

### Installation Guide



Univox<sup>®</sup> PLS-X1    Part No 217100

Univox<sup>®</sup> PLS-X3    Part No 217300

Univox<sup>®</sup> PLS-X5    Part No 217500

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# Introduction

Thank you for choosing Univox.

The new Univox® PLS-X series loop drivers combine 50 years of experience with the latest in electronic design to deliver unrivaled sound clarity, power and performance in a compact stylish housing.

Our Engineering Simplicity philosophy is evident in the functionality and ease of use of each model.

The three models in the series, PLS-X1, PLS-X3 and PLS-X5 are identical with the exception of output power. Each offers three inputs, two of which are programmable including a 100V line setting, a self-test mode, loop monitor and monitor speaker amplifier. With LED indicators for input and output levels, optimizing system performance is simple.

The PLS-X Series is integrated into Univox® Loop Designer, a free, web-based project planning and design tool that quickly and accurately assists in the design of loop systems.

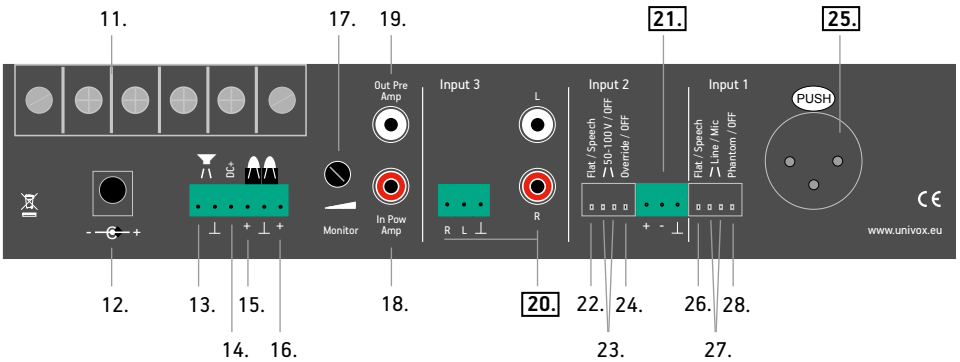
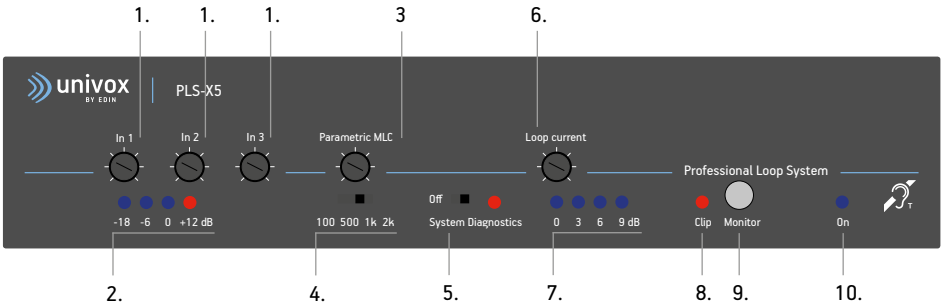
Please read this user guide carefully before (installation and) use of this product. All Univox® loop drivers have a very high output power resulting in products capable of fulfilling standards.

## Package contents

The PLS-X series package contains the following components:

- Loop driver
- DC Power Supply
- Power cable
- Three phoenix screw terminals
- Four rubber feet
- T Sign
- Rack mounting plate with 8 screws
- Measuring protocol/certificate
- Installation Guide

# Connections and controls



1. Input level control (Input 1-3)
2. Input level LEDs
3. Parametric MLC control
4. Parametric MLC knee point switch
5. System diagnostics switch and LED
6. Loop current control
7. Loop current LEDs
8. Voltage clipping/Peak LED
9. Loop monitor jack
10. Power LED
11. Loop terminals
12. DC supply jack
13. Monitor speaker connector (screw 1+2)
14. Auxiliary DC power output (screw 3)
15. Remote input monitor connector (screw 4+5)
16. Remote output monitor connector (screw 5+6)
17. Monitor volume control
18. Direct connection to loop power amplifier (In Pow Amp)
19. Pre-amplifier output (Out Pre Amp)
20. **Input 3** (Phoenix screw terminal/RCA)
21. **Input 2** (Phoenix screw terminal)
22. Speech enhancement DIP switch (Flat/Speech)
23. 50-100 V line DIP switch On/Off
24. Override DIP switch On/Off (Input 3)
25. **Input 1** (Balanced XLR)
26. Speech enhancement DIP switch (Flat/Speech)
27. Line/Mic sensitivity DIP switch
28. Phantom power On/Off

