



ELBERG LYD-TEKNIK – E-mail: elt@adr.dk – Phone: +45 44 99 26 99
Birkhøjterrasserne 420 E – DK-3520 Farum
VAT-no. 15 88 74 51 – Danske Bank 3167 4133 081402
www.elberg-elt.dk – Not a BIT better ... a LOT better!

ELBERG SERIES 15 Audio Mixer

ELBERG SERIES 15 is a compact series 19" audio mixers, which modular structure permits any configuration with up to 12 balanced stereo- or mono modules. Its technical specifications and facilities make it an outstanding tool in situations, where extremely good sound quality is mandatory without taking too much of the precious space (19"x18").

Today, most sound systems have more than 2 tracks. Therefore, the SERIES 15 is equipped with 4 balanced and 4 unbalanced outputs. The balanced outputs can optionally be transformer balanced, enabling them to drive a radio station's phone line to the transmitter directly. The console is equipped with 2 stereo- and 1 mono send- and return system (unbalanced).

Two main types of input channels are available, each fitting randomly in the console's 12 input slots:

The mono modules include a transformer balanced microphone input and a balanced (electronically or by transformer) line input with separate gain controls. Optionally, a balanced insert point pre equaliser is available. The modules feature a 3 band equaliser with sweepable mid range plus an 80 Hz low cut filter. The mic input has switchable 48 V phantom power.

The stereo modules contain 2 balanced (electronically or by transformer) and 2 unbalanced line inputs, each with its own gain control, enabling 2 stereo sources to be connected to one input, selectable by a switch. In other words, up to 24 stereo sources can be simultaneously connected, 12 at a time selectable. The modules are equipped with a selector for left, right, mono or stereo, 2 band shelving equaliser plus the ability to phase reverse right channel.

Both main types of modules include MUTE, PFL (pre fader listen), BAL/PAN plus routing to outputs 1-2 and/or 3-4. Every pushbutton includes an LED, enabling a very fast read out of the state of the mixer.

Clear LED-meters placed aside the faders show the channel's input level pre fader. Four 15-segments LED-meters on the master module show the output levels of the console, and five 5-segments LED-meters show the output levels of the five aux sends.

For record players, an RIAA amplifier is included. Its outputs can connect to any line input of the console or external equipment. The console's "UNMUTE" function enables the channels' MUTE function to be remotely controlled. High quality 100 mm conductive plast faders (Penny & Giles optionally) ensure smooth and noiseless operation. An internal talk-back mic can feed sends and/or master outputs. Built-in test oscillator for calibrating connected equipment. Two balanced stereo monitor inputs for returns from master machines or tuner. Several "jumpers" are placed in the console, enabling specific set-ups to suit personal taste. The BC-version is primarily intended for broadcast or demanding sound editing or recordings, while the EC-version (EditorControl) makes it possible to control MUTES and faders from external video editing equipment ("sound follows picture") or computer.

To limit noise, all ELBERG mixers come with an external 2U 19" power supply. The modular construction secures a high degree of serviceability, and the extensive use of golden connectors and high quality components ensures trouble free use for decades.



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SERIES 15 Specifications

Generally:

Frequency response	15 Hz to 40 kHz $\pm 0,5$ dB
Harmonic distortion	$\leq 0,05\%$ (+10 dBu out)
Channel separation	> 70 dB
Noise (EIN)	mic input -129,5 dBA ($R_{in} = 200 \Omega$) line input -86 dBA ($R_{in} = 0 \Omega$) outputs, all faders closed: ≤ -95 dB outputs, all faders open: ≤ -91 dB
Cross talk	≥ 76 dB
Equaliser	Upper ± 15 dB shelving @ 10 kHz Mid ± 15 dB (Q=1) @ 100 Hz-9 kHz (mono modules only) Lower ± 15 dB shelving @ 100 Hz
Low cut filter	80 Hz, 12 dB/octav - other frequencies on request
Test oscillator	1 kHz ($\pm 10\%$), distortion $< 0,6\%$
Talk back	built-in electret condenser mic - can be remotely activated
Meters	Master 4 ea. 15-segments LED (PPM - limited 'Nordic Scale') (complies with N9 apart from display below -33 dB). Mono module 1 ea. 5-segments LED (PPM) - 0 dB = 0,775 V Stereo module 2 ea. 5-segments LED (PPM) - 0 dB = 0,775 V Effect module 1 ea. 5-segments LED (PPM) - 0 dB = 0,775 V
Power supply	External 19" - 2U
Dimensions	Width: 19" (483 mm), depth: 10U (450 mm), height: 195 mm (rear), 60 mm (front)

Inputs [max. in]

Mono module mic	gain +20 to +70 dB, bal., 1 k Ω , XLR [+2 dBu]
line	gain ± 15 dB, bal., 22 k Ω , XLR [+22 dBu]
Stereo module line 1	gain ± 15 dB, bal., 22 k Ω , XLR [+22 dBu]
line 2	gain ± 15 dB, unbal., 22 k Ω , phono [+22 dBu]
Effect return (2 stereo, 1 mono)	gain +6 to +21 dB (nom. +10 dB), unbal., 22 k Ω , phono [+12 dBu]
Monitor (2 stereo)	gain 0 dB, bal., 22 k Ω , XLR [+22 dBu]
Gramophone (stereo)	gain 36,5 dB (1 kHz), unbal., 47 k Ω , phono [-17 dBu]

