series 15

USER GUIDE

Soundcraft

CE This equipment complies with the EMC Directive 89/336/EEC

For further details contact:

Harman International Industries Ltd,
Cranborne House, Cranborne Road,
Potters Bar, Hertfordshire, EN6 3JN, U.K.

Tel: +44 (0) 1707 665000
Fax: +44 (0) 1707 660482

© Harman International Industries Ltd. 1999
All rights reserved

Parts of the design of this product may be protected by worldwide patents.

Part No. ZM0230
Issue 2

Soundcraft is a trading division of Harman International Industries Ltd.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor. Soundcraft shall not be liable for loss or damage whatsoever arising from the use of information or any error contained in this manual.

No part of this manual may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, electrical, mechanical, optical, chemical, including photocopying and recording, for any purpose without the express written permission of Soundcraft.

It is recommended that all maintenance and service on the product should be carried out by Soundcraft or its authorised agents. Soundcraft cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

Soundcraft

Harman International Industries Limited.
Cranborne House,
Cranborne Road,
Cranborne Industrial Estate,
Potters Bar,
Herts.,
EN6 3JN
UK.

Tel: 01707 665000
Fax: 01707 660482

SERIES 15

Contents

1. Introduction **1.1**

Introduction 1.2

Warranty 1.3

2. Installation **2.1**

Dimensions 2.2

Connector Pinouts 2.3

Jumper and Switch Options 2.6

3. Block Diagrams **3.1**

System Block Diagram 3.3

4. Functional Description **4.1**

Dual Mic Input Module 4.2

Mono Telco Input Module 4.4

Stereo Telco Input Module 4.6

Stereo Input Module 4.8

Group Output Module 4.10

Stereo Master Module 4.12

Monitor Module 4.14

Meterbridge 4.18

5. Specifications **5.1**

Series 15 Typical Specifications 5.3

SERIES 15

1 Introduction

Introduction

Congratulations on purchasing a Soundcraft console.

The Series 15 is a fully modular mixing console designed for On-Air and Broadcast production for use in local radio stations and smaller studios of national broadcasters

The console is an extension to Soundcraft's successful radio range and offers additional features, such as four stereo groups, insert points and comprehensive monitoring facilities.

System Overview

- 16, 24 and 32 module frames
- Full range of mono, stereo and telco inputs
- 4 stereo groups
- Mono and stereo cleanfeeds
- Comprehensive monitoring and talk back
- Routing controlled monitor muting
- Comprehensive remote facilities

Power Supply

- The Series 15 uses the CPS275 Power Supply.

Warranty

1 **Soundcraft** is a trading division of Harman International Industries Ltd .

End User means the person who first puts the equipment into regular operation.

Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.

Equipment means the equipment supplied with this manual.

2 If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.

3 Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.

4 This warranty shall only be available if:

a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and

b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and

c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and

d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.

5 Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.

6 The benefit of this Warranty may not be assigned by the End User.

7 End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

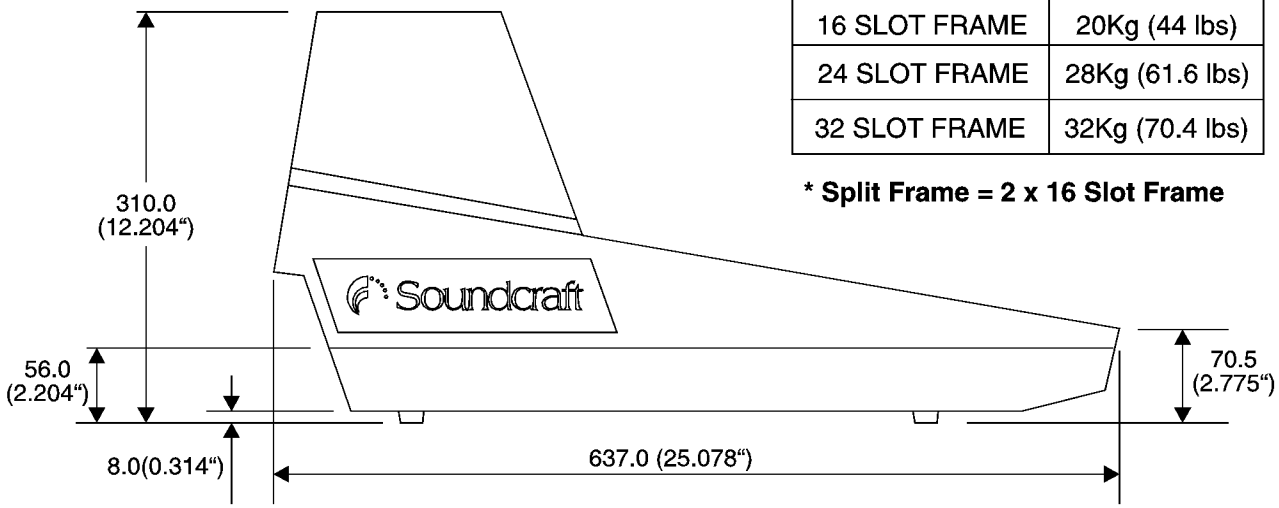
SERIES 15

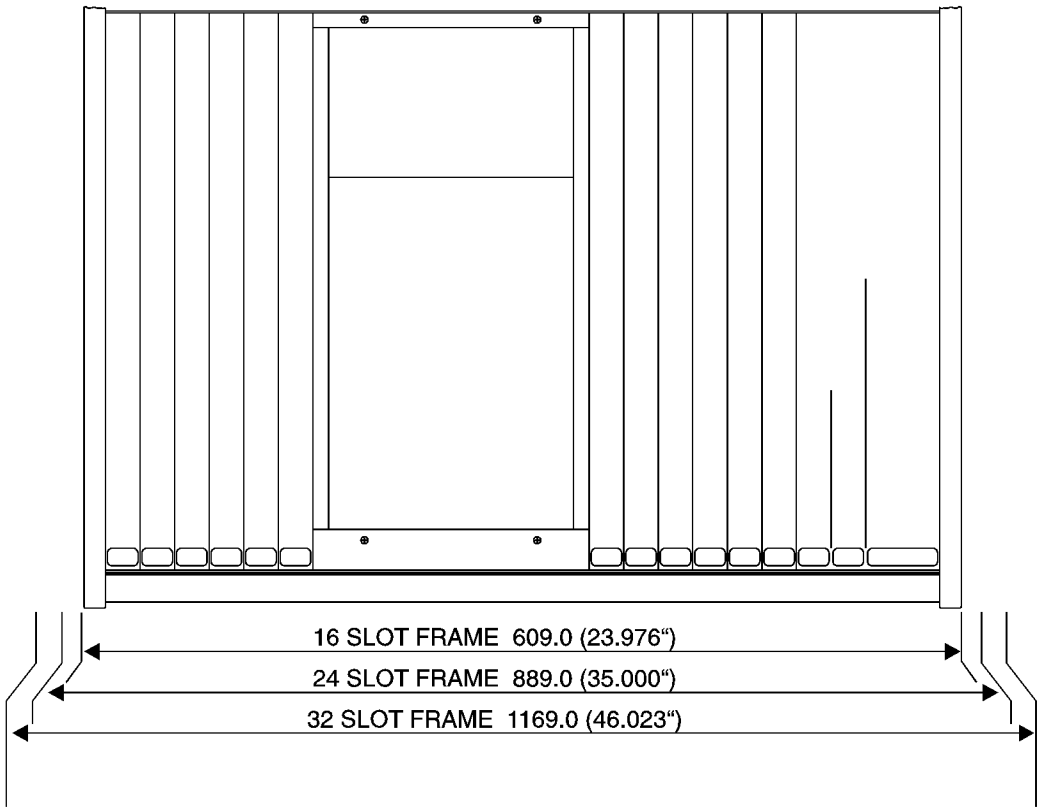
2 Installation

All dimensions are in millimeters (inches in brackets)

CONSOLE	WEIGHT
16 SLOT FRAME	20Kg (44 lbs)
24 SLOT FRAME	28Kg (61.6 lbs)
32 SLOT FRAME	32Kg (70.4 lbs)

*** Split Frame = 2 x 16 Slot Frame**





Connector Pinouts

This section is intended to help you to connect, to the console, the external equipment in your installation. It also identifies the user-definable options which are available.

Dual Mic Input Module

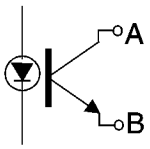
Remotes 15-way D-type Female

Remote Outputs are opto-coupled on Input modules.

Relay contacts on Monitor module.