# Explanation

## Note

Univox PLS-X series is only working if a loop cable is connected. If no loop cable is connected, the Peak indicator is lit constantly as a warning.

All controls are regulated with a small screw driver.

## 1. Input level control (In1-In3)

Each input can be set to the correct input level using the appropriate single turn potentiometer on the front panel.

## 2. Input level LEDs

The three blue and single red LEDs indicate the signal level at the output of the pre-amplifier.

To ensure the AGC function is optimised, the signal level should be set to 0dB with maximum peaks reaching +12dB, i.e. the 0dB LED should be lit most of the time during the audio programme and the +12dB indicator should flicker occasionally.

## 3-4. Parametric MLC

The parametric metal loss control function provides the ultimate in signal level correction for signal loss due to the interference of metal. By selecting the appropriate parametric curve, the installer can fine tune the frequency response, compensating for the effects of different metal types and configurations.

There are four parametric curves to choose from: 2kHz, 1kHz, 500Hz and 100Hz. The chosen curve sets the frequency at which the metal loss control starts to compensate.

The function is powerful, however, excessive compensation can lead to signal limiting in the treble range. If signal limiting occurs, the red Peak LED (8) will illuminate indicating that the signal is limited, i.e. the available voltage in the driver is insufficient to deliver a constant current (voltage clipping).

## 5. System diagnostics

Univox PLS-X series has a built-in system test. We recommend that this feature is used periodically, at least monthly, to check the integrity of the loop driver, its inputs and the loop condition.

To access the system diagnostics mode, set the switch on the front panel to the right. All the inputs are now disabled and an internal 1kHz oscillator is connected to the input instead. The oscillator pulses at 2 seconds intervals with a 0dB level, activating the AGC regardless of the adjusted sensitivity. The red LED indicator is flashing with the signal.

If the input level LEDs and at least one output loop current LED flash in unison, the system is working correctly.

If the input and output LEDs do not flash, check that the loop is connected and not open circuit. Also check the proper connection of the signal source.

If only the input LEDs flash, and the loop is properly connected, the output current is set too low. Increase the output current.

## 6. Loop current control

The loop current can be adjusted by turning the loop current control (6) potentiometer.

## 7. Loop current LEDs

The current output level is indicated by the loop current LEDs in 3dB increments. The LED dB scale is relative to the loop output current and is based on the available current of the particular model. 0dB is lit when the output current is 1/4 of the maximum available current and the power is 1/8 of the available power. Each 3dB increment represents a doubling of the output. However, the only way to set the output level to the correct IEC level is to use a professional field strength meter, preferably Univox FSM 2.0.

## 8. Voltage clipping/Peak LED

The Peak LED will illuminate when the voltage is clipping, i.e. there is insufficient voltage to maintain a constant current.

Momentary short term voltage clipping is unlikely to be audible in hearing aids, but if clipping occurs for any length of time (the Clip LED (8) remains on), the audio quality will suffer and remedial action should be taken to reduce or eliminate the problem.

Voltage clipping will occur at higher frequencies first. It causes distortion of the audio signal. Situations that require higher voltages from the loop driver and where voltage clipping may occur are typically where:

- The loop has a high impedance. The impedance of the cable is determined by its length and cross sectional area. The longer and thinner the cable, the higher its impedance. The feed cable must also be considered when calculating the loop impedance. A 2-turn loop will have an impedance more than double that of a single turn loop of the same length and cross-section due to mutual inductance.
- Strong compensation from the parametric MLC control is applied

### Note

In some cases metal reinforcement can actually reduce the voltage requirement.

