

ONE BUTTON DOOR ENTRY KIT VR120DK-1



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MANUAL INTRODUCTION

The information in this manual is intended as an installation and commissioning guide for the Videx VR120 vandal resistant one button audio intercom kit. This manual should be read carefully before the installation commences. Any damage caused to the equipment due to faulty installations where the information in this manual has not been followed is not the responsibility of Videx Security Ltd.

VIDEX run free training courses for engineers who have not installed this system before. Technical help is also available on 0191 224 3174 during office hours or via e-mail tech@videx-security.com.

An electronic copy of this technical manual can be downloaded by scanning the QR code to the right.



SYSTEM INTRODUCTION

This audio kit will enable a caller at an entrance point to signal an occupant in the dwelling by pressing a call button which will send an electronic call tone to an audio telephone. A Yellow 'SPEAK' LED will indicate the call has been answered and a two way conversation can take place, the occupant can release an electric lock release by pressing a button on the telephone base unit. The kit does not include the electric lock release. A 12V AC release should be used with this kit (The output for the lock is a dry contact relay so any other type of lock can be used with an appropriate PSU). If this kit is to be used with a gate, the dry contact output can be used to trigger the gate control board. DDA features such as a 'SPEAK' LED, 'BUSY' LED, 'DOOR OPEN' LED and reassurance tone are standard on this kit.

A flush back box is standard in this kit, however a flush stainless steel bezel back box and a surface back box with rainshield are also available (see page 6).

Key Features

- 12 Gauge stainless steel.
- IP68 rated button.
- SPEAK, BUSY and OPEN call progress LEDs.
- Call progress reassurance tone.
- Dry contact relay output for lock release or gate controller.
- Timed call, speech and lock release.
- Speaker and microphone volume adjustment.

This audio kit can be used for a single entrance system, however it can be expanded to include multiple entrance panels.



SYSTEM COMPONENTS

This kit comprises of a flush or surface vandal resistant 1 button door panel including a power supply and audio telephone. Up to a maximum of three audio telephones can be used on this system to call in parallel.

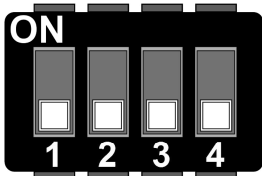
DOOR PANEL

An audio or video vandal resistant door panel will consist of a 136 amplifier module, button connector board and 'n' number of buttons. Additionally call buttons can be engraved to suite the apartment numbers.

Speaker module connections, switches and jumper

Dip-Switches

The four way dip-switch bank has the following functions. Please note: dip-switches must be set before power up. Any changes made when power is on will not take effect until a power down reset.



Speech Time	
Switch 1 OFF	1 minute
Switch 1 ON	2 mintues

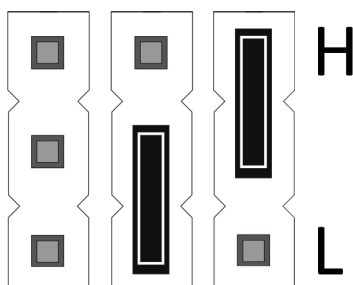


Relay Time			
Switch 2 OFF	2 seconds	Switch 2 ON	8 seconds
Switch 3 OFF		Switch 3 OFF	
Switch 2 OFF	4 seconds	Switch 2 ON	20 seconds
Switch 3 ON		Switch 3 ON	

Speech Live	
Switch 4 OFF	Only when called
Switch 4 ON (only possible on one door systems)	Speech live whenever handset lifted

Jumper

Jumper JP controls the reassurance tone volume level at the door panel.



Position H	High volume reassurance tone
Position L	Low volume reassurance tone
No Jumper	No reassurance tone

POTS

Speech volume adjustments are carried out at the door panel using a small trimmer driver.

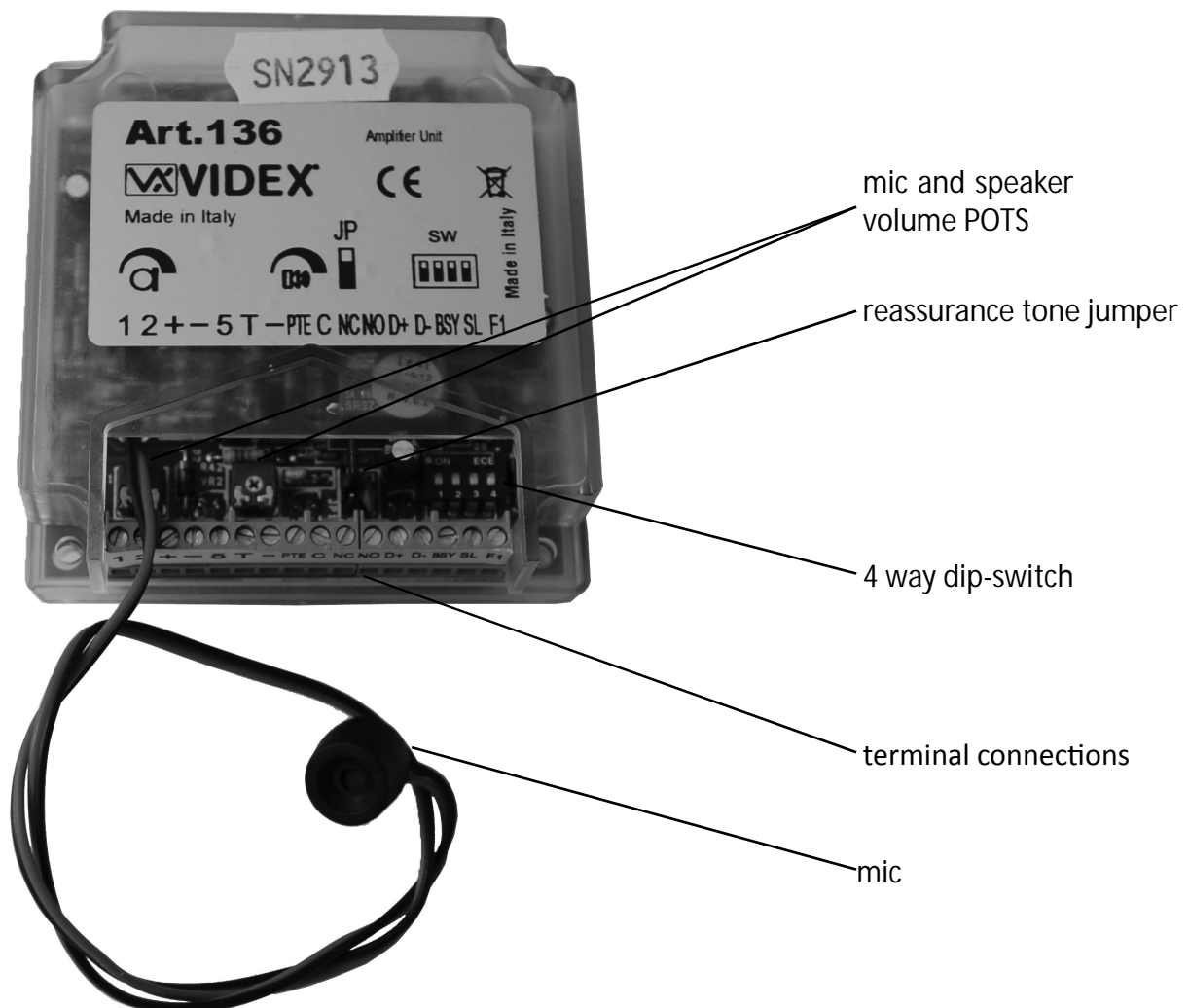


adjustment for speech volume at the apartment (microphone)