OPTO POLARITY

A= COLLECTOR
B=EMITTER

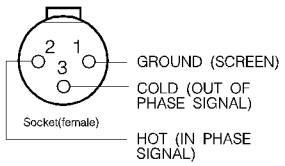


1	Chassis Ground	9	Cue Lite 1A output (*)
2	Cue Lite 1Bm output (*)	10	Cue Lite 2A output (*)
3	Cue Lite 2B output (*)	11	+5V
4	Ext T/B Hi	12	Ext T/B Lo
5	Cough A input	13	Cough B input
6	GND	14	Insert Send -
7	Insert Send +	15	Insert Return -
8	Insert Return +		

*or Hybrid latch on Telco Module

Inputs

3pin XLR Female
1. Ground
2. Hot (in phase) signal
3. Cold (in phase) signal



Stereo Input Module

Remote 15-way D-type Female

1	Chassis Ground	9	Start 1A
2	Start 1B	10	Stop 1A
3	Stop 1B	11	Chassis Ground
4	Chassis Ground	12	Start 2A
5	Start 2B	13	Stop 2A
6	Stop 2B	14	Chassis Ground
7	+ 5V	15	Chassis Ground
8	GND		

Inputs + Inserts Female

1	Chassis Ground	14	Input 1 L -
2	Input 1 L +	15	Chassis Ground
3	Chassis Ground	16	Input 1 R -
4	Input 1 R +	17	Chassis Ground
5	Chassis Ground	18	Input 2 L -
6	Input 2 L +	19	Chassis Ground
7	Chassis Ground	20	Input 2 R -
8	Input 2 R +	21	Chassis Ground
9	Insert Return R +	22	Insert Return R -
10	Insert Send R +	23	Insert Send R -
11	Chassis Ground	24	Insert Send L -
12	Insert Send L +	25	Insert Return L -
13	Insert Return L +		

StereoTelco Module

Remote 15-way D-type Female

1	Chassis Ground	9	Start 1A
2	Start 1B	10	Stop 1A
3	Stop 1B	11	Chassis Ground
4	Chassis Ground	12	Start 2A
5	Start 2B	13	Stop 2A
6	Stop 2B	14	Chassis Ground
7	+ 5V	15	Chassis Ground
8	GND		

Inputs and Cleanfeed Outputs

1	Chassis Ground	14	Input 1 L -
2	Input 1 L +	15	Chassis Ground
3	Chassis Ground	16	Input 1 R -
4	Input 1 R +	17	Chassis Ground
5	Chassis Ground	18	Input 2 L -
6	Input 2 L +	19	Chassis Ground
7	Chassis Ground	20	Input 2 R -
8	Input 2 R +	21	Chassis Ground
9	----------	22	----------
10	Insert Send R +	23	Insert Send R -
11	Chassis Ground	24	Insert Send L -
12	Insert Send L +	25	----------
13	----------		

Stereo Master Module

Outputs/Inserts

1	Chassis Ground	9	Aux Out -
2	Aux Out +	10	-10dBV Right
3	-10dBV Left	11	Chassis Ground
4	Insert Return R +	12	Insert Return R -
5	Insert Send R +	13	Insert Send R -
6	Chassis Ground	14	Insert Send L -
7	Insert Send L +	15	Insert Return L -
8	Insert Return L +		

Monitor Module

External Inputs

1	Chassis Ground	9	Ext 1 L -
2	Ext 1 L +	10	Ext 1 R -
3	Ext 1 R +	11	Ext 2 L -
4	Ext 2 L +	12	Ext 2 R -
5	Ext 2 R +	13	GND
6	GND	14	Ext 4 L +
7	Ext 3 L +	15	Ext 4 R +
8	Ext 3 R +		

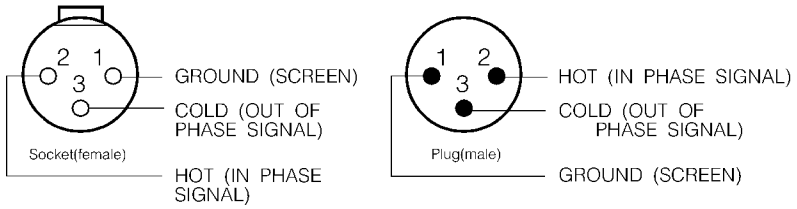
Remotes

(2 sets of ganged contacts per Output - relay contacts - normally open between A & B)

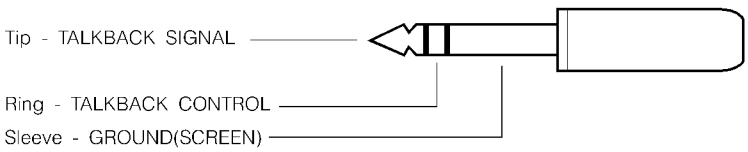
1	Chassis Ground	6	C/Room Mute 1A
2	C/Room Mute 1B	7	C/Room Mute 2A
3	C/Room Mute 2B	8	Studio Mute 1A
4	Studio Mute 1B	9	Studio Mute 2A
5	Studio Mute 2B		

Miscellaneous Audio Connectors

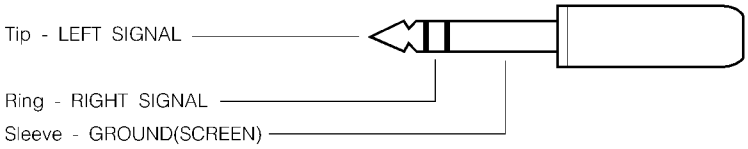
MIC & TELCO LINE INPUTS C/F, GROUP, PROGRAM & MONO OUTPUTS



1/4" `A' Gauge Stereo Jack Plug used as Talkback Input/Output



1/4" `A' Gauge Stereo Jack Plug used for Headphones and Monitors



Dual Mic Input Module

J1	Mic 1 Phantom Power	
J2	Mic 2 Phantom Power	
J3	Add Channel to T/Back Mix	2-3 = Enable 1-2 = Disable
SW6A	Close to disable PFL switch dual action	default = open
SW6B	Close to enable PFL cancel from fader up	default = closed
SW6C	Close to Bypass Insert	default = closed
SW6D	Close for Insert IN	default = open
SW6E	Close for Mic 1 C/Room mute	default = closed
SW6F	Close for Mic 1 Studio mute	default = open
SW6G	Close for Mic 2 C/Room mute	default = closed
SW6H	Close for Mic 2 Studio mute	default = open

Stereo/Stereo Telco Input

SW9A	Close to bypass insert	default = closed
SW9B	Close for insert IN	deafault = open
SW10A	Close enables repeat start from START button	default = open
SW10B	Close disables dual action of PFL switch	default = open
SW10C	Close enables latching START	default = open
SW10D	Close enables PFL cancel from fader up	default = closed

Group/Master Modules

J1	Insert Bypass Left	1-2 = bypass 2-3 = insert in
J2	Insert Bypass Right	1-2 = bypass 2-3 = insert in

Monitor Module (LH PCB)

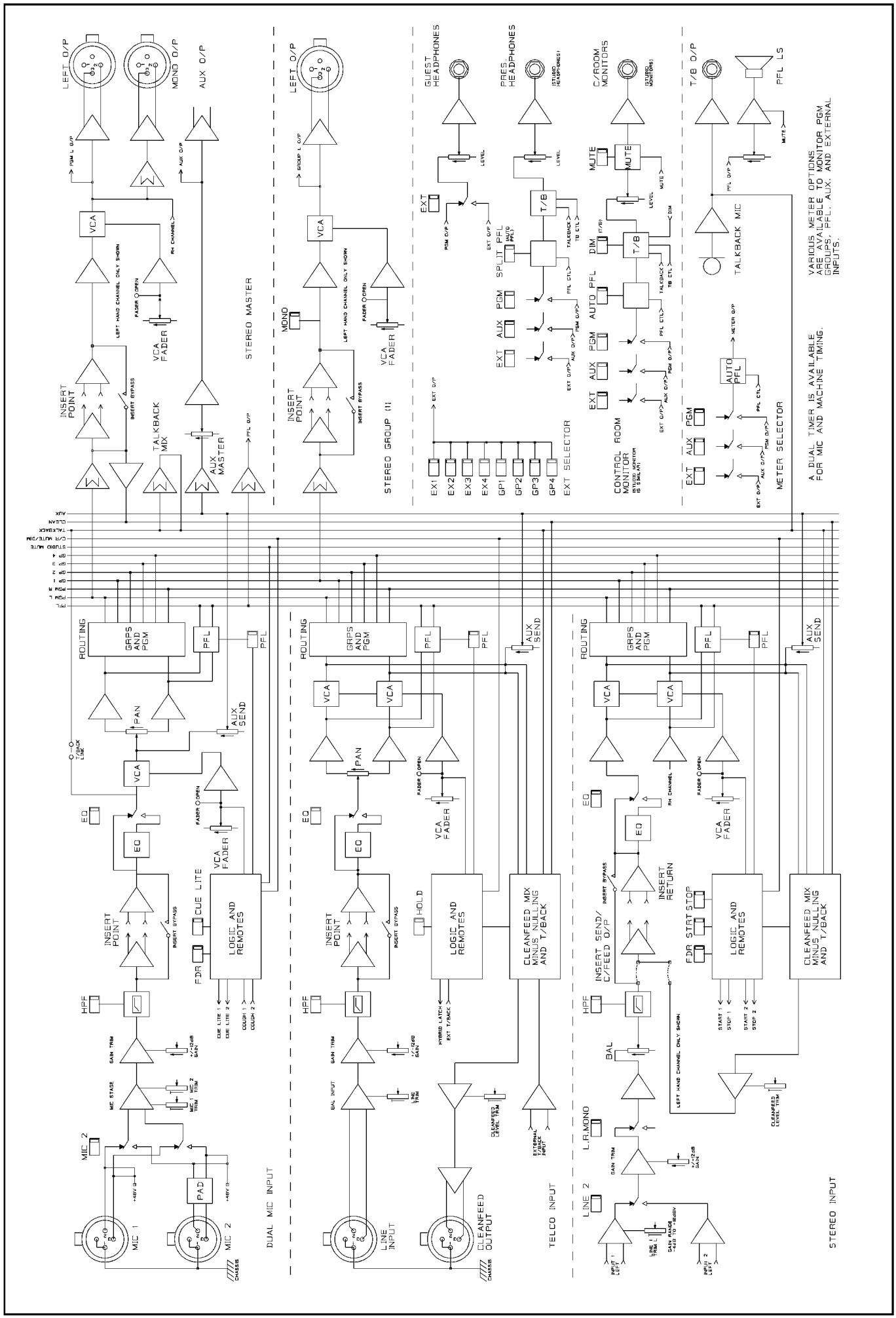
J1	Talkback to Presenter's Phones	1-2 = enable 2-3 = disable
J2	Talkback to C/Room	1-2 = enable 2-3 = disable

