beyerdynamic

BEDIENUNGSANLEITUNG

OPERATING INSTRUCTIONS

NOTICE D'UTILISATION

DT 250/252

Studiokopfhörer
Professional Headphone
Casque de Studio

DT 280
DT 290
DT 291
DT 287
DT 297

Hör-Sprechgarnitur
Headset
Micro-casque

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BEDIENUNGSANLEITUNG DT 200-SERIE

deutsch

OPERATING INSTRUCTIONS DT 200-SERIES

english

NOTICE D'UTILISATION SERIES DT 200

français

OPERATING INSTRUCTIONS
DT 250 / DT 252 / DT 280 / DT 290 / DT 291 /DT 287 / DT 297

Thank you for selecting one of the DT 200 series professional studio headphones or headsets. They have been made in Germany from high-grade materials and assembled under stringent quality and performance tests to provide you with a professional communications tool. Please take some time to read through this instruction booklet to give you an idea of the design criterion and some information on connection, use and maintenance.

1. Safety

When plugging in any of the DT 200-series headsets to the drive amplifier, we recommend that this is done before it is fitted over the ears for use. This will give the technician the chance to check that the volume levels are not too high. Please remember that the user could well be a highly-paid presenter and the consequences of damaging his/her ears may well prove to be music to the ears of the lawyer! The very low levels of distortion can make listening levels higher than is perceived and we have to warn you that listening to programme or talkback at high levels for long periods can permanently damage your hearing.

2. Design Features

DT 250 / DT 252

The DT 250 / DT 252 is a closed dynamic headphone offering excellent ambient noise isolation making it suitable for all kinds of applications in broadcasting and recording studios. The headband and earphone cushioning systems have been carefully designed for maximum comfort and unobtrusive style. The powerful neodymium magnet system provides high-fidelity reproduction and a balanced sound. The standard impedance is 80 Ω. Furthermore, versions with 250 Ω systems are available. The connecting cables to the ear monitors run safely in the headband and the main connecting cable is terminated on one side with a multi-pin connector.

DT 280 / DT 290

Same as DT 250, but featuring the dynamic hypercardioid DM 290 microphone. The DT 280 / DT 290 headset is used in intercom and talkback systems as well as other applications where a dynamic microphone is required. The DT 280 / DT 290 V.11 has an integrated microphone preamp for AB-powering.

DT 291 / DT 297

Same as DT 250, but featuring an omnidirectional electret condenser microphone (DT 291) or a cardioid condenser microphone (DT 297). The DT 291 PV / DT 297 PV is equipped with an integrated preamp for phantom powering.
The DT 297 V.11 has an integrated microphone preamp for AB-powering.

3. Connection

The DT 250 / DT 252 headphones are supplied with an appropriate connecting cable. The the DT 280 / DT 290 / DT 291 / DT 287 / DT 297 headsets are supplied without connecting cable. For appropriate connecting cables, please refer to "Optional Accessories". Direct solder connections can be made to all cables with free ends (for cable connection refer to "Block Diagram"). Upon request the required plugs can be connected at the factory.
It is important that the external equipment the studio headphones or the headsets will be connected to are of good quality and of the correct impedance and

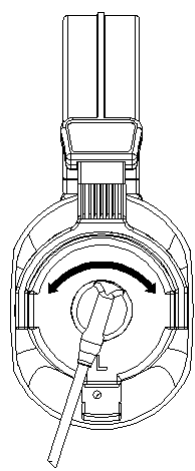
power ratings to get the best performance from them. Please refer to the "Technical Specifications" for detailed information.
The microphone of the DT 280 / DT 290 headset is designed for balanced connection. But it can be also connected to unbalanced microphone inputs.
The DT 291 PV or DT 297 PV headsets are suitable for the connection to balanced microphone inputs with phantom power. At a distance of 5 cm the microphone level is 13 mV or 250 mV.
Use the DT 280 / DT 290 V.11 or DT 287 / DT 297 V.11 headset with integrated preamp for connecting to TV cameras with a microphone input for AB-powering. At a distance of 5 cm the microphone level can be adjusted between 52 mV and 1.3 V at normal speech volumes. The supply voltage for the pre-amplifier can vary between 6 - 27 V. The power consumption is at:

		DT 290 V.11	DT 297 V.11
6 V	R_{VOR} 330 Ω	8 mA	6 mA
12 V	R_{VOR} 330 Ω	23 mA	20 mA
20 V	R_{VOR} 330 Ω	43 mA	40 mA
27 V	R_{VOR} 330 Ω	61 mA	57 mA

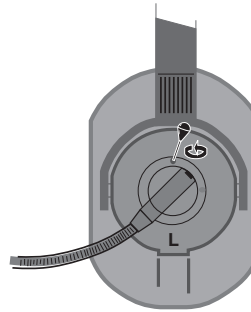
4. Operation

The headphones are fully adjustable and should be positioned for the best fit over the ears. This will give maximum long-term comfort and will minimise sound leakage or spill.
The microphone should be positioned to the side of the mouth, about 20 - 30 mm forward. This will keep it within the direct sound path but out of breath stream, therefore minimising any 'pop' sounds.