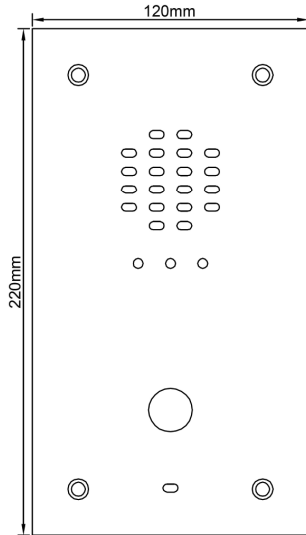
adjustment for speech volume level at the door station (speaker)

VX136 Amplifier Module		VX136 Current Rating on +12Vdc	
Connection	Function	Condition	Current (mA)
1	Receive speech from apartment	Standby	18mA
2	Transmit speech to apartment	System busy	58mA
+	+12Vdc input	During a call	122mA
-	0V (Ground)	Live speech	108mA
5	Switched 0V from phone to trigger door release relay	Lock Release	125mA
T	Electronic call tone output to common side of call buttons	Maximum	130mA
-	0V for use with push to exit input (PTE)		
PTE	Switched 0V input from push to exit button to trigger door release relay		
C	Common connection of dry contact relay		
NC	Normally closed connection of dry contact relay		
NO	Normally open connection of dry contact relay		
D+	External link to door open (+12V side) LED. Not used with this kit		
D-	External link to door open (0V side) LED. Not used with this kit		
BSY	Busy signal for use with multiple door systems (Normally high, 12V. Low when busy 0V)		
SL	Switched 0V output to switch on video PSU. (0V throughout a call, open collector in standby)		
F1	Switched 0V output to switch on camera. (0V throughout a call, open collector in standby)		

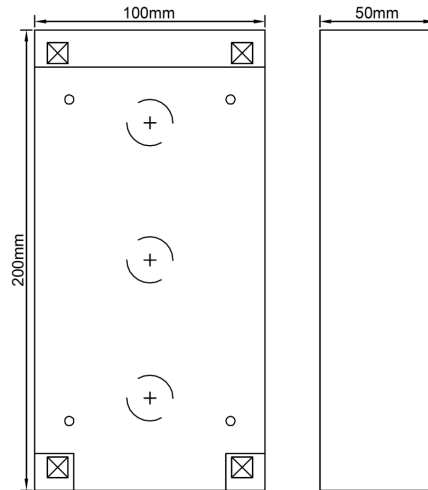


PANEL AND BACK BOX DIMENSIONS

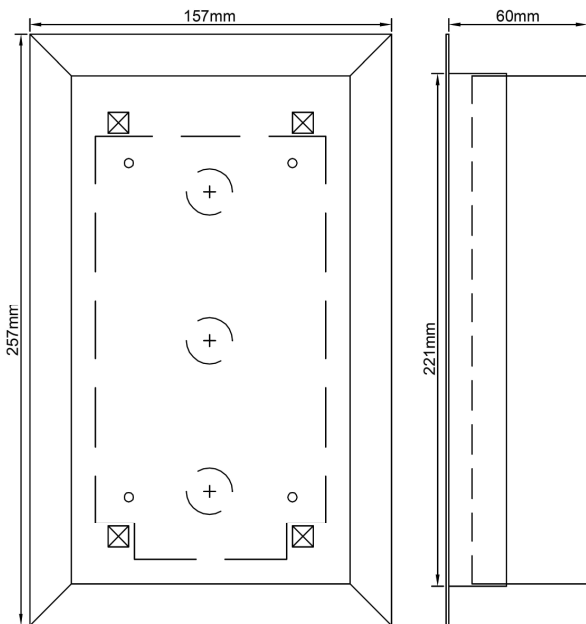
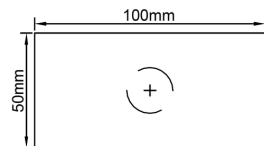
There are three VR120 panel back box options available, a standard flush back box, a flush back box with bezel and a surface back box with rainshield (see below).



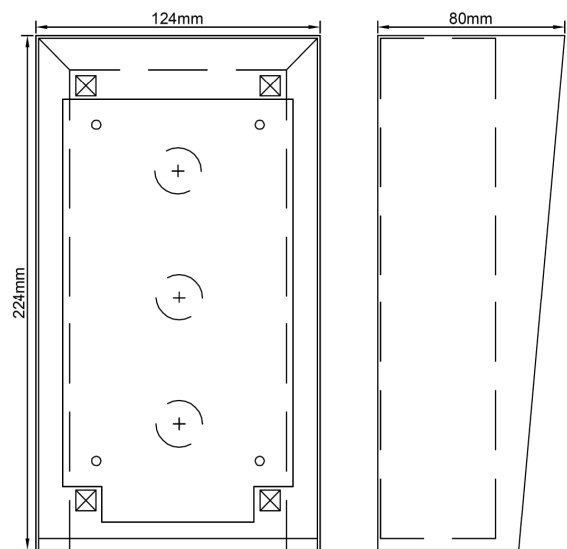
FRONT PANEL



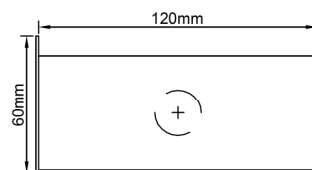
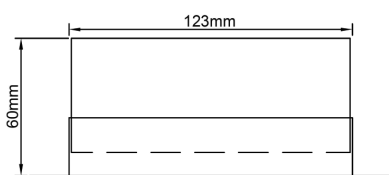
FLUSH (VRFB120x220)



FLUSH WITH BEZEL
(VRBB120x220)



SURFACE WITH
RAINSHIELD
(VRSB120x220)

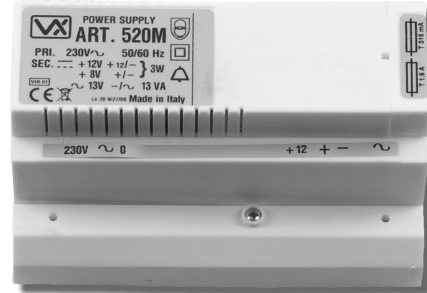


POWER SUPPLY

Art.520M

The standard power supply in this kit is the Art.520M. Outputs of 12Vdc (200mA max), 8Vdc (300mA max) and 13Vac (1A max) are available. The dc outputs are designed to power the amplifier module only and cannot be used to power other devices such as code locks, lock releases etc. These items must be connected to the AC output of this power supply.