## 9. Loop monitor/headphones socket

Univox® PLS-X series has a powerful speaker amplifier and a 3.5mm headphone socket built-in. The headphone socket is on the front panel, the speaker connectors (13) and volume control (17) are placed in the rear panel. Both are fed directly from the loop providing an accurate reproduction of the loop signal. A distorted, poor quality signal or lack of audio input is easily identified by use of this feature.

### Note 1

The volume control is located in the rear panel and controls the volume level of both the external speaker, if attached, and the headphones output.

### Note 2

Excessive output to speaker may reduce the overall loop output power.

## 10. Power LED (On)

The blue Power LED is illuminated at all times when the unit is connected to a working power supply.

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The units are designed to run 24/7. They do not have a separate on/off switch and can only be turned off by disconnecting or turning off the power supply.

## **11. Loop terminals**

The two outer terminals (screw 1 and 4) are used for connecting a single turn loop. The two inner centre terminals (screw 2 and 3) provide a shorting bar to couple a 2-turn loop when a twin core cable is used (see page 14).

## **12. DC Supply socket**

The external DC power supply provided with the loop driver is connected at the DC supply socket in the rear panel.

### **Note**

Connect the power cord to the amplifier first, before connecting to the wall socket to avoid high inrush current.

The voltage rating of the supply is dependent on the model.

Only Univox approved power supplies correctly rated for the loop driver model should be used. The use of incorrectly rated, or third party power supplies will invalidate your 5 year warranty.

## **13. Monitor speaker connector (screw 1+2)**

A monitor speaker may be permanently connected providing some sound reinforcement in smaller rooms. In this case, care needs to be taken to avoid acoustic feedback.

## **14. Auxiliary DC power output (screw3)**

The DC output is available to power compatible accessories. The output voltage is dependent on the loop driver model/external power supply.

## **15. Remote input monitor connector (screw 4+5)**

A LED connected to this terminal will mirror the operation of the -6 dB input Level LED on the front panel, thus allowing the monitoring of the presence of an input signal in a more convenient location.

## 16. Remote output monitor connector (screw 5+6)

A LED connected to this terminal will mirror the operation of the 0dB output current Level LED on the front panel, thus allowing the monitoring of the presence of output current in a more convenient location.

## 17. Monitor volume control

Controls the volume for the headphone output and the external speaker where fitted. See (9) Loop Monitor and (13) Monitor Speaker Connector.

## 18. Direct connection to loop power amplifier (In Pow Amp)

An external signal source can be connected to the input and directly drive the loop amplifier's power amplifier without effecting the amplifier's filter and AGC functions.

Typical connection: External DSP for direct control of frequency distribution and dynamic.

Input sensitivity: 0dBu (0.775V/10kOhm).

### Note 1

The loop amplifier's other inputs (In1-In3) can be used simultaneously.

### Note 2

This input lacks the 5kHz lowpass filter and is unballanced. Input impedance: 10kOhm

## 19. Pre-amplifier output (Out Pre Amp)

This output delivers an output signal after adjustment of input level, filter and AGC functions.

Typical connections:

- Connection to recording devices with the built-in AGC function as level control
- Connection to a PA system (for example a mixer)
- Output signal to another loop amplifier through its RCA input (see 20)

### Note

Connection of several loop amplifiers from one signal source is most easily done by connecting the signal in parallel to the balanced input (In1 or In2) of each amplifier. Each amplifier is then individually adjusted with MLC and frequency adjustment.

Output level: approx. 0.5V.

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## 20. Input 3

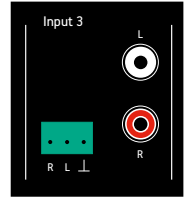
Input 3 is an unbalanced line input. The sensitivity is adjusted using the control on the front panel.

The source may be connected using the RCA connector (L/R) or the Phoenix screw terminal, but can't be used simultaneously.

If the RCA input is used:

Mono signals are connected through **R or L and** the earth connection.

