M3

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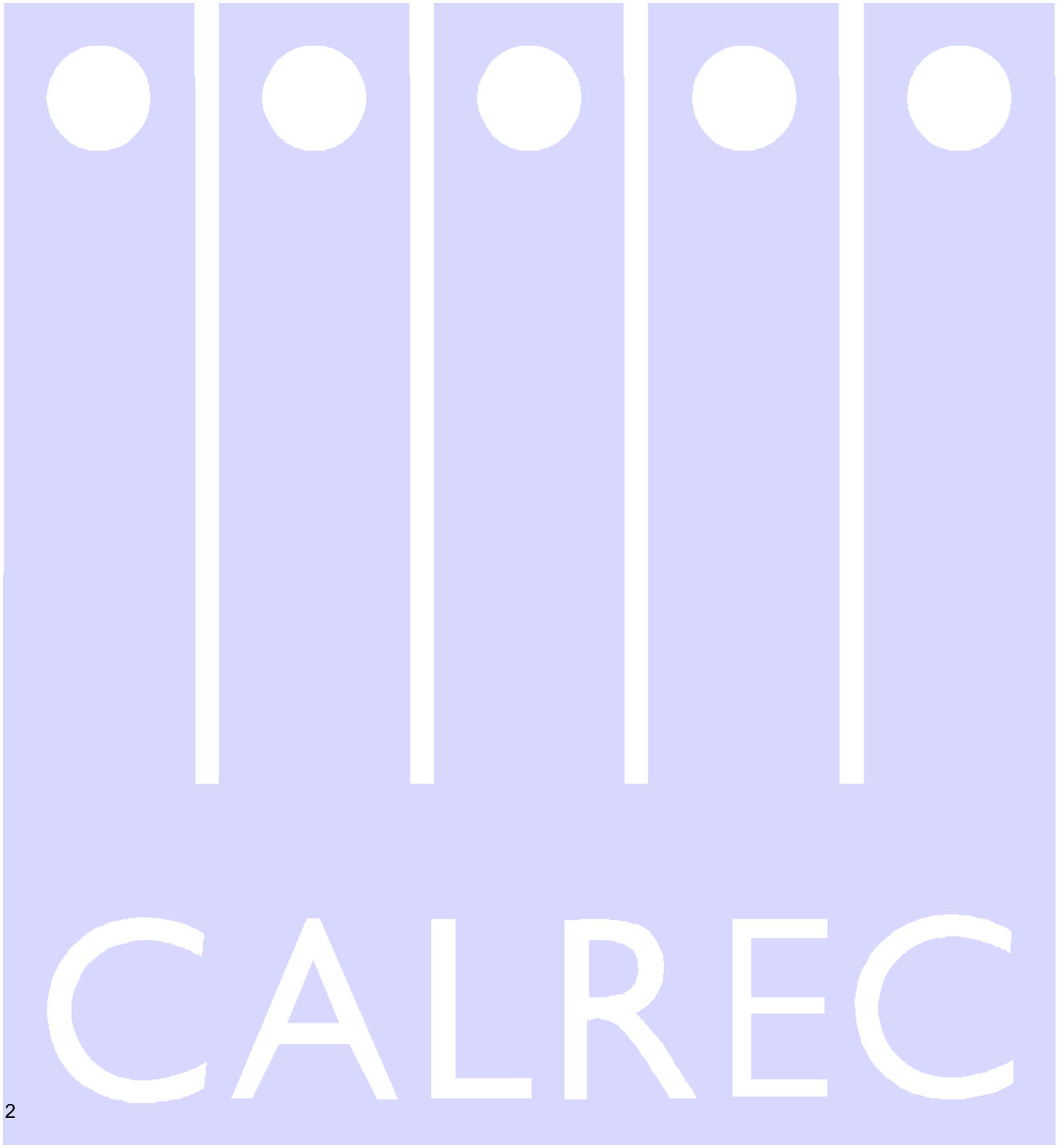
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INTRODUCTION

The Calrec M3 is a high quality, mixing console which provides superior audio and operational performance in a choice of compact packages. It's ease of use makes the M3 ideal for novice operators as well as those who can make full use of the wealth of facilities provided. As with all Calrec products, the M3 has been designed for long life in real world environments, and offers high levels of reliability and excellent return on investment.

By combining sophisticated circuit designs with the latest construction techniques, the M3 provides comprehensive features which meet the increased demands of broadcasters for small format mixers. The M3 fulfils all the requirements of a broadcast mixing console with mix-minus facilities on every channel, mono and stereo auxiliaries, routing to four groups and two main outputs with a comprehensive monitoring system. High input headroom combined with excellent noise figures means there is no sacrifice in audio performance which is so often the result on location, or in space restrictive installations.

The M3 enables Broadcasters to meet the operational needs required from small installations without compromise and with the highest level of confidence in performance and reliability.

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PRINCIPLE FEATURES

- Available in three frame sizes
  - Up to 10 Channels in the small frame
  - Up to 24 Channels in the medium frame
  - Up to 38 Channels in the large frame
- Optional Upstand Chassis
- Choice of 3 channel modules:
  - Mono with dual mic/line inputs
  - Stereo with stereo mic/line inputs
  - Stereo with line inputs
- 3-band equaliser and 2-band filters on all Channel modules
- Individual Channel bargraph level monitoring
- Mix Minus / Cleanfeed system to channel direct outputs
- Fader Cue/Start system
- Up to 4 Mono or Stereo Groups
- Mono Groups can be used as a L/R split
- 3 Mono and 1 Stereo Auxiliaries
- 2 Main Stereo Outputs with Dynamics
- Comprehensive Monitoring with external inputs
- Internal or External Power Supply options

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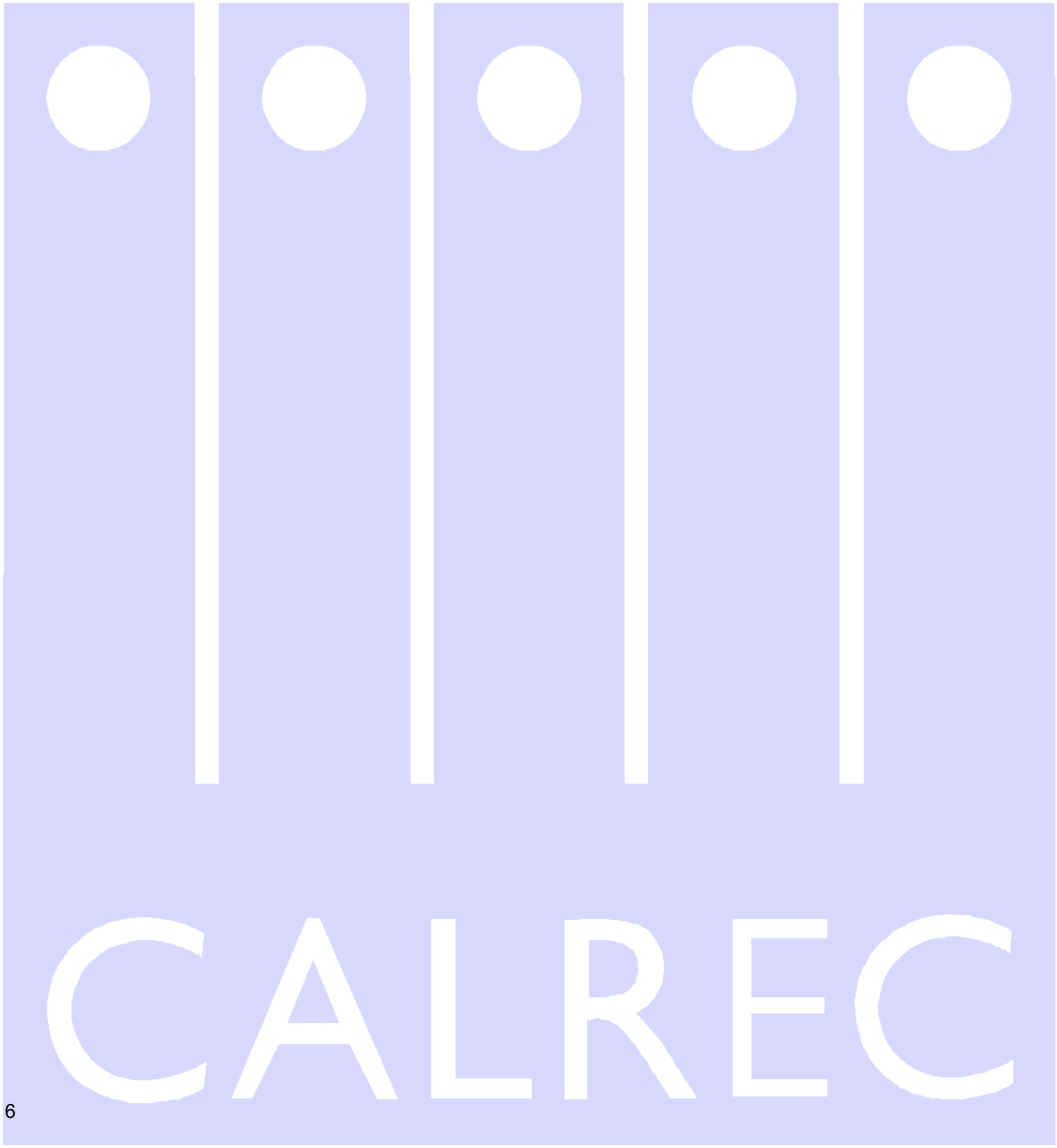
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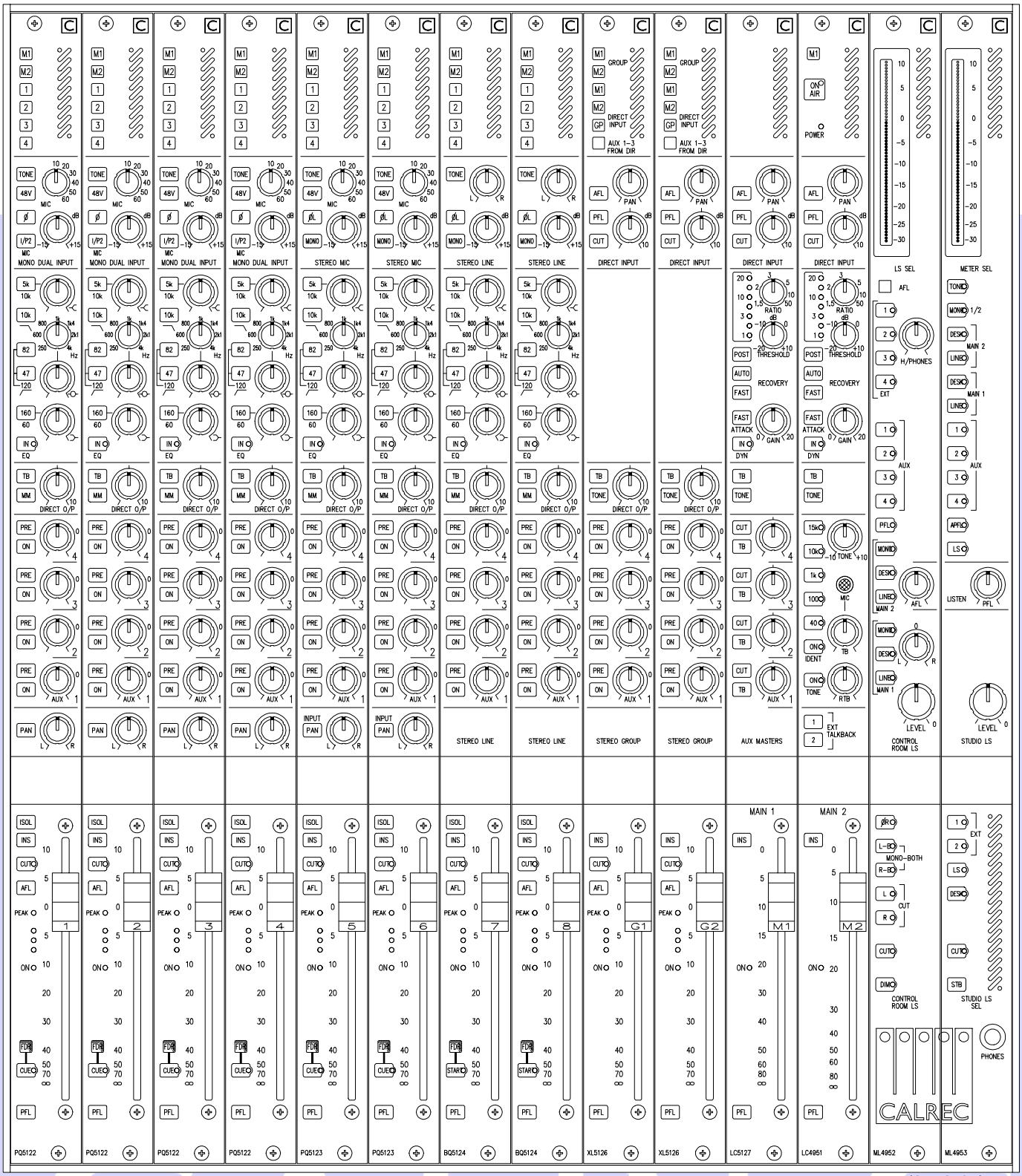
1.0 Layout & Profiles

SMALL CHASSIS TYPICAL LAYOUT



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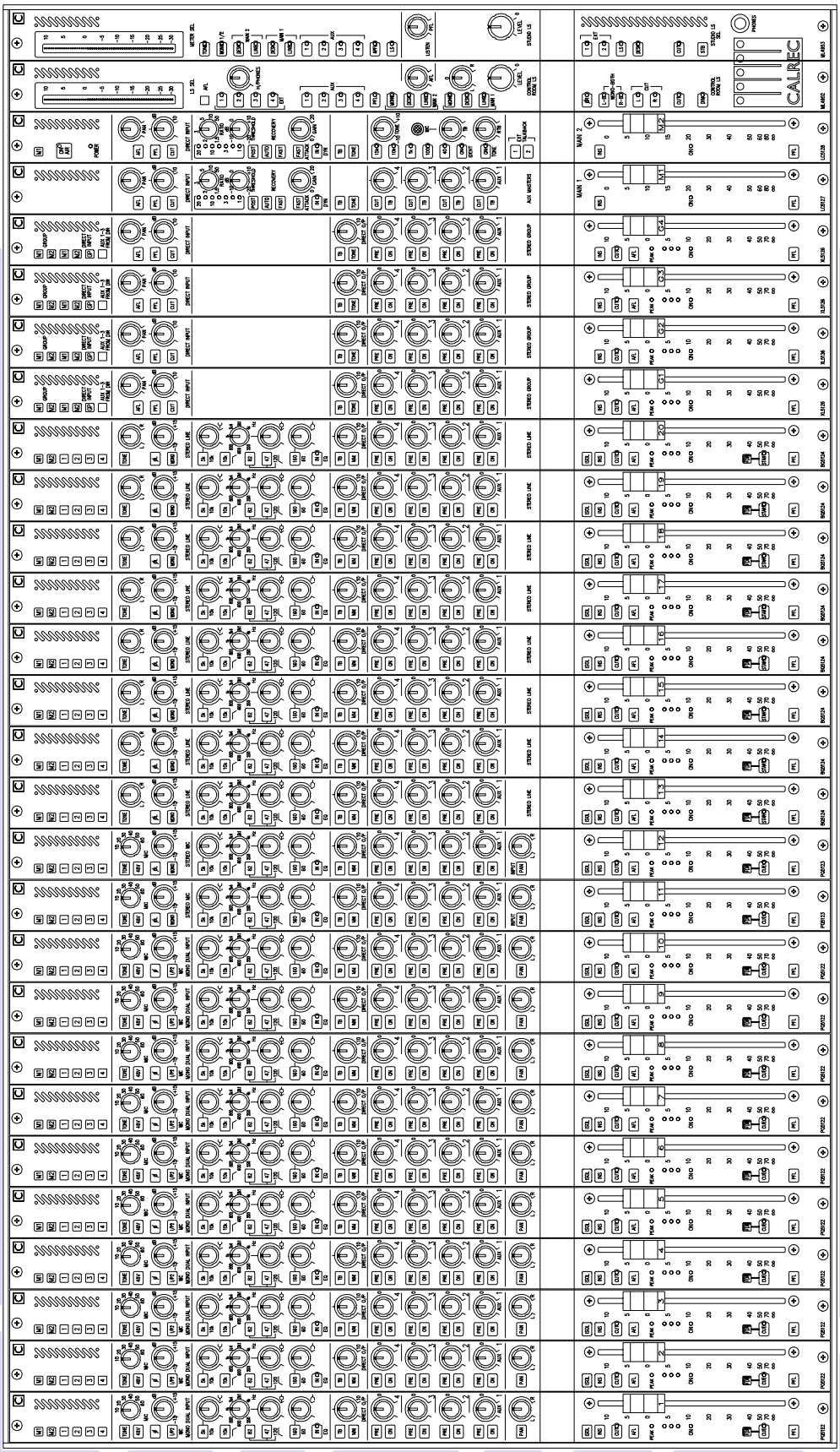
MEDIUM CHASSIS TYPICAL LAYOUT



