Surround facilities**
- **Optional VCA Group faders**

INTRODUCTION

The Calrec **S2** is a standard console design providing high density mono or Stereo broadcast facilities with optional multitrack recording and replay circuits.

Channel modules have dual inputs (dual mic & line in mono versions). Facilities are not compromised on Stereo modules which also have provision for M/S conversion and width adjustment.

Features:

- Choice of 3 channel modules:
  Mono with dual mic/line inputs
  Stereo with stereo mic/line inputs
  Stereo line with dual stereo line inputs
- Very low noise performance
- 28dB console headroom
- Channel headroom still extends to 36dB by unique auto-gain ranging circuit

- 24 to 72 channel options
- 8 Stereo groups
- 2 Main Stereo outputs with dynamics
- 8 Auxiliary outputs - 2 stereo with separate pan
- Surround facility of channels with optional surround monitor
- Optional VCA group faders - up to 10
- CMOS analogue switch routing for low noise & reliability
- Optional 24 or 32 track recording and replay facility, using assignable path and routing selection with auto-recall of settings on power up
- 30mm modules & faders
- Unique printed circuit board backplane connectors for reliability and fast installation time
- 4-band equalisation
- Automation available
- Provision for a range of metering, compressor & similar modules in upstand
- SLS & PA mute system follows faders, group & main selections
- Stereo AFL & PFL
- Sophisticated monitor LS panel with many external stereo inputs
- Optional “LS2” panel for additional inputs and/or second monitor LS system
- Provision for remote operation (Fader ON, Cut & VCA)
- 2 Mix Minus systems on channel direct outputs
- Switched M/S to L/R conversion on stereo channels
- Stereo width & pan controls
- Channel & group direct outputs have provision for Talkback (and tone on groups)
- All interfaces balanced standard level, main & auxiliary outputs transformer isolated
- Separate mains power units with elaborate fail monitor
- Elegant stand & finishes

THE ADDITIONAL FEATURES RELATIVE TO S SERIES

The basic differences between S2 and S are as follows:-

1. The S2 makes provision for Surround Sound operation and monitor.
   The monitor may be omitted if Surround Sound is not required.
2. The S2 has provision for VCA grouping with up to 10 additional VCA group faders and a VCA group master fader. These are entirely optional.
3. The S2 provides a pan control on Stereo Auxiliary outputs 7 & 8 on each channel and group.
4. The S2 channel, group, main and fader modules are not compatible with the modules due to the change in the internal signal operating level giving improved headroom. Also the S2 faders are larger than the S faders. In all other respects the S2 is identical to the S and all other modules are identical and compatible.
5. The S2 Frame is 4 modules (120mm) wider than the S and slightly deeper (30mm).

SURROUND SOUND ON S2

A button on the channel modules marked SURROUND directs left and right signals to odd Groups and Main only and directs centre and surround signals to even Groups and Main. A Front/Back pan allows the channel signal to be panned between front (L, R and centre) outputs and Surround output in addition to the normal left/right pan. The Front/Back pan control is shared with the width control on Stereo Modules where it is assumed that only one facility is required at any one time.

The Surround Sound monitor panel allows the DESK MODE to be set for normal STEREO, 4 TRACK and 5 TRACK. In the 4 TRACK mode, the outputs from the console are Main 1: Left and Right, Main 2: Centre and Mono Surround and the loudspeaker monitor outputs are provided at these positions. There are two outputs for Surround connected together.

In the 5 TRACK Mode Left and Right Surround are taken and monitored separately from Auxiliary 8 Output thus featuring the new Aux 7/8 pan control to move the Surround left-right across the rear sector.

The Surround monitor panel enables comparisons to be made between the two surround conditions (as well as normal DESK STEREO), the ENCODER left-right signal (for compatibility) and the DECODER Surround presentation. This involves the connection of an external encoder and monitor decoder. Provision is made for the latter to be switched between STEREO, MONO and SURROUND when this facility is available on the decoder.

Finally two joysticks are provided for surround panning. These are connected on the patchfield.

VCA GROUPING ON S2

Up to ten VCA Group Faders are provided in five twin modules. To make room for them (and the Surround facility) the console is 120mm (4 module widths) wider and the two Main faders and VCA master fader are moved up next to the LS monitor panel.

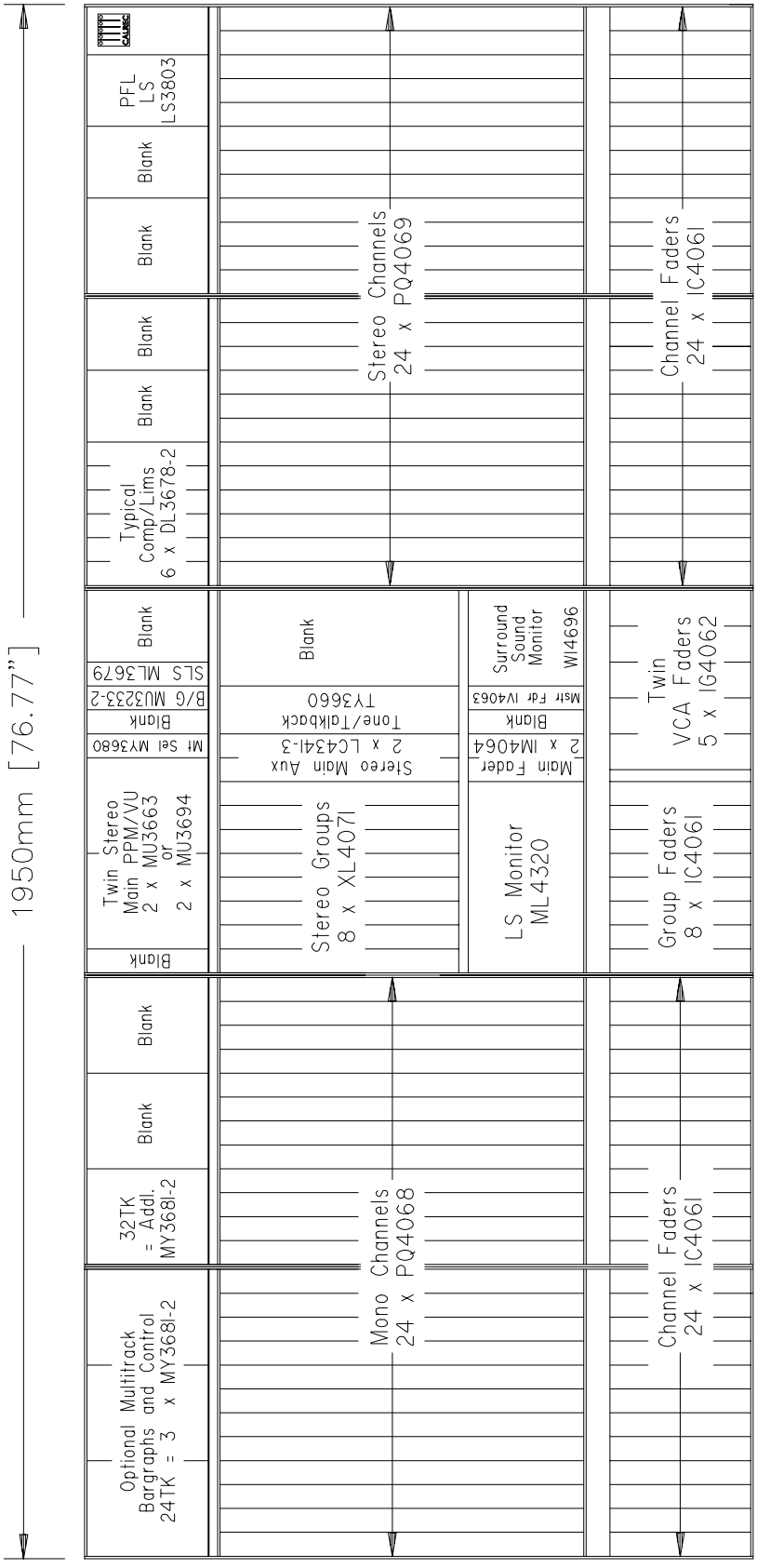
The VCA group faders are selected on the channel and normal group faders by a selection system comprising numeric display and button and VCA Group on selector. The faders are then influenced by the selected VCA group fader and additionally the channels or groups so selected may be cut or their AFL's operated together by the selected VCA group fader.

AUXILIARY 7/8 PAN CONTROL ON S2

Besides the use already described for Surround panning, this control may be used in the LINE 2 TO AUX 8 condition where multitrack tape replay inputs may be mixed down and controlled for a monitor mix. They may now be also panned for a stereo monitor mix.

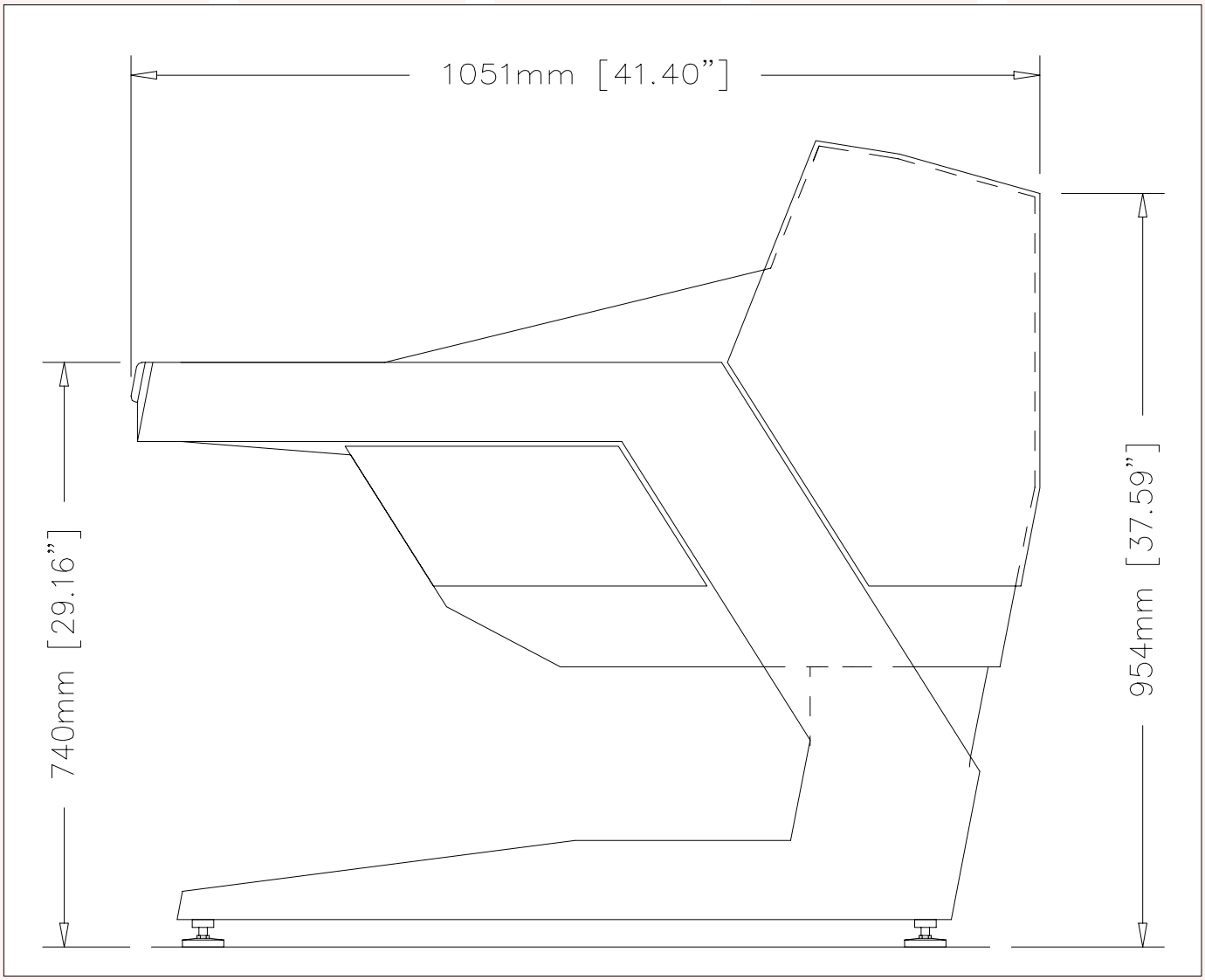
2.0 Console typical layout & profiles

TYPICAL LAYOUT



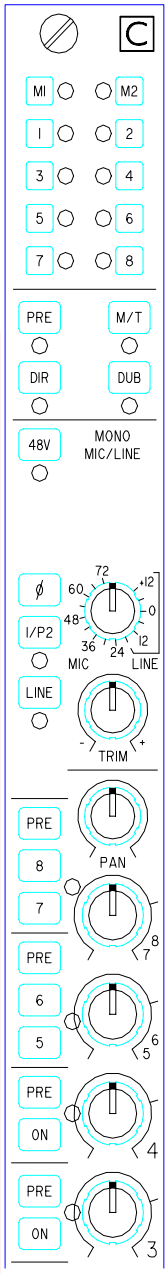
Frame sizes are available from 48 to 96 channels.

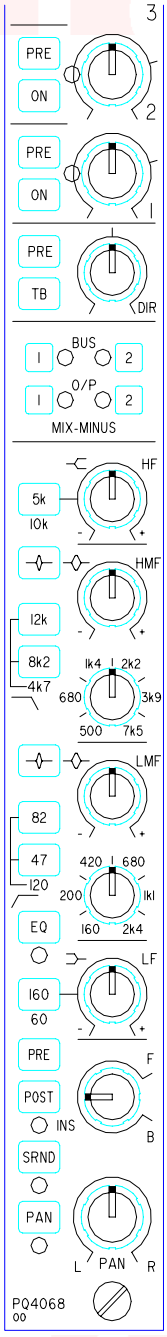
PROFILE



3.0 Modules & Panels Description

MODULES **page**





PQ4068 MONO CHANNEL

Routing to: 2 Main Stereo outputs, Red LED's
8 Stereo groups, Yellow LED's

Optional assignable routing to 24 or 32 Multitrack recording outputs normally from Post channel Pan but switchable to Pre Fader (or Pre EQ internally) or Direct Output (post Direct Output level control). Pre/post fader: Red/green LED's. Direct: Yellow LED. M/T Assign: Green LED when channel/group selected. Enables routing from channel/group and performs forward routing interrogation via Multitrack Bargraph displays.
OverDUB button releases channel set globally for Multitrack replay to previous setting for over-dubbing. Yellow LED.
48V phantom power button. Red LED.

Φ Phase reverse button.
I/P2 selects second inputs Mic & Line. Green LED.
LINE selects Line inputs: Changes Red LED (Mic) to Green.
Coarse gain rotary switch: 6dB steps - Restricted Line range.
TRIM: ±6dB Mic & Line.
DIRect Output (mono) with pre/post fader selection (pre EQ internal option) and provision for Talkback injection.

