

12 SERIES

EQUALIZER



PROFESSIONAL PRODUCTS

OPERATION MANUAL

MODE D'EMPLOI

BEDIENUNGSANLEITUNG

MODO DE EMPLEO



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

WARNING

FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

MULTIPLE-INPUT VOLTAGE: This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

U.K. MAINS PLUG WARNING

A moulded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. **NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and **MUST** be ASTA approved to BS1362.

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the **Declaration of Conformity**. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Operation of this unit within significant electromagnetic fields should be avoided.

- use only shielded interconnecting cables.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE MUST BE EARTHED.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the unit's chassis.

CONDUCTOR		WIRE COLOR	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

DECLARATION OF CONFORMITY

Manufacturer's Name: dbx Professional Products
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product: dbx 1231, 1215

conforms to the following Product Specifications:

EMC: EN 55013 (1990)
EN 55020 (1991)
EN 60065 (1993)
Safety: IEC65 (1985) with Amendments 1, 2, 3

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC (1989), as amended by directive 93/68/EEC (1993).

dbx Professional Products
Vice President of Engineering
8760 S. Sandy Parkway
Sandy, Utah 84070, USA
December 20, 1996

European Contact: Your Local dbx Sales and Service Office or
International Sales Office
68 Sheila Lane
Valparaiso, Indiana
46383, USA
Tel: (219) 462-0938
Fax: (219) 462-4596

WARRANTY

1. The warranty registration card that accompanies this product must be mailed within 30 days after purchase date to validate this warranty. Proof-of-purchase is considered to be the burden of the consumer.
2. dbx warrants this product, when bought and used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.
3. dbx liability under this warranty is limited to repairing or, at our discretion, replacing defective materials that show evidence of defect, provided the product is returned to dbx WITH RETURN AUTHORIZATION from the factory, where all parts and labor will be covered up to a period of two years. A Return Authorization number must be obtained from dbx by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.
4. dbx reserves the right to make changes in design or make additions to or improvements upon this product without incurring any obligation to install the same additions or improvements on products previously manufactured.
5. The foregoing is in lieu of all other warranties, expressed or implied, and dbx neither assumes nor authorizes any person to assume on its behalf any obligation or liability in connection with the sale of this product. In no event shall dbx or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.

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INTRODUCTION

Congratulations on your purchase of a dbx graphic equalizer. All dbx graphic equalizers are high performance multi-functional units designed to deliver all the flexibility and power that professional users demand. We recommend that you take a moment to read through this operation manual. It provides information that will assist you from system set-up to EQ applications. The 12 Series Equalizers include the following features:

- Switchable Boost/Cut range between $\pm 6\text{dB}$ and $\pm 15\text{dB}$
- Balanced inputs and outputs
- XLR, Barrier Strip, and 1/4" TRS connectors
- $-12\text{dB}/+12\text{dB}$ input gain range
- $18\text{dB}/\text{octave}$ 40Hz Bessel Low-Cut filter
- Chassis/signal ground lift capability
- Internal power supply transformer
- Power-off hard-wire relay bypass with 2-second power-up delay

INSPECTION

Verify that the equalizer's package contains the following:

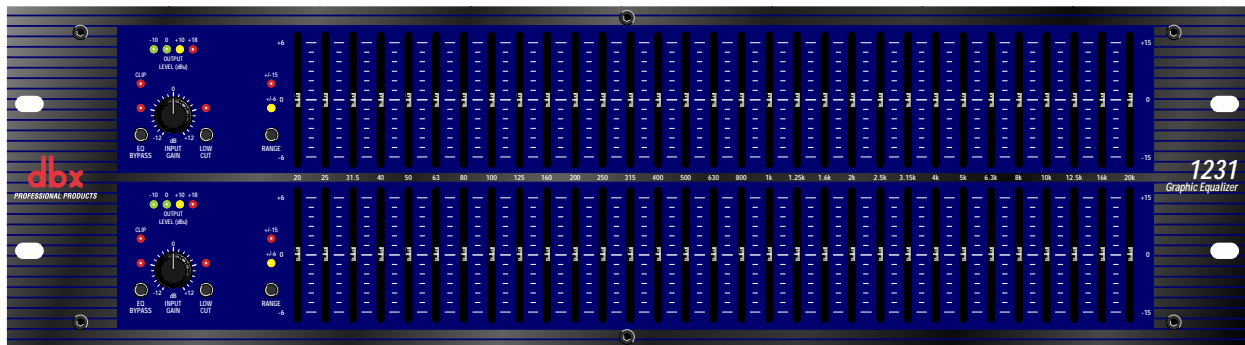
- Equalizer unit matching serial number marked on package
- AC power cord
- Operation Manual
- Registration Card
- Four rack mount screws and washers

If any of these items are missing please contact dbx customer service at the number provided on the back cover of this manual.