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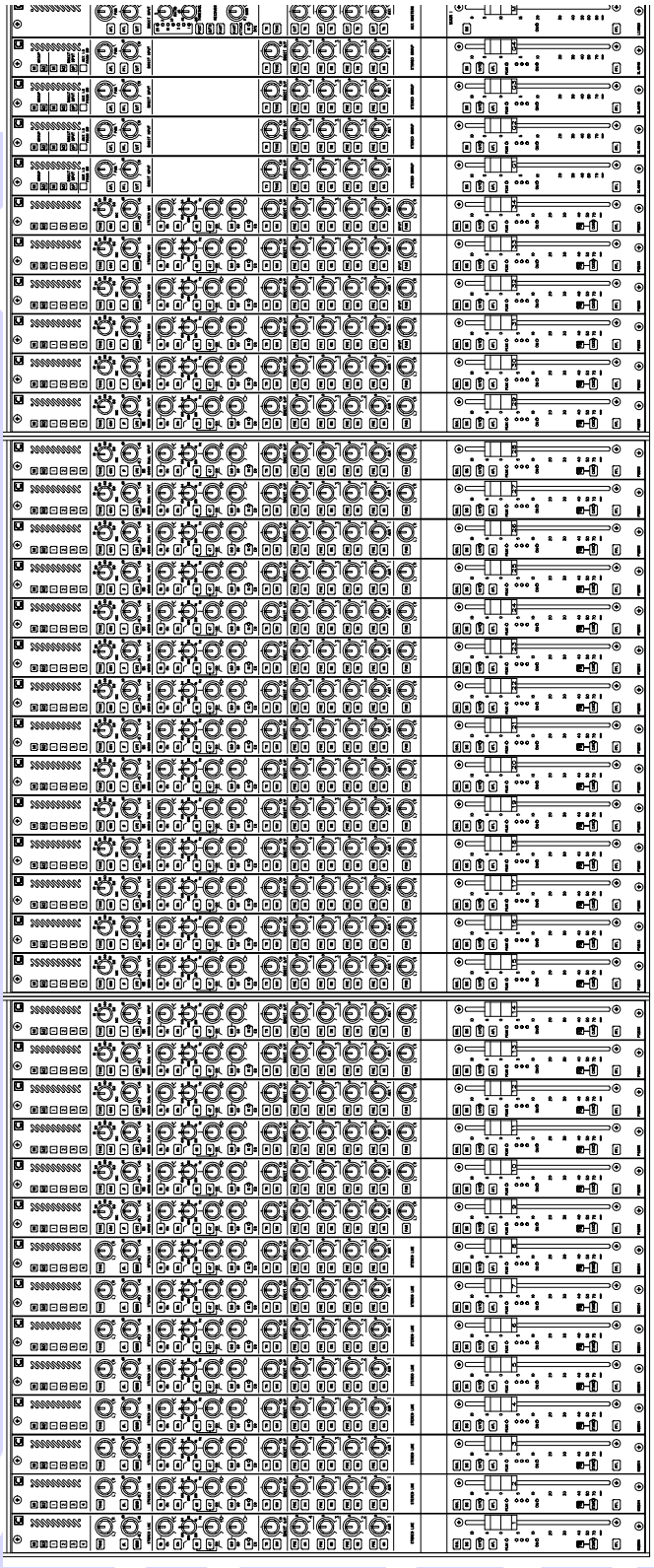
LARGE CHASSIS TYPICAL LAYOUT



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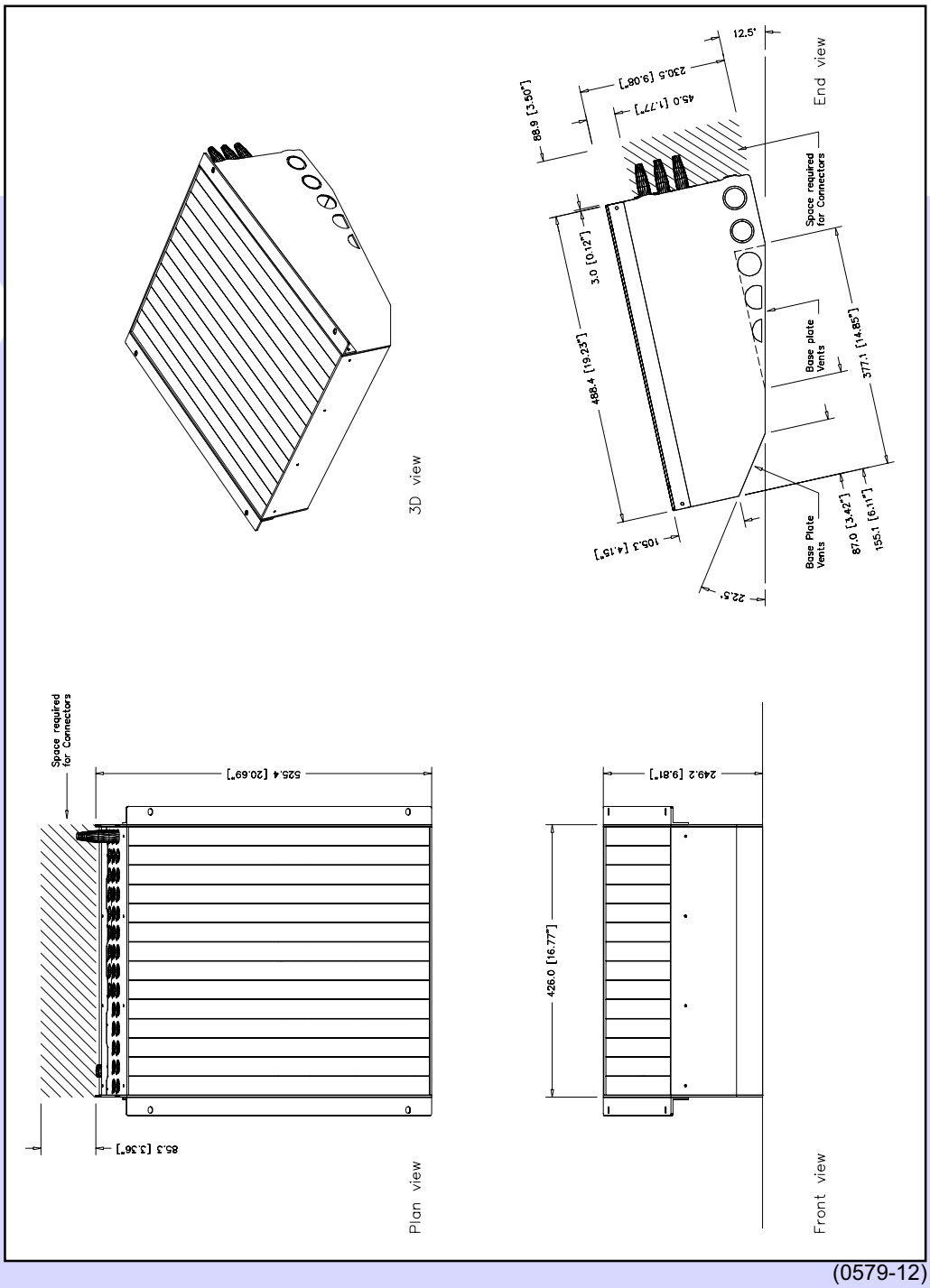
PLAN, ELEVATION AND GENERAL ARRANGEMENT DETAILS

SMALL CHASSIS



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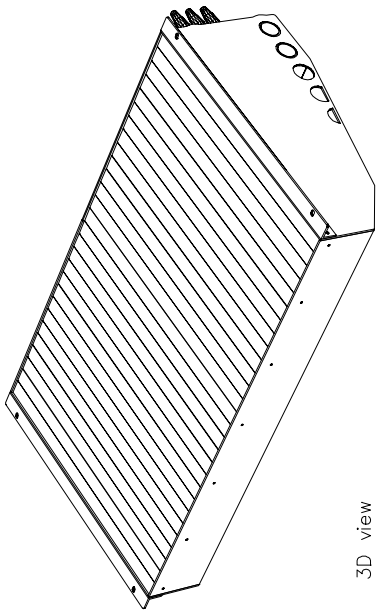
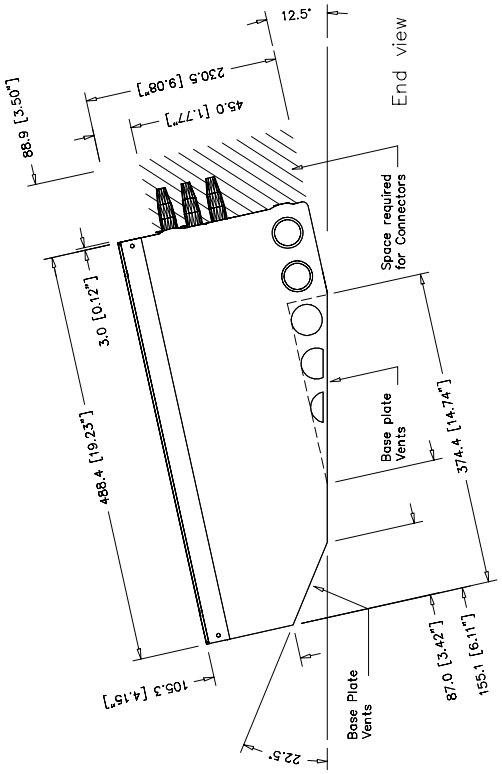
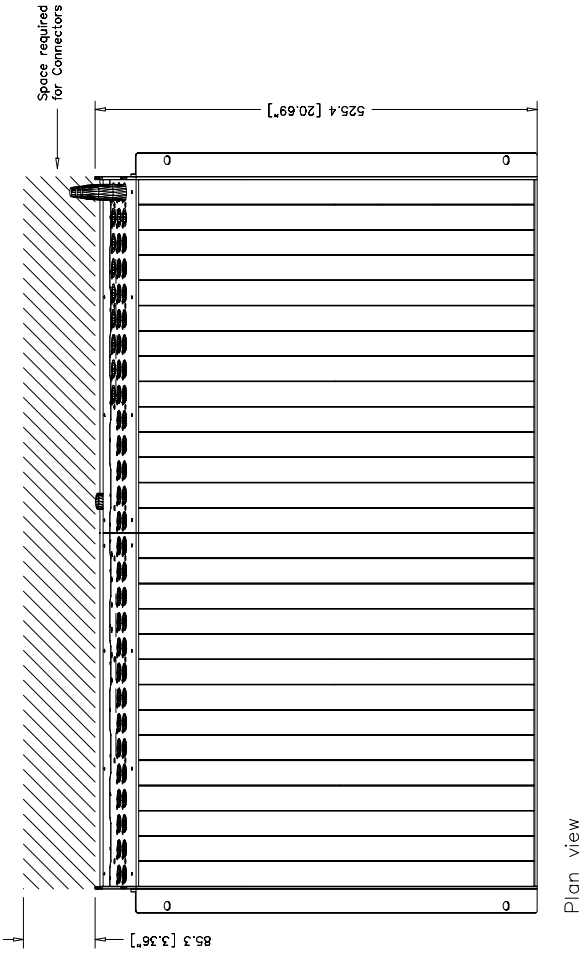
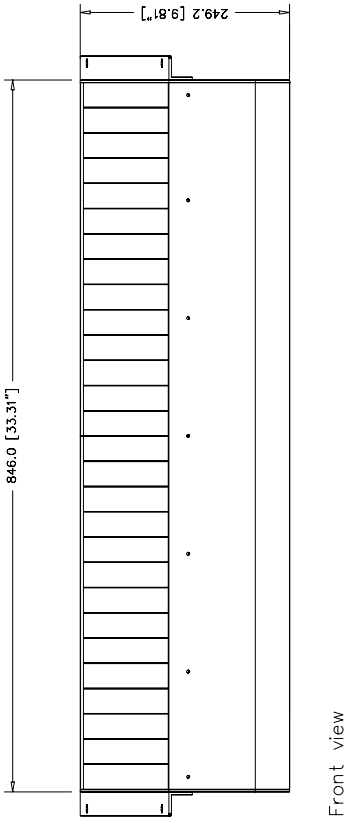
Supplied with an internal Power Supply Unit as standard, but an external version is available upon request.

PLAN, ELEVATION AND GENERAL ARRANGEMENT DETAILS
MEDIUM CHASSIS









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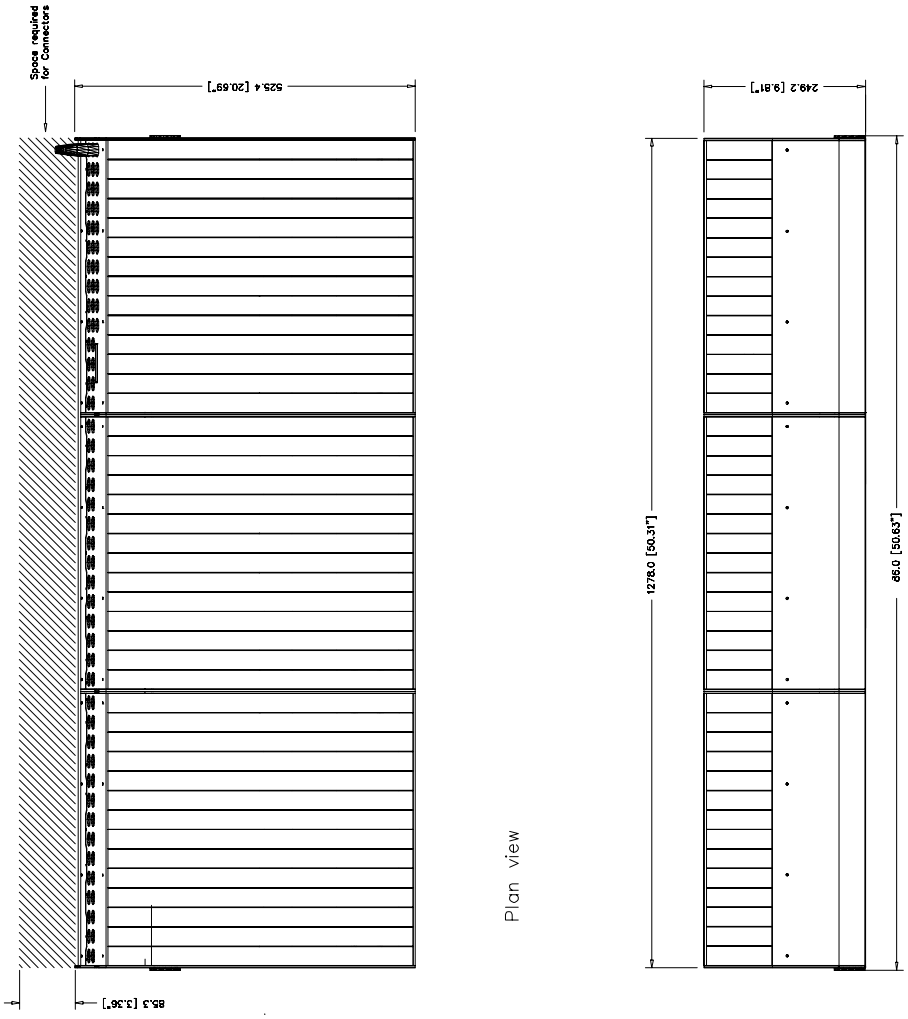
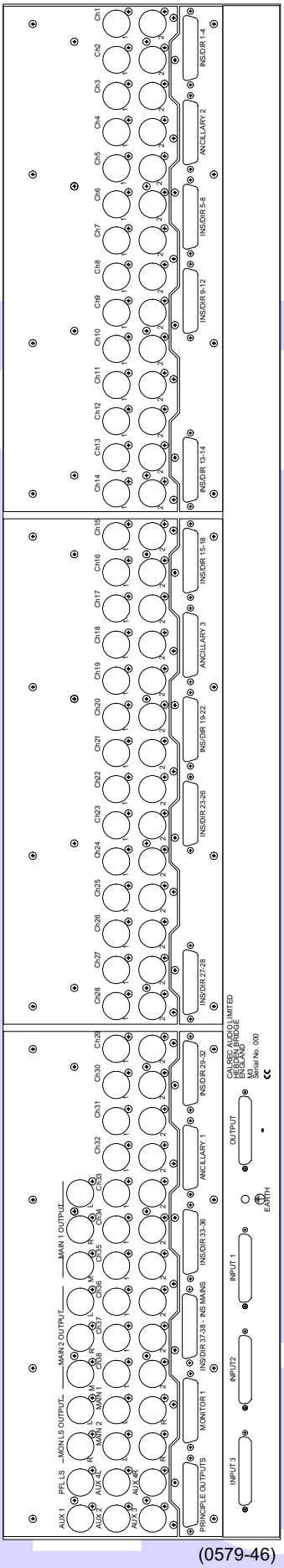
PLAN, ELEVATION AND GENERAL ARRANGEMENT DETAILS
LARGE CHASSIS



REAR CONNECTOR DETAILS

Large Chassis



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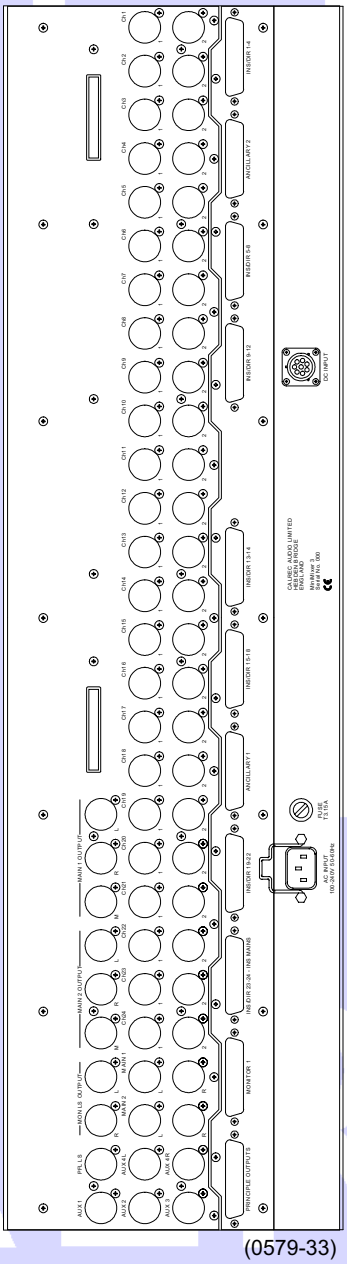
Medium Chassis



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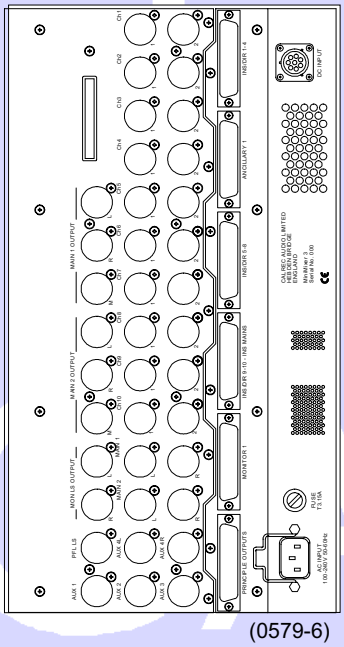
Small Chassis