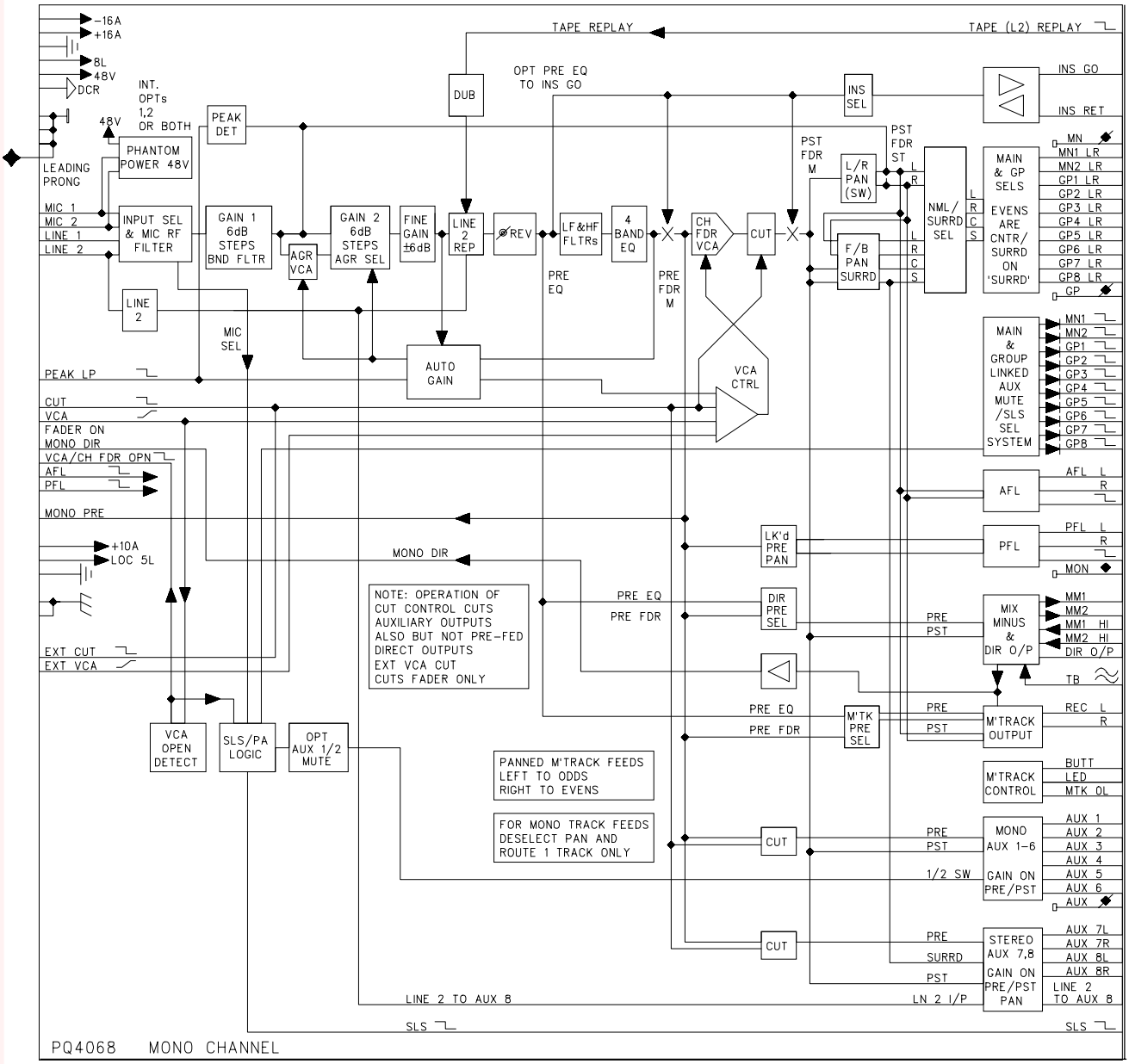
8 Auxiliary Outputs: Common gain control and common pre/post fader selection on 5/6 and 7/8. 7 & 8 are Stereo with Pan control. Red/green LED indication of pre/post fader selection when output is selected. Aux 1 & 2 can be muted by P.A. selection system if required (internal switch).

MIX MINUS: 2 independent systems with BUS & O/P selection to Direct Output. Bus 2 overides Bus 1. Internal pre/post fader selection of bus feed Yellow LED's. A Mix Minus bus can have several feeds & several outputs - not necessarily the same number. Each output is a mix of the other bus feeds except its own feed unless the bus is not selected.

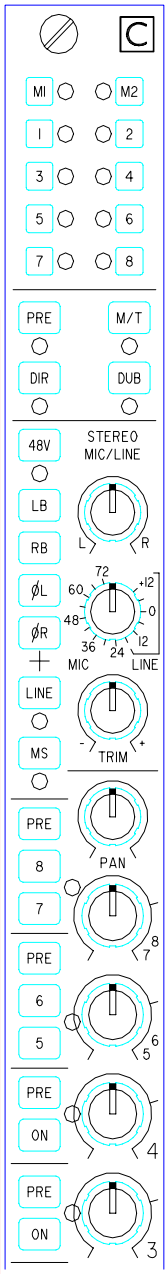
4-band Equaliser with 2 parametric mid bands and double shelf selection on LF & HF bands. LF & HF filters 3-position selection. EQ in/out with Red LED.
Pre & Post fader insert selection with standard level balanced in & out interface. Yellow LED.

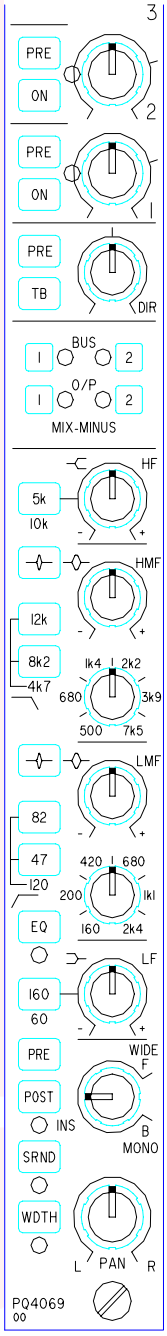
Surround selects odd numbered outputs & groups to be L-R and even numbered outputs & groups to be CENTRE-SURROUND. Aux 8 becomes STEREO SURROUND with PAN control.

FRONT/BACK pan between L-C-R and surround.
L-R PAN control with In/Out selection & Red LED.


-16A
+16A
8L
48V
DCR
INT. OPTs 1,2 OR BOTH
48V
PHANTOM POWER 48V
LEADING PRONG
MIC 1
MIC 2
LINE 1
LINE 2
INPUT SEL & MIC RF FILTER
LINE 2
PEAK DET
GAIN 1 6dB STEPS BND FLTR
AGR VCA
GAIN 2 6dB STEPS AGR SEL
FINE GAIN ±6dB
LINE 2 REP
REV
LF&HF FLTRs
4 BAND EQ
CH FDR VCA
CUT
PRE EQ
PRE FDR M
DUB
TAPE REPLAY
OPT PRE EQ TO INS GO
INS SEL
TAPE (L2) REPLAY
INS GO
INS RET
PST FDR M
L/R PAN (SW)
PST FDR ST
NML/ SURRD SEL
F/B PAN SURRD
MAIN & GP SELS
EVENS ARE CNTR/ SURRD ON 'SURRD'
MN
MN1 LR
MN2 LR
GP1 LR
GP2 LR
GP3 LR
GP4 LR
GP5 LR
GP6 LR
GP7 LR
GP8 LR
GP
MIC SEL
AUTO GAIN
VCA CTRL
PEAK LP
CUT
VCA
FADER ON
MONO DIR
VCA/CH FDR OPN
AFL
PFL
MONO PRE
MAIN & GROUP LINKED AUX MUTE /SLS SEL SYSTEM
MN1
MN2
GP1
GP2
GP3
GP4
GP5
GP6
GP7
GP8
AFL
AFL L
R
PFL
PFL L
R
MON
+10A
LOC 5L
MONO DIR
LK'd PRE PAN
NOTE: OPERATION OF CUT CONTROL CUTS AUXILIARY OUTPUTS ALSO BUT NOT PRE-FED DIRECT OUTPUTS EXT VCA CUT CUTS FADER ONLY
PRE EQ
PRE FDR
DIR PRE SEL
MIX MINUS & DIR O/P
MM1
MM2
MM1 HI
MM2 HI
DIR O/P
TB
EXT CUT
EXT VCA
PRE EQ
PRE FDR
M'TK PRE SEL
PRE
PST
M'TRACK OUTPUT
REC L
R
VCA OPEN DETECT
SLS/PA LOGIC
OPT AUX 1/2 MUTE
PANNED M'TRACK FEEDS LEFT TO ODDS RIGHT TO EVENS
FOR MONO TRACK FEEDS DESELECT PAN AND ROUTE 1 TRACK ONLY
M'TRACK CONTROL
BUTT
LED
MTK OL
CUT
PRE
PST
MONO AUX 1-6
GAIN ON PRE/PST
1/2 SW
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
AUX
CUT
PRE
SURRD
PST
STEREO AUX 7,8
GAIN ON PRE/PST PAN
LN 2 I/P
AUX 7L
AUX 7R
AUX 8L
AUX 8R
LINE 2 TO AUX 8
LINE 2 TO AUX 8
SLS
SLS
PQ4068 MONO CHANNEL

PQ4069 STEREO CHANNEL





Routing to: 2 Main Stereo outputs, Red LEDs
8 Stereo Groups, Yellow LEDs

Optional assignable routing to 24 or 32 Multitrack recording outputs normally from Post channel Pan but switchable to Pre Fader (or Pre EQ internally) or Direct Output (post Direct Output level control). Pre/post fader: Red/green LEDs. Direct: Yellow LED. M/T Assign: Green LED when channel/group selected. Enables routing from channel/group and performs forward routing interrogation via Multitrack Bargraph displays.
OverDUB button releases Channel set globally for Multitrack replay to previous setting for over-dubbing. Yellow LED.

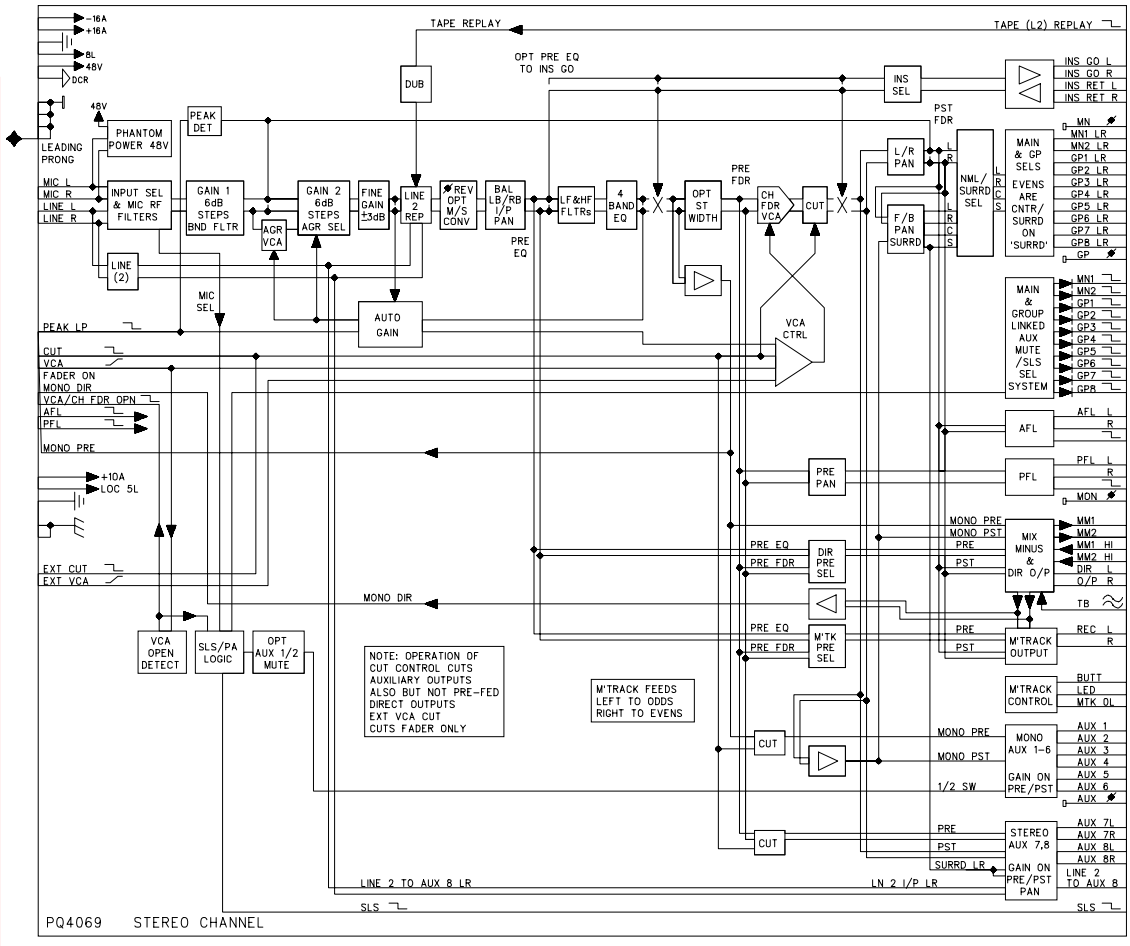
48V phantom power button. Red LED.

Balance ±3dB control on stereo is inoperative on LB or RB (left to both, right to both outputs) and becomes an input pan control on LB+RB between left & right inputs to both left & right outputs.
ΦL, ΦR Phase reverse left & right.
LINE selects Line input: Changes Red LED (Mic) to Green.
MS inserts MS/LR convertor: Red LED.
Coarse gain rotary switch: 6dB steps - Restricted Line range.
TRIM: ±6dB Mic & Line.
DIRect Output (Stereo) with pre/post fader selection (pre EQ internal option) and provision for Talkback injection.

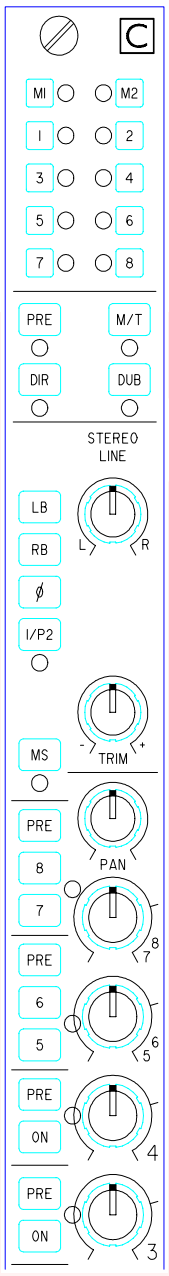
8 Auxiliary Outputs: Common gain control and common pre/post fader selection on 5/6 and 7/8. 7 & 8 are Stereo.
Red/green LED indication of pre/post fader selection when output is selected. Aux 1 & 2 can be muted by PA selection system if required (internal switch).

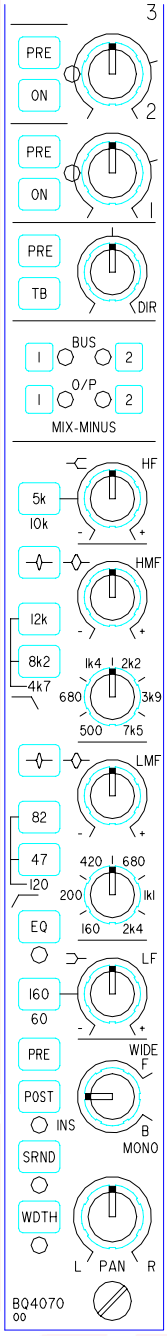
MIX MINUS: 2 independent systems with BUS & O/P selection to Direct Output. Internal pre/post fader selection of bus feed. Yellow LEDs. A Mix Minus bus can have several feeds & several outputs - not necessarily the same number. Each output is a mix of the other bus feeds except its own feed unless the bus is not selected. 4-band Equaliser with 2 parametric mid bands and double shelf selection on LF & HF bands. LF & HF filters 3-position selection. EQ in/out with Red LED.
Pre & Post fader insert selection with standard level balanced in & out interface. Yellow LED.