Outputs

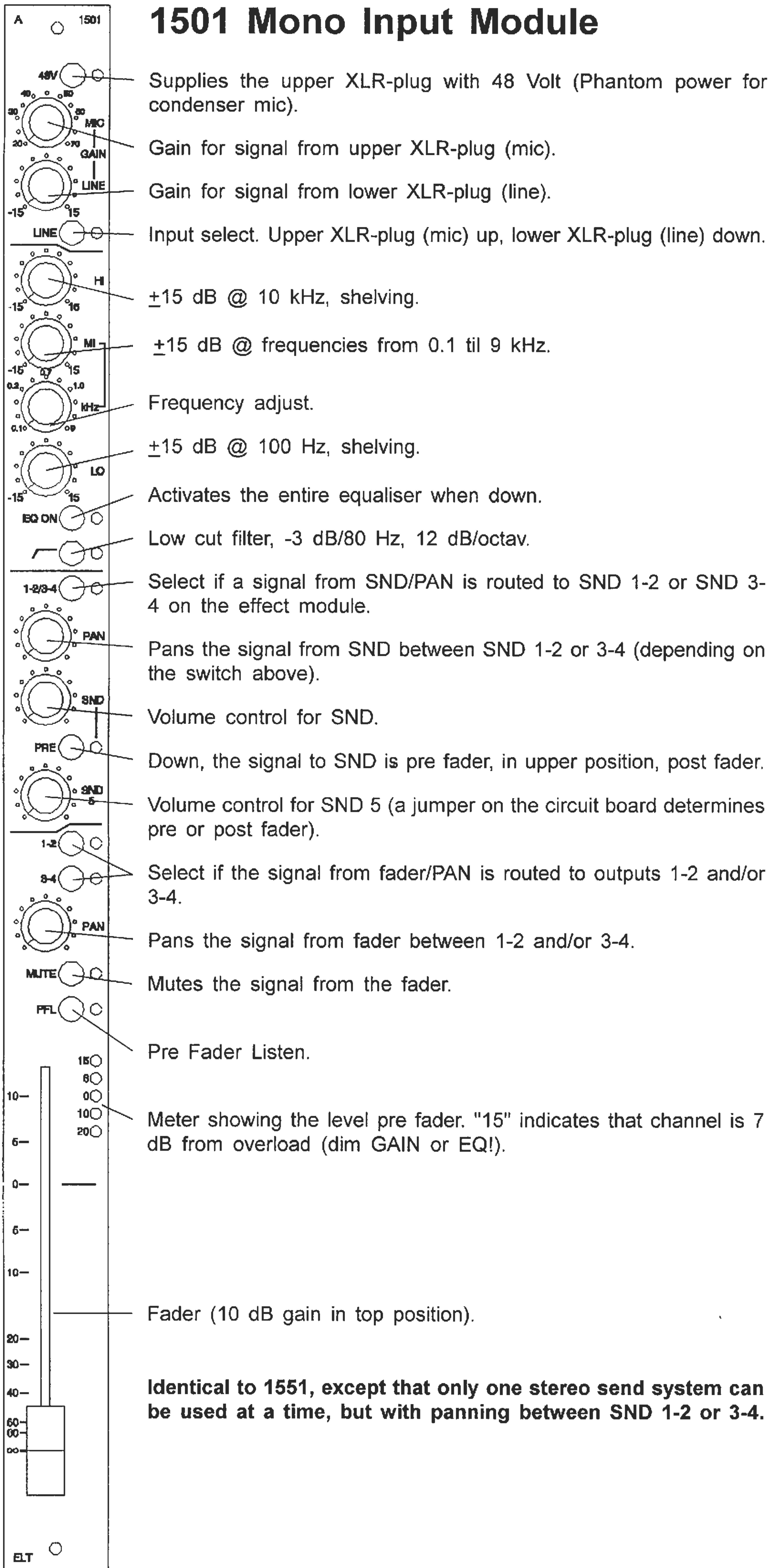
Line (2 stereo)	bal., XLR
Line (2 stereo)	unbal., phono
Effect send (2 stereo, 1 mono)	unbal., phono
Monitor	unbal., phono
Gramophone	unbal., phono
Talk back	unbal., phono
Pre fader listen (stereo)	unbal., phono
Phones	unbal., stereo jack

All outputs: max. out = +22 dBu in $\geq 600 \Omega$. All balancing available with transformers.

0 dBu = 0,775 V. All XLRs are connected according to IEC 268-12 (1=GND, 2=HOT, 3=COLD).

ELBERG SERIES 15 complies with the Nordic Radios' specifications sheets N9 and N10 (4th edition) on all major points. Other specifications on request.

1501 Mono Input Module



Supplies the upper XLR-plug with 48 Volt (Phantom power for condenser mic).

Gain for signal from upper XLR-plug (mic).

Gain for signal from lower XLR-plug (line).

Input select. Upper XLR-plug (mic) up, lower XLR-plug (line) down.

± 15 dB @ 10 kHz, shelving.

± 15 dB @ frequencies from 0.1 til 9 kHz.

Frequency adjust.

± 15 dB @ 100 Hz, shelving.

Activates the entire equaliser when down.

Low cut filter, -3 dB/80 Hz, 12 dB/octav.

Select if a signal from SND/PAN is routed to SND 1-2 or SND 3-4 on the effect module.

Pans the signal from SND between SND 1-2 or 3-4 (depending on the switch above).

Volume control for SND.

Down, the signal to SND is pre fader, in upper position, post fader.

Volume control for SND 5 (a jumper on the circuit board determines pre or post fader).

Select if the signal from fader/PAN is routed to outputs 1-2 and/or 3-4.

Pans the signal from fader between 1-2 and/or 3-4.

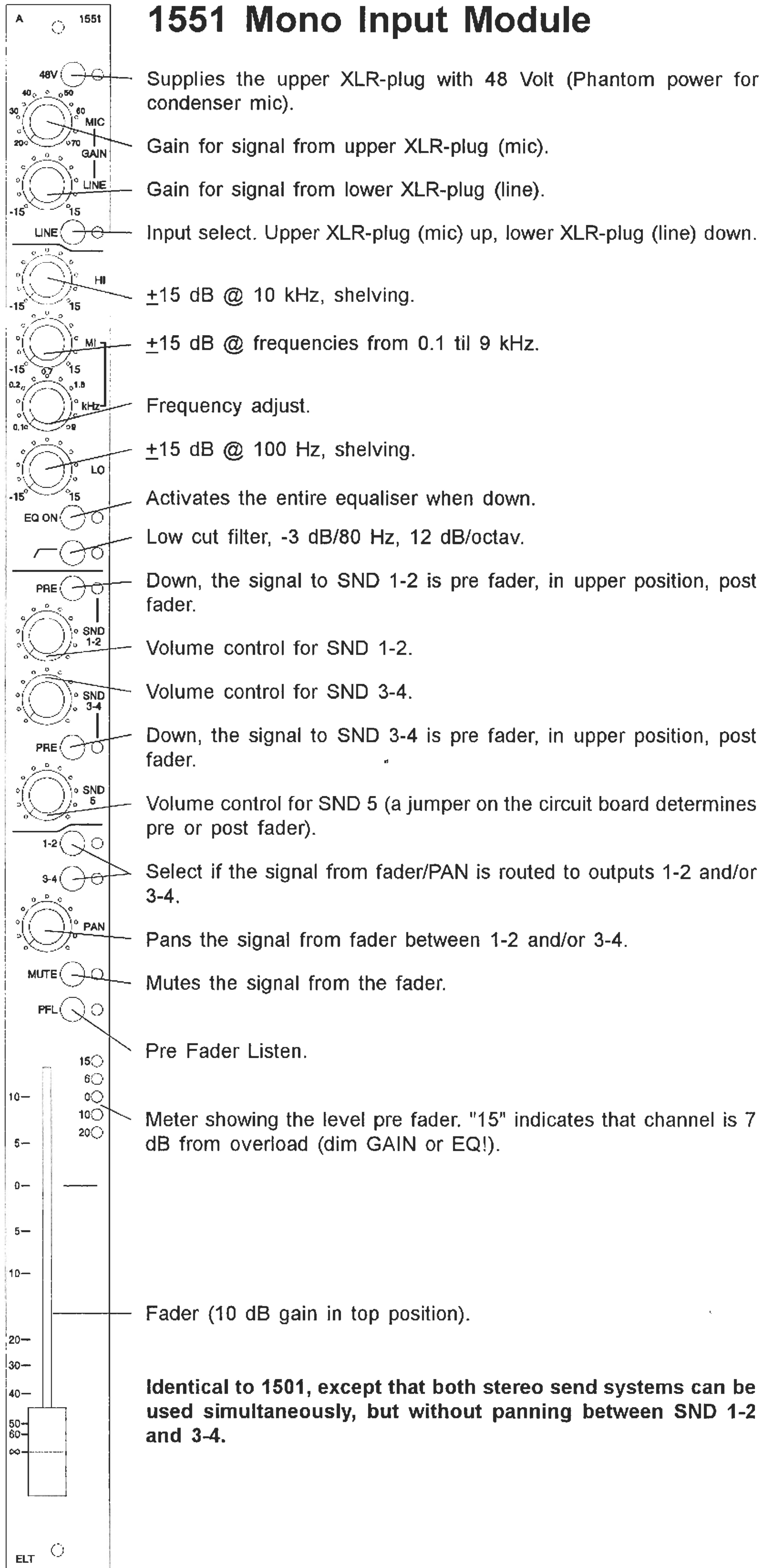
Mutes the signal from the fader.