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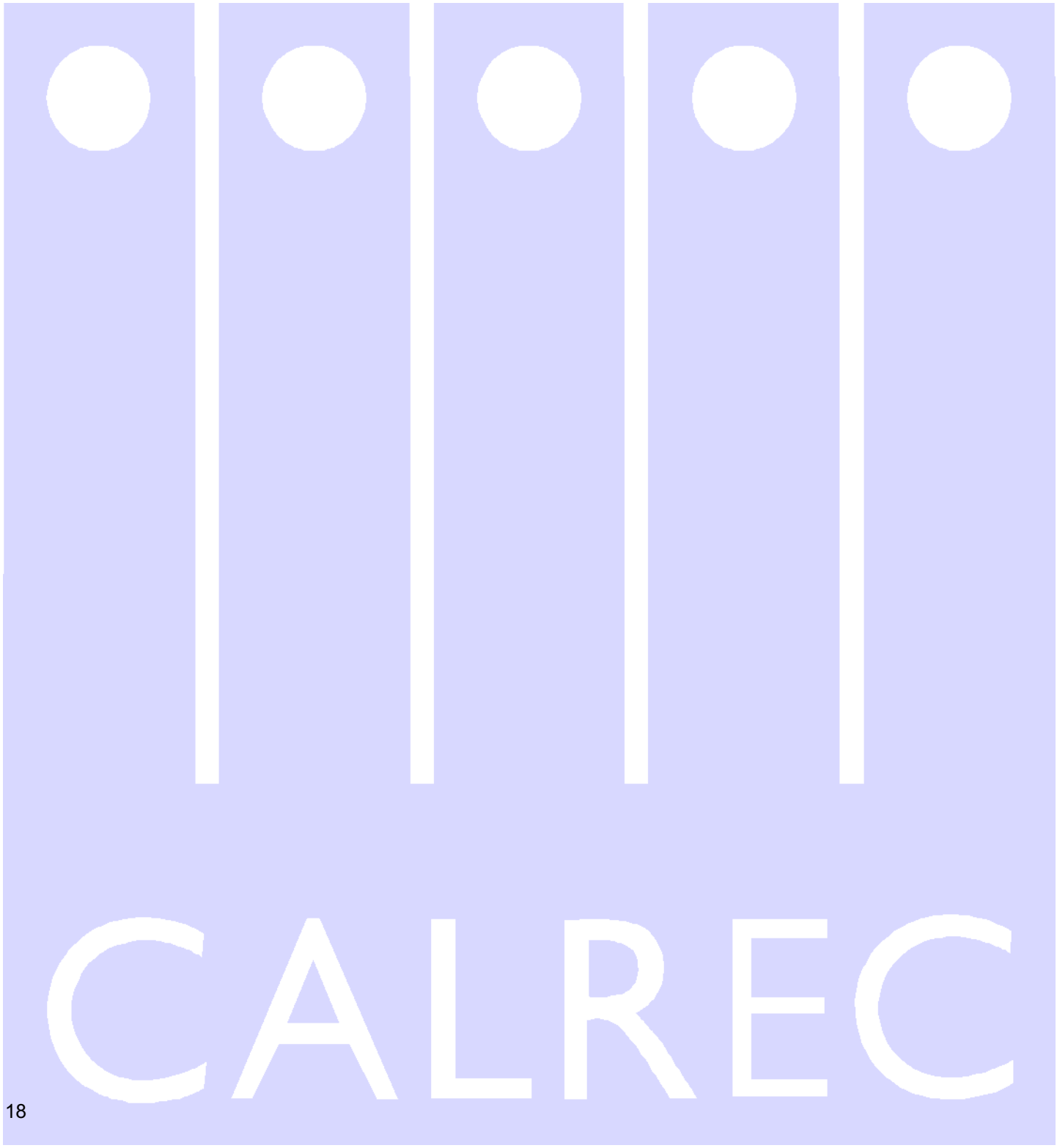
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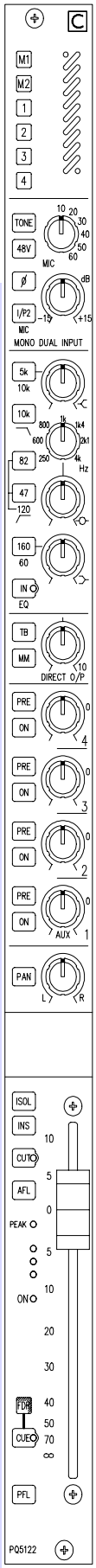
2.0 Modules & Panels Description

PQ5122 MONO MIC/LINE DUAL INPUT CHANNEL



Routing to : 2 main Stereo outputs up to 4 Mono or Stereo groups.

Tone : Red button switches alignment tone to the channel post mic gain control but pre the trim - Inhibited on air, but can be internally set to be permanently enabled.

48V : Microphone phantom power.
Ø : Phase reverse.
I/P2 : Selects input 2 (mic or line, internal option).
Gain : Rotary Switch +10 to +60dB in 10dB steps (Mic only).
Trim : ± 15dB (applies to both Mic and Line inputs).

HF Filter : 1 button : 10kHz.
LF Filter : 2 buttons : 47Hz, 82Hz, both 120Hz.

3-band equaliser :
HF shelf : ± 15dB at 10kHz or 5kHz (button pressed).
MID bell : ± 15dB frequency variable from 250Hz to 4kHz.
LF shelf : ± 15dB at 60Hz or 160Hz (button pressed).

EQ in/out button (includes filters) Red LED.

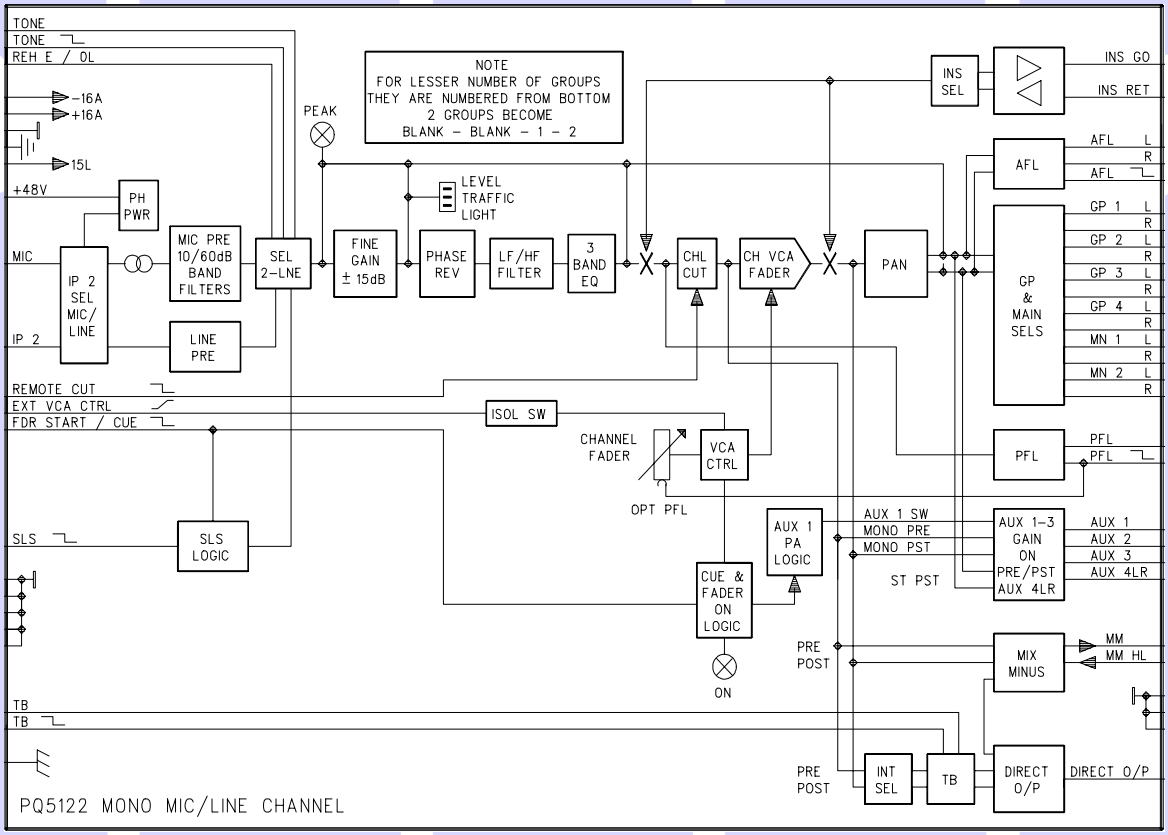
Direct output gain control 10dB in hand.
TB : Talkback button to direct output.
MM : Pushbutton selects Mix-Minus buss to either a channel direct output or as a channel contribution to a common Mix-Minus buss (both the direct o/p and the MM contribution can be internally selected pre or post fader).

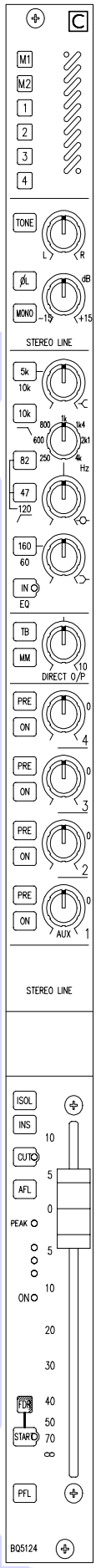
Aux 4 : Stereo output to aux 4 buss, selectable pre or post fader and on/off. Follows channel pan.
Aux 1-3 : Mono outputs to aux 1 to 3 busses with individual level, pre/post and on/off controls.

L/R : Left/right pan selected by PAN button.

Scribble strip

ISOL : Isolates external VCA control.
INS : Selects insert circuit (pre or post fader or bypassed are internal options).
CUT : Latching button (Yellow LED) cuts all pre and post signals except insert send (if selected pre) and PFL.
AFL : Latching button routes channel left/right signal in stereo to the AFL mix which is fed to the monitor loudspeakers, automatically over-riding the normal feed.
Peak : Red LED illuminates when the signal anywhere in the module is within 3dB of clipping.
3 LEDs : Displays pre EQ signal level relative to 0dBu.
ON : Green LED illuminates to show channel fader open.
FDR : Fires remote start/cue when fader is open.
CUE : Fires remote start/cue when pressed, Green LED.
PFL : Latching button routes pre-fader channel signal to the small PFL loudspeaker (with internal option to inject into the main monitor chain).
Fader : 10dB in hand.


TONE
TONE
REH E / OL
-16A
+16A
15L
+48V
PH PWR
MIC
IP 2
IP 2 SEL MIC/ LINE
MIC PRE 10/60dB BAND FILTERS
LINE PRE
SEL 2-LNE
PEAK
FINE GAIN ± 15dB
PHASE REV
LF/HF FILTER
3 BAND EQ
LEVEL TRAFFIC LIGHT
NOTE
FOR LESSER NUMBER OF GROUPS
THEY ARE NUMBERED FROM BOTTOM
2 GROUPS BECOME
BLANK - BLANK - 1 - 2
CHL CUT
CH VCA FADER
PAN
INS SEL
INS GO
INS RET
AFL
AFL L
R
AFL
GP 1 L
R
GP 2 L
R
GP 3 L
R
GP 4 L
R
MN 1 L
R
MN 2 L
R
GP & MAIN SELS
REMOTE CUT
EXT VCA CTRL
FDR START / CUE
ISOL SW
CHANNEL FADER
VCA CTRL
OPT PFL
PFL
PFL
SLS
SLS LOGIC
AUX 1 PA LOGIC
AUX 1 SW
MONO PRE
MONO PST
ST PST
AUX 1-3 GAIN ON PRE/PST AUX 4LR
AUX 1
AUX 2
AUX 3
AUX 4LR
CUE & FADER ON LOGIC
ON
PRE POST
MIX MINUS
MM
MM HL
TB
TB
PRE POST
INT SEL
TB
DIRECT O/P
DIRECT O/P
PQ5122 MONO MIC/LINE CHANNEL



BQ5124 STEREO LINE INPUT CHANNEL

Routing : 2 main stereo outputs and up to 4 mono or stereo groups

Tone : Red button switches alignment tone to the channel post mic gain control but pre the trim - Inhibited on air.
L/R : Input balance control. +3/0/off.
ØL : Phase reverse left leg.
Mono : Switches both inputs to both outputs.
Trim : ± 15dB.

HF Filter : 1 button : 10kHz
LF Filter : 2 buttons : 47Hz, 82Hz, both 120Hz

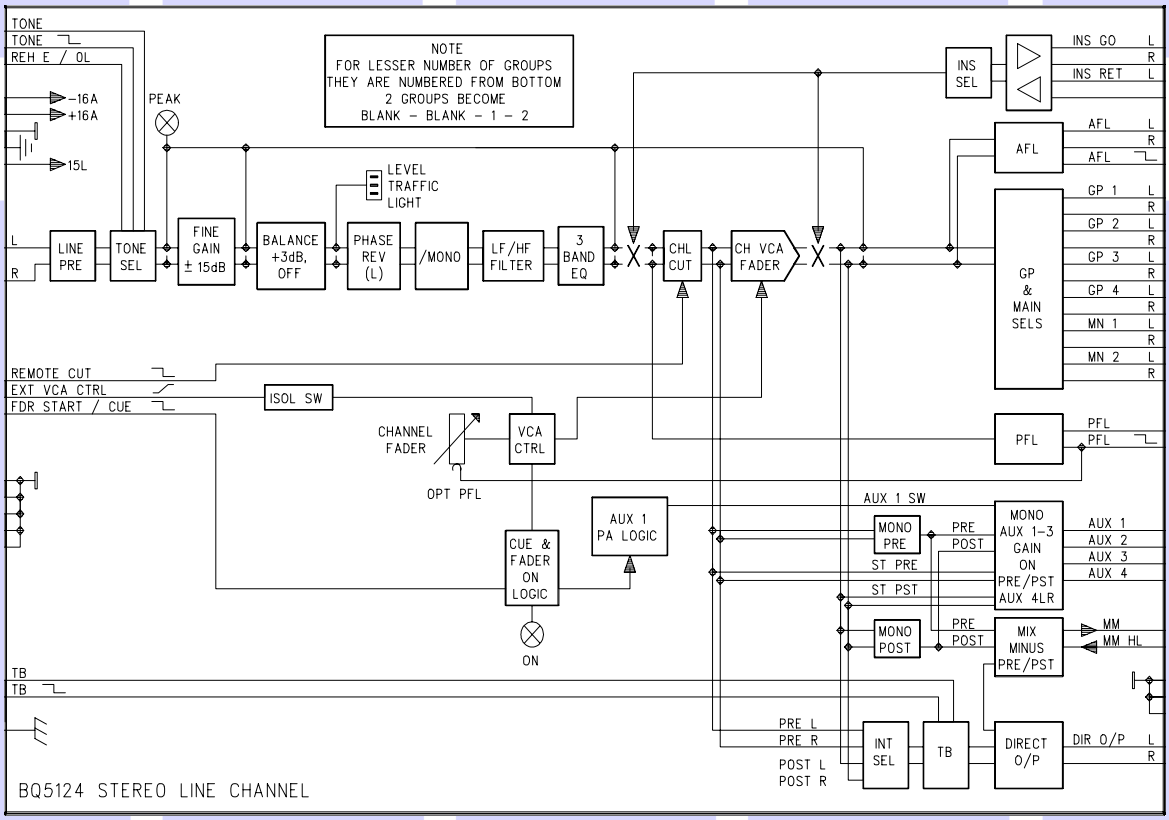
3 band equaliser :
HF shelf : ± 15dB at 10kHz or 5kHz (button pressed)
MID bell : ± 15dB frequency variable from 250Hz to 4kHz
LF shelf : ± 15dB at 60Hz or 160Hz (button pressed)
EQ in/out button (includes filters) red LED

Direct Output gain control, 10dB in hand (can be internally selected pre or post fader).
TB : Talkback button to direct output.
MM : Push button selects Mix-Minus buss to either the channel direct output or as a channel contribution to a common Mix-Minus buss (both the direct o/p and the MM contribution can be internally selected pre or post fader).

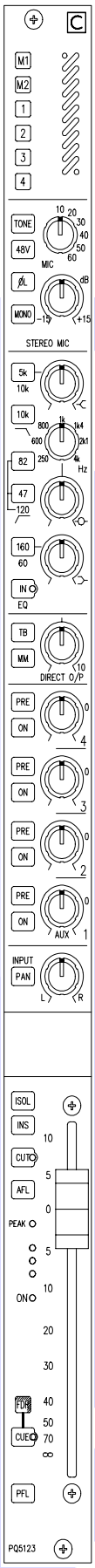
Aux 4 : Stereo output to aux 4 buss, selectable pre or post fader and on/off. Follows channel pan.
Aux 1-3 : Mono outputs to aux 1 to 3 busses with individual level, pre/post and on/off controls.

Scribble strip

ISOL : Isolates external VCA control.
INS : Selects insert circuit (pre or post fader or bypassed are internal options).
CUT : Latching button cuts all pre and post signals except: insert send (if internally selected pre) and PFL, yellow LED.
AFL : Latching button routes channel left/right signal in Stereo to the AFL mix which is fed to the monitor loudspeakers, automatically over-riding the normal feed.
Peak : Red LED illuminates when the signal anywhere in the module is within 3dB of clipping.
3 LEDs : Bar display shows pre EQ signal level relative to 0dBu.
ON : Green LED illuminates to show channel fader open.
FDR : Button fires remote start/cue when fader is open.
START : Button fires remote start/cue when pressed, green LED.
PFL : Latching button routes pre-fader channel signal to the small PFL loudspeaker (with internal option to inject into the main monitor chain).
Fader : With 10dB in hand.


TONE
TONE
REH E / OL
-16A
+16A
15L
PEAK
NOTE
FOR LESSER NUMBER OF GROUPS
THEY ARE NUMBERED FROM BOTTOM
2 GROUPS BECOME
BLANK - BLANK - 1 - 2
LEVEL
TRAFFIC
LIGHT
L
R
LINE PRE
TONE SEL
FINE GAIN ± 15dB
BALANCE +3dB, OFF
PHASE REV (L)
/MONO
LF/HF FILTER
3 BAND EQ
CHL CUT
CH VCA FADER
INS SEL
INS GO
INS RET
AFL
GP & MAIN SELS
GP 1
GP 2
GP 3
GP 4
MN 1
MN 2
PFL
REMOTE CUT
EXT VCA CTRL
FDR START / CUE
ISOL SW
CHANNEL FADER
VCA CTRL
OPT PFL
AUX 1 PA LOGIC
CUE & FADER ON LOGIC
ON
AUX 1 SW
MONO PRE
PRE
POST
ST PRE
ST PST
MONO AUX 1-3 GAIN ON PRE/PST AUX 4LR
AUX 1
AUX 2
AUX 3
AUX 4
MONO POST
MIX MINUS PRE/PST
MM
MM HL
TB
PRE L
PRE R
POST L
POST R
INT SEL
DIRECT O/P
DIR O/P
BQ5124 STEREO LINE CHANNEL

PQ5123 STEREO MIC INPUT CHANNEL



Routing to	:	2 main Stereo outputs up to 4 Mono or Stereo groups. Optional routing to mono groups - left to odds, right to evens.
Tone	:	Red button switches alignment tone to the channel post mic gain control but pre the trim - Inhibited on air.
48V	:	Microphone phantom power.
ØL	:	Phase reverse left leg.
Mono	:	Switches both inputs to both outputs.
Gain	:	Rotary Switch +10 to +60dB in 10dB steps.
Trim	:	± 15dB.
HF Filter	:	1 button : 10kHz.
LF Filter	:	2 buttons : 47Hz, 82Hz, both 120Hz.