Terminal	Function
+12	12Vdc output (200mA max.)
+	8Vdc output (300mA max.)
-	0V (Ground)
~	13Vac (1A max.)
230V~	Mains in (Live connection)
0V	Mains in (Neutral connection)



Fuse compartment

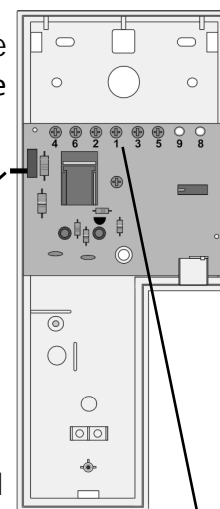
AUDIOPHONE

Art.3011

The Art.3011 audiophone is a smart line electronic call tone phone and includes a lock release push button and a 3 level call tone volume switch and requires a minimum of 5 cores for connection.

Terminal	Function
1	Transmit speech to the door panel
2	Receive speech from the door panel
3	0V (Ground)
4	Electronic call tone input
5	Lock trigger (Switched 0V)
6	Not used

3 level call tone switch



terminal connections

Art.3011



Other audiophones that can be used with this kit are the Art.3111 (*spare service button*) and the Art.3112 (*spare service button and mute switch*).

ACCESSORIES

Art.512A

The Art.512A is an extension sounder that can be wall mounted and will ring whenever the audiophone it is connected to rings. The 512A requires an electronic calltone input.

Connections

Terminal	Function	Condition	Current Rating (mA)
4	Calltone input	During a call	100mA
-	0V (GND)	Max	105mA



Art.512A

ES/1 Extension Strobe

The ES/1 is a timed strobe unit for the hard of hearing or can be used in noisy environments. The strobe will flash when a call is received and will continue flashing for an adjustable time period or until the reset button is pressed. It requires a 12Vac or dc power input and the adjustable time period can be set between 2 - 100 seconds.



ES/1

Connections

Terminal	Function	Condition	Current Rating (mA)
Power	12Vac or dc input	Standby	6.6mA
I/P	+positive trigger	During a call	160 - 175mA
+O/P	12Vdc output	Max	180mA
GND	0V (ground)		
Reset	Switched 0V reset		
NC	Normally closed relay connection		
CO	Common relay connection		
NO	Normally open relay connection		

Art.506N relay

The Art.506N universal boxed 12/24V ac/dc double pole relay can be used for many functions. Its changeover relay contacts are rated at 240Vac 5A. It also includes low current transistor switched inputs (+positive and -negative triggers). The Art.506N relay can also be used to switch a volt free contact to a gate or barrier controller and also used to drop power off to a fail safe mag lock.

Connections

Terminal	Function	
1	24V ac or DC input	
2	12V ac or DC input	
3	0V switched input (link to GND when not using terminal 4)	
4	Switched +positive input	
5	GND (0V power when using switched +positive input)	
CO1	Common relay 1 connection	Max. current and voltage for each relay 5A @ 230Vac
NO1	Normally open relay 1 connection	
NC1	Normally closed relay 1 connection	
CO2	Common relay 2 connection	
NO2	Normally open relay 2 connection	
NC2	Normally closed relay 2 connection	



Art.506N

INSTALLATION

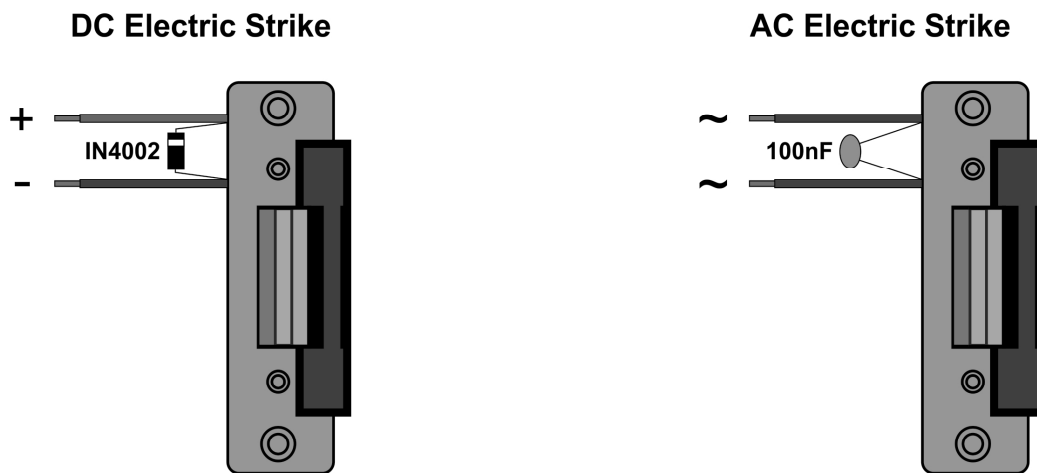
Initial Installation Checks

The wiring diagrams towards the back of this manual should be followed carefully. Heavy duty conductors on wiring diagrams are shown heavily outlined in some instances where voltage drop is experienced then these wires should be doubled up.

- Check that all components are free from damage before installing (Do not proceed with the installation in the event of damage).
- Keep all packaging away from children.
- Do not obstruct the ventilation openings or slots on any of the devices.
- All connections to mains voltages must be made to the current national standards (IEE Wiring regulations)
- Install an appropriate fused spur or isolation switch to isolate the mains.
- Isolate the mains before carrying out any maintenance work on the system.
- All intercom and access control cables must be routed separately from the mains.

Lock Release Wiring and Back EMF Protection

When fitting an electric lock release back EMF protection will be required. If fitting an AC lock release then a 100nF ceramic disc capacitor must be fitted across the terminals on the lock. If fitting a DC lock release (fail secure or fail safe) then a 1N4002 diode must be fitted across the terminals on the lock.



CABLE TYPE AND CABLE SIZE GUIDE

Cable Types

The following cable types described below are measured in mm² for the cross sectional area (CSA) for each conductor (core) within the cable bundle. The tables show the distances in metres between system components. All cable types are categorised using the AWG (American Wire Gauge).

Suitable cables for this system are a BT type telephone cable CW1308 and a YY cable (other similar or equivalent cables are also suitable). When selecting a particular cable type care must be taken to ensure that excessive voltage drop is avoided and the lowest possible resistance is achieved. Use the following cable types and the tables as a guide to ensure that the best possible performance is achieved.

CW1308 Telephone cable (CSA 0.22mm² AWG 24 - Maximum Resistance 97.8 Ohm/km)

CW1308 is an internal grade cable and is available in 3 pair, 4 pair, 6 pair, 10 pair, 12 pair, 15 pair, 20 pair and 25 pair.

CW1308B Telephone cable (CSA 0.22mm² AWG 24 - Maximum Resistance 97.8 Ohm/km)

CW1308B is an internal or external grade cable (if used externally must be protected) and is available in 10 pair and 20 pair.

CW1128 Telephone cable (CSA 0.22mm² AWG 24 - Maximum Resistance 96 Ohm/km)

CW1128 is an external grade poly-filled cable (if used externally must be protected) and is available in 2 pair, 5 pair, 10 pair and 20 pair.

CW1128 / CW1198 Telephone cable (CSA 0.5mm² AWG 20 - Maximum Resistance 91 Ohm/km)

CW1128 / CW1198 is an external grade poly-filled armoured cable (for direct burial) and is available in 2 pair, 5 pair, 10 pair and 20 pair.