All versions:
The microphone boom is rotatable so that the microphone can be placed over the left or right ear.



V.11-Version of DT 287/297:
Adjustment of the built-in microphone pre-amplifier.



5. Limiter - LTD Versions

All headphone and headsets of the DT 200 series can also be ordered with an integrated limiter. This option ensures that the hearing of the user is protected at any time while using the product. In order to meet the important health and safety criteria the passive circuitry has been designed to achieve a similar sound impression as a complex VCA limiter. It is a two-phase limiting concept which incorporates a smooth decrease of the audio signal by 6 dB after which a hard, protective brick-wall limiter limits the audio signal when the input volume is still increased.

The advantage of this concept is the soft, compressor-like transition between the unlimited audio signal and the brick-wall limiter. This area still sounds very good, but signalises the user without producing immediate distortion that the limiter threshold is reached. The headphones and headsets include the addition "LTD" and can be found in chapter 7. "Models". All models can be ordered with any preferred limiter threshold.

6. Maintenance

As with any equipment which will be used in close proximity to sensitive parts of the body, it is essential that the ear pads, the headband and the microphone pop-shield are kept clean. Use a damp cloth for cleaning the ear-pads and headband using only gentle cleansing agents (such as washing-up liquid). Take care not to allow any water drops into the transducer elements and do not use any solvent cleaners. The microphone pop-shield of the head-sets can be easily removed and washed in warm water. Please take care that the pop shield is completely dry when it is replaced. The ear-pads can wear out due to effects of skin moisture, cosmetics and mechanical strains while wearing the headphones. From time to time you will need to replace the ear-pads:

1. Remove the ear-pad from the housing part.
2. Put the new ear-pad on the housing so that the drop-in pins can lock in the corresponding holes.
3. Press the new ear-pad with the thumbs of both hands to the housing until you hear a clear "click" noise.

The modular design of the headphone allows easy servicing as all part can easily be exchanged.

7. Models

DT 250 Studio headphone, **80** Ω, black, with WK 250.07 coiled cable, plug-in type (stereo mini jack plug with 1/4" adapter). . Order # 442.844

DT 250 Studio headphone, **250** Ω, black, with WK 250.07 coiled cable, plug-in type (stereo mini jack plug with 1/4" adapter). . Order # 443.530

DT 252 Single-ear studio headphone, **80** Ω, black, with WK 250.07 coiled cable, plug-in type (stereo mini jack plug with 1/4" adapter) . . . . . Order # 445.177

DT 280 MK II Single-ear headset, **200/80** Ω . . . . . Order # 701.599

DT 280 MK II Single-ear headset, **200/250** Ω . . . . . Order # 701.602

DT 280 V.11 MK II Headset, **200/80** Ω with integrated pre-amp . . . . . Order # 700.509

DT 290 MK II Headset, **200/80** Ω . . . . . Order # 701.610

DT 290 MK II Headset, **200/250** Ω . . . . . Order # 701.629

DT 290 V.11 MK II Headset, **200/80** Ω with integrated pre-amp . . . . . Order # 700.525

DT 291 PV MK II Headset, **80** Ω, condenser microphone (omnidirectional), with integrated preamp for phantom powering . . . . . Order # 701.440

DT 291 PV MK II same as above, but **250** Ω . . . . . Order # 701.459

DT 287 V.11 MK II Single-ear headset, **80** Ω, condenser microphone (cardioid) . . . . . Order # 700.517

DT 297 PV MK II Headset, **80** Ω, condenser microphone (cardioid), for 12 - 48 V phantom power . . . . . Order # 701.467

DT 297 PV MK II same as above, but **250** Ω . . . . . Order # 721.042

DT 297 V.11 MK II Headset, **80** Ω, with integrated microphone pre-amp . . . . . Order # 700.533

DT 250 LTD Studio headphone, **80** Ω, black, with limiter and cable. . . . . Order # 497.924

