PRO SERIES

USER MANUAL

FOR THE

PS 150

SINGLE CHANNEL TELEPHONE INTERFACE

CONTENTS

1.0 GENERAL DESCRIPTION

The PS 150 is designed to interface the ASL intercom system (3-wire, party line) to the telephone system (2-wire).
For example communication can be realised between a normal telephone and one or more ASL stations, or between two ASL systems via a telephone-line.

The PS 150 is a sub-station and receives power from the intercom line.

The PS 150 is a combination of two interfaces.
One for interfacing the intercom line to a separate input and output, and one for interfacing the telephone line to a separate input and output.
These inputs and outputs are internally (cross-) connected.

The two-stage sidetone circuit (level, hi) allows you to obtain an input/output separation better than 30 dB from 20Hz to 20KHz.

The built in testtone generator helps you to adjust or check the sidetone level at any time.

2.0 UNPACKING

The shipping carton contains the parts listed below
* The PS 150
* Set of telephone cables
* User manual

If any are missing, contact your dealer.

ASL has taken great care to ensure this product reaches you in flawless condition.

After unpacking the unit please inspect for any physical damage to the unit, and retain the shipping carton and relevant packing materials for use should the unit need returning.

If any damage has occurred, please notify your dealer so that a written claim can be initiated. Please also refer to the guarantee section of this manual.

3.0 MECHANICAL INSTALLATION

The PS 150 will interface between ASL partyline (3-wire intercom) and 2-wire telephone systems.

To connect the PS 150 with ASL partyline system, use professional flexible microphone cable with 2 wires and 1 shield only. Connect the partyline system cable into the intercom line connector on the rear.
To connect the PS 150 with the 2-wire telephone system, use the telephone cable to the FCC type connector on the rear.

There are no separate power connections to install since the necessary DC voltages are derived from the ASL partyline.

The PS 150 is fully protected against mis-wiring (reverse power) or short circuit in the interconnecting cables.

If your telephone system does not use the FCC type connectors we have applied on the PS 150 you can use these extra cables for interconnecting.

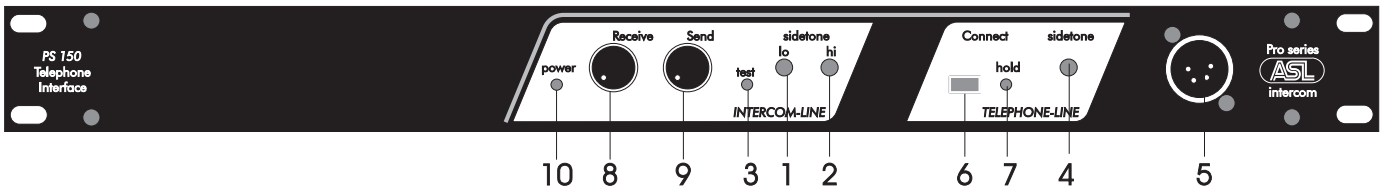
Connection procedure :
1. Lift the covers of the telephone line connector and the telephone plug, which your system applies.

2. Use their connection screws for attaching the four leads coming from each cable following these colour assignments:

yellow	EB
green	b
red	a
black	ground

3. Put the covers back in place.

4.0 FRONT PANEL CONTROLS



The PS 150 is a combination of two interfaces.
One for interfacing the intercomline to a separate input and output, and one for interfacing the telephone line to a separate input and output.
These inputs and outputs are internally cross connected.

Both interfaces have their own sidetone trimmers.
The two sidetone trimmers at the left side of the front panel control the internal input/output separation of the intercom line interface.
The sidetone trimmer in the right of the front panel controls the internal input/output separation of the telephone line interface.
For prevention of internal feedback or a 'hollow sound' in both systems all sidetone trimmers must be adjusted carefully.

The telephone line sidetone rejection may be rather poor compared to the intercomline sidetone rejection because of the complex impedance of the telephone line.

Because the PS 150 combines two interfaces, a decrease of sidetone rejection in all intercom stations connected to the same channel as the PS 150 might occur.