Stereo width control with In/Out selection & Red LED.
Surround selects odd numbered outputs & groups to be L-R and even numbered outputs & groups to be CENTRE-SURROUND. Aux 8 becomes STEREO SURROUND with PAN control. WIDTH control becomes FRONT-BACK pan between L-C-R & SURROUND or SURROUND when width is not selected.
Stereo L/R PAN control.


TAPE REPLAY
TAPE (L2) REPLAY
OPT PRE EQ TO INS GO
DUB
INS SEL
PST FDR
PRE FDR
PRE EQ
LEADING PRONG
PHANTOM POWER 48V
PEAK DET
INPUT SEL & MIC RF FILTERS
GAIN 1 6dB STEPS BND FLTR
GAIN 2 6dB STEPS AGR SEL
FINE GAIN ±3dB
LINE 2 REP
REV OPT M/S CONV
BAL LB/RB I/P PAN
LF&HF FLTRs
4 BAND EQ
OPT ST WIDTH
CH FDR VCA
CUT
L/R PAN
F/B PAN SURRD
NML / SURRD SEL
MAIN & GP SELS EVENS ARE CNTR/ SURRD ON 'SURRD'
MAIN & GROUP LINKED AUX MUTE /SLS SEL SYSTEM
AGR VCA
LINE (2)
MIC SEL
AUTO GAIN
VCA CTRL
PEAK LP
CUT
VCA
FADER ON
MONO DIR
VCA/CH FDR OPN
AFL
PFL
MONO PRE
EXT CUT
EXT VCA
VCA OPEN DETECT
SLS/PA LOGIC
OPT AUX 1/2 MUTE
NOTE: OPERATION OF CUT CONTROL CUTS AUXILIARY OUTPUTS ALSO BUT NOT PRE-FED DIRECT OUTPUTS EXT VCA CUT CUTS FADER ONLY
M'TRACK FEEDS LEFT TO ODDS RIGHT TO EVENS
PRE PAN
DIR PRE SEL
M'TK PRE SEL
MIX MINUS & DIR O/P
M'TRACK OUTPUT
M'TRACK CONTROL
MONO AUX 1-6
GAIN ON PRE/PST
STEREO AUX 7,8
GAIN ON PRE/PST PAN
1/2 SW
SURRD LR
LINE 2 TO AUX 8 LR
LN 2 i/P LR
SLS
PQ4069 STEREO CHANNEL

BQ4070 STEREO LINE CHANNEL





Routing to: 2 Main Stereo outputs, Red LEDs
8 Stereo Groups, Yellow LEDs

Optional assignable routing to 24 or 32 Multitrack recording outputs normally from Post channel Pan but switchable to Pre Fader (or Pre EQ internally) or Direct Output (post Direct Output level control).

Pre/post fader: Red/green LEDs. Direct: Yellow LED. M/T Assign: Green LED when channel/group selected. Enables routing from channel/group and performs forward routing interrogation via Multitrack Bargraph displays.
OverDUB button releases channel set globally for Multitrack replay to previous setting for over-dubbing. Yellow LED.

Balance ±3dB control on Stereo is inoperative on LB or RB (left to both, right to both outputs) and becomes an input pan control on LB+RB between left & right inputs to both left & right outputs.

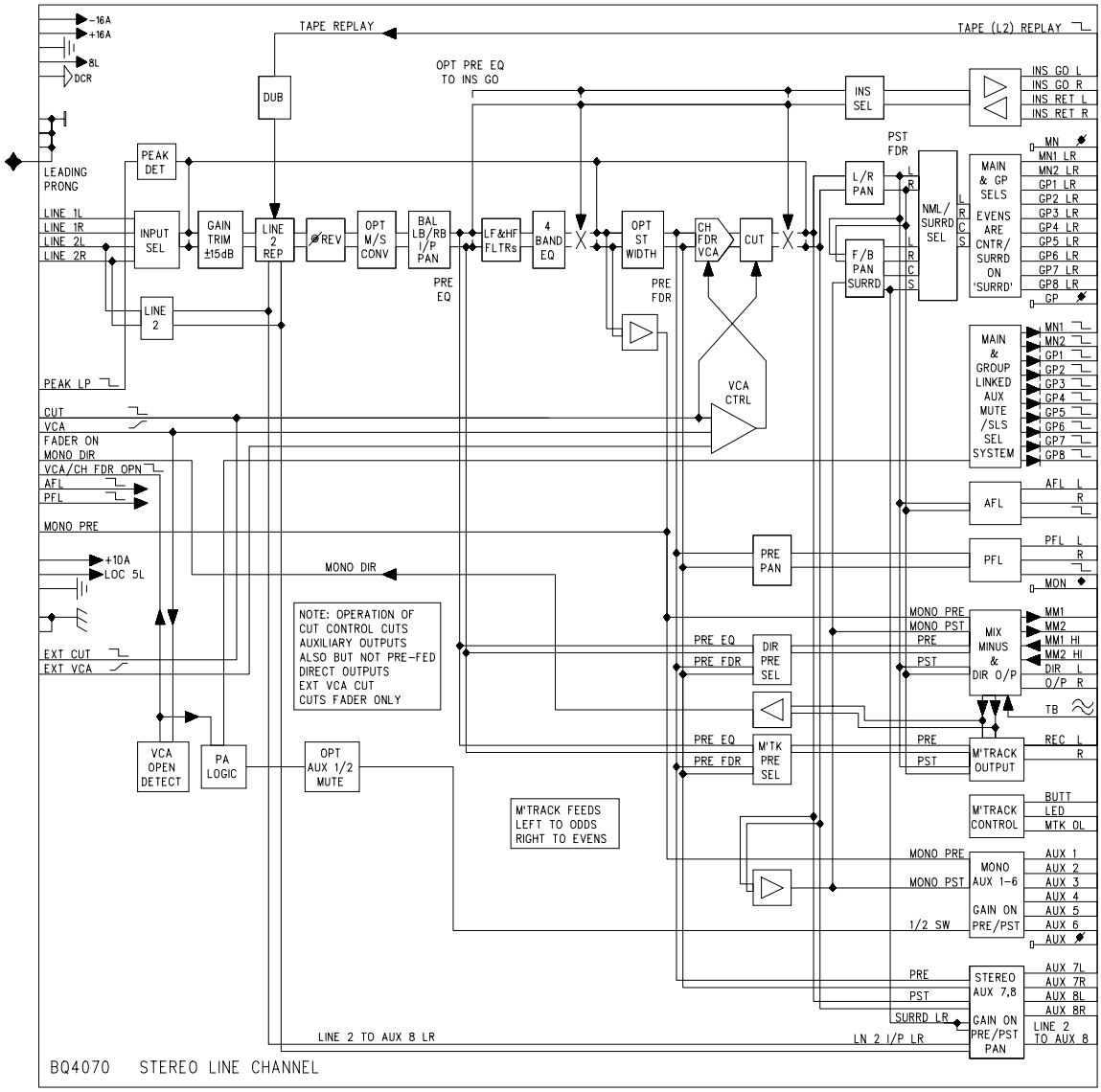
Φ - Phase reverse button. (L & R)
I/P2 - Selects second Stereo Line input. Green LED.
MS inserts MS/LR convertor: Red LED.
TRIM: ±15dB on both Stereo Line inputs.
DIRect Output (Stereo) with pre/post fader selection (pre EQ internal option) and provision for Talkback injection.

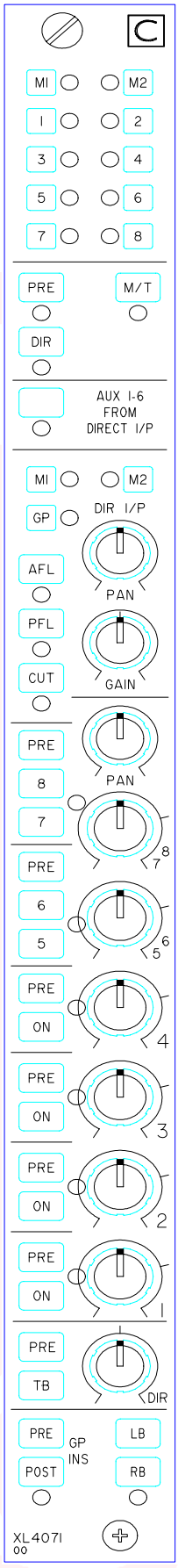
8 Auxiliary Outputs: Common gain control and common pre/post fader selection on 5/6 and 7/8. 7 & 8 are Stereo. Red/green LED indication of pre/post fader selection when output is selected. Aux 1 & 2 can be muted by PA selection system if required (internal switch).

MIX MINUS: 2 independent systems with BUS & O/P selection to Direct Outputs. Internal pre/post fader selection of bus feed Yellow LEDs. A Mix Minus bus can have several feeds & several outputs - not necessarily the same number. Each output is a mix of the other bus feeds except its own feed unless the bus is not selected.

4-band Equaliser with 2 parametric mid bands and double shelf selection on LF & HF bands. LF & HF filters 3-position selection. EQ in/out with Red LED.
Pre & Post fader insert selection with standard level balanced in & out interface. Yellow LED.

Stereo width control with In/Out selection & Red LED.
Surround selects odd numbered outputs & groups to be L-R and even numbered outputs & groups to be CENTRE-SURROUND. Aux 8 becomes STEREO SURROUND with PAN control. WIDTH control becomes FRONT-BACK pan between L-C-R & SURROUND or SURROUND when width is not selected.
Stereo L/R PAN control.


-16A
+16A
8L
DCR
LEADING PRONG
LINE 1L
LINE 1R
LINE 2L
LINE 2R
PEAK LP
CUT
VCA
FADER ON
MONO DIR
VCA/CH FDR OPN
AFL
PFL
MONO PRE
+10A
LOC 5L
EXT CUT
EXT VCA
TAPE REPLAY
TAPE (L2) REPLAY
DUB
OPT PRE EQ TO INS GO
PEAK DET
INPUT SEL
GAIN TRIM ±15dB
LINE 2 REP
REV
OPT M/S CONV
BAL LB/RB I/P PAN
PRE EQ
LF&HF FLTRs
4 BAND EQ
OPT ST WIDTH
PRE FDR
CH FDR VCA
CUT
VCA CTRL
INS SEL
INS GO L
INS GO R
INS RET L
INS RET R
PST FDR
L/R PAN
F/B PAN SURRD
NML/ SURRD SEL
MAIN & GP SELS
EVENS ARE CNTR/ SURRD ON 'SURRD'
MN
MN1 LR
MN2 LR
GP1 LR
GP2 LR
GP3 LR
GP4 LR
GP5 LR
GP6 LR
GP7 LR
GP8 LR
GP
MAIN & GROUP LINKED AUX MUTE /SLS SEL SYSTEM
MN1
MN2
GP1
GP2
GP3
GP4
GP5
GP6
GP7
GP8
AFL
AFL L
R
PFL
PFL L
R
MON
PRE PAN
MONO DIR
NOTE: OPERATION OF CUT CONTROL CUTS AUXILIARY OUTPUTS ALSO BUT NOT PRE-FED DIRECT OUTPUTS EXT VCA CUT CUTS FADER ONLY
PRE EQ
PRE FDR
DIR PRE SEL
MONO PRE
MONO PST
PRE
PST
MIX MINUS & DIR O/P
MM1
MM2
MM1 HI
MM2 HI
DIR L
O/P R
TB
M'TK PRE SEL
REC L
R
M'TRACK OUTPUT
M'TRACK CONTROL
BUTT
LED
MTK OL
VCA OPEN DETECT
PA LOGIC
OPT AUX 1/2 MUTE
M'TRACK FEEDS LEFT TO ODDS RIGHT TO EVENS
MONO AUX 1-6
GAIN ON PRE/PST
1/2 SW
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
AUX
STEREO AUX 7,8
SURRD LR
AUX 7L
AUX 7R
AUX 8L
AUX 8R
LINE 2 TO AUX 8
LINE 2 TO AUX 8 LR
LN 2 I/P LR
BQ4070 STEREO LINE CHANNEL



XL4071 STEREO GROUP

Routing to: 2 Main Stereo outputs, Red LEDs
Other 7 Stereo Groups, Yellow LEDs

Optional assignable routing to 24 or 32 Multitrack recording outputs normally from Post channel Pan but switchable to Pre Fader (or Pre EQ internally) or Direct Output (post Direct Output level control).

Pre/post fader: Red/green LEDs. Direct: Yellow LED. M/T Assign: Green LED when channel/group selected. Enables routing from channel/group and performs forward routing interrogation via Multitrack Bargraph displays.

Aux 1 - 6 from Direct I/P: switches pre & post feeds to Direct I/P circuit. Yellow Led.

Direct I/P Routing to: 2 Main Stereo outputs. Red LEDs.
Direct I/P Routing to: Group Mixer. Yellow LED.

DIRECT I/P:

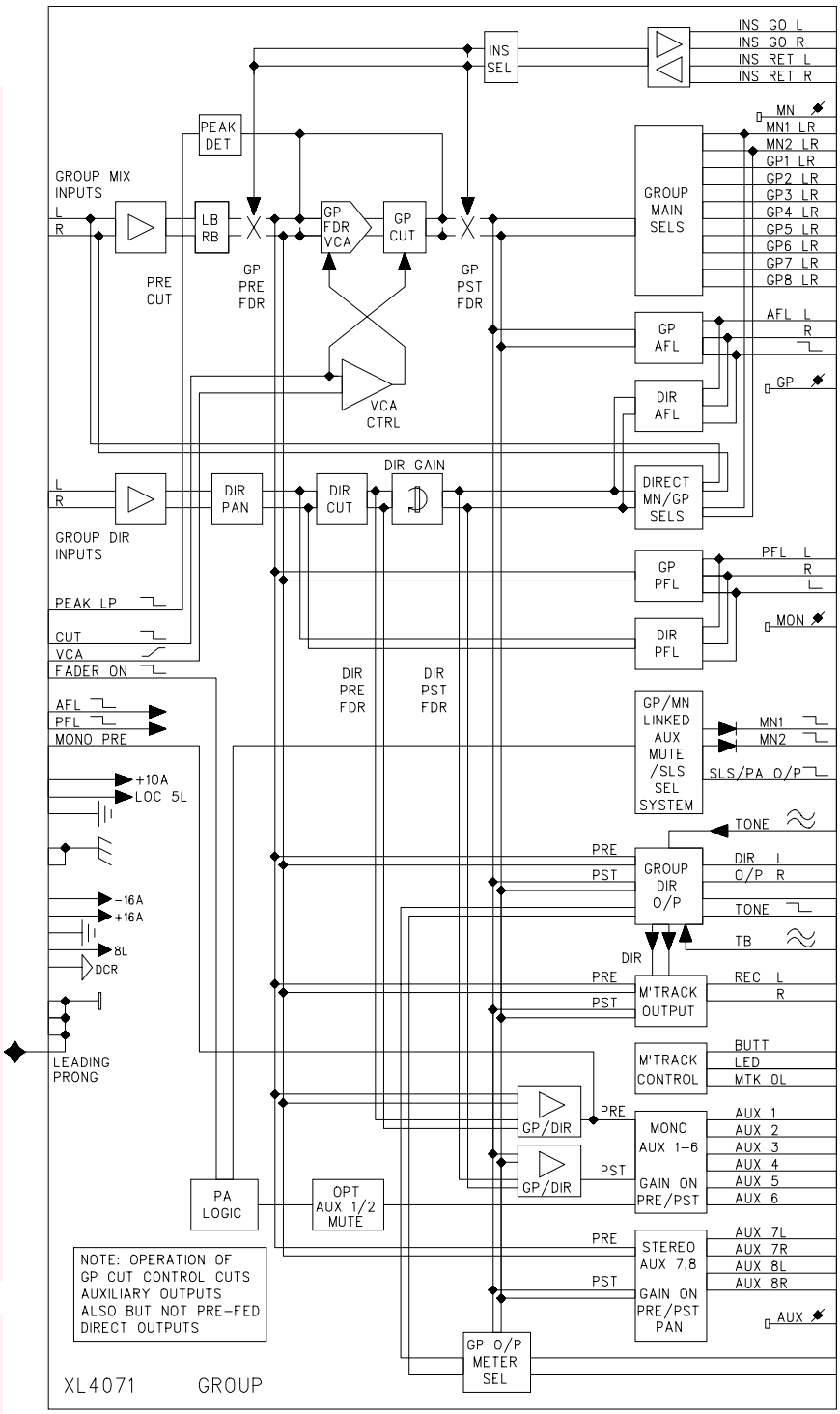
AFL	:	Red LED (Stereo)
PFL	:	Green LED (Stereo)
CUT	:	Yellow LED

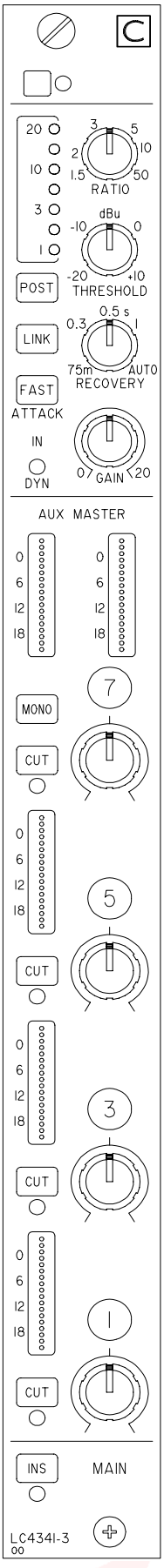
Direct I/P Stereo PAN control.