Monitor Module (RH PCB)

J1	Talkback to Studio Phones	1-2 = enable 2-3 = disable
J2	Talkback to Studio	1-2 = enable 2-3 = disable

SERIES 15

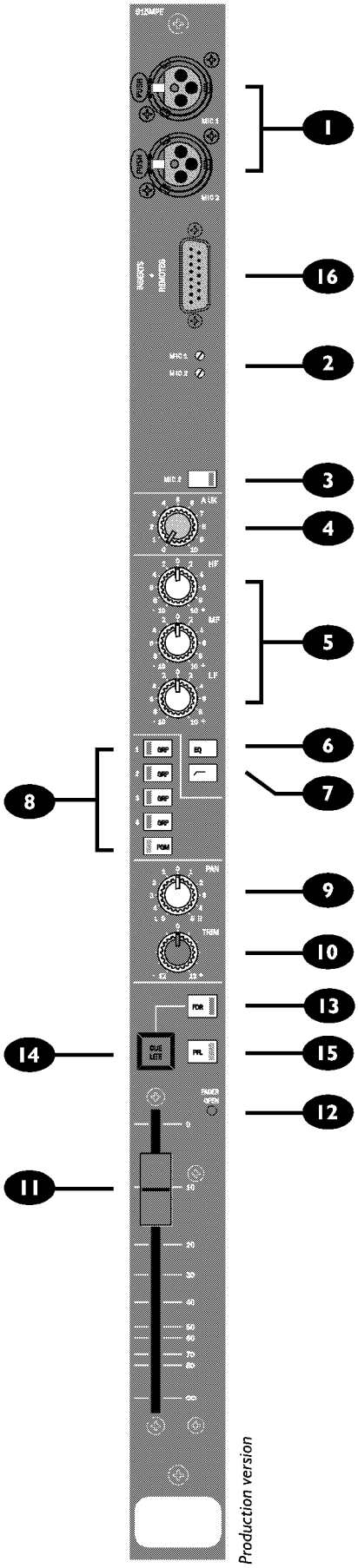
3 Block Diagrams


LEFT O/P
MONO O/P
AUX O/P
STEREO MASTER
VCA
VCA FADER
INSERT POINT
TALKBACK MIX
AUX MASTER
STEREO GROUP (1)
GUEST HEADPHONES
PRES. HEADPHONES
C/ROOM MONITORS
T/B O/P
PFL LS
TALKBACK MIC
METER SELECTOR
CONTROL ROOM MONITOR
EXT SELECTOR
SPLIT PFL
AUTO PFL
ROUTING
GRPS AND PGM
PFL
AUX SEND
PAN
EQ
HPF
CUE LITE
LOGIC AND REMOTES
CLEANFEED MIX MINUS NULLING AND T/BACK
INSERT SEND/ C/FEED O/P
INSERT RETURN
DUAL MIC INPUT
TELCO INPUT
STEREO INPUT
MIC 1
MIC 2
PAD
LINE INPUT
CLEANFEED OUTPUT
L,R,MONO
LINE 2
A DUAL TIMER IS AVAILABLE FOR MIC AND MACHINE TIMING.
VARIOUS METER OPTIONS ARE AVAILABLE TO MONITOR PGM GROUPS, PFL, AUX, AND EXTERNAL INPUTS.

SERIES 15

4 Functional Description

Dual Mic Input Module



Production version

This module is available in Production (with Routing) or On-Air (without Routing) variants, with or without EQ.

1 MIC INPUTS

The Dual Mic input module has connections for two microphones with associated remote connections for cue light and cough switches. Each input has internal jumpers to select phantom power, and PCB switches for programming control room and studio mutes.

Inputs are via standard female XLR-3 connectors, accessible by hingeing up the meterbridge.

As an option, the MIC 2 input may be fitted with a pad, allowing the connection of line level sources.

2 INPUT SENSITIVITY PRESETS

Two through-panel presets are available, one for each of the input sockets, accessible under the meterbridge. They allow for the coarse adjustment of input levels using a small screwdriver.

3 MIC 2

The MIC 2 switch selects the MIC 2 input socket when depressed and the Mic 1 input socket when released. A LED in the switch glows red when the MIC 2 input is selected.

4 AUX SEND

This control routes the post fade channel signal to the mono Aux bus.

5 EQUALISER

The optional 3 band EQ provides 10dB of boost or cut at 10kHz (HF), 3kHz (MF) and 180Hz (LF).

6 EQ

When the EQ switch is depressed, the EQ section is switched into the signal path. The integral yellow LED illuminates when the EQ is active. When the switch is released the signal path bypasses the EQ section.

7 FILTER

A High Pass Filter is provided that gives 12dB per octave roll off at 80Hz. This control is useful for filtering-out low frequency hum.

8 ROUTING

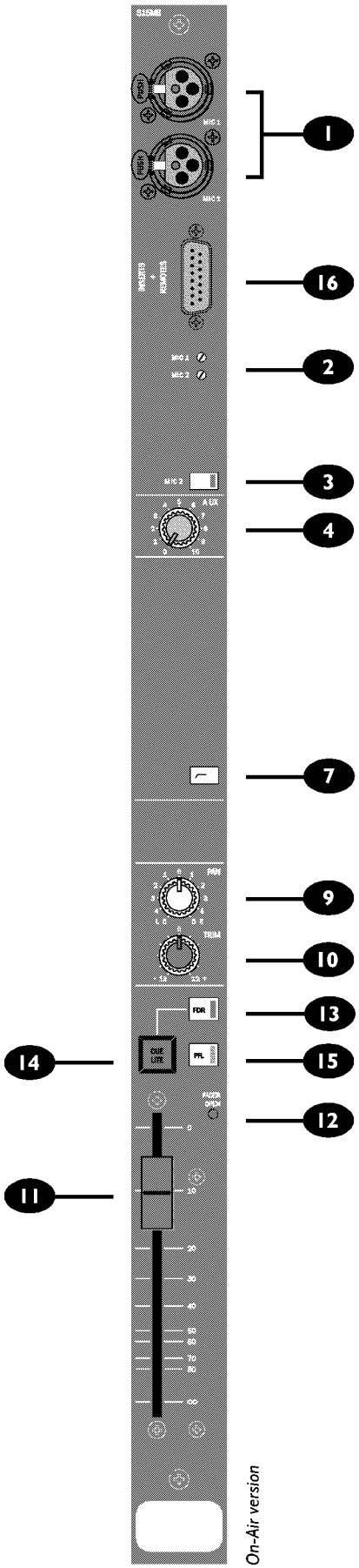
The post fade channel signal may be routed to any combination of the four stereo groups (1 - 4) and the main stereo master output (PGM). Integral LEDs illuminate to show the routing selection.

9 PAN

The PAN control determines the position of the signal in the stereo mix. Rotation fully anticlockwise feeds the signal solely to the left mix bus, whilst rotation clockwise sweeps the image to the right mix bus.

10 TRIM

This control provides +/- 12dB level adjustment, and is useful when in PFL, selected by the alternate action PFL switch.



11 FADER

The smooth-action, 100mm fader gives a gain of unity (0dB) when it is in the fully up position.

12 FADER OPEN LED

There is a microswitch attached to the fader which detects when it is in the fully down position, and this is used to control several of the features which are described below. The Fader Open LED gives visual indication that the fader has moved off it's back stop.

Fader Open may be programmed to cancel PFL selection.

13 FDR SWITCH

The latching FDR switch transfers the remote CUE LITE function to the fader only, disabling the CUE LITE switch (see below).

14 CUE LITE

The electronically latching CUE LITE switch controls the opto-isolated remote cue light function, available on the INSERTS + REMOTES connector, and provides a closure when the switch is illuminated. When FDR is selected (see above), the illumination and switch action follow the fader.

15 PFL

The Pre-Fade Listen switch allows you to listen, via the Monitors section, to an input on this channel. When the Fader is moved away from the down position the PFL circuit is automatically deactivated if this function is selected by an internal jumper: PFL cannot therefore be activated when the Fader is up. A red LED glows to indicate that the PFL circuit is active.

16 INSERT + REMOTES SOCKET

This 25-way D-type connector allows you to implement the following facilities:

Insert

A pre-EQ, balanced insert point is provided for the use of external processors. The insert may be switched out when not required by an internal PCB switch.

