

TelCom

USER MANUAL

Version1.02

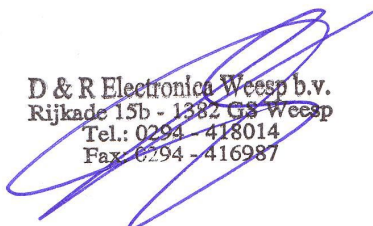
Dear Customer,

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,



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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



Hook	Line connect switch to connect and disconnect calls from the telephone line. At the same time a LED lights up
Call LED	When a call is coming in this LED lights up indicating a call is coming in.
Ringer off	This hidden switch allows you to turn the internal buzzer off by inserting a small screwdriver
Send	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.
Receive	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.
Side tone	With this trimmer you can adjust the side tone to a minimum

Back panel lay-out



RECEIVE	Balanced Stereo jack/Cinch output to be connected to line input of a mixer.
SEND	Balanced Stereo jack/Cinch input to be connected to Mix Minus/Clean feed (N-1) or Aux output of the mixer.
PHONE:	RJ-11 connector to connect with a telephone set.
LINE (wall)	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 appliance 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 +4dBu.

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

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

RECEIVE	
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

SEND	
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
GENERAL	
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 instead of the phone itself (which can be switched off depending upon the jumper J7/8 setting inside the TelCom unit).

Default factory setting is that the Phone is not switched off.

The green led indicates that a connection has been made.

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.

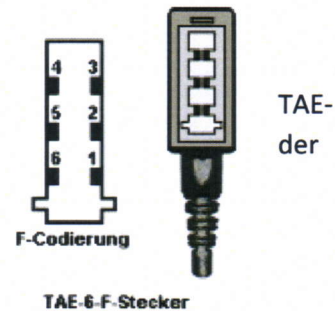
Technische Hinweise zum Anschluss des Telefonhybrids

Anschlussbelegung RJ11 / Keine Funktion des Telefons:

Manchmal kommt es vor, dass ein Telefon nicht am Telefonhybrid funktioniert. Dies liegt nicht an einem Gerätedefekt, sondern an unterschiedlichen Anschlussbelegungen der Telefonleitungen (RJ11) am Telefon. Nachfolgenden führen wir die richtige Belegung der einzelnen Stecker auf, damit der Telefonhybrid betrieben werden kann:

TAE-Stecker (Wandanschluss):

F-Codierung: Abk. für "Fernsprecher-Codierung". Durch Nasen am Stecker passen die Stecker von Telefonen immer nur in F-Buchsen Anschlussdose.

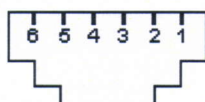
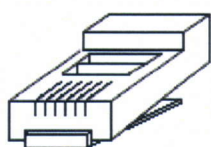


F-Codierung	1	La oder a1	a-Leitungsader	weiß
	2	Lb oder b1	b-Leitungsader	braun
	3	W	Externer Wecker/Klingel	grün
	4	E	Erde für Nebenstelle	gelb
	5	b2	b-Leitungsader vom Gerät zurück	-
	6	a2	a-Leitungsader vom Gerät zurück	-

Für den Betrieb des Telefons und des Telefonhybrids ist die Belegung 1 und 2 erforderlich.

RJ11-Stecker (Western-Stecker): Belegung Telefonhybrid (PHONE + LINE)

6 Kontakte (davon 4 belegt), Westernstecker 6P4C. Die beiden äußeren Kontakte fehlen.

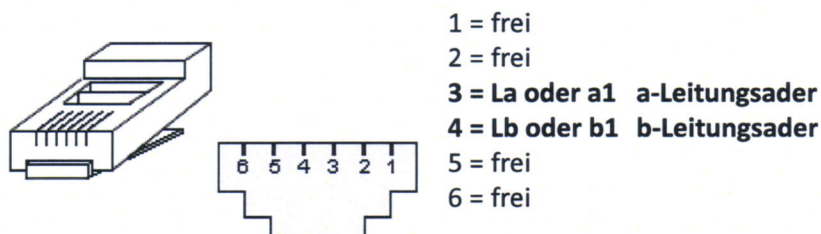


- 1 = frei
- 2 = frei
- 3 = La oder a1 a-Leitungsader
- 4 = Lb oder b1 b-Leitungsader
- 5 = frei
- 6 = frei

