PHONEX-D1
PHONEX-D2

2 Line Digital Telephone Hybrid

(Rev. 3.3 ENG)

CONTENT

1 INTRODUCTION

PHONEX D1 - PHONE X D2 AVAILABLE VERSION

CODE#	ARTICLE	DESCRIPTION
A112100000	**PHONEX D1**	Digital studio telephone hybrid 1 line PSTN/POTS. Audio process DSP-Based, XLR analog and AES/EBU input and output.DTMF decoder and GPIN/GPOUT port. Graphic LCD display for TX and RX level monitoring. 1 GSM module for wireless operation (opz).USB and Serial port. 1u rack 19"space. Universal PSU.
A112110000	**PHONEX D2 MKII**	Digital studio telephone hybrid 2 lines PSTN/POTS. Audio process DSP-Based, XLR analog and AES/EBU In/Out. DTMF decoder and GPIN/GPOUT port. Graphic LCD display for TX and RX level monitoring. Up to 2 GSM module for wireless operations as option. USB and Serial port. 1u rack 19"space. Universal PSU.

AVAILABLE OPTION ON PHONEX D2

CODE#	ARTICLE	DESCRIPTION
A112100300	**PHXD-LAN**	Ethernet port for LAN connection (TCP/IP and UDP) and Rs232 (Parser ASCII) designed for PhoneX D1 and PhoneX D2
A112080300	**PHX-MCT-GSM**	GSM Interfacen for **PHONEX D1 PHONEX D2** and **MACROTEL X1** and **MACROTEL X2**

1.1 MAIN FEATURES

PhoneX is an entirely digital telephone hybrid with DSP (Digital Signal Processor) audio processing, expressly studied to offer high audio performance for the broadcast market. PhoneX controls two PSTN/POTS two-wire analog lines; an external GSM modem can be connected to each telephone line. The digital audio processing system offers high performance and excellent send/receive separation. PhoneX can be controlled from the front panel, from a PC using dedicated software, via web page and using GPIO and TCP/IP type commands.

1.2 USE OF THIS MANUAL

This manual has been designed to be used with PhoneX D1 and PhoneX D2. In some case some features cannot be held by PhoneX D1.

1.3 PHONEX D1 AND PHONEX D2 – DEPLIANT AND BROCHURE

PhoneX D1

PhoneX D2

BROADCAST SERIES DIGITAL TELEPHONE HYBRIDS

HIGHLIGHTS

1. **Digital Telephone hybrid based on DSP audio process**
2. **Management of 1 or 2 pots/pstn line and GSM QuandBand**
3. **Audio controls: AGC Stage, Echo canceller, De-Noiser, 2Band Eq, Ducking**
4. **Hold and Attenuator features on calls**
5. **Auto-answer and disconnection features**
6. **Integrated DTMF dialer via software and webpage.**
7. **Integrated DTMF decoder for automation system remote control (Start/Stop)**
8. **Separate send and receive over balanced XLR, with Mic/Line software selection**
9. **Remote control via Telco N-1 mixing console, software, webpage and tablet**
10. **1 Ethernet port, 2 Rs232 serial ports, 1 USB B-type and Gpio's.**

MAIN DESCRIPTION

PhoneX D1 and PhoneX D2 are telephone hybrid designed for Broadcast marketplace. The internal frameworks based on DSP (Digital Signal Processor) hit in realtime the highest audio performances, that sets PhoneX D1 and PhoneX D2 as state-of-art technology in telephone interface.

As in Macrotel X1 and X2, the PhoneX D1 and D2 equipments allows to manage one or two landlines, shared with GSM QuadBand modem optionally improved, to place phone calls where wired lines are not available. Enhanced audio features exclusively designed for phone calls such as: AGC stage, Echo canceller, De-Noiser, 2Band Equalizer, Ducking and Hold caller/Attenuator. Conference features allowed into PhoneX D2 makes a meeting callcalling between caller.

PhoneX D1 and PhoneX D2 ease the everyday's operators usage via front panel button, the graphic LCD display send and receive levels for each phone hybrid, via software pc based, any webpage and wireless devices as tablet or smart

phone. Always available GPIO contact from and to Telco N-1 modules. PhoneX series allows analog balanced and digital aes/ebu input and output over XLR connectors, with mic/line send features switched via software.
Available connections via two rs232 serial ports and one usb. By option a Ethernet board to manage lan connection can be added directly into PhoneX D1 and PhoneX D2.
All audio features and working mode can be managed locally and remote via software, without a physically intervention over phone hybrid. Auto-ranging internal switching power supply to use the equiments all around the world. PhoneX D1 and PhoneX D2 occupies 1 standard RU.

TECH SPECS PhoneX D1 – PhoneX D2

General Features	PhoneX D1	PhoneX D2
Lines	1 Pots/Pstn Line or 1 GSM Line *(by option)*	2 Pots lines or 2 GSM lines *(by option)* or 1 Pots line + 1 GSM line *(by option)*
Phone Line	1x RJ11 6/4	2x RJ11 6/4
Set Line	1x RJ11 6/4	2x RJ11 6/4
GSM Line	1x RJ10	2x RJ10
Line Mode	Standard 2-Wire connection or GSM*(by option)*	
Telephone Set mode	Worldwide, software setup	
Audio Features		
Audio process	24Bit-120Mhz DSP-Based audio process	
A.G.C	1 stage	1 stage
Ducking	Yes	Yes
Echo canceller	Yes	Yes
De-Noiser	Yes	Yes
Attenuator	Yes	Yes
2-Band EQ	Yes	Yes
Tone generator	0 dBu @ 800 Hz	0 dBu @ 800 Hz
Dialer keypad sw	Yes, via Software and Web Page	Yes, via Software and Web Page
DTMF Decoder	Yes	Yes
Conference Mode	No	Yes
Auto call Hook/Drop	Yes	Yes
Front Panel operation		
Hook / drop push button	Yes, separate button for Hook and Drop	Yes, same button for Hook and Drop
Ring light	Hook-1 push button	Hook-1 & Hook-2 push button
LCD Panel	160x32p LCD graphic display	
Level Send & receive	Showed in LCD graphic display	
Audio Input and Output		
Send Analog-1	1x XLR female electronically balanced	1x XLR female electronically balanced
Send Digital-1	1x XLR female el.bal AES3/EBU, synch to digital input	1x XLR female el.bal AES3/EBU common send Digital Left, synch to digital input
Receive Analog-1	1x XLR male electronically balanced	1x XLR male electronically balanced
Receive Digital-1	1x XLR male el.bal AES3/EBU	1x XLR male el.bal AES3/EBU common receive L=R= Hybrid 1 or L=R= Hybrid 1+Hybrid 2
Send Analog-2	1x XLR female electronically balanced	1x XLR female electronically balanced
Send Digital-2	No	No
Receive Analog-2	1x XLR male electronically balanced	1x XLR male electronically balanced
Receive Digital-2	No	No
Microphone Input	Switch Mic/Line via software	Switch Mic/Line via software
Remote Control		
GPIO Connector	SubD 15p HD	
GPIO Type	4x GPIn optocoupled, 4x GPOut Open Collector optoisolated	
USB	1x USB– B Type EMI Filtered	
Serial	2x Rs232 EMI Filtered	
Software Remoter	Yes	
Parser ASCII protocol	Rs232 by default, TCP/IP and UDP *by option*	
GSM Wireless module	*by option*	
Ethernet Port/Web Server	*by option*	

COMPARISON TABLE

General Features	Macrotel X1	Macrotel X2	PhoneX D1	PhoneX D2
Telephone Lines Configuration	1 Pots/Pstn line or 1 GSM line	2 Pots/Pstn lines or 2 GSM Lines or 1 Pots line + 1 GSM line	1 Pots/Pstn line or 1 GSM line	2 Pots/Pstn lines or 2 GSM Lines or 1 Pots line + 1 GSM line
GSM Quad Band Module	1x optional	2x optional	1x optional	2x optional
Line Mode	Standard 2-Wire RJ11 6/4 connection or GSM *(by option)*			
Telephone Set mode	Worldwide mode, software setup			
Audio Features				
Audio process	120 Mhz@24 Bit - DSP Digital Signal Audio Process			
A.G.C & Attenuator	✓	✓	✓	✓
Echo canc & 2-Band Eq	✓	✓	✓	✓
Auto call Hook/Drop	✓	✓	✓	✓
Tone generator @ 800Hz	✓	✓	✓	✓
Dialer keypad Software	✓	✓	✓	✓
Dialer keypad WebPage	-	-	✓	✓
Ducking	-	-	✓	✓
De-Noiser Module	-	-	✓	✓
DTMF Decoder	-	-	✓	✓
Front Panel operation				
LCD Panel	160x32p LCD graphic display			
Send & receive Level	Showed in LCD graphic display			
Separate Hook/Drop	✓	-	✓	-
Hook / drop push button	-	✓	-	✓
Audio Input and Output				
Microphone Input	Switch Mic/Line via software			
Send Analog-1	✓	✓	✓	✓
Send & Receive Digital	-	-	✓	✓
Remote Control				
GPIO Connector & Type	SubD 15p HD - 4x GPIn optocoupled, 4x GPOut open collector			
USB Connector	1x USB – B Type EMI Filtered			
Serial Connection	2x Rs232 EMI Filtered			
Software Remoter	✓	✓	✓	✓
Parser ASCII via Rs232	-	-	✓	✓
Ethernet/Web Server and ASCII Parser via LAN	-	-	*by option*	*by option*
GSM Wireless module	*by option*	*by option*	*by option*	*by option*

2 SAFETY WARNINGS / ISTRUZIONI PER LA SICUREZZA

SAFETY WARNINGS

CONSIGNES DE SÉCURITÉ IMPORTANTES

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WICHTIGE SICHERHEITSHINWEISE

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

(Rel. 2.0)

2.1 FOREWORD

For your own safety and to avoid invalidation of the warranty all text marked with these Warning Symbols should be read carefully.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.

The manufacturer shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual, or through any mis-operation or fault in hardware contained in the product.

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

3 SAFETY WARNINGS

The installation and servicing instructions in this manual are for use by qualified personnel only.

- **Read All Instructions.** All safety and operating instructions must be read before operating the product. They also must be retained for future reference, as it contains a number of useful hints for determining the best combination of equipment settings for Yr particular application.
- **Heed All Warnings**. All warnings on the product and those listed in the operating instructions must be adhered to.
- **Heat**. This product must be situated away from any heat sources such as radiators or other products (including power amplifiers or transmitters) that produce heat.
- **Power Sources.** This product must be operated from the type of power source indicated on the marking label and in the installation instructions. If you are not sure of the type of power supplied to your facility, consult your local power company. Make sure the AC main voltage corresponds to that indicated in the technical specifications. If a different voltage (ex. 110/115 VAC) is available, open the equipment closure and set the voltage switch on the main supply circuit, located behind the AC socket
- **Power Cord Protection.** Power supply cords must be routed so that they are not likely to be walked on nor pinched by items placed upon or against them. Pay particular attention to the cords at AC wall plugs and convenience receptacles, and at the point where the cord plugs into the product
- **Use only with a 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.
- **Lightning**. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the AC wall outlet and the audio connections. This will prevent damage to the product due to lightning and power line surges
- **Installation**. Configuration and installation should only be carried out by a competent installation engineer
- **Cabling**. Using high quality wires, well protected. Make sure the cable integrity.

This symbol alerts you to the presence of dangerous voltage inside the closure – voltage which may be sufficient to constitute a risk of shock. Do not perform any servicing other than that contained in the operating instructions. Refer all servicing to qualified personnel

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Do not change the voltage setting or replace the mains fuse without first turning the unit off and unplugging the mains cord

Make sure the AC main voltage corresponds to that indicated in the technical specifications. THIS APPARATUS MUST BE EARTHED !

To avoid risk of fire use the correct value fuse, as indicated on the label stuck on the right side of the unit.

This apparatus uses a single pole mains switch and does therefore not separate the unit completely from the mains power. To completely separate from mains power (in the event of danger) unplug mains power cord. As the MAINS plug is the disconnect device, the disconnect device shall remain readily operable.

4 CONSIGNES DE SÉCURITÉ IMPORTANTES

- **Lire ces consignes**
- **Conserver ces consignes**
- **Observer tous les avertissements**
- **Suivre toutes les consignes**
- **Ne pas utiliser cet appareil à proximité de l'eau**
- **Ne pas obstruer les ouvertures de ventilatio**n. Installer en respectant les consignes du fabricant
- **Ne pas installer à proximité d'une source de chaleur** telle qu'un radiateur, une bouche de chaleur, un poêle ou d'autres appareils (dont les amplificateurs) produisant de la chaleur.
- **Ne pas annuler la sécurité de la fiche de terre**, la troisième branche est destinée à la sécurité. Si la fiche fournie ne s'adapte pas à la prise électrique, demander à un électricien de remplacer la prise hors normes.
- **Protéger le cordon d'alimentation** afin que personne ne marche dessus et que rien ne le pince, en particulier aux fiches, aux prises de courant et au point de sortie de l'appareil
- **Utiliser uniquement les accessoires spécifiés par le fabricant**
- **Utiliser uniquement avec un chariot**, un support ou une table spécifié par le fabricant ou vendu avec l'appareil. Si un chariot est utilisé, déplacer l'ensemble chariot–appareil avec précaution afin de ne pas le renverser, ce qui pourrait entraîner des blessures
- **Débrancher l'appareil** pendant les orages ou quand il ne sera pas utilisé pendant longtemps.
- **Confier toute réparation à du personnel qualifié.** Des réparations sont nécessaires si l'appareil est endommagé d'une façon quelconque, par exemple: cordon ou prise d'alimentation endommagé, liquide renversé ou objet tombé à l'intérieur de l'appareil, exposition de l'appareil à la pluie ou à l'humidité, appareil qui ne marche pas normalement ou que l'on a fait tomber.
- **NE PAS exposer cet appareil aux égouttures et aux éclaboussements**. Ne pas poser des objets contenant de l'eau, comme des vases, sur l'appareil

Ce symbole indique la présence d'une tension dangereuse dans l'appareil constituant un risque de choc électrique.

Ce symbole indique que la documentation fournie avec l'appareil contient des instructions d'utilisation et d'entretien importantes.

Avant de modifier le commutateur de changement de tension ou replacer le fusible il faut débrancher l'appareil de la prise électrique. Pendant son usage, l'appareil doit etre branchee à la prise de terre

Utiliser le fusible principal AC avec le valeur qui est indiquée sur l'étiquette collée sur le coffret.

Assurez-vous que la tension principale AC correspond à celle indiquée dans les spécifications techniques.

L'interrupteur d'alimentation interrompt un pôle du réseau d'alimentation excepté le conducteur de terre de protection. En cas de danger, debrancher le cordon d'alimentation. Parce que la prise du réseau de alimentation est utilisée comme dispositif de déconnexion, ce dispositif doit demeuré aisément accessible

5 ISTRUZIONI IMPORTANTI PER LA SICUREZZA

- **Leggere le presenti istruzioni**
- **Conservare queste istruzioni**
- **Osservare tutte le avvertenze**
- **Seguire scrupolosamente tutte le istruzioni**
- **Non usare questo apparecchio in prossimità di acqua**
- **Non ostruire alcuna apertura per il raffreddamento**. Installare l'apparecchio seguendo le istruzioni
- **Non installare l'apparecchio accanto a fonti di calore** quali radiatori, aperture per l'afflusso di aria calda, forni o altri apparecchi (amplificatori inclusi) che generino calore
- **Non rimuovere il terminale di connessione a terra sul cordone di alimentazione**: esso ha lo scopo di tutelare l'incolumità dell'utilizzatore. Se la spina in dotazione non si adatta alla presa di corrente, rivolgersi ad un elettricista per far eseguire le modifiche necessarie.
- **Evitare di calpestare il cavo di alimentazione o di comprimerlo**, specialmente in corrispondenza della spina e del punto di inserzione sull'apparato.
- **Utilizzare solo dispositivi di collegamento e gli accessori specificati dal produttore.**
- **Utilizzare l'apparecchio** solo con un carrello, un sostegno, una staffa o un tavolo di tipo specificato dal produttore o venduto insieme all'apparecchio. Se si utilizza un carrello, fare attenzione negli spostamenti per evitare infortuni causati da ribaltamenti del carrello stesso.
- **Scollegare l'apparecchio dalla presa di corrente** durante i temporali o quando inutilizzato a lungo
- **Per qualsiasi intervento**, rivolgersi a personale di assistenza qualificato. È' necessario intervenire sull'apparecchio ogniqualvolta si verificano danneggiamenti di qualsiasi natura. Ad esempio, la spina o il cavo di alimentazione sono danneggiati, è entrato liquido nell'apparecchio o sono caduti oggetti su di esso, l'apparecchio è stato esposto alla pioggia o all'umidità, non funziona normalmente o è caduto.
- **Non esporre a sgocciolamenti o spruzzi**. Non appoggiare sull'apparecchio oggetti pieni di liquidi, ad esempio vasi da fiori.

Questo simbolo indica la presenza di alta tensione all'interno dell'apparecchio, che comporta rischi di scossa elettrica.

Questo simbolo indica la presenza di istruzioni importanti per l'uso e la manutenzione nella documentazione in dotazione all'apparecchio.

Non sostituire il fusibile o cambiare la tensione di alimentazione senza aver prima scollegato il cordone di alimentazione. L'APPARATO DEVE ESSERE CONNESSO A TERRA.

Sostituire il fusibile generale con uno di identico valore, come indicato sulla etichetta applicata sul mobile dell'apparato

Assicurarsi che la tensione di rete corrisponda a quella per la quale è configurato l'apparecchio

Questo apparato utilizza un interruttore di alimentazione di tipo unipolare e l'isolamento dalla rete elettrica non è pertanto completo. Per ottenere un isolamento totale (ad esempio in caso di pericolo), scollegare il cordone di alimentazione. Inoltre, poichè la spina di alimentazione è utilizzata come dispositivo di sezionamento, essa deve restare facilmente raggiungibile

6 WICHTIGE SICHERHEITSHINWEISE

- **Diese Hinweise LESEN**
- **Diese Hinweise AUFHEBEN**
- **Alle Warnhinweise BEACHTEN**
- **Alle Anweisungen BEFOLGEN**
- **Dieses Gerät NICHT in der Nähe von Wasser verwenden**
- **KEINE Lüftungsöffnungen verdecken**. Gemäß den Anweisungen des Herstellers einbauen
- **Nicht in der Nähe von Wärmequellen**, wie Heizkörpern, Raumheizungen, Herden oder anderen Geräten (einschließlich Verstärkern) installieren, die Wärme erzeugen
- **Die Schutzfunktion des Schukosteckers NICHT umgehen**. Bei Steckern für die USA gibt es polarisierte Stecker, bei denen ein Leiter breiter als der andere ist; US-Stecker mit Erdung verfügen über einen dritten Schutzleiter. Bei diesen Steckerausführungen dient der breitere Leiter bzw. der Schutzleiter Ihrer Sicherheit. Wenn der mitgelieferte Stecker nicht in die Steckdose passt, einen Elektriker mit dem Austauschen der veralteten Steckdose beauftragen
- **VERHINDERN, dass das Netzkabel gequetscht oder darauf getreten wird**, insbesondere im Bereich der Stecker, Netzsteckdosen und an der Austrittsstelle vom Gerät
- N**UR das vom Hersteller angegebene Zubehör** und entsprechende Zusatzgeräte verwenden.
- **NUR in Verbindung** mit einem vom Hersteller angegebenen oder mit dem Gerät verkauften Transportwagen, Stand, Stativ, Träger oder Tisch verwenden. Wenn ein Transportwagen verwendet wird, beim Verschieben der Transportwagen-Geräte- Einheit vorsichtig vorgehen, um Verletzungen durch Umkippen
- **Das Netzkabel dieses Geräts** während Gewittern oder bei längeren Stillstandszeiten aus der Steckdose ABZIEHEN.
- **Alle Reparatur- und Wartungsarbeiten** von qualifiziertem Kundendienstpersonal DURCHFÜHREN LASSEN. Kundendienst ist erforderlich, wenn das Gerät auf irgendwelche Weise beschädigt wurde, z.B. wenn das Netzkabel oder der Netzstecker beschädigt wurden, wenn Flüssigkeiten in das Gerät verschüttet wurden oder Fremdkörper hineinfielen, wenn das Gerät Regen oder Feuchtigkeit ausgesetzt war, nicht normal funktioniert oder fallen gelassen wurde.
- **Dieses Gerät vor Tropf- und Spritzwasser SCHÜTZEN**. KEINE mit Wasser gefüllten Gegenstände wie zum Beispiel Vasen auf das Gerät STELLEN.

Dieses Symbol zeigt an, dass gefährliche Spannungswerte, die ein Stromschlagrisiko darstellen, innerhalb dieses Geräts auftreten.

Dieses Symbol zeigt an, dass das diesem Gerät beiliegende Handbuch wichtige Betriebs- und Wartungsanweisungen enthält.

Vor Änderung der Netzspannung oder Sicherungswechsel Netzkabel trennen.
Das Gerät muss für den Betrieb geerdet werden.

Hauptsicherung nur mit einer gleichwertigen austauschen
(s. entsprechende Etikette).

Vor Einschalten Netzspannungseinstellung am Gerät überprüfen bzw. anpassen.

Inpoliger Netzschalter. In Notfälle oder für Wartungsarbeiten Netzkabel trennen. Der Netzstecker fungiert auch als Trennelement muss deshalb zugänglich bleiben

7 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

- **LEA estas instrucciones**
- **CONSERVE estas instrucciones**
- **PRESTE ATENCION a todas las advertencias.**
- **SIGA todas las instrucciones**
- **NO utilice este aparato cerca del agua**
- **NO obstruya ninguna de las aberturas de ventilación.**Instálese según lo indicado en las instrucciones del fabricante
- **No instale el aparato cerca de fuentes de calor** tales como radiadores, registros de calefacción, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor
- **NO anule la función de seguridad del enchufe polarizado** o con clavija de puesta a tierra. Un enchufe polarizado tiene dos patas, una más ancha que la otra. Un enchufe con puesta a tierra tiene dos patas y una tercera clavija con puesta a tierra. La pata más ancha o la tercera clavija se proporciona para su seguridad. Si el toma corriente no es del tipo apropiado para el enchufe, consulte a un electricista para que sustituya el toma corriente de estilo anticuado
- **PROTEJA el cable eléctrico** para evitar que personas lo pisen o estrujen, particularmente en sus enchufes, en los toma corrientes y en el punto en el cual sale del aparato
- **UTILICE únicamente los accesorios especificados por el fabricante**
- **UTILICESE únicamente** con un carro, pedestal, escuadra o mesa del tipo especificado por el fabricante o vendido con el aparato. Si se usa un carro, el mismo debe moverse con sumo cuidado para evitar que se vuelque con el aparato
- **DESENCHUFE el aparato** durante las tormentas eléctricas, o si no va a ser utilizado por un lapso prolongado.
- **TODA reparación** debe ser llevada a cabo por técnicos calificados. El aparato requiere reparación si ha sufrido cualquier tipo de daño, incluyendo los daños al cordón o enchufe eléctrico, si se derrama líquido sobre el aparato o si caen objetos en su interior, si ha sido expuesto a la lluvia o la humedad, si no funciona de modo normal, o si se ha caído.
- **NO exponga** este aparato a chorros o salpicaduras de líquidos. NO coloque objetos llenos con líquido, tales como floreros, sobre el aparato.

Este símbolo indica que la unidad contiene niveles de voltaje peligrosos que representan un riesgo de choques eléctricos.

Este símbolo indica que la literatura que acompaña a esta unidad contiene instrucciones importantes de funcionamiento y mantenimiento.

Antes de cambiar la alimentacion de voltaje o de cambiar el fusible, desconecte el cable de alimentacion. Para reducir el riesgo de descargas electricas, esta unidad debe ser conectada a tierra.

Remplaze el fusible con lo mismo, que corresponde a lo indicado en el panel del equipo.

Antes de encender, controlar que la linea de alimentacion de voltaje corresponda a la indicada

El interruptor de alimentación es unipolar. En el caso de peligro, desconecte el cable de alimentación. Porque la clavija de conexion a red sirve por la desconection de la unidad, la clavija debe ser ubicada en proximidad de la unidad

8 UNPACKING AND INSPECTION

Your equipment was packed carefully at the factory in a container designed to protect the unit during shipment. Nevertheless, we recommend making a careful inspection of the shipping carton and the contents for any signs of physical damage.

Damage & Claims

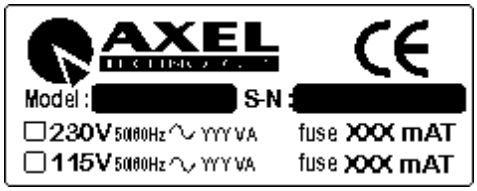
If damage is evident, do not discard the container or packing material. Contact your carrier immediately to file a claim for damages. Customarily, the carrier requires you, the consignee, to make all damage claims. It will be helpful to retain the shipping documents and the waybill number.

Save all packing materials! If You should ever have to ship the unti (e.g. for servicing), it is best to ship it in the original carton with its packing materials because both the carton and packing material have been carefully designed to protect the unit.

Under normal conditions no user maintenance or calibration are required. Internal links and preset controls may be set to configure the unit during installation. **Any service work required should be carried out by qualified service personnel only.**
We are able to offer further product support through our worldwide network of approved dealers and service agents.

To help us provide the most efficient service please would you keep a record of the unit serial number, and date and place of purchase to be quoted in any communication regarding this product.

The actual equipment Serial Number is indicated on the silver label stuck on the rear panel of the equipment closure.



Tools And Equipment Needed

Only standard technician's tools are required to install this equipment.

9 FIRST INSTALLATION RECOMMENDATIONS

9.1 POWER SUPPLY CABLE

A power supply cable of approx. 2 mt length is supplied with the device, which has a moulded IEC plug attached – this is a legal requirement.
The type of plug for the power supply depends on the country in which it is delivered.

If for any reason, you need to use this appliance with a different plug, you should use the following wiring guidelines in replacing the existing plug with the new one:

Earth	Green, or green and yellow
Neutral (N)	Blue
Live (L)	Brown

Supply cables should be laid in such a manner that one does not step or walk on them. They should not be squashed by any objects.

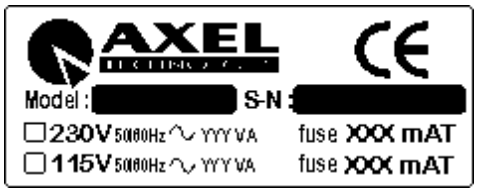
THIS EQUIPMENT MUST BE EARTHED.

The chassis is always connected to mains earth to ensure your safety: check your mains wiring and earthing before switching on.

9.2 AC MAINS VOLTAGE SETTING (230 V / 115 V)

BE SURE THAT THE UNIT IS SET TO THE CORRECT MAINS/LINE VOLTAGE FOR YOUR COUNTRY BEFORE PLUGGING IT INTO THE WALL OUTLET !

The actual Mains voltage is indicated on the label stuck on the equipment closure. Should the type of power at the operation location not be known, please contact your dealer or electricity company.



If, for some reason, the unit is to be operated at a mains input voltage which is different to that as supplied, you need to switch the voltage selector on the right side of the unit. You also need to replace the AC main fuse, according to information provided on the external label or on the Technical Specifications table at the end of this user manual.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, ALWAYS DISCONNECT THE AC MAINS CABLE BEFORE ALTERING THE CHANGE-OVER SWITCH. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

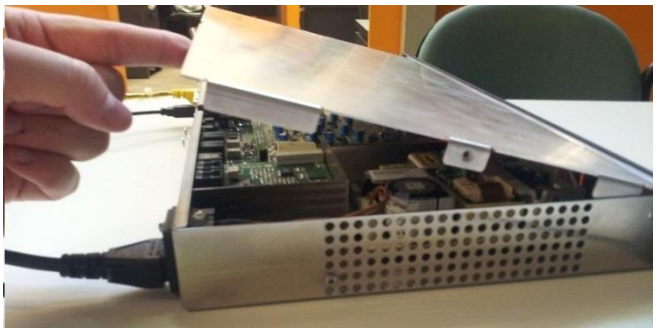
9.3 FUSE REPLACEMENT

The power supply socket has an integral fuse drawer containing the AC power fuse and a spare, both of the same value.

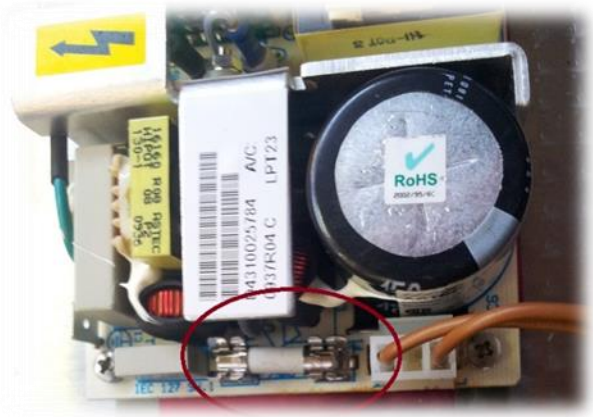
BEFORE REPLACING THE POWER FUSE, MAKE SURE YOU HAVE THE RIGHT TYPE OF FUSE FOR THE VOLTAGE TO BE PROTECTED.
USING WRONG FUSE TYPE WILL RESULT IN INSUFFICIENT PROTECTION.

Make sure that the power is switched off and the power cable is disconnected from the equipment.

a. Open the upper iron cover using a screwdriver.



b. Replace the fuse located at the internal position – Power supply Type-1



c. Replace the fuse located at the internal position – Power supply Type-2

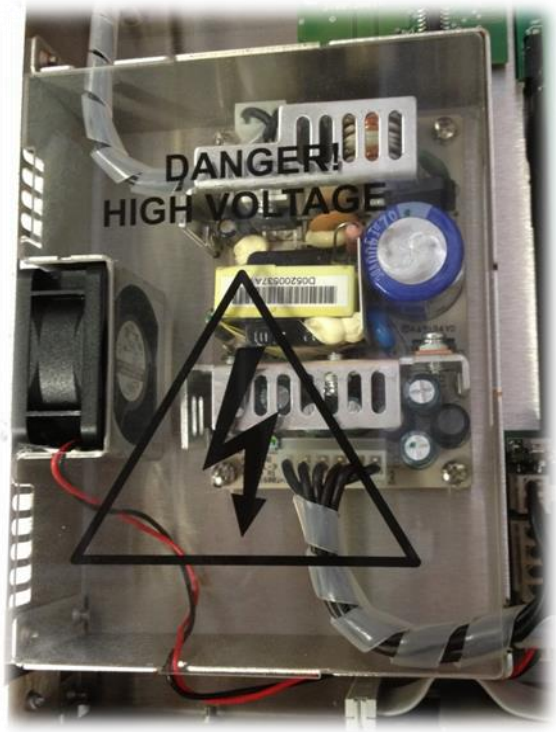
Perform the set-up under static control conditions. Static charges are likely to completely destroy one or more of the CMOS semiconductors employed in the unit. Static damage will not be covered under warranty.

Basic damage prevention consists of minimizing generation, discharging any accumulated static charge on your body and preventing that discharge from being sent to or through any electronic component.