Cough Switch

This user-provided facility has two functions, as follows:

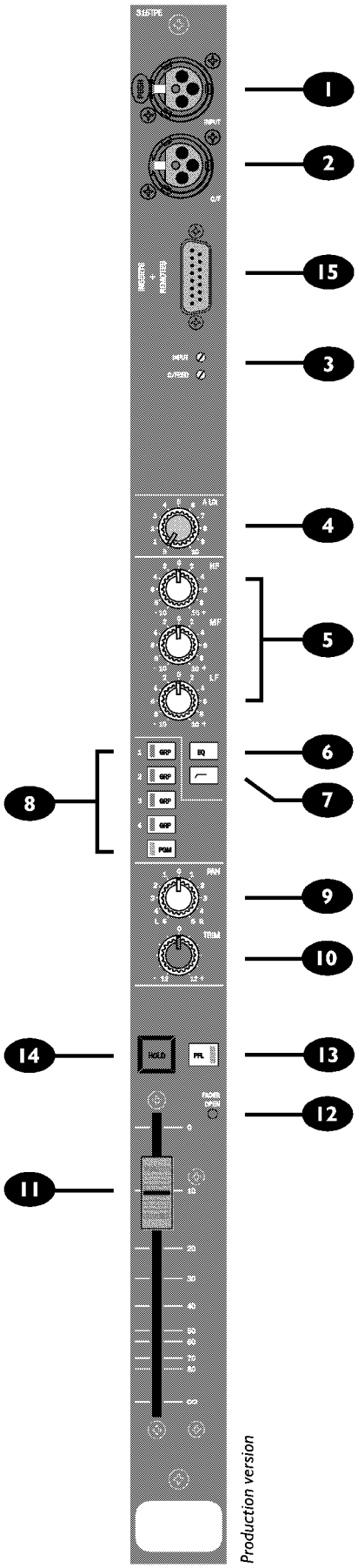
1) The Input Channel is muted when the Fader is up and the external Cough Switch is closed. This allows the Presenter/Guest to temporarily mute his or her microphone.

2) The Cough Switch allows the Guest to force a PFL so that he or she may talk to the Presenter. This forced PFL occurs when the Fader is down and the Cough Switch is closed.

Cue Lite

This user-provided facility will be controlled via opto-coupled outputs which close when the Fader is up and the CUE LITE switch is depressed.

Mono Telco Input Module



The Mono Telco module must be connected to the telephone system via a telephone hybrid circuit. The module has connections for a mono line input with associated mono cleanfeed output. Remotes are provided for hybrid latching and external talkback inputs to the cleanfeed.

1 INPUT

A female XLR input into which the output from an external telephone hybrid may be plugged. It is a balanced input.

2 C/F (Cleanfeed)

The Clean Feed output is a male XLR connector which may be plugged into the input of an external telephone hybrid. The Clean Feed signal (also known as Mix Minus) is the programme output signal minus the phone signal. It is a balanced output.

Note: If programme output from the cleanfeed is required when the fader is down, a wire link must be fitted to LK19 on the PCB.

3 LEVEL ADJUSTMENT PRESETS

Input sensitivity and Cleanfeed output level are adjusted by through-panel presets located under the meterbridge.

LINE (Coarse Adjust)

This allows the coarse adjustment of the Line input level.

C/F (Coarse Adjust)

Allows variation of programme level returned to caller on telephone call.

4 AUX SEND

This control routes the post fade channel signal to the mono Aux bus.

5 OPTIONAL EQUALISER

The optional 3 band EQ provides 10dB of boost or cut at 10kHz (HF), 3kHz (MF) and 180Hz (LF).

6 EQ

When the EQ switch is depressed, the EQ section is switched into the signal path. The integral yellow LED illuminates when the EQ is active. When the switch is released the signal path bypasses the EQ section.

7 FILTER

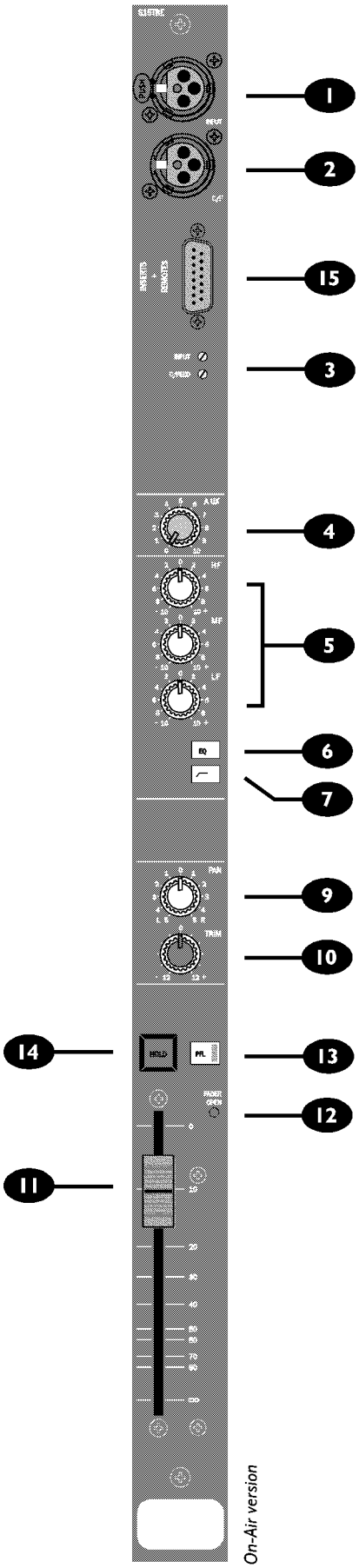
A High Pass Filter is provided that gives 12dB per octave roll off at 80Hz. This control is useful for filtering-out low frequency hum.

8 ROUTING

The post fade channel signal may be routed to any combination of the four stereo groups (1 - 4) and the main stereo master output (PGM). Integral LEDs illuminate to show the routing selection.

9 PAN

The PAN control determines the position of the signal in the stereo mix. Rotation fully anticlockwise feeds the signal solely to the left mix bus, whilst rotation clockwise sweeps the image to the right mix bus.



10 TRIM

This control provides +/- 12dB level adjustment, and is useful when in PFL, selected by the alternate action PFL switch.

11 FADER

The smooth-action, 100mm fader gives a gain of unity (0dB) when it is in the fully up position.

12 FADER OPEN LED

There is a microswitch attached to the fader which detects when it is in the fully down position, and this is used to control several of the features which are described below. The Fader Open LED gives visual indication that the fader has moved off it's back stop.

Fader Open may be programmed to cancel PFL selection.

13 PFL

The Pre-Fade Listen switch allows you to listen, in mono, via the Monitors section, to an input on this channel. When the Fader is moved away from the down position the PFL circuit is automatically deactivated if this function is selected by an internal jumper: PFL cannot therefore be activated when the Fader is up. A red LED glows to indicate that the PFL circuit is active.

Selecting PFL automatically engages the hybrid and routes the console talkback system to the cleanfeed output, enabling a two-way conversation between the caller and engineer/presenter.

14 HOLD

The electronically latching HOLD switch engages the telephone hybrid, allowing a call which has been set up in PFL to be retained while waiting to put the caller on air. Once the fader is up, closing the fader will cancel the HOLD selection.

15 INSERT + REMOTES SOCKET

This 25-way D-type connector allows you to implement the following facilities:

Insert

A pre-EQ, balanced insert point is provided for the use of external processors. The insert may be switched out when not required by an internal PCB switch.

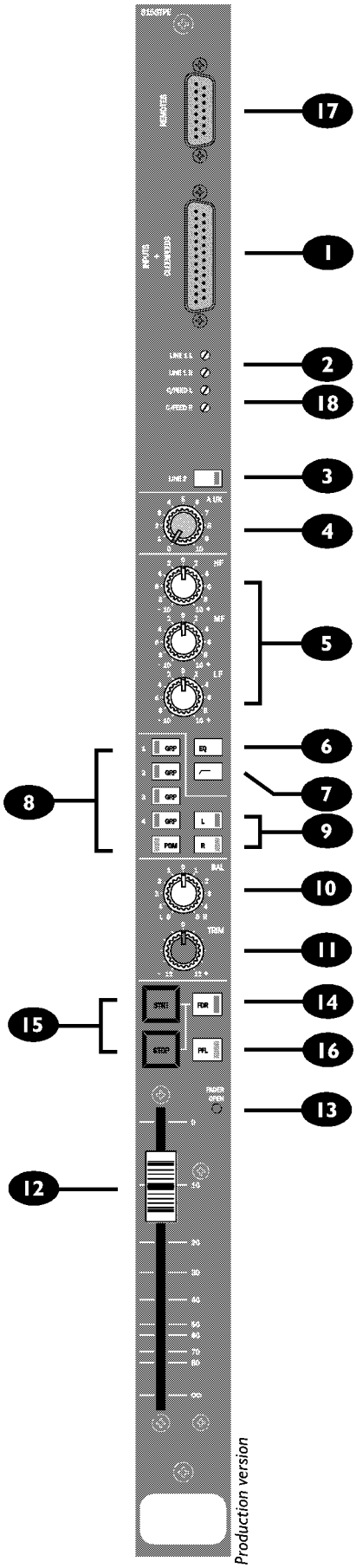
Remote HOLD

Latches the telephone hybrid (see HOLD above).

External Talkback

An external Talkback input to the cleanfeed.

Stereo Telco Input Module



The Stereo Telco module is available in Production (with Routing), with or without EQ, or On-Air (without Routing) variants, and includes a stereo clean feed output.

1 INPUTS + CLEANFEED

The module has connections for two balanced stereo line level inputs with associated remote connections for machine stop starts. Line 1 is suitable for nominal operating levels of +4dBu to -10dBV, and Line 2 has a fixed gain of 0dB.

The stereo cleanfeed output is balanced. Connections are via a 25-way D-type connector under the meterbridge.

Note: If programme output from the cleanfeed is required when the fader is down, a wire link must be fitted to LK6 on the PCB.

2 LINE 1 SENSITIVITY PRESETS

Two through-panel presets are available under the meterbridge. They allow for the adjustment of Line 1 Left and Right input levels using a small screwdriver.

3 LINE 2

The LINE 2 switch selects the fixed gain LINE 2 input and remotes when depressed and the Line 1 input and remotes when released. A LED in the switch glows red when the LINE 2 input is selected.