Direct I/P GAIN control with 10dB in hand at 12 o'clock line-up.

8 Auxiliary Outputs: Common gain control and common pre/post fader selection on 5/6 and 7/8, 7 & 8 are Stereo. Red/green LED indication of pre/post selection when output is selected. Aux 1 & 2 can be muted by PA selection system if required (internal switch).

DIRect Output (Stereo) with pre/post fader selection (pre EQ internal option) and provision for Talkback injection.
Pre & Post fader insert selection with standard level balanced in & out interface. Yellow LED.
LB: Left input to Both outputs.
RB: Right input to Both outputs.
LB + RB: A mono mix of both inputs to both outputs.


INS GO L
INS GO R
INS RET L
INS RET R
INS SEL
PEAK DET
GROUP MIX INPUTS
L
R
LB
RB
PRE CUT
GP PRE FDR
GP FDR VCA
GP CUT
GP PST FDR
VCA CTRL
GROUP MAIN SELS
MN
MN1 LR
MN2 LR
GP1 LR
GP2 LR
GP3 LR
GP4 LR
GP5 LR
GP6 LR
GP7 LR
GP8 LR
GP AFL
AFL L
R
DIR AFL
GP
DIR GAIN
DIR PAN
DIR CUT
DIRECT MN/GP SELS
GROUP DIR INPUTS
GP PFL
PFL L
R
DIR PFL
MON
PEAK LP
CUT
VCA
FADER ON
DIR PRE FDR
DIR PST FDR
AFL
PFL
MONO PRE
GP/MN LINKED AUX MUTE /SLS SEL SYSTEM
MN1
MN2
SLS/PA O/P
+10A
LOC 5L
TONE
PRE
PST
GROUP DIR O/P
DIR L
O/P R
TONE
TB
DIR
-16A
+16A
8L
DCR
M'TRACK OUTPUT
REC L
R
LEADING PRONG
M'TRACK CONTROL
BUTT
LED
MTK OL
GP/DIR
GP/DIR
MONO AUX 1-6
GAIN ON PRE/PST
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
PA LOGIC
OPT AUX 1/2 MUTE
STEREO AUX 7,8
GAIN ON PRE/PST PAN
AUX 7L
AUX 7R
AUX 8L
AUX 8R
AUX
NOTE: OPERATION OF GP CUT CONTROL CUTS AUXILIARY OUTPUTS ALSO BUT NOT PRE-FED DIRECT OUTPUTS
GP O/P METER SEL
XL4071 GROUP



LC4341-3 MAIN OUTPUT

Routing from Output 2 to Output 1 only. Red LED.

Main output compressor, may be used as a limiter (50/1 ratio).

20dB gain reduction Yellow bargraph.

Normally pre fader - can be set post fader.

Can be linked between outputs.

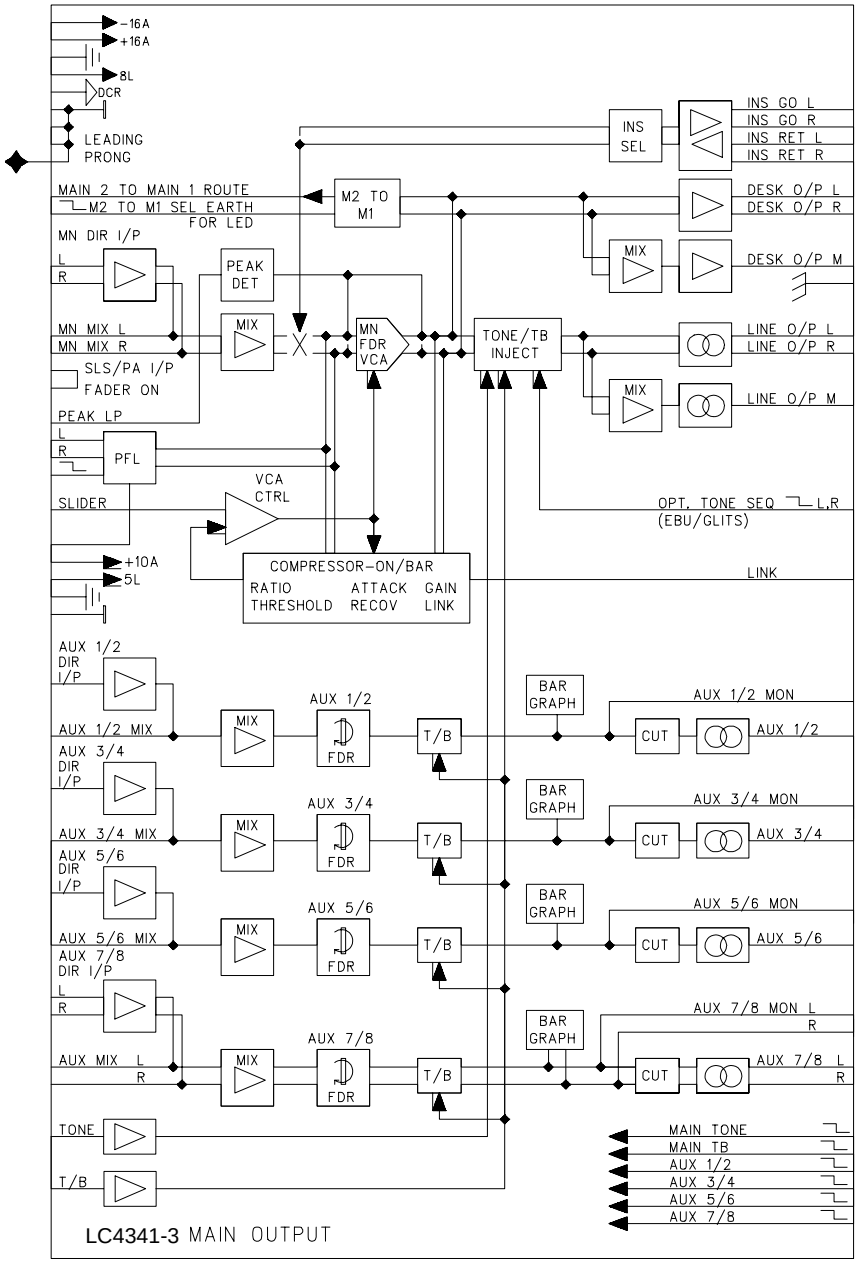
Separate In/Out switch: Red LED - Dims Gain reduction bargraph when out.
Make-up gain control - 20dB max.

Auxiliary Output Master Controls.
Output 1 controls Auxiliaries 1, 3, 5 and 7.
Output 2 controls Auxiliaries 2, 4, 6 and 8.

Each output can be cut if required, then the Green/Red bargraphs are dimmed.

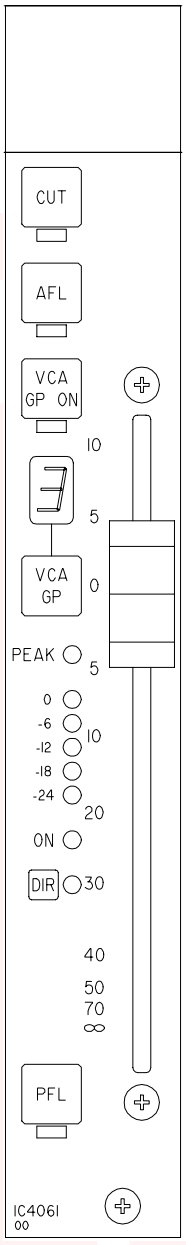
Stereo auxiliary outputs 7 & 8 may be set for mono operation.

Pre Fader Insert selection. Yellow LED.



LC4341-3 MAIN OUTPUT

IC4061 CHANNEL/GROUP FADER



Used for Mono/Stereo channels.

Scribble strip.

CUT button - cuts all channel/group outputs. Yellow LED.
- mechanically latching function (retained through power down).

AFL button routes channel or group signal exclusively to monitor loudspeakers (in place Stereo). Momentary button can be internally set for latching OR momentary on sustained press & latching on short press. Several AFL's can be selected together.

VCA GROUP ON - puts channel under control of indicated VCA Group fader. This includes fader level, AFL & CUT. Green LED's unless either this fader OR the VCA Group fader are faded out when LED shows RED.

NUMERIC - indicates which VCA Group is selected.

VCA GROUP - controls VCA Group selection via numeric. Note this selection is retained on power down up to 1 week.

FADER - with +10dB in hand - can be reverse scale to order.

PEAK - Red LED illuminates when signal anywhere in circuit approaches within 3dB of clipping.

BAR GRAPH - (5 LED's: 1 Red, 1 Yellow, 3 Green) gives a display of Pre EQ signal level in the channel.

ON - Green LED illuminates when fader is open.

DIR button switches Bar Graph to show DIRECT OP level. Restricted access button - Yellow LED.

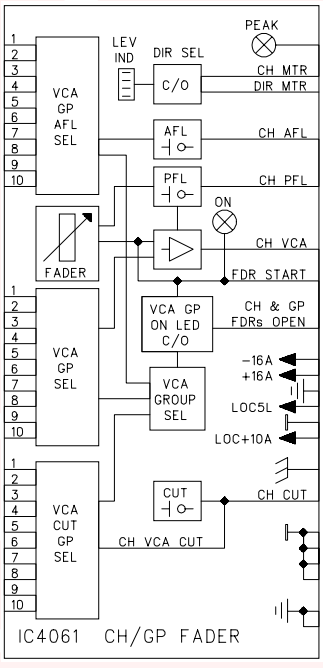
PFL button routes channel or group pre fader signal to PFL loudspeaker(s) in-place Stereo if 2 are used. Momentary button can be internally set for latching or momentary on sustained press AND latching on short press. PFL can be cancelled when fader opens (internal switch).

Calrec Auto Gain Ranging

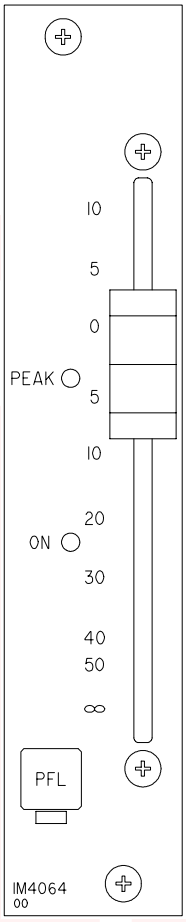
This unique principle allows the channel to operate with a normal headroom of 28dB above chosen setting.

On severe overloads the headroom is automatically extended to 36dB up to the fader. The pre-fader signals to Echo, Foldback etc. are limited in this condition to avoid severe overload but the channel signal is exclusively under the control of the operator and he/she will naturally pull back the channel fader.

This principle ensures a very good noise figure in the channel especially in the equaliser whilst coping with extreme levels experienced often in outside broadcast work.



IM4064 MAIN OUTPUT FADER



Scribble strip.

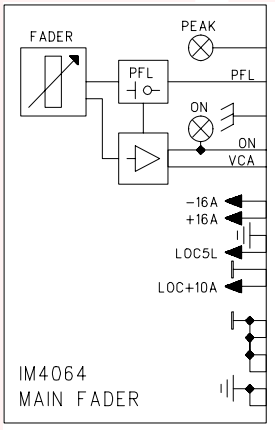
FADER - with +10dB in hand - can be reverse scale to order.

PEAK - Red LED illuminates when pre or post fader signal approaches within 3dB of clipping.

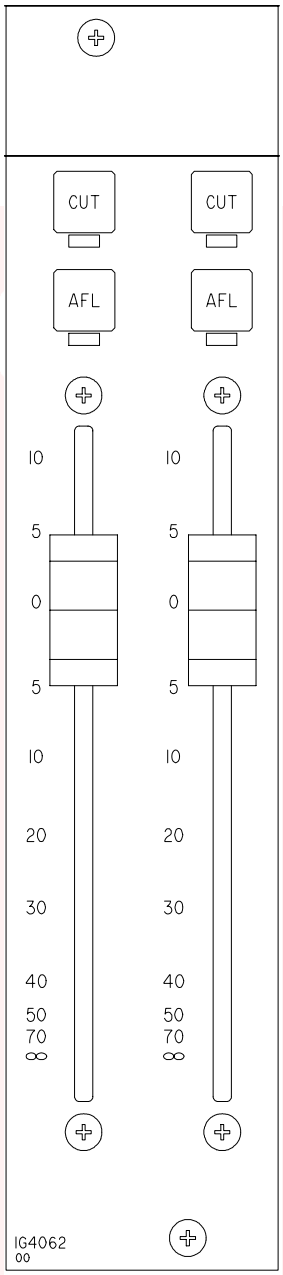
ON - Green LED illuminates when fader is open.

PFL button routes main signal to PFL loudspeaker(s): in-place stereo.

Momentary button can be internally set for push-push electronic latching.



IG4062 VCA GROUP TWIN FADER

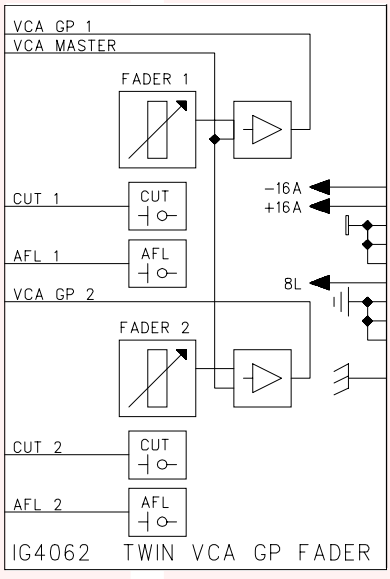


Scribble strip.