Stereo signals are connected through **R and L and** the earth connection.



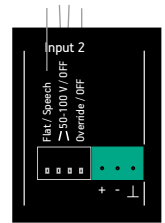
## 21. Input 2

Input 2 is a line input, switchable between a balanced line input and a 50-100V line input. The sensitivity is adjusted using the control on the front panel.

The source is connected using the Phoenix screw terminal:

Mono signals are connected to **+ or -** and the earth connection.

Stereo signals are connected to **+ and -** and the earth connection.



22. 24

23

## 22. Speech enhancement (Flat/Speech) (DIP switch 1)

The speech enhancement function works by filtering low frequencies (<150Hz) which can mask the intelligible sound. It is recommended to use this function for all normal loop systems.

With the DIP switch in the '**down**' position, speech enhancement is **OFF**.

With the DIP switch in the '**up**' position, speech enhancement is **ON**.

### Note

When commissioning the loop system in accordance with the performance standard IEC 60118-4, the speech enhancement function must be switched off.

## 23. 50-100 V/Line (DIP switch 2+3)

With both DIP switches in the '**down**' position: Input 2 is set to **50-100V line sensitivity**.

With both DIP switches in the '**up**' position: Input 2 is set to "**normal**" line sensitivity.

For sensitivity levels, see technical specification on page 22-23.

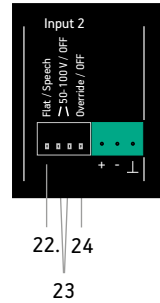
## Note

The DIP switches should be set in the appropriate position before connecting the input signal to avoid causing damage to the input.

## 24. Override On/Off (DIP switch 4)

With the DIP switch in 'down' position, Input 2 is set as the **Priority Input**. In this case, when a signal is detected, all other inputs will be suppressed. Only signals above -6dB activates the priority function. This functionality is ideal when connecting to an alarm system such as a voice alarm.

To **turn off this feature**, set the DIP switch to the 'up' position.

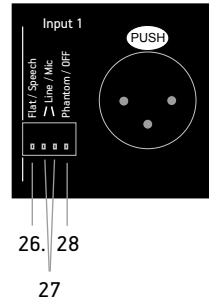


## 25. Input 1

Input 1 is a balanced switchable Line/Mic input that can be set to line or microphone sensitivity and with or without phantom power. The sensitivity is adjusted using the control on the front panel.

## Note

If connecting an unbalanced signal (not recommended) the pin that is not used has to be connected to pin 1 (earth).



## 26. Speech enhancement (Flat/Speech) (DIP switch 1)

The speech enhancement function works by filtering low frequencies (<150Hz) which can mask the intelligible sound through the so called "masking effect". It is recommended to use this function for all normal loop systems.

With the DIP switch in the 'down' position, speech enhancement is **OFF**.

With the DIP switch in the 'up' position, speech enhancement is **ON**.

## Note

When commissioning the loop system in accordance with the performance standard IEC 60118-4, the speech enhancement function must be switched off.

## 27. Line/Mic (DIP switch 2+3)

The switch is used to alter the sensitivity of the XLR input for line and microphone.

With the 2 DIP switches in the '**down**' position, Input 1 is set to **Line sensitivity**.

With the 2 DIP switches in the '**up**' position, Input 1 is set to **Mic sensitivity**.

For sensitivity levels, see Technical Specification on page 22-23.

## 28. Phantom Power On/Off (DIP switch 4)

Electret microphones need a DC bias to function. This DC bias, when provided by the host amplifier, is commonly called phantom power.

With the DIP switch in the '**down**' position phantom power is turned **ON**.

With the DIP switch in the '**up**' position, phantom power is turned **OFF**.

The phantom power or bias voltage is approximately 12V (some variation occurs, depending on the loop driver model).

### Note 1

Phantom Power should only be turned on when an electret microphone is connected to the amplifier.

### Note 2

Before connection of an electret microphone needing more phantom power than 12V, a microphone pre-amplifier must be used. If such a pre-amplifier is connected to the XLR connector in Input 1, the phantom power should be turned off (switch 4 in 'up' position) and the sensitivity be set to line level (switch 2+3 in 'down' position).

