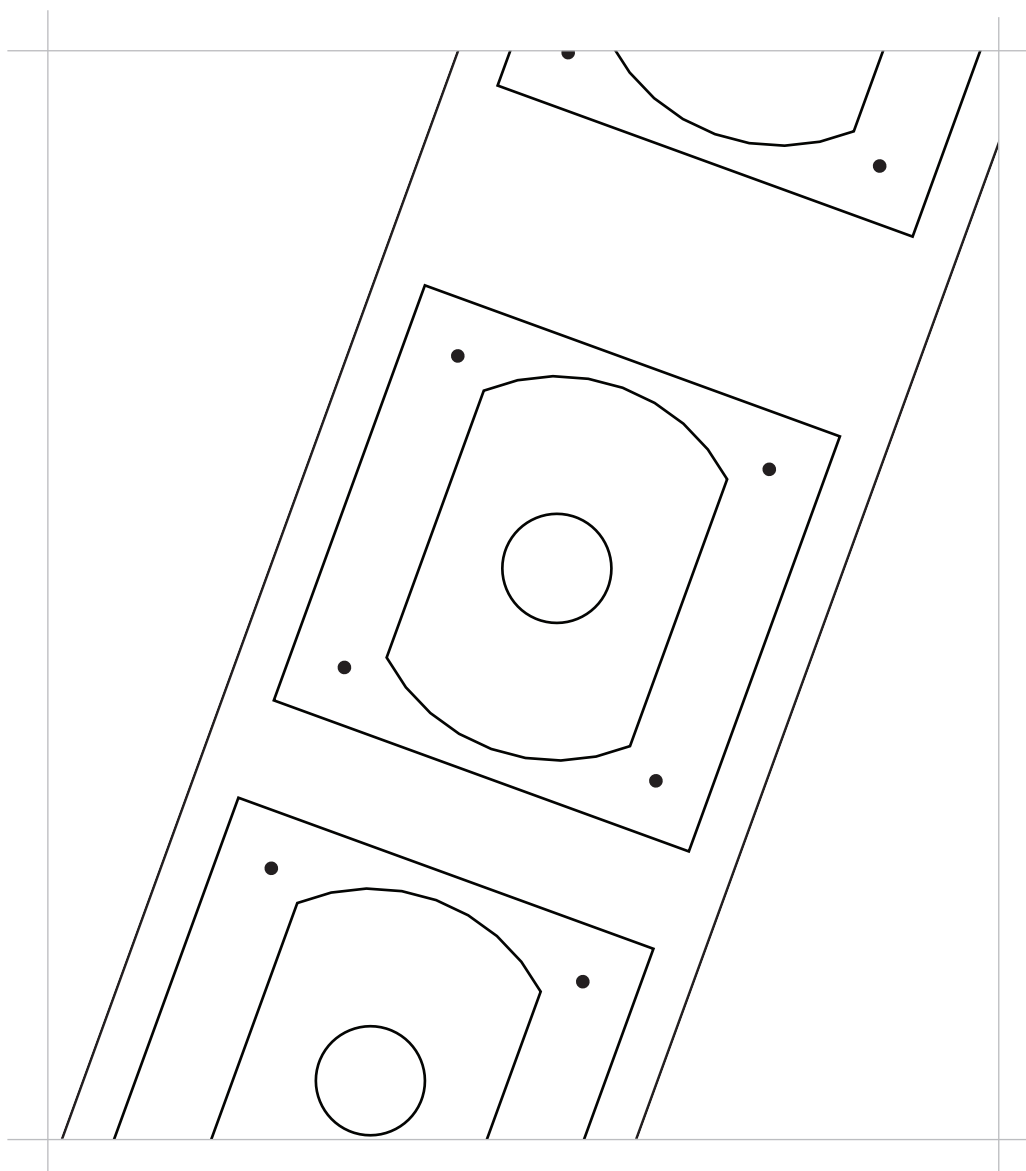


Installation Manual

AXYS® Intellivox - DC/DS 808 & 1608 models*

Models Ivx-DC808, Ivx-DS808, Ivx-DC1608, Ivx-DS1608

(Part Nos. 585860, 587860, 585880, 587880)



* For early serial numbers with input board equipped with WAGO connectors.

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This document confirms that products manufactured by Duran Audio bearing the CE label meet all the requirements in the EMC directive 2004/108/EC and LV directive 2006/95/EC laid down by the Member States Council for adjustment of legal requirements. Furthermore the products comply with the rules and regulations from 30 August 1995 referring to the electromagnetic compatibility of devices. Duran Audio products bearing the CE label comply with the following harmonised or national standards:

EMC:

EN 55103-1 :1996

EN 55103-2 :1996

Safety:

IEC 60065 :2002

Mains Harmonics:

EN 61000-3-2 :2001

Insulation:

Class1

Duran Audio BV**Koxkampseweg 10****5301 KK Zaltbommel****The Netherlands****Tel: +31 418 515583****Fax: +31 418 518077**

Zaltbommel, December 2011.

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1. IMPORTANT SAFETY INSTRUCTIONS



This symbol is intended to alert you to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



This symbol is used throughout this manual and is intended to alert you to the presence of important instructions.

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings*. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarised or grounding-type plug*. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus*.
- 11) Only use attachments/accessories specified by the manufacturer.



- 12) Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution

when moving the cart/apparatus combination to avoid injury from tip-over.

- 13) Unplug this apparatus during lightning storms or when unused for long periods of time*.

- 14) Refer servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Warning -To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.



Warning - To disconnect this apparatus from the mains power supply, turn off the power at the switch labelled Circuit Breaker on the front panel of the amplifier and remove the connector from the mains input socket labelled Mains on the rear panel*.



Warning - the PowerCon® connector should never be plugged or unplugged when there is power on the connector, regardless of whether the amplifier is switched on or not. ALWAYS ensure that the mains supply is turned off at source before inserting or removing the PowerCon®*.



Warning - This apparatus is a Class I device and must be connected to a mains socket outlet that provides a safety ground connection*.



Warning - The installer should ensure that the mechanical mounting method employed for the loudspeaker column should be capable of supporting four times the weight of the unit (i.e., with a safety factor of 4x). Always use both the brackets provided with the unit.

* These safety warnings are applicable to the IntelliAmp amplifier only

2. INTRODUCTION

This manual describes the recommended installation procedure for the AXYS® Intellivox DC (DDC2.0) and DS (DDS) range of loudspeakers, Models DC/DS 808 and 1608.

The AXYS® Intellivox is a type of loudspeaker known as an active DSP-controlled loudspeaker array, which utilises the principle of mounting multiple, individually-driven loudspeaker drive units in the vertical plane at specific spacings. All the Intellivox models covered by this manual consist of two components: the column loudspeaker unit and a mains-powered multi-channel power amplifier which includes a Digital Signal Processing (DSP) section.

The DC/DS 808/1608 models have been specifically designed for applications where a high SPL is required, and/or an extended audio frequency response suitable for high quality music reproduction is desirable.

This manual describes the following aspects of an installation:

- Necessary cabling
- Connector wiring
- Mechanical installation



After installation, the amplifier and loudspeaker should be tested for basic functionality using the supplied AXYS® WinControl software; the manual also describes this procedure. (Note that full configuration and control of the loudspeaker is beyond the scope of this manual; this topic is fully documented in the WinControl Help files.)