CAT5e (CSA 0.2mm² AWG 24 - DC loop resistance <0.188 Ohm/m, converts to 94 Ohm/km)

CAT5e is an internal grade cable and is available in 4 pair. Please note that if CAT5e cable is going to be used then the DC characteristics above must be met by measuring the resistance of the cable directly or by consulting the manufacturer's datasheet.

YY Control Cable

(CSA 0.5mm² AWG 24 - Maximum Resistance 39 Ohm/km)

(CSA 0.75mm² AWG 18 - Maximum Resistance 26 Ohm/km)

(CSA 1.0mm² AWG 17 - Maximum Resistance 19.5 Ohm/km)

(CSA 1.5mm² AWG 15 - Maximum Resistance 13.3 Ohm/km)

(CSA 2.5mm² AWG 13 - Maximum Resistance 8 Ohm/km)

YY control cable is an internal or external grade cable (if used externally must be protected) and is available in 4 Core, 7 Core, 12 Core & 18 Core. Each cable comes with numbered cores in white on a black sheath and also includes a green/yellow earth core.

Connections from door panel to Audiophone

Connection	50m	100m	200m	300m	400m
Power	0.35mm ²	0.5mm ²	0.75mm ²	1.0mm ²	1.5mm ²
All others	0.25mm ²	0.35mm ²	0.5mm ²	0.75mm ²	1.0mm ²

Maximum acceptable resistance for power terminal connections = 5 Ohms or less, for all other connections = 10 Ohms or less for best possible performance.

Connections for power supply output to door panel and lock release

	50m	100m
Connection	0.5mm ²	0.75mm ²

The power supply ideally should be located as close to the door panel as possible, typically between 20 - 30m. Maximum acceptable resistance for above connections = 3 Ohms or less for best possible performance.

Audiophone Cable

Model	Min. Cores	50m	100m	200m	300m	400m	500m
Art.3011	5	4 pair CW1308 or CAT5e	6 pair CW1308 or 7 core 0.5mm ² YY	10 pair CW1308 or 12 core 0.5mm ² YY	12 pair CW1308 or 12 core 0.5mm ² YY	12 core 0.5mm ² YY	12 core 1.0mm ² YY
Art.3111	5	4 pair CW1308 or CAT5e	6 pair CW1308 or 7 core 0.5mm ² YY	10 pair CW1308 or 12 core 0.5mm ² YY	12 pair CW1308 or 12 core 0.5mm ² YY	12 core 0.5mm ² YY	12 core 1.0mm ² YY
Art.3112	5	4 pair CW1308 or CAT5e	6 pair CW1308 or 7 core 0.5mm ² YY	10 pair CW1308 or 12 core 0.5mm ² YY	12 pair CW1308 or 12 core 0.5mm ² YY	12 core 0.5mm ² YY	12 core 1.0mm ² YY

Whenever possible the speech line connections 1 and 2 (*refer back to page 7*) should be twisted with the speech GND connection as pairs. Maximum acceptable resistance for power terminal connections = 5 Ohms or less, for all other connections = 10 Ohms or less for best possible performance.

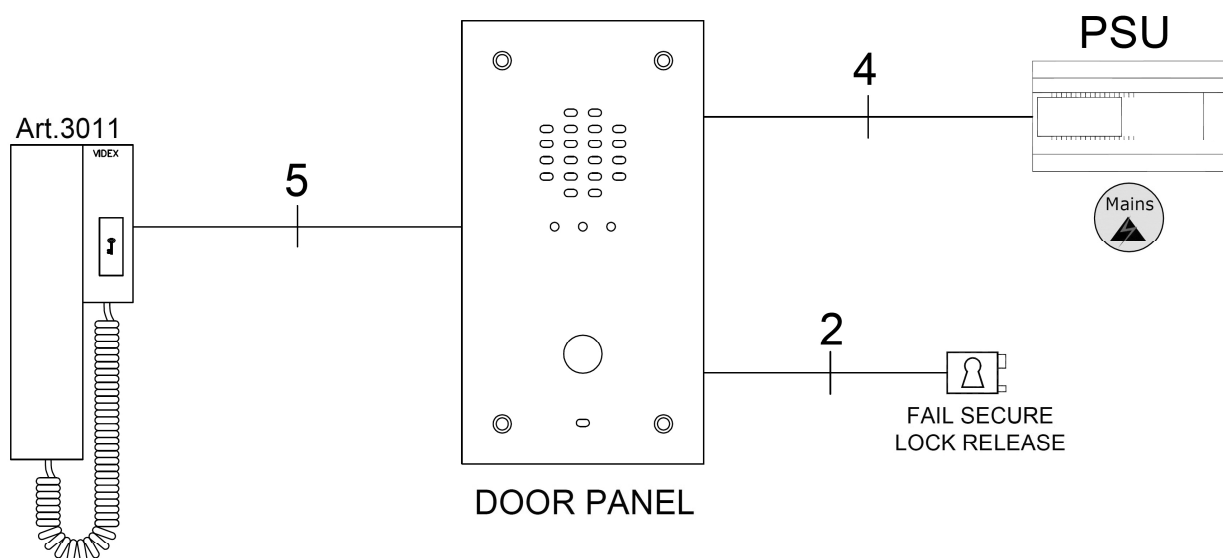
It should be noted that if a multi-core cable is used and the overall resistance of the cable is higher than that stated above it is possible to double up on core connections to both increase the CSA of the connection and reduce the overall resistance of the cable.

High Voltage and Low Voltage Cables

When laying high voltage cables (*mains*) and low voltage cables (*intercom and signal*) they should always be routed separately in different ducting. If for any reason they are in the same ducting whether internally or externally they should always be kept separate within the ducting itself, typically there should be a gap of approximately 12" (inches) between the sets of high voltage and low voltage cables. If necessary they should be cable tied off to keep them as far apart as possible.