DT 250 LTD Studio headphone, **250** Ω, black, with limiter and cable. . . . . Order # 497.142

DT 252 LTD Single-ear studio headphone, **80** Ω, black, with limiter and cable. . . . . Order # 497.266

DT 280 MK II LTD Single-ear headset, **80** Ω, dynamic microphone, with limiter, without cable . . Order # 497.983

DT 280 MK II LTD same as above, but **250** Ω . . . . . Order # 497.975

DT 290 MK II LTD Headset, **80** Ω, dynamic microphone, with limiter, without cable . . . . . Order # 498.033

DT 290 MK II LTD same as above, but **250** Ω . . . . . Order # 497.851

DT 291 PV MK II LTD Headset, **80** Ω, condenser microphone (omnidirectional), with limiter, without cable . . . . . Order # 488.615

DT 291 PV MK II LTD same as above, but **250** Ω . . . . . Order # 498.017

DT 287 PV MK II LTD Single-ear headset, **80** Ω, condenser microphone (cardioid), with limiter, without cable . . . . . Order # 498.076

DT 287 PV MK II LTD Single-ear headset, **250** Ω, condenser microphone (cardioid), with limiter, without cable . . . . . Order # 498.025

DT 297 PV MK II LTD Headset, **80** Ω, condenser microphone (cardioid), with limiter, without cable . . . . . Order # 490.881

DT 297 PV MK II LTD same as above, but **250** Ω . . . . . Order # 498.114

8. Spares

BN 59-59/A	Headband cushion	Order # 503.886
EDT 250 V	Ear cushions pair (cloth), for DT 25*/28*/29*	Order # 942.704
EDT 250 S	Ear cushions pair (soft PVC), for DT 25*/28*/29*	Order # 943.549
WS 97 AZ	Wind screen, charcoal-grey	Order # 465.313

9. Optional Accessories

WK 250.07	Coiled cable for DT 25* stereo mini jack plug with 1/4" adapter	Order # 442.070
K 190.00	Straight cable for DT 28*/DT29*, 1.5 m, free ends	Order # 431.575
K 190.00	Straight cable for DT 28*/DT29*, 3 m, free ends	Order # 441.937
K 190.28	Straight cable for DT 28*/DT29*, 1.5 m, with 4-pin XLR socket	Order # 445.304
K 190.39	Straight cable for V.11 version of the DT 29* series, with 5-pin XLR plug to connect to professional cameras (Sony, Philips, Ikegami), 1.5 m	Order # 475.181
K 190.40	Straight cable for DT 28*/DT29*, 1.5 m, with 3-pin XLR plug and 1/4" stereo jack plug	Order # 445.894
K 190.40	Straight cable for DT 28*/DT29*, 3 m, with 3-pin XLR plug and 1/4" stereo jack plug	Order # 446.750
K 190.41	Straight cable for DT 28*/DT29*, 1.5 m, with 5-pin XLR plug	Order # 445.312
K 190.48	Straight cable for DT 280/DT 290 with 2 x 3.5 mm stereo jack plugs to connect to PC sound cards (Warning: No phantom powering)	Order # 479.470
WK 190.00	Coiled connecting cable for DT 28*/DT29*, 3 m, free ends	Order # 448.176

10. Disposal

This symbol on the product, in the instructions or on the packaging means that your electrical and electronic equipment should be disposed at the end of its life separately from your household waste. There are separate collection systems for recycling in the EU. For more information, please contact the local authority or your retailer where you purchased the product.

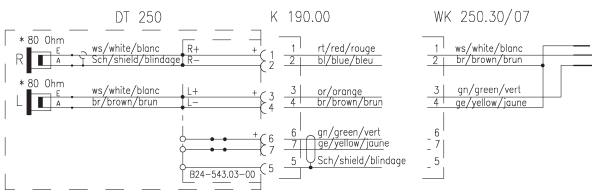
11. Technical Specifications

DT 250 / DT 252
DT 280 / DT 290 / DT 291 / DT 287 / DT 297

Headphone

Frequency response	10 - 30,000 Hz (for headsets optimised for highest intelligibility of speech)
Nominal impedance	80 Ω / 250 Ω
Nominal sound pressure level at1 kHz	100 dB SPL at 1 mW ≙ 0.28 V at 80 Ω 100 dB SPL at 1 mW ≙ 0.5 V at 250 Ω
Input power rating	100 mW ≙ 120 dB ≙ 2.8 V at 80 Ω 100 mW ≙ 120 dB ≙ 5 V at 250 Ω
Ambient noise attenuation	approx. 16 dBA
Headband pressure	4.5 N
Weight (without cable)	
DT 250 / DT 290 / DT 294 / DT 297	240 g
DT 252 / DT 280 / DT 287	170 g