APPLICABLE MODELS, AND VARIANTS

This manual applies to the following AXYS® Intellivox models*:

Intellivox-DC808 and DC1608

Intellivox-DS808 and DS1608



Note that later serial numbers are equipped with an input board with Phoenix in stead of WAGO connectors. This manual describes the WAGO version (early serial numbers). The Phoenix input board is used from the following serial numbers:

lvx-DC808 : 011600013

lvx-DC1608 : 011700010

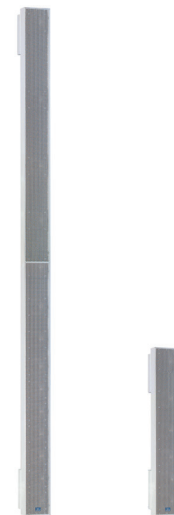
lvx-DS808 : 010700016

lvx-DS1608 : 010800036

The DC/DS808 loudspeaker unit is fitted with six 6.5" lo/mid-range drivers and two 1" hi-frequency compression drivers. The DC/DS IntelliAmp supplied with these models has 8 separate audio channels.

The DC/DS1608 loudspeaker unit is fitted with fourteen 6.5" lo/mid-range drivers and two 1" hi-frequency compression drivers. The DC/DS IntelliAmp supplied with these models has 16 separate audio channels.

The DS models use a different DSP algorithm from the DC models. This difference may be ignored for the purposes of installation and commissioning.



DC/DS 1608 DC/DS 808

fig.1 The Intellivox models covered by this manual

*Other members of the Intellivox range, including DC/DS 115 and DC/DS/DSX 180, 280, 430 and 500 models have different installation procedures and this manual should NOT be used when installing them. Refer instead to Intellivox Installation Manual Ref. 2008 10/lvxIM_v2.0.

WHAT'S IN THE PACKAGING

The Intellivox is shipped in two separate shipping cartons: the loudspeaker unit and the amplifier/DSP section.

Loudspeaker:

In addition to the loudspeaker itself, each unit is shipped with the following items:

- Two mounting brackets, pre-attached* to the loudspeaker
- Box containing speaker cable (5 m), fitted with 20-way (DC/DS808) or 40-way (DC/DS1608) Harting connectors at each end (male-to-female)

Amplifier:

In addition to the IntelliAmp itself, each unit is shipped with the following items:

- Installation manual (this document)
- Datasheet specific to the model
- AC power cable (2 m), fitted with a Neutrik® PowerCon® connector and a European mains plug
- Package of small parts, consisting of:

REF	ITEM	QTY	USE
A	M8 x 45 mm hex-head screws with washers and wall plugs	8	Mounting bracket fixings* (wall)
B	5-pole female WAGO connector, with cover	1	Mating connector for rear panel RS-485 control port
C	5-pin XLR male connector	1	Connector for front panel RS-485 interface
D	6-pole female WAGO connector, with cover	1	Mating connector for rear panel audio inputs
E, F	Set of PVC inserts for WAGO connectors, with wire insertion tool	1	WAGO connector wiring

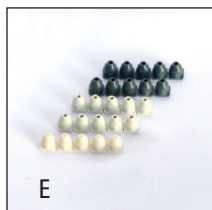
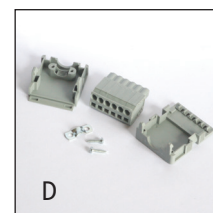
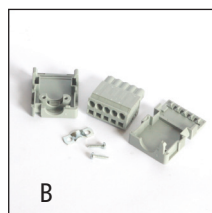
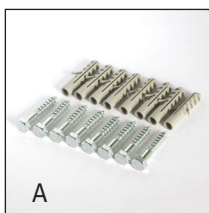


fig.2 - Box contents

*The mounting brackets are fitted to the loudspeaker at the factory in order to provide protection during shipment of the HF compression drivers.

3. INSTALLATION GUIDE

PREPARING FOR INSTALLATION

Before starting to install the Intellivox loudspeaker, a number of points should be considered.

- It is assumed that the installation site has been the subject of an extensive DDA investigation or optimisation prior to the actual install. (DDA = Digital Directivity Analysis, the AXYS® proprietary simulation and optimisation software for these products*). This procedure will have identified the optimum physical location for the Intellivox loudspeaker, to accurately achieve the desired acoustic coverage. In particular, the “acoustic centre” position will have been specified, in terms of height above the finished floor. The installer should confirm that he/she has this information.

- Unless specified otherwise by the sound system designer, the Intellivox column should be installed at a position exactly perpendicular to the listening plane (i.e. vertical if the floor is horizontal). Unlike conventional loudspeaker systems, minor mechanical misalignment may lead to degraded coverage and intelligibility. Ensure (by use of a levelling device such as a spirit level) that the surfaces to which the mounting brackets will be attached are absolutely vertical and in the same plane, and that all the individual fixing holes are themselves in the same plane.

- The only electrical connection to be made to the Intellivox loudspeaker is the multicore cable from the amplifier. Consideration should be given to its cable route and also to ease of rear access to the connector. The Harting connector is quite large and allowance for its size needs to be made when preparing the mounting location.

- The separate IntelliAmp is intended to be mounted in a standard 19” rack; this should be as near as practical to the loudspeaker column. The standard speaker cable supplied is 5 m in length, but longer versions, up to 25 m, are available to special order; please contact JBL for more information. The amplifier operates from 230 V as well as 115 V AC mains; a suitable AC mains outlet will be required at the rack location. The outlet must be on a circuit able to supply the

full-load current and the maximum short-term in-rush current drawn by the amplifier. Refer to the datasheet supplied for the actual figures specific to the model being installed. The third terminal of the mains outlet must be connected to a proper safety ground. Local safety regulations may require a separate mains distribution network or an uninterruptible mains power supply (UPS).

SIGNAL AND CONTROL CABLES

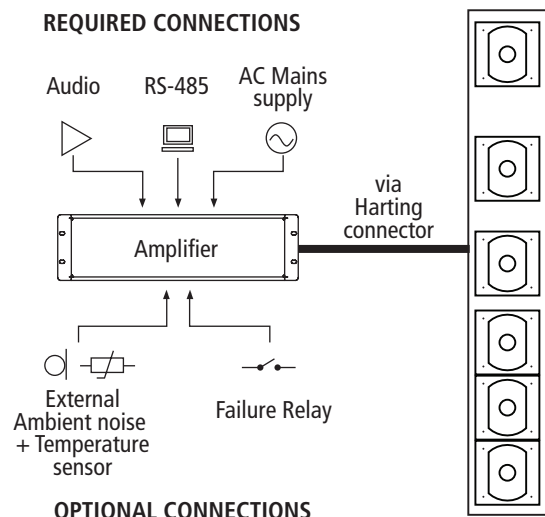


fig.3 - Connections

- In addition to the mains supply and the multicore cable to the loudspeaker, some or all of the following cables will need to be run to the rack location. The necessity for each of these will have been determined by the system designer; the installer should ensure that he/she has these details to hand. All wiring details can be found on pages 9-15.

- Network connection: the IntelliAmp is configured, and may also be monitored, from a PC running AXYS® WinControl software. With all installations it will be necessary to upload the correct settings for each unit (loudspeaker/amplifier combination) to obtain the desired acoustic coverage. Once this has been done, there is strictly no longer an operational need to have the IntelliAmp connected to a PC because all

*Authorised electro-acoustic consultants or ‘build & design’ sound contractors can apply for a DDA License free of charge. This license can be obtained through our website at <http://www.duran-audio.com/> For further information please refer to the Help files and manual with the DDA software.

settings are stored locally within the unit's memory and in the event of a power failure will be automatically reloaded on power-up. The system designer will have determined whether a permanent network connection needs to be provided. This will be the case if the Intellivox is to be monitored remotely during normal operation. Otherwise, the network wiring can be omitted, but consideration should still be given to the amplifier's location with regard to ease of both initial and future access for a PC connection. It may be appropriate to install network wiring in order to provide a network access point at a location more easily accessible than at the rack. A cable with two individually foil-screened twisted pairs should be used. Details of suitable cables can be found at page 23.