4 AUX SEND

This control routes the post fade channel signal to the mono Aux bus.

5 OPTIONAL EQUALISER

The optional 3 band EQ provides 10dB of boost or cut at 10kHz (HF), 3kHz (MF) and 180Hz (LF).

6 EQ

When the EQ switch is depressed, the EQ section is switched into the signal path. The integral yellow LED illuminates when the EQ is active. When the switch is released the signal path bypasses the EQ section.

7 FILTER

A High Pass Filter is provided that gives 12dB per octave roll off at 80Hz. This control is useful for filtering-out low frequency hum.

8 ROUTING

The post fade channel signal may be routed to any combination of the four stereo groups (1 - 4) and the main stereo master output (PGM). Integral LEDs illuminate to show the routing selection.

9 L/R

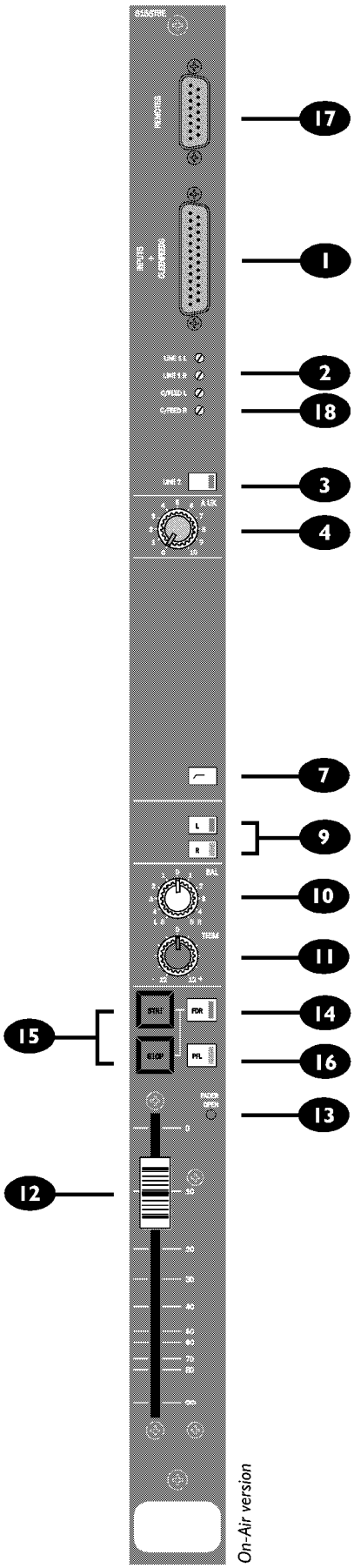
The L and R switches select Left and Right respectively in mono to both side of the channel when depressed. When both are depressed, a mono sum of the stereo input is switched to both sides of the channel.

10 BAL

The BAL control determines the position of the signal in the stereo mix, providing approximately 6dB adjustment left and right.

11 TRIM

This control provides +/- 12dB level adjustment, and is useful when in PFL, selected by the alternate action PFL switch.



12 FADER

The smooth-action, 100mm fader gives a gain of unity (0dB) when it is in the fully up position.

13 FADER OPEN LED

There is a microswitch attached to the fader which detects when it is in the fully down position, and this may be used to control the remote start/stop functions when FDR is selected (see below). The Fader Open LED gives visual indication that the fader has moved off it's back stop.

Fader Open may be programmed to cancel PFL selection.

14 FDR SWITCH

The latching FDR switch transfers the remote START/STOP functions to the fader only, disabling the STRT and STOP switches (see below).

15 STRT/STOP

The STRT (START) and STOP switches are used for machine remotes and provide momentary pulse action via optocouplers to external equipment, or may be configured as a maintained switch closure by internal jumpers. The START function may be linked to the timer bus if required.

The internal switch illumination gives visual indication of the remotes status.

Selecting FDR (see above) disables the STRT and STOP switches and transfers control of the remotes to the fader. The switch illumination still follows the remotes, even when FDR is selected.

16 PFL

The Pre-Fade Listen switch allows you to listen, in mono, via the Monitors section, to an input on this channel. When the Fader is moved away from the down position the PFL circuit is automatically deactivated if this function is selected by an internal jumper: PFL cannot therefore be activated when the Fader is up. A red LED glows to indicate that the PFL circuit is active.

Selecting PFL automatically engages the hybrid and routes the console talkback system to the cleanfeed output, enabling a two-way conversation between the caller and engineer/presenter. A red LED glows to indicate that the PFL circuit is active.

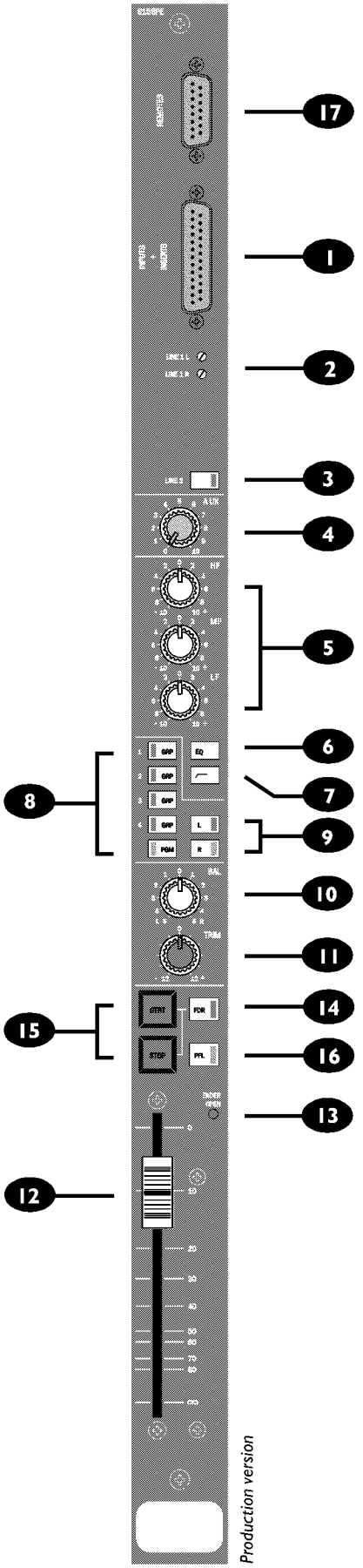
17 REMOTES

This 15-way D-type connector under the meterbridge provides optocoupled remote Start/Stop functions for two external machines. The remote selection follows the Line 1/Line 2 selection.

18 CLEANFEED LEVEL PRESETS

Two through-panel presets (left and right) are available under the meterbridge to adjust the level of the cleanfeed output.

Stereo Input Module



The Stereo Input module is available in Production (with Routing), with or without EQ, or On-Air (without Routing) variants.

1 INPUTS + INSERTS

The module has connections for two balanced stereo line level inputs with associated remote connections for machine stop starts. Line 1 is suitable for nominal operating levels of +4dBu to -10dBV, and Line 2 has a fixed gain of 0dB.

A balanced stereo insert point is provided. Connections are via a 25-way D-type connector under the meterbridge.

2 LINE 1 SENSITIVITY PRESETS

Two through-panel presets are available under the meterbridge. They allow for the adjustment of Line 1 Left and Right input levels using a small screwdriver.

3 LINE 2

The LINE 2 switch selects the fixed gain LINE 2 input and remotes when depressed and the Line 1 input and remotes when released. A LED in the switch glows red when the LINE 2 input is selected.

4 AUX SEND

This control routes the post fade channel signal to the mono Aux bus.

5 OPTIONAL EQUALISER

The optional 3 band EQ provides 10dB of boost or cut at 10kHz (HF), 3kHz (MF) and 180Hz (LF).

6 EQ

When the EQ switch is depressed, the EQ section is switched into the signal path. The integral yellow LED illuminates when the EQ is active. When the switch is released the signal path bypasses the EQ section.

7 FILTER

A High Pass Filter is provided that gives 12dB per octave roll off at 80Hz. This control is useful for filtering-out low frequency hum.

8 ROUTING

The post fade channel signal may be routed to any combination of the four stereo groups (1 - 4) and the main stereo master output (PGM). Integral LEDs illuminate to show the routing selection.

9 L/R

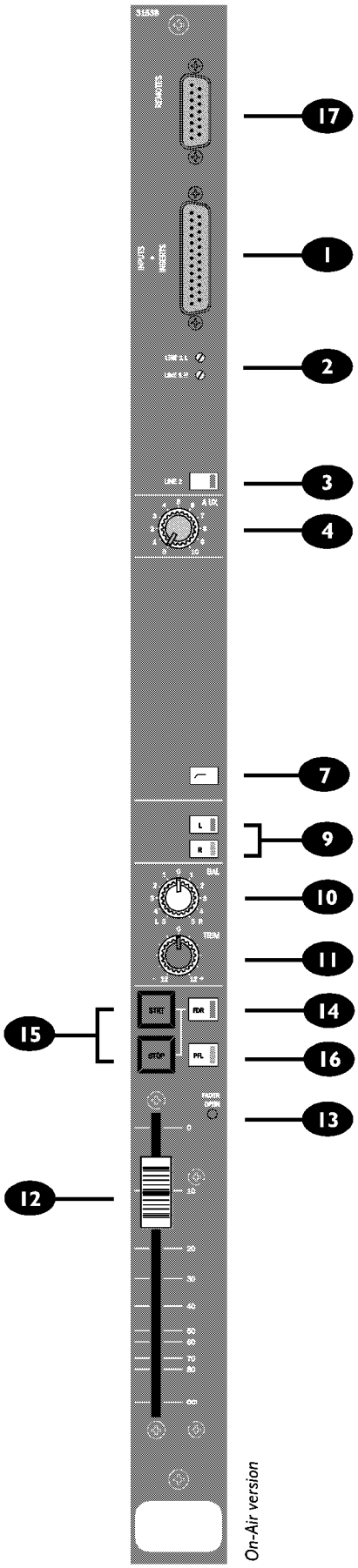
The L and R switches select Left and Right respectively in mono to both side of the channel when depressed. When both are depressed, a mono sum of the stereo input is switched to both sides of the channel.