3-band equaliser :

HF shelf	:	± 15dB at 10kHz or 5kHz (button pressed).
MID bell	:	± 15dB frequency variable from 250Hz to 4kHz.
LF shelf	:	± 15dB at 60Hz or 160Hz (button pressed).

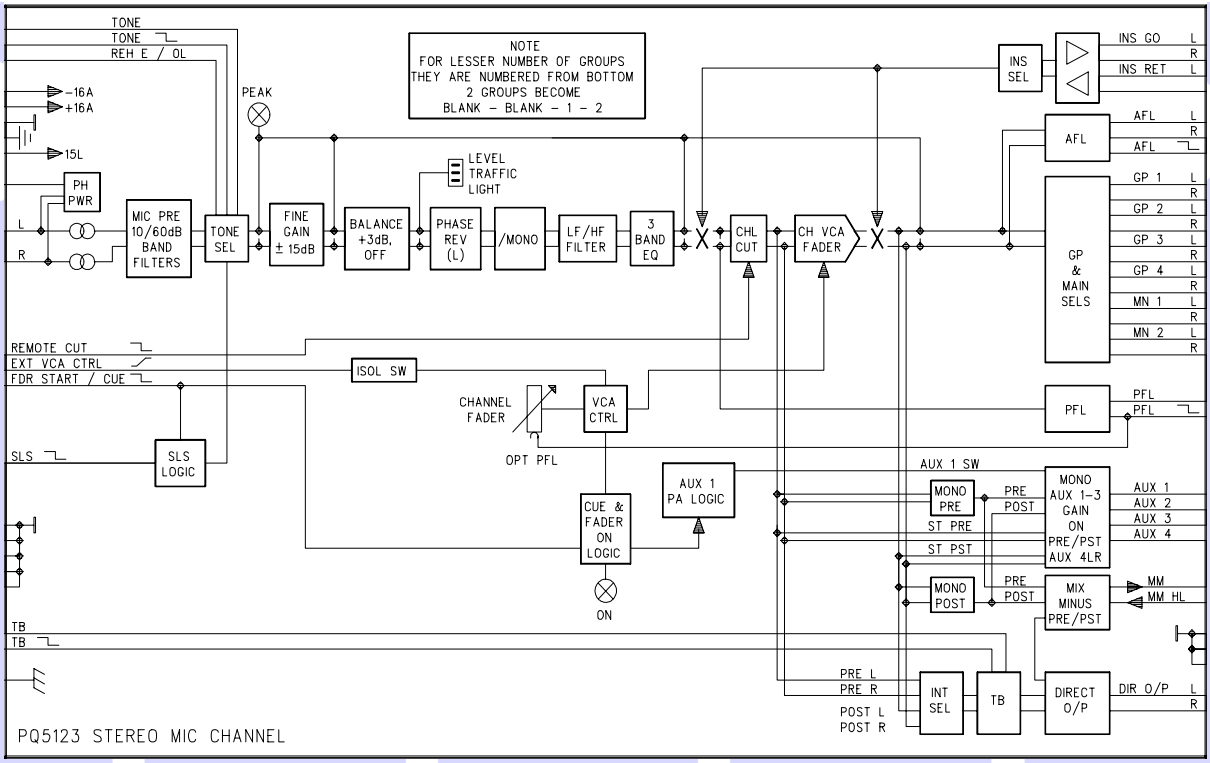
EQ in/out button(includes filters) Red LED.

Direct output gain control 10dB in hand.

TB	:	Talkback button to direct output.
MM	:	Pushbutton selects Mix-Minus buss to either a channel direct output or as a channel contribution to common mix-minus buss (both the direct output and the MM contribution can be internally selected to be pre or post fader)
Aux 4	:	Stereo output to aux 4 buss, selectable pre or post fader and on/off. Follows channel pan.
Aux 1-3	:	Mono outputs to aux 1 to 3 busses with individual level, pre/post and on/off controls.
L/R	:	Input signal left/right pan selected by INPUT PAN button.

Scribble strip

ISOL	:	Isolates external VCA control.
INS	:	Selects insert circuit (pre or post fader or bypassed are internal options).
CUT	:	Latching button (yellow LED) cuts all pre and post signals except insert send (if selected pre) and PFL.
AFL	:	Latching button routes channel left/right signal in stereo to the AFL mix which is fed to the monitor loudspeakers, automatically overriding the normal feed.
Peak	:	Red LED illuminates when the signal anywhere in the module is within 3dB of clipping.
3 LEDs	:	Displays pre EQ signal level relative to 0dBu.
ON	:	Green LED illuminates to show channel fader open.
FDR	:	Fires remote start/cue when fader is open.
CUE	:	Fires remote start/cue when pressed, Green LED.
PFL	:	Latching button routes pre-fader channel signal to the small PFL loudspeaker (with internal option to inject into the main monitor chain).
Fader	:	10dB in hand.


TONE
TONE
REH E / OL
-16A
+16A
15L
PEAK
NOTE
FOR LESSER NUMBER OF GROUPS
THEY ARE NUMBERED FROM BOTTOM
2 GROUPS BECOME
BLANK – BLANK – 1 – 2
INS SEL
INS GO L R
INS RET L
AFL L R
AFL
AFL
PH PWR
L
R
MIC PRE 10/60dB BAND FILTERS
TONE SEL
FINE GAIN ± 15dB
BALANCE +3dB, OFF
LEVEL TRAFFIC LIGHT
PHASE REV (L)
/MONO
LF/HF FILTER
3 BAND EQ
CHL CUT
CH VCA FADER
GP 1 L R
GP 2 L R
GP 3 L R
GP 4 L R
GP & MAIN SELS
MN 1 L R
MN 2 L R
REMOTE CUT
EXT VCA CTRL
FDR START / CUE
ISOL SW
CHANNEL FADER
VCA CTRL
PFL
PFL
PFL
SLS
SLS LOGIC
OPT PFL
AUX 1 SW
AUX 1 PA LOGIC
MONO PRE
PRE POST
ST PRE
ST PST
MONO AUX 1–3 GAIN ON PRE/PST AUX 4LR
AUX 1
AUX 2
AUX 3
AUX 4
CUE & FADER ON LOGIC
ON
MONO POST
PRE POST
MIX MINUS PRE/PST
MM
MM HL
TB
TB
PRE L
PRE R
POST L
POST R
INT SEL
TB
DIRECT O/P
DIR O/P L R
PQ5123 STEREO MIC CHANNEL

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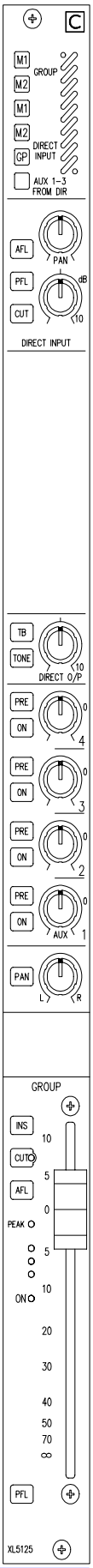
XL5125 MONO GROUP



Group routing to 2 main Stereo outputs.

Group direct input routing to 2 main Stereo outputs to group mixer.

Aux 1-3 from direct button switches aux 1-3 to group direct input.

Direct AFL	:	Latching button routes direct input after fader signal exclusively to monitor loudspeaker.
Direct PFL	:	Latching button routes direct input pre fader signal to small PFL loudspeaker.
Direct CUT	:	Latching button cuts direct input signal.
Direct PAN	:	Pans Mono direct input signal between left & right outputs.
Direct Gain	:	Sets direct input signal level, 10dB in hand.

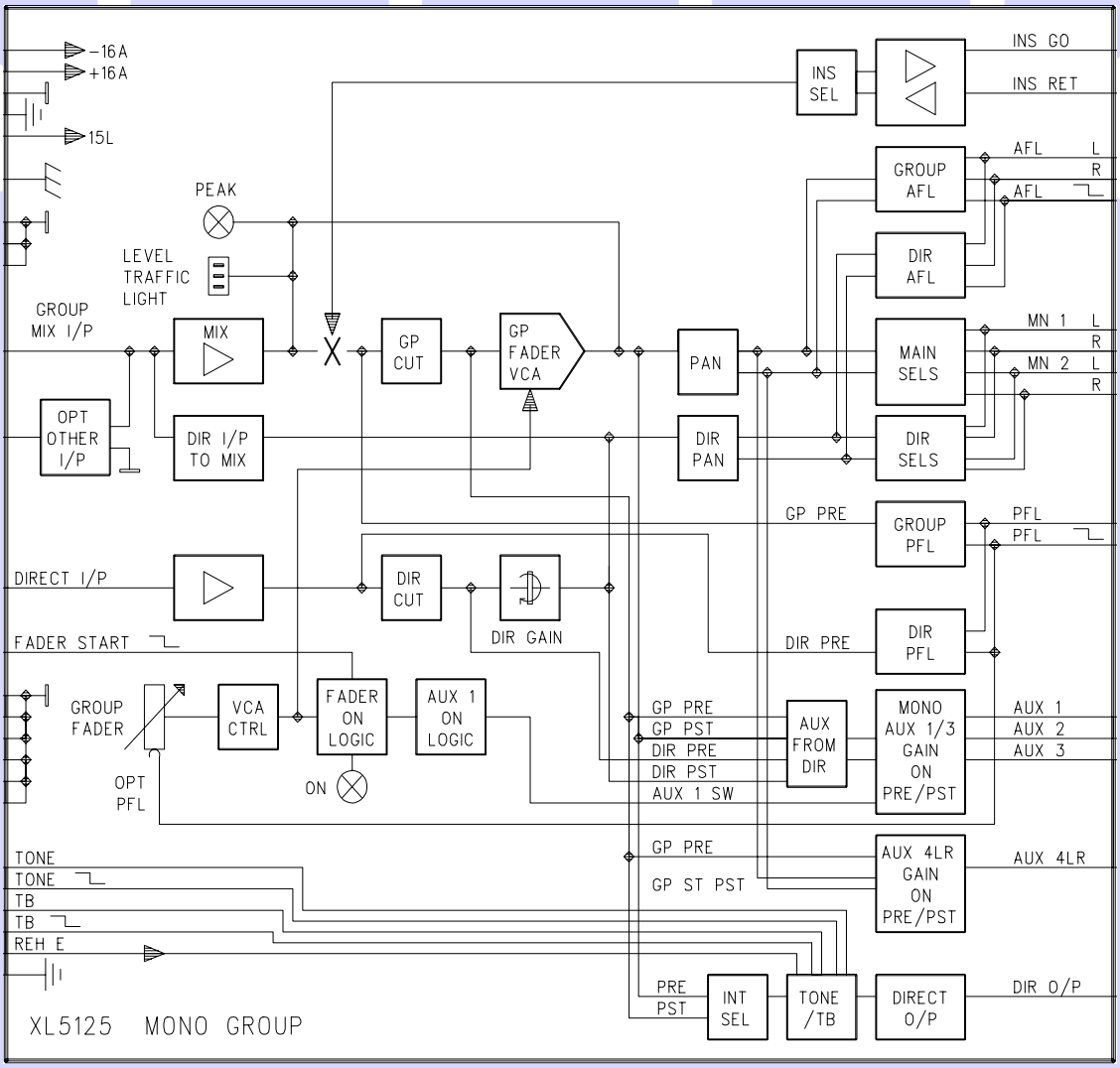
Direct output gain control 10dB in hand (direct output can be internally selected pre or post fader)

TB	:	Talkback button to direct output
TONE	:	To direct output, inhibited ON AIR
Aux 4	:	Stereo output to aux 4 buss, selectable pre or post fader and on/off. Follows channel pan.
Aux 1-3	:	Mono outputs to aux 1 to 3 busses with individual level , pre/post and on/off controls.
L/R	:	Left/right pan selected by PAN button.

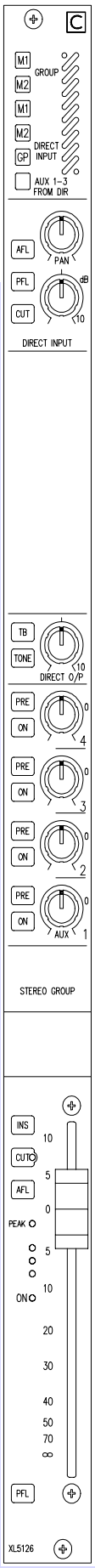
Scribble strip

INS	:	Selects insert circuit (pre fader).
CUT	:	Latching button (Yellow LED) cuts all pre and post signals except insert send and PFL.
AFL	:	Latching button routes channel left/right signal in Stereo to the AFL mix which is fed to the monitor loudspeakers, automatically overriding the normal feed.
Peak	:	Red LED illuminates when the signal anywhere in the module is within 3dB of clipping.
3 LEDs	:	Displays pre EQ signal level relative to 0dBu.
ON	:	Green LED illuminates to show channel fader open.
PFL	:	Latching button routes pre-fader channel signal to the small PFL loudspeaker (with internal option to inject into the main monitor chain).
Fader	:	10dB in hand

Mono groups can be internally selected to be fed with either a mono mix signal or a left/right split to pairs of group mono modules. Left to groups 1+3, right to groups 2+4.


-16A
+16A
15L
PEAK
LEVEL
TRAFFIC
LIGHT
GROUP
MIX I/P
MIX
OPT
OTHER
I/P
DIR I/P
TO MIX
GP
CUT
GP
FADER
VCA
PAN
DIR
PAN
INS
SEL
INS GO
INS RET
GROUP
AFL
AFL
L
R
AFL
DIR
AFL
MAIN
SELS
MN 1
L
R
MN 2
L
R
DIR
SELS
GP PRE
GROUP
PFL
PFL
PFL
DIRECT I/P
DIR
CUT
DIR GAIN
FADER START
DIR PRE
DIR
PFL
GROUP
FADER
OPT
PFL
VCA
CTRL
FADER
ON
LOGIC
ON
AUX 1
ON
LOGIC
GP PRE
GP PST
DIR PRE
DIR PST
AUX 1 SW
AUX
FROM
DIR
MONO
AUX 1/3
GAIN
ON
PRE/PST
AUX 1
AUX 2
AUX 3
TONE
TONE
TB
TB
REH E
GP PRE
GP ST PST
AUX 4LR
GAIN
ON
PRE/PST
AUX 4LR
PRE
PST
INT
SEL
TONE
/TB
DIRECT
O/P
DIR O/P
XL5125 MONO GROUP

XL5126 STEREO GROUP



Group routing to 2 main Stereo outputs.

Group direct input routing to 2 main Stereo outputs to group mixer.

Aux 1-3 from direct button switches aux 1-3 to group direct input.

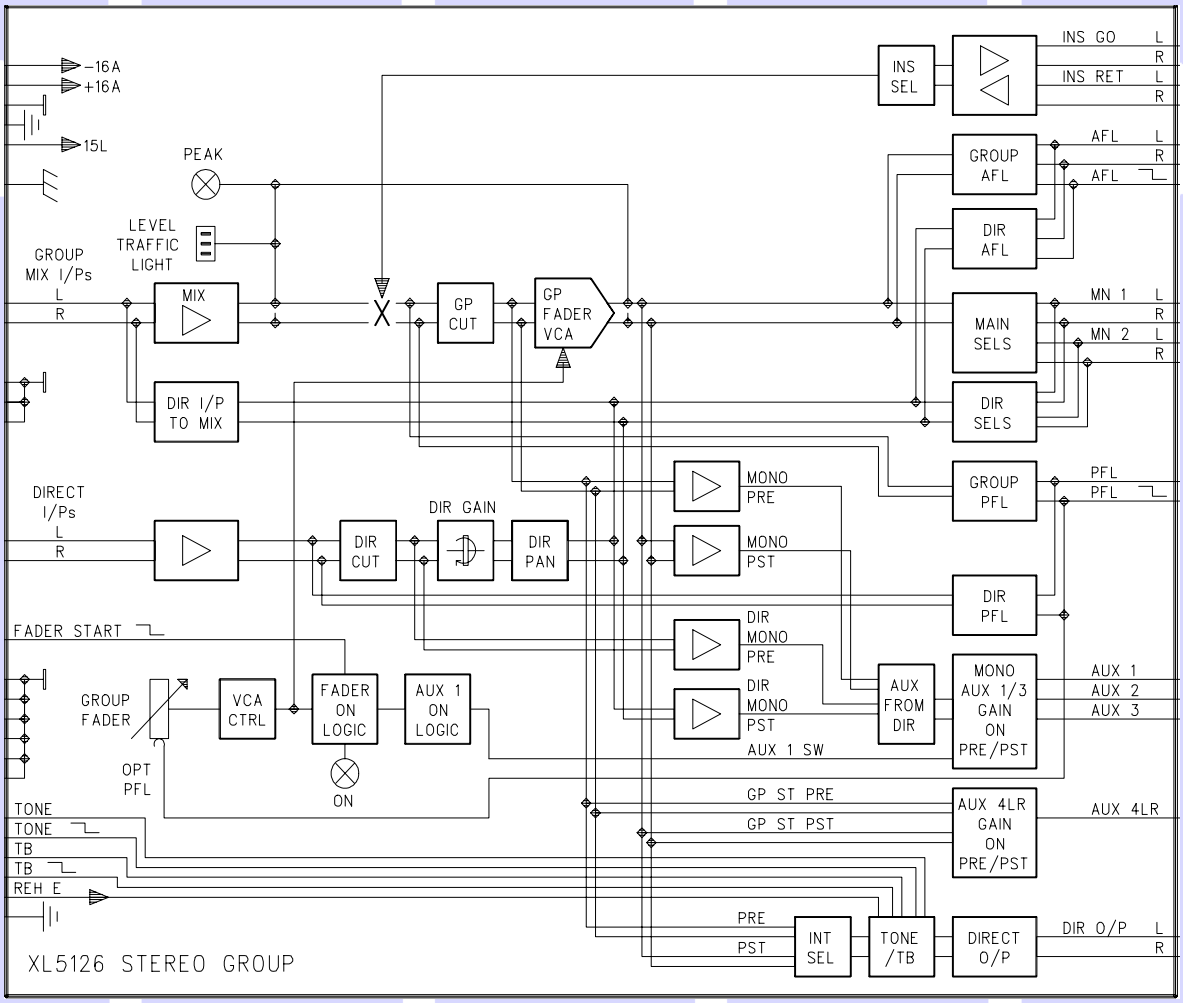
Direct AFL	:	Latching button routes direct input after fader signal exclusively to monitor loudspeaker.
Direct PFL	:	Latching button routes direct input pre fader signal to small PFL loudspeaker.
Direct CUT	:	Latching button cuts direct input signal.
Direct PAN	:	Pans Stereo direct input signal between left & right outputs.
Direct Gain	:	Sets direct input signal level, 10dB in hand.