- **Audio inputs:** the IntelliAmp accepts line level audio (0 dBV)*. Two separate transformer-balanced audio inputs are provided; however, units are shipped with only input 1 active. Input 2 can be made active via WinControl.
- **Fault monitoring:** if network monitoring is not to be used, a simple surveillance function may be realised by means of the IntelliAmp's 'failure detect' volt-free relay. This connection requires a 2-core cable.
- **Ambient Noise Sensing:** the DSP section of the IntelliAmp incorporates an autogain algorithm which can adjust the gain of the system in response to changing ambient noise levels. If this feature is to be used, an external ambient microphone (available as an option**) should be connected if specified by the system designer. Standard screened two-core microphone cable should be used for this purpose.
- **Frost protection:** The IntelliAmp is equipped with a frost protection system which activates an internally generated pilot tone if the ambient temperature drops below a pre-determined threshold. The frost protection threshold can be set using WinControl. If this function is required, an external ambient temperature sensor (available as an option**) should be connected with screened two-core cable (or similar) for its correct operation.

* The IntelliAmp may be ordered with alternative input modules which accept signals directly from 70/100 V distribution systems. Two modules are available: a) with one normal 0 dBV balanced line level input and one 70/100 V input, b) with two 70/100 V inputs. These options need to be specified at the time of ordering. See page 22 for order codes.

**Note that the optional external ANS microphone is combined with a temperature sensor in a single unit (JBL Order Code 97661101). If both functions are required, the use of 2-pair screened cable is recommended.

MECHANICAL INSTALLATION OF THE AMPLIFIER

The IntelliAmp is designed to be mounted in a standard 19" equipment rack. The front panel is fitted with rackmount ears for this purpose. The IntelliAmp occupies 3U of vertical rack space.



Note that due to the weight of the amplifier, the use of additional rear supports is strongly recommended. The rear of the unit has additional mounting points to facilitate this.

Ventilation

The IntelliAmp is forced-air cooled by two internal temperature-controlled fans. This ventilation method should ensure that the amplifier remains within its operational temperature range under most circumstances, but if it is to be installed in a location of high ambient temperature, and/or in a rack containing a significant quantity of other heat-generating equipment (see below), consideration should be given to climate-controlling the room in which the equipment rack is situated.



Do not install the IntelliAmp in a 19" rack immediately above or below another item of equipment generating a significant amount of heat (e.g. another power amplifier). Plain 1U blank panels should be used as spacers. Note that slotted or perforated ventilation panels should not be used, as these will reduce the effect of forced-air cooling. Also, be aware of the rear-to-front direction of airflow of the IntelliAmp; it is not good practice to install equipment employing forced-air cooling with different directions of airflow in the same enclosed rack.

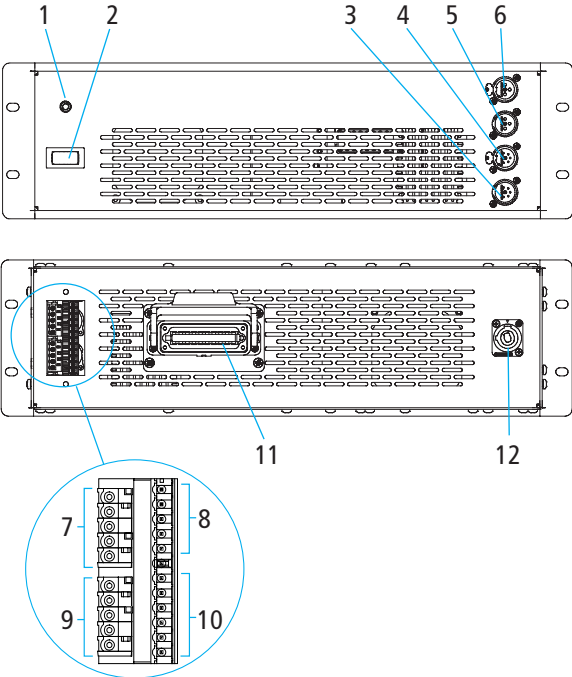


Airflow is via the grilles at the rear (intake) and front (exhaust) of the amplifier. Ensure that both sets of grilles are completely clear of any obstructions within 100 mm (4") in order to maintain the necessary airflow.

See page 16 for details regarding the mechanical installation of the loudspeaker enclosure.

CONNECTOR AND WIRING DETAILS

All permanent connections to the IntelliAmp are made at the rear of the unit. Audio 1 and RS-485 connections are replicated on the front panel on XLRs, together with loop-through connectors. This is useful when multiple IntelliAmps are installed in the same rack.



- 1

Status LED
- 2

Mains Circuit Breaker
- 3

RS-485 loop-through connector
- 4

Alternative RS-485 network connector
- 5

Audio 1 loop-through connector
- 6

Alternative Audio 1 input
- 7

Fault monitoring relay connector
- 8

RS-485 connector
- 9

Ambient SPL / temperature sensor connector
- 10

Audio Input connector
- 11

Loudspeaker connector
- 12

Mains connector

fig.4 - Connector Details

AC MAINS

The IntelliAmp is equipped with a 3-pin PowerCon® mains connector. Internal mains current protection is provided by the resettable circuit breaker on the front panel, which also acts as the mains on/off switch. Be sure that the mains voltage stated on the unit complies with the local standard before connecting the IntelliAmp to the mains supply.



A 2 m pre-made PowerCon® mains cable with a European plug is supplied with the unit. If it is necessary to fit a different type of mains plug, please observe the following cable colour codes:

TERM	EURO	USA
L	Brown	Black
E	Green/yellow	Green
N	Blue	White

The orientation of the PowerCon® connector is evident from the keyway on the centre spigot; insert the plug fully and then rotate it clockwise until a firm click is heard. The plug is now locked against inadvertent removal. To unplug, press the release latch on the side of the plug body before rotating anticlockwise.

The PowerCon® connectors are plugged and unplugged as shown in the diagram below.

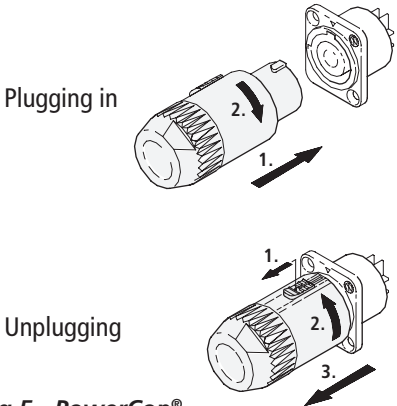


fig.5 - PowerCon®



Note - The PowerCon® connector should NEVER be plugged in or unplugged while AC mains is present. This applies whether or not the amplifier is switched on. ALWAYS isolate the AC mains supply at its source before plugging or unplugging the connector.



Warning - This apparatus is a Class I device and must be connected to a mains socket outlet that provides a safety ground connection.



Warning - Presence of mains voltage is not indicated by the LED on the front panel. This LED indicates the status of the IntelliAmp and cannot be used as a mains voltage indicator.

WAGO CONNECTORS

All other Intellivox connections are made via the four on-board WAGO Type 231 multi-pin connectors. These are:

- Audio (6-way male)
- Network (5-way male)
- Ambient noise mic/Ext. temp. sensor (5-way female)
- Failure detection (5-way female)

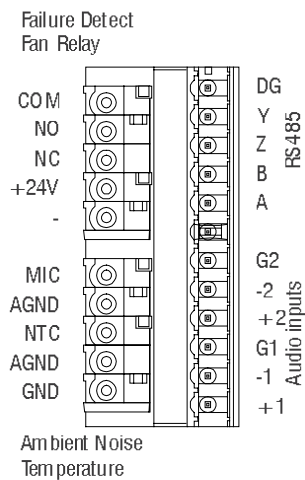


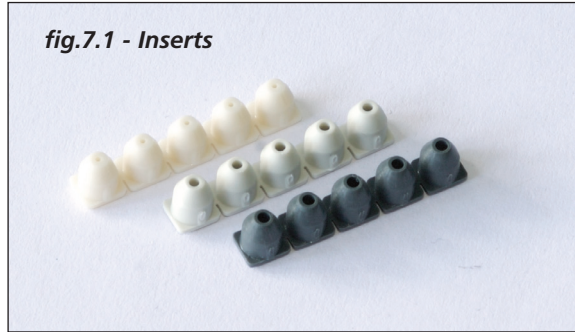
fig.6 - Wiring Diagram

One 5-way and one 6-way mating female connector is supplied with every unit for the network and audio connections. 5-way mating male connectors for the other two sockets are available separately from JBL if required (see page 22), but will be shipped with the unit if specified at the time of order.