RJ11-Stecker (Western-Stecker): Belegung Telefon Internationale Norm

6 Kontakte (davon 4 belegt), Westernstecker 6P4C. Die beiden äußeren Kontakte fehlen.

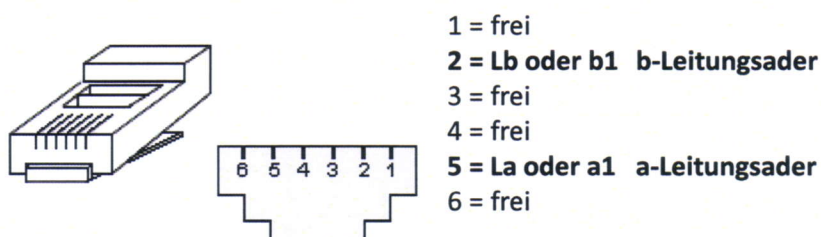
Telefone mit dieser Beschaltung funktionieren mit jedem Standard – Kabel am Telefonhybrid



RJ11-Stecker (Western-Stecker): Belegung Telefon (z.T. Telekom / Siemens)

6 Kontakte (davon 4 belegt), Westernstecker 6P4C. Die beiden äußeren Kontakte fehlen.

Für den Betrieb bestimmter Telefone muss ein angepasstes Kabel verwendet werden, sonst ist kein Betrieb des Telefons möglich.



Der Hersteller hat meistens folgendes Kabel im Lieferumfang:

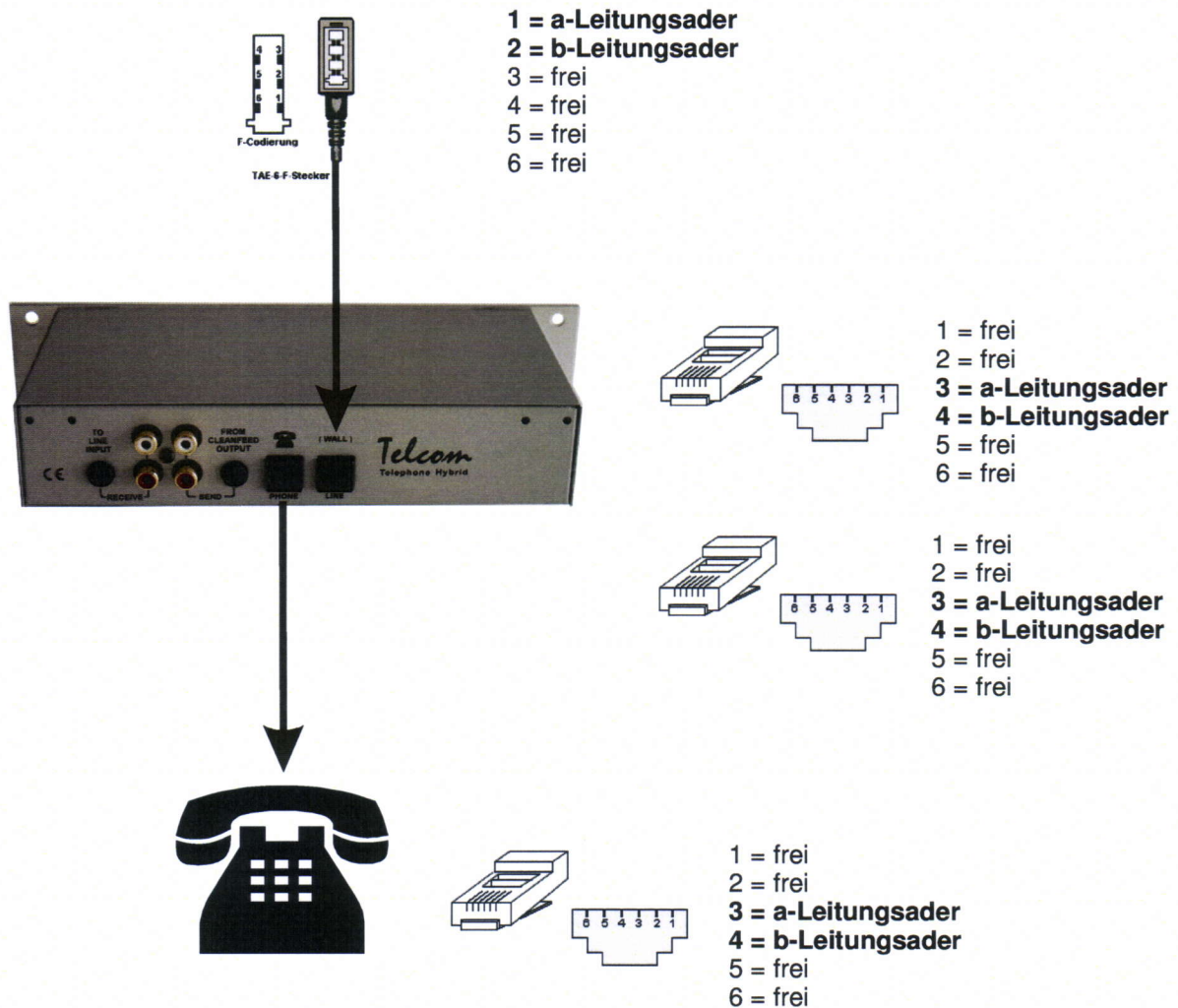
TAE-F

RJ11

- | | | | |
|---|---------------------------|------|-------------------------------|
| 1 | La oder a1 a-Leitungsader | ---> | 5 = La oder a1 a-Leitungsader |
| 2 | Lb oder b1 b-Leitungsader | ---> | 2 = Lb oder b1 b-Leitungsader |

Wenn dieses Kabel in den Hybrid gesteckt wird, ist keine Funktion möglich, da das Gerät auf 3 und 4 funktioniert und nicht auf 5 und 2 !!!

Hier der Belegungsplan als Gesamtübersicht



Bei Nichtfunktion des Telefons, ist die Belegung

des RJ11 – Steckers auf 5 und 2 zu ändern !!!

oder

1 = frei
2 = b-Leitungsader
3 = frei
4 = frei
5 = a-Leitungsader
6 = frei

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
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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