10 BAL

The BAL control determines the position of the signal in the stereo mix, providing approximately 6dB adjustment left and right.

11 TRIM

This control provides +/- 12dB level adjustment, and is useful when in PFL, selected by the alternate action PFL switch.



12 FADER

The smooth-action, 100mm fader gives a gain of unity (0dB) when it is in the fully up position.

13 FADER OPEN LED

There is a microswitch attached to the fader which detects when it is in the fully down position, and this may be used to control the remote start/stop functions when FDR is selected (see below). The Fader Open LED gives visual indication that the fader has moved off it's back stop.

Fader Open may be programmed to cancel PFL selection.

14 FDR SWITCH

The latching FDR switch transfers the remote START/STOP functions to the fader only, disabling the STRT and STOP switches (see below).

15 STRT/STOP

The STRT (START) and STOP switches are used for machine remotes and provide momentary pulse action via optocouplers to external equipment, or may be configured as a maintained switch closure by internal jumpers. The START function may be linked to the timer bus if required.

The internal switch illumination gives visual indication of the remotes status.

Selecting FDR (see above) disables the STRT and STOP switches and transfers control of the remotes to the fader. The switch illumination still follows the remotes, even when FDR is selected.

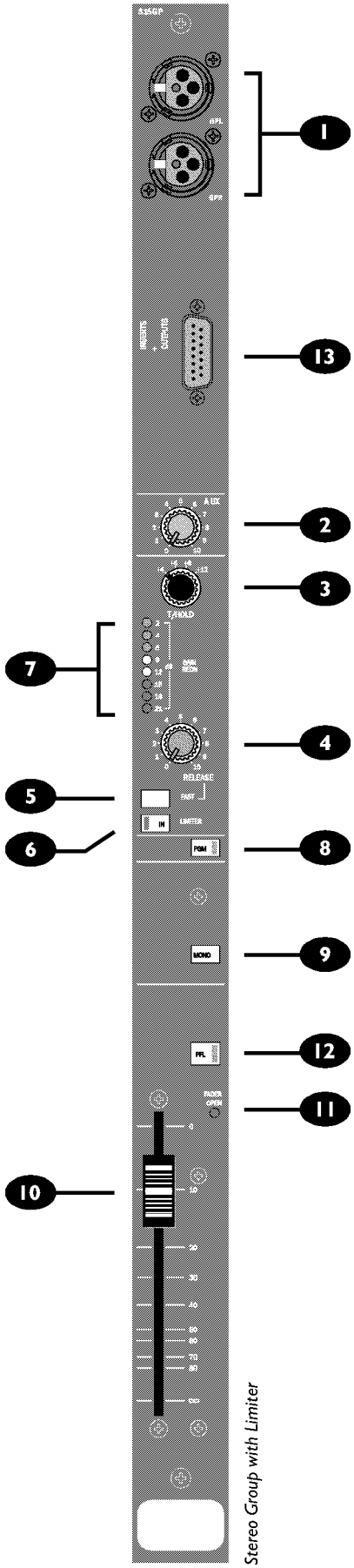
16 PFL

The Pre-Fade Listen switch allows you to listen, in mono, via the Monitors section, to an input on this channel. When the Fader is moved away from the down position the PFL circuit is automatically deactivated if this function is selected by an internal jumper: PFL cannot therefore be activated when the Fader is up. A red LED glows to indicate that the PFL circuit is active.

17 REMOTES

This 15-way D-type connector under the meterbridge provides optocoupled remote Start/Stop functions for two external machines. The remote selection follows the Line 1/Line 2 selection.

Group Output Module



The Group Output module is available in two versions, either with or without a built-in Limiter.

1 GROUP OUTPUTS

The group output module has electronically balanced Left and Right outputs on XLRs, and unbalanced -10dBV output on a D type connector (see 13 below)

2 AUX SEND

The post fade signal may be routed to the mono aux bus via the AUX send pot.

Limiter (Optional)

3 T/HOLD

The T/HOLD (Threshold) switch offers four settings from +4 to +12dBr which limit the ouput level to that level.

4 RELEASE

The variable RELEASE pot sets the Limiter Release time from 200mS to 10 secs.

5 FAST (Attack)

The FAST switch gives a choice of Limiter attack times. When the switch is depressed the attack time is 0.5mSec, and when released the attack time is 10mSec.

6 IN

The Limiter is switched into circuit when the IN switch is depressed. The integral LED illuminates to show that the Limiter is active.

7 GAIN REDN (Gain Reduction)

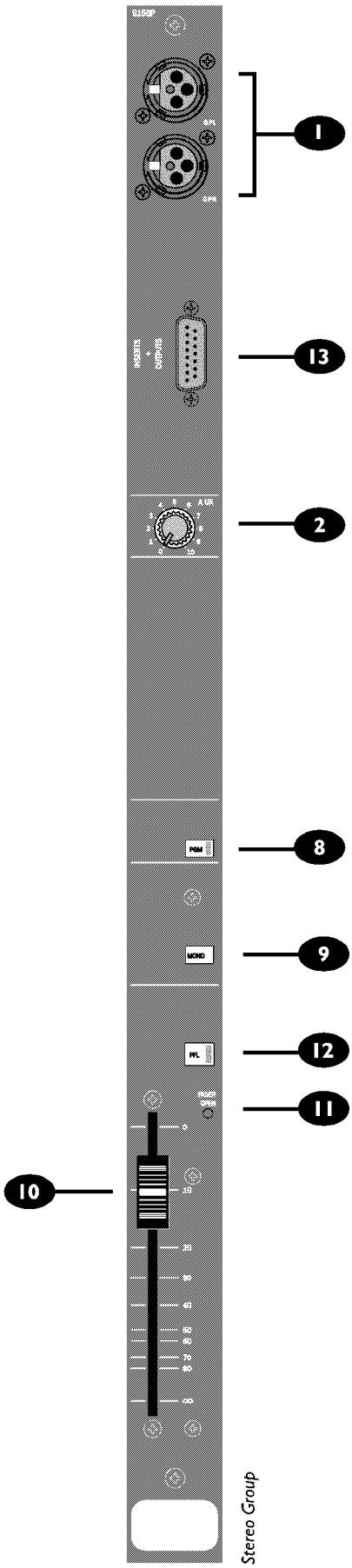
The 8 LED Bargraph Meter gives a visual indication of the amount of gain reduction as a result of the Limiter action. Excessive amounts of gain reduction may have a noticeable effect, and would suggest incorrect level settings on the input channels.

8 PGM

When the PGM (Program) switch is depressed the Group output is routed to the main stereo mix.

9 MONO

When the latching MONO switch is depressed the Group output is summed to mono.



10 FADER

The 100mm VCA fader controls the stereo Group output, or the level of the Group signal to the mix if PGM is selected.

11 FADER OPEN

There is a microswitch attached to the fader which detects when it is in the fully down position. The FADER OPEN LED illuminates when the fader is moved off the back stop.

12 PFL

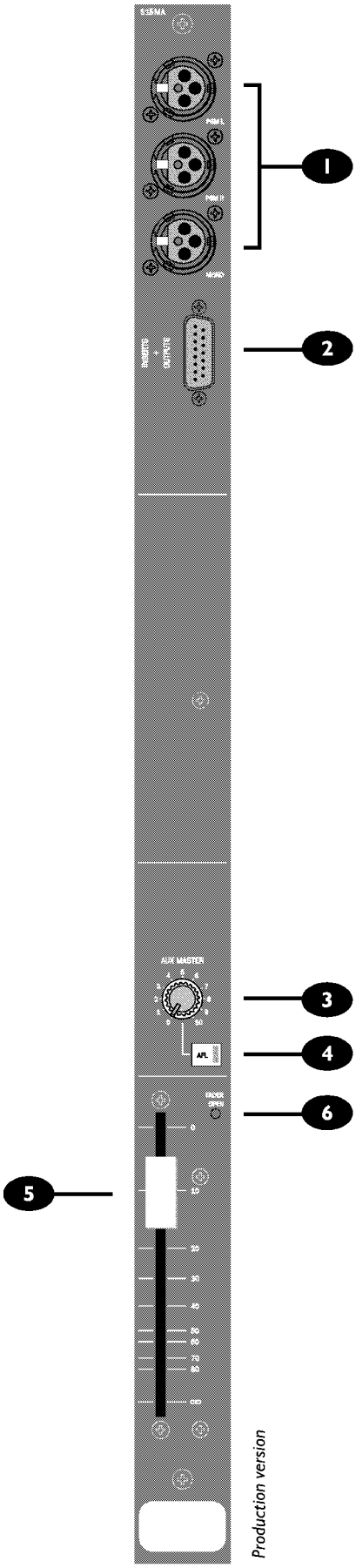
The Pre-Fade Listen switch allows you to listen, in mono, via the Monitors section, to an input on this Group. When the Fader is moved away from the down position the PFL circuit is automatically deactivated if this function is selected by an internal jumper: PFL cannot therefore be activated when the Fader is up. A red LED glows to indicate that the PFL circuit is active.