Direct output gain control 10dB in hand (direct output can be internally selected pre or post fader).

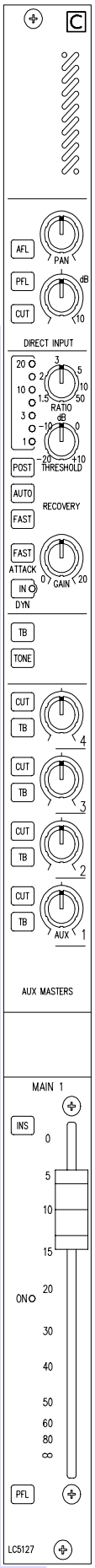
TB	:	Talkback button to direct output.
TONE	:	To direct output, inhibited ON AIR.
Aux 4	:	Stereo output to aux 4 buss, selectable pre or post fader and on/off. Follows channel pan.
Aux 1-3	:	Mono outputs to aux 1 to 3 busses with individual level, pre/post and on/off controls.

Scribble strip

INS	:	Selects insert circuit (pre fader).
CUT	:	Latching button (yellow LED) cuts all pre and post signals except insert send and PFL.
AFL	:	Latching button routes channel left/right signal in Stereo to the AFL mix which is fed to the monitor loudspeakers, automatically overriding the normal feed.
Peak	:	Red LED illuminates when the signal anywhere in the module is within 3dB of clipping.
3 LEDs	:	Displays pre EQ signal level relative to 0dBu.
ON	:	Green LED illuminates to show channel fader open.
PFL	:	Latching button routes pre-fader channel signal to the small PFL loudspeaker (with internal option to inject into the main monitor chain).
Fader	:	10dB in hand.


-16A
+16A
15L
PEAK
LEVEL
TRAFFIC
LIGHT
GROUP
MIX I/Ps
L
R
MIX
GP
CUT
GP
FADER
VCA
DIR I/P
TO MIX
DIRECT
I/Ps
L
R
DIR GAIN
DIR
CUT
DIR
PAN
FADER START
GROUP
FADER
VCA
CTRL
FADER
ON
LOGIC
AUX 1
ON
LOGIC
OPT
PFL
ON
TONE
TONE
TB
TB
REH E
INS
SEL
INS GO
INS RET
GROUP
AFL
AFL
DIR
AFL
MAIN
SELS
MN 1
MN 2
DIR
SELS
GROUP
PFL
PFL
DIR
PFL
MONO
PRE
MONO
PST
DIR
MONO
PRE
DIR
MONO
PST
AUX 1 SW
AUX
FROM
DIR
MONO
AUX 1/3
GAIN
ON
PRE/PST
AUX 1
AUX 2
AUX 3
GP ST PRE
GP ST PST
AUX 4LR
GAIN
ON
PRE/PST
AUX 4LR
PRE
PST
INT
SEL
TONE
/TB
DIRECT
O/P
DIR O/P
XL5126 STEREO GROUP

LC5127 MAIN OUTPUT 1 AND AUX MASTERS



Direct AFL : Latching button routes direct input after fader signal exclusively to monitor loudspeaker.
Direct PFL : Latching button routes direct input pre fader signal to small PFL loudspeaker.
Direct CUT : Latching button cuts direct input signal.
Direct PAN : Control pans Stereo direct input signal
Direct level : Control sets direct input signal level, 10dB in hand.

Main output Compressor, may be used as a Limiter (50:1 ratio) 20dB Gain reduction, Yellow LEDs.
Normally pre fader can be set POST fader (with button pressed).

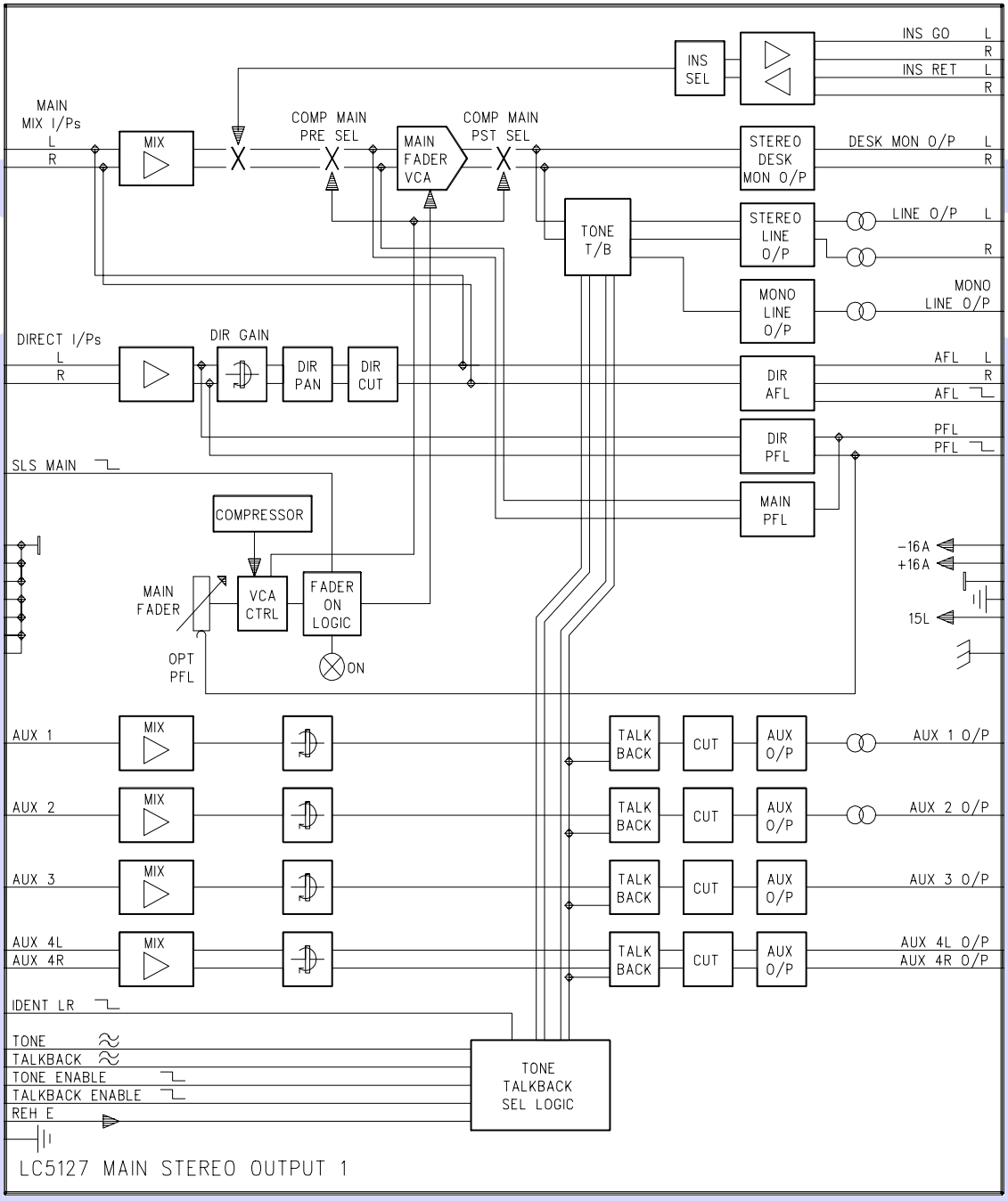
RECOVERY AUTO : Sets recovery to between 0.1 to 1.5 secs, programme dependant.
RECOVERY FAST : Changes recovery time from 1 secs to 75ms (overridden by AUTO button)
ATTACK : Normal 4ms @ 5:1 ratio or FAST 0.2ms @ 5:1 ratio
Dynamics IN button : Red LED.
RATIO : 1.5 to 50:1 variable control.
THRESHOLD : -20 to +10dBu, variable control.
GAIN make-up : 0 to +20dB variable control.

TB : Talkback momentary button, inoperative ON AIR.
TONE latching button : Inoperative ON AIR.

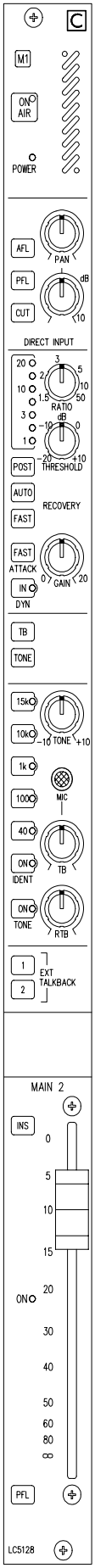
Aux 1-4 : Output level controls +10dB in hand.
: Output CUT buttons.
: TB Talkback buttons (momentary).

Scribble Strip

INS : Insert button - Selects main output insert (pre fader).
ON : Green LED Illuminates when fader is open.
PFL : Latching button routes main output pre fader signal to small PFL loudspeaker.
FADER : With 0dB in hand.


INS SEL
INS GO L R
INS RET L R
MAIN MIX I/Ps L R
MIX
COMP MAIN PRE SEL
MAIN FADER VCA
COMP MAIN PST SEL
STEREO DESK MON O/P
DESK MON O/P L R
TONE T/B
STEREO LINE O/P
LINE O/P L R
MONO LINE O/P
MONO LINE O/P
DIRECT I/Ps L R
DIR GAIN
DIR PAN
DIR CUT
DIR AFL
AFL L R AFL
DIR PFL
PFL PFL
MAIN PFL
SLS MAIN
COMPRESSOR
MAIN FADER
VCA CTRL
FADER ON LOGIC
ON
OPT PFL
-16A
+16A
15L
AUX 1
AUX 2
AUX 3
AUX 4L
AUX 4R
TALK BACK
CUT
AUX O/P
AUX 1 O/P
AUX 2 O/P
AUX 3 O/P
AUX 4L O/P
AUX 4R O/P
IDENT LR
TONE
TALKBACK
TONE ENABLE
TALKBACK ENABLE
REH E
TONE TALKBACK SEL LOGIC
LC5127 MAIN STEREO OUTPUT 1

LC5128 MAIN OUTPUT 2, TONE & TALKBACK



M1 : Routes to Main 1.
ON AIR : Pushbutton with red LED. Inhibits tone and talkback within the console and closes relay contact for interface to other areas.
POWER : Red LED flashes to indicate a failure of either the PSU or the fan (if fitted).

Direct AFL : Latching button routes direct input post fader, exclusively to monitor loudspeaker.
Direct PFL : Latching button routes direct input pre fader signal to small PFL loudspeaker.
Direct CUT : Latching button cuts direct input signal.
Direct PAN : Pans stereo direct input signal.
Direct Input : Sets signal level, 10dB in hand.

Main output Compressor, may be used as a Limiter (50:1 ratio) 20dB Gain reduction, Yellow LEDs. Normally pre fader can be set POST fader (with button pressed).
RECOVERY AUTO : Sets recovery to between 0.1 to 1.5 secs, programme dependant.
RECOVERY FAST : Changes recovery time from 1 secs to 75ms (overridden by AUTO)
ATTACK : Normal 4ms @ 5:1 ratio or FAST 0.2ms @ 5:1 ratio.
Dynamics IN button : Switches in dynamics. Red LED
RATIO : 1.5 to 50:1, variable control.
THRESHOLD : -20 to +10dBu, variable control.
GAIN : Make-up gain adjustable from 0 to +20dB, variable control.

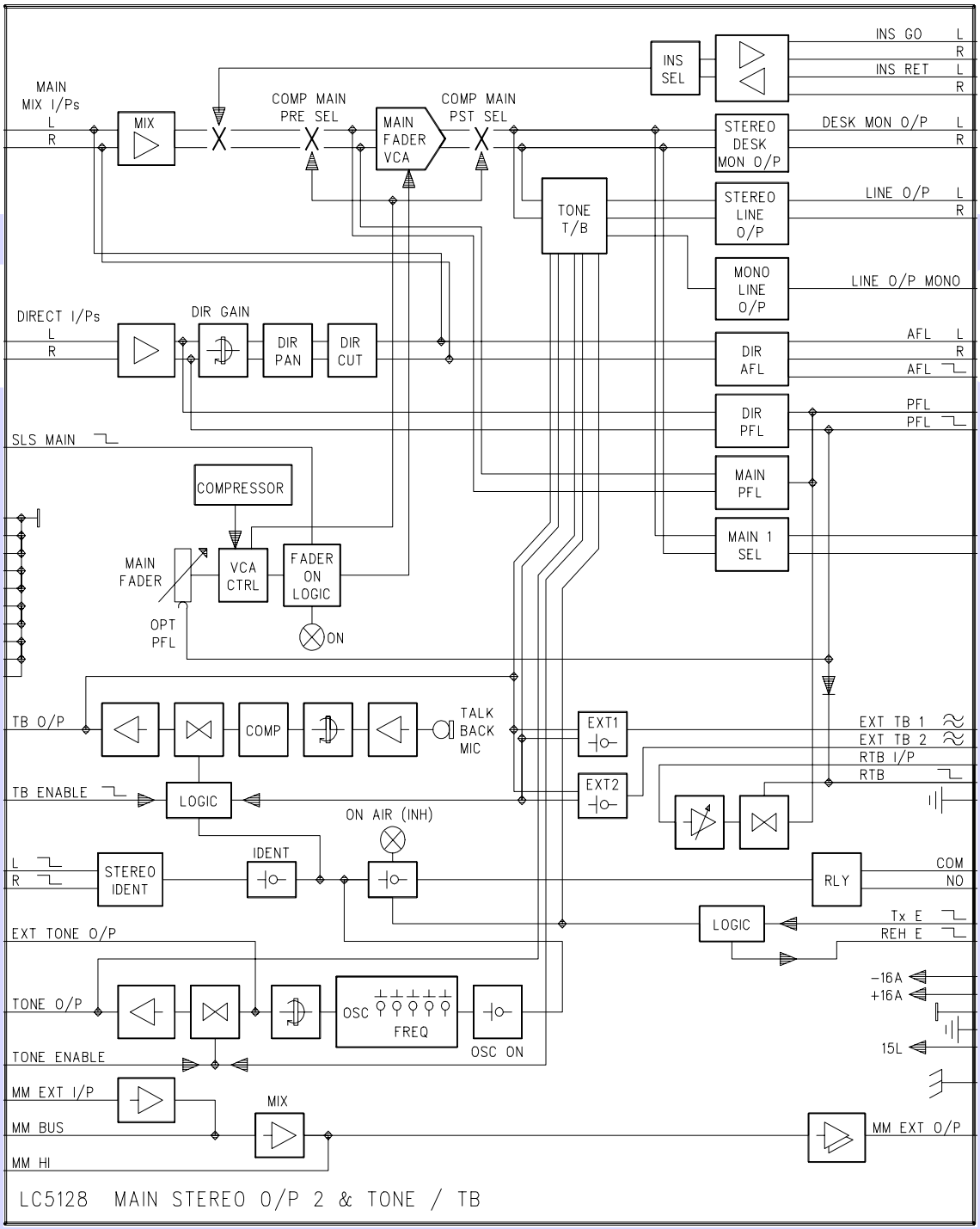
TB : Talkback momentary button, inoperative ON AIR.
TONE : Latching button, inoperative ON AIR.

OSCILLATOR FREQUENCY : 5 buttons 40, 100, 1k, 10k, 15kHz
IDENT button green LED. : Pulses tone to main outputs only, choice of 4 sequences which include EBU & BBC GLITS specification (internally selectable).
TONE button : Switches ON oscillator, red LED.
TONE control : ±10dB level adjustment on nominal 0dBu output.
MIC : Talkback microphone.
TB : Sets outgoing Talkback level.
RTB : Sets reverse (incoming) Talkback level to PFL loudspeaker.

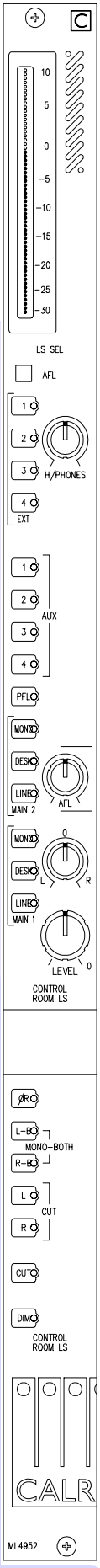
EXT 1 & 2 TALKBACK buttons to external destinations

Scribble Strip

INS : Insert button. Selects main output insert (pre fader).
ON : Green LED. Illuminates when fader is open.
PFL : Latching button routes main output pre fader signal to small PFL loudspeaker.
FADER : 0dB in hand


MAIN
MIX I/Ps
L
R
MIX
COMP MAIN
PRE SEL
MAIN
FADER
VCA
COMP MAIN
PST SEL
INS
SEL
INS GO
L
R
INS RET
L
R
STEREO
DESK
MON O/P
DESK MON O/P
L
R
TONE
T/B
STEREO
LINE
O/P
LINE O/P
L
R
MONO
LINE
O/P
LINE O/P MONO
DIRECT I/Ps
L
R
DIR GAIN
DIR
PAN
DIR
CUT
DIR
AFL
AFL
L
R
AFL
DIR
PFL
PFL
PFL
SLS MAIN
MAIN
PFL
MAIN 1
SEL
COMPRESSOR
MAIN
FADER
VCA
CTRL
FADER
ON
LOGIC
OPT
PFL
ON
TB O/P
COMP
TALK
BACK
MIC
EXT1
EXT2
EXT TB 1
EXT TB 2
RTB I/P
RTB
TB ENABLE
LOGIC
ON AIR (INH)
L
R
STEREO
IDENT
IDENT
RLY
COM
NO
LOGIC
Tx E
REH E
EXT TONE O/P
TONE O/P
OSC
FREQ
OSC ON
-16A
+16A
15L
TONE ENABLE
MM EXT I/P
MIX
MM BUS
MM HI
MM EXT O/P
LC5128 MAIN STEREO O/P 2 & TONE / TB

CALREC



ML4952 MONITOR 1

LEVEL BARGRAPH : Displays level of left channel of meter select output (internally selectable for PPM/VU and 0dB reference level).

AFL : Red indicator - illuminated when any AFL selection is made.