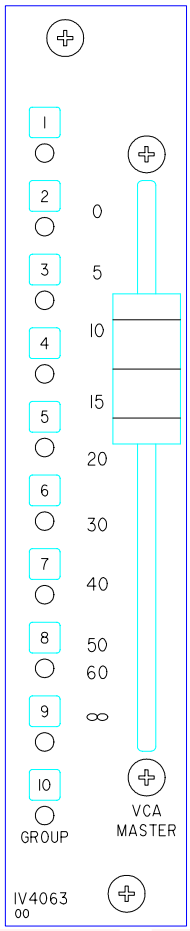
FADER - with +10dB in hand - can be reverse scale to order.

CUT button cuts channels & groups selected to VCA fader illuminating their LEDs. Yellow LED.

AFL button puts channels & groups selected to VCA fader to the AFL monitor illuminating their LEDs. Red LED.



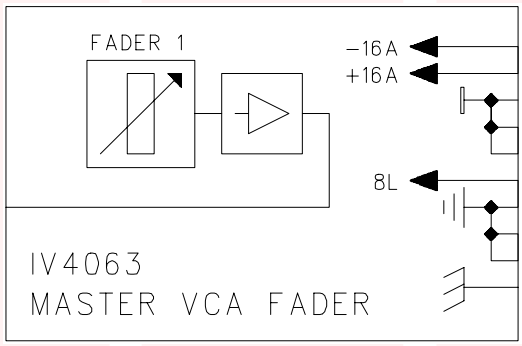
IV4063 VCA MASTER FADER



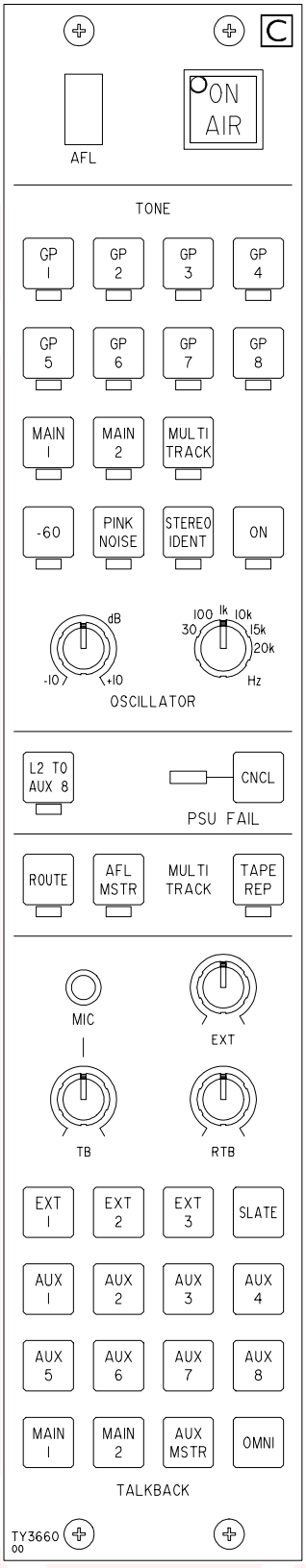
Scribble strip.

FADER - normally operated at top of travel - can be reverse scale to order.

BUTTONS 1 to 10 to select which VCA Group faders the Master is acting upon. Green LEDs.



TY3660 TONE/TALKBACK



Master AFL indicator illuminates Red when any AFL button is selected or a multitrack AFL is switched in. Also illuminates AFL LED on ML4230 Monitor Loudspeaker panel.

ON AIR button disables all tone and main Talkback functions with remote indication. Red LED.

Tone oscillator - Red LED, -60dB button - Green LED and PINK noise option - Yellow LED. Routing to all Groups, Main Outputs and Multitrack - Yellow LEDs.

L2 TO AUX 8: Routes all Line 2 (Line on Stereo channel) to Auxiliary 8 output. Stereo from Stereo channels. Global function on all channels. Yellow LED. Independent of other input selections - used for Multitrack replay monitor system.

STEREO IDENT: Switches on an internal sequencer which controls switches tone on the main outputs. EBU sequence or Glits (option).

PSU FAIL - LED & cancel button. Lamp flashes when a PSU or part thereof fails. Cancel button stops flashing & leaves LED steady red. Second failure or switching on console resumes flashing.

The Multitrack buttons ROUTE and AFL are used to assign routing from channels or groups to tracks and perform track AFL. Normally both LEDs are off, but when either button is pressed the LEDs illuminate appropriately. ROUTE is GREEN, and AFL is RED.

When the ROUTE LED is GREEN, the console is in assignable routing mode. When the AFL LED is RED, the console is in Track AFL mode. When neither LED is lit, the console is in NORMAL mode and both forward and reverse interrogation is available.

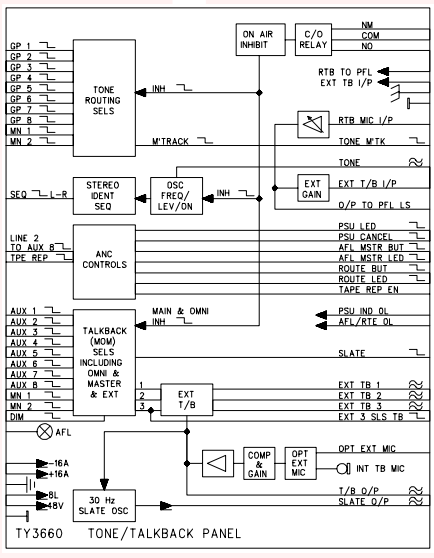
If the console is in ROUTE or AFL mode, and no multitrack activity is performed within 20 seconds, the console times out to NORMAL mode, preserving all current settings.

TAPE REP - Globally switches all channels to Tape Replay via Line 2 inputs (LINE on Stereo) over-riding other sections. Can be over-ridden by OVERDUB button on channels. Green LED.

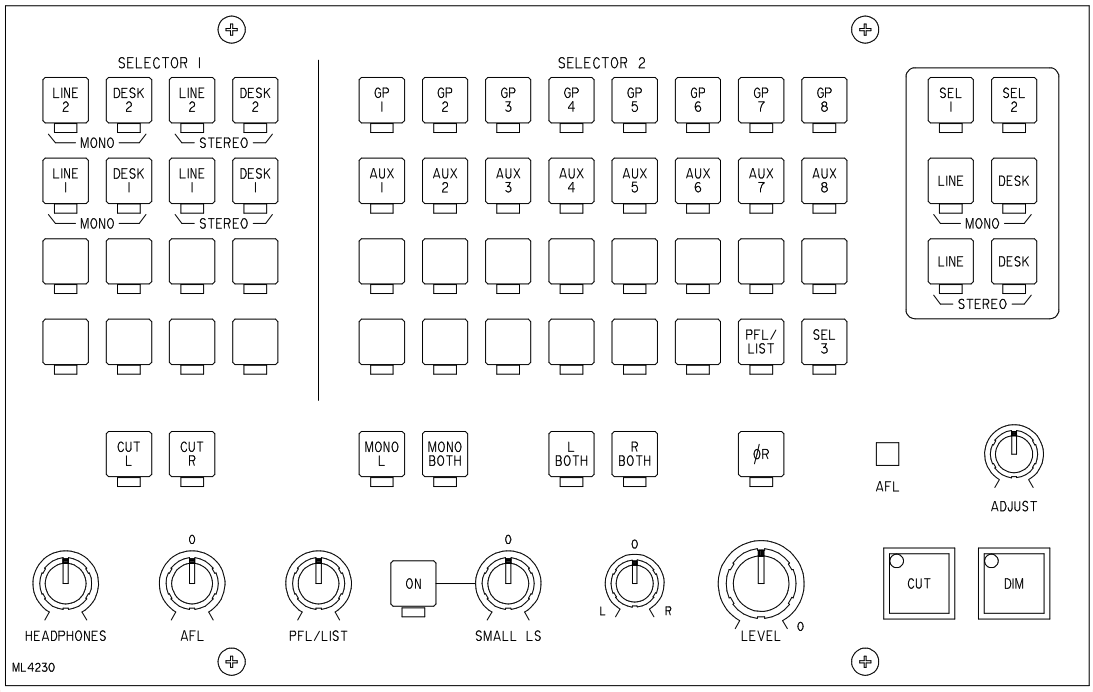
TALKBACK MIC and Gain control.

EXT & RTB. (Reverse Talkback) Line and mic level inputs to PFL loudspeaker.

TALKBACK momentary routing as shown.



ML4230 MONITOR LS



SELECTOR 1: 16 selections as show. 8 external Stereo. Green LEDs.

SELECTOR 2: 32 selections as shown. 14 external Stereo.
Facility for bringing in selections from a LS2 panel via SEL 3. Green LEDs.

MAIN selector: 6 selections: SEL 1 & 2 & Main 1 outputs. Red LEDs.

LS Mode Selections: 7 buttons with Red LEDs and AFL over-ride red LED.

HEADPHONES: Level control to separate output. +10/-oo

AFL: Trim ±10dB.

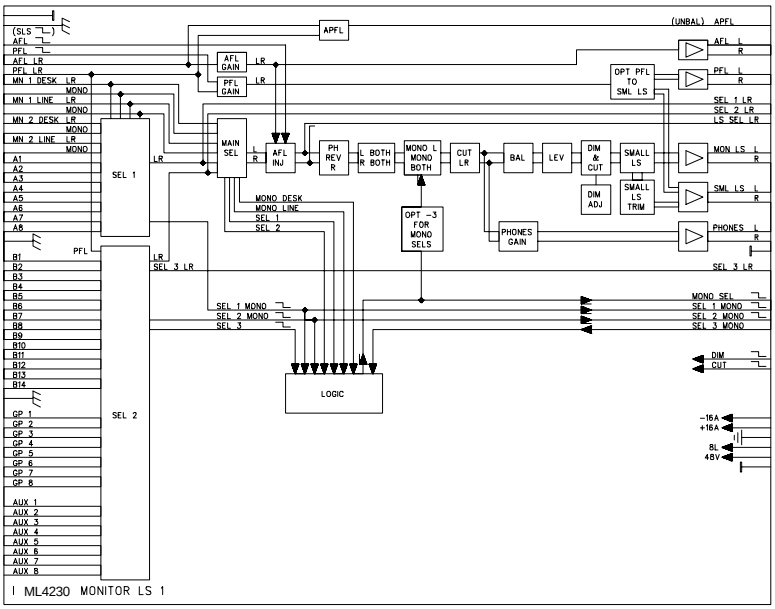
PFL: Level control. +10/-oo

SMALL LS: Button option with Trim to near-field LS ±10dB.

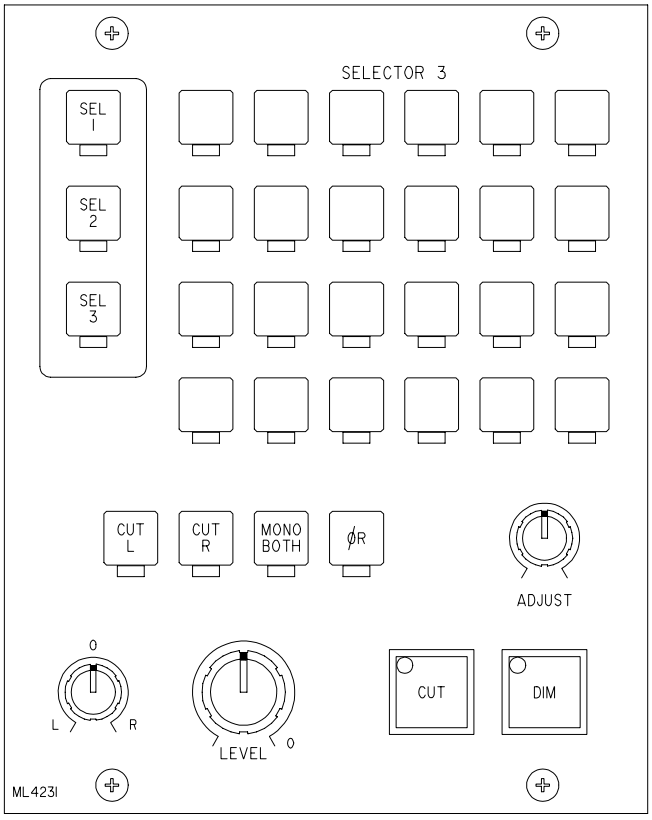
BALANCE Control: ±3dB.

GAIN Control: 0/-oo

CUT & DIM buttons with Dim level adjust. -6/-30dB. Red LEDs.



ML4231 LOUDSPEAKER 2



SELECTOR 3: 24 Stereo external inputs. Green LEDs.

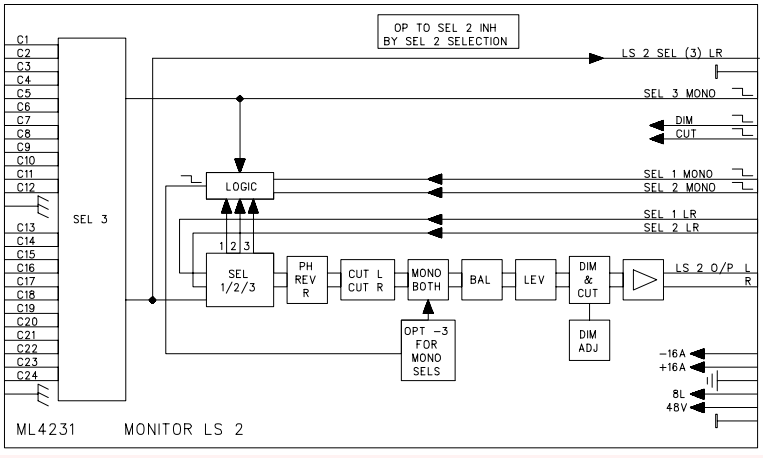
MAIN Selector: Facility for selecting SEL 1 & SEL 2 outputs from Monitor LS module as well as local SEL 3 output.

LS Mode Selector: 4 buttons with Red LEDs.

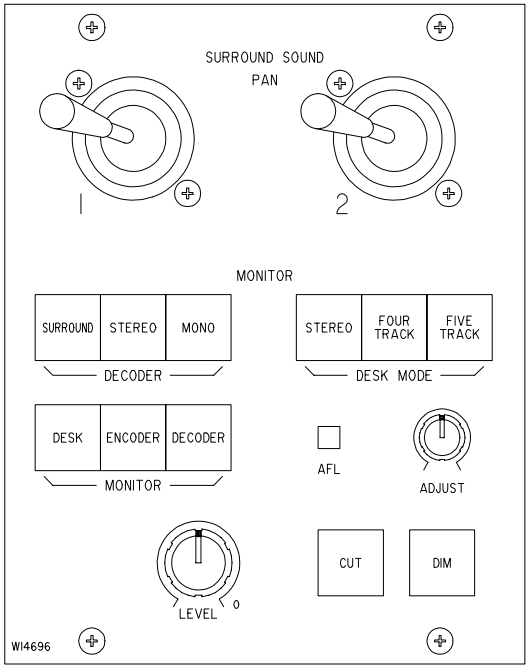
BALANCE control ±3dB.

GAIN control 0/-ooodB.

CUT & DIM buttons with dim level adjust, -6/-30dB. Red LEDs.



WI4696 SURROUND MONITOR



DESK MODE SELECTOR:

Stereo: Desk normal & monitor controlled by MONITOR LOUDSPEAKER panel.

Four Track: Desk outputs M1: L-R, M2:CENTRE,MONO SURROUND MONITOR controlled by this panel. Mono surround to L & R Surround LS.

Five Track: As 4-track except that L & R surround from Aux 8 LR also.

MONITOR SELECTOR:

Desk: Surround monitor as set above from Desk outputs.