If speaker stations are connected, internal feedback may occur.
If this problem arises, it can be solved by keeping the send and receive levels of the PS 150 low and by turning the speaker attenuator trimmers of the howling speaker station(s) anti clockwise.

1 SIDETONE LEVEL trimmer (INTERCOM LINE)
This trimmer controls the internal input/output separation of the intercom line interface.
It also compensates the resistance of the interconnecting cables.
For sidetone adjustment procedure see 4.4.

2 SIDETONE HI trimmer
This trimmer controls the internal input/output separation in the high-frequency range.
It compensates the capacity of the interconnecting cables.

3 SIDETONE TEST knob
This hidden pushbutton switch activates a testtone generator which adds a 200Hz tone to the internal input signal of the intercom line interface.
It allows you to adjust or check the sidetone trimmer settings of the intercom line interface.

Note: Make sure you are not disturbing any communication because the test-tone is placed on the intercomline which implies that all stations on that channel can hear the test tone.

4 SIDETONE LEVEL trimmer (TELEPHONE LINE)
This trimmer controls the internal input/output separation of the telephone line interface.

SIDETONE ADJUSTMENT PROCEDURE
- plug a headset in the test headset connector.
- set receive level to minimum.
  set send level to maximum.
- set intercom line sidetone trimmers in start position :
  level : turn fully clockwise.
  hi : turn fully anti-clockwise.
- activate the testtone generator.
- decrease testtone level by turning the level trimmer anti-clockwise.
  adjust for minimum level.
- decrease the remaining high-frequencies by turning the hi trimmer clockwise.
- repeat the last three steps until you are sure you have obtained the best possible settings.
- set telephone line sidetone trimmer in start position: turn level trimmer fully clockwise.
- connect an ASL sub-station (beltpack, speaker station) to the intercom channel and adjust its sidetone for minimal level.
- connect the PS 150 to the telephone line and make connection with the front panel connect switch.
- Turn up receive level slowly while speaking into the headset mike. The volume of your voice will increase.
- Turn telephone line sidetone level trimmer anti-clockwise and adjust for minimum level.

4.0 FRONT PANEL CONTROLS

5 TEST HEADSET connector
This connector allows you to listen to the intercom line during the sidetone adjustment procedure (see 4.4), or continuously.
You can plug in a headset or headphones.
Pin assignment :
1. not connected
2. not connected
3. phones +
4. phones (GND)

6 CONNECT switch
This switch connects the telephone line to either the telephone or to the telephone interface.

If you switch the telephone line to the PS 150, the hold indicator illuminates.
If you have switched the telephone line from the telephone to the PS 150, you may place the telephone handset back on the hook, because the PS 150 will hold the connection.

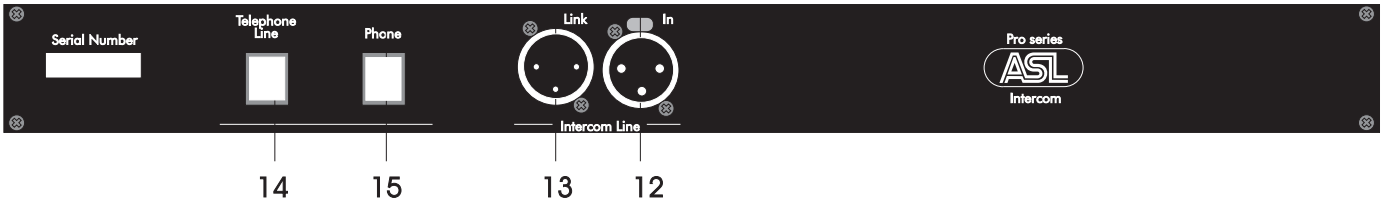
7 HOLD indicator led
This led illuminates if you have switched the telephone line to the PS 150.
It indicates that the telephone line is occupied (by the PS 150).

8 RECEIVE volume control knob
This knob controls the listen level of the telephone line signal as it is received by the intercomline.