Pre Fader Listen.

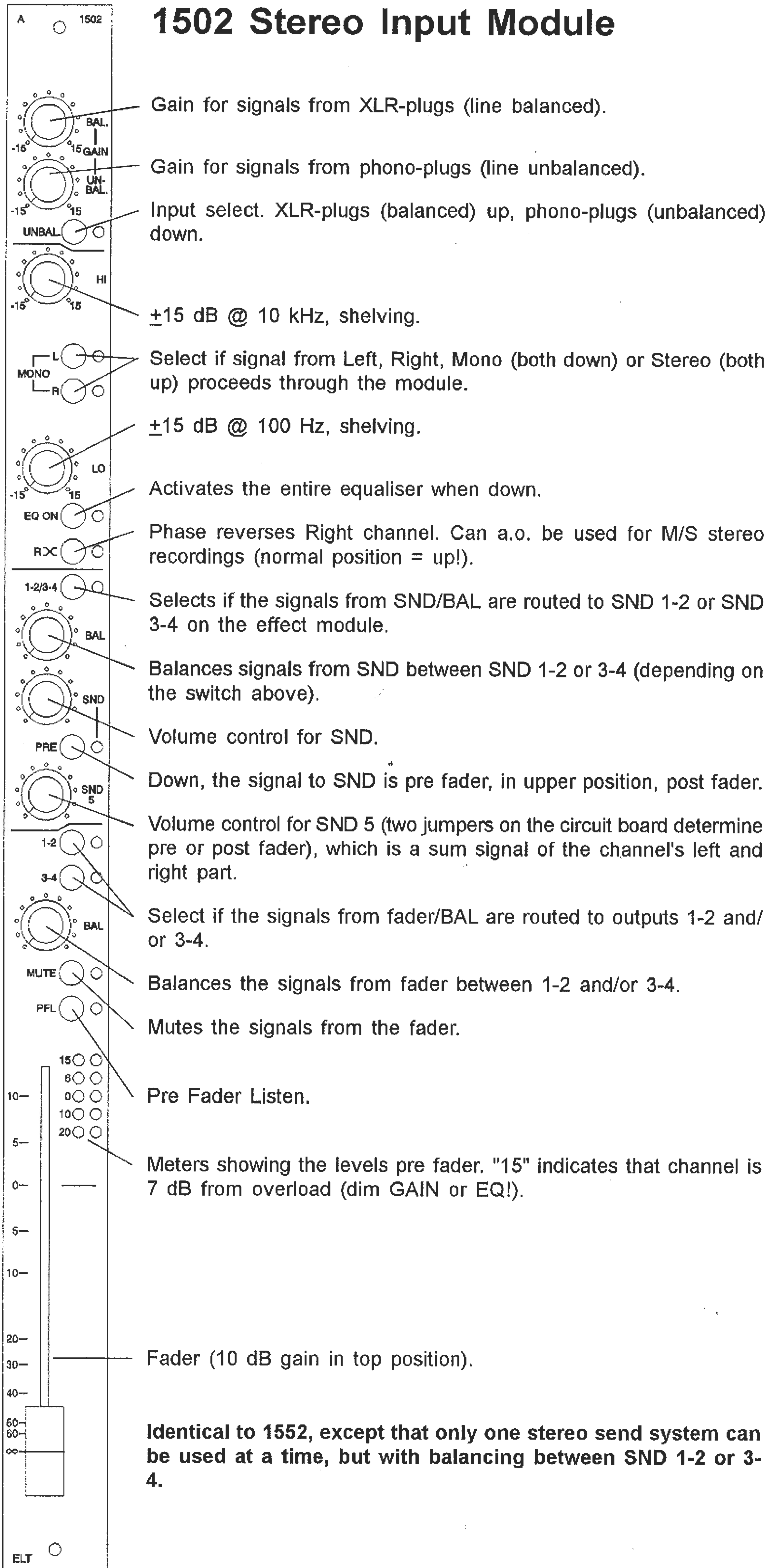
Meter showing the level pre fader. "15" indicates that channel is 7 dB from overload (dim GAIN or EQ!).

Identical to 1551, except that only one stereo send system can be used at a time, but with panning between SND 1-2 or 3-4.

