

# TelCom

## **USER MANUAL**

Version1.03

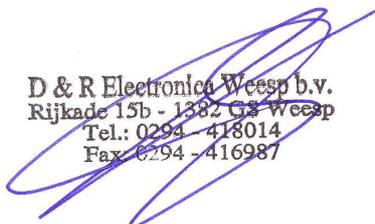
Dear Customer,

Thank you for choosing the TelCom Telephone Hybrid.

This time you are not faced with a huge manual because it is simply not necessary because of the natural recognition of all functions on the user interface.  
All functions are self-explanatory and you will certainly appreciate the ergonomics of this design.

We are confident that you will be using the TelCom for many years to come, and wish you a lot of success in your application.

With kind regards,



D & R Electronica Weesp b.v.  
Rijkade 15b - 1382 GS Weesp  
Tel.: 0294 - 418014  
Fax: 0294 - 416987

**Duco de Rijk**  
President

**D&R ELECTRONICA WEESP B.V.**

Rijkade 15B  
1382 GS WEESP-HOLLAND  
The Netherlands  
Phone: 0294-418 014  
Fax: 0294-416 987  
Website: <http://www.d-r.nl>  
E-mail: [info@d-r.nl](mailto:info@d-r.nl)

## What is a Telephone hybrid?

Telephone hybrids provide the interface between professional audio equipment and the public telephone network. They provide protection for your equipment and the public telephone lines, allowing for varying line signals and line conditions. Automatically canceling out the unwanted signal they also facilitate two-way communication down a single telephone line.

Each hybrid has a telephone line connection, a handset connection and separate connectors for audio input and output from a broadcast mixer, or other professional audio source.

A large proportion of D&R hybrids are used in radio and television broadcasting applications allowing external callers to be connected to the studio mixing console. Most of the other units are supplied to communication operations allowing extremely effective conversion between 4-wire audio circuits and standard telephone lines.

### Specs:

#### AUDIO PROGRAM IN AND OUT

Connectors : Jack stereo 6.3mm and Cinch connectors  
Input impedance : 5kOhm (transformer balanced)  
Output level : -40 up to +6 dBu  
Output impedance : 2kOhm (transformer balanced)  
Noise on Receive output : less than -82dB (A weighted)

#### GENERAL DATA

Power supply : Powered by telephone line  
Dimensions : Front 240x44mm, Depth 110mm  
Weight : 725grams

#### LINE INTERFACE

Connector : RJ11  
Nominal input level : -6dBu  
Nominal output level : -6dBu  
Compensation Mode : fully electronic\*  
Impedance : 600 Ohm

\* Depends on telephone line characteristics

## Front panel lay-out



<b>Hook</b>	Line connect switch to connect and disconnect calls from the telephone line. At the same time a LED lights up
<b>Call LED</b>	When a call is coming in this LED lights up indicating a call is coming in.
<b>Ringer off</b>	This hidden switch allows you to turn the internal buzzer off by inserting a small screwdriver
<b>Send</b>	This trimmer adjust the level of the audio sent to the telephone caller which is connected to the SEND jack/cinch connector on the rear panel.
<b>Receive</b>	This trimmer adjust the level of the audio coming in from the telephone caller which is connected to the RECEIVE jack/cinch connector on the rear panel.
<b>Side tone</b>	With this trimmer you can adjust the side tone to a minimum

## Back panel lay-out



<b>RECEIVE</b>	Balanced Stereo jack/Cinch output to be connected to line input of a mixer.
<b>SEND</b>	Balanced Stereo jack/Cinch input to be connected to Mix Minus/Clean feed (N-1) or Aux output of the mixer.
<b>PHONE:</b>	RJ-11 connector to connect with a telephone set.
<b>LINE (wall)</b>	RJ-11 connector to connect with the public telephone network.

## USER MANUAL

The D&R TelCom telephone Hybrid is designed to create an easy connection between the public telephone line and your studio equipment.

The Hybrid has to be inserted between your telephone and the telephone line.

Connect the two wires of the telephone line's wall unit to the RJ-11 connector labeled LINE (wall) and connect the telephone appliance itself to the Hybrid's phone output on the RJ-11 connector labeled PHONE. This can be done with standard available cable assemblies from your local phone shop.

Now the hybrid is interfaced (fully balanced) between your telephone handset and its connection to the outside world. The hybrid can now split the send and return signals.

Now connect the hybrid's balanced audio output labeled **RECEIVE** to a (preferable) balanced input of around -10dBu on a mixing console.