CONTROL ROOM MONITOR SELECTOR - 15 way selector with the following sources:

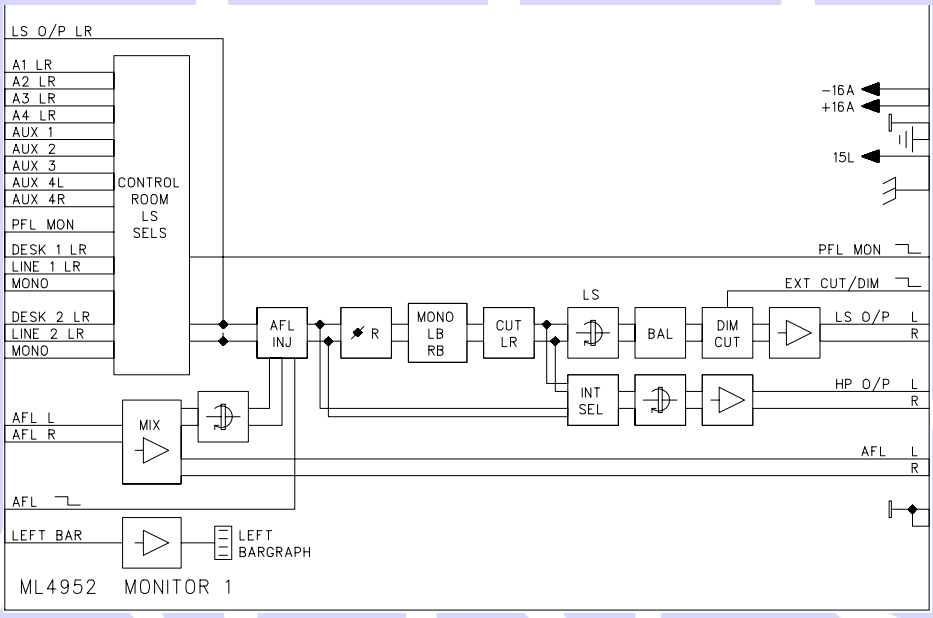
- 4 external Stereo inputs 1 to 4, Green LEDs (Labelled A1-A4 on schematic).
- Aux 1 to Aux 4, Green LEDs.
- PFL, Yellow LED.
- MAIN 2; Stereo line, Stereo desk and Mono outputs, Yellow LEDs.
- MAIN 1; Stereo line, Stereo desk and Mono outputs, Yellow LEDs.

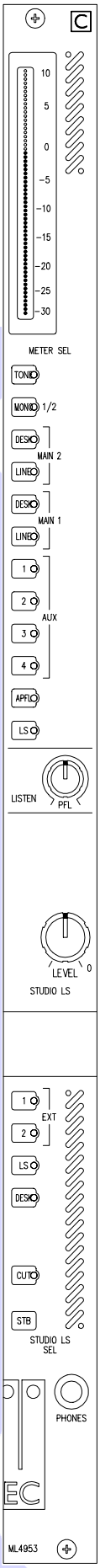
HEADPHONE level control, monitors output of control room selector (internally selectable for output to be taken either pre or post the LB, RB mono and phase reverse switching).

AFL : After Fade Listen trim control to monitor loudspeakers.

CONTROL ROOM MONITOR LOUDSPEAKER CONTROLS:

L - R : Balance control.
LEVEL control : Sets loudspeaker level.
ØR : Phase reverses right leg in monitor chain, Red LED.
L-B : Left to both outputs, Red LED (pressing both L-B and R-B gives a Mono mix to both outputs).
R-B : Right to both outputs, Red LED.
CUT L : Cuts left loudspeaker, Red LED.
CUT R : Cuts right loudspeaker, Red LED.
CUT button : Cuts both loudspeakers, Red LED.
DIM button : Reduces loudspeaker level by 14dB, Red LED.





ML4953 MONITOR 2

LEVEL BARGRAPH : Displays level of right channel of meter select output (internally selectable for PPM/VU and 0dB reference level).

METER SELECTOR - 12 way selector with the following sources:

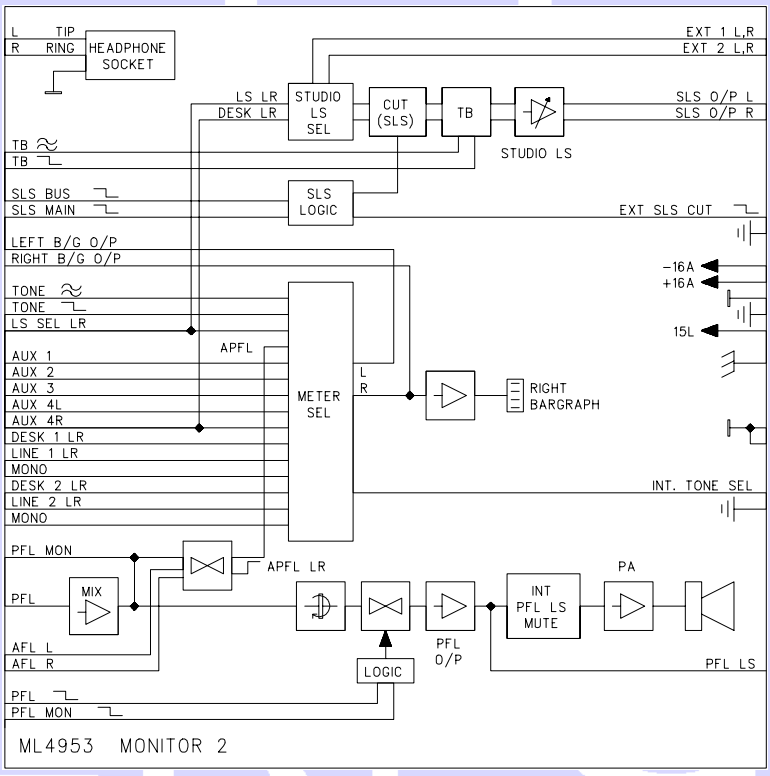
TONE	:	Sends line up tone to meters, Red LED.
LS	:	Follows control room monitor selector, Green LED.
AUX 1	:	Mono aux 1 to left meter, Green LED.
AUX 2	:	Mono aux 2 to left meter, Green LED.
AUX 3	:	Mono aux 3 to left meter, Green LED.
AUX 4	:	Stereo aux 4 to both meters, Green LED.
APFL	:	AFL plus PFL, Green LED.
MONO 1/2	:	Main outputs 1 & 2 to meters, Green LED (main 1 to left meter, main 2 to right meter).
MAIN 1 DESK	:	Green LED.
MAIN 1 LINE	:	Green LED.
MAIN 2 DESK	:	Green LED.
MAIN 2 LINE	:	Green LED.

PFL	:	Pre Fade Listen level control to PFL loudspeaker.
STUDIO LS LEVEL	:	Sets studio loudspeaker level.

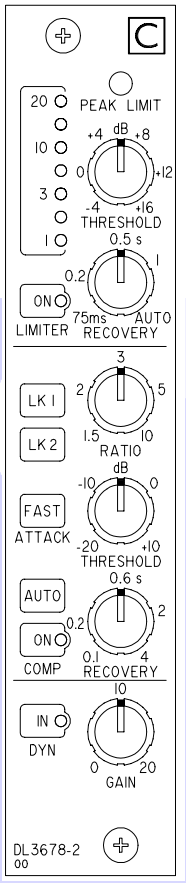
STUDIO LS MONITOR SELECTOR, 4 way selector with the following sources:

2 External sources	:	EXT 1 and EXT 2, Red LEDs.
LS	:	Follows control room monitor selector, Red LED.
DESK	:	Main 1 desk output, Red LED.
CUT button	:	Cuts studio loudpeaker, Yellow LED (may also be cut by the SLS logic system).
STB button	:	Studio Talkback - Momentary, selects desk Talkback to studio loudspeaker.

HEADPHONE socket for headphone monitoring.



DL3678-2 STEREO COMPRESSOR/LIMITER



Stereo Limiter:

Ratio	:	Fixed 100/1.
Threshold	:	-4/+16dBu variable.
Attack	:	Fixed 100 µs.
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.

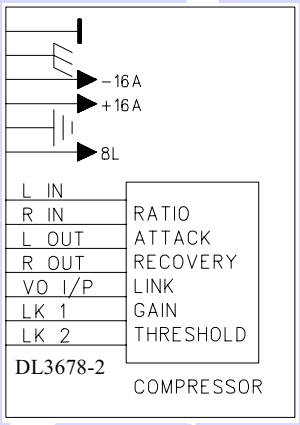
Stereo Compressor:

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:

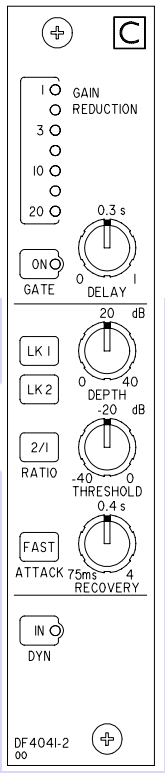
Bargraph	:	Up to 24dB gain reduction with enhanced resolution at lower reduction levels.
Links	:	Button 1 & 2 to external buss or pairs etc - links side chains together.
DYN-IN	:	Button with Red LED indication - when OUT gives total bypass condition except that bargraph operates as a preview at reduced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

DF4041-2 EXPANDER/GATE



Stereo Expander:

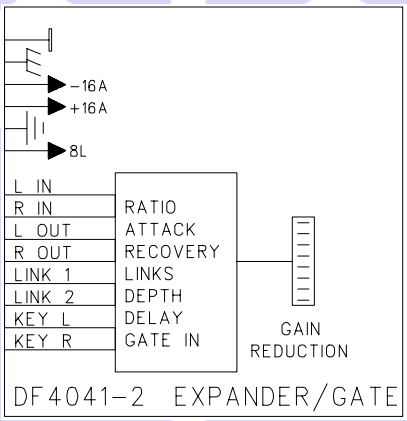
Ratio	:	Normal, varies with level 1.5/1 to 5/1 - Fixed 2/1 (button)
Threshold	:	0/-40dBu variable
Attack	:	Normal 4 m-sec. FAST (button) 50µs
Recovery	:	75ms to 4 sec variable
Depth	:	0/40dB variable (extent of expansion below threshold)
Bargraph	:	Up to 20dB gain reduction
Links	:	1 & 2 to external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

Stereo Noise Gate:

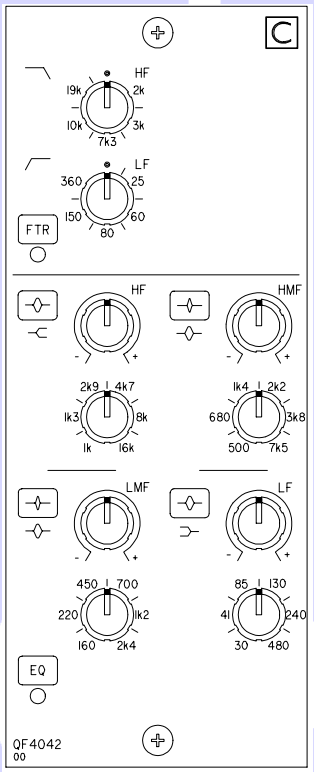
Gate	:	Button with LED indication. All expander controls apply except Ratio becomes infinite.
Gate Delay	:	0/1 sec variable - in addition to normal 6dB gate hysteresis

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

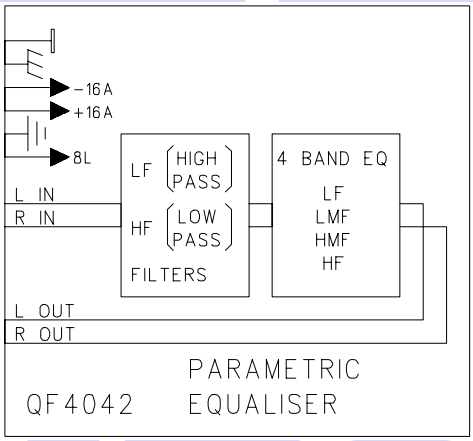
4 band parametric equaliser: ± 16dB max at selected frequencies

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

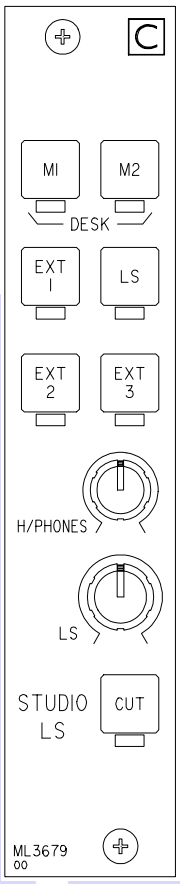
LF & HF bands can be shelf or bell (Q 1.0)

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

Separate Filters & EQ in buttons.



ML3679 STUDIO LS CONTROL

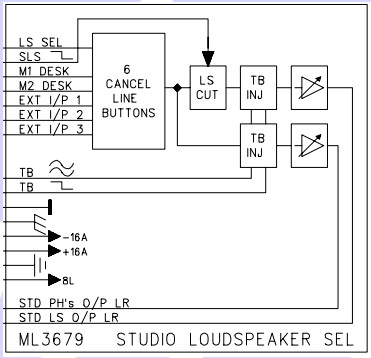


6 Electronic cancelling inputs - Yellow LEDs including 3 external inputs.

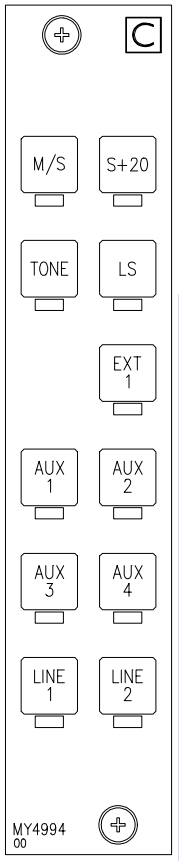
Gain controls 0dB to OFF.

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



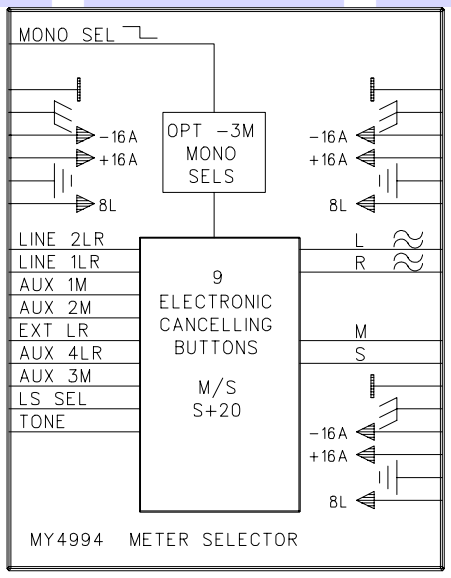
MY4994 METER SELECTOR



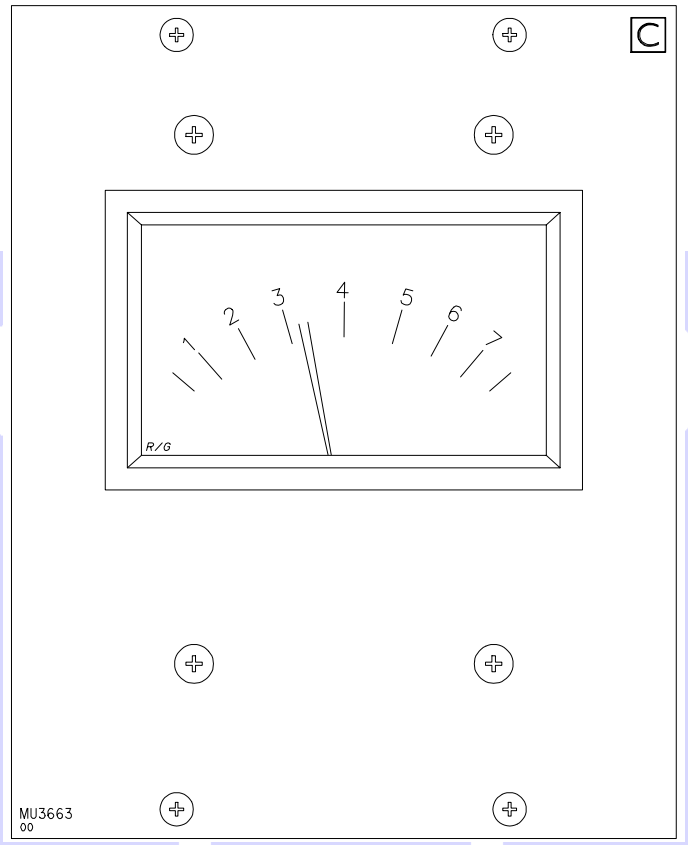
Selections from labelled sources.

Yellow LEDs - Electronic cancelling set.

M/S latching & S+20. Red LEDs meter selector can be internally selected to automatically switch the meaning to m/s when a mono source is selected and to automatically reduce the metering by -3dB if required. This is done to bring the mono and stereo signals in line with each other at 0dB.

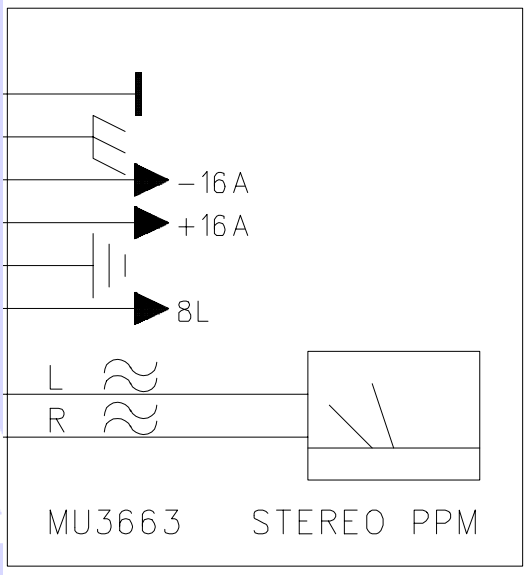


MU3663 STEREO PPM A/B

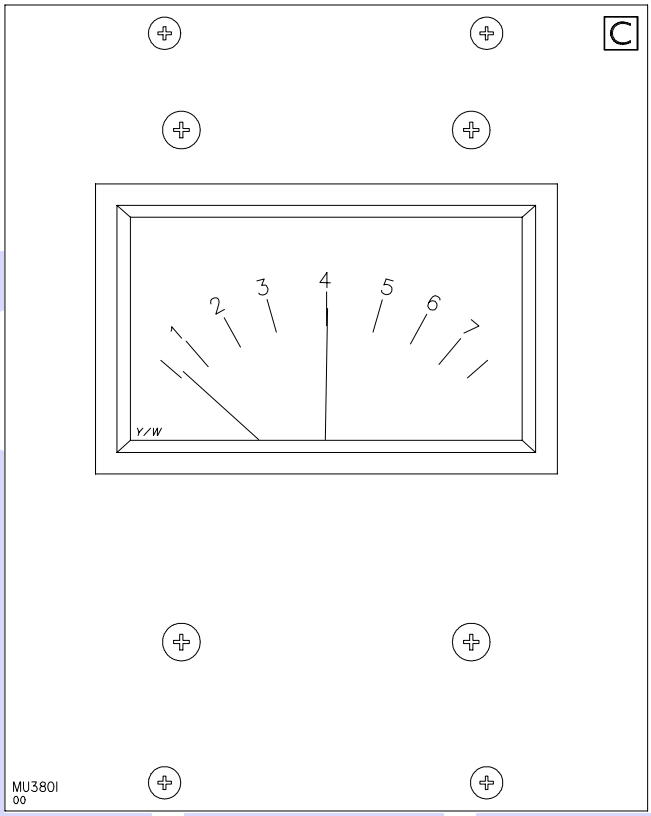


Stereo PPM with Red/Green needles and illumination.