To wire the WAGO Type 231 connectors, proceed as follows:

- 1) Prepare the cable; strip back approximately 8-9 mm (0.35") of the insulation of each core.
- 2) Refer to the table opposite: select the appropriate PVC insert for the wire size. If the wire is too big for the largest size insert, the inserts can be ignored and the wire connected directly (next step). Insert the wire into the insert so that the bare end goes through the hole but the insulated portion does not.

fig.7.1 - Inserts



WIRE SIZE	INSERT COLOUR
0.08 to 0.2 mm ²	White
0.25 to 0.5 mm ²	Light grey
0.75 to 1.0 mm ²	Dark grey

- 3) Using the wire insertion tool supplied as shown below, open the clamp contact in the connector shell by pressing inwards towards the shell.

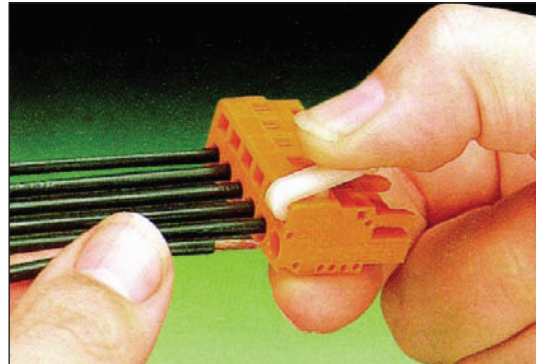


fig.7.2 - Using the WAGO insertion tool

- 4) Insert the stripped wire, with or without a PVC insert, into the hole as shown. If using an insert, ensure that it is fully seated. Release the wire insertion tool, and check that the wire is secured. Repeat from Step 2 for all other cores.

AUDIO INPUTS

The IntelliAmp is normally* fitted with two transformer-balanced line inputs. Selection of Input 1 and/or Input 2 as audio source is made from the WinControl software via the network, and for most installations only Input 1 need be wired. However, Input 2 may be connected to a secondary signal path (in case of a failure elsewhere in the system), or to an emergency sound source.

Inputs 1 and 2 are available on the 6p male WAGO connector on the rear panel, but Input 1 is paralleled to a 3-pin female XLR on the front panel; this is usually reserved for use during a temporary installation set-up, but may be used as the permanent audio input if more convenient. Audio 1 is also wired to an adjacent 3-pin male XLR, allowing audio to be looped to further IntelliAmps where required.

For optimum results only use good quality balanced audio cable consisting of a twisted pair and an overall screen. The audio source(s) (e.g. the AXYS® Octadrive) should have a low impedance balanced output. The nominal line input level is 0 dBV.

The front and rear panel audio connector pinout is as follows:

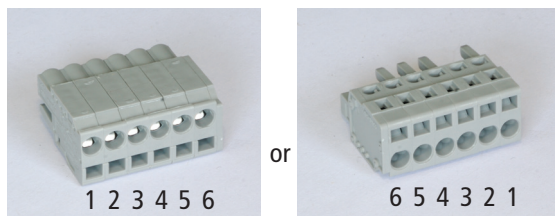
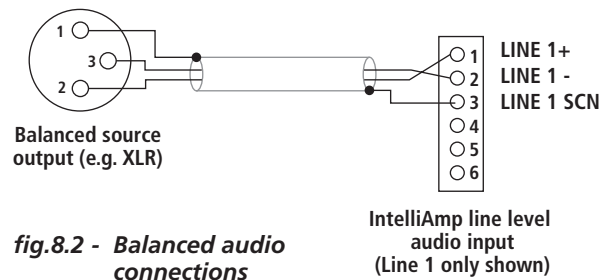


fig.8.1 - Audio input connections

XLR CONN (front)	
PIN NO.	FUNCTION
1	Line 1 Screen
2	Line 1 +
3	Line 1 -

If the source equipment has a well-designed balanced output and the wiring strategy shown below is used, there should be no problems with hum or other extraneous noise. Note that pins 3 and 6 of the audio connector are analogue audio grounds, they should be used only for connecting the screen of the audio cables, and for no other purpose.



Due to the complex architecture of some large audio systems, unexpected hum or noise may occur due to ground loops, or injected noise from other equipment elsewhere in the system. If this occurs, please refer to the appendix of this manual and/or the JBL website, where additional guidance on grounding strategies will be found, with general techniques that may be applied in order to reduce ground-induced noise.

WAGO CONN (REAR)							
PIN NO.	LABEL	STANDARD VERSION		1 X 70 V/100 V 1 X LINE VERSION		DUAL 70 V/100 V VERSION	
1	+1	Line level audio input 1 (0 dBV)	Line 1 +	70 V/100 V input*	70 V/100 V +	70 V/100 V input*	70 V/100 V +
2	-1		Line 1 -		70 V/100 V -		70 V/100 V -
3	G1		Line 1 Screen		GND (n/c)		GND (n/c)
4	+2	Line level audio input 2 (0 dBV)	Line 2 +	Line level audio input (0 dBV)	Line +	70 V/100 V input	70 V/100 V +
5	-2		Line 2 -		Line -		70 V/100 V -
6	G2		Line 2 Screen		Line Screen		GND (n/c)

*See footnote on Page 8

NETWORK CONNECTION

The rear panel RS-485 network connection should be wired if the Intellivox system is to be constantly monitored in operation. The front panel XLR connector provides a convenient means of uploading the system's configuration file once the installation is complete. Note, however, that the front and rear RS-485 connectors must not both be connected to a computer simultaneously. Pinouts of both connectors are given below.

The RS-485 interface permits multiple units to be "daisy-chained" in parallel, so that all units are controlled by the same PC. In such a system, each unit must have its own unique network address; this is determined via WinControl for each individual loudspeaker/IntelliAmp pair.

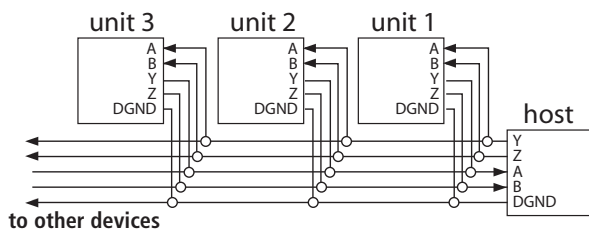


fig.9.1 - Multiple units "daisy chained" in parallel

The network connection should be wired as shown in the table and diagram below:

Note that 2-pair, individually-screened cable should be used for RS-485 connection. The transmit (Tx) and receive (Rx) balanced data lines must be wired via their own twisted pairs. CAT-5 type UTP or FTP cable is NOT suitable. Please refer to the Appendix section of the manual for cable specifications.