BLOCK DIAGRAM

Audio System Block Diagram

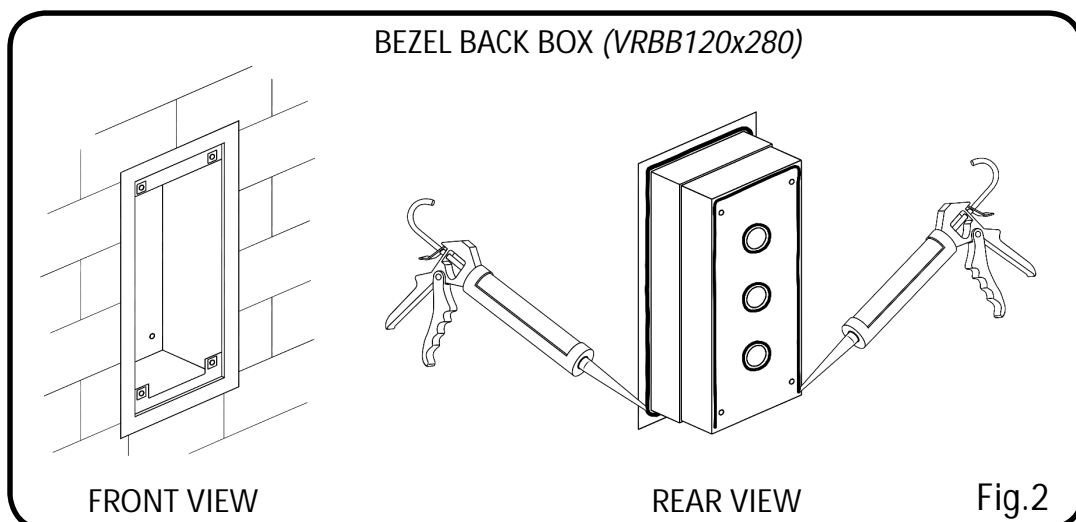
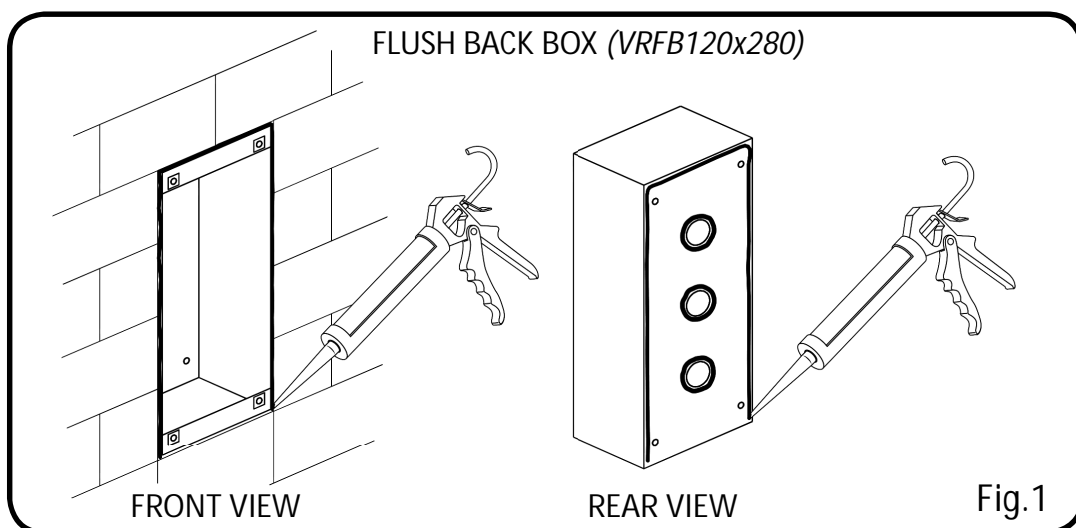


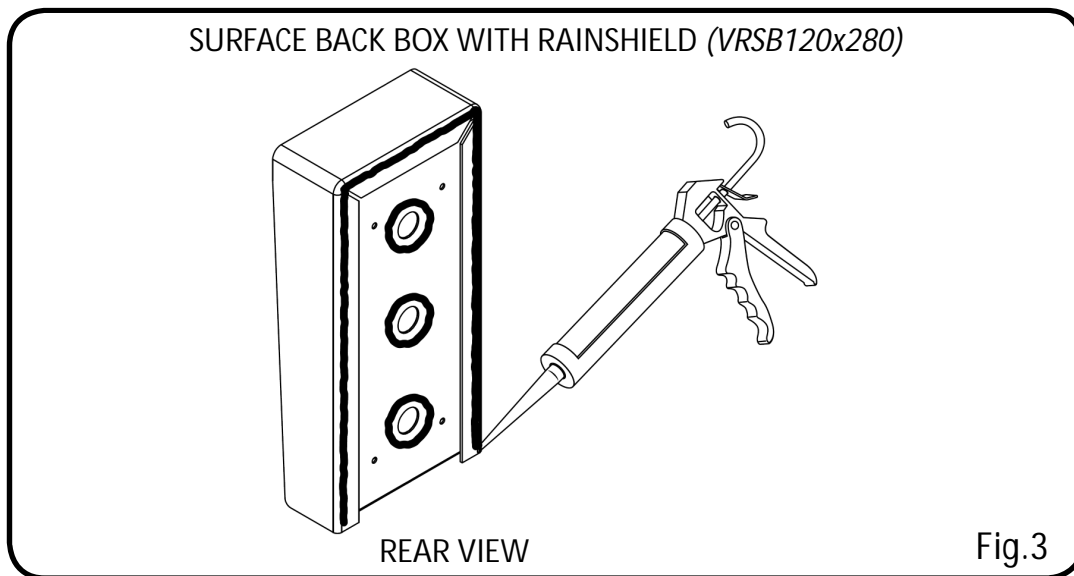
Additional cores will be required for auxiliary devices such as push to exit buttons, fireman switches, fail safe lock release etc. If more than one intercom panel is being used then an additional core for the busy (*BSY*) connection between intercom panels will be required.

PANEL AND BACK BOX INSTALLATION

The following guide lines should be followed with respect to the installation and care of the VR120 panel and accompanying back box. The back box should be adequately secured to the wall to prevent risk of injury.

- To prevent water ingress to the VR120 panel ensure that a good seal between the back box and the face plate itself is made. The neoprene seal on the face plate will offer this as long as the back box front is flush with the wall surface. Always ensure the panel is tightened sufficiently to compress the neoprene seal.
- In the event of gaps due to uneven walls we suggest using a silicon sealant be used. In the event of water ingress to the back box we would also suggest drilling 3x4mm holes at the bottom of the back box to allow any collection of water to escape.
- Always ensure all cable entry points are sufficiently sealed to prevent water ingress (*refer to Fig.1, Fig 2 and Fig.3*). All cables should loop down and then back up to the termination connections to avoid any water travelling along the cable and onto the pcb.





PANEL CARE

The VR120 door panel is manufactured from brushed 12 Gauge 304 grade stainless steel. It is important that the fascia is cleaned on regular occasions to prevent dirt build up and tarnishing of the metal. A general household metal polish can be used but care should be taken to follow the grain of the metal when polishing and always only polish in one direction with a soft cloth to avoid light scratching of the fascia. Also try to avoid any polish build up around the call button which may prevent the button from operating correctly.

The table below identifies the methods of cleaning.

To Clean	Method
Finger prints	Detergent and warm water or a household polish.
Routine cleaning	Soap, detergent or dilute (1%) ammonia solution in warm water.
Staining and discolouration	Mild non-scratching creams and polishes. Take care to avoid build up of creams in the buttons which could cause sticking.

Cleaners that cannot be used:

- Chloride containing cleaners.
- Hydrochloric acid based cleaners.
- Sidol stainless steel cleaner (*can affect engraving*).
- Hydrochloride bleaches.
- Silver cleaners.