9 SEND volume control knob
This knob controls the listen level of the intercom line signal as it is send to the telephone line.

10 POWER INDICATOR
This LED illuminates if line power is supplied by the power supply or master station of the ASL intercom system in which the PS 150 is used.

5.0 REAR PANEL CONTROLS



At the rear panel you will find the connectors for inter connecting the PS 150 within the ASL intercom system and within the telephone system.
The telephone line connection is transformer balanced.

12 INTERCOM IN connector
This XLR-3 is for connecting the intercomline.
Pin assignments :
1. 0V / ground shield
2. + 30V power wire
3. audio wire

13 INTERCOM LINK connector
This output is for extending the intercom line to other sub-stations.
It is linked to the intercom line input connector and has the same pin assignments.

14 TELEPHONE LINE connector
This connector is for connecting the telephone line.
Pin assignments :
1 not connected
2 EB
3 b
4 a
5 ground
6 not connected

The pin 3 and 4 of the telephone line connector are switched to pins 3 and 4 of the telephone connector when the PS 150 is off-line (HOLD led is off), and switched to the interface when the PS 150 is on-line (HOLD led is lit).

15 TELEPHONE connector
This connector is for connecting a telephone, a telephone bell or any other telephone apparatus.
Pin assignments : see 14.
The pins 2 and 5 of the telephone connector are always interconnected with pin 2 and 5 of the line connector.

7.0 CABLING

For the PRO Series Intercom system the interconnecting cables are of the shielded two-conductor microphone cable type and the intercom line connectors are of the XLR-3 type. Audio and Call signals are on XLR pin 3, DC power is on XLR pin 2. XLR pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

Since the audio signal is transferred in an **unbalanced ★** way, certain rules have to be obeyed when installing the cables of an intercom network. This is to avoid earth loops and to minimize power loss and the possible effect of electromagnetic fields.

These rules are:

- **Use high quality (multipair) cable.**
  For interconnecting user stations, power supplies and accessories in an ASL Intercom network, use high quality shielded two-conductor (minimum 2x 0.30 mm2) microphone cable only.
  In case of a multi channel intercom network, use high quality microphone 'multipair' cable only, each pair consisting of two conductors (minimum 2x 0.15 mm2) with separate shield. Multipair cable should also have an overall shield.

- **Use flexible cables.**
  Use flexible single and multipair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

- **Separate cable screen to XLR pin 1.**
  The screen of each separate microphone cable and/or the screen of each single pair in a multipair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect this cable screen to the metal housing of the connector or to metal wall boxes (outlets).
  See page 10 for Earthing Concept.

- **Cable trunks, connection boxes and overall multipair cable screen to clean earth.**
  Metal cable trunks, metal connection boxes and overall multipair cable screen should be interconnected and, at one point (the 'central earthing point') in the intercom network only, be connected to a clean safety earth.
  See page 10 for Earthing Concept.

- **Keep metal connection boxes and cable trunks isolated from other metal parts.**
  Metal housings for intercom cables and connectors should be mounted in such a way that they are isolated from other metal cable and connector housings and from any other metal construction parts.

- **Keep cables parallel as much as possible**
  When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multipair cable, parallelism is ensured in the best possible way.

- **Avoid closed loops.**
  Always avoid that cables are making a loop. So-called 'ring intercom' should not physically be cabled as a ring. All cable routes should have a 'star' configuration, with the central earthing point (usually close to the power supply position) as the centre of the star.

- **Keep cables away from electromagnetic sources.**
  Keep intercom cables away from high energy cables, e.g. 110/220/380V mains power or dimmer controlled feeds for spotlights.
  Intercom cables should cross high energy cables at an angle of 90° only.
  Intercom cables should never be in the same trunking as energy cables.

- **Place power supplies in a central position.**
  In order to avoid unacceptable power losses, place the power supplies as close as possible to where most power consumption occurs or, in other words, most user stations are placed.