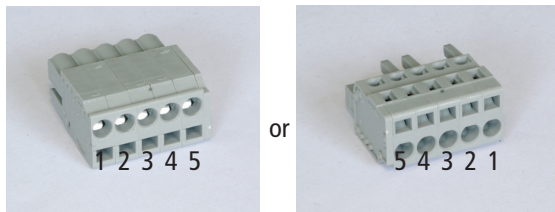


fig.9.2 - Network connections

WAGO CONN (rear)		
PIN NO.	LABELLED	FUNCTION
1	A	Data Rx +
2	B	Data Rx -
3	Z	Data Tx -
4	Y	Data Tx +
5	DG	Screen

5 pin XLR (front)	
PIN NO.	FUNCTION
1	Screen
2	Data Tx +
3	Data Tx -
4	Data Rx -
5	Data Rx +

The maximum cable length over which the network connection will operate reliably depends on the cable type and the baud rate used. With good quality cable, a safe maximum figure is 2000 m. If the distance is significantly longer than this, a network repeater will be required.

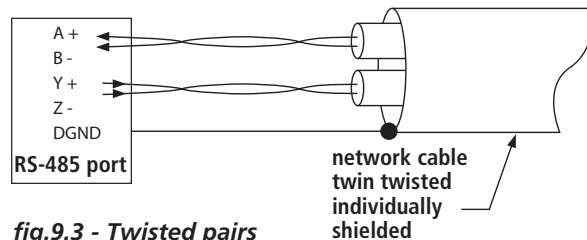


fig.9.3 - Twisted pairs

Further information on the RS-485 network can be found in the manual for the USB to RS-485 converter and in the WinControl Help files.



Before connecting multiple devices to the same network subnet, ensure that their network addresses do not overlap. Each device should be set to a unique network address (determined via WinControl).



If the RS-485 network is not used (i.e. the RS-485 converter is disconnected) for a longer period of time, ensure that either all devices are switched off, or are disconnected from the network.

Alternatively the RS-485 drive lines (host Y and Z in fig. 9.1) can be shorted or interconnected via a low impedance (e.g. 100 Ohm resistor). Note that in this respect it is also allowed to interconnect all RS-485 pins (A, B, Y, Z and DGND), the device transmit pins are always disabled in this case.

FAULT MONITORING RELAY CONNECTOR

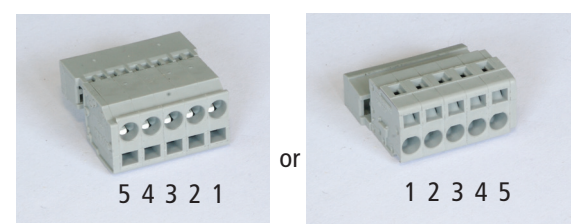


fig.10.1 - Fault monitoring relay connections

PIN NO.	LABELLED	USE
1	COM	Failure relay Common
2	NO	Failure relay Normally Open
3	NC	Failure relay Normally Closed
4	+24V	+24V
5	-	Not connected

The pinout of this connector is as follows:

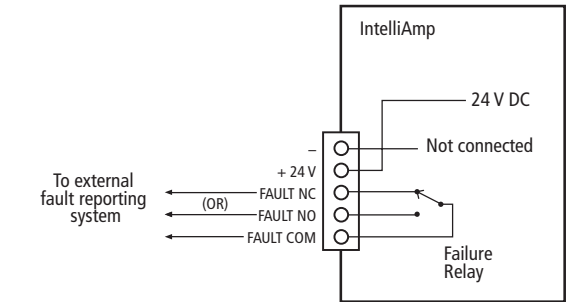



fig.10.2 Failure relay connections

 The diagram above illustrates how this connector may typically be wired.

The external fan control is not operational, the IntelliAmp is equipped with internal temperature-controlled fans.

Please note that Failure Relay and SPL/Temp sensor connectors are both of the same type, do NOT interchange!

Fault Monitoring

The IntelliAmp’s internal Failure Relay is energised in normal operation (COM connected to NC). Power failure or a pre-defined fault condition causes the relay to release, when COM will be shorted to NO. External fault monitoring equipment can be connected to COM and either NO or NC as required, depending on whether the external system registers a fault condition as a short-circuit or an open-circuit. The relay contacts are fully floating (volt-free).

The fault conditions under which the IntelliAmp failure relay is de-energised are user-definable, and are loaded as part of the unit’s settings file with WinControl.

Status LED

Note that the front panel Status LED mimics the operation of the failure relay. The LED is green in normal operation, and goes red when a fault condition arises.

EXTERNAL AMBIENT SPL/TEMPERATURE SENSOR

The pinout of this connector is as follows:

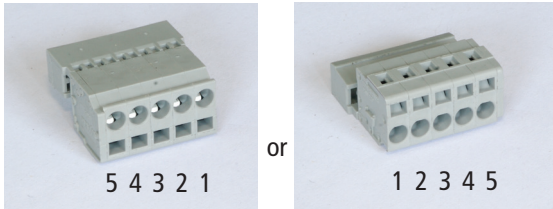


fig.11.1 - External ambient SPL/Temperature sensor connections

PIN NO.	LABELLED	FUNCTION
1	MIC	ANS mic +
2	AGND	ANS mic -
3	NTC	Temp Sensor +
4	AGND	Temp Sensor -
5	GND	Screen

Although accessed via the same connector, the ANS microphone and temperature sensor functions are independent of each other and either or both may be used, as required. The optional AXYS® combined Ambient SPL/ Temperature sensor is recommended, but either of its two functions may be used alone if wished.

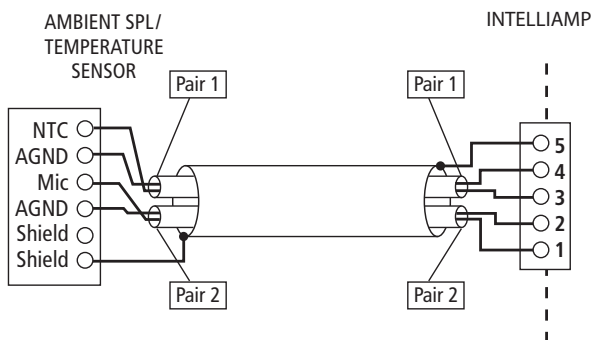


fig.11.2 - Ambient SPL/Temperature sensor connections

The diagram above illustrates how this connector should be wired to the optional combined sensor using twin twisted-pair cable with an overall screen. Note that there are two AGND terminals on both the IntelliAmp and the sensor; care should be taken not to confuse these, and in particular, not to connect AGND to GND at any time.

External Ambient SPL Sensor

The IntelliAmp's DSP system incorporates an autogain algorithm which intelligently alters the volume of the audio according to the ambient noise level. The autogain function is activated and adjusted via WinControl. The automatic volume adaptation feature will only give good results if the signal measured by the sensor's microphone is truly representative of the diffuse ambient noise level, and therefore careful consideration needs to be given to the best location for the sensor. This may well be at a position remote from the Intellivox loudspeaker itself. It should not be near direct sound sources such as people talking, air conditioning system outlets, or other constant noise sources such as electrical plant, etc. The most favourable sensor locations are walls or ceilings (height > 3 m) within the coverage range of the loudspeaker.

Temperature sensor

The external temperature sensor is for activating the IntelliAmp's frost detection system, and should be connected if it is anticipated that the ambient temperature at the sensor position may drop below 0 °C. If it does, an internally-generated pilot tone is applied to the loudspeakers, this warms the voice coils slightly, thus preventing any build-up of moisture in the magnet gap.

LOUDSPEAKER CONNECTIONS

The standard cable supplied with the unit is 5 m in length. Longer cables are available, and length should be specified at the time of ordering. The loudspeaker cables are terminated in Harting multipin connectors, male-to-female, and wired pin-to-pin. The DC/DS 808 models use 20-pin connectors, the DC/DS 1608 models use a dual version which provides two 20-pin connectors in a single shell.