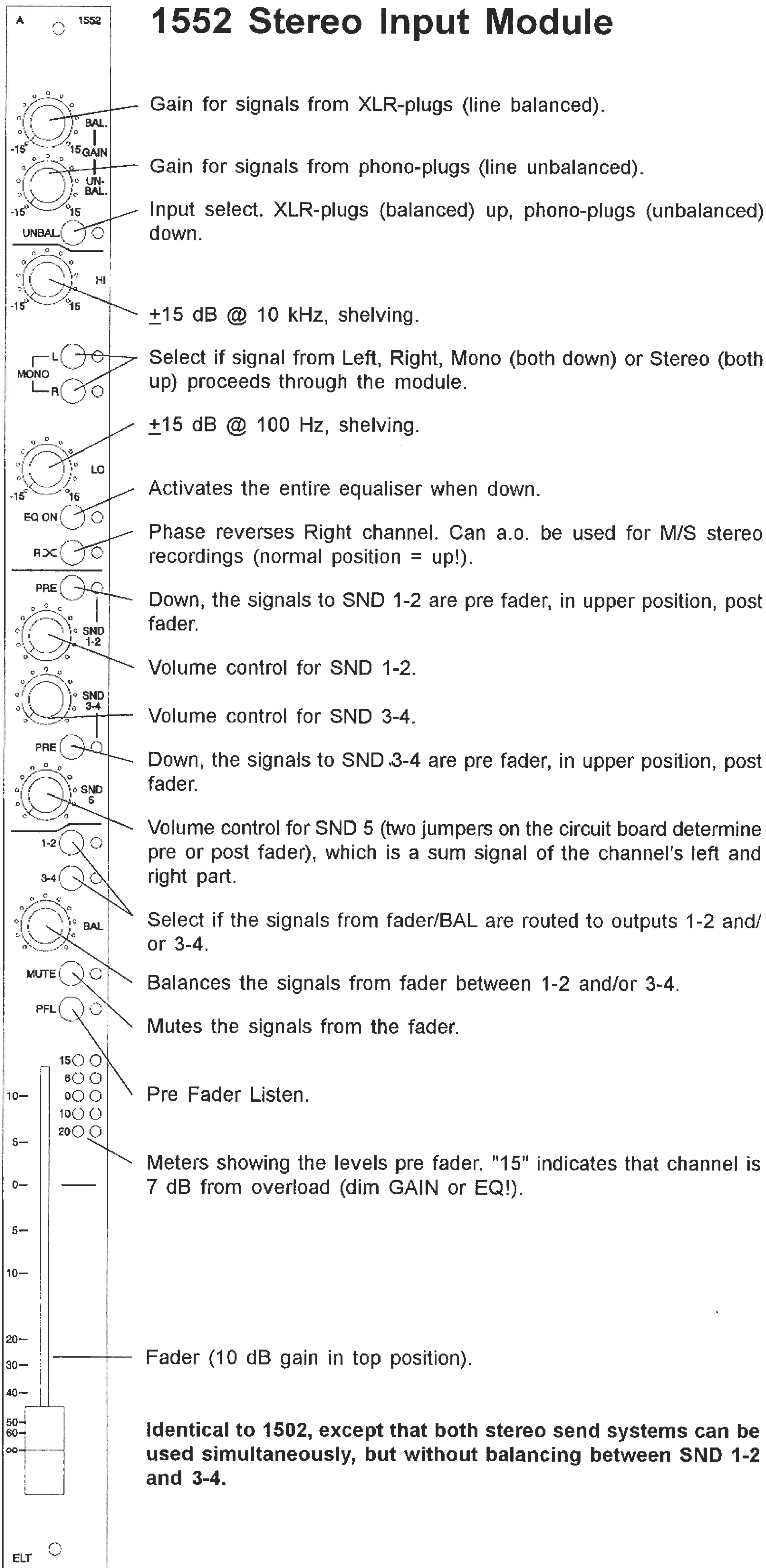
1551 Mono Input Module



1502 Stereo Input Module

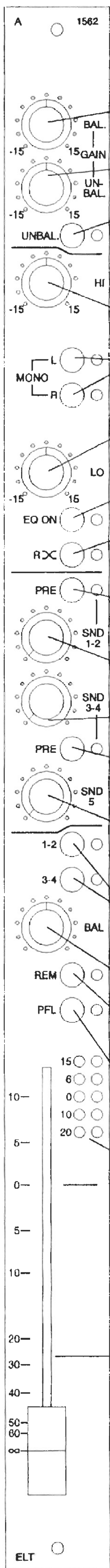


1552 Stereo Input Module



Identical to 1502, except that both stereo send systems can be used simultaneously, but without balancing between SND 1-2 and 3-4.

1562 Stereo Input Module



Gain for signals from XLR-plugs (line balanced).

Gain for signals from phono-plugs (line unbalanced).

Input select. XLR-plugs (balanced) up, phono-plugs (unbalanced) down.

± 15 dB @ 10 kHz, shelving.

Select if signal from Left, Right, Mono (both down) or Stereo (both up) proceeds through the module.

± 15 dB @ 100 Hz, shelving.

Activates the entire equaliser when down.

Phase reverses Right channel. Can a.o. be used for M/S stereo recordings (normal position = up!).

Down, the signals to SND 1-2 are pre fader, in upper position, post fader.

Volume control for SND 1-2.

Volume control for SND 3-4.

Down, the signals to SND 3-4 are pre fader, in upper position, post fader.

Volume control for SND 5 (two jumpers on the circuit board determine pre or post fader), which is a sum signal of the channel's left and right part.

Select if the signals from fader/BAL are routed to outputs 1-2 and/or 3-4.

Balances the signals from fader between 1-2 and/or 3-4.

Momentary switch for START/STOP of REMote equipment.

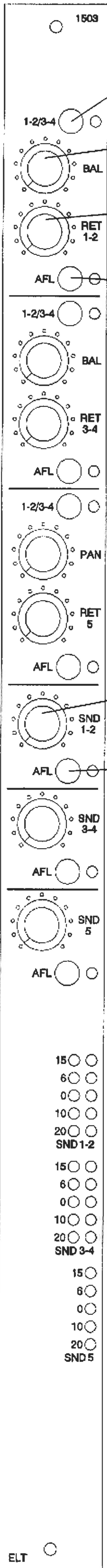
Pre Fader Listen.

Meters showing the levels pre fader. "15" indicates that channel is 7 dB from overload (dim GAIN or EQ!).

Fader (10 dB gain in top position).

Identical to 1502, except that both stereo send systems can be used simultaneously, but without balancing between SND 1-2 and 3-4. Furthermore, this module supports START/STOP of remote equipment, but has no MUTE.

1503 Effect Module



Selects if signals from BAL below are routed to outputs 1-2 or 3-4.

Balances the signals from RET 1-2 below between outputs 1-2 or 3-4.

Signals from phono-plugs RETURNS 1 and 2 on the backplate. May be considered as an extra line input and used as such.

After Fader Listen.

Same functions as above except that the signals are from RETURNS 3 and 4 on the backplate.

Same functions as above except that the input is mono and the signal is from RETURN 5 on the backplate.

Master control for signals from the input channels' SND 1-2. The signals are fed to the backplate's SENDS 1-2 phono-plugs.