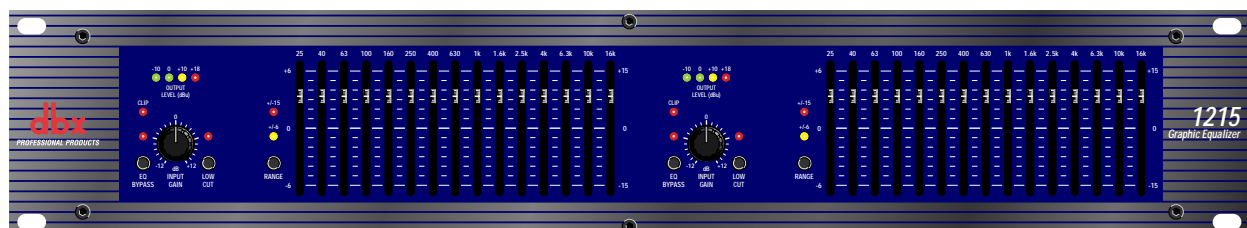
OPERATING CONTROLS

Front Panels

1231 - dual channel 31 band graphic equalizer



1215 - dual channel 15 band graphic equalizer



Input Gain Control: This control sets the signal level to the equalizer. It is capable of -12dB to +12dB of gain. Its effect is apparent by viewing the OUTPUT LEVEL BAR GRAPH.

EQ Bypass: This switch removes the graphic equalizer section from the signal path. (See Block diagram on Page 8.) The BYPASS switch does not, however, affect the INPUT GAIN, or LOW CUT filters.

EQ Bypass LED: This red LED lights when the EQ is in bypass mode. Note that bypass mode only effects the graphic equalizer section of the 12 Series EQs. The INPUT GAIN and LOW CUT controls remain unaffected when the EQ is bypassed.

Boost/Cut Range Selection Switch and LEDs: This switch selects which of the two boost/cut ranges the equalizer will use, either ± 6 dB or ± 15 dB. The red LED lights when the ± 15 dB range is selected, and the yellow LED lights when the ± 6 dB range is selected. Note that the BOOST/CUT switch is slightly recessed. This is to prevent accidental activation of the switch, possibly causing damage to other sound system components.

Output Level Bar Graph: These four LEDs indicate output level of the equalizer. The red LED is 3dB below clipping and is marked as +18dBu. It monitors the level at the output of the equalizer after all other processing.

Clip LED: This LED lights whenever any internal signal level reaches 3dB below clipping which may occur when any of the following happen: 1) the input signal is “hotter” than +22dBu, 2) excessive gain is applied by the input gain control, or 3) excessive boost is applied using the frequency sliders.

Frequency Band Slider Controls: Each one of these slider potentiometers will boost or cut at its noted frequency by ± 6 dB or ± 15 dB, depending upon the position of the BOOST/CUT RANGE switch. When all the sliders are in the center detented position the output of the equalizer is flat. The frequency band centers of the 1231 are marked at 1/3rd of an octave intervals on ISO standard spacings, while the frequency band centers of the 1215 are marked at 2/3rds of an octave intervals on ISO standard spacings.

Low Cut Enable Switch: The LOW-CUT switch inserts or removes the 18dB/octave 40Hz Bessel low-cut filter from the signal path. When the LOW-CUT switch is pushed in, the LOW-CUT filter is IN the audio path.

CONNECTING THE EQ TO YOUR SYSTEM

The 12 Series Equalizers have balanced inputs and outputs that can be used with any balanced or unbalanced line-level device. For more specific information about cabling possibilities, please refer to the section entitled **Installation Considerations, Page 6.**

To connect the equalizer to your sound system refer to the following steps:

- **Turn off all equipment before making connections.**
- **Mount equalizer in a standard-width rack.**
Install the EQs in a rack with the rack screws provided. It can be mounted above or below anything that does not generate excessive heat. Ambient temperatures should not exceed 113° F (45°C) when equipment is in use. Although the unit's chassis is shielded against radio frequency and electromagnetic interference, extremely high fields of RF and EMI should be avoided.
- **Make audio connections via XLR, barrier strip, or 1/4" TRS jacks (according to application needs)**
All three types of connectors for the inputs and outputs can be used for balanced or unbalanced connections. The use of more than one connector at a time for the inputs could unbalance balanced lines, cause phase cancellation, short a conductor to ground, or cause damage to other equipment connected to the equalizer. More than one output may be used simultaneously as long as the combined parallel load is greater than 600Ω.
- **Select the operating range with the BOOST/CUT RANGE SELECTION switch**

Note: Be sure to reduce audio levels at the power amplifiers when changing the setting of this switch as it may generate an audible transient.