Uninsulated dangerous voltage are inside the enclosure, voltage that may be sufficient to constitute a risk of shock.
Always disconnect to AC Mains before removing the top cover

9.4 PROTECTION AGAINST LIGHTNING

When the upper iron cover is removed, a plastic transparent cover helps the user safety, to avoid from flashlight coming from the switching power supply. After the power cord has been disconnected some parts of the power supply remain electrically loaded for a lot of time.
Axel Technology suggest to don't touch never this parts, and it is not responsible for human flash light or electrical burns.



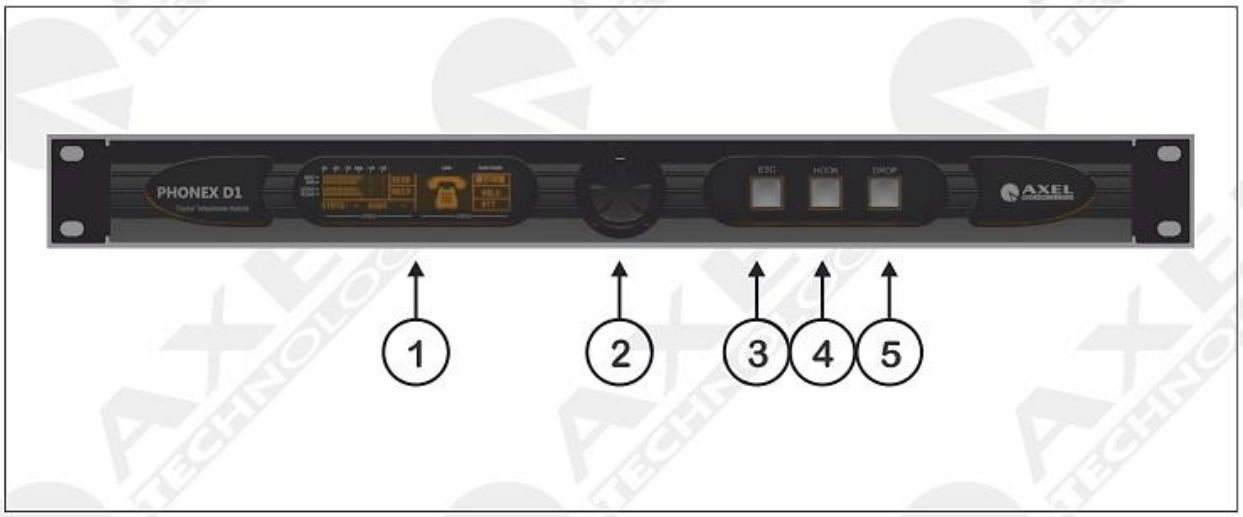
Should the device be put out of action due to being struck by lightning or excess voltage, disconnect it from the power supply without delay. Do not reconnect until the device has been checked. If in doubt contact the technical support service.

Make sure there is suitable lighting protection to protect the device.
Alternatively you should disconnect all connectors from the device during a storm or when the device is going to be unsupervised or not used for a longer period of time.
These measures will protect against damage by lightning or excess voltage.

9.5 VENTILATION

The equipment will operate as a free-standing unit without requiring any special cooling arrangement.
However, slots and openings in the product are provided for ventilation. They ensure reliable operation of the product, keeping it from overheating. These openings must not be blocked nor covered during operation.
YOU MUST LEAVE AT A MINIMUM ONE RACK UNIT OF EMPTY SPACE ABOVE THE EQUIPMENT TO ENHANCE VENTILATION AND TO GET A LONGER EQUIPMENT LIFE.

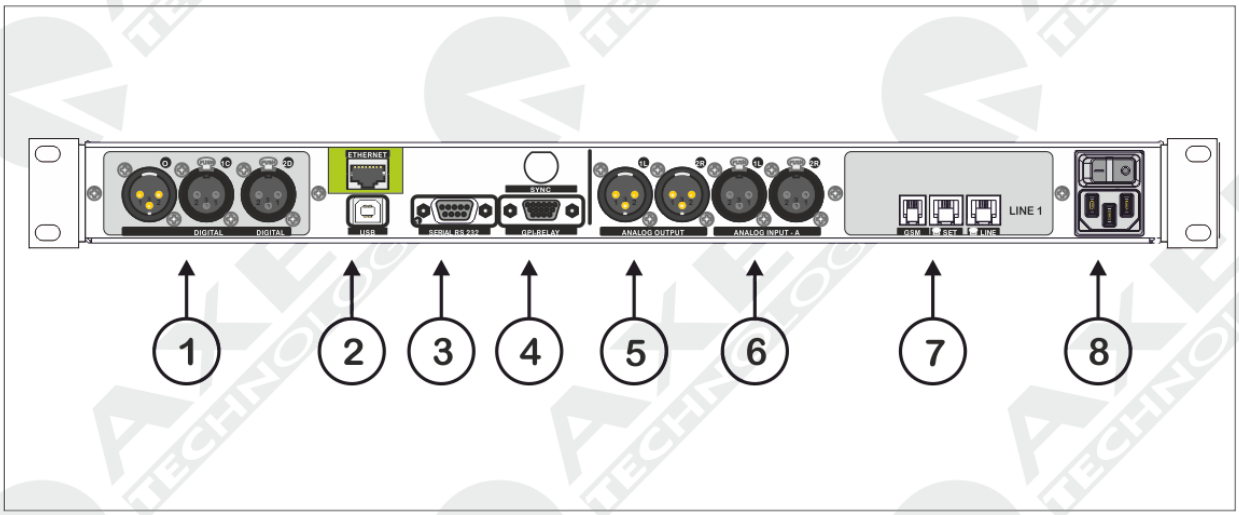
10 PHONEX D1 AND PHONEX D2 GENERAL DESCRIPTION



10.1 PHONEX D1 FRONT PANEL

N°	NOME CONTROLLO	FUNZIONE
1	DISPLAY LCD	LCD Display that shows the status and operating mode of PhoneX-D1. The technical parameters of each menu are displayed here
2	JOG-SHUTTLE	Knob (or JogShuttle) to access the various navigation menus and make changes. Press the JogShuttle to confirm selection.
3	“ESC” BUTTON	Press this key to delete the changes made or exit the selected menu
4	“HOOK” BUTTON	Line hook/unhook key. The Hook LED inside the key flashes when there is an incoming call and remains switched on when the line is hooked. NOTE: the LED only switches on when the telephone line is connected to the ‘LINE’ socket of the hybrid device.
5	“DROP” BUTTON	This button is used to close an active phone calling.

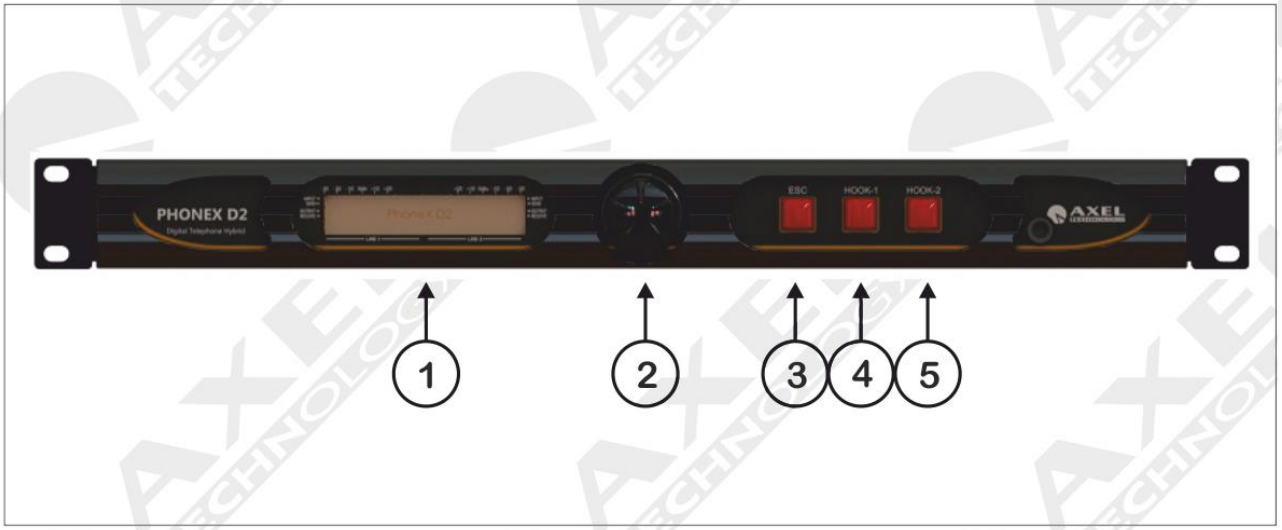
10.2 PHONEX D1 REAR PANEL



N°	NOME CONTROLLO	FUNZIONE
1	**DIGITAL I/O**	Digital AES3/EBU audio input on balanced XLR connector with 110Ω impedance. Digital AES3/EBU audio output on balanced XLR connector with 110Ω impedance. Connector 2D is disabled on PhoneX D1
2	**“USB” PORT** **+** **ETHERNET PORT** ***(OPZ)***	PhoneX D1 allows to be connected to PC via USB port. Before connect the USB A/B from the PC to the PhoneX D1, please install the Axel Telephone Hybrid Remoter that install also the USB driver into the OS. PhoneX is fitted with an Rj45 Ethernet port to monitor and control the device. This port can also be used to control the Web Browser and as SNMP agent.*(optional)*
3	**SERIAL -1 RS232** **SERIAL PORT 1** **+** **SERIAL -2 RS232** **SERIAL PORT 2**	PhoneX D1 provides up to 2 serial ports to control the device via remote control software. The Axel Telephone Hybrid Remoter control software can be used to change the operating parameter, while PhoneX Address Manager can be used to set the values of the TCP/IP card, the Target Name (or device name) and the access password for SNMP communication. The Target ID can also be set and the Front panel locked. Serial Port 1 can also be used to **reprogram the firmware** and to connect the device to an external **56K analog modem** (for remote control using the phone line). Default port speed is set at 38,400bps
4	**“GPIO” PORT**	Interface with 15 pin female HD SubD connector. Determines the PhoneX logic status via the GPOut open collector, while it provides the PhoneX command via GPIn, thanks to the opto couplers installed. The PhoneX status is also visible from the software panel on the right section of the software: **- GPI Status**

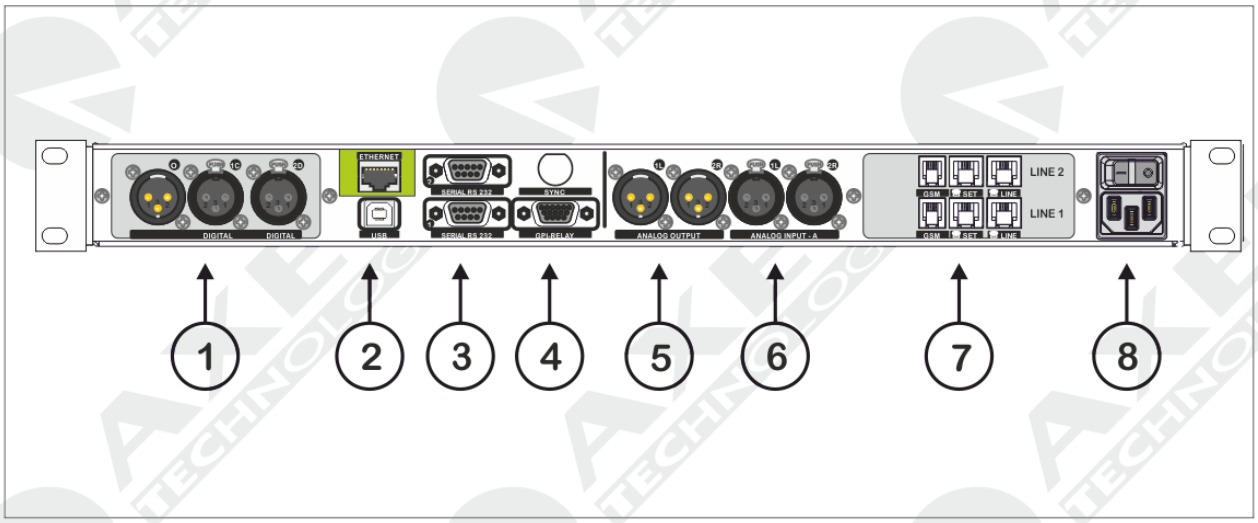
		- GPO Status  As regards the Opto Interface port pinout see the Appendix at the end of this manual. For the operation of each GPI and GPO see the specific section in the next pages of this manual.
5	**ANALOG OUTPUT**	Electronically balanced analog audio output of the second hybrid, on Balanced XLR connector, Mono type. The two connectors presents the same-same signal in outputs.
6	**ANALOG INPUT**	Input of telephone Hybrid, with electronically balanced XLR connection. This input is for the signal to be sent to the interlocutor via the telephone line. The signal must be of the Mix-Minus type.
7	**LINE-1** **GSM-SET-LINE**	Double RJ11 6/4 connector to connect the PSTN/POTS telephone line to the telephone Hybrid n°2 (LINE socket) and to connect a telephone device in parallel to the hybrid (SET) used, for example to dial the number to call or to answer an incoming call. The GSM connector is a connector for audio interface with external GSM device for telephone Hybrid n°1. The pinout of this connector cam be found in the technical appendix of this manual.
8	**POWER SUPPLY UNIT**	Switch with on/off light. The switch-power socket unit is fitted with a fuse drawer that contains the power supply fuse and a spare one with the same characteristics: a retarded 2000 mA for 230V mains voltage.

10.3 PHONEX D2 FRONT PANEL



N°	NOME CONTROLLO	FUNZIONE
1	**DISPLAY LCD**	LCD Display that shows the status and operating mode of PhoneX-D1. The technical parameters of each menu are displayed here
2	**JOG-SHUTTLE**	Knob (or JogShuttle) to access the various navigation menus and make changes. Press the JogShuttle to confirm selection.
3	**“ESC” BUTTON**	Press this key to delete the changes made or exit the selected menu
4	**“HOOK-1” BUTTON**	Line hook/unhook key. The Hook LED inside the key flashes when there is an incoming call and remains switched on when the line is hooked. NOTE: the LED only switches on when the telephone line is connected to the ‘LINE’ socket of the hybrid device.
5	**“HOOK-2” BUTTON**	Line hook/unhook key. The Hook LED inside the key flashes when there is an incoming call and remains switched on when the line is hooked. NOTE: the LED only switches on when the telephone line is connected to the ‘LINE’ socket of the hybrid device.

10.4 PHONEX D2 REAR PANEL



N°	NOME CONTROLLO	FUNZIONE
1	**DIGITAL I/O**	Digital AES3/EBU audio input on balanced XLR connector with 110Ω impedance. Digital AES3/EBU audio output on balanced XLR connector with 110Ω impedance, in PhoneX D2 the inputs are divided as following: 1C – Hybrid 1 Input 2D – Hybrid 2 Input
2	**“USB” PORT** **+** **ETHERNET PORT** ***(opz)***	PhoneX D2 allows to be connected to PC via USB port. Before connect the USB A/B from the PC to the PhoneX D2, please install the Axel Telephone Hybrid Remoter that install also the USB driver into the OS. PhoneX D2 is fitted with an Rj45 Ethernet port to monitor and control the device. This port can also be used to control the Web Browser and as SNMP agent.*(optional)*
3	**SERIAL 1 – RS232** **SERIAL PORT -1**	PhoneX D2 provides up to 2 serial ports to control the device via remote control software. The Axel Telephone Hybrid Remoter control software can be used to change the operating parameter, while PhoneX Address Manager can be used to set the values of the TCP/IP card, the Target Name (or device name) and the access password for SNMP communication. The Target ID can also be set and the Front panel locked. Serial Port 1 can also be used to **reprogram the firmware** and to connect the device to an external **56K analog modem** (for remote control using the phone line). Default port speed is set at 38,400bps
4	**“GPIO” PORT**	

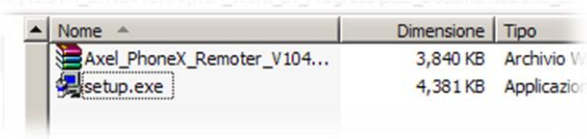
		Interface with 15 pin female HD SubD connector. Determines the PhoneX D2 logic status via the GPOut open collector, while it provides the PhoneX D2 command via GPIn, thanks to the opto couplers installed. The PhoneX D2 status is also visible from the software panel on the right section of the software: **- GPI Status** **- GPO Status**  As regards the Opto Interface port pinout see the Appendix at the end of this manual. For the operation of each GPI and GPO see the specific section in the next pages of this manual.
5	**ANALOG OUTPUT**	Analog audio output electronically balanced over XLR connector. Type Mono. Over the connectors the outputs are: 1L = Hybrid Out -1 2R = Hybrid Out -2
6	**ANALOG INPUT -A**	Input of telephone Hybrid, with electronically balanced XLR connection. This input is for the signal to be sent to the interlocutor via the telephone line. The signal must be of the Mix-Minus type.
7	**LINE-1** **GSM-SET-LINE**	Double RJ11 6/4 connector to connect the PSTN/POTS telephone line to the telephone Hybrid n°2 (LINE socket) and to connect a telephone device in parallel to the hybrid (SET) used, for example to dial the number to call or to answer an incoming call. The GSM connector is a connector for audio interface with external GSM device for telephone Hybrid n°2. The pinout of this connector cam be found in the technical appendix of this manual.
7	**LINE-2** **GSM-SET-LINE**	Double RJ11 6/4 connector to connect the PSTN/POTS telephone line to the telephone Hybrid n°2 (LINE socket) and to connect a telephone device in parallel to the hybrid (SET) used, for example to dial the number to call or to answer an incoming call. The GSM connector is a connector for audio interface with external GSM device for telephone Hybrid n°1. The pinout of this connector cam be found in the technical appendix of this manual.
8	**POWER SUPPLY**	Switch with on/off light. The switch-power socket unit is fitted with a fuse drawer that contains the power supply fuse and a spare one with the same characteristics: a retarded 2000 mA for 230V mains voltage.

11 INSTALLATION AND USE OF THE CONTROL SOFTWARE

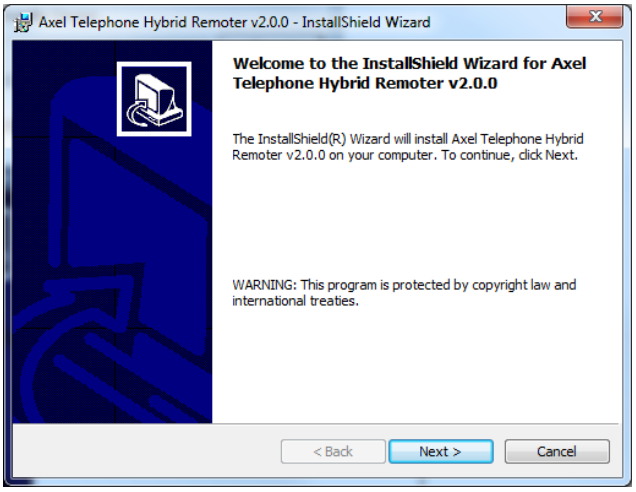
The installation procedure of the PhoneX D1 and PhoneX D2 control software is described below. The program runs on all Windows platforms, including Windows Xp sp3, Windows Vista and Windows 7 32-bit and Windows 7 64-bit and Windows 8 Pro 64bit. The control software must be installed before connecting the devices to the USB port. To install the program follow the instructions below using the program file from the original CD contained in the package with the device, or the file downloaded from the Axel Technology website.

1. Insert the CD in the player
2. Run SETUP.EXE

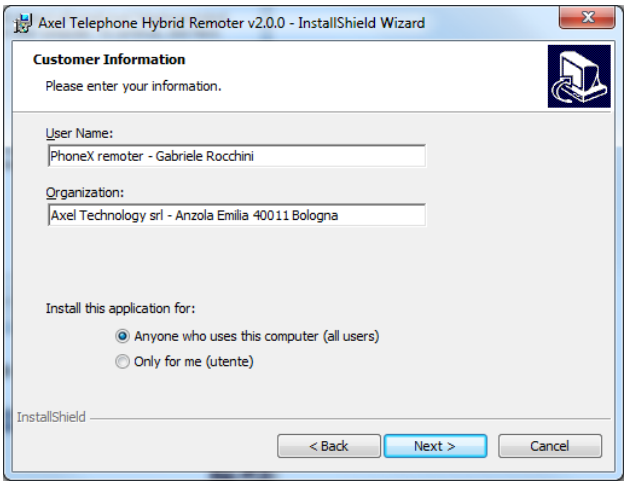
a. We recommend copying the program CD on the hard disk of the PC you are using and to run the program from the hard disk. The following InstallShield Wizard page will appear



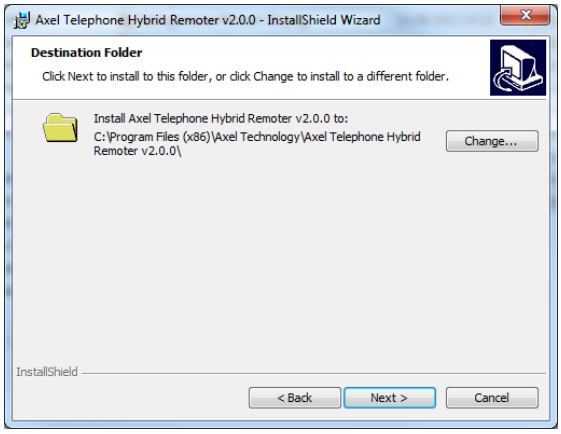
3. The following page will be displayed; click NEXT

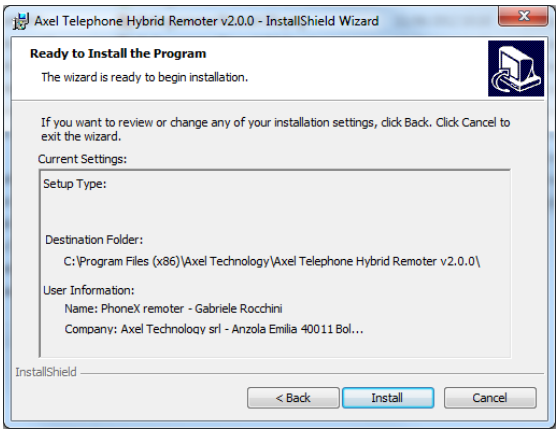


4. Enter user information:

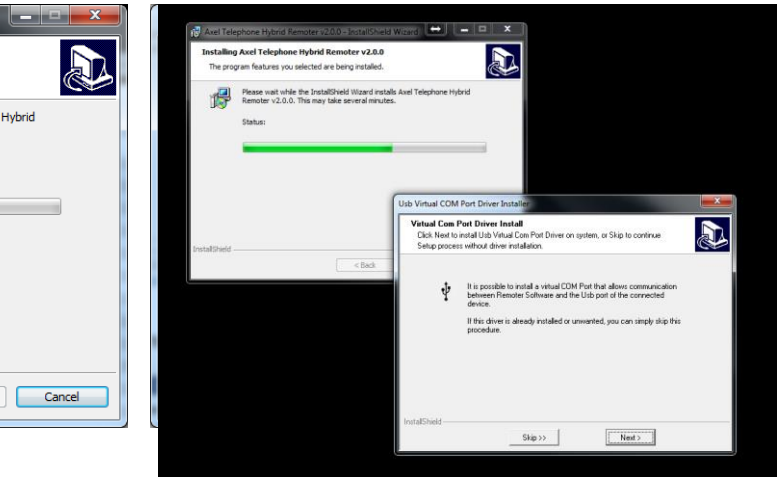


5. Select a destination folder or leave folder unchanged, click NEXT and then INSTALL

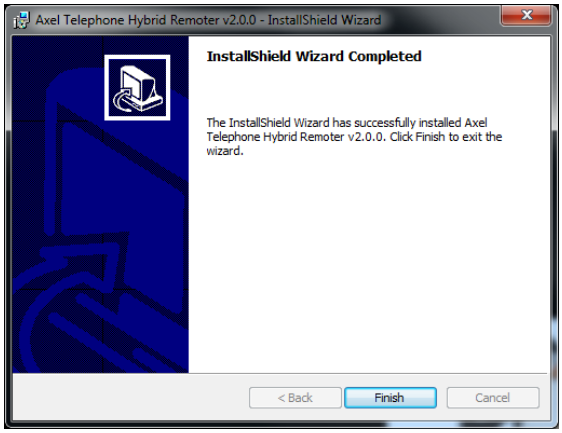




6. The software will start the installation of the program on the PC; when complete the following page will be displayed



7. Click FINISH to end the installations; two new icons with the Falcon Three SDI TV picture will appear on the desktop and in the program list. The two icons refer to the programs:



a. Axel Telephone Hybrid Remoter v2.0.x
b. Axel Telephone Hybrid Address Manager v2.0.x

8. At this point the programs can be used to manage the PhoneX device. The following chapters describe the connection procedures and product potential.

12 USE OF THE PHONEX ADDRESS MANAGER SOFTWARE

The PhoneX Address Manager software assigns a TCP/IP address, the relevant Subnet Mask, a Gateway and a port to PhoneX. This is obtained using the PC's serial port on which PhoneX Address Manager is installed and the **SERIAL-1** port of the PhoneX device. The following screen will appear when you open the program:

The PhoneX Address Manager is still disconnected from the PhoneX device, in fact the values of the Ethernet port are still grey. Click **CONNECT** to connect the PC to PhoneX; the Ethernet port values will show on the PhoneX Address Manager of PhoneX. The default values of the COM port are

38.400bps 8-N-1

If the USB port is used to connect the device, it must be selected the COMx (VCOM USB PORT) that is the virtual COM to USB port.

Once the PhoneX Address Manager has been connected to PhoneX the Ethernet port values are displayed. To change these values position the cursor in the relevant fields and enter the port data, then click
SEND DATA to send the changes to PhoneX.

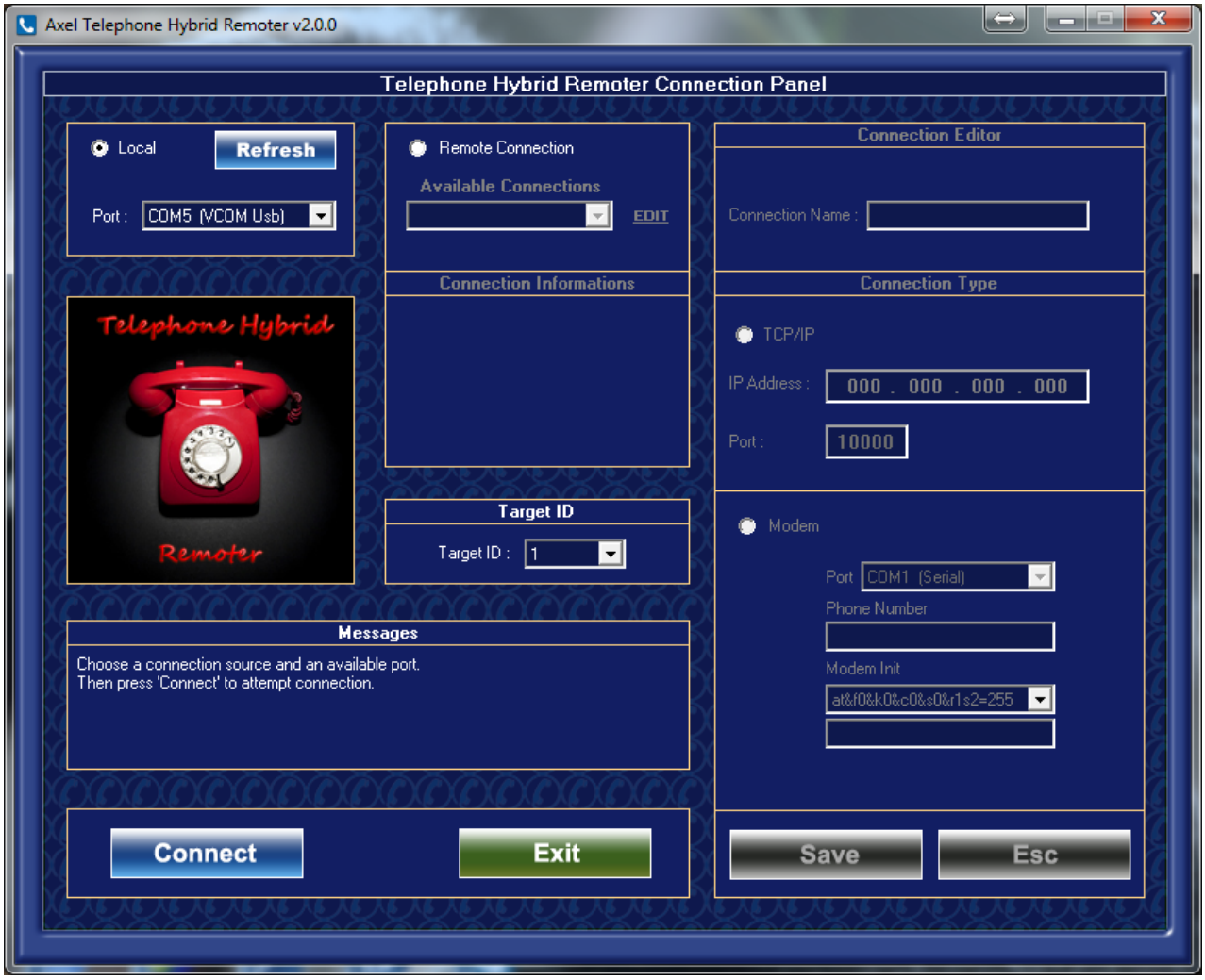
To check whether the changes have been made click ***RELOAD DATA***, which refreshes the program which then reads the port values again.

With this program it is possible to set the Read Password and Write Password of communication via the **SNMP** protocol. The default setting is:

Read Password: **public**
Write Password: **private**

Information concerning the device connected is available in the lower part of the software, above the command keys. Data such as the "***Connected Target***" is available; this shows the device model connected and the ***firmware release installed*** (v2.0.0). The ***Firmware Code*** is also shown, which indicates the univocal progressive number of the firmware and hardware installed on the device. This number could be required for an upgrade of the device or in the case of specific requirements or customisations..

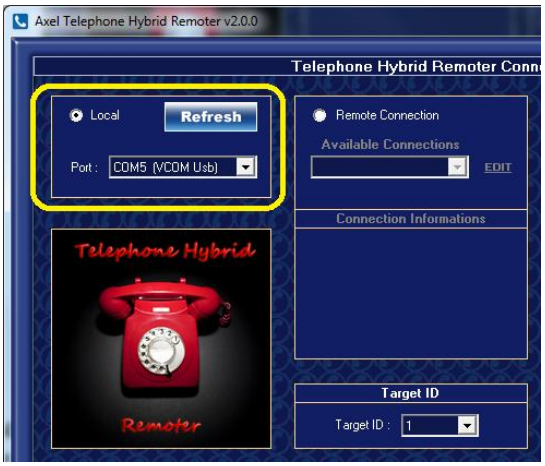
13 USE OF TELEPHONE HYBRID REMOTER



Start window of the PhoneX control software

13.1 ACCESS VIA SERIAL CONNECTION

To operate on the PhoneX, after having allocated the serial port and TCP/IP values it is necessary to use the PhoneX Remoter program by clicking the special icon. The window below shows the PhoneX and PC connection via Rs232 serial port.