13 INSERTS + OUTPUTS

Balanced insert points are provided for the use of external processors. When not required they may be linked out internally.

The Group outputs are also available, unbalanced, on this connector at a nominal level of -10dBV.

Stereo Master Module



The Stereo Master is available as a Production version with Fader, or an On-Air version without fader.

1 GROUP OUTPUTS

The stereo master module has the three main programme outputs, LEFT, RIGHT and a MONO sum. Balanced outputs at a nominal 0dB are available on these XLRs.

2 INSERTS + OUTPUTS

A 15-way D-type connector provides a balanced Aux Output and unbalanced Left and Right outputs at a nominal -10dBV.

Balanced Insert points are provided for the use of external processors at a nominal level of 0dB. When not required they may be linked out internally.

3 AUX MASTER

The Aux Master send pot controls the level of the Aux output and has an overall gain of +10dB.

4 AFL

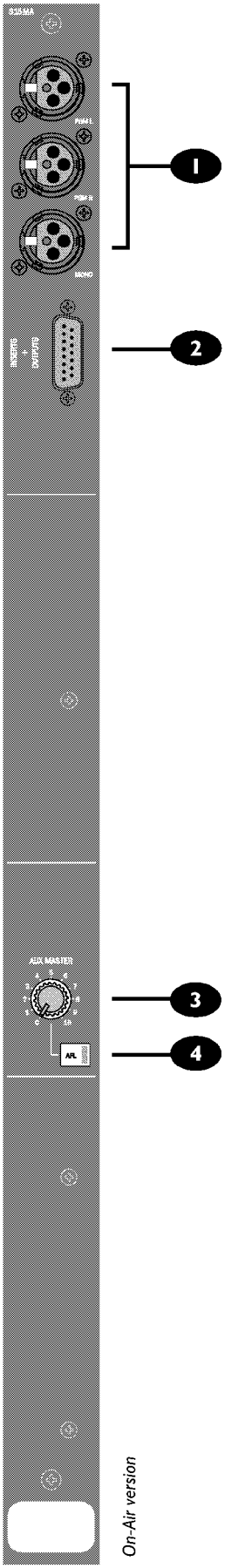
Pressing the AFL switch routes the Aux signal to the mono PFL bus for monitoring on the Presenter's headphones or Control Room monitors.

5 FADER

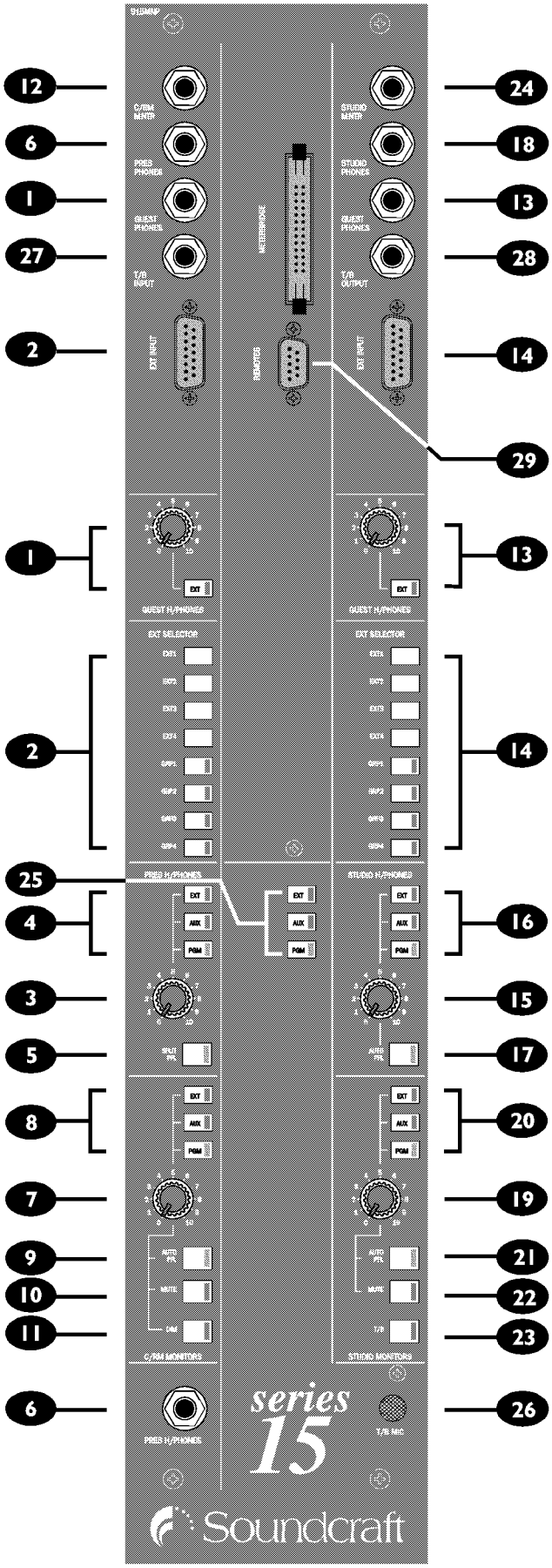
The 100mm VCA fader controls the stereo output.

6 FADER OPEN

The FADER OPEN LED illuminates when the fader is moved off the back stop as an indication that the outputs are active.



On-Air version



Monitor Module

Similar monitoring facilities are provided for the Control Room and Studio.

Control Room Monitoring

1 GUEST H/PHONES

The Guest headphones normally monitor the main stereo programme outputs but can alternatively monitor the selected source of the EXT SELECTOR switch bank (see 2 below) via the EXT switch. This pot adjusts the output level to the 1/4" jack socket under the meterbridge. The output is suitable for 400 ohm headphones.

2 EXT SELECTOR

The EXT SELECTOR switch bank offers a choice of monitoring from external inputs EX1 to EX4 and the four Stereo Groups. EX1 and EX2 are balanced line level inputs, EX3 and EX4 are unbalanced inputs with a nominal sensitivity of -10dBV, and are provided on the EXT INPUT D-type connector beneath the meterbridge. The output of the selector is routed to the EXT switches for Guest, Presenter, C/Room Monitor loudspeakers and Meter Selector switch banks.

Presenter's Headphones

3 PRES H/PHONES

The Presenter's headphones normally receive a choice of Program, Aux or External source, but switch automatically to receive stereo pre-fade whenever an input or group PFL, or master AFL switch is selected. Reverse talkback from a mic module will also switch the headphones to pre-fade. Talkback from the talkback input jack will dim the monitored source by 20dB and talkback will appear in both ears. It is not possible to turn the headphone output level completely off.

This pot adjusts the output level to the 1/4" jack socket at the bottom of the module, and the additional jack socket under the meterbridge (see 6 below).

4 SOURCE SELECTION

The source for the Presenter's Headphones may be selected from PGM (Stereo Program), AUX or the output of the EXT SELECTOR switch bank (see 2 above).

5 SPLIT PFL

The Presenter's headphones normally receive a choice of Program, Aux or External source, but switch automatically to receive stereo pre-fade whenever an input or group PFL, or master AFL switch is selected. This can be selected to be SPLIT PFL in which case the pre-fade signal is routed in mono to the right hand earpiece and the selected monitor source (EXT, AUX or PGM) is routed in mono to the left hand earpiece.

6 PRES PHONES

Two jacks are provided for the connection of 400 ohm headphones.

Control Room Monitors

7 C/RM MONITOR LEVEL

This control adjusts the level to the Control Room loudspeakers. It is not possible to turn the monitor output level completely off except when muted.

8 SOURCE SELECTION

The source for the Control Room Monitors may be selected from PGM (Stereo Program), AUX or the output of the EXT SELECTOR switch bank (see 2 above). The selected source is replaced by pre-fade when the AUTO PFL switch is selected (see below).

9 AUTO PFL

When AUTO PFL is selected, the selected monitor source is replaced by an active PFL or master AFL. The original monitor source is reinstated when the PFL or AFL is deselected.

10 MUTE

MUTE will mute the monitor, as will a live mic in the Control Room. The LED in the MUTE switch will illuminate to indictate a mute condition.

11 DIM

A DIM switch is provided which will dim the Control Room output by 20dB. The T/B switch (see 23) will also dim the control room monitor. Selecting PFL on a Telco or Stereo with cleanfeed module will also dim the Control Room Monitors.

12 C/RM MNTR

This stereo jack provides an unbalanced Control Room Monitor output at a nominal 0dB.

Studio Monitoring

13 GUEST H/PHONES

The Guest headphones normally monitor the main stereo programme outputs but can alternatively monitor the selected source of the EXT SELECTOR switch bank (see 2 below) via the EXT switch. This pot adjusts the output level to the 1/4" jack socket under the meterbridge. The output is suitable for 400 ohm headphones.