- **Connect ASL power supply to a 'clean' mains outlet.**
  The ASL power supply may be connected to the mains power outlet to which other audio equipment is connected. Avoid using mains outlets which also power dimmer controlled lighting systems.

  In case of more complex installations, don't hesitate to contact us. Please send us a block diagram of the planned network with a list of all user stations and their positions, and we are happy to advise you on cabling lay-out.

★ **See Party Line, Technical Concept**

8.0 PARTY LINE, TECHNICAL CONCEPT

ASL's PRO Series offers a complete two way ('full duplex') communications system.
Users of the system are connected via a 'party line'. Master stations (with built-in power supply), beltpacks, speaker stations and power supplies are interconnected via standard microphone cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.

Current drive is used for signal transfer. Each station utilises a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to headphones or loudspeakers.

This principle has three advantages:
- the use of a single audio line allows several stations to talk and listen simultaneously.
- due to the high bridging impedance offered by each station, the number of stations 'on line' has no influence on the level of the communications signal.
- power and audio to the intercom stations use the same cable.

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

9.0 GUARANTEE

This unit is warranted by ASL Intercom to the original end-user purchaser against defects in workmanship and materials in it's manufacture for a period of one year from the date of shipment to the end-user.

Faults arising from misuse, unauthorised modifications or accidents are not covered by this warranty. If the unit is faulty, it should be sent in it's original packing to the supplier or your local ASL dealer, with shipping prepaid. A note must be included stating the faults found and a copy of the original suppliers invoice.

THIS PRODUCT WAS DESIGNED, DEVELOPED AND MANUFACTURED BY :

AMPCO SOUND LAB BV
MAARSSEN (UTRECHT) HOLLAND

10.0 TECHNICAL SPECIFICATIONS PS 150

INTERCOM LINE DRIVER

Max. output current	3mA rms
output impedance	> 150 kOhm

INTERCOM LINE SIDETONE

rejection	> 34 dB (20 Hz - 20 kHz)
cable compensation	0 - 1000 meters

TELEPHONE LINE DRIVER

output impedance	600 Ohms
max. output	+14 to -34 dBm
freq.response	150 Hz - 6 kHhz (-3 dB)

TELEPHONE LINE SIDETONE

rejection	> 10 dB (300 Hz - 3 kHz)