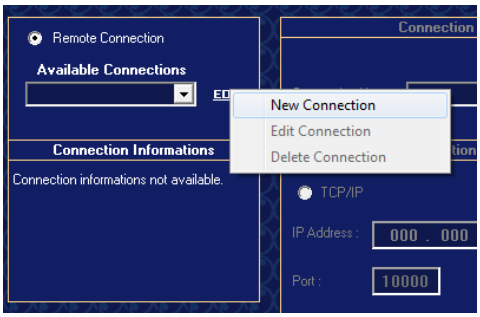
As can be seen, a USB connection is being used on the **COM5** port of the PC in use. The USB connection is the fastest one to set up; connect the Pin-to-Pin serial cable or the USB A/B cable supplied in the PhoneX box and click **CONNECT**; the control panel for the management of the device will appear. For a network connection (TCP/IP) see the next chapter

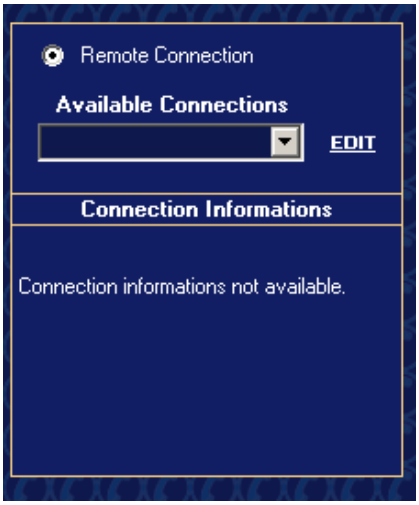
Click Connect to establish a communication between the PhoneX Remoter and PhoneX; all the information concerning the device's memory, status and operating mode is displayed. The control panel will change format and display all the necessary controls to operate the device. The various controls are explained in detail in the next chapters

13.2 ACCESS VIA TCP/IP CONNECTION

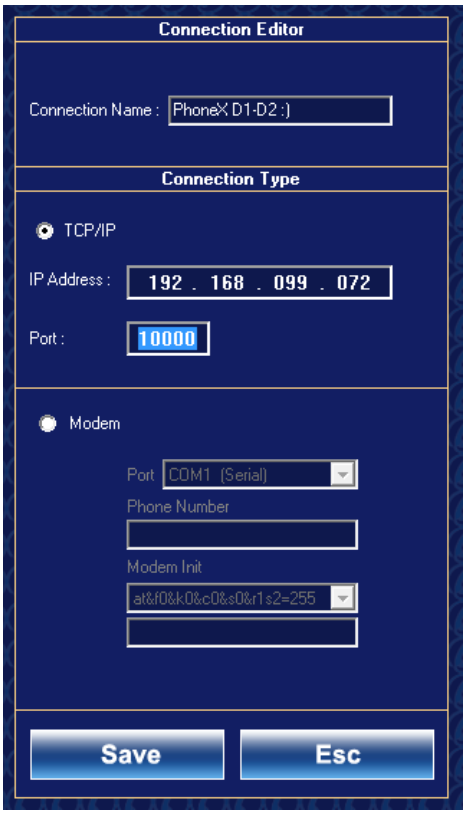
To access and manage the device via TCP/IP follow the simple instructions below. Unlike a serial connection, a TCP/IP connection is extremely useful when more than one unit must be managed. In this way it is possible to connect to PhoneX devices and manage each one in remote mode from one single point.

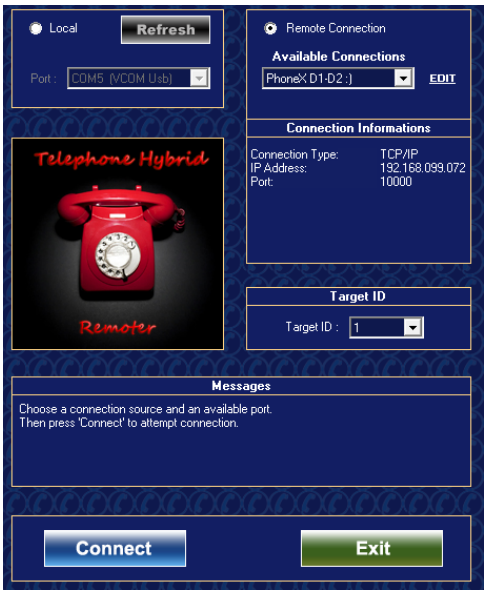
1. Click "*Remote Connection*"
2. Click "**EDIT**"
3. A menu will appear with "**New Connection**" or "**Edit Connection**" or "**Delete Connection**"





4. Select "**New Connection**" and the "Connection Editor" will appear in lighter colour; this can be used to select the **TCP/IP** or Modem connection and set the Connection Name
5. Select a name in the Connection Name field, and select TCP/IP; in the empty fields enter the IP and the port (default 10000) to assign to the PhoneX device
6. Click **SAVE**
7. Nella parte centrale comparirà la connessione salvata con il relativo Connection Name, e nella parte Connection Informations sarà possibile visualizzare a display sia la tipologia di connessione (TCP/IP o Modem) che l'indirizzo IP e la Porta.
8. To access the device via the **TCP/IP** connection simply click **CONNECT**





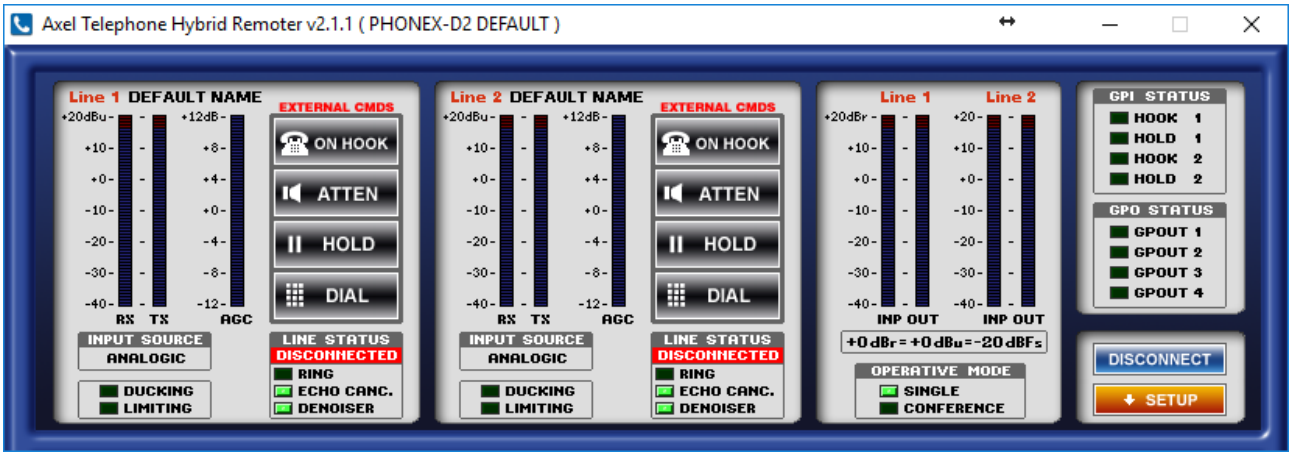
14 MANAGE PHONEX D1 AND PHONEX D2 VIA SOFTWARE

Axel Telephone Hybrid Remoter is a program to manage and control PhoneX both locally (via serial connection) and remotely via TCP/IP connection. As regards the monitoring functions, the front panel also shows the Send and Receive levels and primary functions such as line hook, ducking, attenuation and hold.

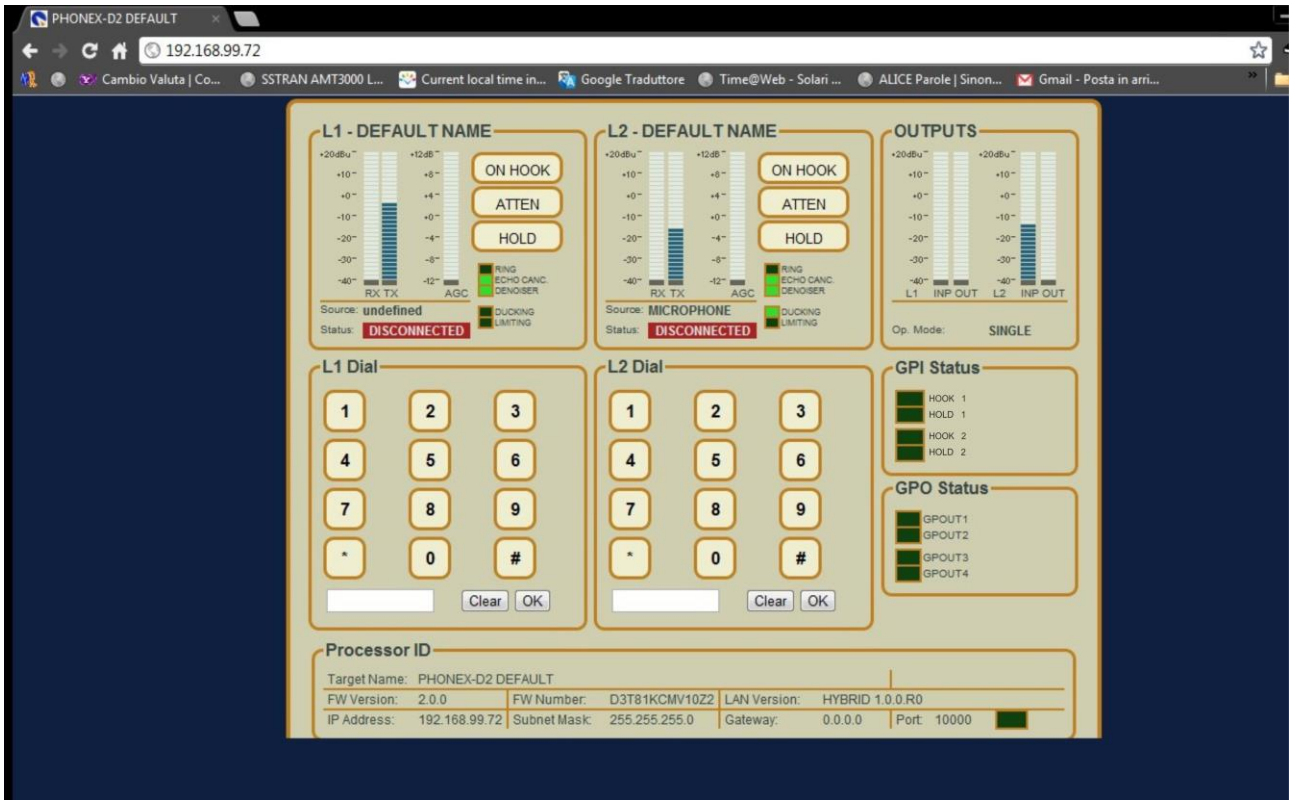
Once the software is connected, the PhoneX D1 or PhoneX D2 mainscreen look like the following one:

PhoneX D1

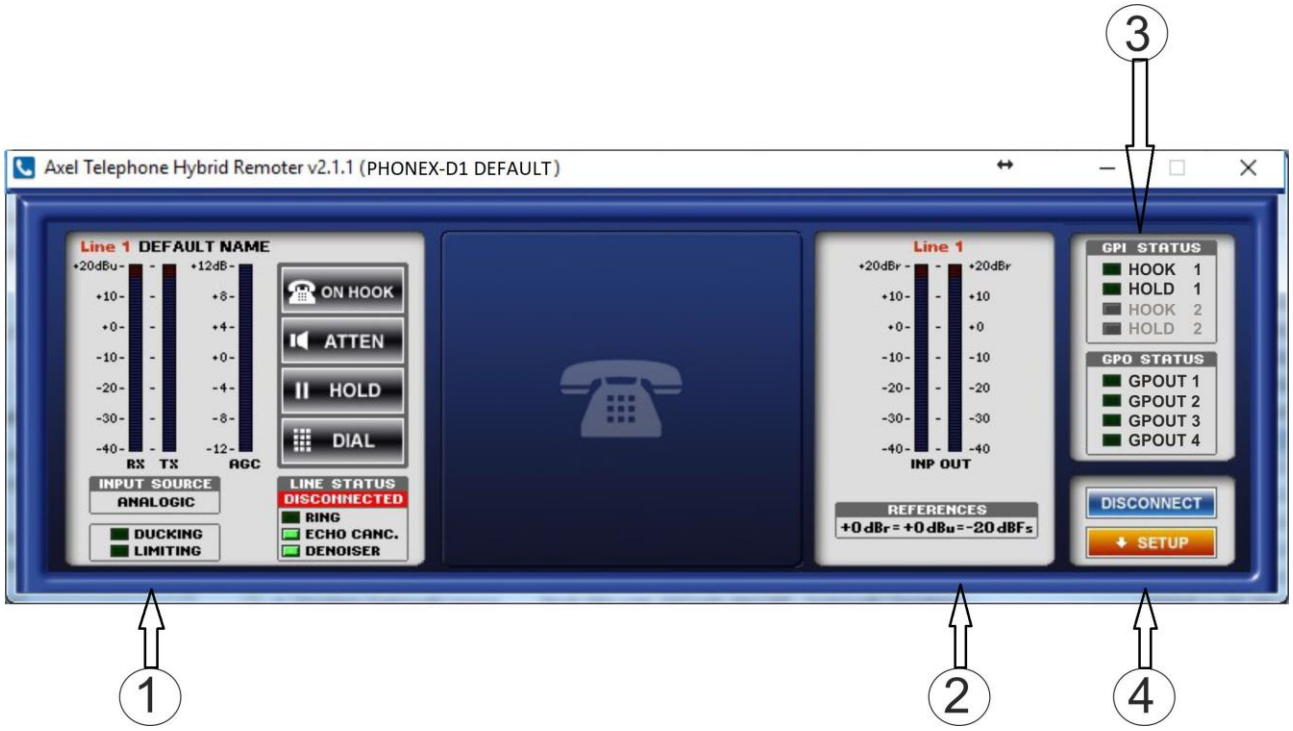
PhoneX D2



A Web Server is also available inside the device to display data via Web browser, such as Mozilla, Internet Explorer or Google Chrome. Once you have accessed the PhoneX device the following screen will appear:



15 TELEPHONE HYBRID REMOTER DETAIL

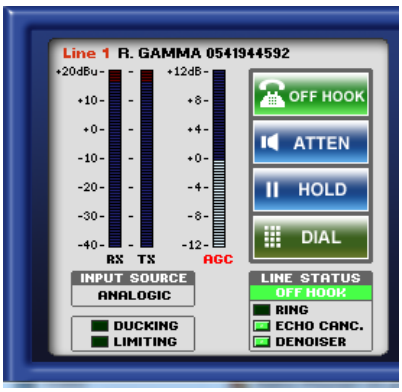


15.1 PHONEX D1 CONTROL SOFTWARE DESCRIPTION

The PhoneX D1 control software (Telephone Hybrid Remoter) is basically divided into 4 parts:

1. **Hybrid 1** section
2. **Levels** section
3. **GPI / GPO status** section
4. **Setup** & **Disconnect** section

15.2 HYBRID 1 SECTION



The "*Hybrid 1 Section*" features a series of operating and monitoring controls relating to the first telephone hybrid connected to a PSTN/POTS line.

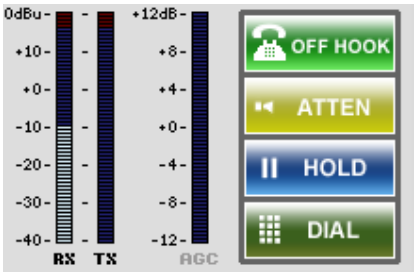
The monitoring part concerns the Receive and Send levels and shows whether PhoneX is in Ducking and Limiting operating mode; it also shows the line status, ring, echo canceller and if the denoiser is active.

As regards device operation, the controls available are:

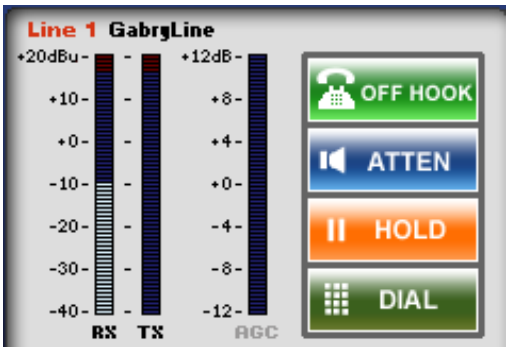
ON HOOK – ATTEN – HOLD – DIAL

ON HOOK: in this status PhoneX can hook an incoming call or open the telephone line. Upon receipt of a call the LED of the incoming call flashes and the PhoneX Remoter displays the RINGING Line Status for the hybrid with the incoming call. The relevant RING LED lights up in the GPO Status and Line Status sections. The relevant relay of the Opto Interface Hybrid communication port closes. See the appendix at the end of this manual for the pinout and connections.
To end a call press OFF HOOK.

ATTEN: when ATTEN is pressed via software or via GPIn connection, a dB reduction equal to the Ducking value set in the control software is applied to the Receive signal:



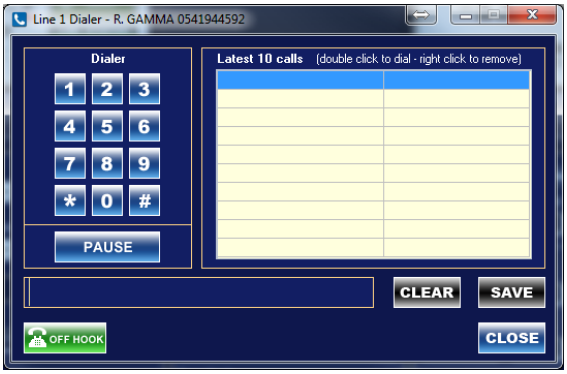
HOLD: when HOLD is pressed via software the Receive volume is taken to –infinity without closing the call.



DIAL: when DIAL is pressed the DTMF dialler opens. Dial the number using the numerical keyboard of your PC and then click ON HOOK. In this way the DTMF dials the number to be called on the telephone line. The Latest 10 Calls section displays the last ten calls; click SAVE to permanently save a telephone number. To recall a number double click on it.

Use the right button of the mouse to delete a number (Delete Row #1) or all the numbers(Delete All) from the list of the Latest 10 calls.

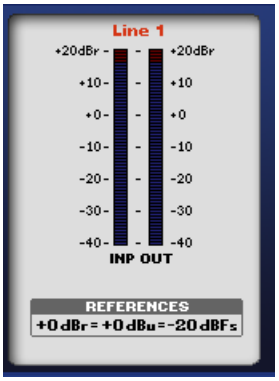
The lower section displays the device statuses and any audio functions enabled.



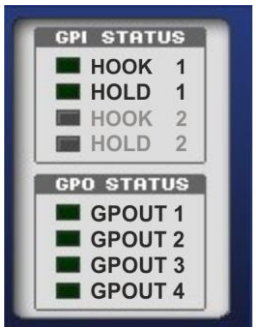
INPUT SOURCE: this shows which source is connected to the PhoneX input. Those available are: Analog, Digital Left, Digital Right and Microphone.
The section below the Input Source shows if the "*Limiting*" and "*Ducking*" controls are enabled. The Line Status section displays the status of the *Ring*, *Echo Canceller* and *Denoiser* controls.

15.3 LIVEL SECTION

In the Level area it is possible to see the Input Audio Level for PhoneX D1



15.4 GPIO STATUS SECTION



The GPI / GPO Status section shows the status of the General Purpose Input and Output status. The 25 pin female SubD port on the back of the device is used to connect the device; see the technical appendix for the connections and the pinout.

15.4.1 GPI status function

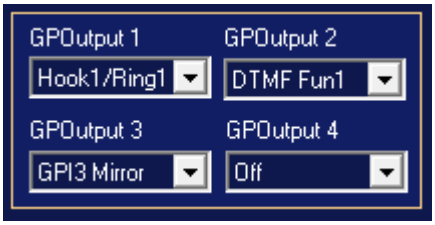
HOOK 1: this is used to hook, by means of a stable contact, the telephone line of Hybrid **1**; it is usually connected to the **TELCO (N-1)** modules of the Broadcast Mixing consoles that feature a **GPO** contact to answer incoming calls directly from the telephone fader.

HOLD1: The closure of this GPI, corresponds to the execution, by the PhoneX, of the **HOLD** command available via REMOTER control software or via web page; in other words "*a MUTE applied to the Receive signal*". A connection to the **GPOs** provided by the mixing consoles or by commands made available to the broadcast technician or director of a programme on air, if the audio received needs to be held.

HOOK 2: Not available in PhoneX D1, it looks like grey in the software below

HOLD2: Not available in PhoneX D1, it looks like grey in the software below

15.4.2 GPO status function



GPOUT 1: by using this monitor, it is possible to see when PhoneX D1 close a Gpout in the GPIO port. The GPOut is available via Open Collector, and further capabilities are available in the "Program Settings" and to each GPOut it is possible to associate some function, below explained:

OFF: take no action

Hook1: Once a phone calling is hooked, this Gpout stay closed for all the calling long, until the phone calling is closed.

Ring1: When a phone calling is coming (Ring) this GPout change its status. This one is generally connected to an optical alarm repeater, to shows the incoming call. This one is generally connected to Telco N-1 module in Broadcast console.

Hook2: Not available on PhoneX D1

Ring2: Not available on PhoneX D1

DTMF Fun1: when a DTMF signal is received composed by a string of N numbers, it can be associated a particular functionality thanks to the internal DTMF decoder.

GPI1 Mirror: Once the related GPI is closed this GPO closes.

Hook1/Ring1: In the same GPO you can have the hook and the ring.

Hook2/Ring2: Not available on PhoneX D1

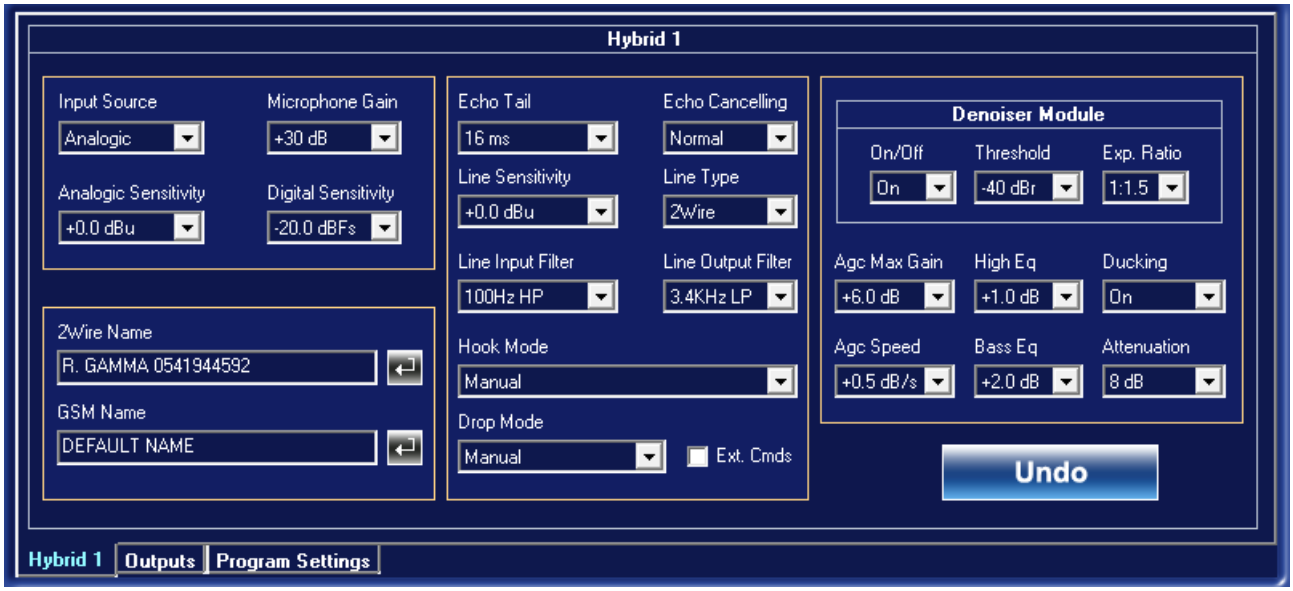
15.5 SETUP SECTION

The SETUP section is the most important area for the configuration of the PhoneX D1. From this section it is possible to configure all the operating modes of the Hybrids 1 (and Hybrids 2 in case of a PhoneX D2). The SETUP section is divided into four sub-menus:

1. **Hybrid 1**
2. **Hybrid 2 (only for PhoneX D2)**
3. **Outputs**
4. **Program Settings**

15.5.1 Hybrid 1 section

In this section all the parameters relating to the Telephone Hybrid 1 (*Hybrid 1*) can be set

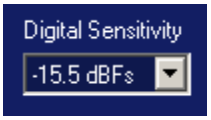


INPUT SOURCE: This is the input of the Hybrid 1, i.e. what is sent (SEND) to the telephone interlocutor. The options available are: Analog, Digital **Left**, Digital **Right** and Microphone. The sensitivity levels of each input are shown at the side and are identified as follows.

ANALOG SENSITIVITY: this is the sensitivity of the balanced analog input. Range of allowed values: from -12.0 dBu to a maximum of +12.0 dBu in 0.1 dBu steps.

DIGITAL SENSITIVITY: this is the sensitivity of the balanced AES3/EBU digital input. This sensitivity value is identical for Digital Left and Digital Right.
Range of allowed values: from -24.0 dBFs to a maximum of +0.0 dBFs in 0.1 dBFs steps.

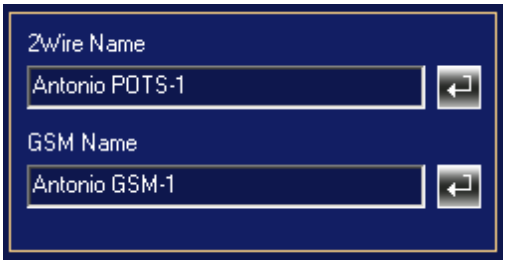
MICROPHONE SENSITIVITY: this is the sensitivity of the analog input (send) but with a higher input sensitivity: the analog audio signal amplification values allowed, range from +10dB to a maximum of +50.0 dBu in 1 dB steps. A +48V phantom power supply is not available for this input.

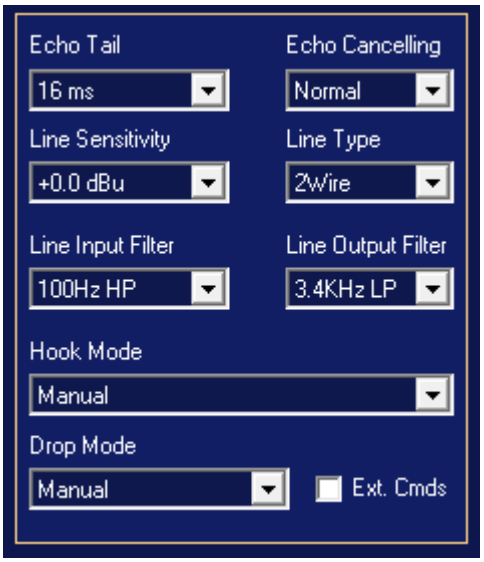


2Wire Name: this field is used to associate a *mnemonic* name to the 2Wire line, which is shown on the PhoneX front LCD panel. To modify the name change the field and press “Return”

GSM Name: this field is used to associate a *mnemonic* name to the GSM connected line, which is shown on the PhoneX front LCD panel.

These two “names” are important because they make it easy to recognise which line is connected to the Telephone Hybrid 1; in fact the POTS and GSM lines can both be used, but not at the same time.





Echo Tail: this is the value in ms of the Echo that is eliminated by the PhoneX DSP. It is used together with the **Echo Cancelling** command that controls the cancellation speed of the Echo on the telephone line. This parameter acts on an automatic variation filter to cancel the echo. The operating parameters self-adapt to the status of the line, of the input and output levels. The variable parameters are the maximum recoverable echo delay (16ms or 32ms) and the intervention modes (OFF, FAST, NORMAL, SLOW)

Hook Mode: this is the Telephone hybrid answering mode, which can range from **Manual,** i.e. Off-Hook (answer) only when a call is answered manually, to **Auto Off-Hook after n rings,** i.e. the automatic answering of the Telephone Hybrid after n rings. The number of rings available is: 1 – 2 – 3 – 4 – 5

Drop Mode: by using this control it is possible to close (Drop) a line in the moment the PhoneX recognize the *CPTD* or closing signal. The CPTD value is settable in the Program Settings -> "CPTD Characteristics" and after the "Country Line Setup"

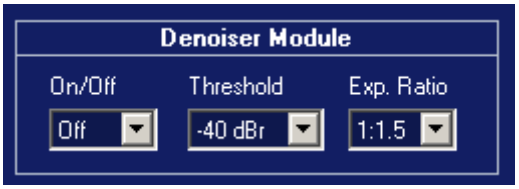
Line Sensitivity: this is used to adjust the input gain from the telephone line from -6dB ÷ +6dB.

Line Input Filter: this is a high-pass filter (HPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values:
from 100 Hz to 350 Hz in 50Hz/steps

Line Output Filter: this is a low-pass filter (LPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values: from 2.6 kHz to 5.0 kHz

Line Type: this command is used to select the telephone line to connect to the Telephone Hybrid. The PhoneX can be connected to a 2Wire POTS / PSTN line with RJ11 plug (two-wire) or to a Wireless line through the connection of an external **GSM** module. This command is used to select which line to use, **2Wire** or **GSM**. The **2Wire** line and the Wireless **GSM** line cannot be used at the same time on the same Telephone Hybrid.

Accept External Commands: by flagging this checkbox PhoneX is enabled to accept or not accept commands received on the GP In and GP Out (SubD 15p) ports.



Denoiser Module: this section is made up of three parameters On/Off, Threshold and Expander Ratio. ON/OFF activates or deactivates the Denoiser section of the DSP audio processing. The Threshold parameter is used to select the level above which the Denoiser module is triggered. The Expander Ratio is used to set the ratio of the sound dynamic expansion range in relation to the DSP Denoiser Module. Allowed values of the Denoiser Module:

- Enabling/Disabling (with hard-off bypass)
- Threshold: -60 dB ÷ -20 dB
- Expansion ratio: 1:1.0 ÷ 1:2.0 in 0.1 steps

AGC, EQ, DUCKING: Section made up of three parameters: AGC, Equaliser and Ducking/Attenuation.