Internal PPM driver.

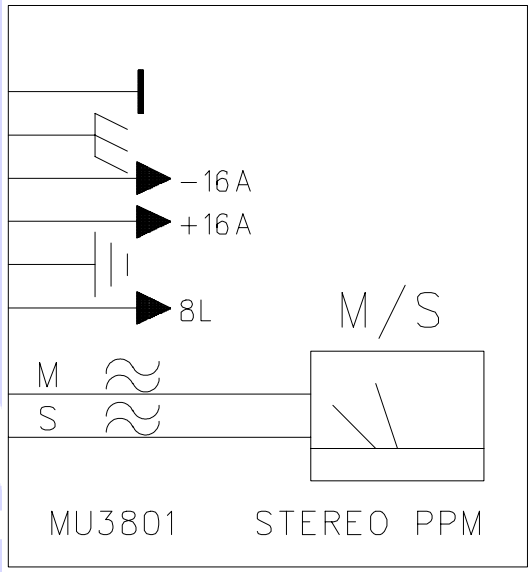


MU3801 STEREO PPM M/S

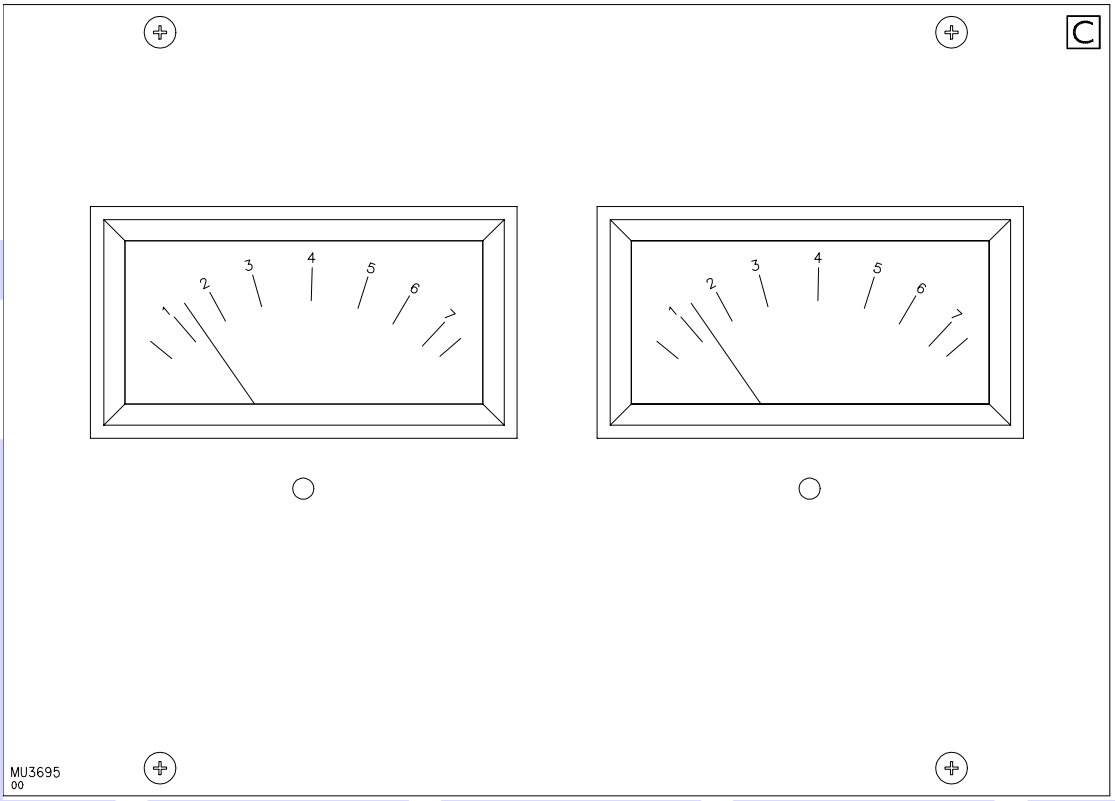


Stereo PPM with White/Orange needles and illumination.

Internal PPM driver.

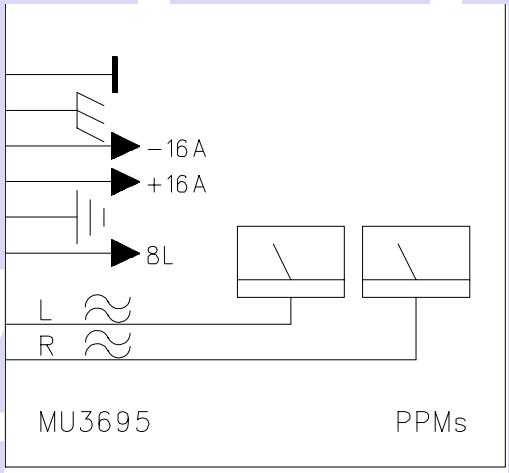


MU3695 TWIN MONO PPM

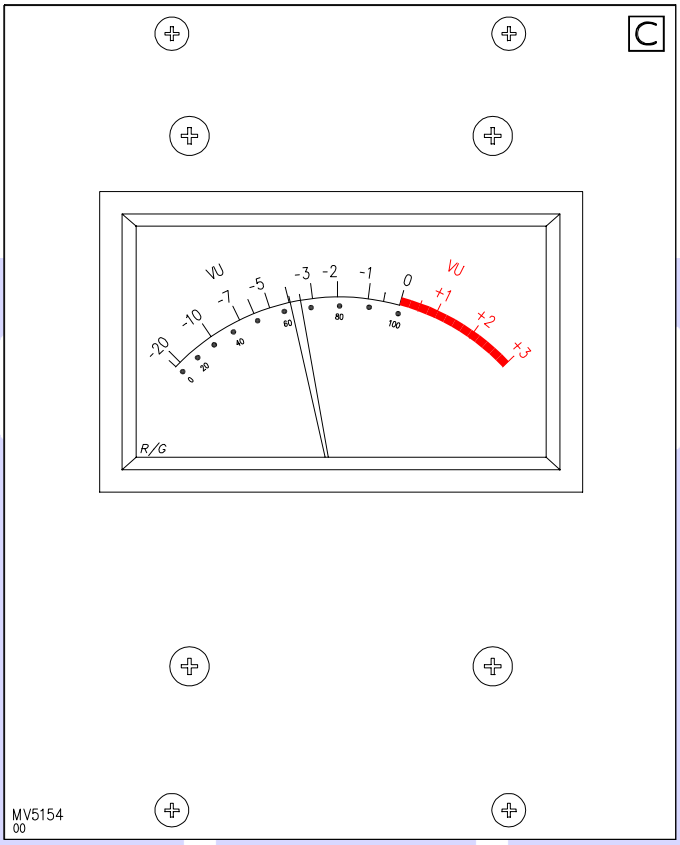


Mono PPMs with white needles and illumination.

Internal PPM drivers.



MV5154 SINGLE STEREO VU METER

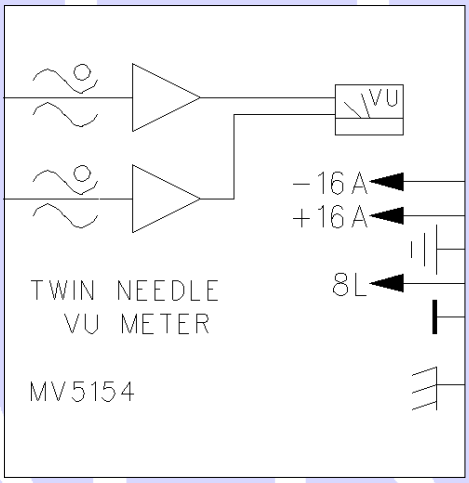


Large VU Meter with illumination.

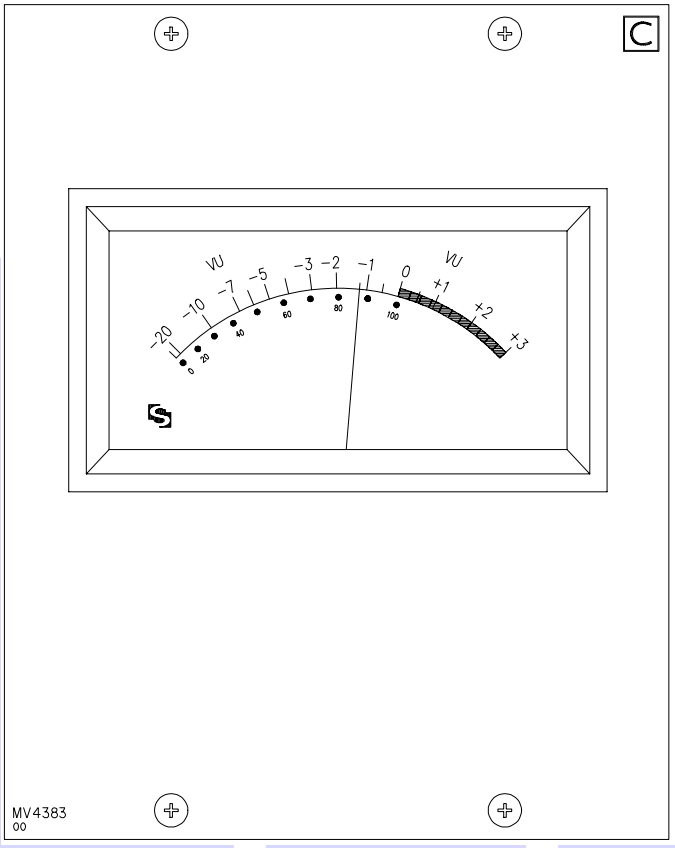
Meter has Red and Green needles.

0VU selectable to +4dBu (Normal).

Internal buffer amplifier.



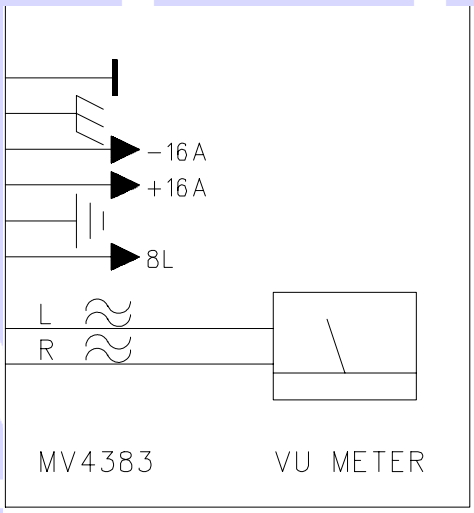
MV4383 SINGLE MONO VU METER



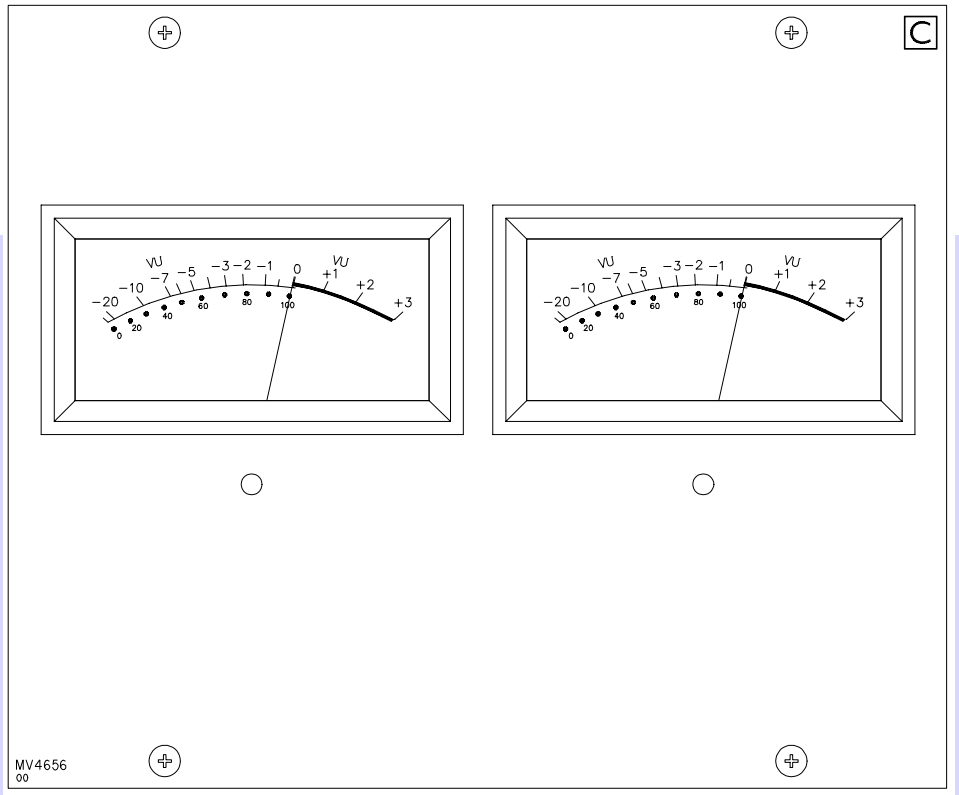
Large VU Meter with illumination.

0VU represents +4dBu.

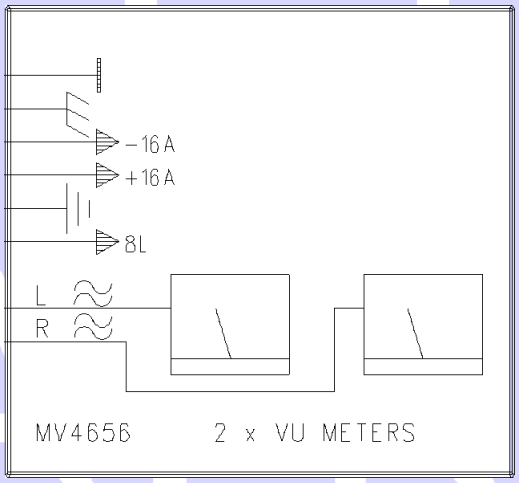
Internal buffer amplifier.



MV4656 TWIN MONO VU METER

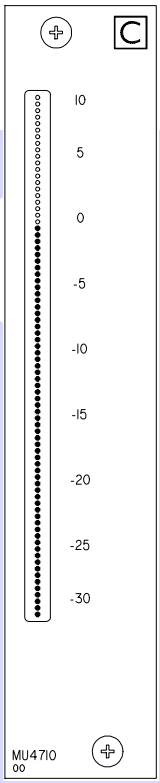


VU meters with illumination. Internal buffer amplifiers.

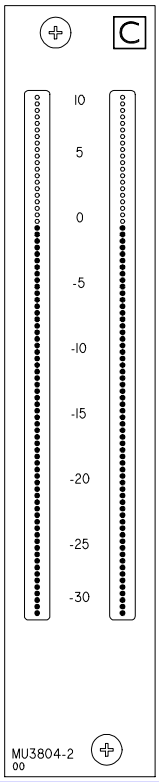


BARGRAPH OPTIONS

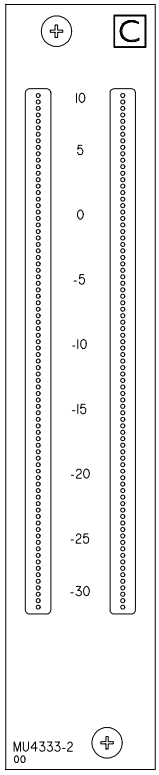
MU4710
MONO
BARGRAPH
(Green)



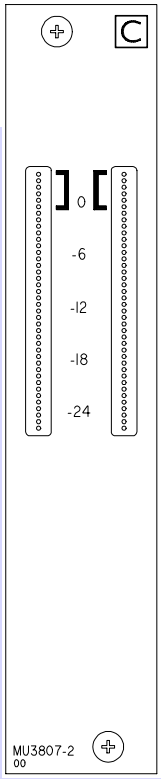
MU3804-2
LARGE STEREO
BARGRAPH
(Red/Green)



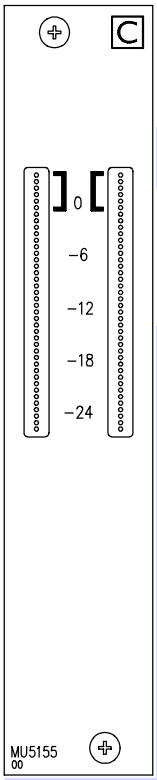
MU4333-2
LARGE STEREO
BARGRAPH
(Green/Red)



MU3807-2
SMALL STEREO
BARGRAPH
(Red/Green)

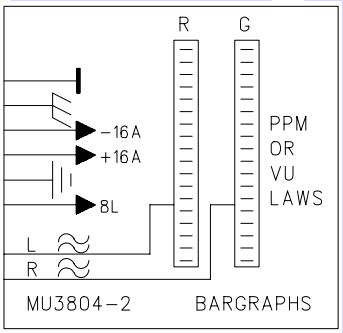


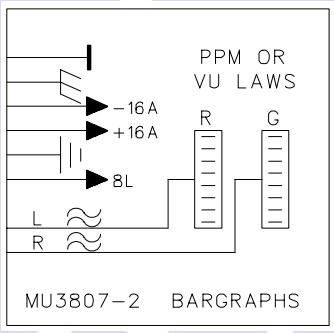
MU5155
SMALL STEREO
BARGRAPH
(Green/Red)



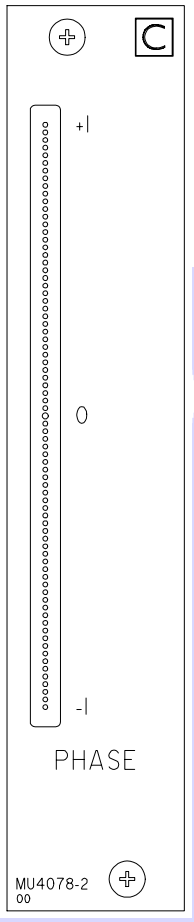
Twin LED bargraphs - 40 LEDs each for good resolution.