# Prepare installation

## Planning

Calculations for coverage area, metal loss, signal sources, power outlets, dissipating heat and ventilation for loop driver placement and other practical installation issues, must be done prior to the on-site installation. Please refer to [www.univox.eu/planning](http://www.univox.eu/planning)

Use Univox Loop Designer (ULD), a free, web-based project planning and design tool that quickly and accurately assists in the design of loop systems.

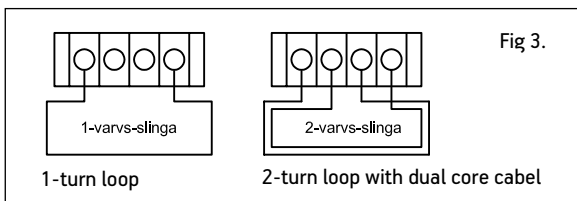
[www.univoxloopdesign.org](http://www.univoxloopdesign.org)

## Tools required

- Copper tape tools, e.g. crimping tool, double-sided adhesive tape, printed warning tape
- General audio installation tools, e.g. Ohm meter
- Field strength meter, e.g. Univox FSM 2.0
- Listening device, e.g. Univox Listener

## Loop cable

Always install a twin core loop cable to secure necessary connection options, especially vital in environments with uneven metal loss. Univox twin core copper tape gives top efficiency with low induction loss. Use a junction box to alternate between single, double and twin turn loop connections.



Use a feed cable (twisted or twin wire) between the junction box and the loop driver, as well as between the loop figuration and the junction box or loop driver.

## Placement of the driver

The Univox PLS-X loop drivers will not generate much excessive heat and can be mounted in 19" racks on top of or below other rack components (check that these don't generate excessive heat), on a wall or another flat surface. In a rack system it is often practical to attach the external power supply to the supporting metallic construction using straps. For mounting on the wall you need to open the chassis to get access to the mounting holes.

### Note

The power supply must be connected to a wall socket close to the loop amplifier.

Although there are several built-in protection schemes for temperature, current and power etc. we recommend to plan for worst case scenario.

The loop cable mustn't be placed closer than 30cm (12in) to a parallel microphone or mixer cable. Crossing is ok.

## Placement of the microphones

Microphone placement is crucial for speech intelligibility. Use shortest distance possible between microphone and mouth/sound source.

### Maximum recommended segment size (to comply with IEC 60118-4)

Metallic environment	Basic level (1000Hz)	IEC level (1600Hz)	Field Strength Attenuation	Important notes/requirements
No metal	22m/70ft	22m/70ft	0	
Standard reinforced concrete	7m/23ft	5m/16ft	3.5-6dB	Increased current, voltage and power
Heavily reinforced concrete	5m/16ft	4m/13ft	3.5-6dB	Increased current, voltage and power
Suspended ceiling	4.8m/16ft	3,6m/12ft	4-10 dB	Conductor must be centered in the suspended ceiling framework (longest distance to metal) Increased current, decreased power
Steel deck/ Metal system floor	4m/13ft	3m/10ft	6-10dB	Increased current, decreased voltage
Iron bar construction	3m/10ft	2m/6.5ft	4-12dB	Medium/strong damping, depending on placement of wire (avoid placement along metal bars)

# Installation

## Start-up procedure

1. Disconnect all input and output connections.
2. Each loop must be securely isolated (particularly to safety-ground and other loop connections). Verify the resistance of each loop (approximately 1-3 Ohm).
3. Set all level controls to minimum setting:
  - System Diagnostics (5) = Off (switch to left position)
  - Parametric MLC (4) = 2kHz (switch to right position)
4. Connect the Power supply (11) and verify Power LED indication (10).
5. Activate System Diagnostics by sliding the switch to the right. Input level bar graph peaks (2) to 0dB . Output bar graph (7) does not indicate.
6. Connect Master loop (12) and adjust the output level, making sure input and output bar graphs indicate in unison. Note: a 2-turn loop is often more efficient. See next page.
7. Check field strength for all loop segments using a field strength meter, e.g FSM 2.0. Verify low field strength directly above wires and high in between segments (peaks to approximately -2dB). If not, there might be a local short circuit between wires.
8. Disconnect Master loop and connect Slave loop (12). Repeat the procedure for Slave loop.
9. Reconnect Master slave.
10. Basic function of the loop system is now verified. Turn System Diagnostics off, by sliding the switch to the left.