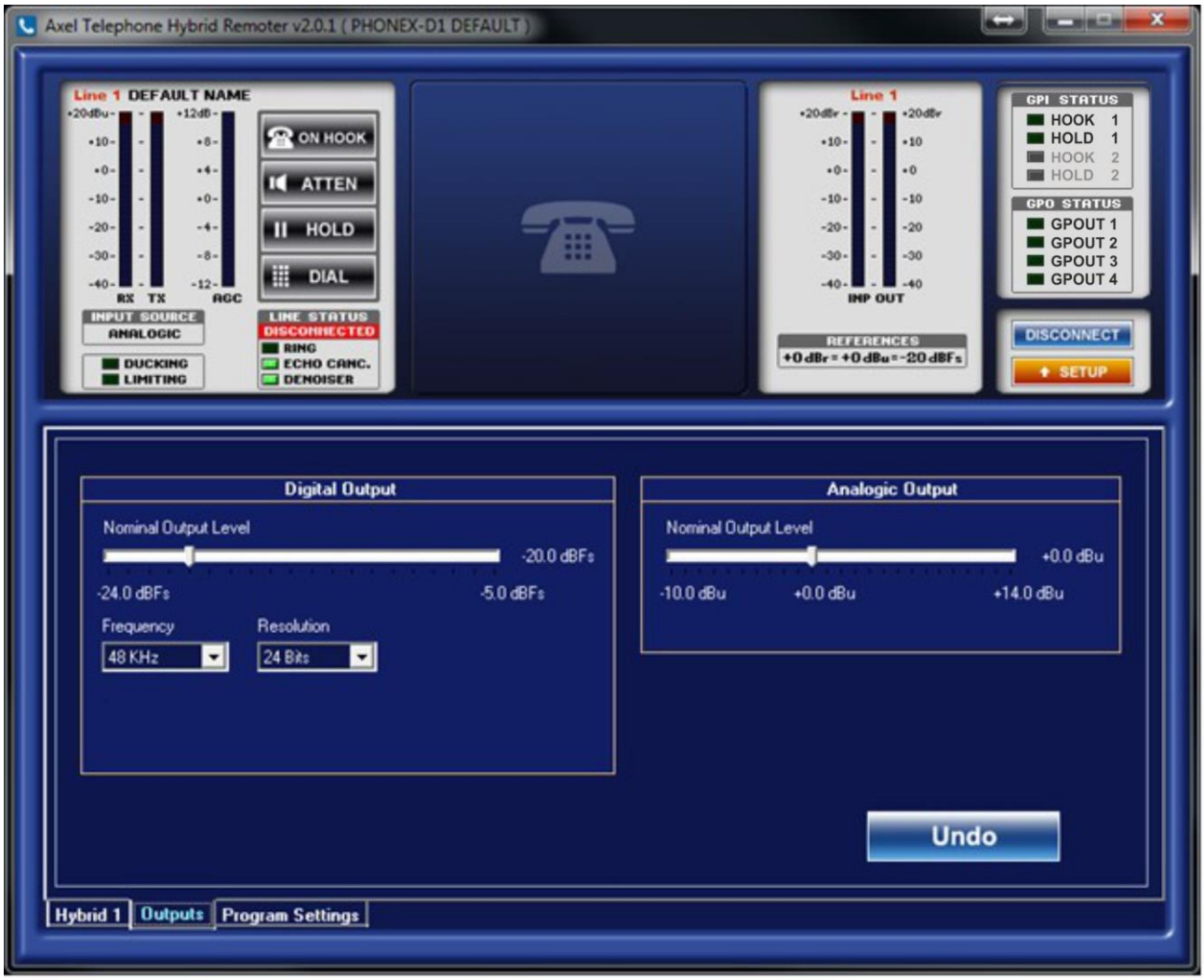
AGC & **AGC Speed**: this is the maximum gain value of the Automatic gain Control (AGC). The parameters that can be set are the maximum gain (from +1dB to +12dB) and the variation speed (from OFF (0dB/s) to 2dB/s, in 0.1 steps), i.e. by how many dB per second the signal level is increased (gain).

High Eq & **Bass Eq**: these two parameters act directly on the two-band equaliser inside the PhoneX audio processor. The gain that can be set ranges from +0.0dB to a maximum of +8.0dB. The equaliser frequencies are set at 300Hz Bass Eq and 2kHz High Eq.

Ducking & **Attenuation**: In this section the attenuation values can be adjusted from 1dB to 30dB. This section includes the ducking function (with On/Off action), which attenuates the input signal from the line of the value set in the **Attenuation** parameter, when the input level to the line is higher than the threshold set. Attenuation can be enabled or the interlocutor can be placed on "**HOLD**", which takes attenuation to -∞.
See the Special notes concerning Ducking/Conference between Hybrids to disable this parameter when the device is used in certain configurations.

UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel.

15.5.2 Outputs Section



This section includes the parameters to change the output operating mode. It is divided into two sections: Digital Output and Analog Output

DIGITAL OUTPUT

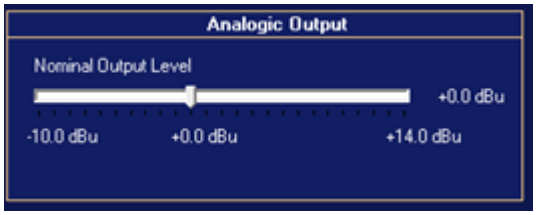
Nominal Output Level:
This parameter changes the nominal level of the AES/EBU output. Range of allowed values: from -24.0 dBFs to a maximum of -5.0 dBFs. This parameter can be used to change the digital output of Hybrid 1 and Hybrid 2.

Frequency: output frequency of the AES/EBU digital signal. Values allowed: 32kHz, 44.1kHz, 48kHz, 64kHz, 88.2kHz, 96kHz.

Resolution: parameter used to set the resolution of the AES/EBU output digital signal. Values allowed: 16bit, 20bit, 24bit.

ANALOG OUTPUT

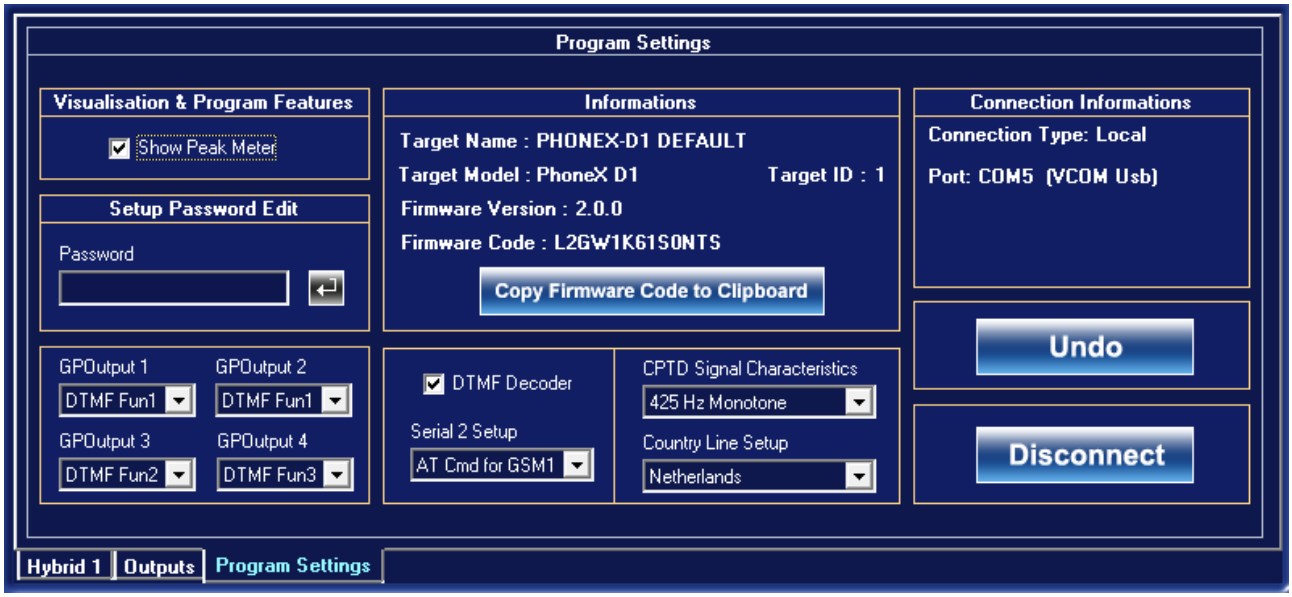
Nominal Output Level:
This parameter changes the nominal level of the Left + Right analog output. Range of allowed values: from -10.0 dBu to a maximum of +14.0 dBu.



UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel.

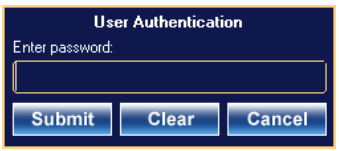
15.5.3 Program Settings Section

The Program Settings section shows all the functions of the PhoneX Remoter Control Software and of the PhoneX D1 device.



Visualisation and Program Features: The "Show peak meter" checkbox offers the possibility to see the peak meter on the levels section of the two Hybrids.

Setup Password: This field is used to enter an alphanumeric Password of maximum 8 digits, which is required to access the device Setup section. Enter the password and click Return. This password must be entered in the User Authentication box to access the Setup section. If you forget the password the device must be returned to the manufacturer in order to be used again. There are no backdoors and Axel Technology's Technical Assistance Service is not authorised
to instruct others to tamper with the device.



Information & Connection Information : This panel provides a summary of the PhoneX model in use, the name of the device, the firmware version installed on the DSP of the device and the univocal firmware code assigned to each single device. The Copy Firmware code to Clipboard key is used to save the Firmware code in the notebook, so that this alphanumeric code can be sent to Axel technology to execute Upgrades or improve the product. The Connection Information box shows the type of connection in use. It can be Serial or TCP/IP, and the IP and Port values are also shown.
.

Country Line Setup: Select the country in which PhoneX is installed from this list. This parameter is important for the configuration of the impedance set inside the PhoneX, which will change and adapt the input telephone line with the line provided in the country in which PhoneX is installed.

CPTD Signal Characteristics: the **Call Progress Tone Detector** it's a special PhoneX D1 feature that recognize if a phone calling is finished or not. Each country line has a different CPTD signal, please select from the available list of Charactheristic the correct one that belong to the country where the PhoneX D1 is installed

DTMF Decoder: by flag this checkbox the PhoneX D1 is allowed to recognize from the Line -1 a DTMF signal, and take action in case there is a setup for it.

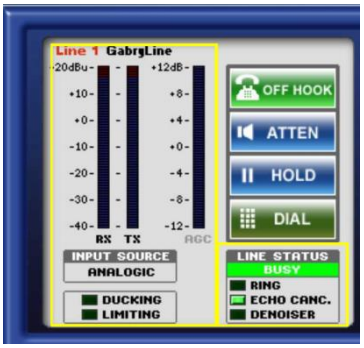
Serial2 Setup: this setup allows the PhoneX D1 to use the Serial -2 as a common Serial port or a port where the GSM module can be connected. In any case ASCII parser data can be sent to the PhoneX D1.

UNDO: press UNDO to reset the values set in the whole Hybrid 1 and Outputs section to the values set on the device before the opening of the control panel. The Disconnect key disconnects the device from the control software.

15.6 PHONEX CONTROL SOFTWARE DESCRIPTION

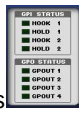
Phonex control software description
The PhoneX control software (PhoneX Remoter) is basically divided into 5 parts:

5. **Hybrid 1** section
6. **Hybrid 2** section
7. **Levels** section
8. **GPI / GPO status** section
9. **Setup** & **Disconnect** section



15.7 HYBRID 1 SECTION

The "*Hybrid 1 Section*" features a series of operating and monitoring controls relating to the first telephone hybrid connected to a PSTN/POTS line.



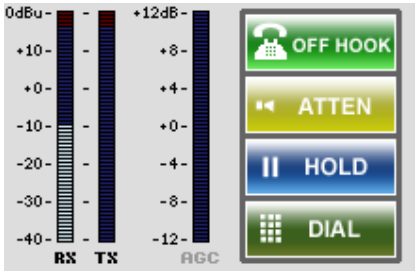
The monitoring part concerns the Receive and Send levels and shows whether PhoneX is in Ducking and Limiting operating mode; it also shows the line status, ring, echo canceller and if the denoiser is active.

As regards device operation, the controls available are:

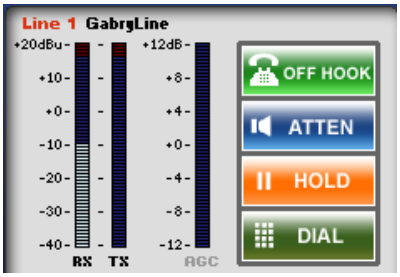
ON HOOK – ATTEN – HOLD – DIAL

ON HOOK: in this status PhoneX can hook an incoming call or open the telephone line. Upon receipt of a call the LED of the incoming call flashes and the PhoneX Remoter displays the RINGING Line Status for the hybrid with the incoming call. The relevant RING LED lights up in the GPO Status and Line Status sections. The relevant relay of the Opto Interface Hybrid communication port closes. See the appendix at the end of this manual for the pinout and connections.
To end a call press OFF HOOK.

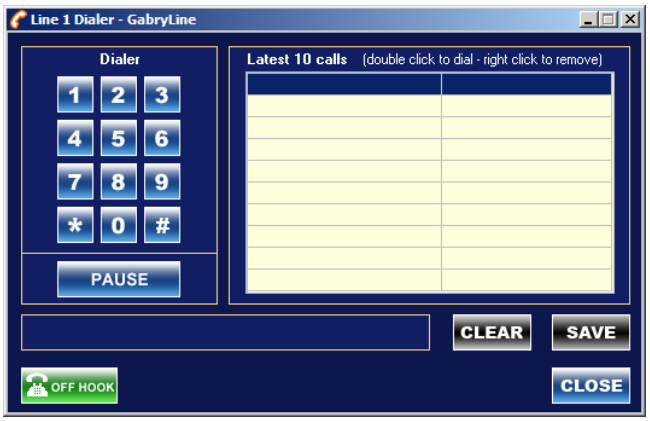
ATTEN: when ATTEN is pressed via software or via GPIn connection, a dB reduction equal to the Ducking value set in the control software is applied to the Receive signal.



HOLD: when HOLD is pressed via software the Receive volume is taken to –infinity without closing the call.

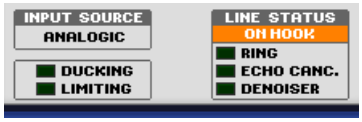


DIAL: when DIAL is pressed the DTMF dialler opens. Dial the number using the numerical keyboard of your PC and then click ON HOOK. In this way the DTMF dials the number to be called on the telephone line. The Latest 10 Calls section displays the last ten calls; click SAVE to permanently save a telephone number. To recall a number double click on it.



Use the right button of the mouse to delete a number (Delete Row #1) or all the numbers(Delete All) from the list of the Latest 10 calls.

The lower section displays the device statuses and any audio functions enabled.



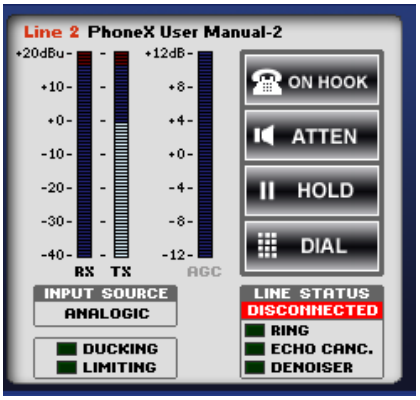
INPUT SOURCE: this shows which source is connected to the PhoneX input. Those available are: Analog, Digital Left, Digital Right and Microphone.
The section below the Input Source shows if the "*Limiting*" and "*Ducking*" controls are enabled. The Line Status section displays the status of the *Ring*, *Echo Canceller* and *Denoiser* controls.

15.8 HYBRID 2 SECTION

The Hybrid 2 section features the same controls as the Hybrid 1 section. As regards the Conferencing function the Hybrids can be enabled by accessing

Setup -> Outputs

and flagging "Conference"

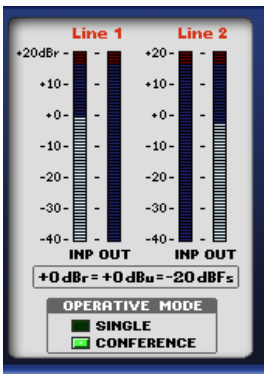


15.8.1 Special notes concerning Ducking/Conference between Hybrids

If more than one PhoneX device is connected in cascade to obtain up to 8 telephone lines, we recommend DISABLING the Ducking function on the various devices connected to each other in order to avoid unpleasant sound effects.

15.9 LEVELS SECTION

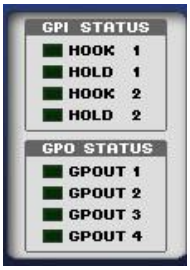
The levels section shows the PhoneX Input and Output levels of both telephone lines of each hybrid. The Operative Mode area shows whether the PhoneX device is operating in **SINGLE** mode, i.e. used as telephone hybrid for each single telephone line, or in **CONFERENCE**, i.e. sending to Telephone Hybrid 2 (*send*) what is received from Telephone Hybrid 1 (*receive*) and sending to Telephone Hybrid 1 (*send*) what is received from Telephone Hybrid 2 (*receive*).
In this mode an audio signal can always be sent via the **SEND** input to both interlocutors. The audio signal that comes, for example, from the **TELCO** channel of the mixer, which sends all the mixer console's audio signals, **WITHOUT** what arrives from the telephone channel, i.e. the **RECEIVE**. In this way an audio-loop with the telephone device is avoided.



15.10 GPI / GPO STATUS SECTION

The GPI / GPO Status section shows the status of the General Purpose Input and Output status. The 25 pin female SubD port on the back of the device is used to connect the device; see the technical appendix for the connections and the pinout.

15.10.1 GPI status function



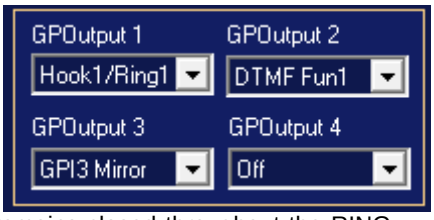
HOOK 1: this is used to hook, by means of a stable contact, the telephone line of Hybrid **1**; it is usually connected to the **TELCO (N-1)** modules of the Broadcast Mixing consoles that feature a **GPO** contact to answer incoming calls directly from the telephone fader.

HOLD1: The closure of this GPI, corresponds to the execution, by the PhoneX, of the HOLD command available via REMOTER control software or via web page; in other words *"a MUTE applied to the Receive signal"*. A connection to the GPOs provided by the mixing consoles or by commands made available to the broadcast technician or director of a programme on air, if the audio received needs to be held.

HOOK 2: this is used to hook, by means of a stable contact, the telephone line of Hybrid 2; it is usually connected to the **TELCO (N-1)** modules of the Broadcast Mixing consoles that feature a **GPO** contact to answer incoming calls directly from the telephone fader**.**

HOLD2: The closure of this GPI, corresponds to the execution, by the PhoneX, of the HOLD command available via REMOTER control software or via web page; in other words *"a MUTE applied to the Receive signal"*. A connection to the GPOs provided by the mixing consoles or by commands made available to the broadcast technician or director of a programme on air, if the audio received needs to be held.

15.10.2 GPO status function



HOOK 1: this is used to monitor the hooking of the telephone line of the Hybrid **1;** it is monitored through the display of the status via the remoter software and the web page and by means of the closure of a stable relay contact. It is usually connected to the **TELCO (N-1)** modules of the Broadcast Mixing console which provide a GPI input to display (by the lighting up of the relevant LED) the presence of an incoming call on the **TELCO** module.

RING1: the closure of this relay corresponds to the receipt of a telephone call. It remains closed throughout the RING phase and reopens when the alternated RING TONE phase ends. When the call is answered the RING ends and the HOOK1 relay contact is closed.

HOOK 2: this is used to monitor the hooking of the telephone line of the Hybrid 2**;** it is monitored through the display of the status via the remoter software and the web page and by means of the closure of a stable relay contact. It is usually connected to the **TELCO (N-1)** modules of the Broadcast Mixing console which provide a GPI input to display (by the lighting up of the relevant LED) the presence of an incoming call on the **TELCO** module**.**

RING2: the closure of this relay corresponds to the receipt of a telephone call. It remains closed throughout the RING TONE phase and reopens when the alternated RING TONE phase ends. When the call is answered the RING ends and the HOOK2 relay contact is closed.

DTMF Fun1: when a DTMF signal is received composed by a string of N numbers, it can be associated a particular functionality thanks to the internal DTMF decoder.

GPI1 MIRROR: Once the related GPI is closed this GPO closes.

HOOK1/RING1: In the same GPO you can have the hook and the ring.

HOOK2/RING2: In the same GPO you can have the hook and the ring.

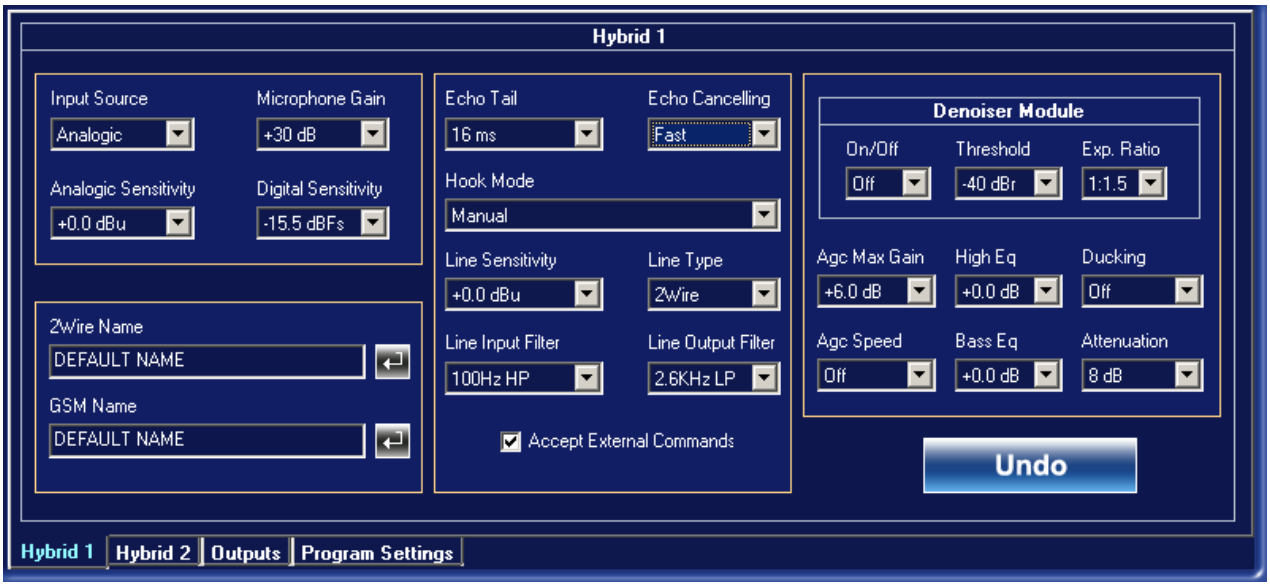
15.11 SETUP SECTION

The SETUP section is the most important area for the configuration of the PhoneX. From this section it is possible to configure all the operating modes of the Hybrids 1 and Hybrids 2. The SETUP section is divided into four sub-menus:

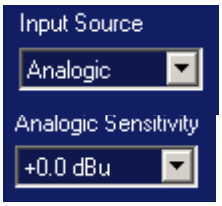
5. **Hybrid 1**
6. **Hybrid 2**
7. **Outputs**
8. **Program Settings**

15.11.1 Hybrid 1 section

In this section all the parameters relating to the Telephone Hybrid 1 (*Hybrid 1*) can be set



INPUT SOURCE: This is the input of the Hybrid 1, i.e. what is sent (SEND) to the telephone interlocutor. The options available are: Analog, Digital **Left**, Digital **Right** and Microphone. The sensitivity levels of each input are shown at the side and are identified as follows.



ANALOG SENSITIVITY: this is the sensitivity of the balanced analog input. Range of allowed values: from -12.0 dBu to a maximum of +12.0 dBu in 0.1 dBu steps.

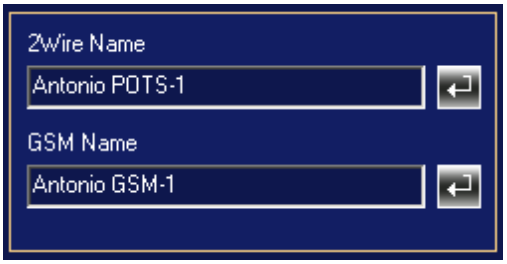
DIGITAL SENSITIVITY: this is the sensitivity of the balanced AES3/EBU digital input. This sensitivity value is identical for Digital Left and Digital Right.
Range of allowed values: from -24.0 dBFs to a maximum of +0.0 dBFs in 0.1 dBFs steps.

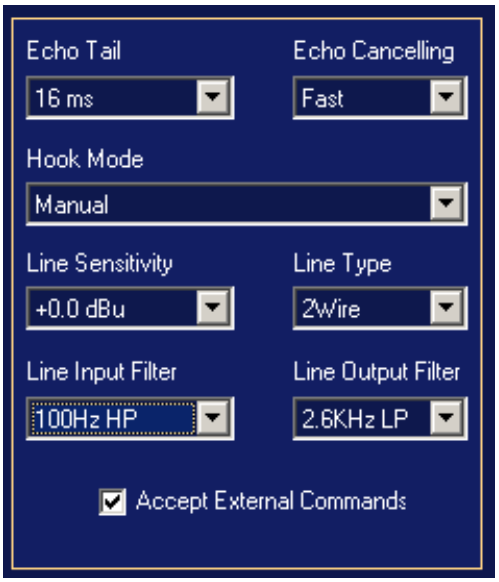
MICROPHONE SENSITIVITY: this is the sensitivity of the analog input (send) but with a higher input sensitivity: the analog audio signal amplification values allowed, range from +10dB to a maximum of +50.0 dBu in 1 dB steps. A +48V phantom power supply is not available for this input.

2Wire Name: this field is used to associate a *mnemonic* name to the 2Wire line, which is shown on the PhoneX front LCD panel. To modify the name change the field and press “Return”

GSM Name: this field is used to associate a *mnemonic* name to the GSM connected line, which is shown on the PhoneX front LCD panel.

These two “names” are important because they make it easy to recognise which line is connected to the Telephone Hybrid 1; in fact the POTS and GSM lines can both be used, but not at the same time.





Echo Tail: this is the value in ms of the Echo that is eliminated by the PhoneX DSP. It is used together with the **Echo Cancelling** command that controls the cancellation speed of the Echo on the telephone line. This parameter acts on an automatic variation filter to cancel the echo. The operating parameters self-adapt to the status of the line, of the input and output levels. The variable parameters are the maximum recoverable echo delay (16ms or 32ms) and the intervention modes (OFF, FAST, NORMAL, SLOW)

Hook Mode: this is the Telephone hybrid answering mode, which can range from **Manual,** i.e. Off-Hook (answer) only when a call is answered manually, to **Auto Off-Hook after n rings,** i.e. the automatic answering of the Telephone Hybrid after n rings. The number of rings available is: 1 – 2 – 3 – 4 – 5

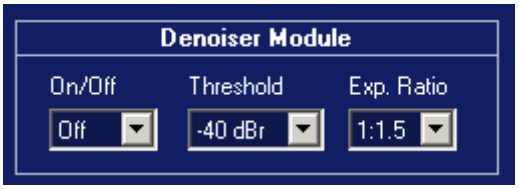
Line Sensitivity: this is used to adjust the input gain from the telephone line from -6dB ÷ +6dB.

Line Input Filter: this is a high-pass filter (HPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values:
from 100 Hz to 350 Hz in 50Hz/steps

Line Output Filter: this is a low-pass filter (LPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values: from 2.6 kHz to 5.0 kHz

Line Type: this command is used to select the telephone line to connect to the Telephone Hybrid. The PhoneX can be connected to a 2Wire POTS / PSTN line with RJ11 plug (two-wire) or to a Wireless line through the connection of an external **GSM** module. This command is used to select which line to use, **2Wire** or **GSM**. The **2Wire** line and the Wireless **GSM** line cannot be used at the same time on the same Telephone Hybrid.

Accept External Commands: by flagging this checkbox PhoneX is enabled to accept or not accept commands received on the GP In and GP Out (SubD 25p) ports.



Denoiser Module: this section is made up of three parameters On/Off, Threshold and Expander Ratio. ON/OFF activates or deactivates the Denoiser section of the DSP audio processing. The Threshold parameter is used to select the level above which the Denoiser module is triggered. The Expander Ratio is used to set the ratio of the sound dynamic expansion range in relation to the DSP Denoiser Module. Allowed values of the Denoiser Module:

- Enabling/Disabling (with hard-off bypass)
- Threshold: -60 dB ÷ -20 dB
- Expansion ratio: 1:1.0 ÷ 1:2.0 in 0.1 steps

AGC, EQ, DUCKING: Section made up of three parameters: AGC, Equaliser and Ducking/Attenuation.

AGC & **AGC Speed**: this is the maximum gain value of the Automatic gain Control (AGC). The parameters that can be set are the maximum gain (from +1dB to +12dB) and the variation speed (from OFF (0dB/s) to 2dB/s, in 0.1 steps), i.e. by how many dB per second the signal level is increased (gain).

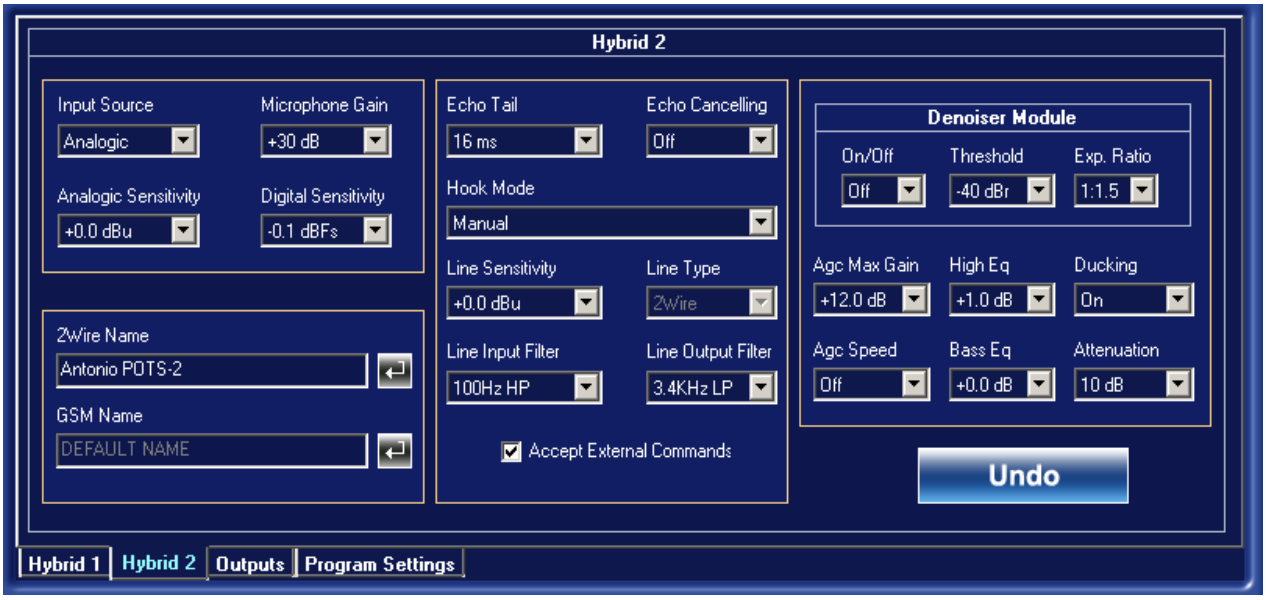
High Eq & **Bass Eq**: these two parameters act directly on the two-band equaliser inside the PhoneX audio processor. The gain that can be set ranges from +0.0dB to a maximum of +8.0dB. The equaliser frequencies are set at 300Hz Bass Eq and 2kHz High Eq.

Ducking & **Attenuation**: In this section the attenuation values can be adjusted from 1dB to 30dB. This section includes the ducking function (with On/Off action), which attenuates the input signal from the line of the value set in the **Attenuation** parameter, when the input level to the line is higher than the threshold set. Attenuation can be enabled or the interlocutor can be placed on "**HOLD**", which takes attenuation to -∞.
See the Special notes concerning Ducking/Conference between Hybrids to disable this parameter when the device is used in certain configurations.

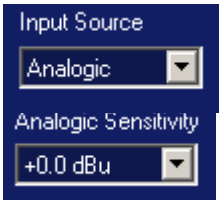
UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel.