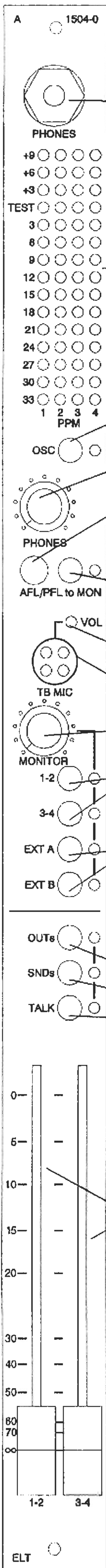
After Fader Listen.

Same as above except the input channels' SND 3-4 to SENDS 3-4 on the backplate.

Same as above except the input channels' SND 5 (mono) to SEND 5 on the backplate.

Meters showing output level for SENDS 1-5.

1504 Master Module



Phones output jack (≥ 100 Ohm).

Peak Program Meters, showing the output levels of the four outputs ("Test" = 0,775 Volt).

The meters comply (except display below -33 dB) with the Nordic Radios' specifications sheet N9 'Nordic Scale'.

Sends a test tone (1 kHz) to the four outputs pre Master Faders.

Volume control for phones output jack above.

5 mm LED which lights when one or more AFL/PFL buttons are depressed. The signal heard from the control room monitors comes from that or those channels only.

In upper position, the AFL/PFL signal is routed to phones only. Depressed, also to the control room monitors.

15-turns trimpot for Talk Back volume.

Talk Back condenser mic.

Volume control for the control room monitors.

Select if Master 1-2 and/or 3-4 are/is routed to the control room monitors.

Monitor the signals from EXT. MON IN (external monitor) XLR plugs if 1-2 and/or 3-4 above are/is depressed. Can also be used for the return signal from a tuner, enabling the radio station to check how it sounds "On Air".

Routes the Talk Back signal to one/all four output(s). *)

Routes the Talk Back signal to SENDS 1-5. **)

Activates the Talk Back mic. Also dims the control room monitors 20 dB (can be deselected via jumper on the circuit board).

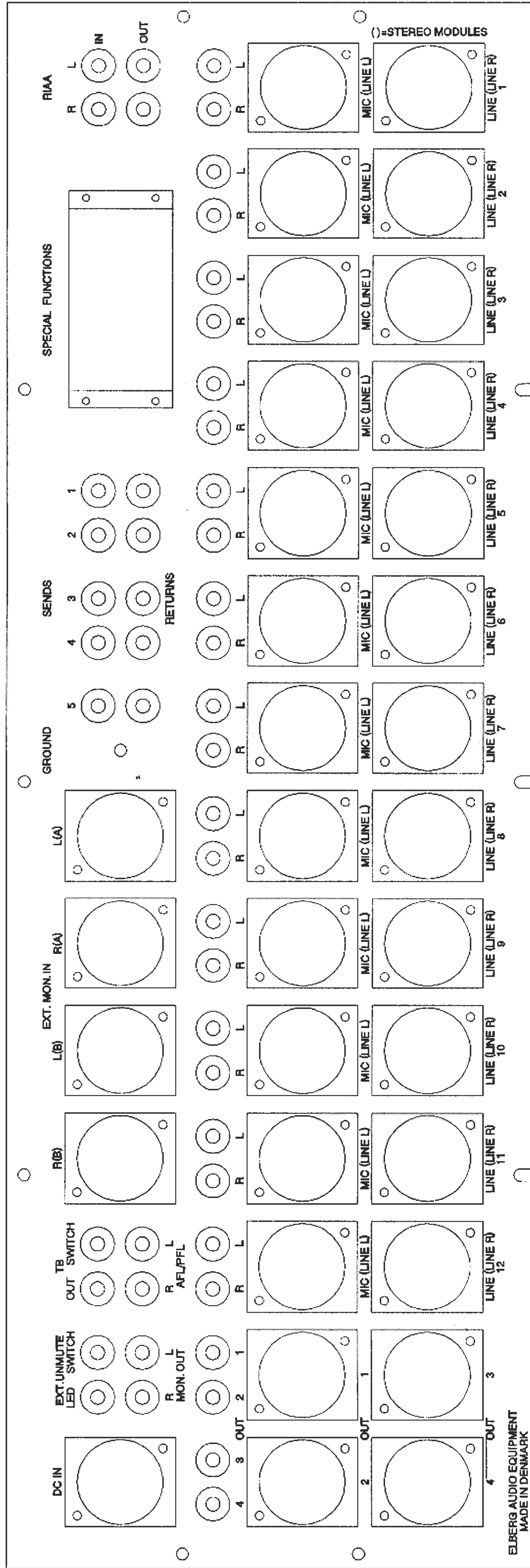
Master Faders for outputs 1-2 and 3-4. This module is also available with 10 dB gain in top position.

*) 4 jumpers on the circuit board define which one(s). Default = all.

**) 5 jumpers on the Effect module define which one(s). Default = 1 & 2.

Please contact your dealer concerning changes.

Backplate - see explanation



Backplate - explanation

Upper "row" from left:

DC IN - Supply voltages from the ELBERG PS15 power supply.

EXT. UNMUTE LED & SWITCH - These two phono-plugs enable chosen modules to be "unmuted", i.e. the mute-function is cancelled, so that the channel can be "opened" via remote control. The "LED"-plug makes it possible to place an LED as visual control on a remote box ("caugh"-button aside speaker or host). Contact dealer for details concerning connection.

MON. OUT - Monitor Out. Connect to power amplifier which drives the control room monitors, or connect directly to powered speakers.

TB OUT & SWITCH - The Talk Back signal can - when the "TALK" button on the Master module has been activated - in addition to the via "OUTs" and/or "SNDs" button(s) chosen destination(s) be routed to wherever wanted via the "TB OUT"-plug. The phono-plug "SWITCH" can control the "TALK"-function remotely. Contact dealer for details concerning connection.

AFL/PFL - Via these plugs the After Fader Listen and Pre Fader Listen signals can feed an external power amplifier if needed.

EXT. MON. IN - These four XLR-plugs are inputs, which can be used for control listening from master machines etc. The signals are chosen on the Master module's "EXT A" & "EXT B" buttons, enabling monitoring of external equipment without interrupting the transmission/recording. An external tuner can also be connected, enabling the radio station to monitor the "On Air" sound.

GROUND - Ground connection for e.g. gramophone.

SENDS - The 5 phono-plugs in the upper row are outputs from the 5 SEND-systems (2 stereo + 1 mono). They are fed from the Effect module's SND 1-5 pots.

RETURNS - The 5 phono-plugs in the lower row are inputs to the 5 RETURN-systems (2 stereo + 1 mono). Feed the Effect module's RET 1-5 pots, the outputs of which can be routed to Master outputs 1-2 or 3-4. Can also be considered as spare inputs at line level.