The TelCom stereo jack or Cinch connector labeled **SEND** has to be connected to a line level (cleanfeed) output of your mixing console.

This output has to be the mix of all signals except the signal coming from the hybrid itself to avoid feedback. An Aux output will do, or in broadcast mixers a clean-feed is the best.

**NOTE: The output of the Hybrid can be connected balanced via the jack connector or unbalanced via the Cinch connectors.**

(Please be aware that the jack interrupts the Cinch connection)

## WIRING SCHEME

<b>PHONE:</b>	RJ-11 connector to connect with a handset.
<b>LINE (wall)</b>	RJ-11 connector to connect with the public telephone network.
<b>SEND</b>	Balanced Stereo jack or unbalanced input to be connected to Mix Minus/Clean feed (N-1) or Aux output of the mixer.
<b>RECEIVE</b>	Balanced Stereo jack or unbalanced Cinch output to be connected to a line level input of the mixer.

## CONNECTION WIRING OF BOTH PHONE AND LINE RJ-11 CONNECTORS

PHONE/WALL RJ-11	FUNCTION	CONNECTION
Pin 1	n.c.	
Pin 2	A (telephone line)	In/out
Pin 3	B (telephone line)	In/out
Pin 4	n.c.	

## WIRING OF AUDIO IN AND OUTPUTS

STEREO JACK TO LINE INPUT / TO CLEANFEED OUTPUT	TYPE	CONNECTION
Screen	Screen (ground)	Audio ground
Ring	Non-phase (cold)	Audio -
Tip	Phase (hot)	Audio +
MONO CINCH TO LINE INPUT / TO CLEANFEED OUTPUT		
Screen	Non-phase (cold)/ground	Audio - ground
Tip	Phase (hot)	Audio +

## SPECIFICATIONS

### Audio Inputs

<b>RECEIVE</b>	
Impedance	5k Ohm, electronically balanced
Common mode rejection	>20dB
Maximum input level	+6dBu
Nominal input level	-6 dBu
Frequency response	300Hz – 5kHz
Connectors	balanced-STEREO JACK / CINCH

<b>SEND</b>	
Impedance	< 2kOhm, electronically balanced
Common mode rejection	>30dB
Maximum output level	+6dBu
Nominal output level	- 6 dBu
Bandwidth to telephone line	250Hz – 4kHz, -3dB ref 1 kHz
Telephone line impedance	Nominally 600 ohm
Telephone line impedance range	300 ohm to 1500 ohm
Connectors	balanced-STEREO JACK / CINCH
<b>GENERAL</b>	
Distortion	Less than 0.1% (0dBu out)
Power supply	From telephone line
Power consumption	Less than 5mA
Dimensions	110x110x40mm (Width x Depth x Height)
Weight	700 g net including packing



## SETTING UP PROCEDURE

When all connections are made you can dial the caller to whom you want to talk. If this connection is made you connect the caller to the mixing console by pushing the HOOK switch. Now listen by means of a PFL (CUE) switch on your mixer to the caller and adjust while talking the Side tone trimmer so that the outgoing signal (your voice) is best attenuated.

Note: the line balancing to your own telephone station has to be performed one time only, when no changes are made to the telephone system in your place.

The maximum attenuation will be between 20 to 26 dB.

Note: This also depends upon the characteristics of the telephone line system on location.

**Hook**

The function of the "**HOOK**" switch is to connect the Hybrid to the Telephone line. With the default Factory setting of jumper J7+8 to Par, it is also possible to pick up the incoming call by a connected Telephone Handset (the HOOK switch needs to be in its off state).

In this default setting it is also possible to make a call from the Telephone handset because the TELCOM unit is not active unless the Hook switch is pushed.

With the Jumper J7+8 setting changed to PhoneCon.switch the Handset is not working anymore and completely removed from the Telcom circuitry. In this way you can pick up call only by the HOOK switch and only hear the incoming call through your send and receive connectors when connected to a mixing console.

**Call**

When a call is coming in this **LED** lights up indicating a call is coming in.

When the Ringer is not switched off (this can be done by a small screwdriver pushing down the hidden switch underneath the hole labeled " Ringer off" ) you will hear a ringer melody coming from the TelCom unit until the moment the Hook switch is pushed. Now the caller is connected to the TelCom unit.

**Ringer off**

Behind this small hole you will find switch that can switch off the internal ringer (small speaker) This can be done by a small screwdriver pushing down the hidden switch underneath the hole labeled " Ringer off"

**Send**

Behind this small hole in the front panel there is a trimmer that adjust the outgoing level to the caller coming from the mixer. Adjustment has to be performed once in cooperation with a caller that can give feedback about the level she/he hears.

