

# TH 2

**GEBRUIKSAANWIJZING  
USER MANUAL  
GEBRAUCHSANWEISUNG  
MODE D'EMPLOI**



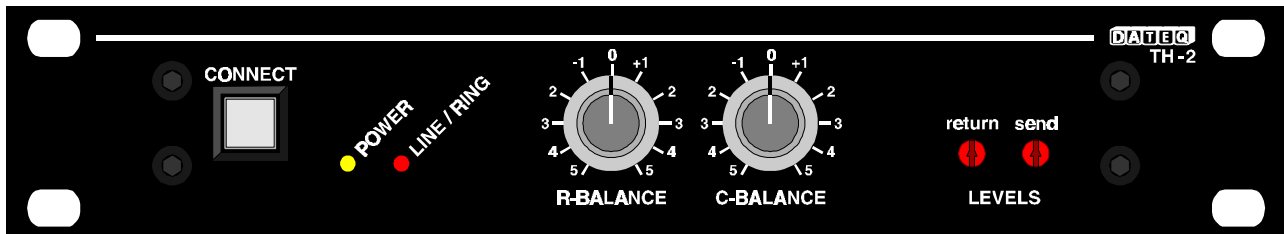
## Safety instructions

- 1 All safety instructions, warnings and operating instructions must be read first.
- 2 All warnings on the equipment must be heeded.
- 3 The operating instructions must be followed.
- 4 Keep the operating instructions for future reference.
- 5 The equipment may never be used in the immediate vicinity of water; make sure that water and damp cannot get into the equipment.
- 6 The equipment may only be installed or fitted in accordance with the manufacturer's recommendations.
- 7 The equipment must be installed or fitted such that good ventilation is not obstructed in any way.
- 8 The equipment may never be installed in the immediate vicinity of sources of heat, such as parts of heating units, boilers, and other equipment which generates heat (including amplifiers).
- 9 Connect the equipment to a power supply of the correct voltage, using only the cables recommended by the manufacturer, as specified in the operating instructions and/or shown on the connection side of the equipment.
- 10 The equipment may only be connected to a legally approved earthed mains power supply.
- 11 The power cable or power cord must be positioned such that it cannot be walked on in normal use, and objects which might damage the cable or cord cannot be placed on it or against it. Special attention must be paid to the point at which the cable is attached to the equipment and where the cable is connected to the power supply.
- 12 Ensure that foreign objects and liquids cannot get into the equipment.
- 13 The equipment must be cleaned using the method recommended by the manufacturer.
- 14 If the equipment is not being used for a prolonged period, the power cable or power cord should be disconnected from the power supply.
- 15 In all cases where there is a risk, following an incident, that the equipment could be unsafe, such as:
  - if the power cable or power cord has been damaged
  - if foreign objects or liquids (including water) have entered the equipment
  - if the equipment has suffered a fall or the casing has been damaged
  - if a change in the performance of the equipment is noticedit must be checked by appropriately qualified technical staff.
- 16 The user may not carry out any work on the equipment other than that specified in the operating instructions.

## Introduction

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The DATEQ TH 2 telephone hybrid forms an interface between a normal telephone line and the studio equipment, in order to realise telephone conversations between an announcer in the studio and a person at the telephone. To make this possible, the telephone line has to be connected to the mixing console.



A normal telephone line exists of a single (twisted) pair of wires. Communication takes place in two directions on the same pair of wires. If this bi-directional telephone line would be connected directly into the mixing console, the output signal from the mixer would also be fed back into the telephone input channel of the console (signal from the same telephone line). This results in distortion of the total mix. To prevent this, a hybrid like the TH 2 should be used. The hybrid separates the signal to the telephone line from the signal at the other end (this is called 'side tone reduction'). This will result in a better sound quality during telephone interviews. Analog hybrids like the TH 2 are not capable of achieving total side tone reduction, however, a reduction of more than 20 dB is sufficient for normal operation.

During operation, the hybrid has to be adjusted to the impedance of the connected telephone line. Normally this will be a dialup-line, which means that every time a connection is made the impedance can be different. This is why the TH 2 is supplied with adjustment knobs at the frontside, with which the actual line impedance can be easily trimmed.