## Input connection and adjustments

11. Set all level controls to minimum setting:
  - System Diagnostic (5) = Off (switch to left position)
  - Parametric MLC (4) = 2kHz (switch to right position)
12. Connect the main audio source to the amplifier's input.
13. Adjust input level (1) to 0dB (with maximum peaks to +12dB) at input bar graph (2). If using a 1kHz pulsed sine wave signal, simply set to 0dB.



## Output connection and adjustments

14. Field strength setting: Start with the highest efficiency connection: 2-turn serial connection, in junction box.
15. Set field strength (6) to -3dB to 0dB at the peaks. If Peak (8) LED flickers only momentarily the connection is acceptable. If Peak LED indicates continuously, try rewiring the connections in the junction box in subsequent order: II) single 1-turn and then III) 1-turn in parallel.

With this procedure the unit will operate with the highest output possible without generating excessive heat.

### **Note 1**

To quickly set up the field strength for a real program source, a PPM instrument is helpful. The Univox Listener has a calibrated level indicator that quickly finds the highest peak.

### **Note 2**

When adjusting the field strength peaks, -2dB field strength works best, due to different dynamic headrooms in hearing aids.

16. Check basic frequency response according to IEC 60118-4, using a field strength meter, e.g. FSM 2.0. If necessary, follow Frequency adjustment procedure (see page 12).
17. Check the sound quality by using an external listening device (Listener or FSM 2.0), Monitor speaker connector (14) or Monitor (9) for headphone (volume control on rear panel Monitor (13)). When operating at maximum output on low impedance, i.e. single turn loops, the automatic limit protection circuit may cut programme peaks. This can be avoided by changing to a 2-turn loop or reduce the output current setting.
18. Start the Commissioning process to certify the installation (see page 18).

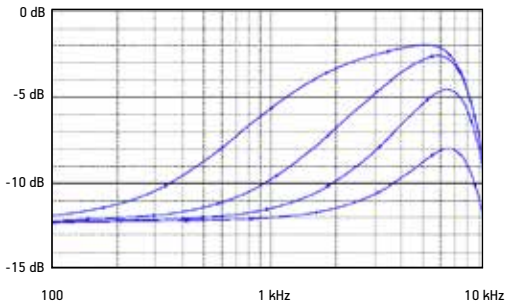
## Metal Loss Correction frequency setting

The degree of compensation for metal loss is adjusted with the MLC potentiometer (3). The start/break frequency is set with the Parametric MLC knee point switch (4) marked: 100Hz, 500Hz, 1kHz, 2kHz.

1. Start with the break frequency set to 2kHz.
2. Adjust the level to -12dB. If this is not sufficient, move to the next lower frequency and repeat as required.
3. Verify that the loop driver's voltage doesn't saturate, i.e. that the peak indicator (8) only flickers temporarily.

When operating at maximum output on some loop types the automatic limit protection circuit may cut programme peaks. To rectify, reduce the loop current accordingly.

## MLC function in maximum position



# Commissioning and certification

It's important to check the system when the installation is completed. To ensure that the loop installation meets the requirements for field strength, consistency and frequency response, it must comply with the international standard IEC 60118-4.

A guide how to commission a loop system to the IEC performance standard, can be found in the user guide for the Univox FSM 2.0 field strength meter and in the Univox® Certificate of Conformity. These documents are also available on [www.univox.eu/certify](http://www.univox.eu/certify).

## Note

To listen to the sound quality, use high quality headphones with the FSM 2.0 or Univox® Listener loop receiver.