SPECIAL FUNCTIONS - A 90-pole multipin connector provides for any special connection a customer would like. On the EC15, which can be controlled by computer, this plug is used for connection of editor. The plug can also be used for optional balanced insert point on Mono modules.

RIAA IN & OUT - The ELBERG SERIES 15 includes an RIAA-circuit, enabling a record player to be directly connected. The RIAA-circuit is "floating", i.e. the record player's outputs connect to the 2 "IN"s. The 2 "OUT"s can then be connected to any Stereo module (phono-plugs) or the line inputs of any external equipment.

Mid "row" (phono-plugs) from left:

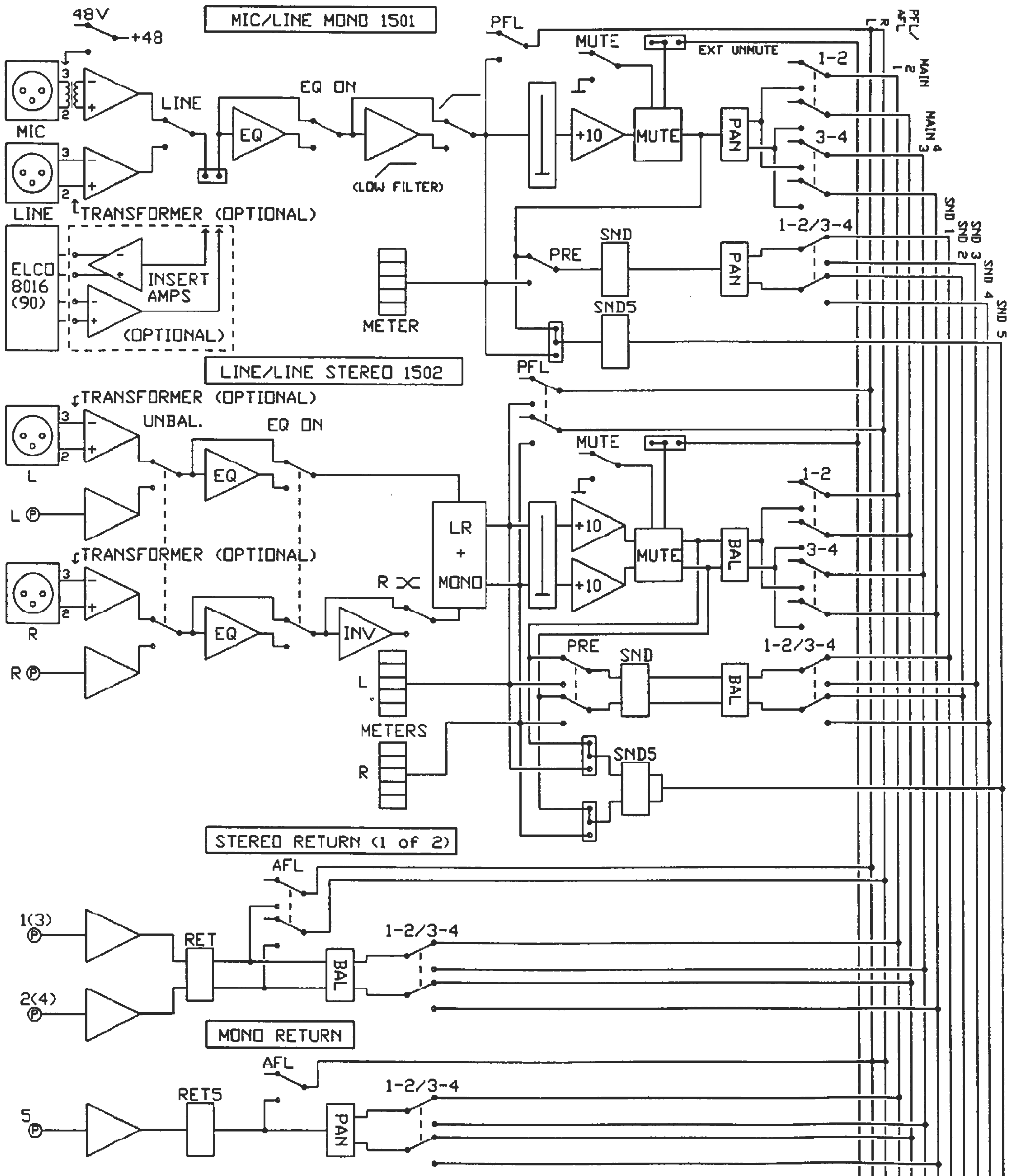
OUT 4, 3, 2, 1 - The 4 signals are unbalanced "copies" of the signals on the 4 XLR-plugs below.

The remaining 2x12 - are unbalanced line inputs for Stereo modules. In slots fitted with a Mono module, these plugs are not connected!

Lower row (XLR-plugs) from left:

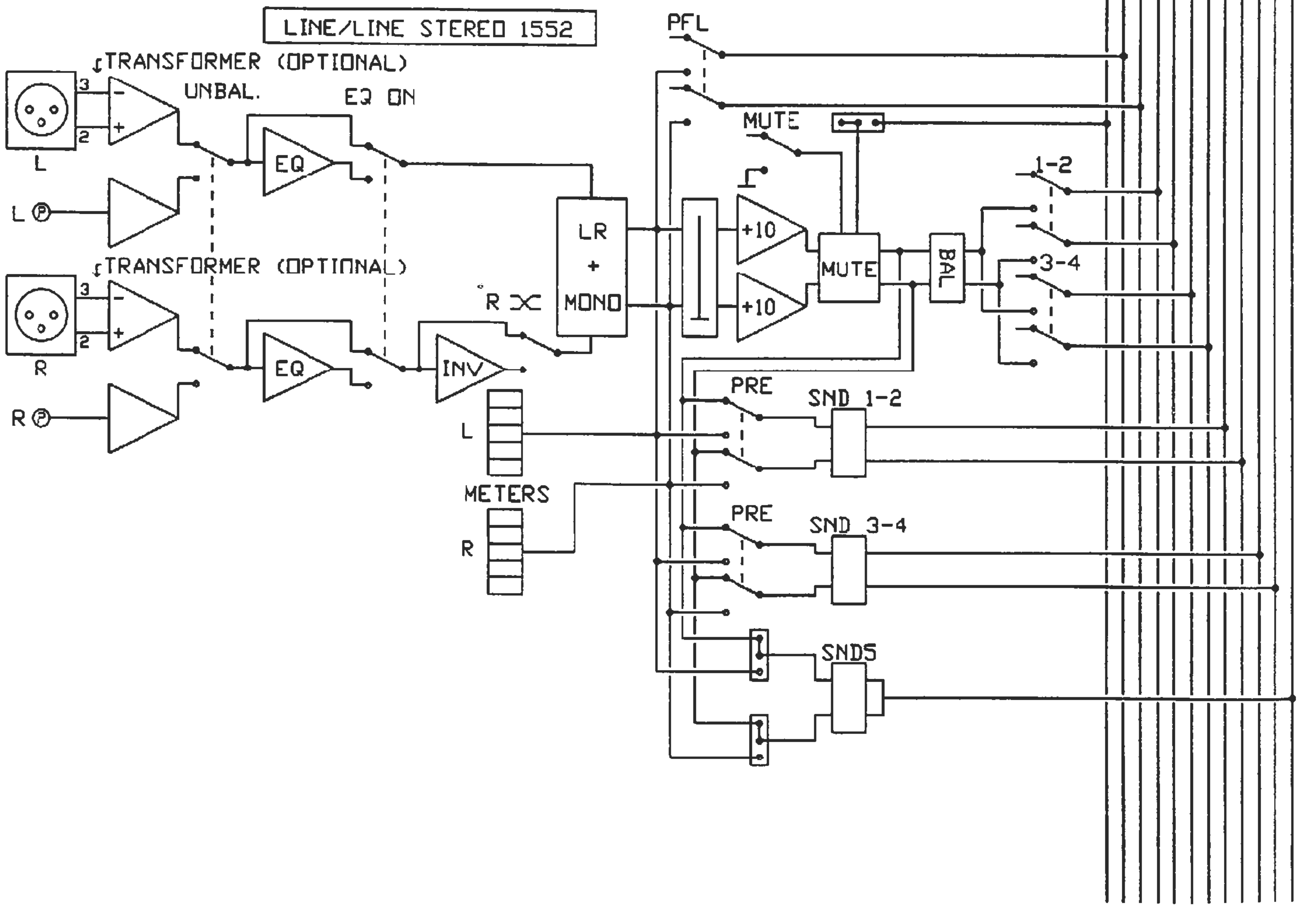
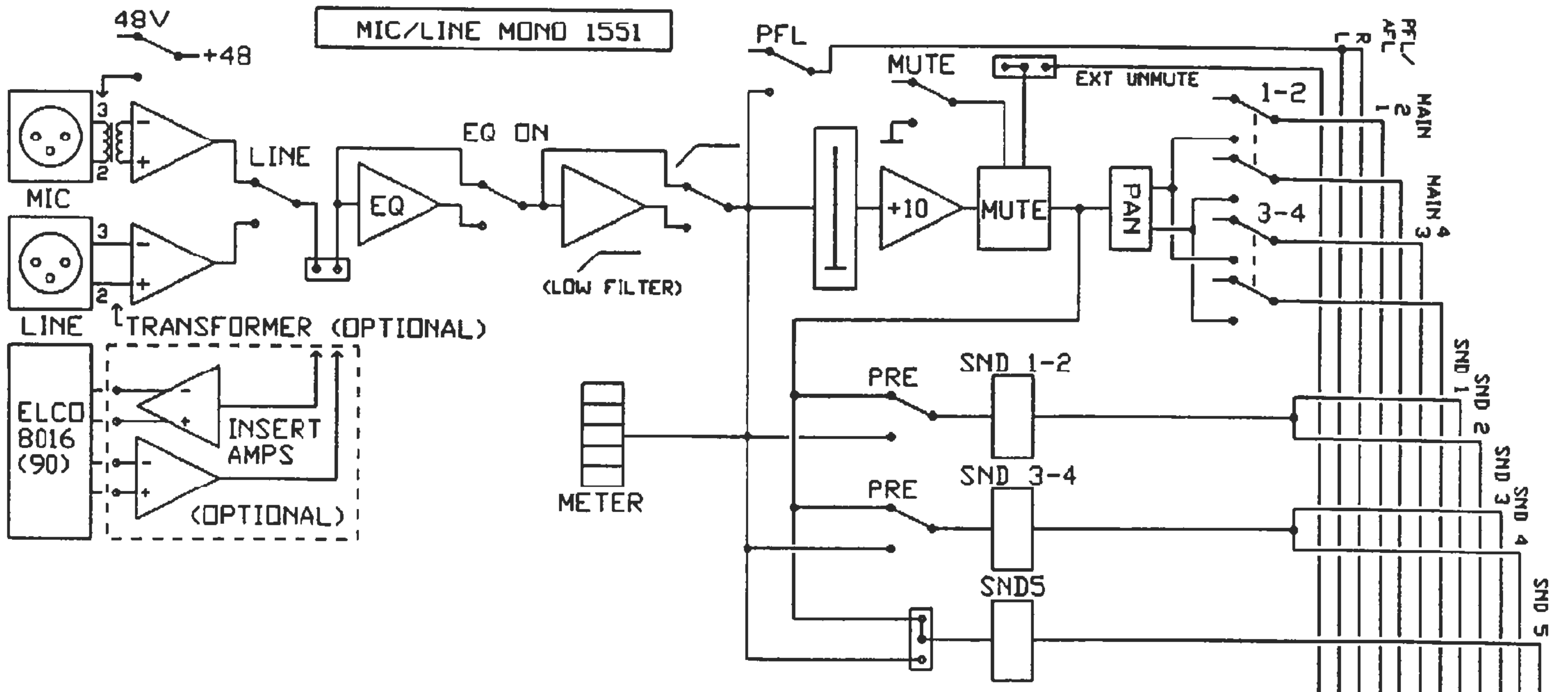
OUT 4, 3, 2, 1 - The 4 signals are balanced "copies" of the signals on the 4 unbalanced phono-plugs above and may be considered the console's "Main Outputs". The level on these plugs are determined by master faders 1-2 & 3-4. If transformers are optionally fitted (and ONLY then!), they can drive a telephone line to transmitter directly.

The remaining 2x12 - are balanced inputs to the 12 input modules, MIC/LINE for Mono modules and LINE L/ LINE R for Stereo modules.