**Receive**

Behind this small hole in the front panel there is a trimmer that adjust the incoming level from the caller going to the mixer. Adjustment has to be performed once in cooperation with a caller that can give feedback about the level she/he talks into the phone. This adjustment has to be a balance between receive level on the TelCom unit and input gain of the connected mixer.

**Sidetone**

This hidden trimmer needs to adjusted to a position where the outgoing level is minimally heard in the receive level coming from the caller.

# Conformity declaration

according ISO/IEC 22 and EN 45014

**Name Manufacturer** D&R Electronica Weesp b.v.  
**Address Manufacturer** Rijnkade 15B, 1382 GS Weesp,  
The Netherlands

**declares that the product**

**Name product** TELEPHONE HYBRID  
**Model number** TELCOM  
**Product options** All

**Complies with the following product specifications:**

**Security** EN 60950: 1988 +A1, A2

**EMC:** CISPR-22: 1985 / EN 55022: 1988 klasse B (\*)  
EN 50082-1: 1992  
IEC 801-2:1991 / prEN 55024-2:1992 - 3kV CD, 8kV AD  
IEC 801-3:1984 / prEN 55024-3:1991 - 3 V/m  
IEC 801-4:1988 / prEN 55024-4:1992 - 0.5kV signal cables,  
1 kV power cables.

**Additional info:**

**The product complies herewith to the following rules**

**Low voltage 73 / 23 / EEG**  
**EMC-rules 89 / 336 / EEG.**

**(\*) The product has been tested in normal users conditions.**

## PRODUCT SAFETY

This product is manufactured with the highest standards and is double checked in our quality control department for reliability in the "HIGH VOLTAGE" section.

### CAUTION

Never remove any panels, or open this equipment. No user serviceable parts inside. Equipment power supply must be grounded at all times.

Only use this product as described, in user manual or brochure.

Do not operate this equipment in high humidity or expose it to water or other liquids. Check the AC power supply cable to assure secure contact.

Have your equipment checked yearly by a qualified dealer service center.

Hazardous electrical shock can be avoided by carefully following the above rules.

### PLEASE READ THE FOLLOWING INFORMATION

Especially in sound equipment on stage the following information is essential to know.

An electrical shock is caused by voltage and current, actually it is the current that causes the shock. In practice the higher the voltage the higher the current will be and the higher the shock. But there is another thing to consider and it is resistance.

When the resistance in Ohms is high between two poles, the current will be low and vice versa. All three of these; voltage, current, and resistance are important in determining the effect of an electrical shock.

*However, the severity of a shock primarily determined by the amount of current flowing through a person.*

A person can feel a shock because the muscles in a body respond to electrical current and because the heart is a muscle it can affect, when the current is high enough.

Current can also be fatal when it causes the chest muscles to contract and stop breathing. At what potential is current dangerous. Well the first feeling of current is a tingle at 0.001 Amp of current. The current between 0.1 Amp and 0.2 Amp is fatal.

Imagine that your home fuses of 20 Amp can handle 200 times more current than is necessary to kill.

How does resistance affect the shock a person feels.

A typical resistance between one hand to the other in "dry" condition could well over 100,000 Ohm.

*If you are playing on stage your body is perspiring extensively and your body resistance is lowered by more than 50%. This is a situation in which current can easily flow.*

Current will flow when there is a difference in ground potential between equipment on stage and in the P.A. system. Please do check if there is any potential between the housing of the mikes and the guitar synth amps, which will be linked by your body on stage. Imagine, a guitar in your hand and your lips close to the mike! A ground potential difference of above 10 volts is not unusual, in improperly wired buildings it can possibly be as high as 240 volts.

Although removing the ground wire sometimes cures a system hum, it will create a very hazardous situation for the performing musician.

*Always earth all your equipment by the grounding pin in your mains plug.*

*Hum loops should be only cured by proper wiring and isolation input/output transformers.*

Replace fuses always with the same type and rating after the equipment has been turned off and unplugged.

If the fuse blows again you have an equipment failure, do not use it again and return it to your dealer for repair.

And last but not least be careful not to touch a person being shocked as you, yourself could also be shocked.

Once removed from the shock, have someone send for medical help immediately

*Always keep the above mentioned information in mind when using electrically powered equipment.*

# TelCom

## **SERVICE MANUAL**

Upon request