The 'Monitor' Output socket is a direct reflection of the loop signal current (volume control on rear panel). The sound quality can be easily assessed at this point in the audio chain aiding set up and problem solving.

# Default Settings

## Rear panel

### Input 1

1. Flat/Speech; DOWN (= speech enhancement off)
2. Line/Mic; DOWN
3. Line/Mic; DOWN } (= line level is selected)
4. Phantom/off; UP (= phantom power off)

### Input 2

1. Flat/Speech; DOWN (= speech enhancement off)
2. 50-100V/off; UP
3. 50-100V/off; UP } (= 100V line off)
4. Override/off; UP (= override off)

## Monitor Control

Set fully anti-clockwise (factory default)

## Front panel

All level controls are set to minimum (turned fully anti-clockwise).

System Diagnostic = Off (switch in left position).

Parametric MLC = 2kHz (switch in right position), level control in min position.

Turn clockwise to change.

# Trouble shooting

Symptom	Possible cause	Solution
General malfunction	-	Check the system with the start-up procedure. See page 10.
Power LED is off	Power supply not connected Power supply faulty	Connect power supply correctly Replace power supply
Input and output LEDs flash on and off	System Diagnostics turned on	Turn System Diagnostics off
Output current LEDs are off, input LEDs are on	Loop current turned down	Adjust Loop current
Output and input LEDs are off, power LED is on	No input signal Input signal set too low	Check if input signal is present Adjust level of input signal
Audio quality is poor, peak LED indicates	Malfunction loop cable Loop impedance is too high Loop current set too high Parametric MLC set too high	Rerun start-up procedure. (page 10) Change the loop: use twin cores in parallel or use a cable with higher cross-section Turn loop current down Turn down Parametric MLC
Audio quality is poor, peak LED is off, sound quality using headphone monitor is also poor	Input signal set too high Audio source is of poor quality	Reduce input signal level and check Line/Mic level setting Change/adjust audio source

Symptom	Possible cause	Solution
Intelligibility of sound from microphone is poor	Low frequency masking Poor microphone user techniques	Turn speech enhancement filter on Instruct user/reduce speaking distance
Microphone connected, input LEDs are off	Phantom power not turned on Input level too low  Microphone needs higher phantom voltage  Microphone/lead/connectors faulty	Turn phantom power on Increase input level/reduce speaking distance  Use valid microphone or connect a microphone mixer (amplifier)  Exchange faulty part
Alarm/priority signal is not clear	Override DIL switch not set to allow this function	Set DIL switch to correct position
Cannot achieve required frequency response at 100 Hz	Speech enhancement filter turned on	Turn speech enhancement filter off
Cannot achieve required frequency response at 5 kHz	Parametric MLC not set correctly Frequency dependent losses too high for parametric compensation	Set Parametric MLC to correct level Use smaller/multiple loops

# Technical Specification

## Audio Input 1

Connection Type:	Balanced XLR (socket)
Level:	Switchable between Line (DIP switches 2 and 3 'down' and Mic (DIP switches 2 and 3 'up')
Line sensitivity range:	40mV-2.6V (-25.7dBu to 10.5dBu) adjustable by control on front panel
Mic sensitivity range:	2.5mV-160mV (-50dBu to -14dBu) adjustable by control on front panel
Phantom power on/off:	DIP switch 4 'up' = OFF, 'down' = ON
Speech Enhancement:	Flat (DIP switch 1 'down') = OFF (filter 60-80Hz) Speech (DIP switch 1 'up') = ON (filter 110-170Hz)

## Audio Input 2

Connection Type:	Phoenix screw terminal
Level:	Switchable between 50-100V line and Line levels  50-100V Line (DIP switches 2 and 3 down) Line (DIP switches 2 and 3 up)  Balanced line sensitivity 140mV-8.3V (-15dBu to 20.6dBu)
Override:	Suppresses Inputs 1 and 2 and gives priority to Input 3 for use with voice alarms or other audio  DIP switch 4 'down' = ON DIP switch 4 'up' = OFF
Speech Enhancement:	Flat (DIP switch 1 'down') = OFF (Low cut filter 60-80Hz) Speech (DIP switch 1 'up') = ON (Low cut filter 110-170Hz)