14 EXT SELECTOR

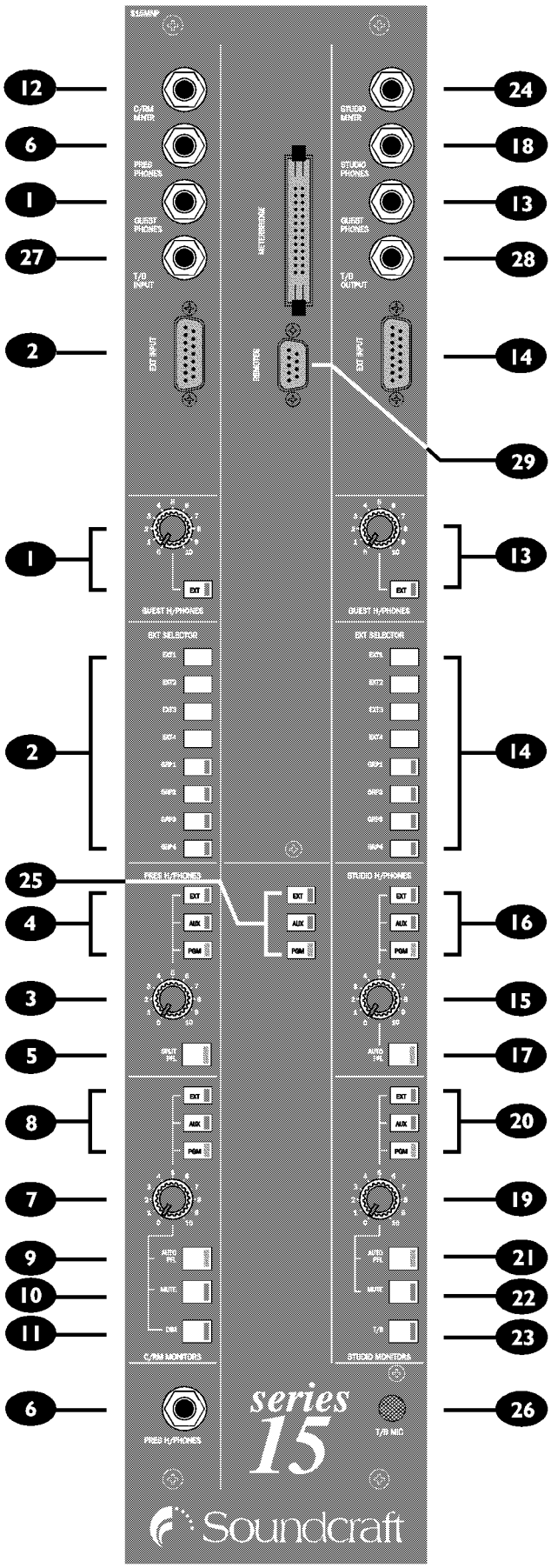
The EXT SELECTOR switch bank offers a choice of monitoring from external inputs EX1 to EX4 and the four Stereo Groups. EX1 and EX2 are balanced line level inputs, EX3 and EX4 are unbalanced inputs with a nominal sensitivity of -10dBV, and are provided on the EXT INPUT D-type connector beneath the meterbridge. The output of the selector is routed to the EXT switches for Guest, Studio, Studio Monitor loudspeakers.

Studio Headphones

15 STUDIO H/PHONES

The Studio headphones normally receive a choice of Program, Aux or External source, but switch automatically to receive stereo pre-fade whenever an input or group PFL, or master AFL switch is selected. Reverse talkback from a mic module will also switch the headphones to pre-fade. Talkback from the talkback input jack will dim the monitored source by 20dB and talkback will appear in both ears. It is not possible to turn the headphone output level completely off.

This pot adjusts the output level to the 1/4" jack socket under the meterbridge (see 18).



16 SOURCE SELECTION

The source for the Studio Headphones may be selected from PGM (Stereo Program), AUX or the output of the EXT SELECTOR switch bank (see 14 on previous page).

17 AUTO PFL

When AUTO PFL is selected, the selected monitor source is replaced by an active PFL or master AFL. The original monitor source is reinstated when the PFL or AFL is deselected. The Studio heaphones only receive pre-fade signals when this switch is selected.

18 STUDIO PHONES

A 1/4" stereo jack is provided for the connection of 400 ohm headphones.

Studio Monitors

19 STUDIO MONITOR LEVEL

This control adjusts the level to the Control Room loudspeakers. It is not possible to turn the monitor output level completely off except when muted.

20 SOURCE SELECTION

The source for the Studio Monitors may be selected from PGM (Stereo Program), AUX or the output of the EXT SELECTOR switch bank (see 2 above). The selected source is replaced by pre-fade when the AUTO PFL switch is selected (see below).

21 AUTO PFL

When AUTO PFL is selected, the selected monitor source is replaced by an active PFL or group AFL. The original monitor source is reinstated when the PFL or AFL is deselected.

22 MUTE

MUTE will mute the monitor, as will a live mic in the Studio. The LED in the MUTE switch will illuminate to indictate a mute condition.

23 T/B

Pressing the T/B (Talkback) switch allows the engineer to talkback to the Studio headphones and/or monitors. Internal jumpers may be programmed to select talkback to either or both the headphones and monitor loudspeakers. The T/B switch will also dim the Control Room Monitor.

24 STUDIO MNTR

This stereo jack provides an unbalanced Studio Monitor output at a nominal 0dB.

25 METER SELECTOR

A meter output is provided from the METER SELECTOR switch bank which is always overridden by pre-fade when any PFL is selected. The selector offers a choice of EXT, AUX or PGM (Program). If EXT is selected the meters receive the output of the C/Room EXT SELECTOR switch bank (2).

26 T/B MIC

A Talkback Mic is provided on the monitor module to allow talkback to the Studio Headphones or Monitors.

27 T/B INPUT

This jack provides a reverse talkback input to the Control Room Headphones or Monitors.

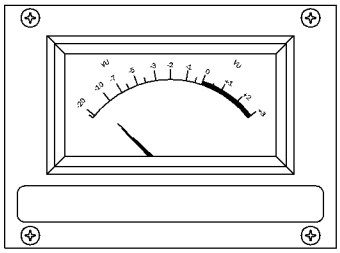
28 T/B OUTPUT

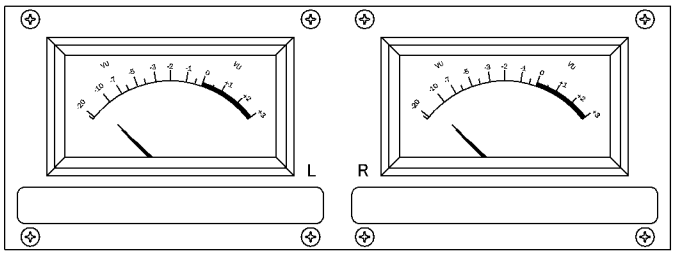
This jack provides an unbalanced Talkback output signal.

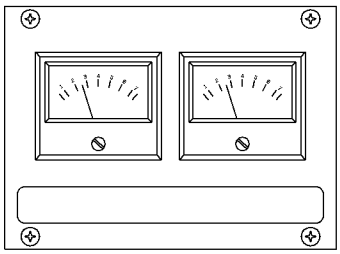
29 REMOTES

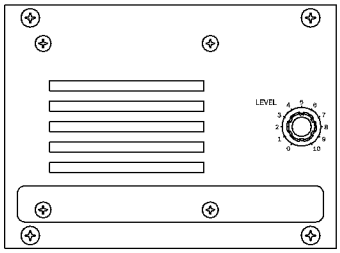
A 9-way D-type connector is provided for two sets of external relay connections to control mutes for the Control Room and Studio Monitors.

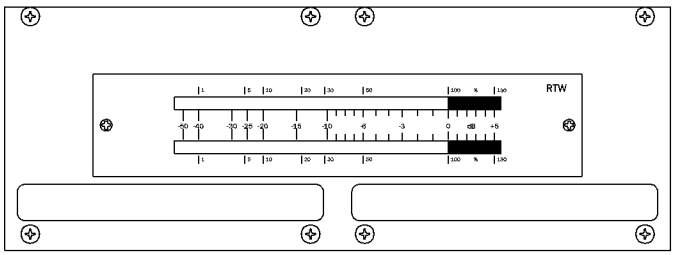
Meterbridge











The Series 15 provides a wide choice of metering options, designed to integrate into any common standard.

Three basic choices are available, with several other variants. Meters may be VU, PPM or special high resolution bargraph meters (such as NTP or RTW).

VU meters are preferred by users who need to know how the average signal levels are using the available dynamic range; PPMs are used to show instantaneous peaks and alert the operator to the possibility of overloading an output.

Meterbridge Options include:

- Twin Mono VU/PPM meters (large)
- Twin Mono VU/PPM (small)
- Single Mono VU/PPM
- Custom Bargraph Panel
- Cue Loudspeaker
- Dual Digital Timer

SERIES 15

5 Specifications

SERIES FOUR Typical Specifications

Frequency response

Mic / Line input	20Hz-20kHz +/-0.5dB

Noise (20Hz-20kHz bandwidth unweighted)

Mic E.I.N.	-127dBu, 150 ohm source
Line E.I.N.	-85dBu

Distortion

THD and noise	<0.01% @ 1kHz

Crosstalk

Adjacent channel	Less than -85dBu
Stereo	Less than -85dBu

CMRR

Microphone input	100dB @ 70dB gain

Input levels*

Microphone input	-70dBu to -20dBu
Maximum input level	+4dBu
Telco input	-10dBu to +4dBu
Stereo line 1	-10dBu to +4dBu
Stereo line 2	0dBu
Insert points	0dBu

** All inputs and insert points are electronically balanced. Optional transformer on mic input only*

Input impedances

Microphone input	>2k2Ω
Line inputs	>20kΩ

Output levels

Max output level	+26dBu into 600Ω
Nominal output level	0dBu or +4dBu

Output impedances

All line level outputs	<75Ω