Encoder: Stereo compatibility check from external Encoder outputs LR.
Decoder: Surround monitor of Encoder & Decoder outputs. (external units)

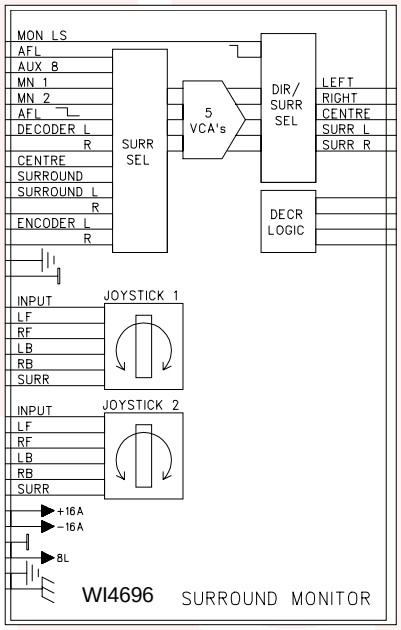
DECODER SELECTOR: Mono, Stereo, Surround] Optional remote controls of decoder for comparison purposes.

Level: Loudspeaker volume control 0/Off.

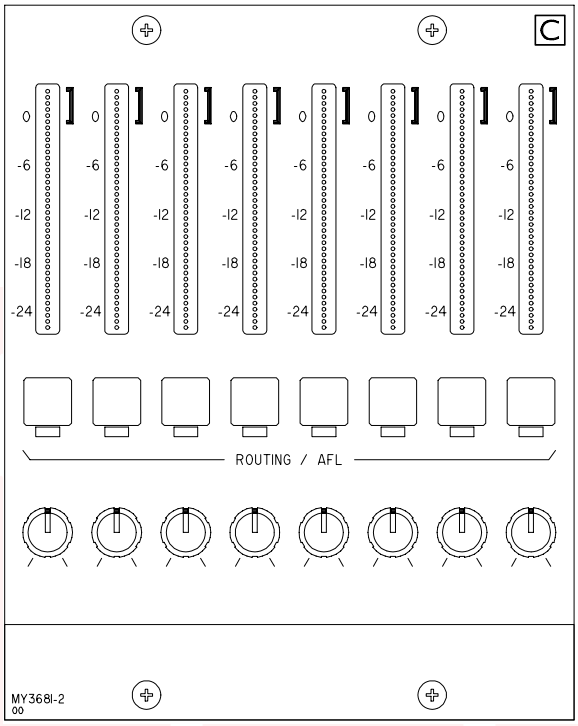
Cut & Dim buttons with Dim Level adjust -6/-30dB. Red LEDs.

AFL - Red LED drawing attention to an AFL selection.

SURROUND PAN CONTROLS - TWO - A channel signal can be panned to any part of the surround presentation. Units have to be patched.



MY3681-2 MULTI-TRACK BARGRAPH/CONTROL

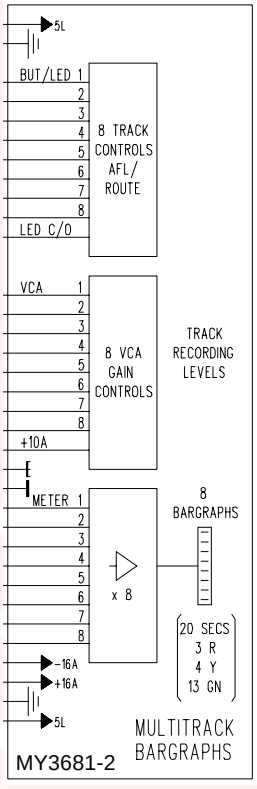


Each Bargraph Control panel provides control over 8 tracks. The Bargraph Meters are GREEN from -oo to -6, YELLOW from -6 to 0, and RED from 0 to +6. There are usually 3 panels for 24 tracks and 4 for 32 track systems.

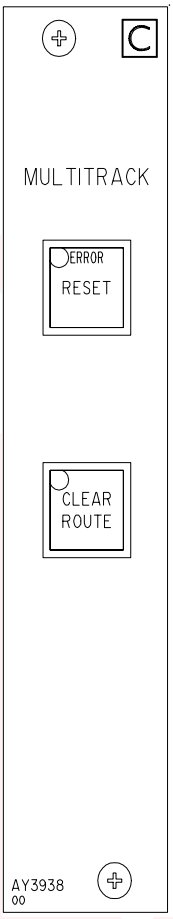
ROUTING/AFL Buttons:
These normally display the current ROUTING assignment for the current selected channel or group (forward interrogation), in GREEN.

The buttons are mechanically momentary and are electronically latched. Tracks are selected and deselected on each push/release cycle. AFL track selections are displayed in RED.

The eight/8 Track Record Send level controls provide +10/ oodB control. The displays can be factory set for 0 = +/- 6dB.



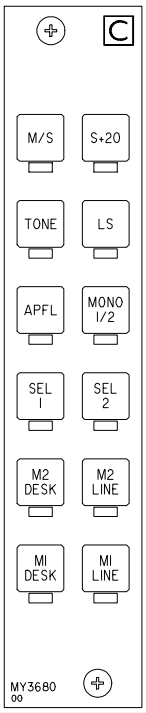
AY3938 MULTITRACK ERROR / RESET

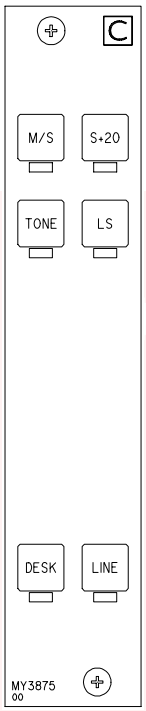


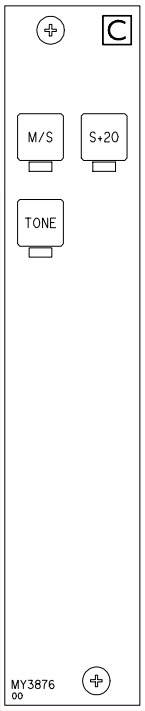
This module provides ancilliary control buttons for Multitrack Operation. Provisionally, the two buttons are RESET and CLEAR ROUTE. The RESET button controls the Computer Sub System, and forces an automatic restart, recalling the last known (saved) ROUTE and AFL settings. The internal LED is RED, and will illuminate if there is a Computer Sub System unrecoverable error, or on power down to indicate the safe CLEAR ROUTE button enables a channel or group routeing to be cleared. A double press is required in order to confirm the operation.

(An optional third button, GLOBAL CLEAR ROUTE will clear ALL settings for all channels and groups.)

MY3680 METER SELECTOR (General)
MY3875 METER SELECTOR (Principal selections)
MY3876 METER SELECTOR (Main function)



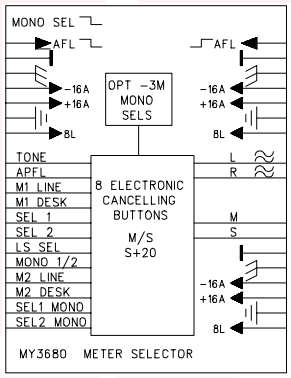


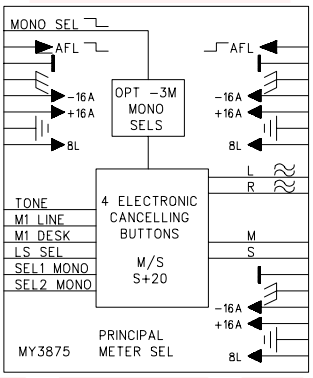


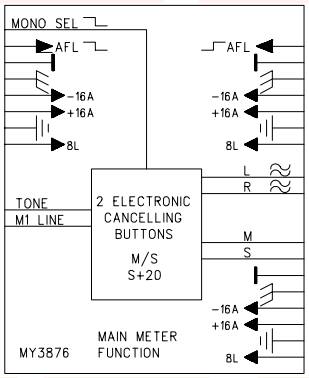
Selections from labelled sources.

Yellow LEDs - Electronic cancelling set (latching on MY3876).

M/S latching & S+20. Red LEDs.

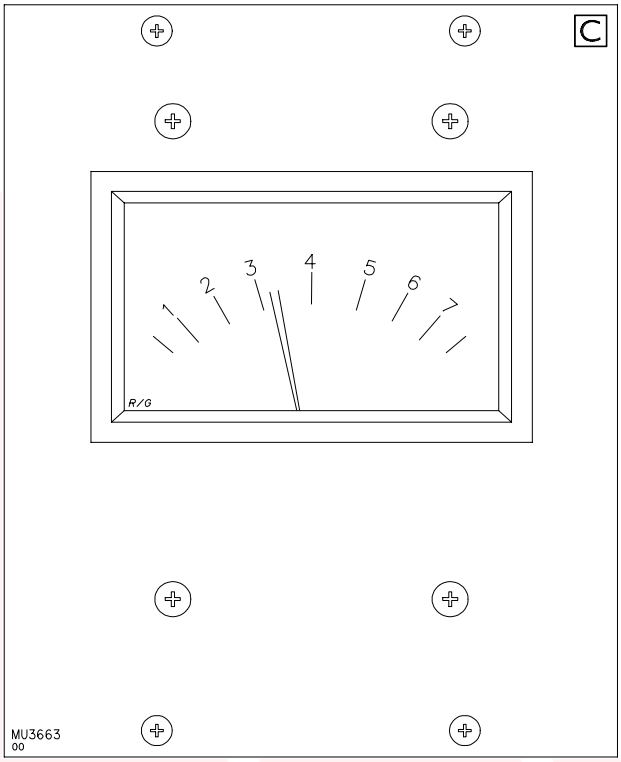


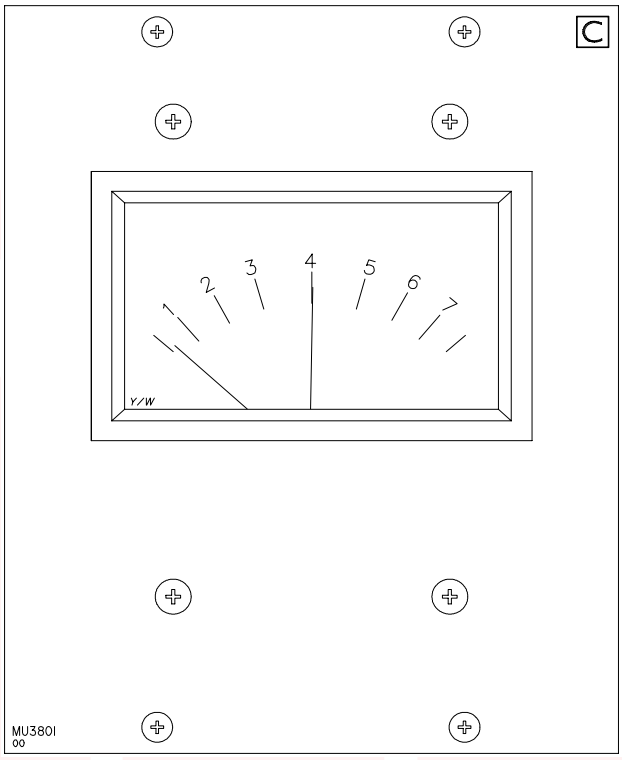




MU3663 STEREO PPM L/R **MU3801 STEREO PPM M/S**

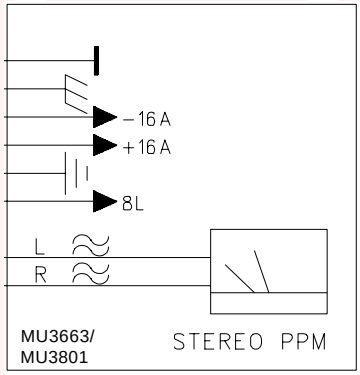
MU3663 Stereo PPM with Red/Green needles and illumination.



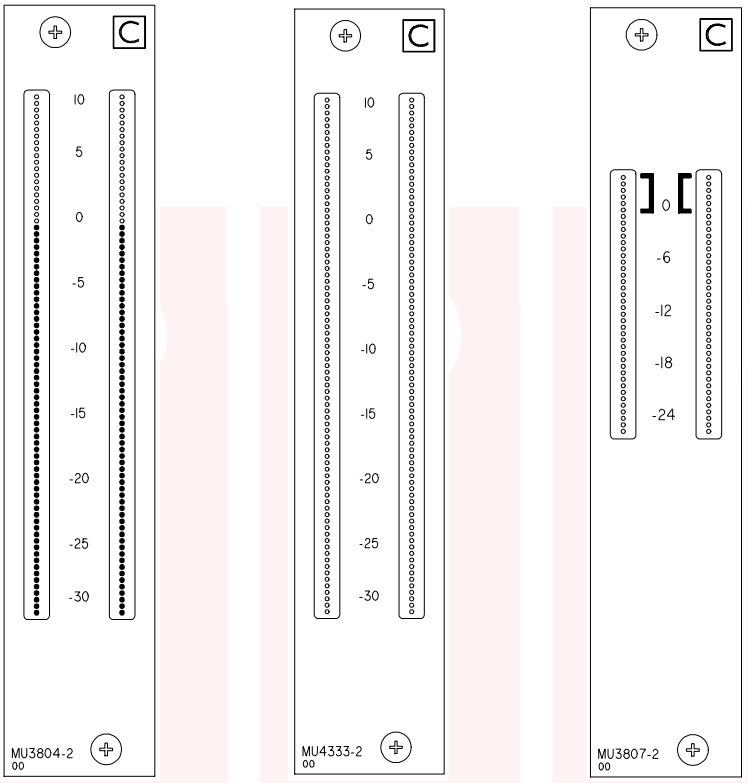


MU3801 Stereo PPM with White/Orange needles and illumination.

Internal PPM drivers.



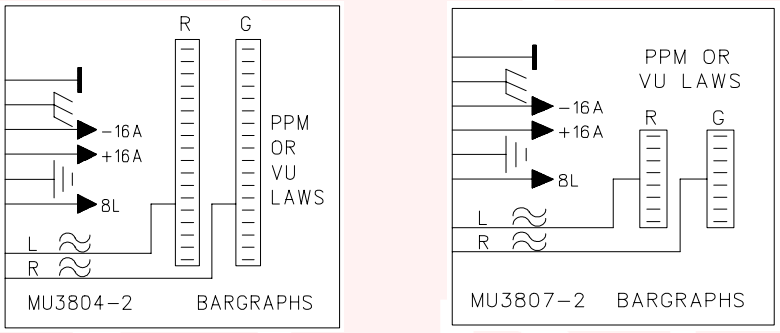
MU3804-2 LARGE STEREO BARGRAPH
MU4333-2 LARGE STEREO BARGRAPH - (Revsd. cols)
MU3807-2 SMALL STEREO BARGRAPH



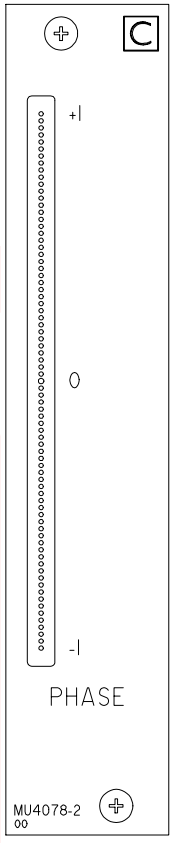
Twin LED bargraphs - 40 LEDs each for good resolution.

Left hand bar is RED.
Right hand bar is GREEN (reversed colours on MU4333).