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

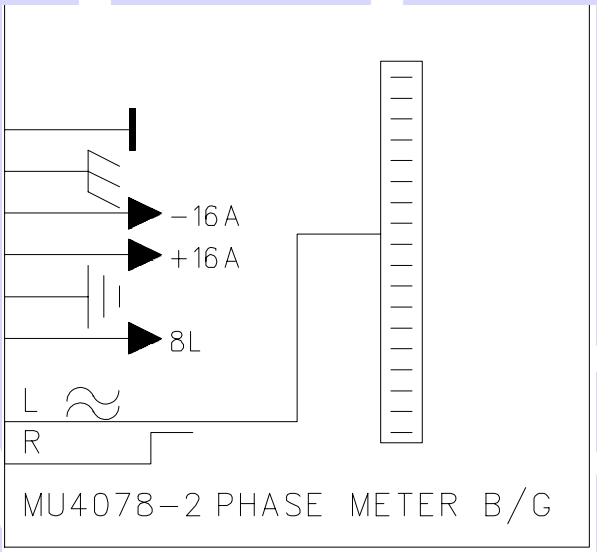




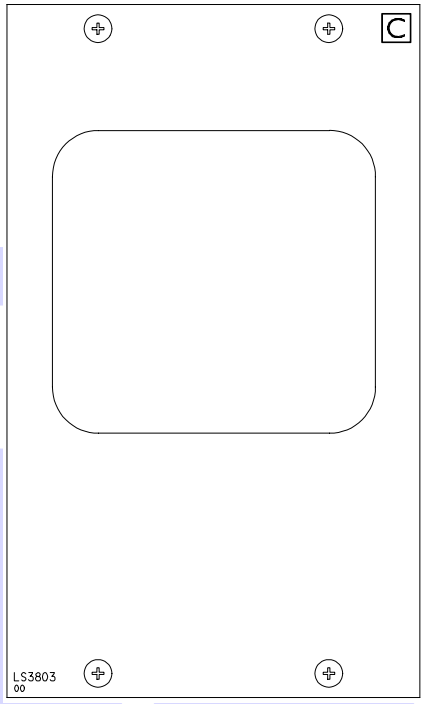
MU4078-2 PHASE BARGRAPH



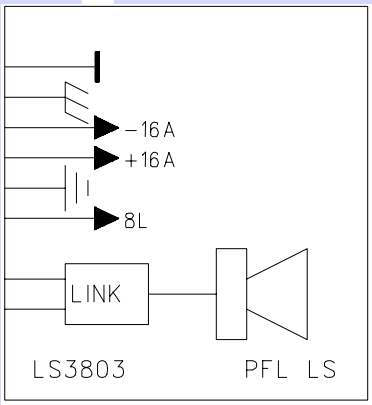
LED Bargraph.
Upper section representing good phase coherence is GREEN.
Lower section representing poor phase coherence is RED.
Spot moves dynamically.



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.



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YW5245 BROADCAST FACILITIES PANEL

PSU FAIL / CANCEL - Red LED flashes when a PSU or part of a PSU has failed.
Flashing may be cancelled by button but will resume with a further failure or if the console is switched off and on again.

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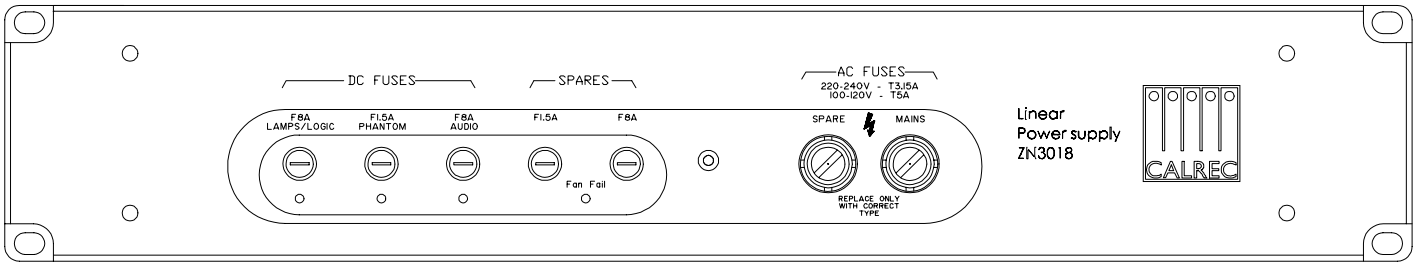
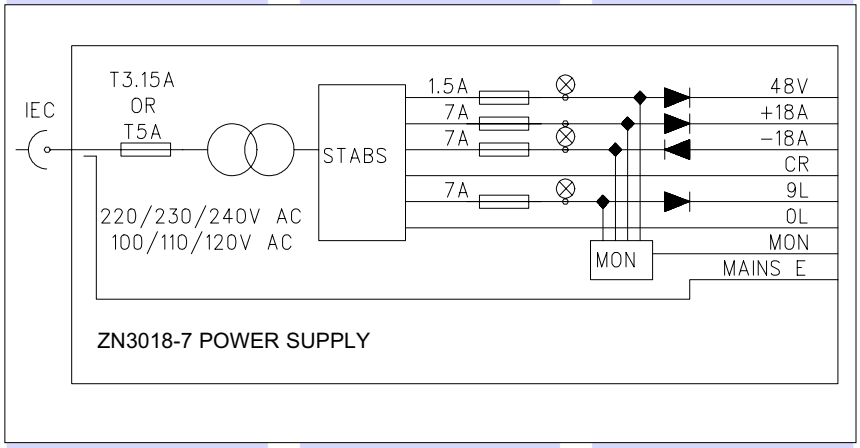
ZN3018-7 2RU EXTERNALPOWER SUPPLY UNIT



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 a second external power supply in the system to act as a “Hot” spare 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 a failure. The units operate in parallel via internal diodes and are designed to operate at mains voltages 10% below that set.

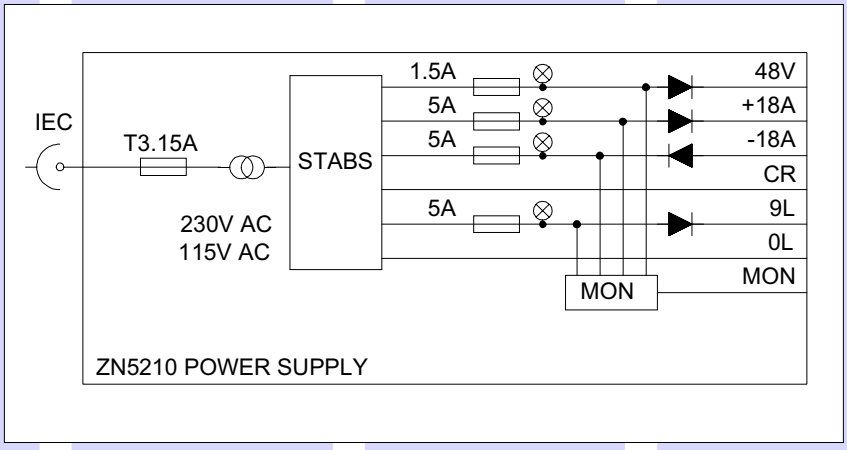


Please note : The small frame M3 is supplied with an internal Power Supply Unit. Should an external Power Supply Unit be used as a “hot” spare for this, then load-sharing will not occur.

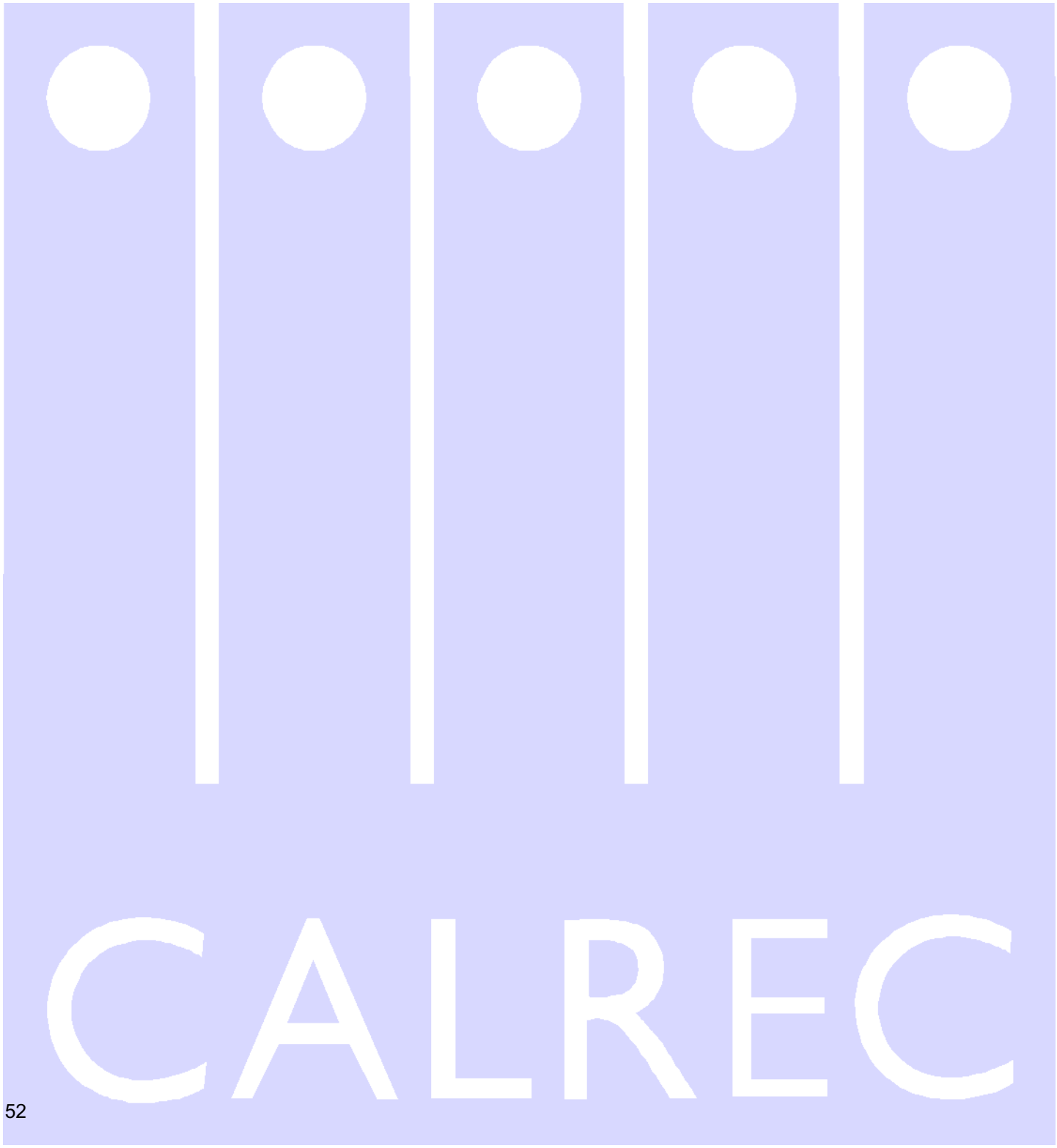
ZN5210 1RU EXTERNAL POWER SUPPLY UNIT

A Calrec designed PSU to provide ±18 volts audio power, 9 volts logic power (stabilised in modules to 5 volts where required) and 48 volts phantom power. It is recommended that there be a second external power supply in the system to act as a "Hot" spare which in addition will share the load.

The 1U units operate in parallel via internal diodes and are designed to operate at mains voltages 10% below that set.



Please note : The small frame M3 is supplied with an internal Power Supply Unit. Should an external Power Supply Unit be used as a "hot" spare for this, then load-sharing will not occur.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3.0 Connections, Specification & Block Diagram

CONNECTIONS

The M3 uses XLR-3 fixed (panel mounted) female (socket) connectors for Channel Mic and Line level inputs and direct inputs to groups and mains.
Main, monitor and Aux outputs are on XLR-3 fixed (panel mounted) male (plug) connectors

50 way D-type fixed panel mounted) female (sockets) connectors are used for all other audio and control connections.

Interface	Connector	Recommended Level	Nominal Impedance	Min Load
Microphone inputs	XLR-3F	-75/+5dBu	1kΩ	-
Line inputs	XLR-3F	-24/+18dBu	20kΩ	-
Insert sends	D-50F	0dBu	40Ω	600Ω
Insert returns	D-50F	0dBu	20kΩ	-
Direct outputs	D-50F	0dBu(+10)	40Ω	600Ω
External Cuts/VCA Control/fader start	D-50F	5V/0V operate	-	-
Group direct inputs	XLR-3F	0dBu	20kΩ	-
Main direct inputs	XLR-3F	0dBu	20kΩ	-
Auxiliary outputs	XLR-3M and D-50F	0dBu	40Ω	600Ω
Main outputs	XLR-3M and D-50F	0dBu	40Ω	600Ω
Monitor inputs	D-50F	0dBu	20kΩ	-
Monitor outputs	XLR-3M and D-50F	0dBu	< 40Ω	600Ω

WEIGHTS

Small chassis (with internal PSU) = 19.5kg (43lb) approx

Medium chassis = 36kg (70.5lb) approx

POWER SUPPLY OPTIONS

Small chassis has four power supply options:

- Internal PSU
- Internal PSU with external hot spare back-up PSU
- External PSU
- External PSU with external hot spare back-up PSU(Load Sharing)

Medium and Large chassis have two options:

- External PSU
- External PSU with external hot spare back-up PSU(Load Sharing)

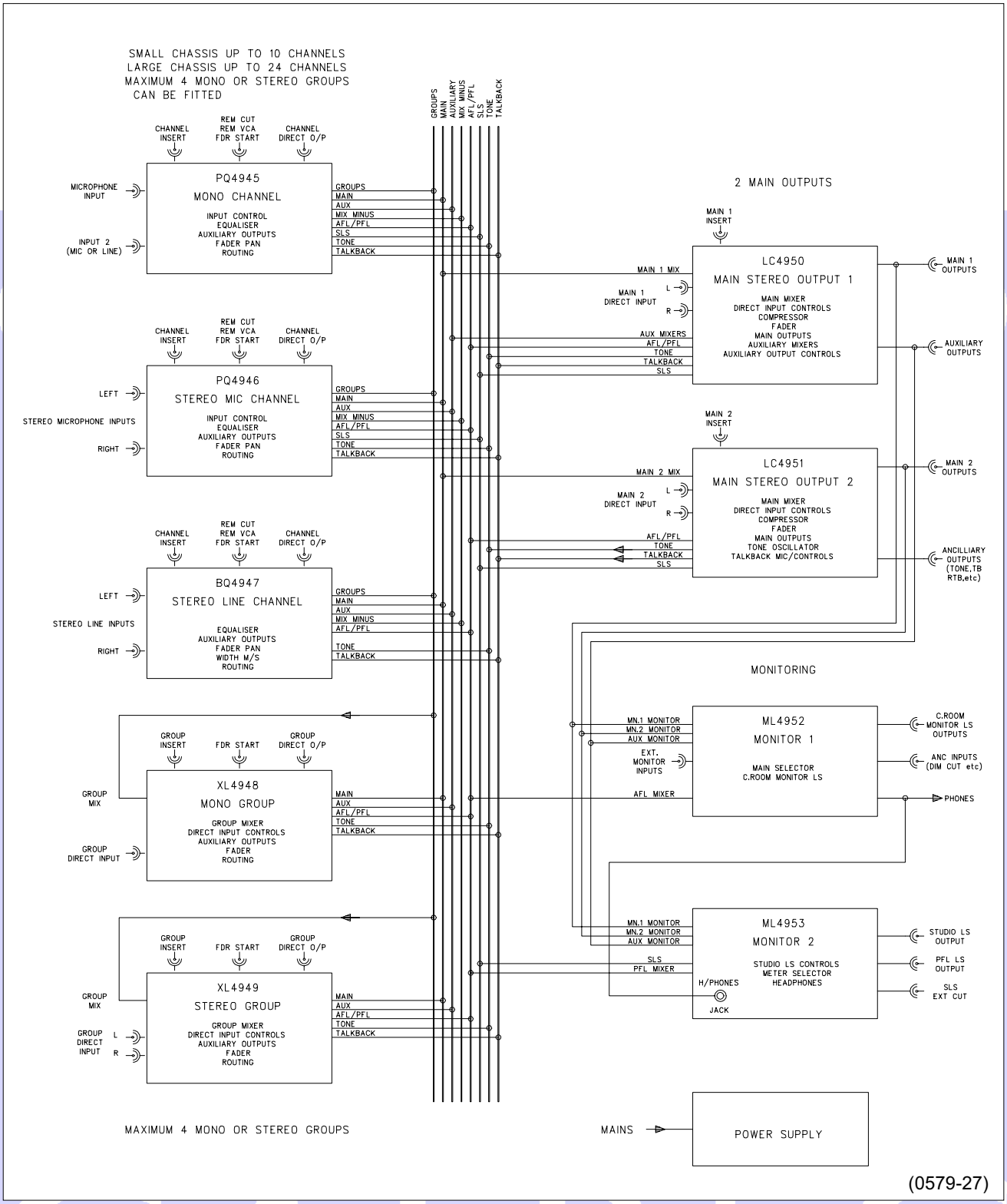
SPECIFICATION

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.

Inputs		
Microphone	Transformer balanced	1kΩ Nominal
Sensitivity	-10/-60dBu in 10dB steps +/- 15dB Variable trim	
Input headroom	27dB Above setting Maximum input +10dBu	
Line	Electronic balanced	20kΩ Nominal
	Sensitivity	+/- 15dB Variable trim Maximum input +27dBu
Monitor/direct	Electronic balanced	20kΩ Nominal
	Sensitivity	0dBu
Outputs		
Main Line	Transformer balanced	0dBu into 600Ω
	Maximum output	+22dBu into 600Ω @1kHz
	Source impedance	30Ω nominal
Aux 1-2	Transformer balanced	0dBu into 600Ω
	Maximum output	+23dBu into 600Ω
	Source impedance	30Ω nominal
Main Desk/Aux 3-4 Groups/Dir/Ins go/ Mon LS/Talkback	Electronic balanced Maximum output	0dBu into 600Ω +23dBu into 600Ω +27dBu into 3.3kΩ
	Source impedance	40Ω nominal
Performance		
Noise	Microphone (EIN)	-126dB
	Line/Group/Main	≤ -83dBu
Distortion	at +16dBU	≤ 0.03% 40Hz-10kHz
Freq. Response	Any circuit	+/- 0.5dB,20Hz-20kHz
Stereo Path Level error	L,R	+/-1dB
Input/Output		
Balance	microphone	≥ -80dB at 1kHz, ≥ -70dB at 10kHz
	Line level circuits	≥ -40dB
Crosstalk	Fader cut-off	≤ -90dB at 1kHz ≤ -85dB at 15kHz
	Adjacent channel	≤ -85dB at 1kHz ≤ -70dB at 10kHz
	Stereo path	≤ -60dB at 10kHz

BLOCK DIAGRAM



Notes

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Calrec Audio Ltd. reserve the right to change specifications without notice. E. & O.E.

(926-025 Iss10)