## Product support

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For questions about the TH 2, accessoires and other products, please contact:

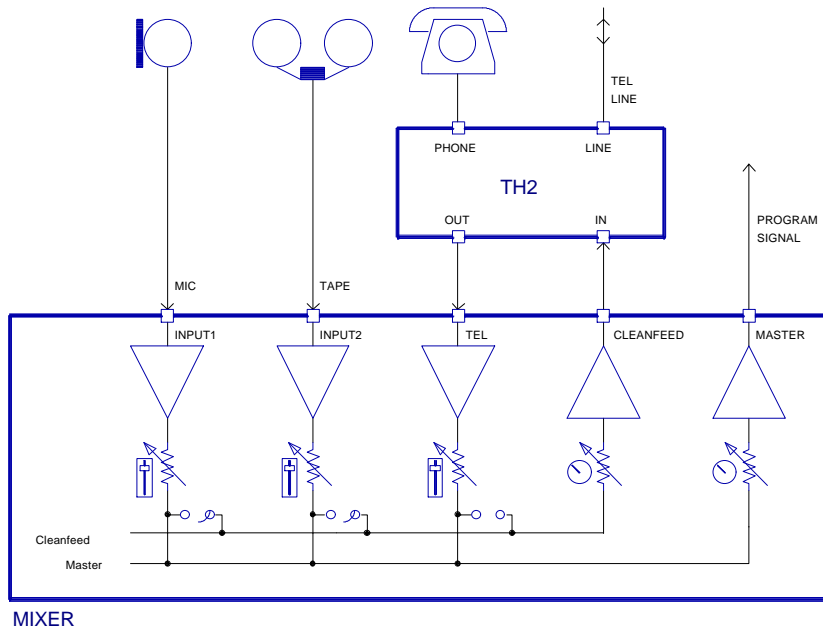
### **Dateq Audio Technologies B.V.**

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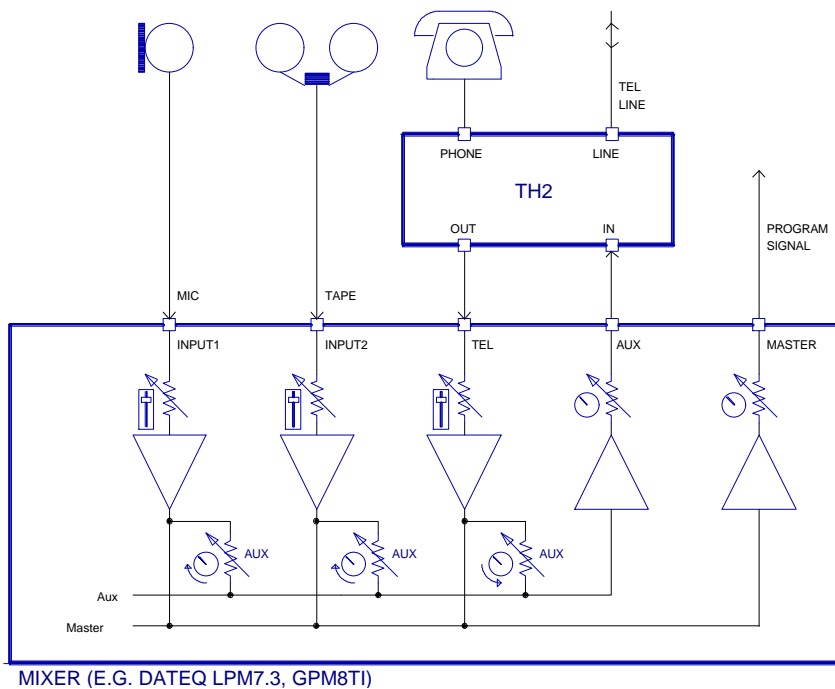
Telephone: +31-36-54 72 222  
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## Installation

To prevent feedback from the remaining side tone, it is not advisable to feed the total mix to the hybrid. Better is to generate a signal in which the signal of the hybrid itself is not present. Many mixing consoles call these outputs "Clean-Feeds". These "Clean-Feeds" consist of the total mix, except some selected channels. Commonly this is set by placing or removing a jumper on the desired channels. This should be done on the channel to which the TH 2 is connected (see figure below).