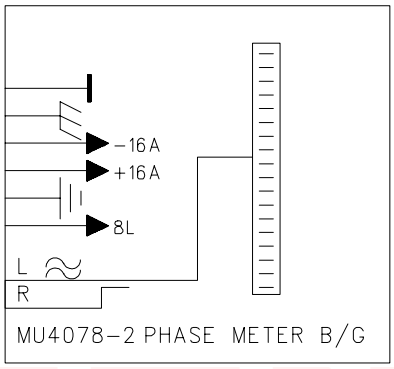
Bars brighten at 0dB representing +6 or +8 dBu for PPM or +4dBu (SCALE 0) for VU (set internally).



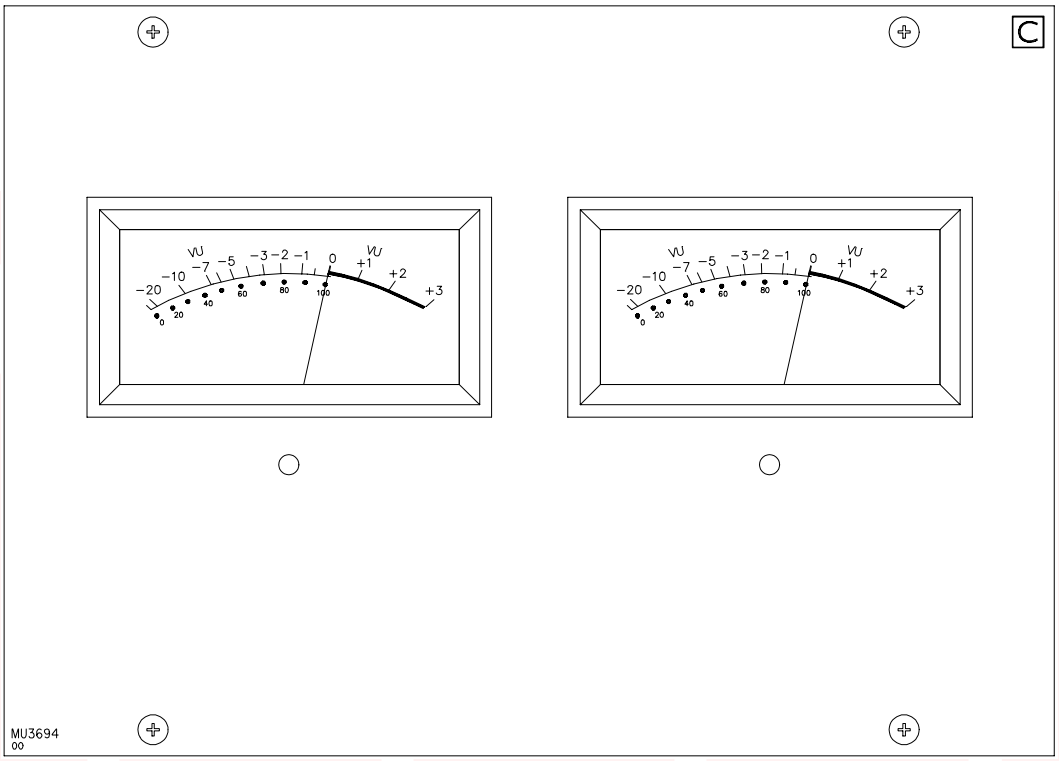
MU4078-2 PHASE BARGRAPH



LED Bargraph.
Upper section representing good phase coherence is GREEN.
Lower section representing poor phase coherence is RED.
Spot moves dynamically.

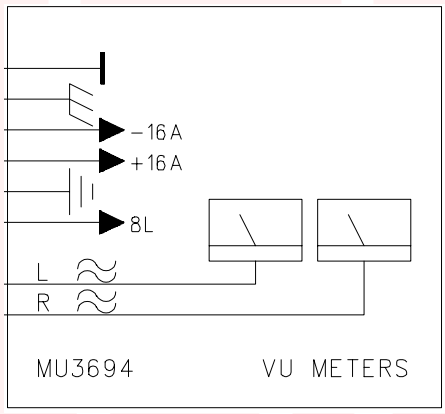


MU3694 2 VU METERS

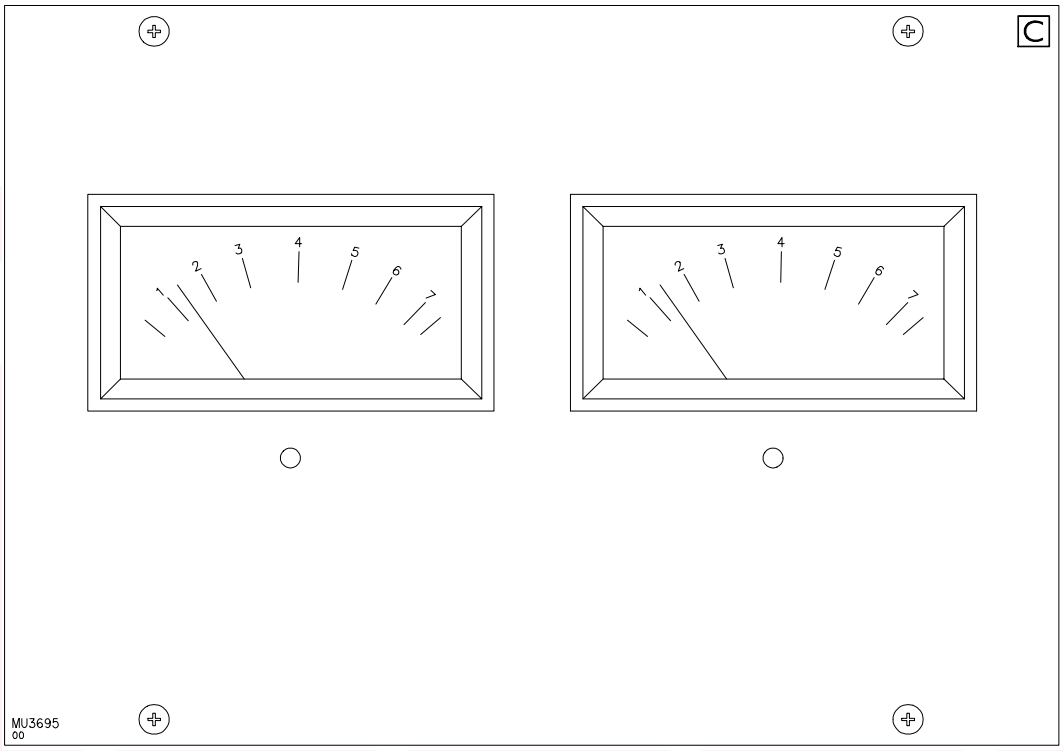


VU meters with illumination.

Internal buffer amplifiers.

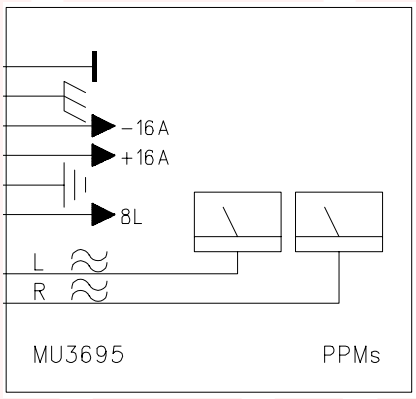


MU3695 2 MONO PEAK PROGRAMME METERS

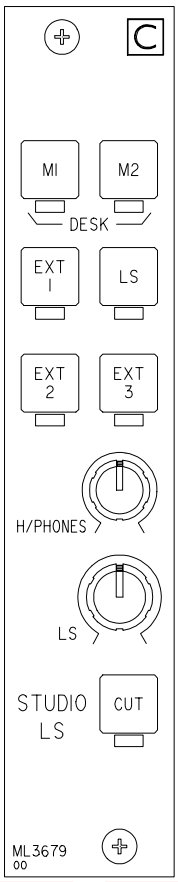


Mono PPMs with white needles and illumination.

Internal PPM drivers.



ML3679 STUDIO LS CONTROL

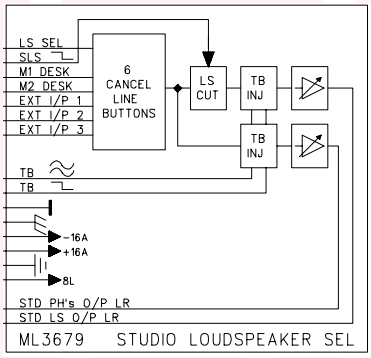


6 Electronic cancelling inputs - Yellow LEDs including 3 external inputs.

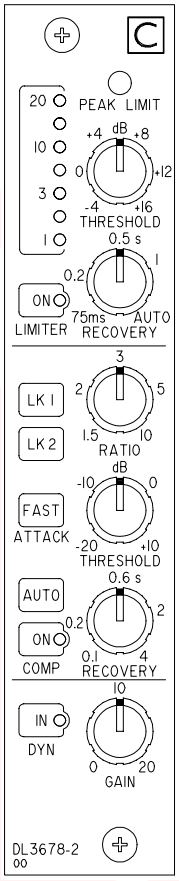
Gain controls 0dB to OFF.

CUT button with Yellow LED - cuts LS automatically when any channel selected to Mic and routed to the Main output either directly or via a group is opened.

Separate studio headphones outputs. Level control 0/-OOdB



DL3678-2 STEREO COMPRESSOR/LIMITER



Stereo Limiter:

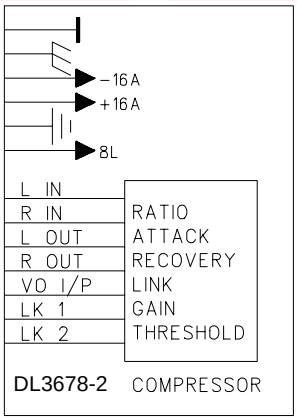
Ratio	:	fixed 100/1
Threshold	:	-4/+16dBu variable
Attack	:	fixed 100 u-secs
Recovery	:	0.075 to 4 secs variable with AUTO facility: 0.1 to 1.5 secs (programme dependent)
Peak Limit	:	Yellow LED indicator
Limiter	:	On button with Yellow LED indication

Stereo Compressor:

Ratio	:	1.5/10 variable
Threshold	:	-20/+10dB variable
Attack	:	Normal 4 msec @ 5:1 or FAST 0.2mS @ 5:1
Recovery	:	0.1 to 4 secs variable with AUTO facility: 0.1 to 1.5 secs (programme dependent)
Make-up Gain	:	0/20dB variable
Voice-over	:	Line level balanced input (may be used when compressor is Off)
Compressor	:	ON button with Yellow LED indicator

Compressor & Limiter:

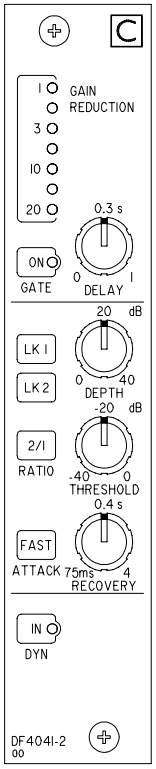
Bargraph	:	Up to 24dB gain reduction with enhanced resolution at lower reduction levels.
Links	:	Button 1 & 2 to external buss or pairs etc - links side chains together.
DYN-IN	:	Button with Red LED indication - when OUT gives total bypass condition except that bargraph operates as a preview at reduced intensity.



Balanced line input & outputs, 0dBu.
Ignore right channel for mono use.

The compressor and limiter normally respond to the higher of the left and right signals. An internal option allows the mono reduction of left and right (-3dB) to take control if the Stereo coherence is such that this exceeds left or right. This renders it unnecessary to "under-drive" the stereo outputs to guard against the possibility of a higher than desired mono level.

DL4041-2 EXPANDER/GATE



Stereo Expander:

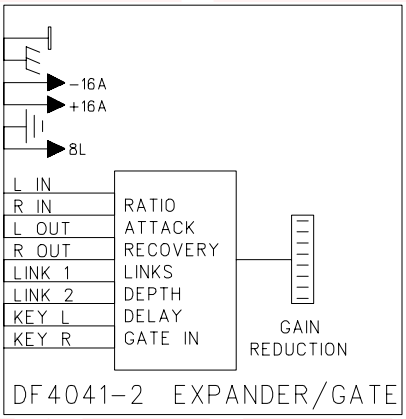
Ratio	:	Normal, varies with level 1.5/1 to 5/1. Fixed 2/1 (button)
Threshold	:	0/-40dBu variable
Attack	:	Normal 4 m-sec. FAST (button) 50 u-sec
Recovery	:	75ms to 4 sec variable
Depth	:	0/40dB variable (extent of expansion below threshold)
Bargraph	:	Up to 20dB gain reduction
Links	:	1 & 2 to external busses or pairs

Stereo Noise Gate:

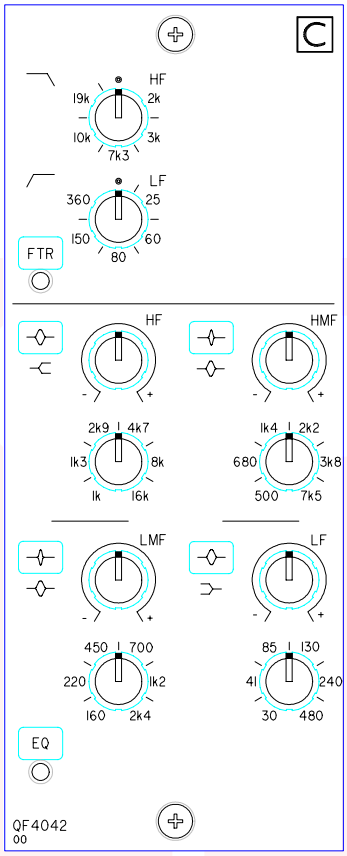
Gate	:	Button with LED indication. All expander controls apply except Ratio becomes infinite.
Gate Delay	:	0/1 sec variable - in addition to normal 6dB gate hysteresis

Expander & Noise Gate:

DYN-IN	:	Button with LED indication - when OFF gives total bypass condition except that bargraph operates as a preview at reduced intensity.



QF4042 PARAMETRIC EQ & FILTERS



Stereo Filters / Equaliser:

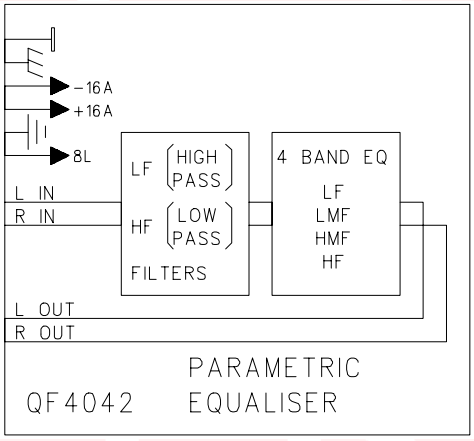
2 band parametric filters: HF (low pass) 12dB/octave
LF (high pass) 18dB/octave

4 band parametric equaliser: ± 16dB max at selected frequencies

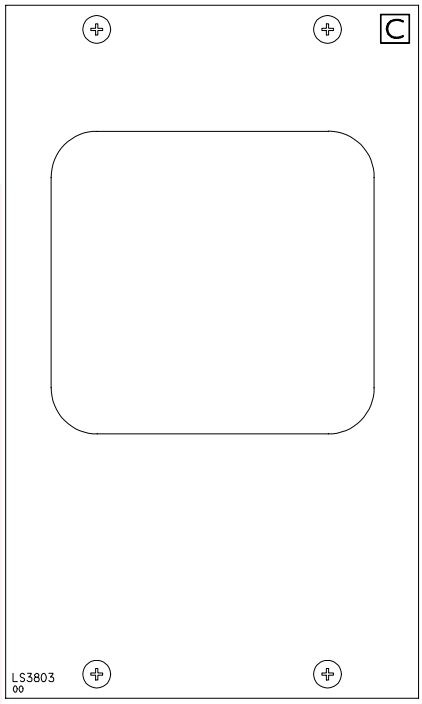
Exclusive lift/cut law allows fine control near centre and low noise in detent.