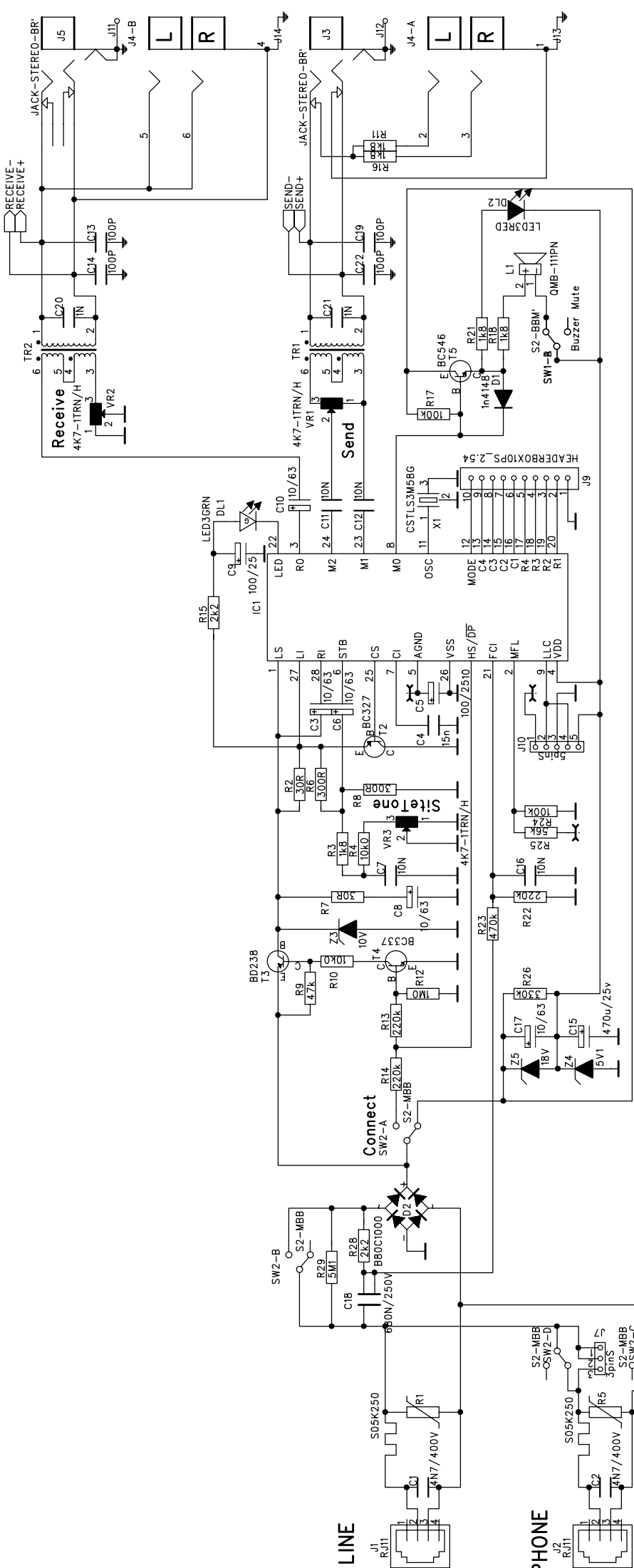
SERVICE MANUAL

Upon request

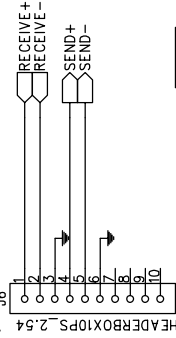
TelCom

SERVICE MANUAL

Upon request



Lyrg, Telco Connection





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Project: **TelCom 1**

Title: **Hybrid**

File:

code: **2085******

Date: **04-06-2008**

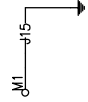
Sheet: **1 of 1**

Design: Jan Betten

Modify: -----

Rev:

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Datum : 12-11-08 [11:10]
D&R Electronica Weesp B.V.

PROD.STUKL.PRINTEN GES. OP OMS

Blad : 1
Bedrijf : 100

Positie	Artikel code	Omschrijving	Leveranciercode	Netto hoeveelheid	Vrd eh.	Verval datum
Maakartikel:		60898515 TelCom Telephone Hybride	Stuklijsteenheid:		1 st	
300	10700644	Afdekdp 6.4mm rond zwart		4.0000	st	
40	10800924	Doos Randapparatuur 9.5"		1.0000	st	
20	10150162	Frame TelCom-1p + Frontpanel		1.0000	st	
150	10500084	Insul. plate 9.5" randapp. PVC		1.0000	st	
130	10700625	Kartelring M3 (buitenvertand)		2.0000	st	
330	10250387	Led 3mm red SLR-03A510-020		2.0000	st	
10	20851515	PCB ins TelCom		1.0000	st	
140	10700600	Parker 2.9x6.5 verz zwart		1.0000	st	
80	10700656	Plakvoet SJ-5012		4.0000	st	
320	10450210	Pushb SiF 2.8 red-square		1.0000	st	
310	10450010	Pushb TAK12x12-107 A3.3 Black		1.0000	st	
90	10800956	Schuimblok 9.5" sleuf VE5-2083		2.0000	st	
290	10800982	Schuimplaat 530x280x20 mm HLTR		2.0000	st	
120	10700787	Taptite M3x6 bolkoppozidr/zwrt		5.0000	st	
110	10700790	Taptite M3x6 verzkop/pozidr/zw		4.0000	st	

Datum : 12-11-08 [11:11]
D&R Electronica Weesp B.V.