The pinout of the Harting connectors is given below:

DC/DS 808 & 1608 upper connector		DC/DS 1608 lower connector only	
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	Ch. 1 +	1	-
2	Ch. 2 +	2	-
3	Ch. 3 +	3	Ch. 9 +
4	Ch. 4 +	4	Ch. 10 +
5	Ch. 5 +	5	Ch. 11 +
6	Ch. 6 +	6	Ch. 12 +
7	Ch. 7 +	7	Ch. 13 +
8	Ch. 8 +	8	Ch. 14 +
9	-	9	Ch. 15 +
10	-	10	Ch. 16 +
11	Ch. 1 -	11	-
12	Ch. 2 -	12	-
13	Ch. 3 -	13	Ch. 9 -
14	Ch. 4 -	14	Ch. 10 -
15	Ch. 5 -	15	Ch. 11 -
16	Ch. 6 -	16	Ch. 12 -
17	Ch. 7 -	17	Ch. 13 -
18	Ch. 8 -	18	Ch. 14 -
19	-	19	Ch. 15 -
20	-	20	Ch. 16 -

CABLE SPECIFICATIONS

Installers wishing to make up their own loudspeaker cables should ensure that the multicore cables used have cores of adequate diameter. The maximum permissible cable length is dependent on the wire gauge of the cores. Too high a cable resistance, resulting either from too small a core diameter, an excessively long cable length, or a combination of the two, will result in an unacceptable level of signal loss between the IntelliAmp and the loudspeaker.

The maximum signal loss that can be tolerated before the performance of the Intellivox is audibly degraded is 1 dB. The tables below list the cable lengths which result in a 1 dB signal loss for various core diameters, and thus represent the maximum cable length which can be employed in each case. Installers should recognise that these are absolute maximum figures, and work well within these limits.

Note that all cores in the cable must be of the same wire gauge.

METRIC WIRE SIZES		AWG WIRE SIZES	
WIRE DIA.	MAX LENGTH (1 dB loss)	WIRE DIA.	MAX LENGTH (1 dB loss)
0.50 mm ²	11.6 m	22 AWG	7.6 m
0.75 mm ²	17.5 m	21 AWG	9.5 m
1.00 mm ²	23.3 m	20 AWG	12.1 m
1.50 mm ²	34.9 m	19 AWG	15.2 m
2.50 mm ²	58.2 m	18 AWG	19.2 m
4.00 mm ²	93.1 m	17 AWG	24.2 m
		16 AWG	30.5 m
		15 AWG	38.4 m
		14 AWG	48.4 m
		13 AWG	61.0 m
		12 AWG	77.0 m
		11 AWG	97.0 m



More comprehensive data on maximum cable lengths and calculated signal loss for other cables types / lengths may be found on the JBL website.

MECHANICAL INSTALLATION OF THE LOUDSPEAKER

Acoustic Centre

Mounting an Intellivox loudspeaker is a straightforward procedure, but it is essential to understand that the height of the unit above floor level is extremely critical. The “correct operational height” is defined as part of the acoustical design process and the installer should make sure that he/she has this information before commencing to mount the Intellivox.

The correct operational height defined by the system designer is the height of the Intellivox’s acoustic centre. This point coincides with the centre of the loudspeaker’s lowest driver unit. The location of the speaker’s acoustic centre is marked by the centre of the yellow sticker on the front face of the unit at the time of shipping, and it is this position that must correspond to the operational height defined in the design process. Note that the horizontal position of the acoustic centre is on the vertical centre line of the column.



fig.12.1 Sticker showing acoustic centre and unit orientation

When calculating the positions for the mountings (see fig 13.1), the distance from the acoustic centre to the top or bottom of the loudspeaker (whichever is being used as the reference datum) should be measured and then allowed for when marking the mounting positions. The model-specific specification sheet supplied with each loudspeaker includes a mechanical drawing clearly showing the mounting position locations.



Because of the extremely tight vertical radiation pattern of the Intellivox, a small deviation from the calculated mounting height may cause severe degradation of the expected acoustic performance. Similarly, the Intellivox should be perfectly vertical in both planes unless otherwise specified (see fig 12.2).



Note that the yellow sticker also indicates which way is “up”; ensure that this orientation is observed.

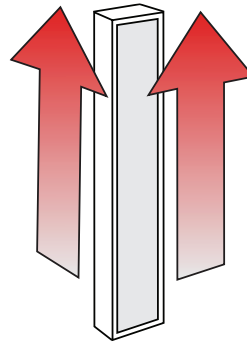


fig.12.2 Illustration showing the critical vertical alignment in both planes

Mounting Options

The Intellivox loudspeaker has two attachment points at the rear of the enclosure; the device should be mounted using these points. Each point consists of four M8 threaded inserts 20 mm deep, and only the hex-head screws supplied with the original mounting hardware should be used.

There are three options for mounting the Intellivox column:

1. The first (and most often used) method is to use the standard mounting brackets supplied ready-fitted to the unit. Dimensions of the bracket are shown in the drawing below.

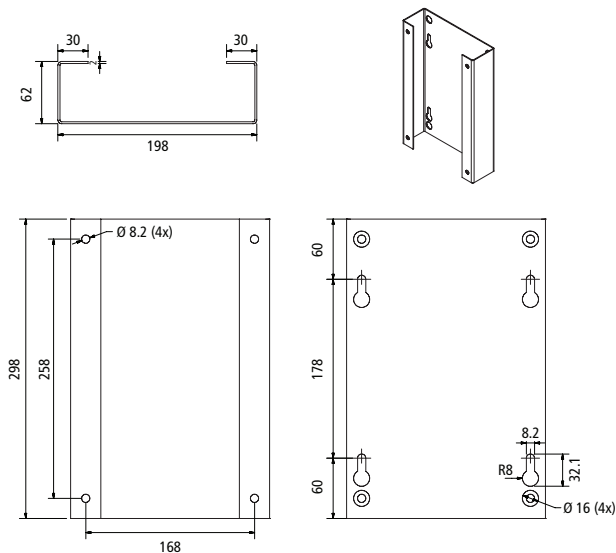


fig.13.1 - Standard bracket dimensions in mm

The standard brackets allow mounting of the Intellivox on a straight wall with a gap of 62 mm (2.5") between the rear of the enclosure and the wall.

The mounting procedure is given on page 18 under "Mounting Procedure".

2. A second method is to mount the Intellivox column using a pair of (optional) hinge brackets, which allow the plane of the column's vertical radiating axis to be at an angle other than 90 degrees to the wall. The hinge brackets are mounted to the rear of the standard brackets. The hinge brackets permit the Intellivox to be rotated through 90 degrees, the direction of rotation being determined by their orientation. Refer to page 22 for ordering information.

3.

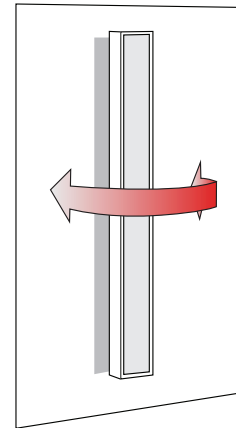


fig.13.2 - Direction of rotation when using hinge brackets

The third method is to mount the column within a recess in the wall or dedicated mounting panel so that the front of the unit is flush. This is a specialised mounting situation which will be encountered only rarely. Access to the rear of the unit will still be required for the multicore loudspeaker cable. Depending on the particular circumstances, it may be appropriate to remove the mounting brackets from the rear of the unit. If this is done, take great care to protect the rear of the HF drivers which are normally protected by the lower bracket.

Because of the proximity of the unit to the walls, particular attention should be paid to the avoidance of acoustic resonances (see below).

Cavity walls can sometimes be problematical when high-power loudspeakers are mounted on them. The internal wall cavity may resonate at one or more frequencies, degrading the audio performance significantly. Installers are advised to insert rockwool or similar sound-absorbing material into the cavity in the vicinity of the loudspeaker when mounting an Intellivox on a wall of this type.

An Intellivox Accessories brochure, which includes details of the optional hinge brackets, may be downloaded from <http://www.jblpro.com>.