15.11.2 Hybrid 2 section

In this section all the parameters relating to the Telephone Hybrid 2 (Hybrid 2) can be set



INPUT SOURCE: This is the input of the Hybrid 2, i.e. what is sent (SEND) to the telephone interlocutor. The options available are: Analog, Digital **Left**, Digital **Right** and Microphone. The sensitivity levels of each input are shown at the side and are identified as follows.



ANALOG SENSITIVITY: this is the sensitivity of the balanced analog input. Range of allowed values: from -12.0 dBu to a maximum of +12.0 dBu in 0.1 dBu steps.

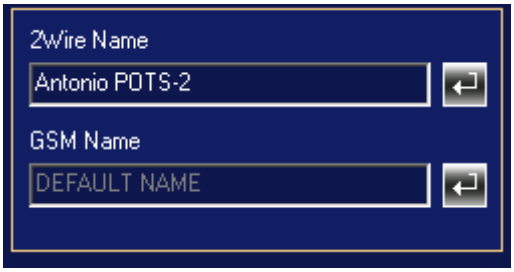
DIGITAL SENSITIVITY: this is the sensitivity of the balanced AES3/EBU digital input. This sensitivity value is identical for the Digital Left and Digital Right.
Range of allowed values: from -24.0 dBFs to a maximum of +0.0 dBFs in 0.1 dBFs steps.

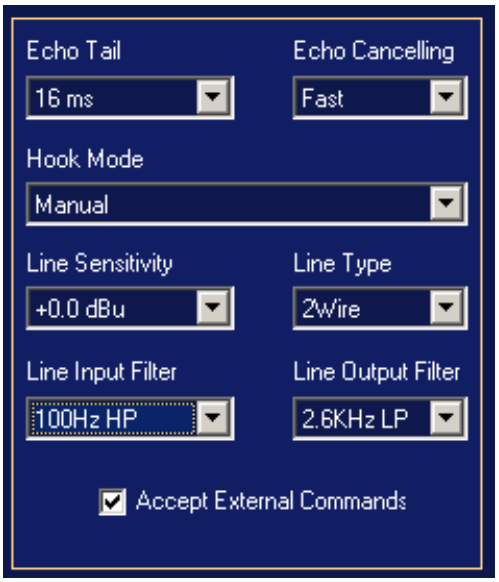
MICROPHONE SENSITIVITY: this is the sensitivity of the analog input (send) but with a higher input sensitivity: the analog audio signal amplification values allowed, range from g +10dB to a maximum of +50.0 dBu in 1 dB steps. A +48V phantom power supply is not available for this input.

2Wire Name: this field is used to associate a mnemonic name to the 2Wire line, which is shown on the PhoneX front LCD panel. To modify the name change the field and press “Return”

GSM Name: this field is used to associate a mnemonic name to the GSM connected line, which is shown on the PhoneX front LCD panel.

These two “names” are important because they make it easy to recognise which line is connected to the Telephone Hybrid 2; in fact the POTS and GSM lines can both be used, but not at the same time.





Echo Tail: this is the value in ms of the Echo that is eliminated by the PhoneX DSP. It is used together with the **Echo Cancelling** command that controls the cancellation speed of the Echo on the telephone line. This parameter acts on an automatic variation filter to cancel the echo. The operating parameters self-adapt to the status of the line, of the input and output levels. The variable parameters are the maximum recoverable echo delay (16ms o 32ms) and the intervention modes (OFF, FAST, NORMAL, SLOW)

Hook Mode: this is the Telephone hybrid answering mode, which can range from Manual, i.e. Off-Hook (answer) only when a call is answered manually, to Auto Off-Hook after n rings, i.e. the automatic answering of the Telephone Hybrid after n rings. The number of rings available is: 1 – 2 – 3 – 4 – 5

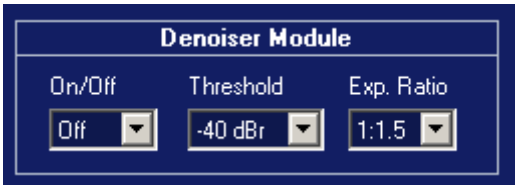
Line Sensitivity: this is used to adjust the input gain from the telephone line from -6dB ÷ +6dB.

Line Input Filter: this is a high-pass filter (HPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values:
from 100 Hz to 350 Hz in 50Hz/steps

Line Output Filter: this is a low-pass filter (LPf) placed on the telephone line in order to adapt and improve as much as possible the incoming audio of one's phone. Range of allowed values: from 2.6 kHz to 5.0 kHz

Line Type: this command is used to select the telephone line to connect to the Telephone Hybrid. The PhoneX can be connected to a 2Wire POTS / PSTN line with RJ11 plug (two-wire) or to a Wireless line through the connection of an external GSM module. This command is used to select which line to use, 2Wire or GSM. The 2Wire line and the Wireless GSM line cannot be used at the same time on the same Telephone Hybrid.

Accept External Commands: by flagging this checkbox PhoneX is enabled to accept or not accept command received on the GP In and GP Out (SubD 25p) ports.



Denoiser Module: this section is made up of three parameters On/Off, Threshold and Expander Ratio. ON/OFF activates or deactivates the Denoiser section of the DSP audio processing. The Threshold parameter is used to select the level above which the Denoiser module is triggered. The Expander Ratio is used to set the ratio of the sound dynamic expansion range in relation to the DSP Denoiser Module. Allowed values of the Denoiser Module:

- Enabling/Disabling (with hard-off bypass)
- Threshold: -60 dB ÷ -20 dB
- Expansion ratio: 1:1.0 ÷ 1:2.0 in 0.1 steps

AGC, EQ, DUCKING: Section made up of three parameters: AGC, Equaliser and Ducking/Attenuation.

AGC & AGC Speed: this is the maximum gain value of the Automatic gain Control (AGC). The parameters that can be set are the maximum gain (from +1dB to +12dB) and the variation speed (from OFF (0dB/s) to 2dB/s, in 0.1 steps), i.e. by how many dB per second the signal level is increased (gain).

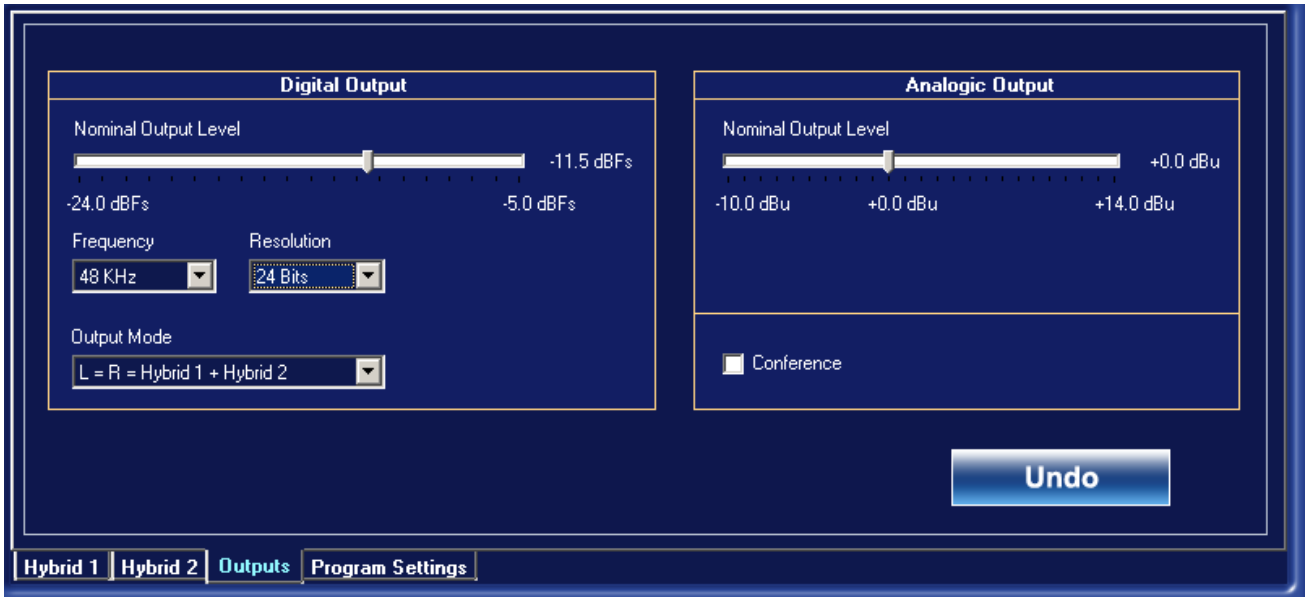
High Eq & Bass Eq: these two parameters act directly on the two-band equaliser inside the PhoneX audio processor. The gain that can be set ranges from +0.0dB to a maximum of +8.0dB. The equaliser frequencies are set at 300Hz Bass Eq and 2kHz High Eq.

Ducking & Attenuation: In this section the attenuation values can be adjusted from 1dB a 30dB. This section includes the ducking function (with On/Off action), which attenuates the input signal from the line of the value set in the Attenuation parameter, when the input level to the line is higher than the threshold set. Attenuation can be enabled or the interlocutor can be placed on "**HOLD**", which takes attenuation to-∞.
See the Special notes concerning Ducking/Conference between Hybrids to disable this parameter when the device is used in certain configurations.

UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel.

15.11.3 Outputs Section

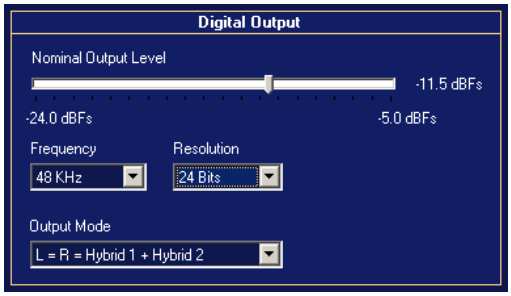
This section includes the parameters to change the output operating mode. It is divided into two sections: Digital Output and Analog Output



DIGITAL OUTPUT

Nominal Output Level:

This parameter changes the nominal level of the AES/EBU output. Range of allowed values: from -24.0 dBFs to a maximum of -5.0 dBFs. This parameter can be used to change the digital output of Hybrid 1 and Hybrid 2.



Frequency: output frequency of the AES/EBU digital signal. Values allowed: 32kHz, 44.1kHz, 48kHz, 64kHz, 88.2kHz, 96kHz.

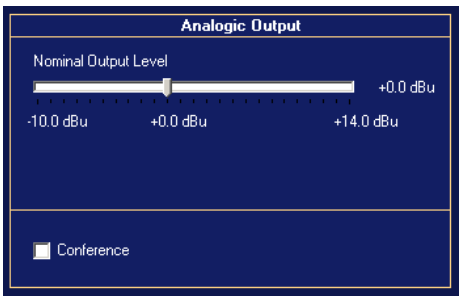
Resolution: parameter used to set the resolution of the AES/EBU output digital signal. Values allowed: 16bit, 20bit, 24bit.

Output Mode: in this box it is possible to select which of the two audio outputs from the two Hybrids must be sent to the AES/EBU output. The output of Hybrid 1 (L = R = Hybrid 1) or the output of Hybrid 2(L = R = Hybrid 2) can be equally sent on the Left and Right, or the two Hybrid can be summed (L = R = Hybrid 1 + Hybrid 2) to send to the AES/EBU digital output the sum of the two telephone Hybrids.

ANALOG OUTPUT

Nominal Output Level:

This parameter changes the nominal level of the Left + Right analog output. Range of allowed values: from -10.0 dBu to a maximum of +14.0 dBu. This parameter can be used to change the Left + Right analog output of Hybrid 1 and Hybrid 2.



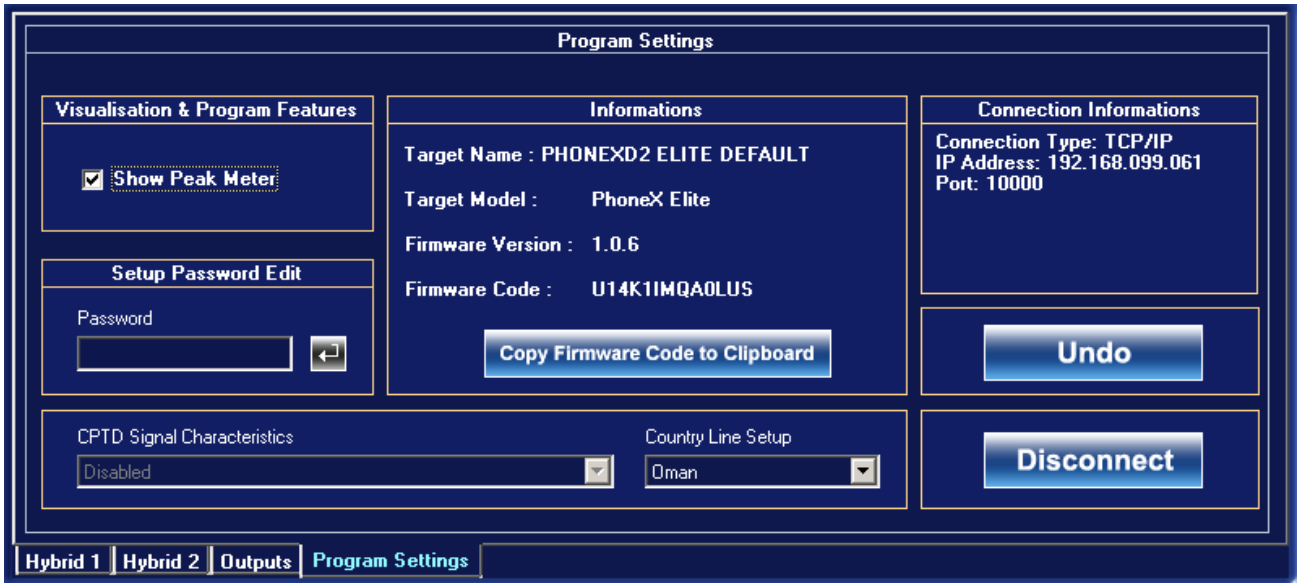
Conference: When this checkbox is flagged the conference operating mode is enabled. This mode foresees that the two Hybrids communicate with each other and that the sum of the outputs of the two Hybrids can be taken from the analog *Receive* output of Hybrid 1 or from the analog *Receive* output of Hybrid 2.

See the Special notes concerning Ducking/Conference between Hybrids to disable this parameter when the device is used in certain configurations.

UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel.

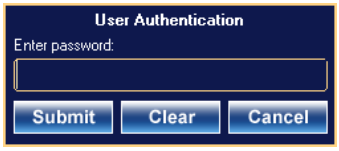
15.11.4 Program Settings Section

The Program Settings section shows all the functions of the PhoneX Remoter Control Software and of the PhoneX device.

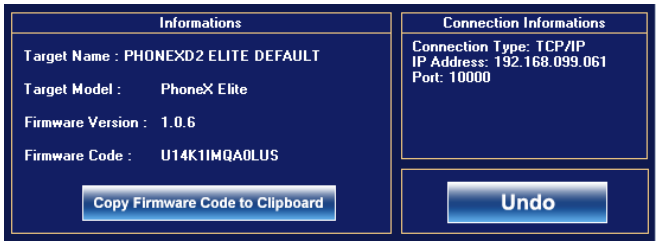


Visualisation and Program Features: The "Show peak meter" checkbox offers the possibility to see the peak meter on the levels section of the two Hybrids.

Setup Password: This field is used to enter an alphanumeric Password of maximum 8 digits, which is required to access the device Setup section. Enter the password and click Return. This password must be entered in the User Authentication box to access the Setup section. If you forget the password the device must be returned to the manufacturer in order to be used again. There are no backdoors and Axel Technology's Technical Assistance Service is not authorised
to instruct others to tamper with the device.



Information & Connection Information : This panel provides a summary of the PhoneX model in use, the name of the device, the firmware version installed on the DSP of the device and the univocal firmware code assigned to each single device. The Copy Firmware code to Clipboard key is used to save the Firmware code in the notebook, so that this alphanumeric code can be sent to Axel technology to execute Upgrades or improve the product. The Connection Information box shows the type of connection in use. It can be Serial or TCP/IP, and the IP and Port values are also shown.



Country Line Setup: Select the country in which PhoneX is installed from this list. This parameter is important for the configuration of the impedance set inside the PhoneX, which will change and adapt the input telephone line with the line provided in the country in which PhoneX is installed.

UNDO: press UNDO to reset the values set in the whole Hybrid 1, Hybrid 2 and Outputs section to the values set on the device before the opening of the control panel. The Disconnect key disconnects the device from the control software.

16 PHONEX CONNECTIONS

16.1 TELEPHONE HYBRID CONCEPT

The hybrid phone is a device capable of interfacing with a telephone line of audio lines. In practice, the audio signals sent toward the hybrid are received from the phone, and vice versa.

The telephone hybrid is widely used in radio and television, as it allows you to create simple audio connections with remote locations in a very low cost. The signal coming from the telephone hybrid is run like a normal audio source.

The hybrids telephone operating in accordance with the principle of separation of the impedance, filtering also the power supply to 60V normally present on telephone lines.

In its simplest form, the hybrid is conceptually an acoustic coupler, ie a device that picks up acoustically signals from the handset. However a hybrid phone is in reality an apparatus more complex, capable of interfacing directly with the telephone line and to carry out the separation necessary to avoid interference. Hybrid complex manage multiple phone lines and can route the audio signals of a line to the other, thus creating a conference call, see how CONFERENCE of Macrotel and Phonex.

16.2 TELCON, N-1 AND MIX-MINUS CONCEPT

Fundamental part of the use of a telephone hybrid, is the knowledge and the proper use of the system TELCO, also called Clean Feed CF, or N-1 and / or mix minus.

All these terms identify the condition below:

The expression n-1 indicates, in professional audio, the audio return signal that is sent from the studio to one or more remote sources, such as a telephone hybrid. This signal is also often called back audio, RX or, in English, mix-minus.

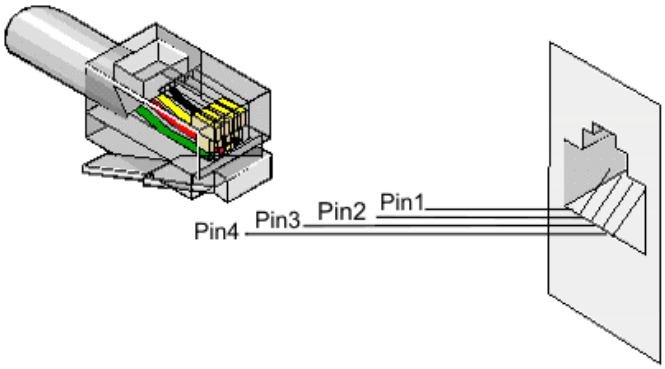
The expression n-1 refers to the notation of the principle of complete recurrence of Henri Poincaré, n +1, and showing the mix of all the audio signals of the study less than that received from the remote unit. From the conceptual point of view, then the remote unit receives back an audio signal that includes the entire product of the study unless itself.

Distancing a bit 'by theory, the n-1 is often a unique signal to all the remote units of a single program. A custom widespread provides for the generation of two or three returns, assigned on the basis of which remote units need to interact with each other: with the same n-1, in fact, two units are not able to hear each other. Sometimes, the return audio is simply an auxiliary audio mixer to which are assigned to the signals to be sent to the remote unit, obtaining a signal that is usable as a return but that is not technically a n-1 (see next capitol)

16.3 CONNECTION TO THE POTS / PSTN TELEPHONE LINE

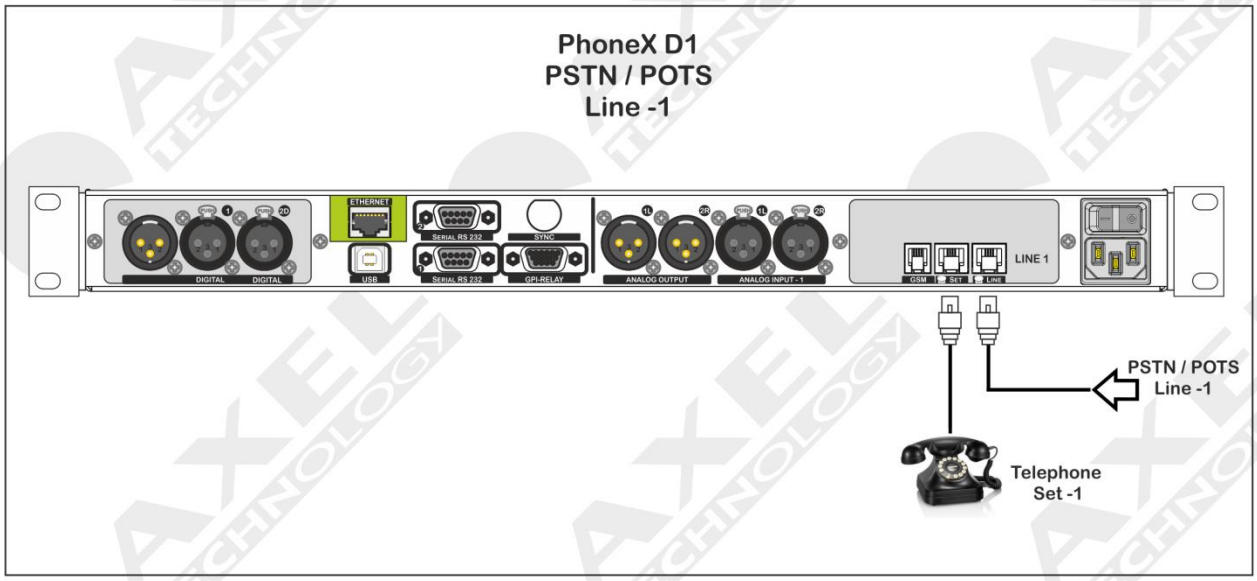
⚠	**CHECK that this device is connected to POTS / PSTN lines (analog)**
⚠	**DO NOT CONNECT this device to digital telephone lines**
⚠	**DO NOT CONNECT this device to ADSL lines, even if fitted with filter.**
⚠	**To avoid any type of hum at 50 Hz and to comply with EMC requirements, the device must be connected to earth by means of the earthing screw on the rear panel or via the power supply cable.**
⚠	**This equipment must be indirectly connected to the telephone network (i.e. through a switchboard). The user shall be solely responsible for the direct connection to the public telephone network.**

The RJ11 connector has 4 wires, but only the two central contacts are used (usually the Red and Green wires – pin 2 and pin 3).

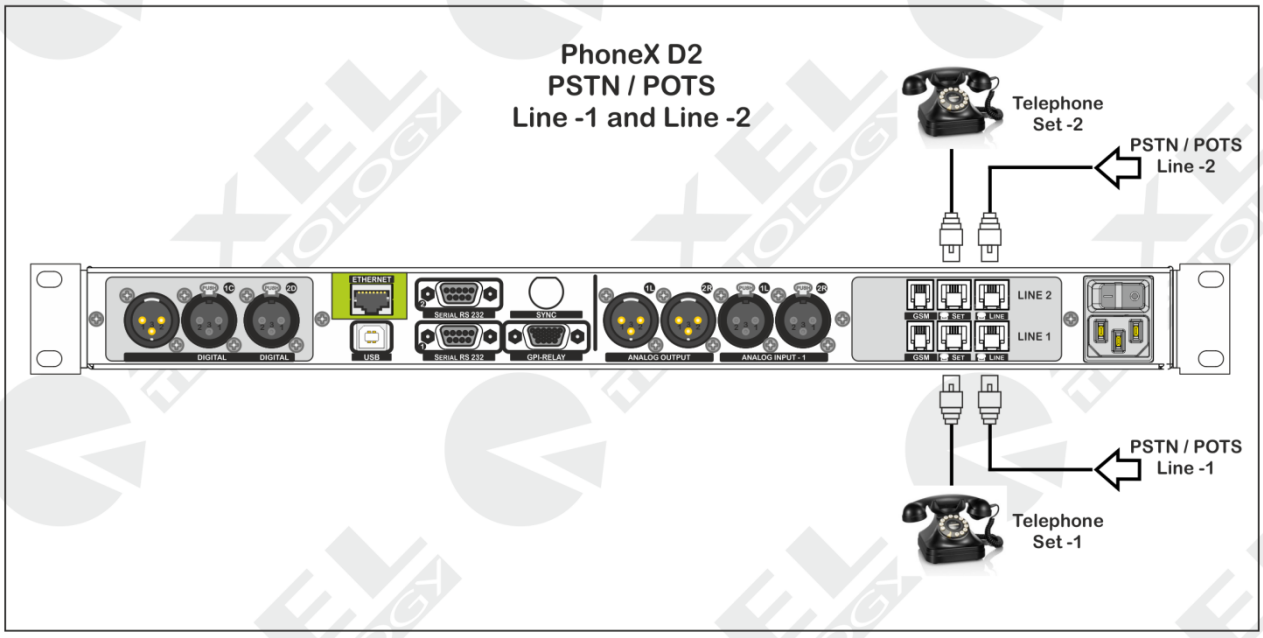


CONNECTOR PINOUT	
Pin	Description
1	**Not connected**
2	Telephone line
3	Telephone line
4	**Not connected**

The ‘Phone’ socket can be used to connect a normal telephone in parallel to the telephone line (for example to make calls). Please note that this socket is NOT always active; it depends on the status of the ‘Hook’ key of each Hybrid. When the Hook key is pressed the Phone socket is not active. The Phone socket has the same pinout as the “line” socket.



If the unit has operating problems caused by lightening or over voltage, disconnect it immediately from the telephone line and electric power supply; do not reconnect it until the device has been duly checked. If in doubt contact the technical assistance service. Make sure also that your system is fitted with adequate lightening protection. If this is not the case, we recommend disconnecting all connectors during thunderstorms or if the device is not used for long periods of time.

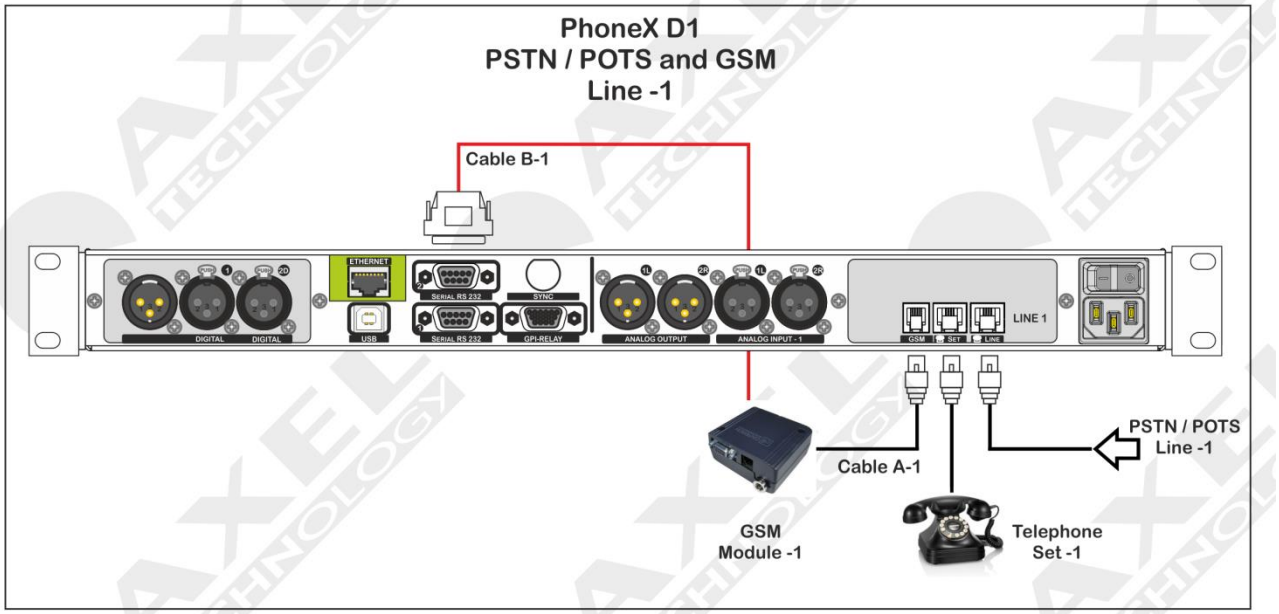


16.4 GSM MODULE 1 AND GSM MODULE 2 WIRELESS CONNECTION

Up to two GSM devices can be connected to PhoneX with mutual exchange between the POTS line and the GSM line. See the LINE TYPE section for the mute exchange of this line. The image below shows how to connect the GSM-1 AND GSM-2 modules. They can also be connected at the same time.

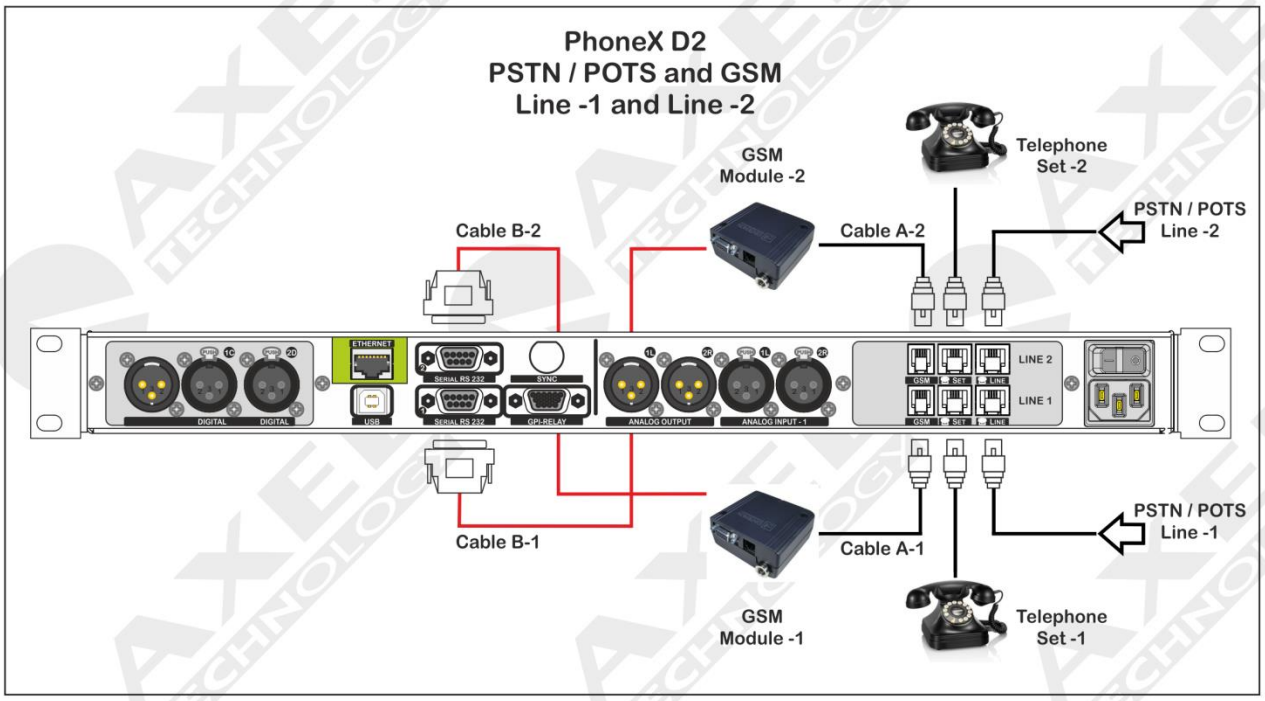
The cable **A-1** (Cable A-1) it's a audio cable,with a RJ10 side directly connected to the "**GSM**" port **LINE 1** in PhoneX D1.