Wiring Diagram DT 250



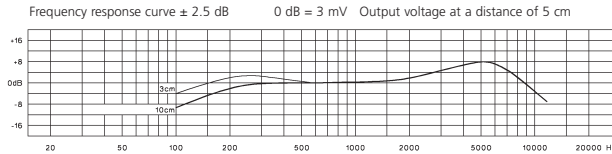
* Sonderausführung 250 Ohm System lieferbar
* Special model 250 ohm system available

DT 280 / DT 290

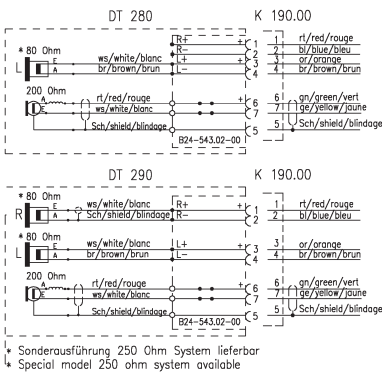
Microphone

Transducer type. . . . . dynamic
Frequency response. . . . . 40 - 12,000 Hz
Polar pattern. . . . . hypercardioid
Interference discharging . . . . . 30 dB
Output voltage at a distance
of 5 cm . . . . . approx. 3 mV
Nominal impedance . . . . . approx. 200 Ω
Weight . . . . . approx. 45 g

Frequency Response Curve

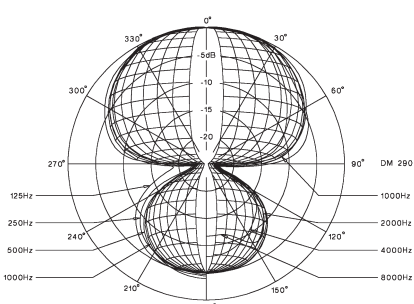


Wiring Diagram



* Sonderausführung 250 Ohm System lieferbar
* Special model 250 ohm system available

Polar Pattern

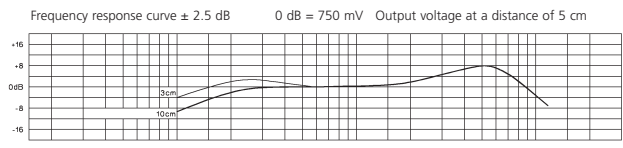


DT 290 V.11

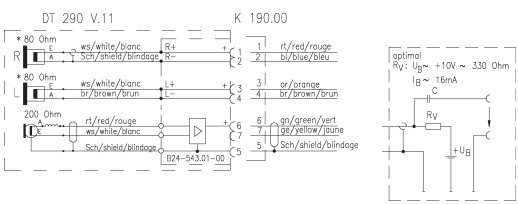
Microphone

Transducer type. . . . . dynamic
Frequency response. . . . . 40 - 12,000 Hz
Polar pattern. . . . . hypercardioid
Output voltage at a distance
of 5 cm, Is = 16 mA,
Us = 10 V, Rv = 330 Ω . . . . . approx. 1.5 V
Output voltage at a distance
of 5 cm, Is = 16 mA,
Us = 10 V, Rv = 330 Ω,
RLS = 200 Ω. . . . . approx. 750 mV
Nominal impedance . . . . . approx. 200 Ω
Current consumption min. . . . . 8 mA
Current consumption max. . . . . 56 mA
Weight . . . . . approx. 45 g