TESTING THE INSTALLATION

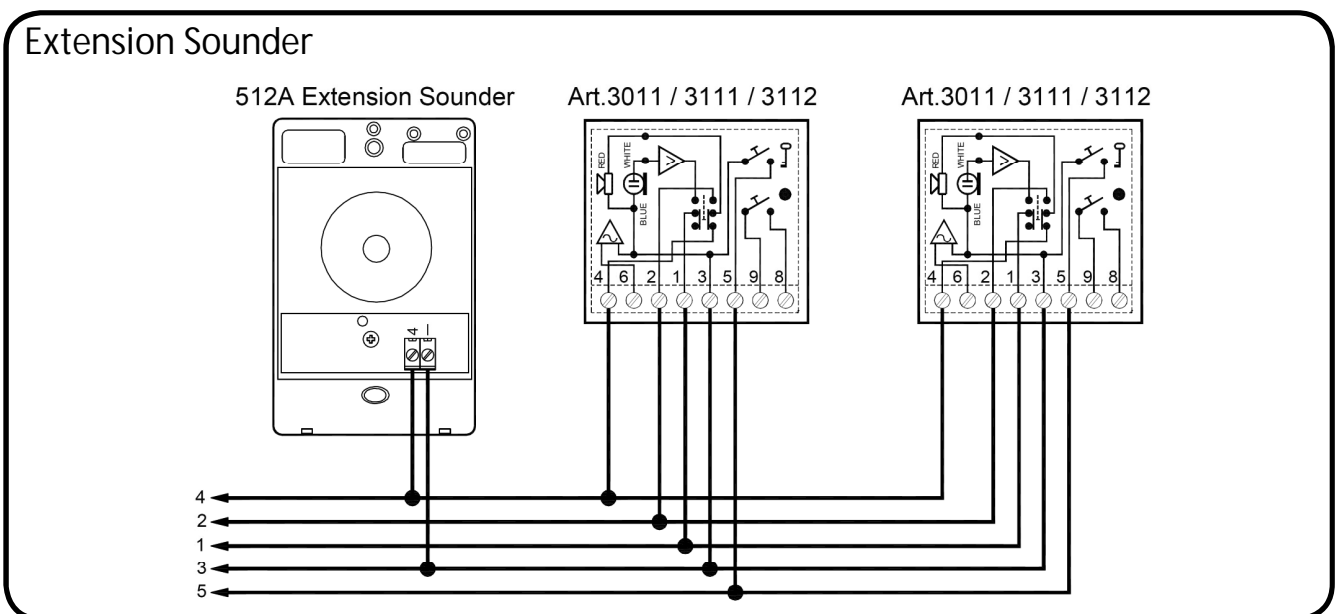
- Check all the connections have been made correctly and are terminated properly into the terminals and then power up the system.
- Check the voltage outputs on all of the terminals of the Art.520M power supply.
- Call all the apartments in turn. Check for the call tone to the apartment, speech in both directions and that the lock release operates when the lock button on the audiophone is pressed.
- If the volume of speech needs to be adjusted, this can be done by adjusting the volume POTs on the rear of the VX136 amplifier at the door panel.
- If the call tone volume needs adjusting this can be done at each handset by adjusting the 3 level volume control switch on the side of the audiophone (*refer back to page 7*).

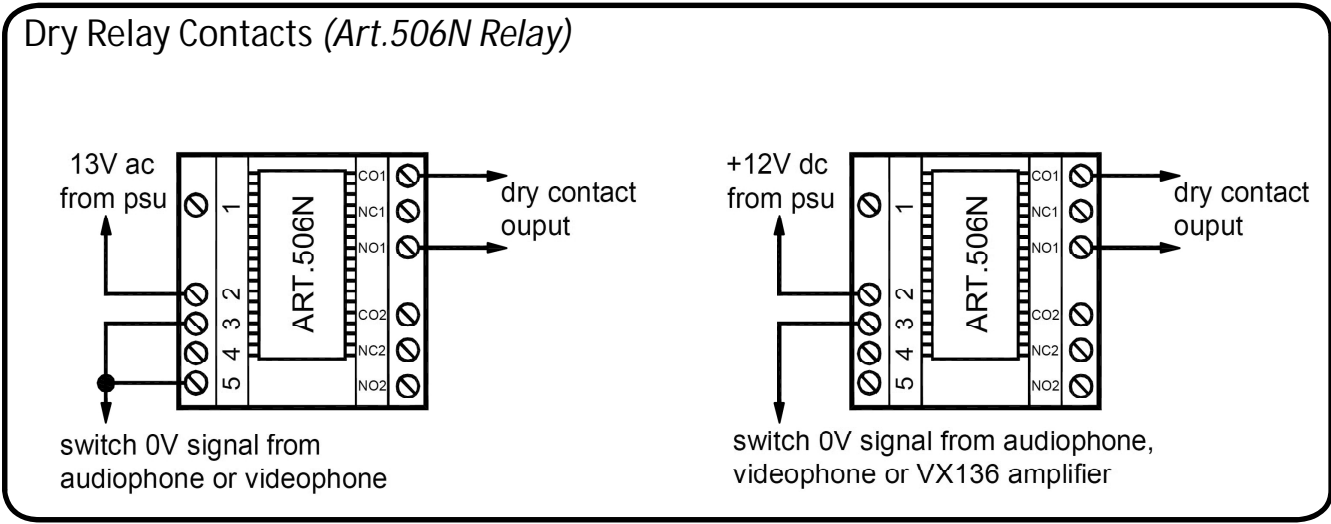
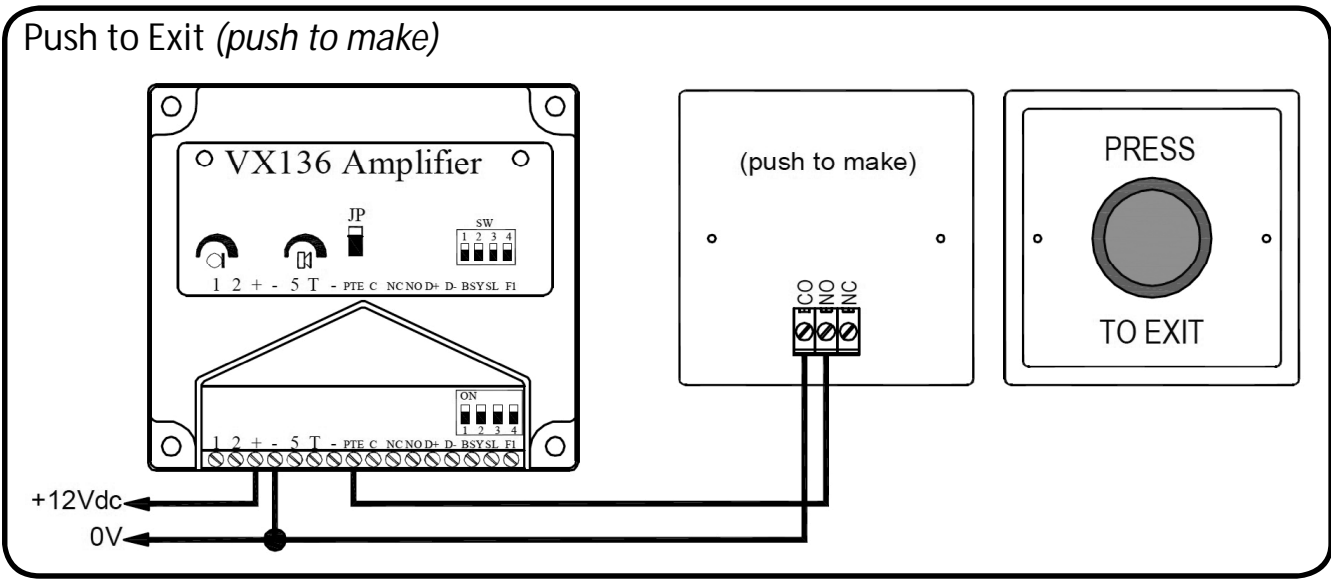
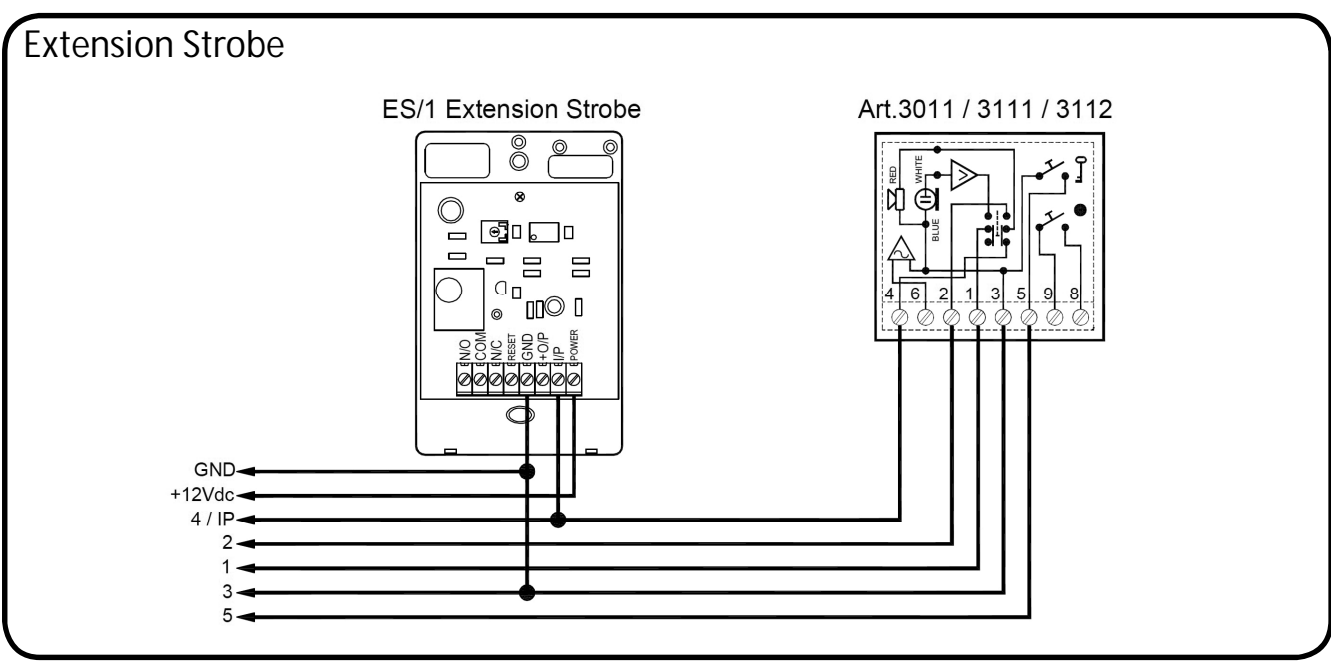
Safety Note: The VR120 panel must be earthed to its back box (*with the earth strap provided in the kit*) and then the back box earthed to the buildings earth connection.