The cable **B-1** (Cable B-1) it's a cable "data" Cross type, with a SubD 9pole connection Male/Male set between the GSM Module -1 and the Serial -2 port in PhoneX D1.

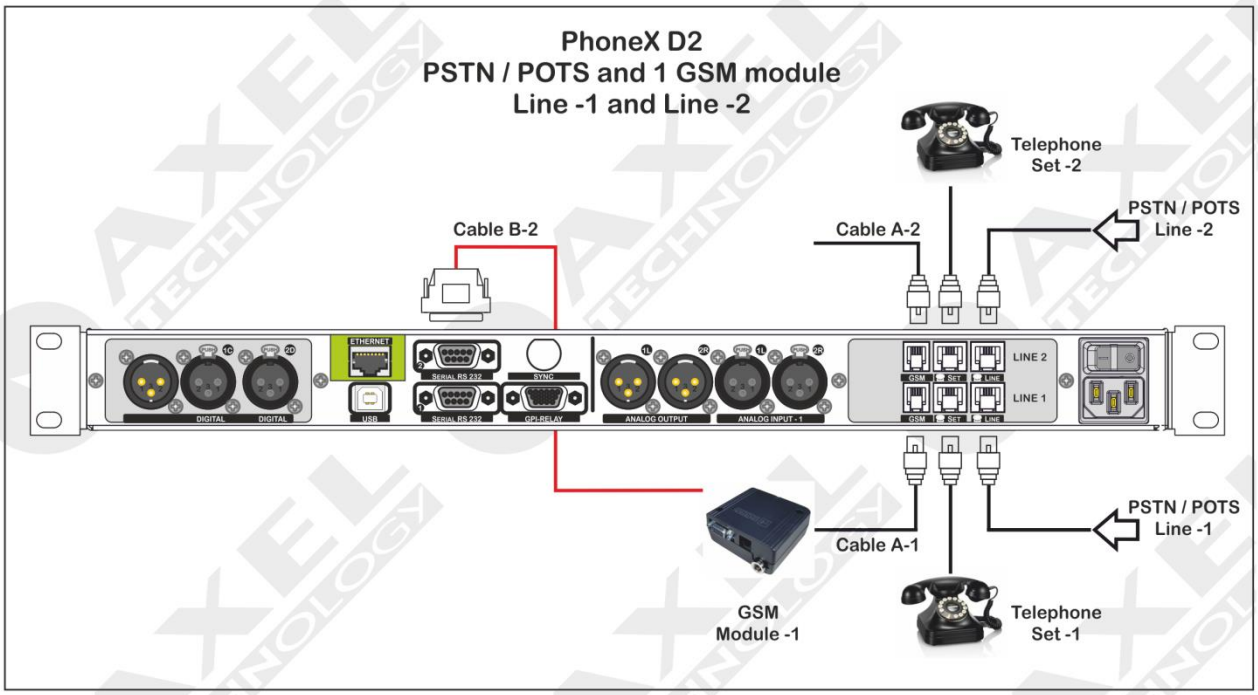


Cable **A-1** (Cable A-1) it's an Audio Cable, with a RJ10 side directly connected to "**GSM**" **LINE 1** into PhoneX D2. The cable **B-2** (Cable B-2) it's a data cable, Cross type, with a connection SubD 9 pole Male/Male set between **GSM Module-1** and **Serial-2** in PhoneX D2.

Cable **A-2** (Cable A-2) it's an Audio Cable, with a RJ10 side directly connected to "**GSM**" **LINE 2** into PhoneX D2.
Cable **B-1** (Cable B-1) it's a data cable, Cross type, with a connection SubD 9 pole Male/Male set between **GSM Module-2** and **Serial-1** in PhoneX D2.



16.5 GSM MODULE 1 AND 2 POTS LINES CONNECTION



Is it possible to connects to a PhoneX D2 one single GSM module and 2 POTS Lines. In any case, via software some configurations must be done.

16.6 AUDIO CONNECTION TO AND FROM PHONEX D1 AND PHONEX D2

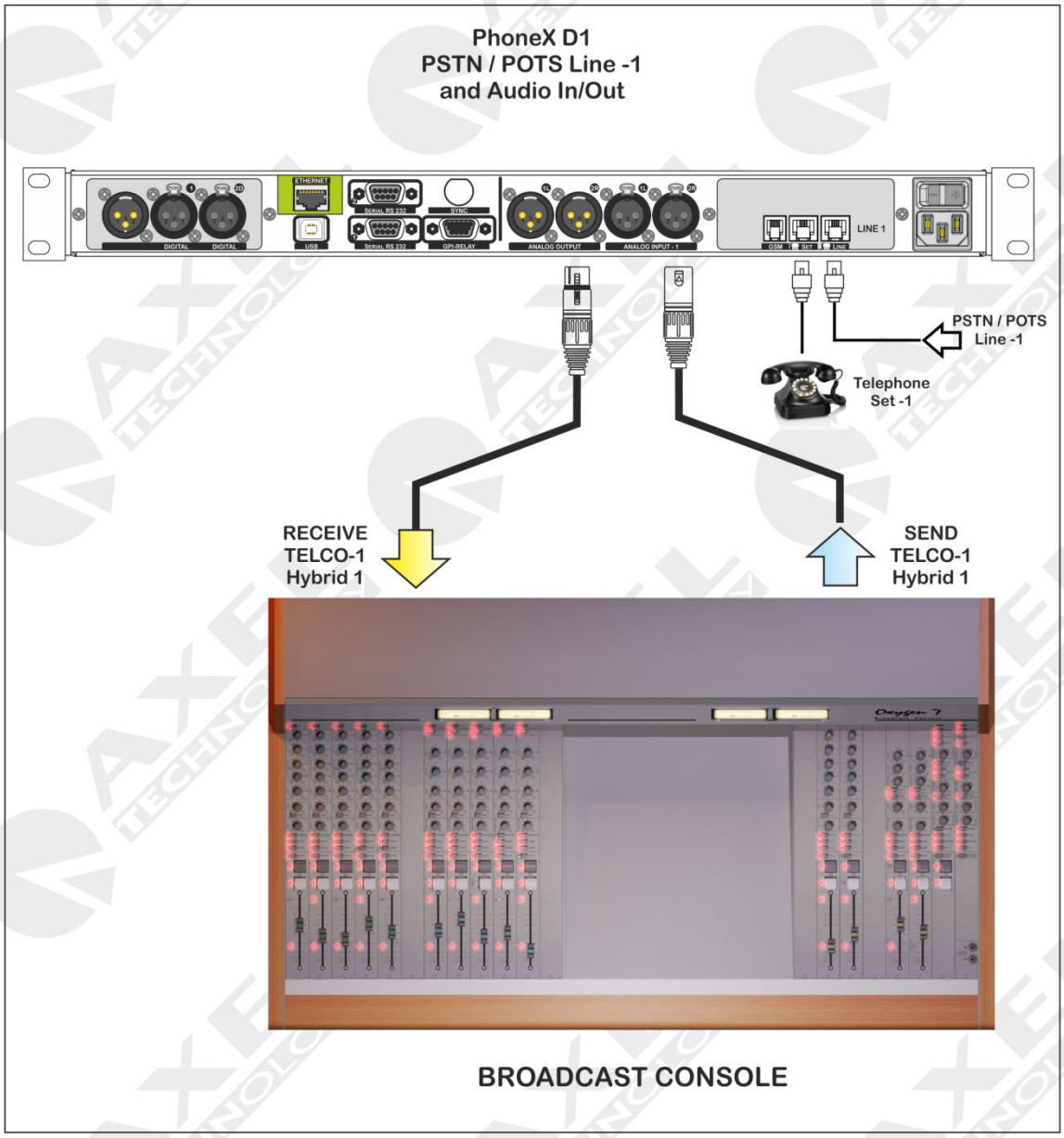
The PhoneX can be connected to other devices such as Mixers or digital consoles in different ways. PhoneX features two possible types of connections, the *Single Mode* or the *Conference Mode*. Both are detailed below. The following connections are available in Single Mode:

a. Analog connection in Single Mode with one telephone line. (PhoneX D1)
b. Analog connection in Single Mode with two telephone lines. (PhoneX D2)
c. Digital connection in Single Mode with one telephone line. (PhoneX D1)
d. Digital connection in Single Mode with two telephone lines. (PhoneX D2)

For the Conference mode with a number of devices connected:

e. Analog connection, in Conference Mode, with two telephone lines and three PhoneX D2 devices.

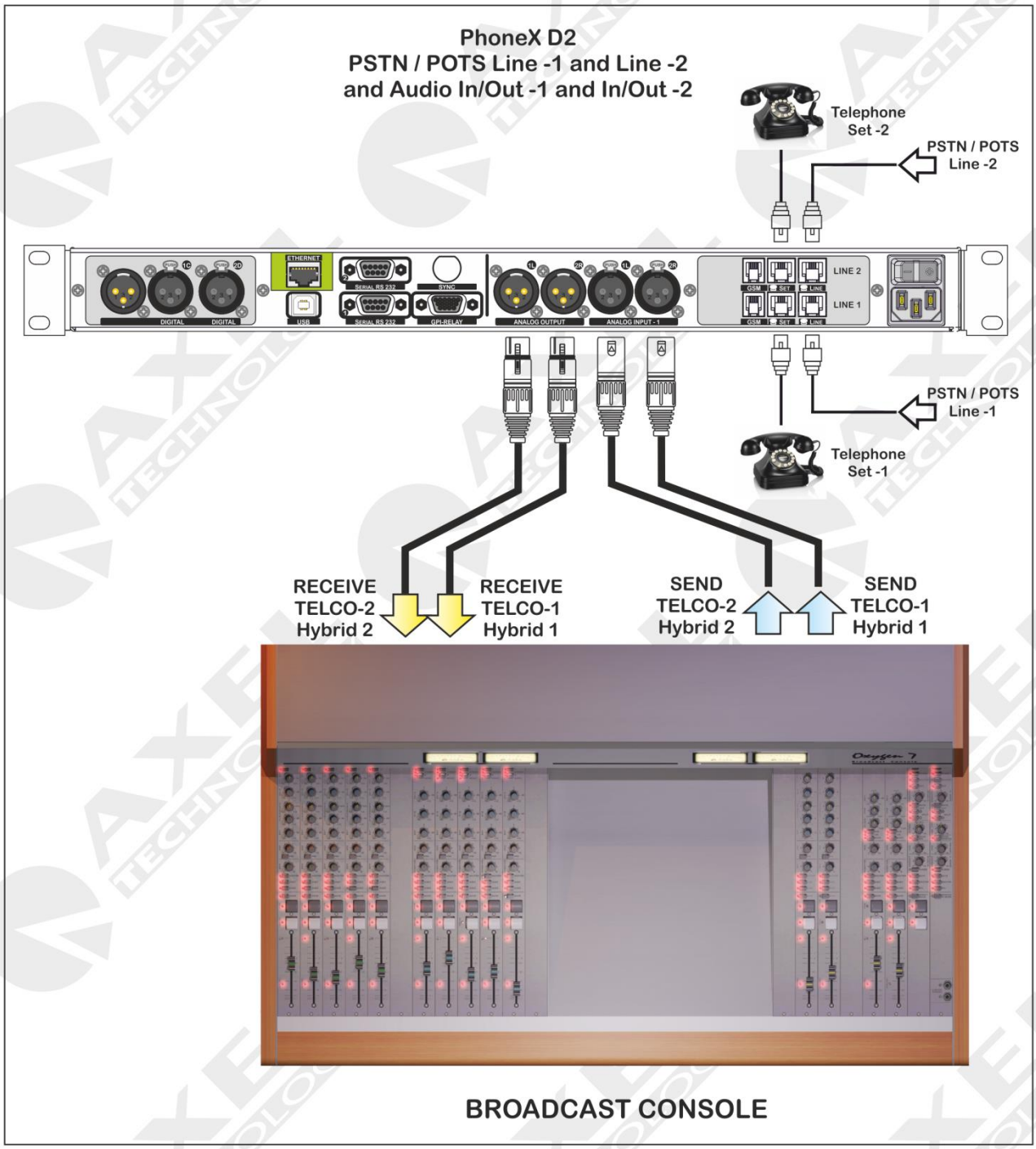
16.7 ANALOG CONNECTION IN SINGLE MODE WITH ONE TELEPHONE LINE



In this mode the PhoneX device is connected to the console using an analog audio line. The audio signal from the Telco N-1 output of the Mixer is sent to Send Hybrid 1 of PhoneX; the output is sent via Receive Hybrid 1 to the Telco module relating to Hybrid 1.

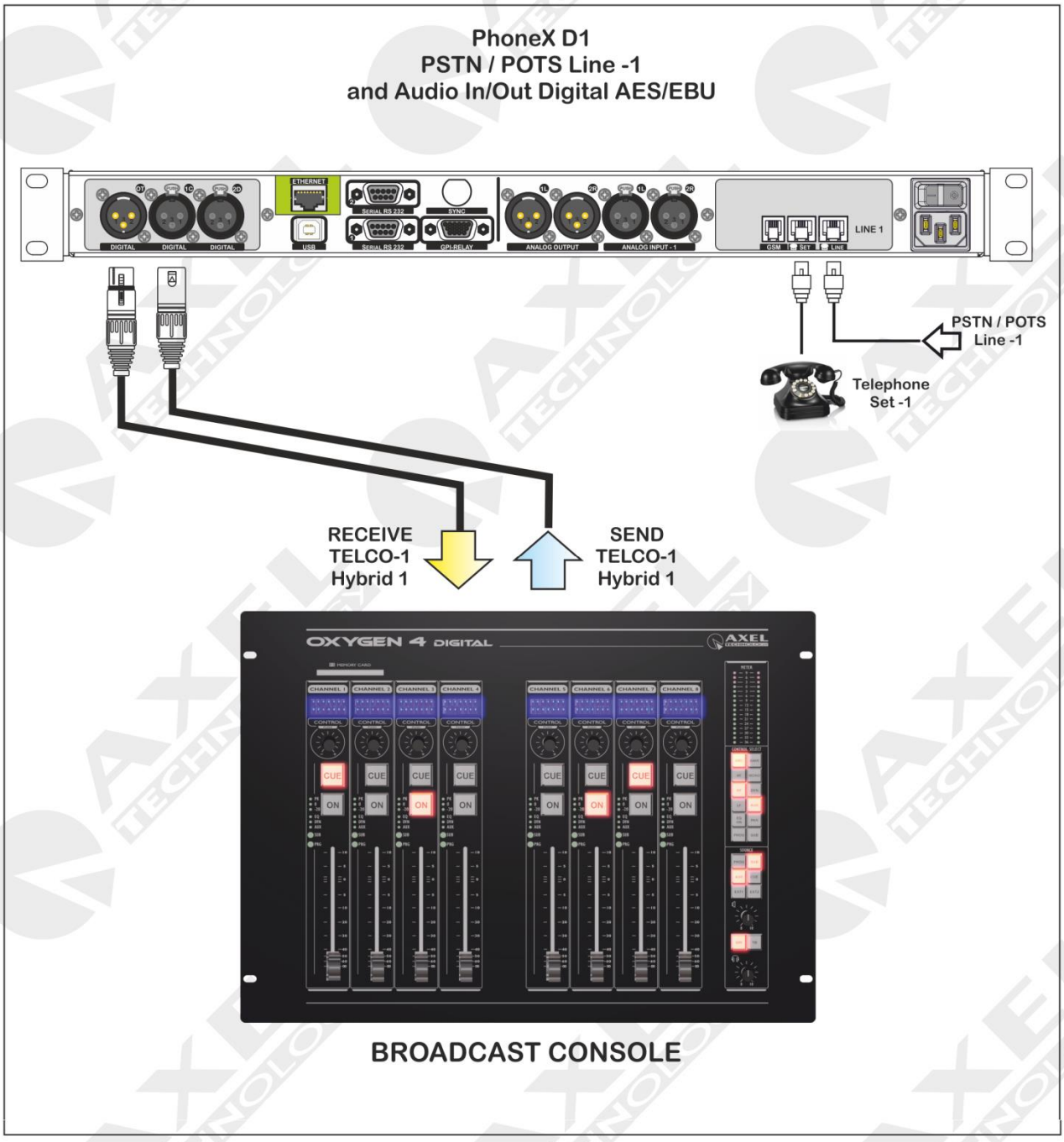
16.8 ANALOG CONNECTION IN SINGLE MODE WITH TWO TELEPHONE LINES (PHONEX D2)

In this mode the PhoneX device is connected to the console using an analog audio line. An audio signal from the Telco output of the mixer (N-1) for the first and second telephone lines is sent to the Send Hybrid 1 and Send Hybrid 2 of PhoneX. The output is sent via Receive Hybrid 1 and Receive Hybrid 2 to the Telco module relating to Hybrid 1 and Hybrid 2 on the mixer.



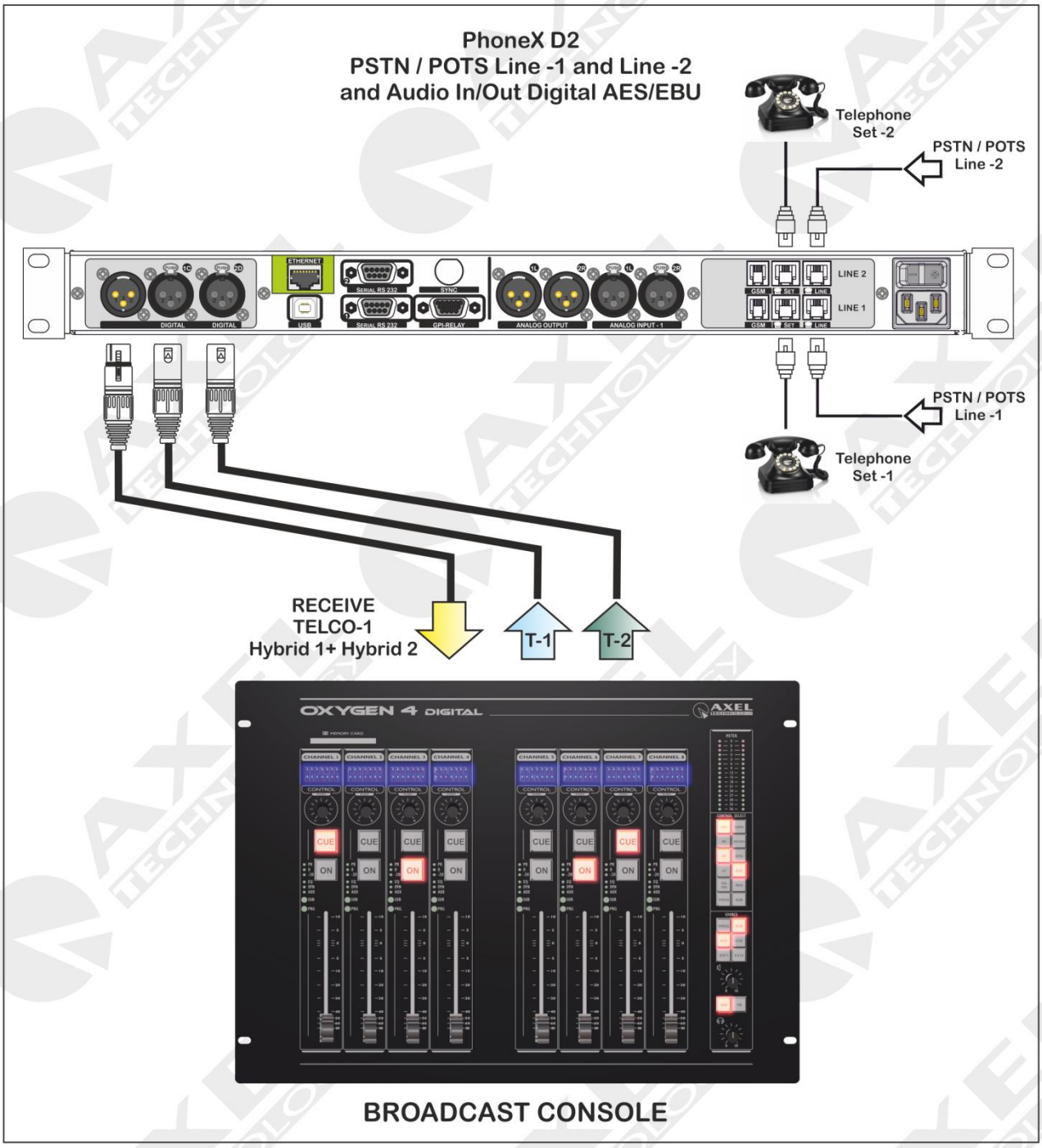
16.9 DIGITAL CONNECTION IN SINGLE MODE WITH ONE TELEPHONE LINE (PHONEX D1)

In this mode the PhoneX device is connected to the console using a digital audio line. An audio signal from the Telco output of the mixer (N-1) for the first telephone line is sent to the Send Hybrid 1 of PhoneX. The conncetion must be done between the Telco Module and input **1C**. The output is sent via Receive Hybrid 1 to the Telco module relating to Hybrid 1 on the mixer.

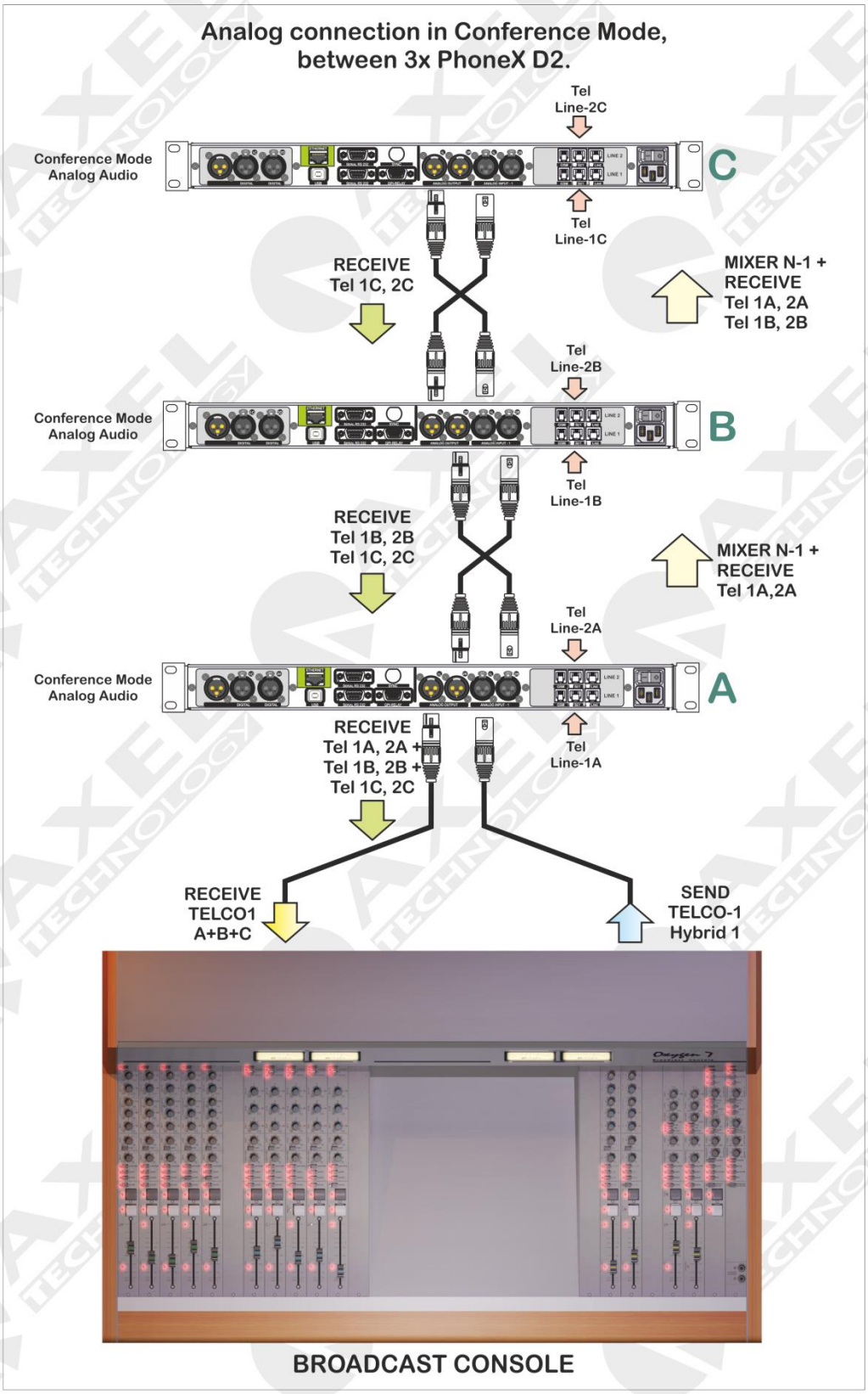


16.10 DIGITAL CONNECTION IN SINGLE MODE WITH TWO TELEPHONE LINES (PHONEX D2)

In this mode the PhoneX device is connected to the console using a digital audio line. An audio signal from the Telco output of the mixer (N-1) for the first and second telephone lines is sent to the Send Digital of PhoneX. The output is sent via Receive Digital to the Telco module relating to the Telephone Hybrid. Using the software it is possible to decide which of the two hybrids to receive, via the AES/EBU transmission line, in the Receive Digital: Hybrid 1 or Hybrid 2 or the sum of both. This function is explained in the "Outputs Section" of this manual.

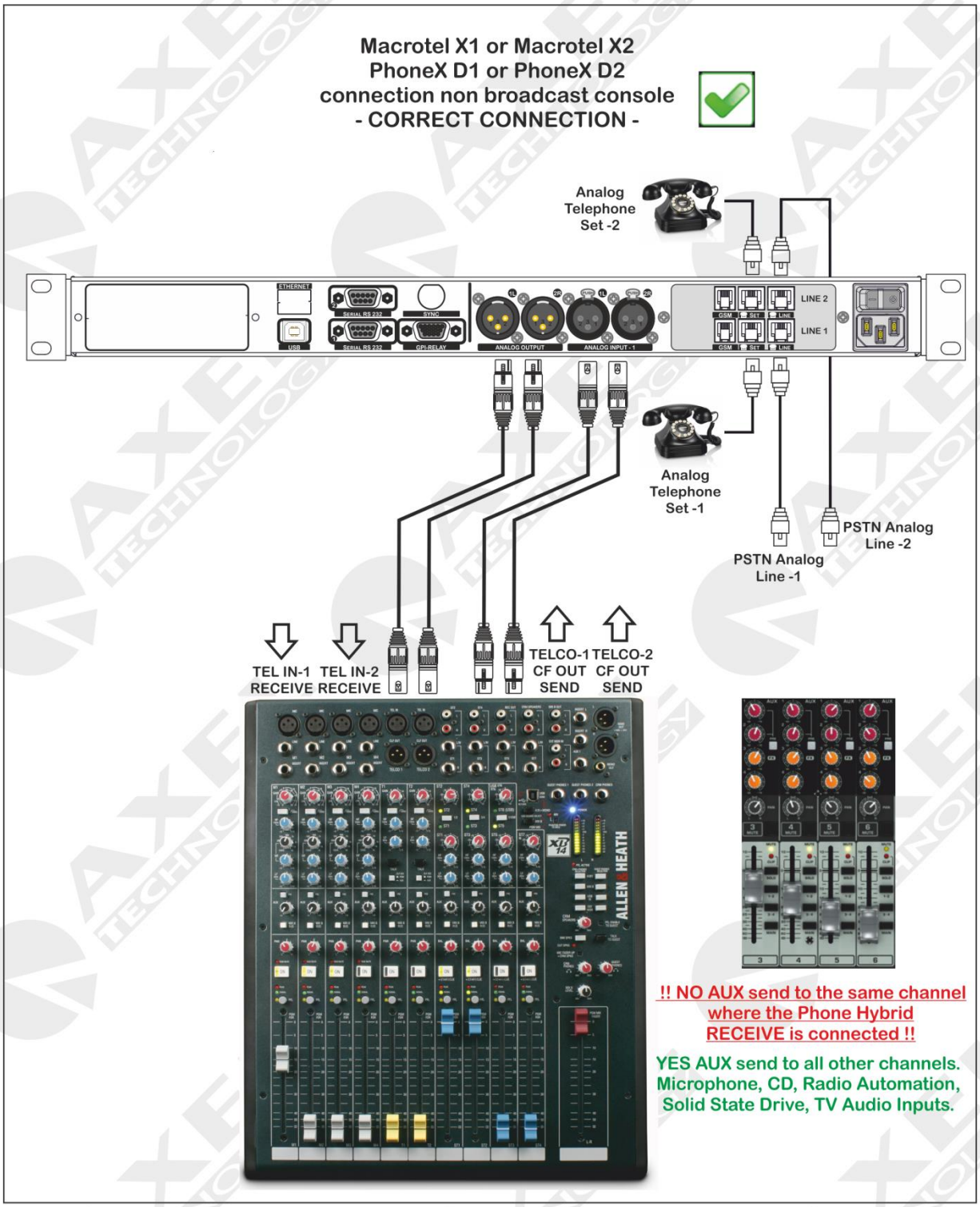


16.11 ANALOG CONNECTION, IN CONFERENCE MODE, WITH TWO TELEPHONE LINES AND THREE PHONEX.



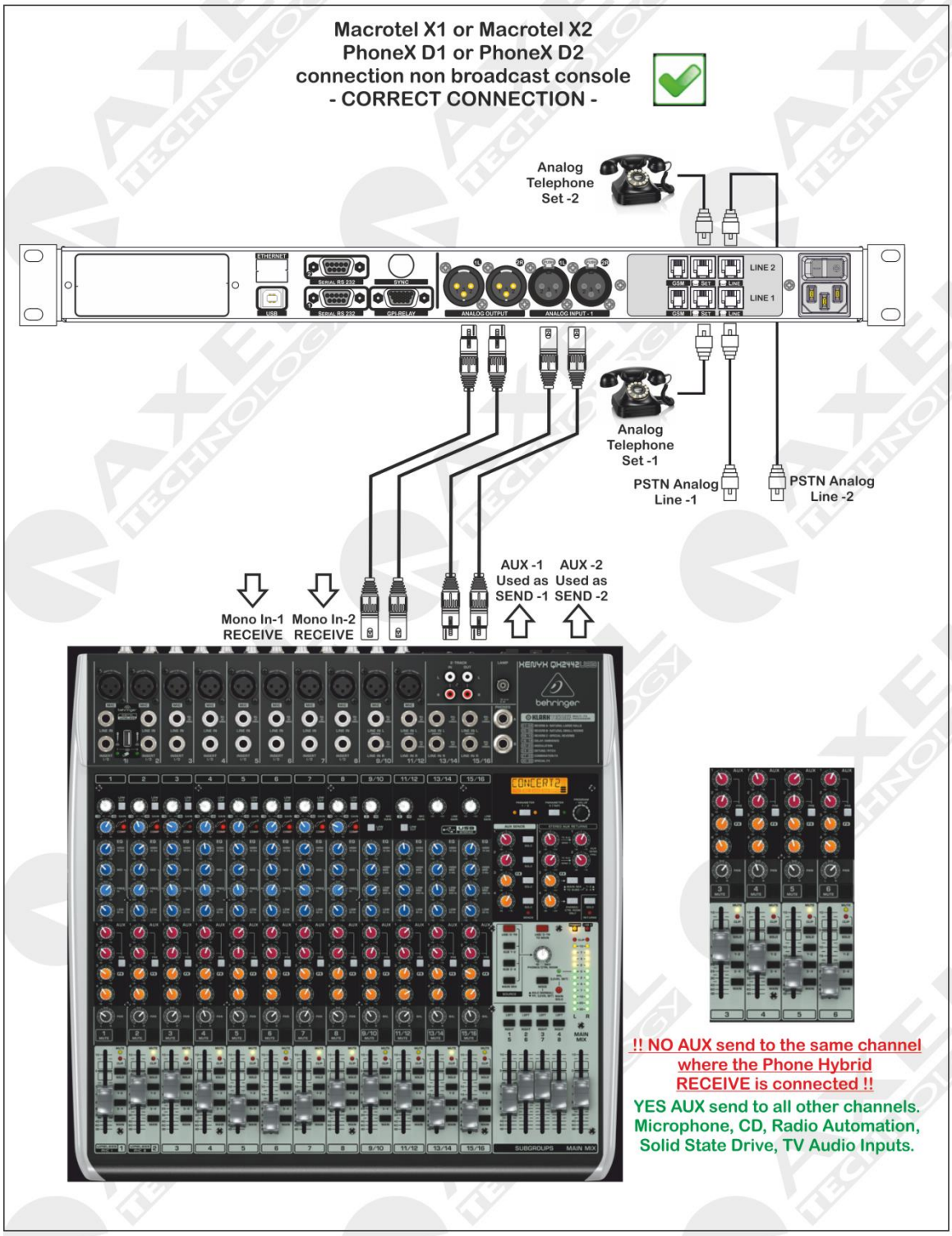
This mode exploits the maximum modularity of the PhoneX device. All the hybrids are connected to each other in “cascade” and all the PhoneX devices can be controlled from the console simply using one single Telcon N-1 channel. The Conference mode on the Analog Output of each hybrid must be enabled to operate in this mode. Important: read the Special notes concerning Ducking/Conference between Hybrids. Up to 4 PhoneX devices can be connected in cascade.