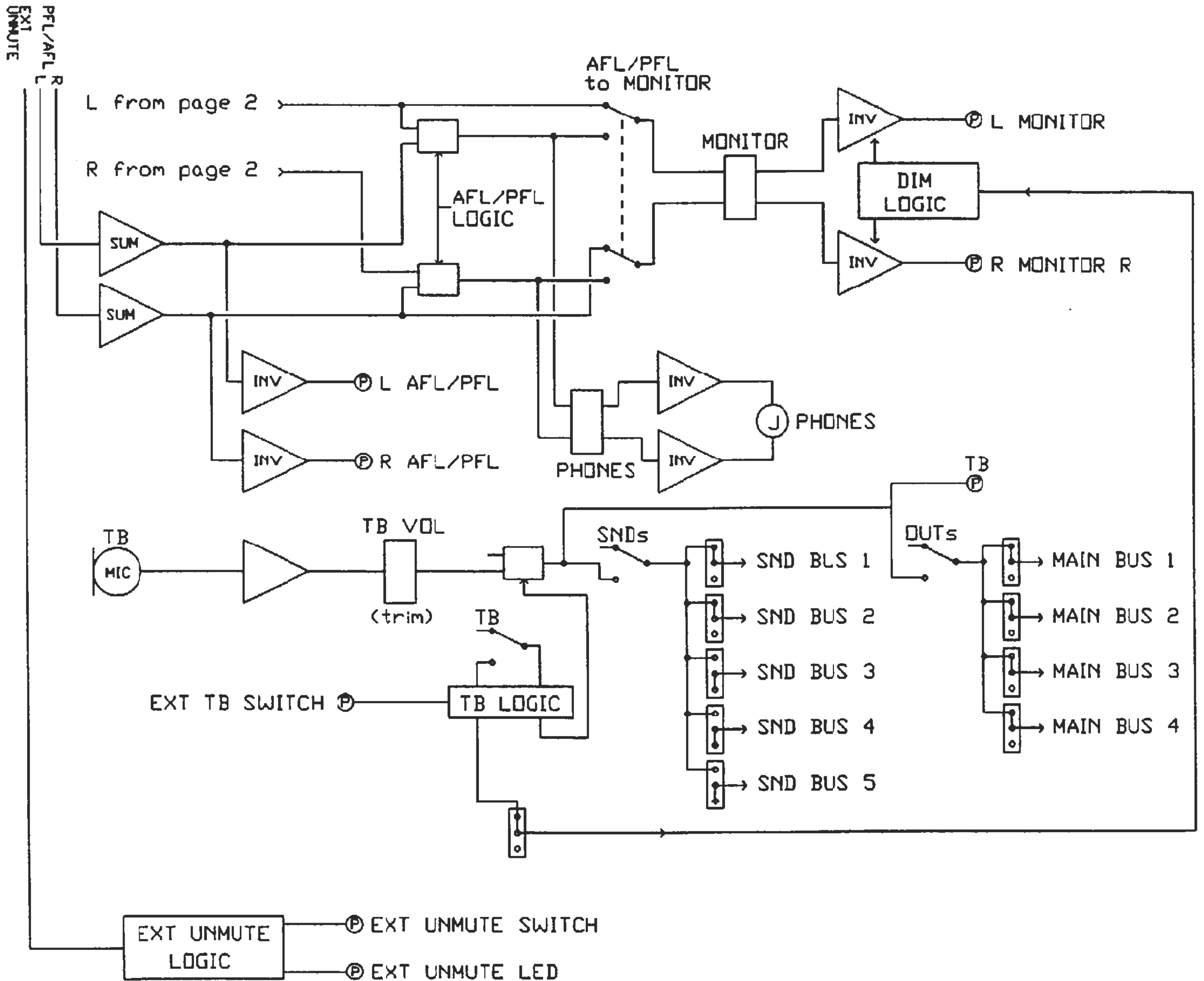
- = ELECTRONIC SWITCH
- = CONTROL
- = JUMPER - DEFAULT SETTING SHOWN
- = GROUND
- = PHONO PLUG
- = JACK PLUG
- ALL SWITCHES SHOWN "OFF" = "UP"

ELBERG LYD-TEKNIK DK-3520 Farum		+45 44 99 26 99
Designed by ELBERG		
FILE: BC15BL1		
DATE/REVISION: 981025/3		
PRODUCT:		ELBERG BC15
DIAGRAM:		BLOCK 1 of 4



- = ELECTRONIC SWITCH
- = CONTROL
- = JUMPER - DEFAULT SETTING SHOWN
- = GROUND
- = PHONO PLUG
- = JACK PLUG
- ALL SWITCHES SHOWN "OFF" = "UP"

ELBERG LYD-TEKNIK DK-3520 Farum		+45 44 99 26 99
Designed by ELBERG		
FILE: BC15BL2		
DATE/REVISION: 990915/1		
PRODUCT: ELBERG BC15		
DIAGRAM: BLOCK 2 of 4		



ELBERG LYD-TEKNIK	
DK-3520 Farum	
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Designed by ELBERG	
FILE: BC15BL3	
DATE/REVISION: 980625/5	
PRODUCT:	ELBERG BC15
DIAGRAM:	BLOCK 4 of 4

Setup of ELBERG BC15 mixere:

Serial no.

Input channels:

Standard setup:	Channel no.											
	1	2	3	4	5	6	7	8	9	10	11	12
Module type 1)	51	51	51	51	52	52	52	52	52	52	52	52
Transformer (LINE) [x]												
Ext. Unmute ON [x]		x	x	x								
SND 5 pre fader [x]												
Faderknob colour [w, b, g, r, y] *)	w	w	w	w	y	y	y	y	w	w	w	w
Insert (mono channels only) [x]												
Penny & Giles fader [x]												

Specific setup:	Channel no.											
	1	2	3	4	5	6	7	8	9	10	11	12
Modul type 1)												
Transformer (LINE) [x]												
Ext. Unmute ON [x]												
SND 5 pre fader [x]												
Faderknob colour [w, b, g, r, y] *)												
Insert (mono channels only) [x]												
Penny & Giles fader [x]												

1) [15]01, 51, 02, 52, 62. If nothing is selected, a cover plate will be mounted instead of a channel.

Master & Effect channel etc.:

Standard setup:	S1	S2	S3	S4	S5	O1	O2	O3	O4
Talk back to SENDs/OUTs [x]	x	x				x	x	x	x
Transformer (OUTs) [x]									
Master faderknobs other colour than red [colour] *)									
Master faders +10 dB [x]									
Master faders Penny & Giles [x]									
Talk back doesn't dim MONITOR OUT [x]									
EXT UNMUTE LED lights on channel "off" [x]									
No effect channel [x]									

Specific setup:	S1	S2	S3	S4	S5	O1	O2	O3	O4
Talk back to SENDs/OUTs [x]									
Transformer (OUTs) [x]									
Master faderknobs other colour than red [colour] *)									
Master faders +10 dB [x]									
Master faders Penny & Giles [x]									
Talk back doesn't dim MONITOR OUT [x]									
EXT UNMUTE LED lights on channel "off" [x]									
No effect channel [x]									

*) Colours: w = white, b = blue, g = green, r = red, y = yellow