## Input 3

Connection Type:	RCA (Phono) and Phoenix screw terminal
Level:	Unbalanced line
Sensitivity range:	30mV-5V (-28dBu to 17dBu) adjustable by control on front panel

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## In Pow Amp

Connection Type: RCA (Phono)  
Input level: Approximately 0.5V

## Out Pre Amp

Connection Type: RCA (Phono)  
Output Level: Approximately 0.5 V

Output signal after low pass filter and AGC. Can be used as the input to other loop drivers.

## Loop Output

Connection Type: Screw terminal (4 connections)

Use the two outer connections for a single turn loop (see page 17).

The two inner connections (center) are used as a shorting bar for configuring a 2-turn loop with twin core cable (see page 17)

	PLS-X1	PLS-X3	PLS-X5
Max Voltage	22 Vpp	31 Vpp	36.5 Vpp
Max Current	4.7 A RMS	6.5 A RMS	9.5 A RMS

## Supplementary Outputs

Connection Type: Phoenix screw terminal (6 connections)

Connection	Type	Function	Specification
1	Audio output	Monitor speaker	10 W IC power chip, 4-32 $\Omega$
2	Ground	Ground	Ground
3	DC power supply	Auxiliary power supply	19-36 V, 100 mA DC
4,5	LED driver	Indicates output current = 0dB LED	Suitable for direct connection of LED or external diagnostic test
5,6	LED driver	Indicates input signal is > -6 dB	Suitable for direct connection of LED or external diagnostic test

# Safety

The equipment should be installed by a competent audio visual technician observing 'good electrical and audio practice' at all times and following all the instructions contained within this document.



Only use the power adapter supplied with the unit. If the power adapter or cable is damaged, replace with a genuine Univox part.

Power adapter must be connected to a mains outlet close to the amplifier and easily accessible.

The installer is responsible for installing the product in a way that may not cause risk of fire. Do not cover the power adapter or loop driver. Only operate the unit in a well ventilated, dry environment. As the product produces internal voltages greater than 35V (peak) AC or DC, the product shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on or close to the product.



Do not remove any covers as there is a risk of electric shock. Please observe that the product warranty doesn't include faults caused by tampering with the product, carelessness, incorrect connection/mounting or maintenance.

# Warranty

This loop driver is supplied with a 5 year (return to base) warranty for parts and labour.

Misuse of the product in any way including but not limited to, will invalidate the warranty.

- Incorrect installation
- Connection to non approved power adapter
- Self oscillation resulting from feedback
- Force majeure, e.g. lightning strike
- Ingress of liquid
- Mechanical impact

# Maintenance and care

Under normal circumstances the product does not need any special maintenance. Should the unit become dirty, wipe it with a clean damp cloth. Do not use solvents or strong detergents.



# Service

Should the system not work after having made the product test as described above, please contact the local distributor for further instructions. Before returning a product to us for service you will need a Service Number from your distributor. They will also send you a Service Report Form which must be completed and returned with the product.

# Technical data

For additional information, please refer to product data sheet/brochure and CE certificate which can be downloaded from [www.univox.eu/products](http://www.univox.eu/products). If required other technical documents can be ordered from [support@edin.se](mailto:support@edin.se).

# Environment



To prevent possible harm to the environment and human health, at the end of serviceable life of the product, please dispose of responsibly by following statutory Disposal Regulations.

# Measuring and control devices

## Univox® FSM 2.0, Field Strength Meter

Instrument for the professional measurement and certification of loop systems in accordance with IEC 60118-4.



## Univox® Listener

Loop receiver for fast and simple check of the sound quality and basic level control of the loop.







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Distributor

Univox by edin, the world's leading authority and producer of high quality hearing loop systems created the first true loop amplifier in 1969. With our strong emphasis on research and development, we have continued to innovate to deliver more firsts in the industry, constantly improving the performance of our products and service for hard of hearing communities worldwide.

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Hearing excellence since 1965