PROD.STUKL.PRINTEN GES. OP OMS

Blad : 1
Bedrijf : 100

Positie	Artikel code	Omschrijving	Leveranciercode	Netto hoeveelheid	Vrd eh.	Verval datu
Maakartikel:		20851515 PCB ins TelCom	Stuklijsteenheid:		1 st	
520	10401246	Capacitor 1n0 R5.0 poly		2.0000	st	
450	10401253	Capacitor 10n R5.0 poly		2.0000	st	
470	10401254	Capacitor 15n R5.0 poly		1.0000	st	
110	10401255	Capacitor 4n7/400v R5.0		2.0000	st	
430	10400225	Capacitor 100pf R2.5 ker		4.0000	st	
640	10400267	Capacitor 680n R7.5 poly		1.0000	st	
680	10401261	Capacitor 100n R5.0 poly		2.0000	st	
180	10600535	Conn Cinch 4xPCB gold pl bush		1.0000	st	
370	10600445	Conn chass 805-D 4p (RJ11)		2.0000	st	
20	10250342	Diode 1N4148 (signal)		2.0000	st	
410	10400292	Elco 100uF/ 25V rad R5.0		3.0000	st	
580	10400294	Elco 470uF/ 25V rad R5 Taped		1.0000	st	
400	10400284	Elco 10uF/50V radial R5.0		4.0000	st	
220	10600478	Header 4P 0° R 2.54		3.0000	st	
210	10600479	Header 5P 0° R 2.54		1.0000	st	
670	10600506	Header 10P box 0° 2.54		2.0000	st	
170	10250023	Ic AS-2534 R		1.0000	st	
230	10600530	Jack Break slimline S253-84		2.0000	st	
700	10250386	Led 3mm green SLR-03A210-020		1.0000	st	
710	10250387	Led 3mm red SLR-03A510-020		1.0000	st	
10	10200420	PCB TelCom-p		1.0000	st	
650	10970009	Piezo buzzer PKM13EPYH4002-B0		1.0000	st	
60	10250345	Rect. B80C1500 (round)		1.0000	st	
510	10350765	Resistor 1M0 5% 1/4W		1.0000	st	
480	10350729	Resistor 1k0 5% 1/4W		2.0000	st	
490	10350731	Resistor 1k5 5% 1/4W		1.0000	st	
500	10350732	Resistor 1k8 5% 1/4W		3.0000	st	
540	10350733	Resistor 2k2 5% 1/4W		2.0000	st	
630	10350772	Resistor 5M1 5% 1/4W		1.0000	st	
660	10350738	Resistor 5k6 5% 1/4W		1.0000	st	
440	10350848	Resistor 10k0 1% 1/4W		1.0000	st	
460	10350743	Resistor 15k 5% 1/4W		1.0000	st	
560	10350790	Resistor 30E1 1% 1/4W		1.0000	st	
690	10350882	Resistor 30k1 1% 1/4W		1.0000	st	
600	10350749	Resistor 47K 5% 1/4W		2.0000	st	
610	10350750	Resistor 56k 5% 1/4W		1.0000	st	
420	10350753	Resistor 100K 5% 1/4W		2.0000	st	
530	10350757	Resistor 220k 5% 1/4W		3.0000	st	
550	10350789	Resistor 300E 1/4watt		1.0000	st	
620	10350918	Resistor 301E 1% 1/4W		1.0000	st	
570	10350759	Resistor 330k 5% 1/4W		1.0000	st	
590	10350761	Resistor 470k 5% 1/4W		1.0000	st	
200	10350002	Resistor vdr S10V-S05K250		2.0000	st	
190	10970011	Resonator CSALF3M58G55-B0		1.0000	st	
240	10600414	Shunt 2p (mini jumper)		4.0000	st	
380	10550414	Switch 2pole mini NS		1.0000	st	
390	10550963	Switch Alps 4p-sh (4x om)		1.0000	st	
350	10950018	Trafo LM-NP-1003-B (PTT line)		2.0000	st	
80	10250333	Transistor BC327/25-RR (TAPE)		1.0000	st	
100	10250332	Transistor BC337/25-RR Tape!!!		2.0000	st	
140	10300155	Trimmer 10K 1turn vert		2.0000	st	
130	10300146	Trimmer 4k7 1turn vert (H)		1.0000	st	
160	10250371	Zenerdiode 10V/400mW		1.0000	st	

Datum : 12-11-08 [11:11]
D&R Electronica Weesp B.V.

PROD.STUKL.PRINTEN GES. OP OMS

Blad : 2
Bedrijf : 100

Positie	Artikel code	Omschrijving	Leveranciercode	Netto hoeveelheid	Vrd eh.	Verval datum
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150	10250350	Zenerdiode 18V0/400mW		1.0000	st	
360	10250369	Zenerdiode 5V1/400mW		1.0000	st	