16.12 CONNECTION TO A NON-BROADCAST MIXING CONSOLE -1



This way of connecting the Macrotel or Phonex telephone hybrid, allows the user to connect a “not broadcast” mixing console. In the example above this console not having all the functionality of a console "Broadcast" feature offers a service to connect directly to the telephone hybrid mixer.
The telephone hybrid receive is connected to TEL TEL IN-1 and IN-2 while the SEND, that is what is sent to the other party phone is connected to TELCO CF OUT-1 and OUT-2 TELCO CF.
CF means Clean Feed, and performs a mix minus created without loops and larsen. Otherwise known as N-1, must be sent from the person phone all the "Program" unless the signal received by the other party phone itself.

16.13 CONNECTION TO A NON-BROADCAST MIXING CONSOLE -2

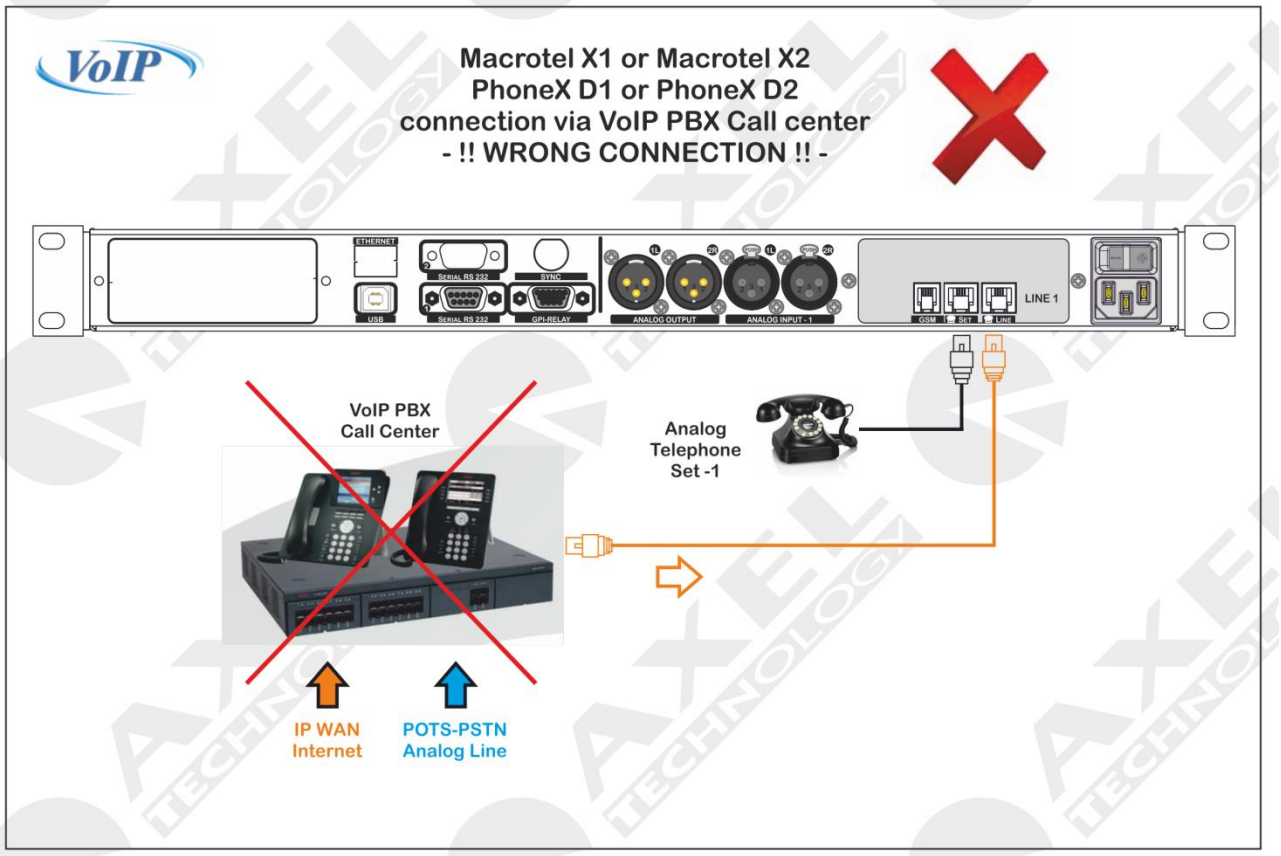


This way of connecting the Macrotel or Phonex, allows users to connect a mixing console that is not “broadcast”. In the example above it is possible to understand that the console in use is completely devoid of the functionality of TELCO, Mix-Minus or N-1. At this point the service of Telco must be created, and executed with what it has available, namely the AUX bus.

In the example above there are two AUX buses (recognizable by both the manual and the red knobs) We could create a hybrid bus that sends to the telephone hybrid ALL the "Program" audio then must be sent to 'AUX-1 and / or AUX-2, the CD Player, directed automatically, the director and studio microphones, BUT will NOT mandate the telephone Hybrid incoming signal. This because it would create larsen and loops very annoying to listen to.

In any case, Axel Technology is not responsible for damages caused to third parties for the improper use of non-broadcast mixing console. In the catalog of Axel Technology is possible to find solutions as a broadcast mixing console.

16.14 CONNECTION TO A DIGITAL LINE OR VOIP -1



It is not technically possible to directly connect a VoIP hybrid phone directly.

You must insert between VoIP and Telephone Hybrid a A.T.A device

16.14.1 What is a A.T.A device?

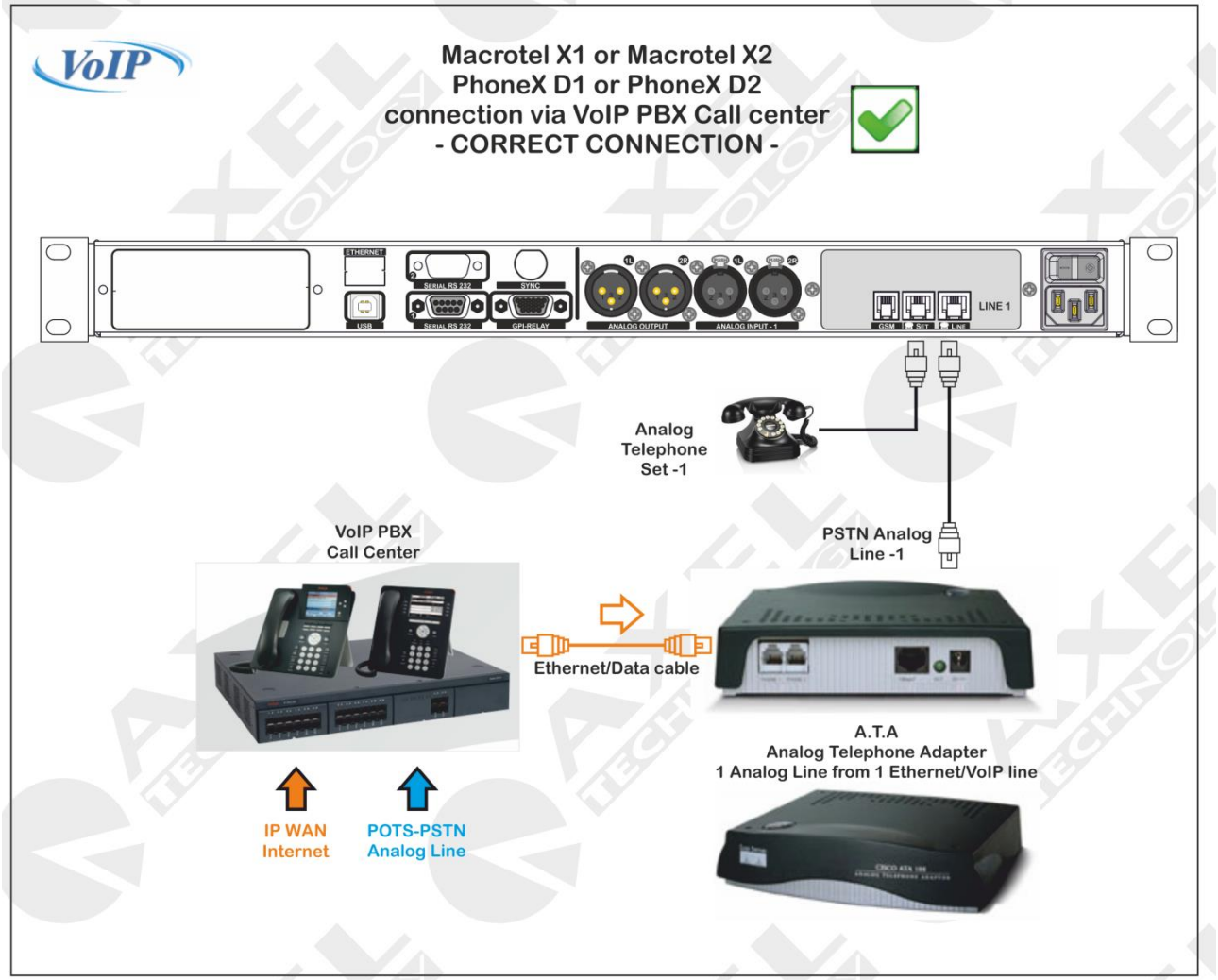
An Analog Telephone Adapter (ATA) (Analog Telephone Adapter) is a device used to connect one or more standard analog phones in order to use them with other systems such as the transport of voice over IP (VoIP)

The ATA is provided by some VoIP providers in order to allow the user to connect their phone from the cable pulling the traditional telephone company. In this case it is possible that the ATA is locked and therefore can only be used with the VoIP provider from whom you purchased it.

An ATA typically has at least one port where you can connect a telephone (normally a RJ11) and one Ethernet port (normally a RJ45) to connect to a LAN connected to the Internet. More complex models can have multiple telephone ports for phones or ISDN PBX and an additional Ethernet port to which you can connect other network objects.

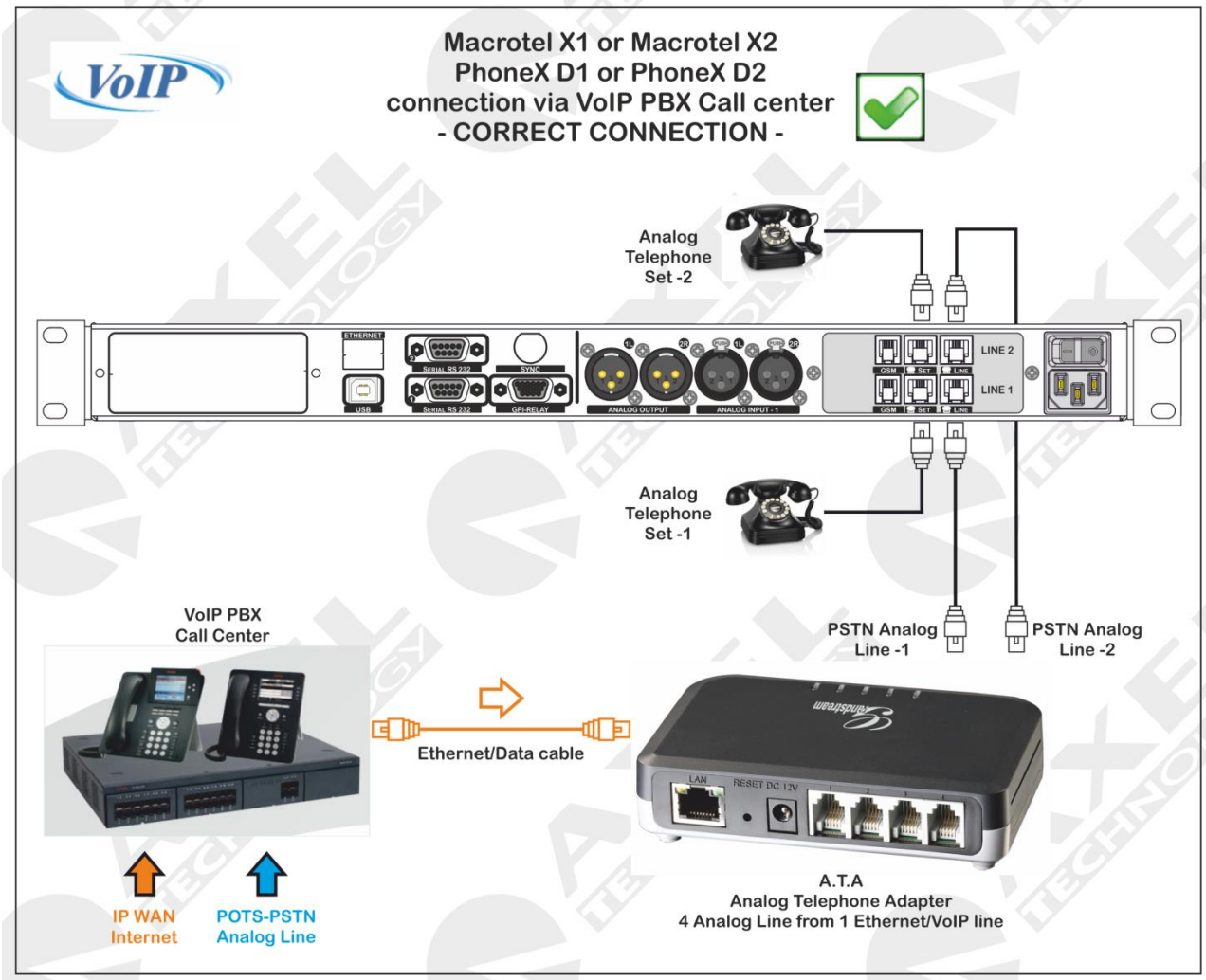
The device is programmed with a dedicated number, which adds a second phone line to the home. Two numbers, the desk phone and the ATA device, share the same line. When a call comes in, the ATA adapter rings even when it is directed to the telephone line. When you dial a number, based on the prefix, the call is routed to a fixed line or the Internet.

16.15 CONNECTION TO A DIGITAL LINE OR VOIP -2



In the event you need to connect a digital line to a hybrid phone, you must enter an ATA which means Analog telephone adapter, or an adapter between a digital line PSTN analog. Each manufacturer has its general, although some still exist generics on the market. Contact your phone service provider for the installation of the same. In the above example an adapter to ONE SINGLE LINE.

16.16 CONNECTION TO A DIGITAL LINE OR VOIP -3



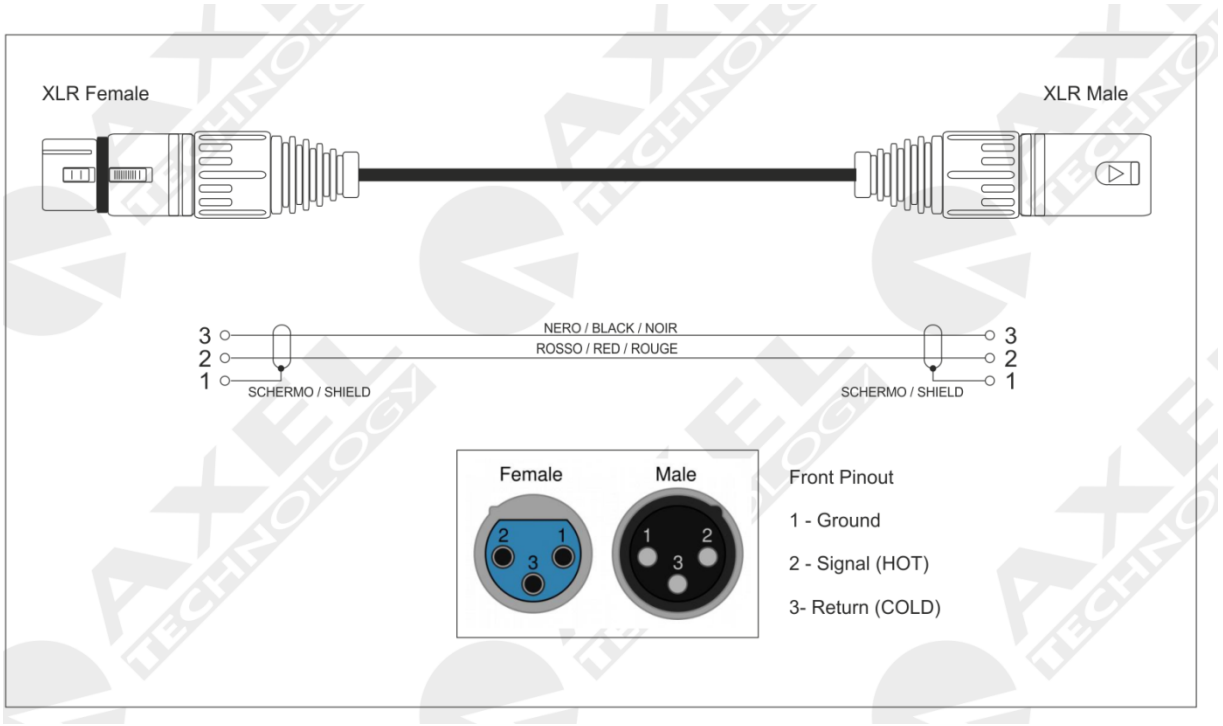
In the event you need to connect a digital line to a hybrid phone, you must enter an ATA which means Analog telephone adapter, or an adapter between a digital line PSTN analog. Each manufacturer has its general, although some still exist generics on the market. Contact your phone service provider for the installation of the same. In the above example an adapter for multiple output lines.

17 TECHNICAL APPENDIX

This section provides all the technical explanations, and the connection pinouts to and from the PhoneX device. Always refer to this technical appendix for connections and connection procedures. In case of differences between the documentation below and the hardware device please contact Axel Technology at the numbers and e-mail addresses shown at the end of this manual. Our technical and assistance department will be pleased to help you!

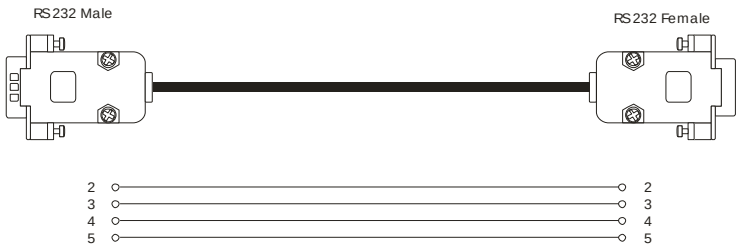
17.1 APPENDIX A – BALANCED AUDIO CONNECTION IN AND OUT

Balanced Audio connection diagram with balanced XLR for **Analogue** audio **input and output** (Left+Right) and AES/EBU digital audio **input and output.**



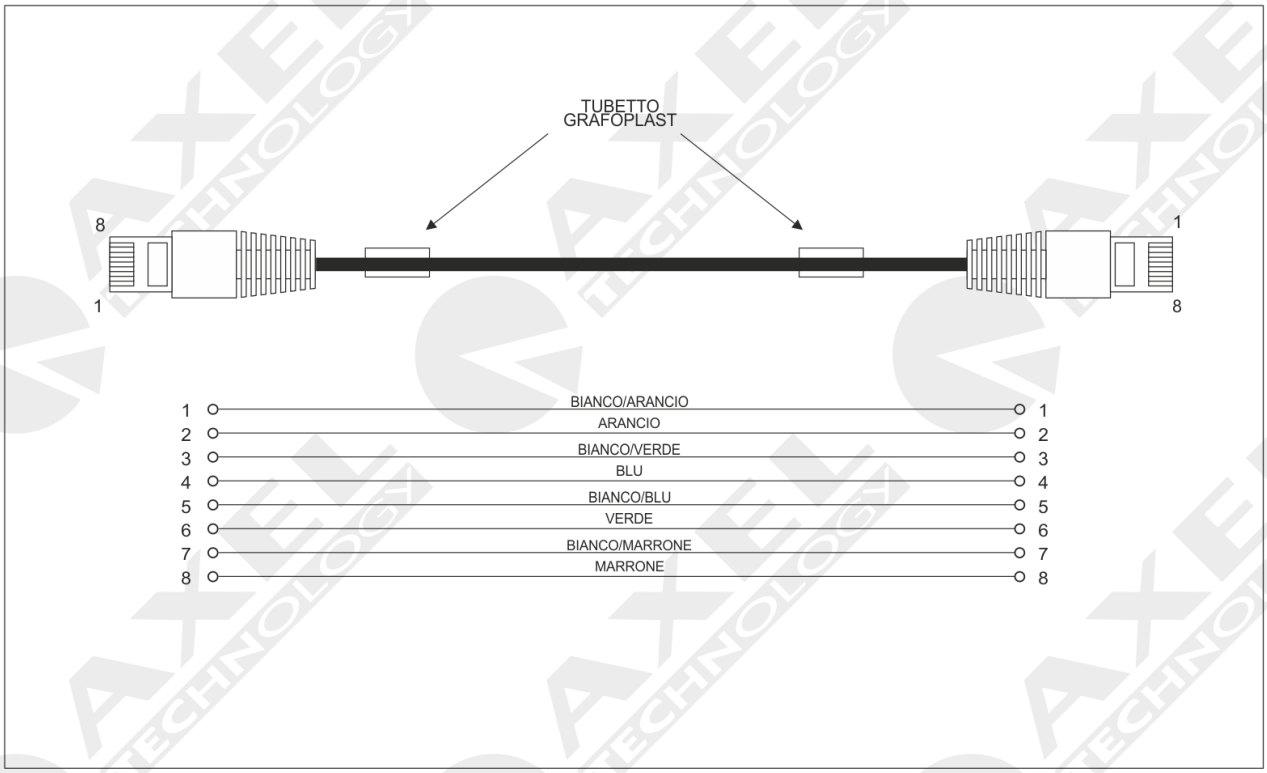
17.2 APPENDIX B – SERIAL CONNECTION PINOUT

PORT 1		PORT 2,3,4	
2	Tx	2	Tx
3	Rx	3	Rx
4	DTR	4	/
5	GND	5	GND

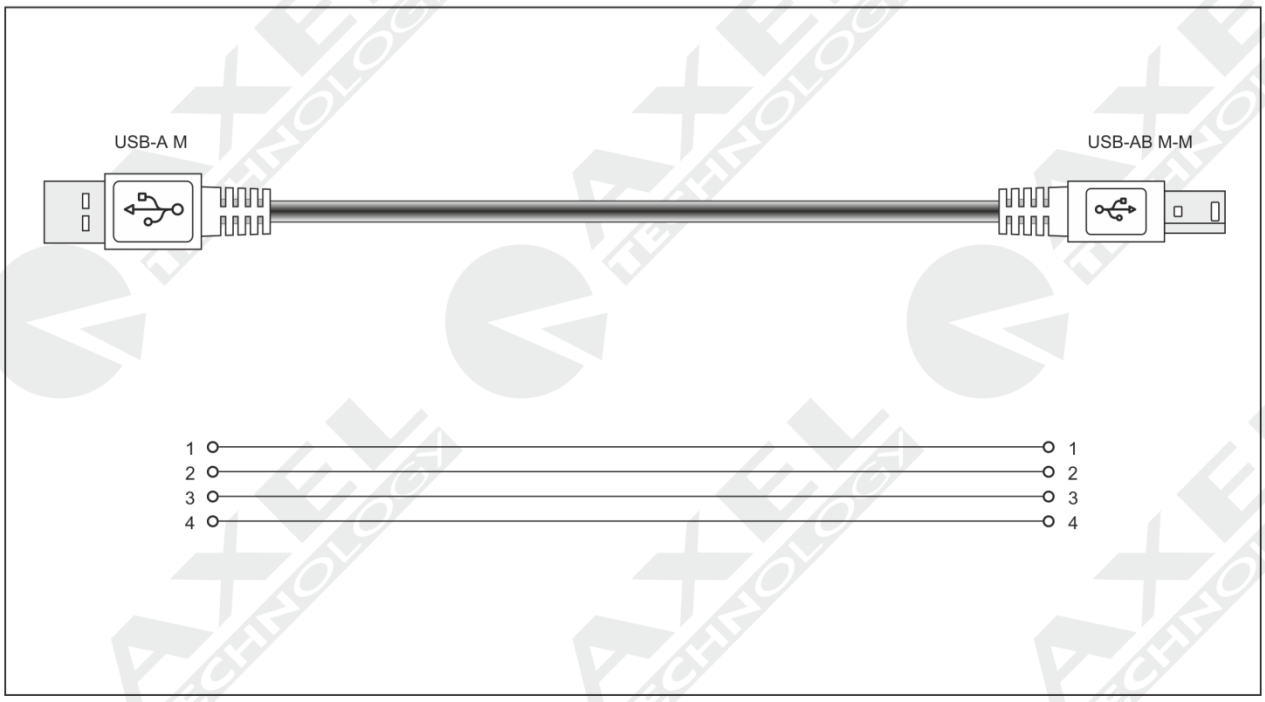


A standard Pin-to-Pin serial cable is required for the PC connection, not a CROSSOVER one. For a correct connection the cable must not be more than 20 m long. Ports 2 and 3 use only the Tx, Rx and GND for the PC connection while port 1 also has the DTR (Data Terminal Ready) for modem connection. The port connection speed must coincide with the speed of the port of the PhoneX device and of the PC's serial port.

17.3 APPENDIX C – ETHERNET / LAN CONNECTION



17.4 APPENDIX D – USB A/B CONNECTION

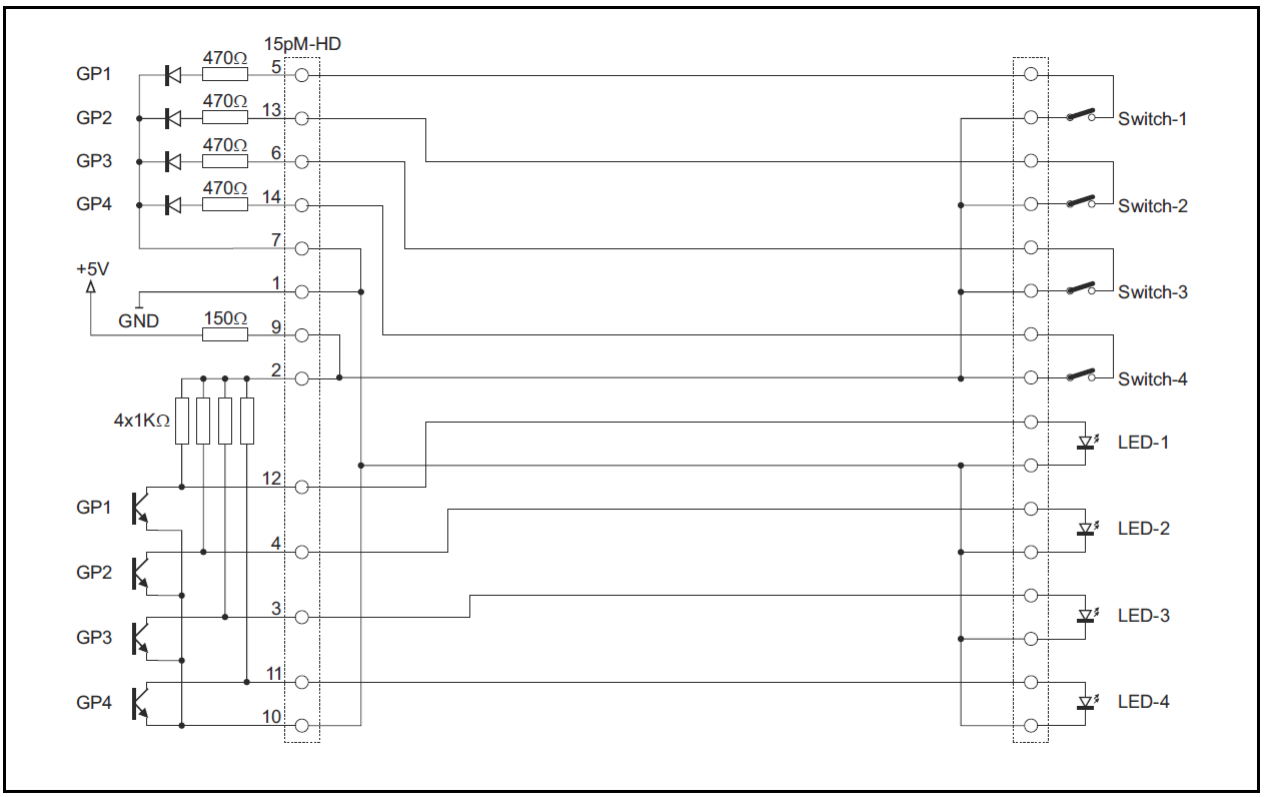


17.5 APPENDIX E – GPIO PORT

The SubD connector 15pole HD GPIO place on the rear of PhoneX, provides 4 inputs General Purpose and 4 outputs General Purpose binary. The inputs are polarized on Opto coupler while the outputs are open collector. They can be used to send commands at the equipment and perform certain functions. The inputs are constituted by photocouplers polarized on each input and is always inserted, inside, a protection resistor 150 ohms in series. The maximum current that can flow on each photo coupler is 20mA. The voltage supplied between pin 9 and pin 1 is +5 Vdc unregulated.