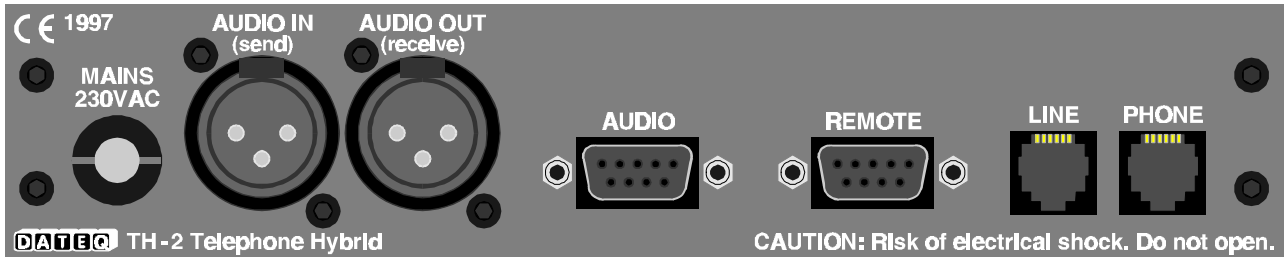


Another possibility is to connect the hybrid to a so-called "Auxiliary-output (post-fader) on the mixing console. Set the corresponding auxiliary control open on all channels, except for the TH 2 channel itself (see figure below). When two hybrids are connected, two AUX-busses are needed.



## Connections

All necessary connections are located at the rear side of the TH 2. The audio inputs and outputs are available in two ways: with XLR-connectors and with a 9-pin SUB-D connector, along with remote signalling and control on a secondary SUB-D connector. The telephone line and the external telephone can be connected using normal RJ12-connectors.



### AUDIO IN (send) (XLR 3-pins female)

Pin	Function	Type
1	Audio GND	A-GND
2	Audio +	In
3	Audio -	In

### AUDIO OUT (receive) (XLR 3-pins male)

Pin	Function	Type
1	Audio GND	A-GND
2	Audio +	Out
3	Audio -	Out

### AUDIO (SUBD9 Male)

Pin	Function	Type
1	Send +	In
2	GND	GND
3	Frame	Frame
4	GND	GND
5	Receive +	Out
6	Send -	In
7	GND	GND
8	GND	GND
9	Receive -	Out

The level of the audio inputs and outputs is adjustable with trimmers at the frontpanel.

**REMOTE (SUBD9 Female)**

Pin	Function	Type
1	ON (off hook)	In
2	n.c.	
3	n.c.	
4	n.c.	
5	A (telephone line)	In/Out
6	GND	GND
7	OFF (on hook)	In
8	n.c.	
9	B (telephone line)	In/Out

The REMOTE-connector enables remote control of the TH 2, for example from the mixing console. The ON- and OFF-inputs are pull-down: a pushbutton switch between GND and ON (1 and 6) switches the hybrid on (off-hook), a pushbutton switch between GND and OUT (6 and 7) switches the hybrid off again (on-hook). If the TH 2 is to be used in a stand alone configuration, the Sub-D 9 connector included in the box, should be connected.

**LINE (RJ12)**

Pin	Function	Type
1	n.c.	
2	n.c.	
3	A (telephone line)	In/Out
4	B (telephone line)	In/Out
5	n.c.	
6	n.c.	