TEST HEADSET

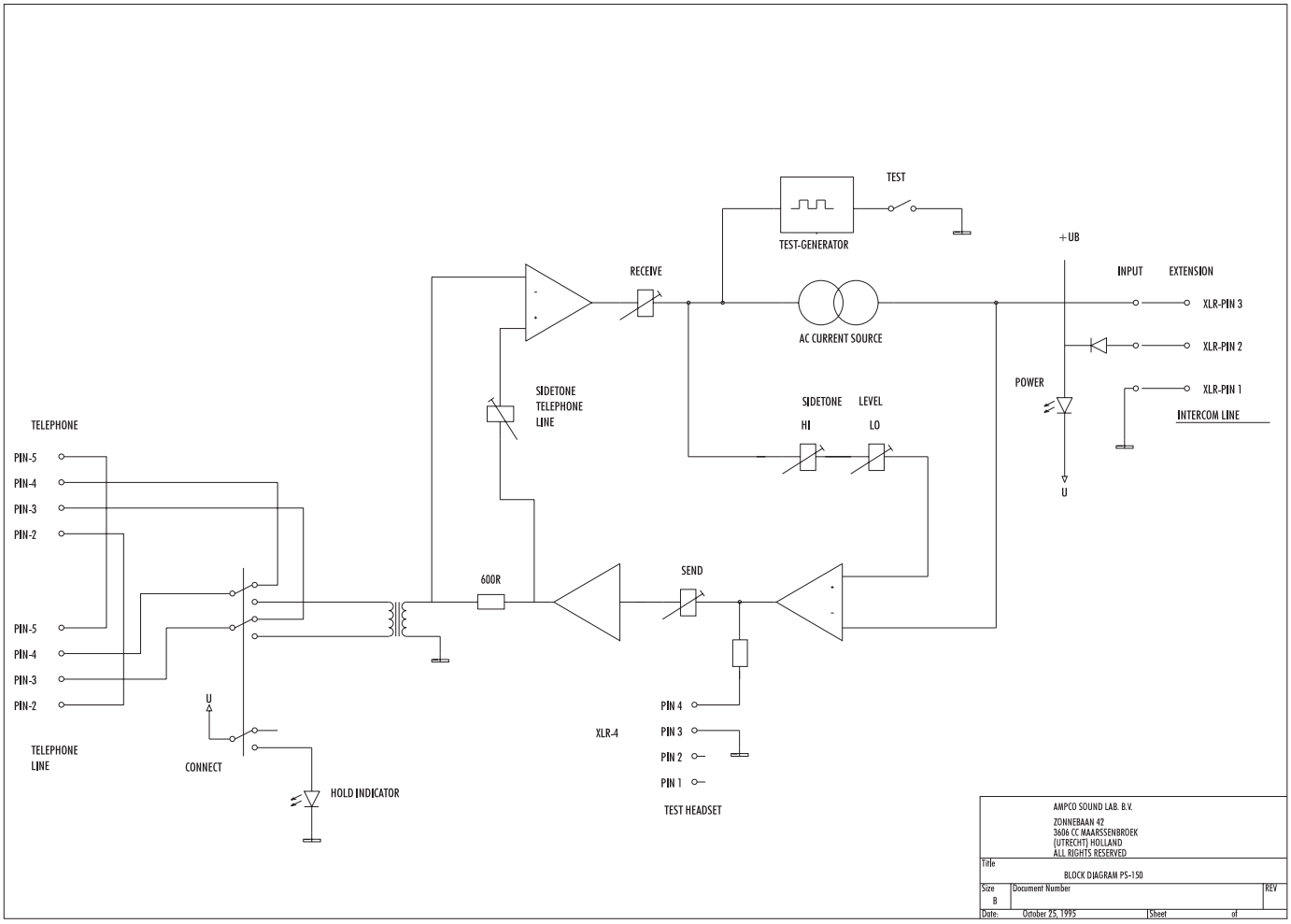
impedance	4 - 2000 Ohms

GENERAL SPECIFICATIONS

supply voltage	+30 VDC (12 V to 32 V)
supply current	35 mA quiescent
audio line level	-18 dBm (max. 0 dBm)
signal-to-noise	80 dB
station bridging impedance	> 150 kOhm
dimension	483 x 44 x 124 mm
weight	2800 grams

Note: 0 dBu = 775 mV into open circuit.

ASL reserve the right to alter specifications without further notice.