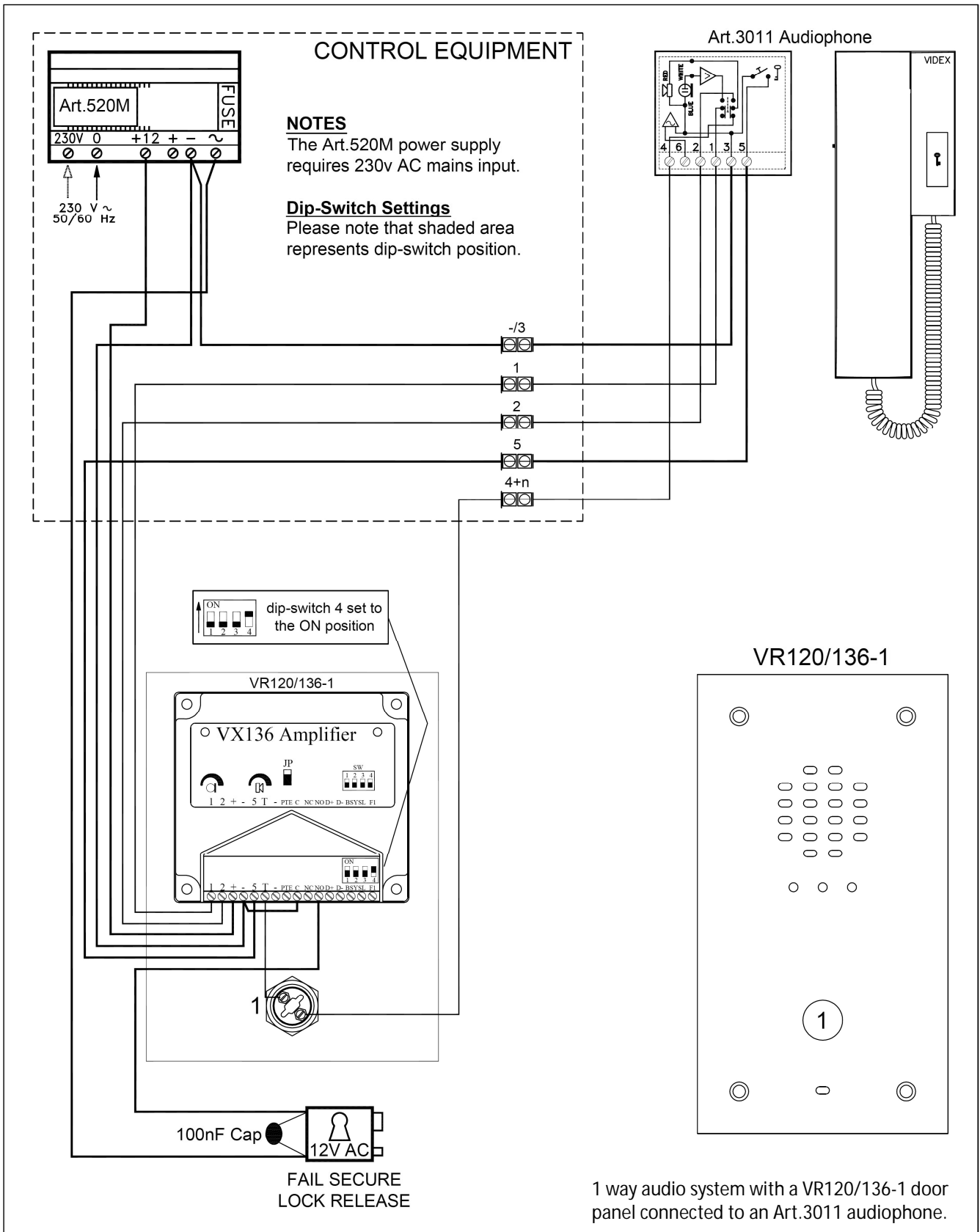
ACCESSORIES CONNECTION GUIDE

Below shows how to connect an extension sounder (*Art.512A*) and an extension strobe (*ES/1*) when fitted to an audio system. In some instances a separate 12Vdc power supply may be required when connecting an extension strobe when several 12Vdc devices are connected on the system, this is to avoid excessive current draw on the existing power supply.