Mounting Procedure

The general mounting procedure using the standard brackets is described below. It is assumed that the IntelliAmp has already been satisfactorily installed and wired in a rack, as described in the previous chapters, and that the multicore speaker cable has been run to the loudspeaker location.

Proceed as follows:

1. Remove the upper of the two mounting brackets from the rear of the loudspeaker by undoing the M8 x 16 hex-head screws securing it (see fig.14).

The four "keyhole"-shaped holes in the rear plate of the bracket are used to fix the brackets to the wall. Use of the wall plugs and hexagon head screws supplied is recommended. If using other types, ensure that the "across-flats" head size does not exceed 15 mm (0.6").

2. Using the bracket removed in Step 1, mark the wall for the wall plugs. Refer also to the Mechanical Details drawing in the datasheet supplied with the loudspeaker. Check the dimensions given from the reference datum to each pair of mounting holes, and allow for the offset of the acoustic centre from the reference to ensure that the acoustic centre will be at the height defined in the acoustic design specification. Reference to Fig 13.1 may also be helpful. Drill the holes (Ø 10 mm).
3. Insert the plugs and screws into the holes. Tighten the screws with a spanner, but stop with a few mm of screw shaft visible between the head and the wall.
4. Check that it is possible to slide a bracket over the heads.
5. Check that the chosen mounting points will position the column in the correct vertical angle specified by the acoustic design (which is usually exactly perpendicular to the listening area). Use spacers on one or more of the brackets if necessary.

6. Next, re-attach the bracket to the rear of the Intellivox enclosure using the screws and washers removed in Step 1. Ensure that both brackets are oriented correctly, with the keyhole slots upwards. Tighten with a spanner, or with a hex socket using the 16 mm dia. holes for access for the socket driveshaft.

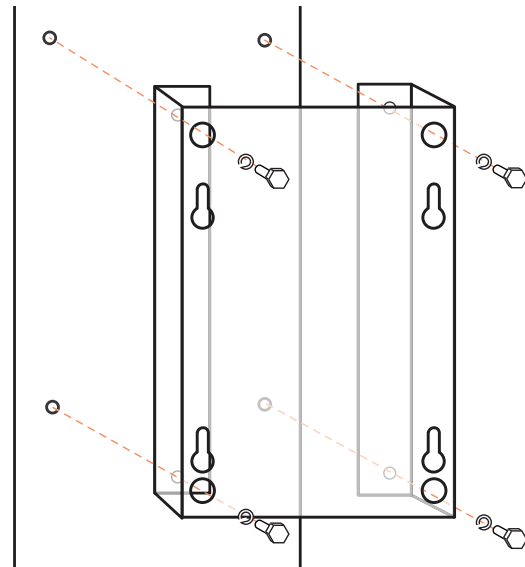


fig.14 - Bracket removal/attachment

7. Manoeuvre the Intellivox loudspeaker roughly into position and plug in the Harting connector of the speaker cable. Apply the connector retaining lock.
8. Lift the Intellivox and slide the brackets over the heads of the hex-head screws protruding from the wall.
9. Firmly fasten the screws securing the brackets to the wall. Re-check the verticality (or other angle if specified) with a spirit level or similar levelling device.

4. SYSTEM CHECKS

After installation and connection are complete, the installer should upload the settings file into the IntelliAmp with WinControl software. The upload procedure will verify the system's correct operation.

This section of the manual describes the file upload procedure. It assumes that a laptop (or other computer) with both WinControl software and a driver for the RS-485 interface already installed is available, together with the AXYS® (or other suitable) RS-485 interface. It also assumes that the installer has the settings files, prepared by the system designer, for each Intellivox loudspeaker making up the system. These may be elsewhere on the laptop's hard drive, or may be supplied separately on removable media such as a memory stick or a CD-ROM. No previous knowledge of WinControl is necessary, but basic familiarity with Windows file handling is required.

A full description of WinControl is beyond the scope of this manual and further information is available in the application's Help files. Instructions on how to install WinControl on a PC are included with the Program Set. Instructions on the use of the AXYS® RS-485 interface are included with the interface itself.

CONNECTING THE PC TO THE INTELLIAMP

The PC connects to the IntelliAmp via an RS-485 interface adapter. (Two versions of adapter are available from AXYS®, for connecting to PCs either via a USB or an RS-232 port).

The most convenient method of connecting to the IntelliAmp is usually via the 5-pin XLR on the front panel. Use either a 5-pin XLR to 5-pin XLR cable or a 5-pin XLR to 9-pin Dsub cable. These cables are supplied with the WinControl Program Set, the type depends on the RS-485 interface type*. Alternatively, the IntelliAmp's RS-485 network port may be accessed via the rear panel WAGO connector; (this may be a simpler option in situations where multiple amplifiers have been interconnected as all amplifiers may be addressed from a single PC access point). There is no difference in functionality between the front and rear panel RS-485 connectors.

The RS-485 interface should then be connected to either the PC's 9-pin COM port (in the case of a RS-232 to RS-485 interface) or a USB port (in the case of a USB to RS-485 interface).

**Cables to connect the RS-485 interface to the Intellivox system may also be ordered separately from JBL – see page 22 for ordering information.*

SETTINGS FILE UPLOAD

- Apply mains power to the Intellivox, turn on the PC and launch WinControl. Open **Options > Communications options**, and confirm that the Off-line box is unchecked and that the correct COM port is selected. Close the Communication options dialogue box. If the PC is connected to only one Intellivox, a screen similar to that shown below should now be

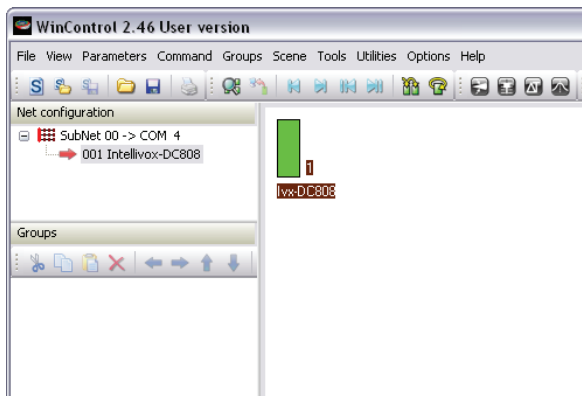


fig.15.1 - WinControl connected to single unit

displayed.

The green rectangle in the main pane represents the Intellivox. The model number is shown below and the unit's current network address to the right. If a complete network comprising multiple Intellivoxes is being accessed, additional similar rectangles will be displayed.

- If the display does not look like that shown, click on **Command > Netscan** to force the PC to re-scan the network. (This will be the case if the Intellivox(es) were unpowered when WinControl was launched.) If this fails to produce the correct display, please check all network connections, and that the correct port on the PC is selected (open **Options > Communications options** to do this).
- Select the Intellivox to have its settings file uploaded by clicking on it once, highlighting its model number and address, if it is not already highlighted.

Click **File > Load settings...**, which will open the two dialogue boxes shown below, *Load control parameters settings* and *Control parameters*.