TEST
TEST-GENERATOR
+UB
RECEIVE
INPUT
EXTENSION
XLR-PIN 3
XLR-PIN 2
XLR-PIN 1
INTERCOM LINE
AC CURRENT SOURCE
POWER
U
SIDETONE
TELEPHONE
LINE
SIDETONE
HI
LEVEL
LO
TELEPHONE
PIN-5
PIN-4
PIN-3
PIN-2
600R
SEND
PIN-5
PIN-4
PIN-3
PIN-2
U
XLR-4
PIN 4
PIN 3
PIN 2
PIN 1
TELEPHONE
LINE
CONNECT
HOLD INDICATOR
TEST HEADSET
AMPCO SOUND LAB. B.V.
ZONNEBAAN 42
3606 CC MAARSSENBROEK
(UTRECHT) HOLLAND
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BLOCK DIAGRAM PS-150
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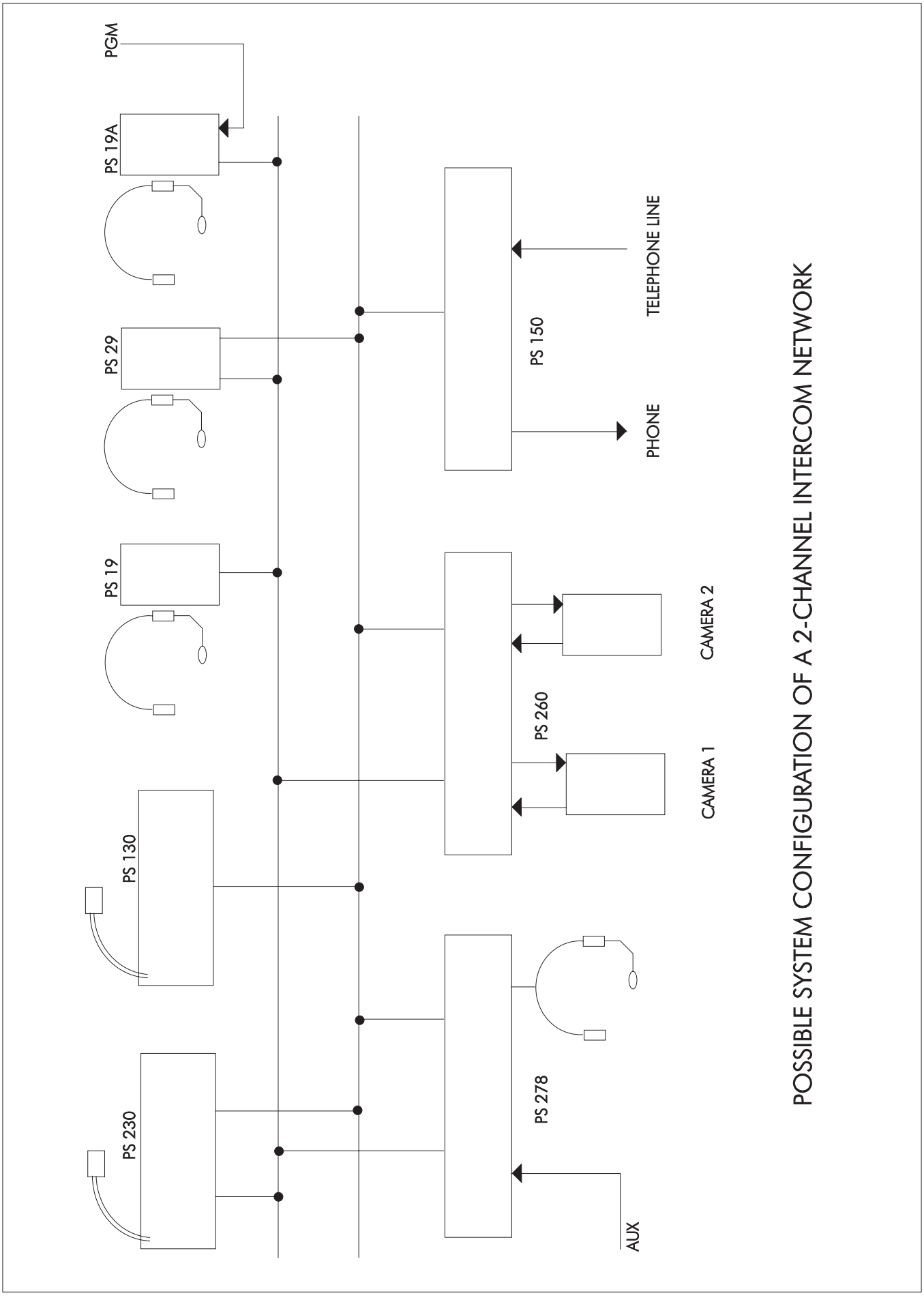