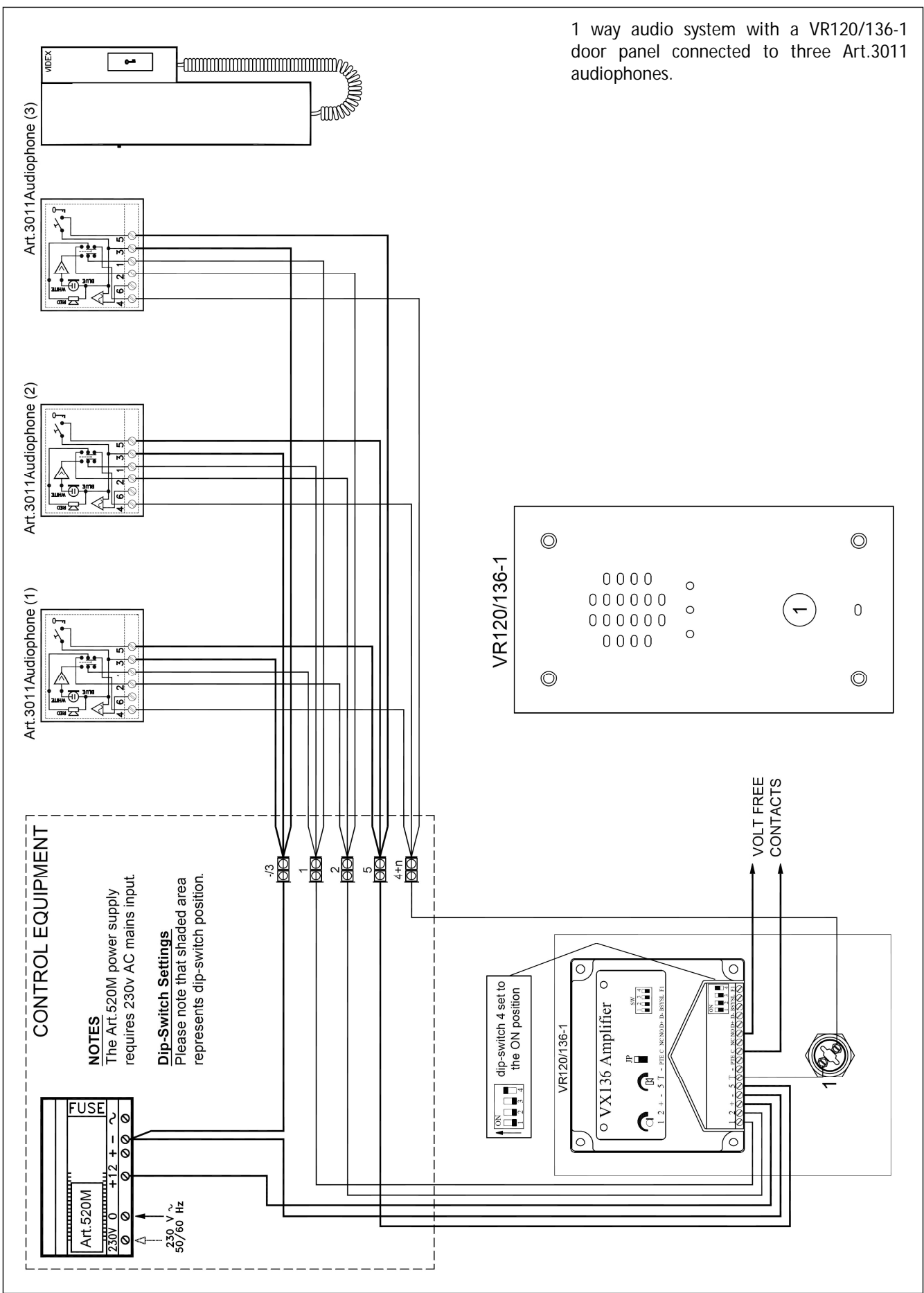




WIRING DIAGRAMS



1 way audio system with a VR120/136-1 door panel connected to three Art.3011 audiophones.



TROUBLE SHOOTING GUIDE

When trouble shooting on this system it will be easier to break the system down to a manageable size. The simplest way to do this is to remove all but one handset (*if more than 1 handset has been connected*). Doing this you can confirm the door panel and control equipment are free from faults. Once this has been confirmed you can reconnect the additional handsets one by one and then test the system again each time to see if the fault has re-appeared.

Symptom	Test
No speech from the door panel to the telephone (speech line 2).	<i>Check terminal 2 on the amplifier for continuity to terminal 2 on the telephone.</i>
	<i>During a call but before lifting the handset, check the voltage from terminal 2 of the 136 amplifier is 12Vdc. Trace this voltage to terminal 2 to the telephone.</i>
	<i>Check the voltage drops to approx. 1Vdc after the handset is lifted. (If not try another telephone).</i>
	<i>If all else fails try another 136 amplifier at the door station.</i>
No speech from the telephone to the door panel (speech line 1).	<i>Check terminal 1 on the 136 amplifier on the door panel for continuity back to terminal 1 on the telephone.</i>
	<i>During a call but before lifting the handset, check the voltage to on terminal 1 of the 136 amplifier is 12Vdc. Trace this voltage to terminal 1 to the telephone.</i>
	<i>Check the voltage drops to approx. 4Vdc after the handset is lifted. (If not try another telephone).</i>
	<i>If all else fails try another 136 amplifier at the door station.</i>
No speech in either direction.	<i>Check for 230v AC mains input to power supply (Art.520M).</i>
	<i>Check the 315mA fuse in the power supply.</i>
	<i>Check for 12Vdc across terminals + & - on the door panel 136 amplifier. This should be there all the time and comes directly from the PSU (Art.520M).</i>
	<i>Check for continuity of both speech line cables, terminals 1 and 2 between the 136 amplifier to the audiophone or videophone.</i>
Lock will not operate from telephone.	<i>Check the door open LED comes ON when the lock button is pressed on the audiophone or videophone (only after speech is live to the handset).</i>
	<i>Check there is 12Vdc on the + and – terminals of the 136 door amplifier.</i>
	<i>Check for continuity across the 136 amplifier relay contacts C/NO when the lock button is pressed on the audiophone or videophone.</i>
	<i>Check for continuity across the 136 amplifier relay contacts C/NO when the PTE input has been triggered by a PTE button or by shorting out terminals PTE and – on the 136 amplifier.</i>
	<i>If using a fail secure lock release check for voltage across the lock when the lock button of the audiophone or videophone is pressed (only after speech is live to the handset) or when the PTE input is activated.</i>
	<i>If using a fail safe lock release check the voltage across the lock drops off when the lock button of the audiophone or videophone is pressed (only after speech is live to the handset) or when the PTE input is activated.</i>
Nothing happens when any call button is pressed.	<i>Check for continuity across the push button terminals.</i>
	<i>Check terminal T on the 136 amplifier for call tone voltage 10-12Vdc.</i>
	<i>Check the common of the buttons has 10-12Vdc present at all times.</i>

Northern Office

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