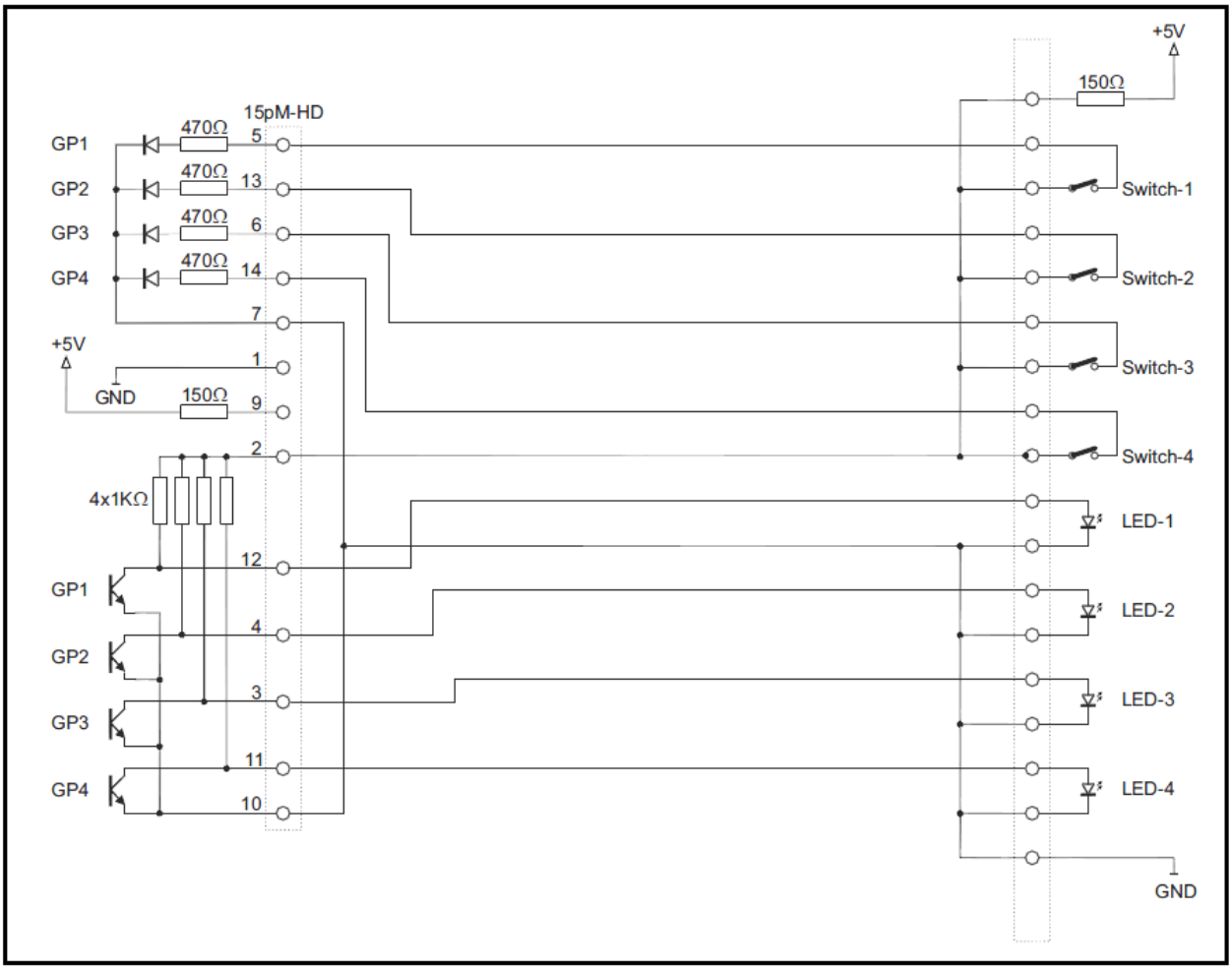
17.5.1 Connection to GPIn and GPOut via internal activation (Relay)

As shown in the diagram below, taking the tension inside the apparatus it is possible to polarize a photo coupler and implement one of the 4 GP Input available. By taking the +5 V from pin9 and applying it to the anode of a photo coupler and then connecting the katodo common (pin 7) to the mass represented by pin1, then you will implement the function. See this section on the switching mode from an external command, represented by a relay or a switch.



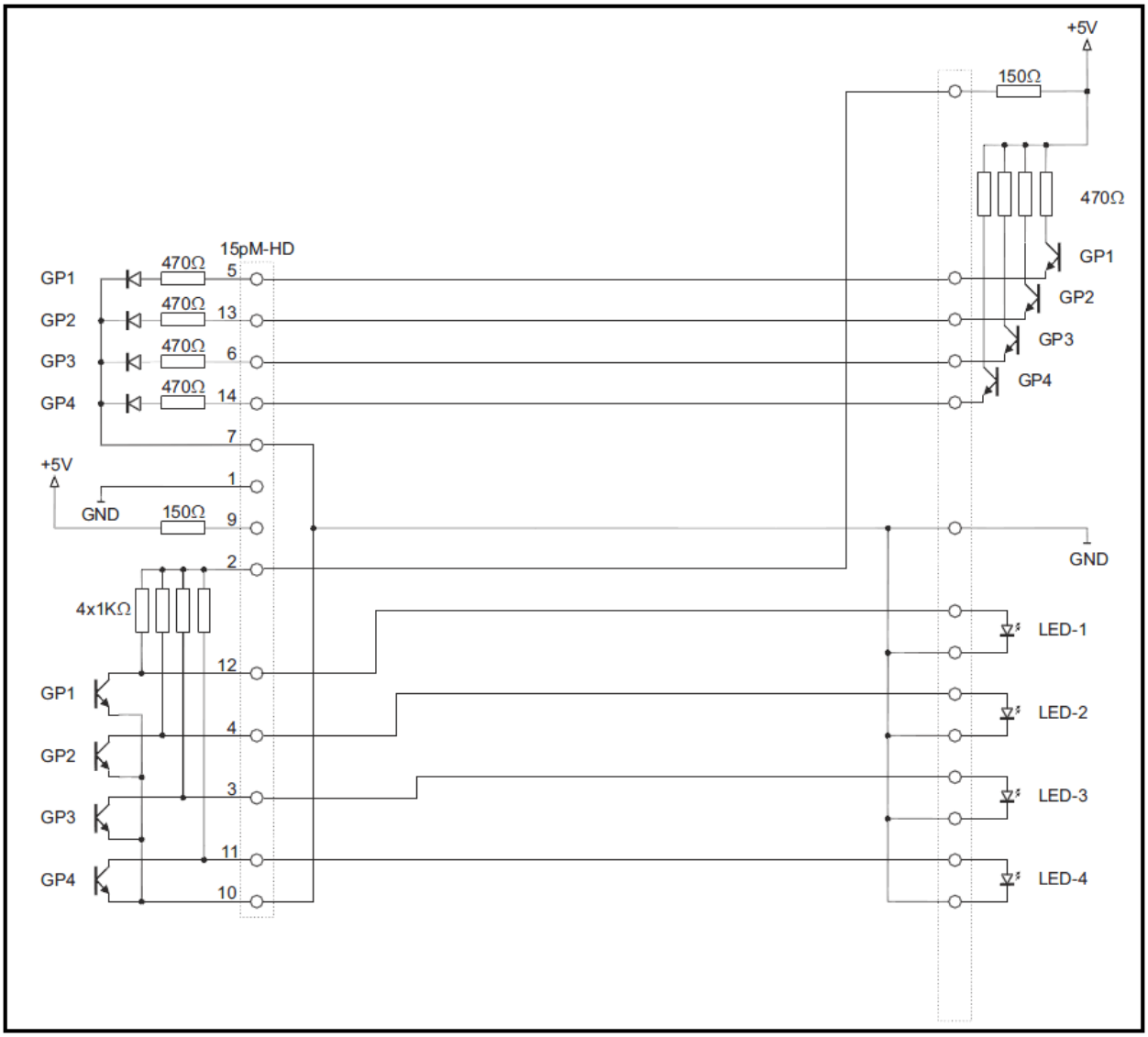
17.5.2 Connection to GPIn and GPOut via external activation (TTL)

As shown in the diagram below, taking the voltage externally apparatus it is possible to polarize a photo coupler and implement one of the 4 GP Input available. Note: in this case the masses of the TTL signals generators are common.

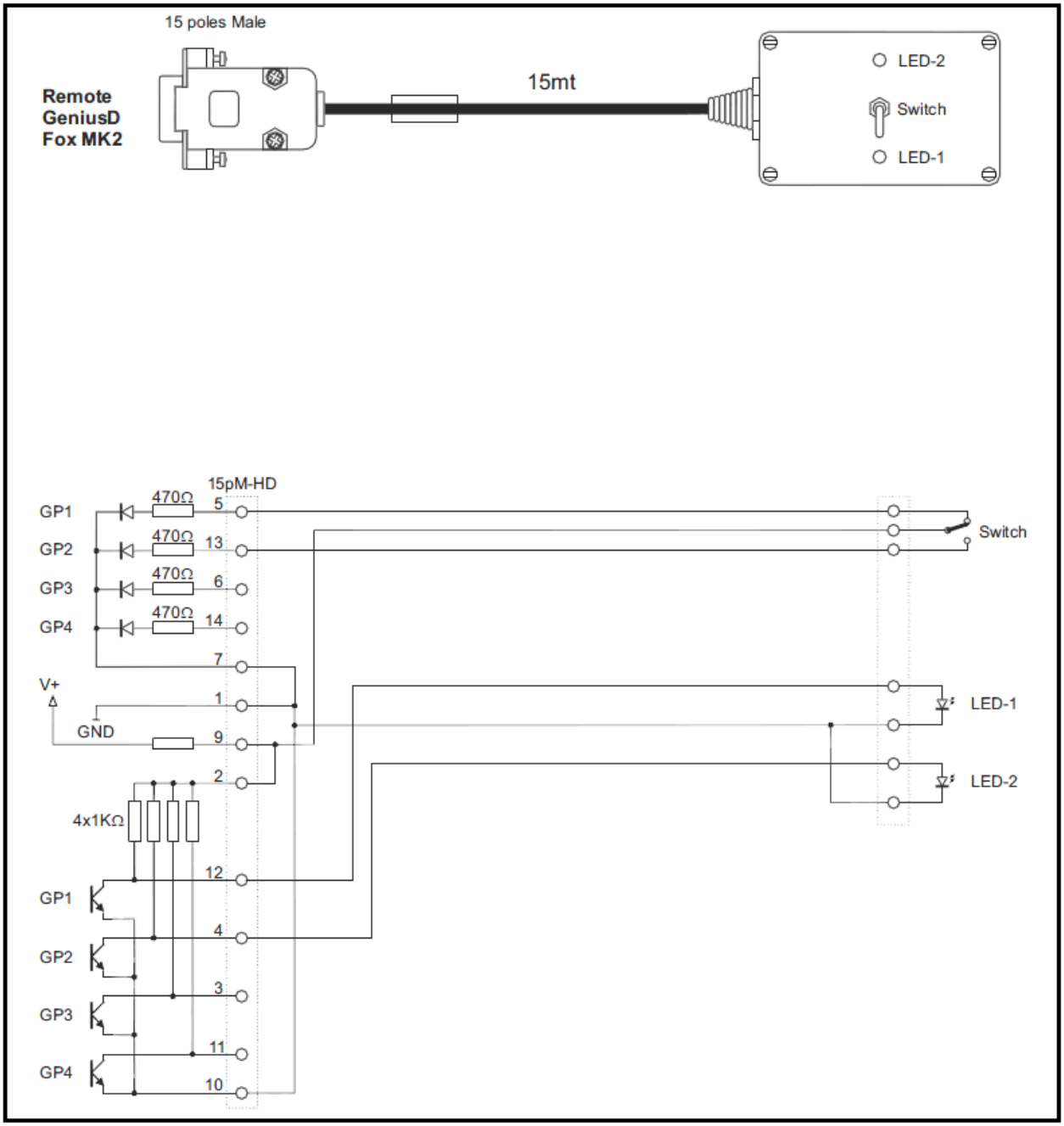


17.5.3 Connection to GPIn and GPOut via external activation -2 (TTL)

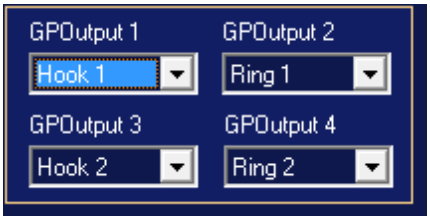
As shown in the diagram below, taking the voltage externally apparatus it is possible to polarize a photo coupler and implement one of the 4 GP Input available. Note: in this case the masses of the TTL signals generators are common.



17.5.4 Operative Example



For the function of each GPO see the Program Settings section, from where various functions can be assigned to the GPOs.



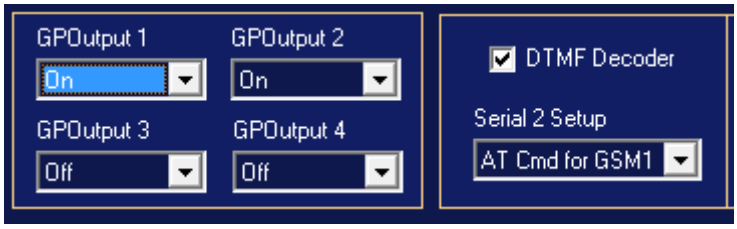
For the purpose of each single GPO please refer to the Program Settings section in the Telephone Hybrid Remoter. For each single GPO these are the purposes:

a) OFF – ON
b) HOOK1 – RING1
c) HOOK2 – RING2
d) DTMF FUN1 – DTMF FUN2 – DTMF FUN3 – DTMF FUN4
e) GPI1 Mirror

a) OFF – OFF, Enabled or Disabled control
b) HOOK1 – RING1, if Ring1 the GPO stay closed for all the ring time. If Hook the GPO stays closed for all the Hook time. This section is referred to Hybrid-1
c) HOOK2 – RING2, if Ring1 the GPO stay closed for all the ring time. If Hook the GPO stays closed for all the Hook time. This section is referred to Hybrid-2
d) Please see the next chapter
e) The GPI1 Mirror rappresents the same-same mirrored function of GPI1

17.5.5 DTMF Remote commands

Into the Program Settings section it is possible to find a special section designed for GPO and DTMF Decoder



If the Checkbox DTMF Decoder is selected, PhoneX introduce a control and a DTMF decoder over the line numer ONE, into PhoneX D1 and over the line number ONE also in PhoneX D2 in the Receive side. In case a DTMF is recognized, an action is taken by the PhoneX, as a GPO closure. Please refer to the below table to get the correspondence between action and DTMF String.

String	Action
#1	GPOutput 1 Closure
#2	GPOutput 2 Closure
#3	GPOutput 3 Closure
#4	GPOutput 4 Closure

String	Action
#1	GPOutput 1 Open
#2	GPOutput 2 Open
#3	GPOutput 3 Open
#4	GPOutput 4 Open

17.5.6 Parser Ascii over Serial Port and Ethernet

An ASCII Parser is available over the Serial Port and the Ethernet Port to get the following commands.

H1, H2 (Hybrid identifier)
DIAL Number,
ATT,
HOLD,
HOOK ON,
HOOK OFF (command)

The Parser replys SYNTAX ERROR or CMD OK.

Example 1:
H1 DIAL 0,3346789
CMD OK

Execution:
Call 3346789 by using the external line via PBX with a pause “,” via Hybrid-1

Example 2:
H2 HOOK ON
CMD OK

Execution:
Close the Line -2

Ethernet Port
Parser Ascii over UDP, same string and Syntax. UDP port :15000.

18 APPENDIX F – PHONEX FIRMWARE UPDATE

The most recent firmware version is installed by the manufacturer on PhoneX before it is delivered. Once purchase, the firmware can be updated with the latest version available. The Firmware Upgrade can be carried using the Windows operating system. The suitable operating systems are: Windows Xp Sp3, Windows Vista and Windows 7 Ultimate 32 Bit and 64bit. Check that Microsoft .net 4 is installed on the operating system; if this is not the case go to www.microsoft.com for the installation.

To update the processor follow the procedure below:

Following the initialisation of the device (firmware upgrade), all the user's settings and adjustments may be deleted and/or overwritten by the manufacturer's new configuration! Save your current configuration using the Configuration Editor before upgrading the firmware.

In the firmware upgrade phase remember to install the new version of the associated software for the remote control of the PC. There is a direct correspondence between the firmware and software versions. For example the PC software version 3.0 the installation of the firmware version 3.0 on the unit and vice versa. More precisely, the first two digits must correspond; in so far as possible, the sub-versions (identified by the third digit) are not involved in the firmware/software compatibility.

As a general rule the *X.Y.Z* software version is executed with the *X.Y.K* firmware version

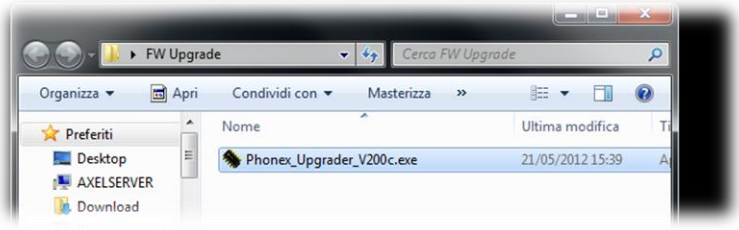
18.1 PREPARING THE DEVICE FOR THE UPDATE

To execute correctly the firmware upgrade or update into a PhoneX D1 and a PhoneX D2, it is necessary to use a Serial COM Port type RS232. If the COM port it is native over the PC Motherboard, the Port configuration is not necessary. If a USB-to-COM converter is used to emulate a COM port, in some case the baud configuration can be necessary. The upgrader software works with these parameters:

38.400bps, 8-N-1

Please find below the step-by-step procedure to upgrade the PhoneX D1 or PhoneX D2 equipments

a. Close all the active procedure in the PC
b. Access to the FW Upgrade folder
c. Double click on the wanted upgrade
d. Start the _Upgrader_V2xx.EXE

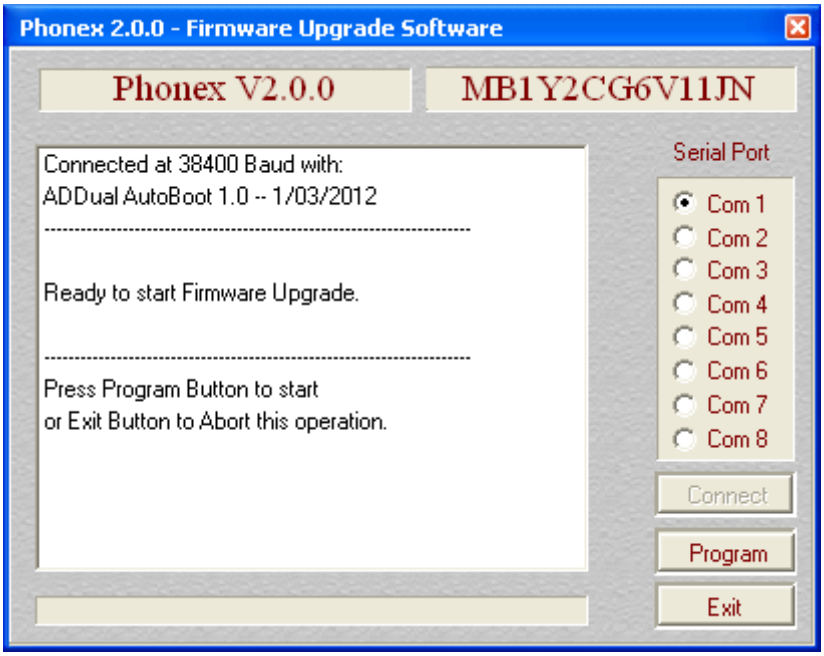


e. PhoneX_Upgrader_V201.exe

NB: *to check the current version of your PhoneX, enter the Firmware version page from the system information menu.*

f. Select the **PC serial port** on the screen

g. **Shut Down the** PhoneX D1 o PhoneX D2
h. **Starts** PhoneX D1 or PhoneX D2 within 3 seconds and press the **CONNECT button**
i. Once the software is correctly connected to the PhoneX D1 and PhoneX D2 a screen like the following one is showned, and at the same time the front PhoneX display show no things and stay completely empty.



j. Once the PhoneX is connected press **PROGRAM**
k. The Firmware Upgrade will starts, at the end press **EXIT** and shut down and restarts PhoneX
l. NB: Please do not shut down or disconnect the power supply/data cable during the Firmware update. It can damage seriously the equipments.

19 TECHNICAL SPECIFICATION PHONEX D1 – PHONEX D2

GENERAL	*VALUE*
Dimension	434x351x44mm (1 rack unit)
AC Rate	230Vac / 110Vac 50 Hz / 60 Hz 30VA
Type of power supply	Switching power supply
Processing architecture	Fully digital, based on DSP 24bit/100Mhz. Signal processing is performed by phase linear filter
Weight	≈ 5 Kg
Operating Temperature	-5°C / +50°C
Compliance	ETSI TBR21, FCC Part68, ICASA, ACAM, AS/ACIF S002, NALTE YD514
ANALOG INPUT MODULE (send)	
A/D Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors:	XLR, female - Electronically balanced
AD Clipping Point	+20.0dBu
Operative Nominal Level:	From –12.0dBu to +12.0dBu (0.1dBu Step)
Line Impedance	600 Ω/ 10 kΩ (Electronically balanced selectable) EMI–suppressed
Distortion:	less than 0.01% TDH+NOISE (0.0dBu 1Khz)
AD Dynamic Range:	108 dB RMS (110 dB A weighted)
Input Modes:	Mono
Microphone Impedance	10 kΩ
Microphone gain	+10dB to +50dB
DIGITAL INPUT MODULE (send)	
Connectors:	XLR, female – Electronically balanced
Format	AES3/EBU
Sample rates	32 kHz / 44.1 kHz / 48 kHz / 64 kHz / 88.2 kHz / 96 kHz with src and jitter correction
Operative Nominal level:	From 0.0 dBFs to -24dBFs (0.1 dBu step)
Dynamic Range:	125 dB (Typ), 122 dB (Min)
Distortion	less than 0.01% TDH+NOISE (0.0dBu 1Khz)
Input Modes:	Mono
ANALOG OUTPUT MODULE (receive)	
D/A Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors	XLR, male - Electronically balanced
Output Level	-12.0dBu to +14.0dBu (0.1dBu Step) – Max (+19dBu)
Impedance Source	10 Ω
Load Impendance	600 Ω or greater
Distorsion	Less than 0.01% TDH+NOISE (0.0dBu @ 1Khz)
TELEPHONE MODULE land line	
Connectors "LINE"	RJ 11 6/4 socket
Connectors "SET"	RJ 11 6/4 socket
Bandwidth telephone line	100Hz – 5kHz, -3dB @ 1 kHz
Telephone line Impedance	Nominally 600 Ω
Isolation	3 kV
TELEPHONE MODULE GSM Module	
Type	Quad-Band GSM 850/900/1800/1900 Mhz
Operating temperature	-30°C ≈ +75°C
Dimensions	90 x 130 x 38 mm
Weight	< 190 g
Supply voltage range	From 8 to 30Vac
Power consuption @12V	Power down 0.5mA, Sleep mode 29mA, Speech mode 184mA
Antenna Interface	SMA 50 Ω
REMOTE INTERFACE	
Digital Inputs GPIn	4x GP In optocoupled
Digital Outputs GPOut	4x GP Out Open Collector optoisolated

20 WEEE Directive – Informativa RAEE

In line with EU Directive 2012/19/UE for waste electrical and electronic equipment (WEEE), this electrical product must not be disposed of as unsorted municipal waste. Please dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling.

In Übereinstimmung mit der Richtlinie 2012/19/UE des Europäischen Parlaments und des Rates über Elektro- und Elektronik-Altgeräte (WEEE) darf dieses Elektrogerät nicht im normalen Hausmüll oder dem Gelben Sack entsorgt werden. Wenn Sie dieses Produkt entsorgen möchten, bringen Sie es bitte zur Verkaufsstelle zurück oder zum Recycling-Sammelpunkt Ihrer Gemeinde.

Conformément à la Directive 2012/19/UE sur les déchets d'équipements électriques et électroniques (DEEE), ce produit électrique ne doit en aucun cas être mis au rebut sous forme de déchet municipal non trié. Veuillez vous débarrasser de ce produit en le renvoyant à son point de vente ou au point de ramassage local dans votre municipalité, à des fins de recyclage.

In navolging van richtlijn 2012/19/UE van het Europees Parlement en de Raad betreffende afgedankte elektrische en elektronische apparatuur (AEEA) mag dit elektrische product niet als ongescheiden huisvuil worden weggedaan. Breng dit product terug naar de plaats van aankoop of naar het gemeentelijke afvalinzamelingspunt voor recycling.

In ottemperanza alla Direttiva UE 2012/19/UE sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE), questo prodotto elettrico non deve essere smaltito come rifiuto municipale misto. Si prega di smaltire il prodotto riportandolo al punto vendita o al punto di raccolta municipale locale per un opportuno riciclaggio.

De conformidad con la Directiva 2012/19/UE de la UE sobre residuos de aparatos eléctricos y electrónicos (RAEE), este producto eléctrico no puede desecharse con el resto de residuos no clasificados. Deshágase de este producto devolviéndolo al punto de venta o a un punto de recogida municipal para su reciclaje.

I henhold til EU-direktiv 2012/19/UE om affald af elektrisk og elektronisk udstyr (WEEE) må dette udstyr ikke bortskaffes som usorteret husholdningsaffald. Bortskaf dette produkt ved at returnere det til salgsstedet eller til det lokale indsamlingssted, så det kan genbruges.

I linje med EU-direktiv 2012/19/UE om avfall som utgörs av eller innehåller elektriska eller elektroniska produkter (WEEE) får denna elektriska produkt inte bortskaffas som osorterat kommunalt avfall. Bortskaffa den i stället genom att lämna in den på försäljningsstället eller din lokala återvinningsstation.

EU:n sähkö- ja elektroniikkalaiteromudirektiivin (2012/19/UE) mukaisesti tätä elektroniikkalaitetta ei saa laittaa lajittelemattoman yhdyskuntajätteen sekaan. Hävitä laite palauttamalla se ostopaikkaan tai viemällä se elektroniikkaromun keräyspisteeseen.

De acordo com a Directiva Europeia 2012/19/UE sobre resíduos sólidos de equipamento eléctrico e electrónico (WEEE), este produto eléctrico não pode ser deitado fora juntamente com o lixo municipal indiferenciado. Por favor, no final da vida útil deste produto, devolva-o ao estabelecimento de aquisição, ou entregueo no local de recolha apropriado para reciclagem designado pelo seu município.

V souladu se smrnicí EU . 2012/19/UE o odpadních elektrických a elektronických zaYízeních (OEEZ) se tento elektrický výrobek nesmí likvidovat jako netYídný komunální odpad. PYi likvidaci tento výrobek vrat'te prodejci nebo ho odevzdejte k recyklaci do komunálního sbrného zaYízení.

Vastavalt EL direktiivile 2012/19/UE, mis käsitleb elektri- ja elektroonikaseadmete jäätmeid (WEEE), ei või antud toodet visata majapidamisjäätmete hulka. Palun tagastage antud toode taaskasutamise eesmärgil müügipunkti või kohaliku piirkonna jäätmekogumise punkti.

V súlade so smernicou 2012/19/UE o odpade z elekrických a elektronických zariadení (OEEZ) sa toto elektrické zariadenie nesmie odstranovat' ako netriedený komunálny odpad. Výrobok odstránte jeho vrátením v mieste nákupu alebo odovzdaním v miestnom zbernom zariadení na recyklovanie.

21 WARRANTY

The manufacturer offers a 1-year ex works warranty.
Do not open the equipment. The warranty shall be voided if any of the warranty seals are broken.
The manufacturer shall not be liable for damage of any kind deriving from or in relation to incorrect use of the product.

DECLARATION OF CONFORMITY

Manufacturer: AXEL TECHNOLOGY S.r.l.
Company title: VIA C. DI SABBIUNO 6/F - 40011 ANZOLA EMILIA - BOLOGNA ITALY

DECLARES UNDER ITS OWN RESPONSIBILITY THAT THE FOLLOWING EQUIPMENT

MODEL: **PHONEX D1**
DESCRIPTION: **Digital studio telephone hybrid Audio processor DSP-Based. DTMF decoder and GPIN/GPOUT port. Graphic LCD display.**
IS COMPLIANT

To the requirements and all characteristics enacted from Community Directive:

1. **2014/30/UE "EMC" Electromagnetic Compatibility**
2. **2014/35/UE "LDV" Low Voltage Directive**
3. **2011/65/UE "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2)"**

and following Harmonized Standards:

- √ **EN 55103-1:2009** Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Emissions.
- √ **EN 55103-2:2009** Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Immunity.
- √ **EN 60065:2016** Audio, video and similar electronic apparatus. Safety requirements.
- √ **EN 61000-6-1:2007** Electromagnetic compatibility. Generic standards. Immunity for residential, commercial and light-industrial environments.
- √ **EN 61000-6-3:2007+A1:2011** Electromagnetic compatibility. Generic standards. Emission standard for residential, commercial and light-industrial environments.
- √ **EN 60950-1:2006+A2:2013** Information technology equipment. Safety. General requirements.
- √ **EN 55024:2010** Information technology equipment. Immunity characteristics. Limits and methods of measurement.
- √ **EN 50581:2012** - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
- √ **EN 55032:2015** - Electromagnetic compatibility of multimedia equipment. Emission Requirements.
- √ **EN 55024:2010+A1:2015** - Information technology equipment. Immunity characteristics. Limits and methods of measurement.

Remark: The present product must be installed as showed in the installation manual provided together with the equipment and used at the sole scope for wich it has been manufactured.

Anzola Emilia (BO) Italy, 09/11/2016

C.E.O.
Giuseppe Vaccari

Axel Technology s.r.l.
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info@axeltechnology.com

DECLARATION OF CONFORMITY

Manufacturer: AXEL TECHNOLOGY S.r.l.
Company title: VIA C. DI SABBIUNO 6/F - 40011 ANZOLA EMILIA - BOLOGNA ITALY

DECLARES UNDER ITS OWN RESPONSIBILITY THAT THE FOLLOWING EQUIPMENT

MODEL: **PHONEX D2 MKII**
DESCRIPTION: **Digital studio telephone hybrid Audio process DSP-Based. Digital AGC processor with 2 band EQ. DTMF decoder and GPIN/GPOUT port. Graphic LCD display.**
IS COMPLIANT

To the requirements and all characteristics enacted from Community Directive:

1. **2014/30/UE "EMC" Electromagnetic Compatibility**
2. **2014/35/UE "LDV" Low Voltage Directive**
3. **2011/65/UE "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2)"**

and following Harmonized Standards:

- √ **EN 55103-1:2009** Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Emissions.
- √ **EN 55103-2:2009** Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Immunity.
- √ **EN 60065:2016** Audio, video and similar electronic apparatus. Safety requirements.
- √ **EN 61000-6-1:2007** Electromagnetic compatibility. Generic standards. Immunity for residential, commercial and light-industrial environments.
- √ **EN 61000-6-3:2007+A1:2011** Electromagnetic compatibility. Generic standards. Emission standard for residential, commercial and light-industrial environments.
- √ **EN 60950-1:2006+A2:2013** Information technology equipment. Safety. General requirements.
- √ **EN 55024:2010** Information technology equipment. Immunity characteristics. Limits and methods of measurement.
- √ **EN 50581:2012** - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
- √ **EN 55032:2015** - Electromagnetic compatibility of multimedia equipment. Emission Requirements.
- √ **EN 55024:2010+A1:2015** - Information technology equipment. Immunity characteristics. Limits and methods of measurement.

Remark: The present product must be installed as showed in the installation manual provided together with the equipment and used at the sole scope for wich it has been manufactured.

Anzola Emilia (BO) Italy, 09/11/2016

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