LF & HF bands can be shelf or bell (Q 1.0)
LMF & HMF bands can be normal Q (1.0) or high Q (3.5) bell.

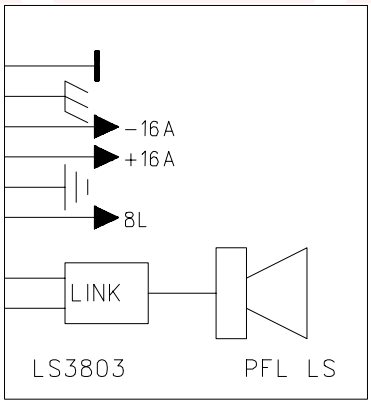
Separate Filters & EQ in buttons.



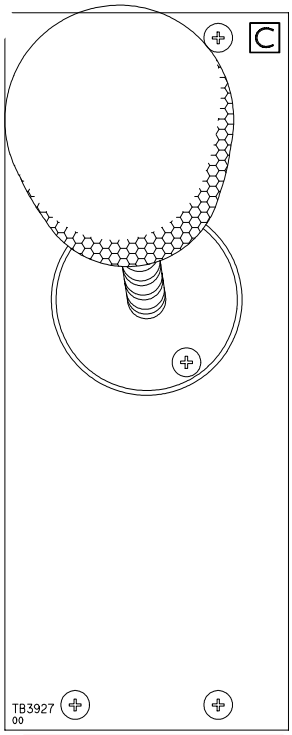
LS3803 PFL LOUDSPEAKER



Module can be set for Left, Right or Mono use.
Module can receive Reverse Talkback plus an extra intercom signal if required.

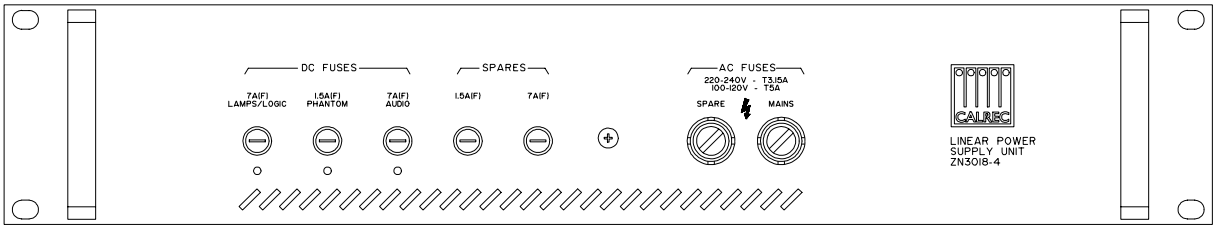


TB3927 EXTERNAL TALKBACK MICROPHONE



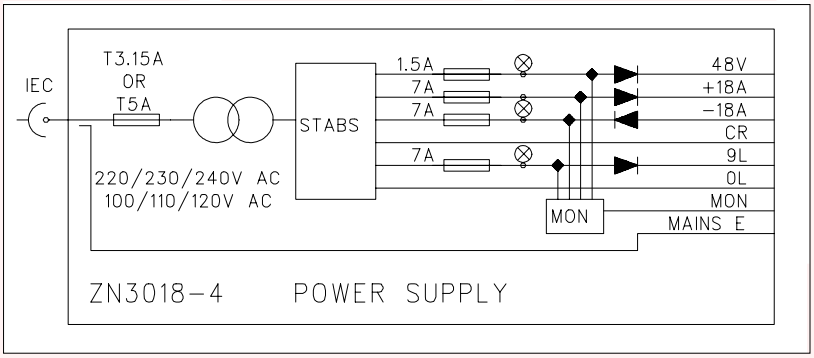
For those customers requiring a microphone projecting from the console on a stalk.

ZN3018-4 MAINS POWER UNIT



A Calrec designed special unit to provide ±16 volts audio power, 8 volts logic power (stabilised in modules at 5 volts where required) and 48 volts phantom power suitable for approximately 16 channels each in a typical console. It is recommended that there be one "Hot" spare in the system which in addition will share the load.

The 2U units include a monitor of the 4 outputs and send a fault signal to the console in the event of failure.
The units operate in parallel via internal diodes.
The units are designed to operate at mains voltages 10% below that set.



INTERNAL/REAR CARDS, PANELS & POWER SYSTEM

XN4342	Internal PFL/AFL/Mix minus card
RX3651	Multitrack matrix card (option)
RL4343	Multitrack outputs card (option)
RY3696	Multitrack functions card (option)
UN3551	Multitrack processor card (option)
ZN3564	Multitrack 5V stabiliser card (option)
ZN3693	Power Distribution Unit
HN3919	Dynamics connections card
HN4232	12 channels back-plane
HN4233	Main back-plane
HN3914	Multitrack back-plane 1 (option)
HN3915	Multitrack back-plane 2 (option)
HN3916	Multitrack back-plane 3 (option)
HN3939	Processor Card Services Panel (Multitrack option)
IC4089	Fader back-plane channel
IG4090	Fader back-plane group/main
HN4092	Fader back-plane link
MY4099	Surround monitor back-plane

4.0 Specifications & Connections

SPECIFICATION

Measurements are with 22-22KHz filters unless otherwise stated.
All specifications are in the frequency range 40-15KHz unless otherwise stated.
Measurements specified are with equaliser and dynamics out of circuit.
0dBu = 0.775 volts RMS dBq = CCIR QUASI-PEAK Normal operating level = 0dBu (peak +8dBu or +6dBu)

Inputs

Microphones:	Sensitivity	=	+18dBu to -78dBu
Lines:		=	+18dBu to -24dBu
Maximum input levels:	PQ4068/69 Mic & Line	=	+24dBu Line 2 Replay = +28dBu
	BQ4070 Line	=	+28dBu
Input impedance:	Mic	=	1.2KΩ -24 to -78dBu (Hi gain)
(Electronic balance)		=	7.5KΩ +18 to -18dBu (Lo gain)
	Line	=	10KΩ
Common mode rejection (CMR)			
Mics - hi gain - 200Ω source		=	>75dB at 1KHz
			>60dB at 15KHz
Mics - lo gain - 200Ω source		=	>70dB at 1KHz
& Lines			>50dB at 15KHz
Other inputs (Insert Returns, Dir I/Ps) -40Ω source		=	>40dB at 1KHz

Outputs

Maximum output levels	Principal outputs (transformer)		+24dBu into 10KΩ
	incl. Main Outputs 1 & 2 (Stereo & Mono)	=	+24dBu into 600Ω at 1KHz
			+22dBu into 300Ω at 1KHz
	All auxiliaries	=	+23dBu into 600Ω at 1KHz
			+22dBu into 300Ω
	Other outputs (electronic)	=	+24dBu into 10KΩ
		=	+23.5dBu into 600Ω
		=	+20.5dBu into 300Ω
Output impedances:	Transformer	=	25Ω Main/50Ω Aux
	Electronic	=	40Ω
Output balance:	Transformer	=	-40dB at 1KHz
	Electronic	=	-40dB at 1KHz
Output common mode rejection:	Transformer	=	-70dB
	Electronic	=	-50dB

Outputs can withstand an input of +12dBu from a source impedance of 10Ω. All main, auxiliary & direct outputs can withstand phantom power backfeed.

Inputs Headroom

Above any input gain setting up to a maximum	Mics	=	36dB with 8dB of auto gain ranging
input of +24dBu:	Other	=	28dB

Fader Tolerances

	Working range ±10dB	=	±0.5dB
	-10 to -30dB	=	1dB
	Below -30dB	=	±5dB

Frequency Response

Into 600Ω or 10KΩ in parallel with 22nF all settings.

Mics & Lines = ±0.25dB 40Hz to 15KHz

Microphone & Line 1 inputs have fixed LF/HF filters.
(measured to main O/P) 12dB/octave ≤ 6dB at 10Hz
- 18dB at 100KHz (continuously falling)

Phase Difference Left to Right ≤ 5° (no EQ)
≤ 7° (with EQ)

Harmonic Distortion

Mic & Line inputs from 200Ω to 40Ω respectively to outputs in 600Ω

+6dBu, 40Hz to 5KHz ≤ 0.04% (-68dB)
+20dBu, 40Hz to 5KHz ≤ 0.1% (-60dB)

Noise

1 Channel from line input (terminated with 40Ω) at line up 0dB
via group to main output = -86dBu (22-22KHz)
= -75dBq (CCIR)
48 Channels routed to group but faded down to Main output at 0dB = -81dBu (22-22KHz)
= -71dBq (CCIR)
Microphone equivalent input noise (200Ω termination): Hi gain = -127dB (RMS, 22-22KHz)
-116dBq (CCIR)

Crosstalk

Mic & Line inputs from 200Ω & 40Ω respectively to outputs in 600Ω signals at 0dBu.
Signal to mono channel via group to main output.

Measured at output of similar chain ≤ -90dB at 1KHz
≤ -80dB at 15KHz
Mono channel panned left or right - measure right or left ≤ -72dB at 1KHz
Left/Right on stereo channel ≤ -70dB at 1KHz
≤ -55dB at 10KHz
Cut off: Fader ≤ -90dB at 1KHz
≤ -80dB at 15KHz
Level pot ≤ -65dB
Routing switch ≤ -80dB
Cuts ≤ -90dB at 1KHz
≤ -80dB at 15KHz

Multitrack

Noise 1 channel to 1 track output < -85dBu (22-22Khz) -75dBq (CCIR)
Crosstalk (adjacent tracks): ≤ -80dB at 1KHz ≤ -70dB at 10KHz
THD: + 6dBu 40Hz-5KHz ≤ 0.02% (-74dB)
+ 20dBu 40Hz-5KHz ≤ 0.08% (-62dB)
Max. Output Levels: +24dBu

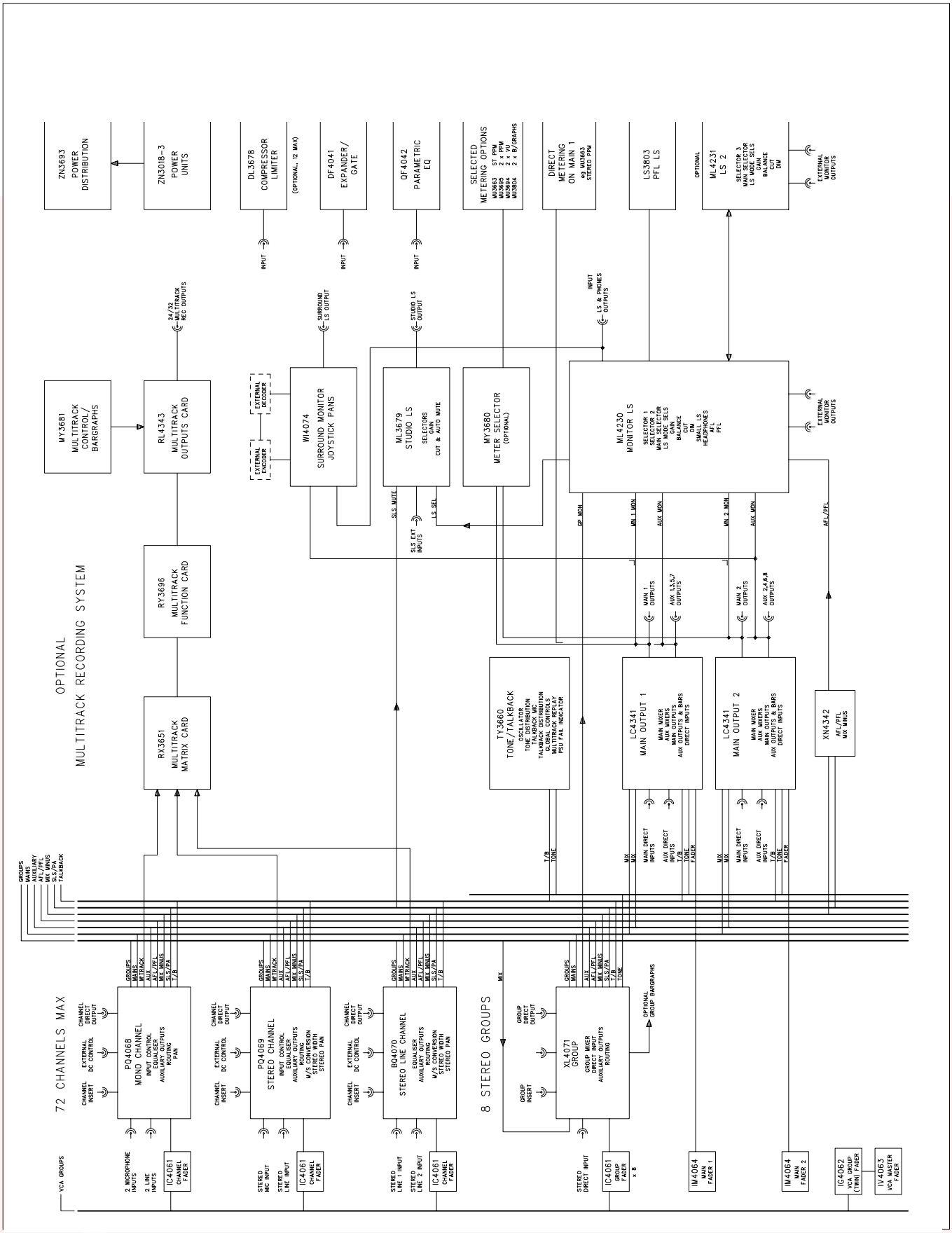
CONNECTIONS

All connections are Varicon 56-way and 38-way, except L.S. Mon is duplicated on XLR 3M connectors. Audio connections are all balanced.

Interface	Level	Impedance	Recommended min load
Microphone I/Ps VP38 - 1 per 4chs	-78/+18dBu	1.2KΩ	-
Line I/Ps VP56 - 1 per 12chs (plus VP38s St Lne)	-24/+18dBu	10KΩ	-
Insert Go VP56 - 1 per 12 chs (VP56)	0dBu	<40Ω	600Ω
Insert Return VP56 - 1 per 12chs (VP56)	0dBu	20KΩ	-
Direct Outputs VP56/16 - 1 per 12chs (VP56)	0dBu (+10)	<40Ω	600Ω
External Cuts/VCA ctrl/ Fader on - VP56 1 per 12chs (8 Grps)	5V/0V operate	-	-
Group Directs I/Ps VP56	0dBu	20KΩ	-
Auxiliary Outputs VP56	0dBu	<40Ω	600Ω
Main Outputs/Mn Dir I/Ps/ Monitor VP 56 & XLR 3M	0dBu	20/20KΩ	600Ω
Monitor LS I/Ps VP56	0dBu	20KΩ	-
Optional additional Monitor I/Ps VP56	0dBu	20KΩ	-
Main D.C Interface (Cuts/ dims/tone/tb etc) VP56	5V/0V operate	-	-
Optional multitrack outputs VP38	0dBu	<40Ω	600Ω
Optional Compressor/ Limiter conns VP56	0dBu	20/20KΩ	600Ω

* NOTE - Recommended minimum loads of 600Ω can be 300Ω with reduced output levels (see specification).

BLOCK SCHEMATIC



Notes

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