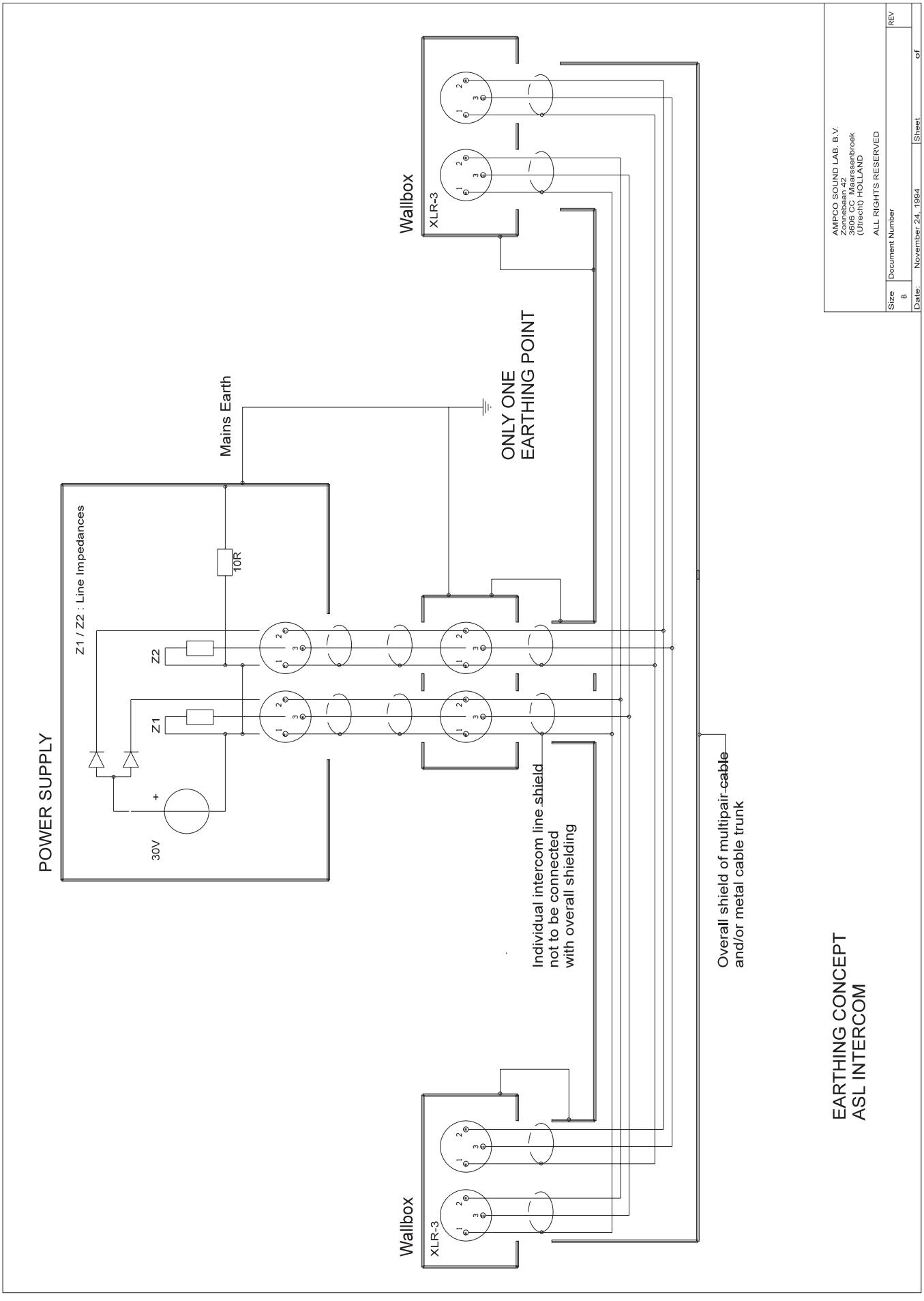


POSSIBLE SYSTEM CONFIGURATION OF A 2-CHANNEL INTERCOM NETWORK


POWER SUPPLY
Z1 / Z2 : Line Impedances
Z2
Z1
10R
30V
+
Mains Earth
ONLY ONE
EARTHING POINT
Wallbox
XLR-3
Wallbox
XLR-3
Individual intercom line shield
not to be connected
with overall shielding
Overall shield of multipair cable
and/or metal cable trunk
EARTHING CONCEPT
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Date:
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