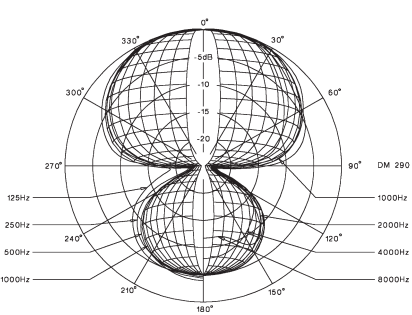
Frequency Response Curve



Wiring Diagram



Polar Pattern

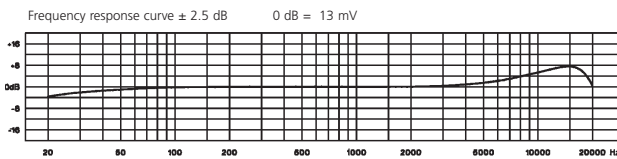


DT 291 PV

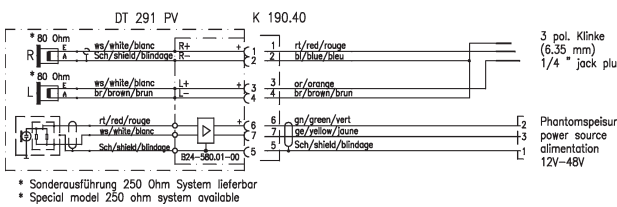
Microphone

Transducer type. . . . . condenser (back electret)
Frequency response. . . . . 20 - 18,000 Hz
Polar pattern. . . . . omnidirectional
Output voltage at a distance
of 5 cm . . . . . approx. 13 mV
Nominal impedance . . . . . approx. 200 Ω
Load impedance . . . . . ≥ 1000 Ω
Max. SPL. . . . . 127 dB
Current consumption . . . . . approx. 3.5 mA
Phantom powering . . . . . 12 - 48 V
Weight . . . . . approx. 20 g

Frequency Response Curve

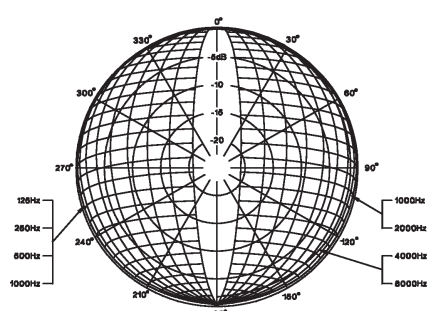


Wiring Diagram



* Sonderausführung 250 Ohm System lieferbar
* Special model 250 ohm system available

Polar Pattern

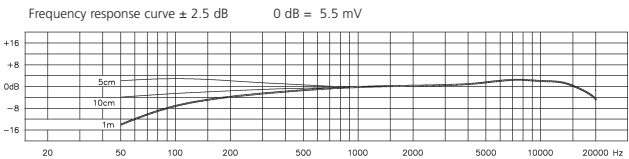


DT 287 PV / DT 297 PV

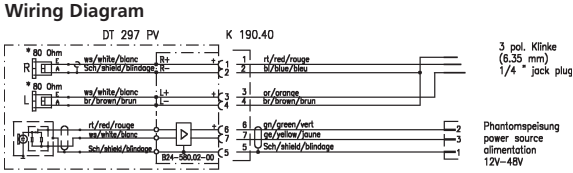
Microphone

Transducer type. . . . . condenser (back electret)
Frequency response. . . . . 40 - 20,000 Hz
Polar pattern. . . . . cardioid
Output voltage at a distance
of 5 cm. . . . . 5.5 mV
Nominal impedance . . . . . 300 Ω
Load impedance . . . . . ≥ 1000 Ω
Max. SPL. . . . . 132 dB
S/N ratio . . . . . 62 dB
Current consumption . . . . . approx. 3.5 mA
Phantom powering . . . . . 12 - 48 V
Weight . . . . . approx. 30 g

Frequency Response Curve

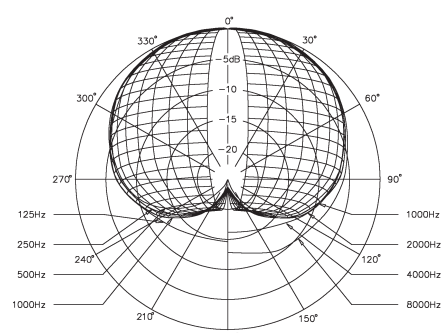


Wiring Diagram



* Sonderausführung 250 Ohm System lieferbar
* Special model 250 ohm system available

Polar Pattern

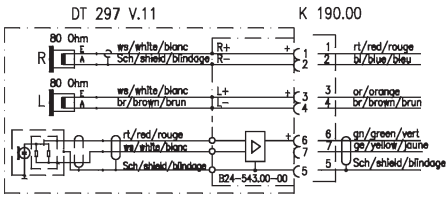


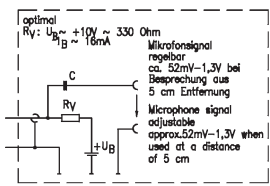
DT 287 V. 11 / DT 297 V.11

Microphone

Transducer type. . . . . condenser (back electret)
Frequency response. . . . . 20 - 20,000 Hz
Polar pattern. . . . . cardioid
Output voltage at a distance
of 5 cm. . . . . approx. 52 mV - 1.3 V adjustable
Nominal impedance . . . . . 300 Ω
Current consumption . . . . . 6 - 56 mA

Wiring Diagram





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