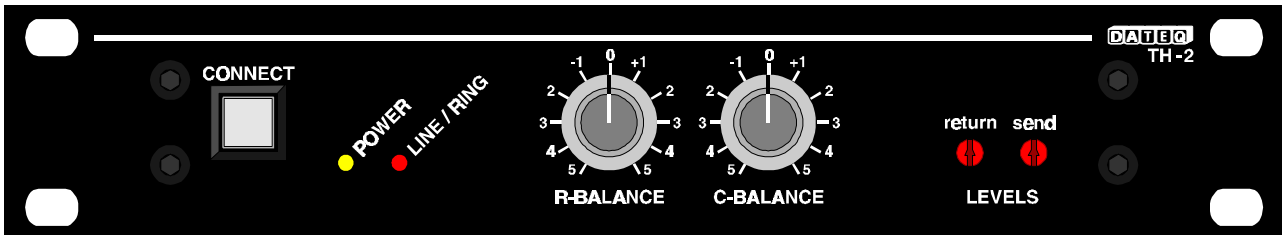
**PHONE (RJ12)**

Pin	Function	Type
1	n.c.	
2	n.c.	
3	A (telephone line)	In/Out
4	B (telephone line)	In/Out
5	n.c.	
6	n.c.	

In order to function properly, it is not necessary to connect an external telephone to the PHONE connector. When the TH 2 is switched on, the hybrid is connected to the telephone line (LINE connector). When switched off, the telephone line (LINE) is connected to the external phone connector (PHONE), to enable normal telephone conversations and dialling.

## Using the TH 2

Start with the TH 2 switched off (on hook). Establish a telephone connection with a normal phone connected to the PHONE-connector of the TH 2, or answer an inbound call simply by picking up the receiver, the way you would normally handle a call. When the connection is made, switch the hybrid on with the CONNECT button, or with the external ON switch. The phone will be disconnected, but the connection with the hybrid remains. The party at the other end will hear the signal sent to the TH 2 (the program signal). The caller signal is present at the audio output of the hybrid, and can be routed to the mixing console. Inbound calls are indicated by means of a blinking LINE/RING-LED.



## R- and C-balance

It is advisable to check if the hybrid is tuned to the current telephone line impedance before using the hybrid for a recording or on the air. This can be done by taking the following steps:

1. Check if the telephone connection is established, and see to it that the hybrid gets a return signal from the console. Listen to the individual pre-fade-listen-signal of the TH 2 (PFL, CUE or SOLO). The filtered telephone program return-signal will be faintly audible.
2. Adjust the R-BALANCE to the point where the level of this signal is as low as possible. This usually will be around the centre point (0).
3. Adjust the C-BALANCE to the point where the level of the signal is as low as possible. This will also be around the centre point (0).
4. Repeat steps 2 and 3 several times.

In practice, the impedance of the telephone line will not differ very much from connection to connection, some extra side tone reduction can be achieved this way.

## Auto-gain

The TH 2 is equipped with a special feature that reduces the signal from the hybrid by 6 dB when audio is sent from the mixer to the hybrid. This means that the caller is dimmed by 6 dB when the announcer in the studio speaks. This feature improves the side tone reduction with 6 dB. The consequence of this auto-gain feature is that when the caller and announcer are talking at the same time ("double talk"), the announcer in the studio will slightly drown the voice of the caller.

## Technical specifications

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### SEND SIDE

Input .....	XLR-3 female, electronically balanced
signal level .....	-6 dBu ... +6dBu
input impedance.....	> 10 kohm
common mode rejection .....	> 40 dB
Frequency response.....	280 Hz .. 3600 Hz (-3 dB) (18 dB/oct)
Send level to telephone line	
nominal.....	-6 dBm

### RECEIVE SIDE

Receive level from telephone line	
nominal.....	-6 dBm
Frequency response.....	280 Hz .. 3600 Hz (-3 dB) (18 dB/oct)
Output .....	XLR-3 male, electronically balanced
signal level .....	-6 dBu ... +6 dBu
output impedance.....	< 600 ohm

### HYBRID CIRCUITRY

Trans hybrid loss	
1kHz, 600 ohm line impedance .....	> 40 dB
white noise, 600 ohm line impedance .....	> 30 dB

### GENERAL

#### POWER SUPPLY

voltage.....	220...240 VAC / 50 Hz
power consumption .....	5 W

#### DIMENSIONS AND WEIGHT

front (1HU, half width) .....	241 x 44 mm (B x H)
depth .....	155 mm
weight.....	1,3 kg net