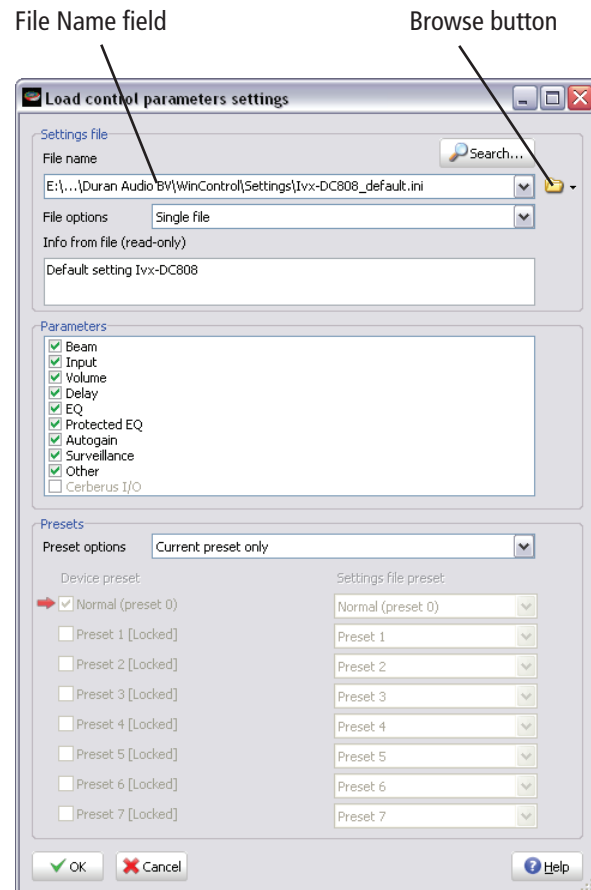
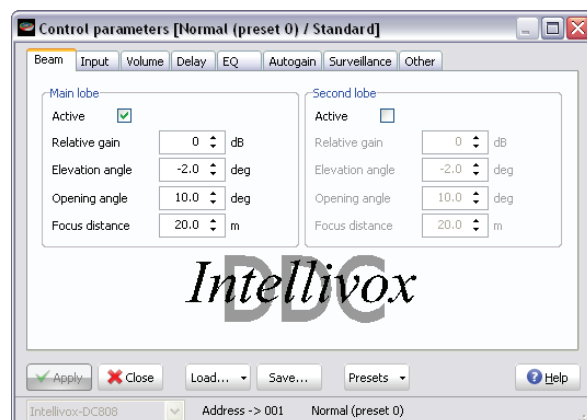



fig.15.2 - Uploading the settings



- The File Name field (at the top of the *Load control parameters settings* dialogue box) indicates the last-used settings file name. If this is the first time that the installation of WinControl has been used, a default settings file is selected. The default location for this file is in [My Documents folder]\Duran Audio BV\WinControl\Settings, though as this is alterable, it is possible that a different location may be displayed, depending on how the particular PC being used has been set up. To navigate to the location containing the settings file to be uploaded, click on the Browse button  (the folder symbol to the right of the File Name field), which will open a further *Open* dialogue box. Navigation may be continued in the normal Windows manner. Note that Intellivox settings files always have an *.ini file extension.
- Select the correct settings file and click **Open**. Then in the *Load control parameters settings* dialogue box, ensure that the proper parameter groups are selected and specify the preset(s) to be uploaded, click **OK*** to continue. An *Info* dialogue box will then open showing additional information, in this box click **OK** to start the upload process. This will transfer the pre-determined Intellivox parameters to the loudspeaker. The *Control parameters* dialogue box can now be closed and the upload is complete.
- If there are further loudspeakers on the network to have their settings files uploaded at this time, the procedure can be repeated by selecting the next Intellivox. It is possible to load the same settings file into several Intellivoxes simultaneously, should the installation require this. See *Addresses and Groups* in the WinControl Help file for more information.

* See *WinControl Help* files for information regarding further Load options.

5. APPENDIX

OPTIONAL ACCESSORIES

Listed below are a number of additional components which may be required for an individual installation.

Mating connectors and components for external wiring:

CONNECTOR	DESCRIPTION	ORDER CODE
Mains power	PowerCon® plug	17824103
Audio Input	WAGO 6-pin female	17954106
Network	WAGO 5-pin female	17954105
Failure relay or Ext SPL Mic/Temp.	WAGO 5-pin male	17944105
Strain relief housing for 5-pole connectors		17949195
Strain relief housing for 6-pole connectors		17949196
lvx-DC/DS808 loudspeaker cable with 20 p male/female Harting connectors, 5 m		97920003
lvx-DC/DS1608 loudspeaker cable with 40 p male/female Harting connectors, 5 m		97870003
WAGO wire inserts (white) for wire dias. 0.08 to 0.2 mm		17949605
WAGO wire inserts (light grey) for wire dias. 0.25 to 0.5 mm		17949615
WAGO wire inserts (dark grey) for wire dias. 0.75 to 1 mm		17949625
WAGO wire insertion tool		17949901

Other installation-related accessories:

DESCRIPTION	ORDER CODE
Intellivox hinge bracket 90°	802010 (2 required)
Input PCB assy. with 1 x 70/100 V and 1 x 0 dBV line input	381001
Input PCB assy. with dual 70/100 V inputs	381003
External ambient mic/temperature sensor	97661101

Network Accessories

DESCRIPTION	ORDER CODE
Serial interface converter, RS-232 to RS-485	387801
Serial interface converter, USB to RS-485	387802
Program Set (inc. WinControl CD, RS-232 interface, cable)	386601
Program Set (inc. WinControl CD, USB interface, cable)	386602
9-pin female Dsub connector	17223309
Cover for D9 connector	17219109
Adaptor cable, 9-pin male Dsub to WAGO 231, 5 m, to be used with RS-232 interface	97660081
Adaptor cable, 9-pin male Dsub to 5-pin XLR male, 5 m, to be used with RS-232 interface	97660082
Adaptor cable, 5-pin XLR female to 5-pin XLR male, 20 m, to be used with USB interface	79660084
Adaptor cable, 5-pin XLR female to WAGO 321, 5 m, to be used with USB interface	97660080

COMMON ANALOGUE GROUNDING ISSUES

Correctly connecting the IntelliAmp to ground has several benefits:

1. **Safety.** The GND terminal of the Neutric PowerCon® connector provides a direct low impedance path from the metal parts of the chassis to ground. Always connect this terminal.
2. **Reduction of RF emission.** Although the IntelliAmp electronics are well shielded and external connections are decoupled to prevent RF emission from the internal high speed digital circuits, this protection will not work properly if the chassis is not connected to ground.
3. **RF Immunity.** RF currents induced in the signal cables by external RF fields are effectively shorted to chassis-ground, provided that the cable screen (shield) is of sufficiently low impedance.

In addition to the mains ground, the IntelliAmp rear panel connectors have ground pins marked in 3 different ways. Each serves a dedicated purpose and care should be taken that they are not interchanged or connected to each other.

- Pins marked GND are connected internally directly to the chassis of the IntelliAmp. There are GND pins on the audio line input connector and the ambient SPL mic/temperature sensor connector. These GND pins are for connecting the screen (shield) of the audio and sensor cables.
- Two pins marked AGND are fitted to the ambient SPL mic and temperature sensor connector, and serve as a signal reference only. AGND should not be connected to any other ground pin (GND or DGND) on the chassis.
- The RS-485 connector has one pin marked DGND and is intended as a terminal for the network cable screen (shield). Since the RS-485 interface is optically isolated (to prevent ground loops), DGND has no relation to the chassis ground. DGND should not be connected to any other ground pin (GND or AGND) on the chassis.

SOFTWARE AND FIRMWARE UPDATES

The AXYS® WinControl application is freely available and can be downloaded from the download area of our website; <http://www.jblpro.com>. We advise installers, users and engineers to check our site regularly for updates. Intellivox firmware and DSP software upgrades will also be made available through the website.

For further information about how to use WinControl please refer to the WinControl Help files.

NETWORK CABLES

The type of cable necessary for correct operation of the RS-485 network is twin twisted pair with each pair individually shielded. Numerous cables of this type are readily available and cables broadly meeting the specifications of the example cable given below are likely to be suitable.

Example of a preferred cable type:

PARAMETER	VALUE
Type	BELDEN 'Datalene' series No. 9729 2-pair
Characteristic impedance	100 ohms
Capacitance (core to core)	41 pF/m
Capacitance (core to screen)	72.5 pF/m
DC resistance (core)	78.7 ohms/km
DC resistance (screen)	59.1 ohms/km



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