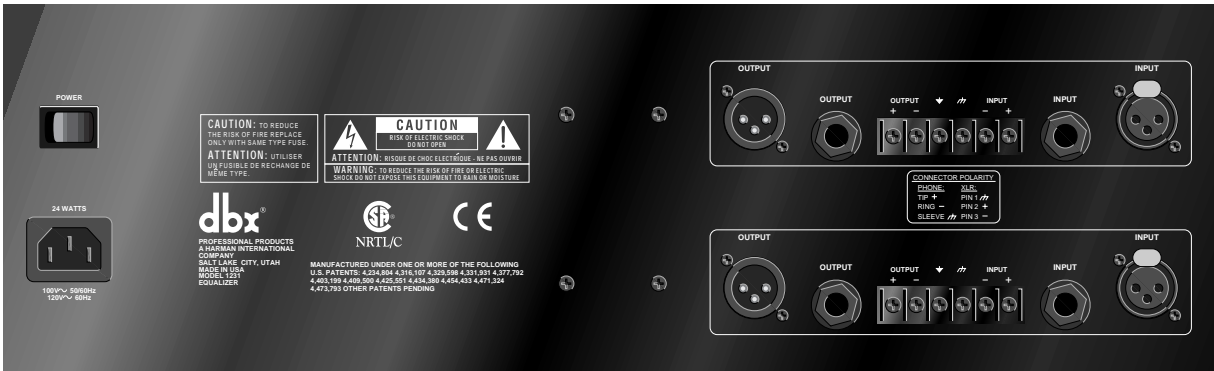
- **Apply power to the equalizer**
Connect the AC power cord to the AC power receptacle on the back of the equalizer. Route the AC power cord to a convenient power outlet away from audio lines. The unit may be turned on and off from the rear panel

power switch or a master equipment power switch. Since the 12 Series Equalizers consume a relatively small amount of power, the units may be left on continuously.

REAR PANEL DESCRIPTIONS

Rear Panels

1231 - dual channel 31 band graphic equalizer



1215 - dual channel 15 band graphic equalizer



Power Switch: Switches the power on and off. Always make audio connections with the power switch in the OFF position.

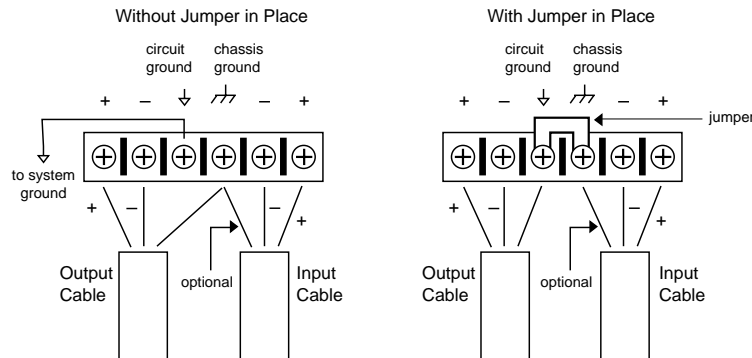
Power Cord Receptacle: Connects AC power to the equalizer.

Output Connectors: Three types of output connectors are provided for output connections: male XLR type connectors, 1/4" tip-ring-sleeve phone jack connectors and a barrier strip.

Input Connectors: Three types of input connectors are provided for input connections: female locking XLR type connectors, 1/4" tip-ring-sleeve phone jack connectors, and a barrier strip. The maximum input level that the equalizer can accept is +22dBu (ref: 0.775Vrms).

Chassis Ground Lift Strap: By removing the jumper connecting the two screws on the barrier strip, the chassis ground is separated from the circuit ground of the equalizer. This is sometimes necessary to prevent "ground loops" in a sound system. When lifting the ground strap, you must make a connection from the circuit ground (↓) terminal to some other ground point in your audio system in order for the equalizer to function properly.

Wiring Connections With Ground



INSTALLATION CONSIDERATIONS

Hookups and Cabling: The 12 Series Equalizers are designed for nominal +4dBu levels. The equalizers can be used with either balanced or unbalanced sources, and the outputs can be used with either balanced or unbalanced loads, provided the proper cabling is used.

A balanced line is defined as two-conductor shielded cable with the two center conductors carrying the same signal but of opposite polarity when referenced to ground. An unbalanced line is generally a single-conductor shielded cable with the center conductor carrying the signal and the shield at ground potential.

Input Cable Configurations: The equalizer has an input impedance of 40k Ω balanced and 20k Ω unbalanced. This makes the 12 Series Equalizers' audio inputs suitable for use with virtually any low source impedance (under 2k Ω).

Output Cable Configurations: The equalizer's output is capable of driving a 600 Ω load to +18dBu. For maximum hum rejection with a balanced source, avoid common grounding at the equalizer's inputs and outputs. Most balanced (3-conductor) cables have the shield connected at both ends. This can result in ground loops which cause hum. If hum persists try disconnecting the shield on one or more of the cables in the system, preferably at the input of a device, not at the output.

OPERATION AND APPLICATION NOTES

The dbx 12 Series Graphic Equalizers are useful audio signal processing tools in situations where precise frequency control is required across the audible frequency spectrum.

When used with an audio spectrum analyzer the EQs can tune any acoustical environment -- from the studio to the concert hall -- to stop ringing, increase clarity, and flatten the overall frequency response of the environment. A real-time spectrum analyzer or other types of audio environment analyzers are very useful in determining the amount of equalization needed.

Insert the graphic equalizer between the signal source (usually a mixer) and the power amplifiers (or the crossover if there is one). Adjust the level and equalization as required to yield the desired system response. The long throw faders of the EQs allow very precise settings of the equalization for accurate equalization curves.

For optimum signal-to-noise response, the gain structure of the sound system must be properly set up. Each component of the sound system should be set at its nominal operating level, starting with the first element in the system, usually a mixing console. Each element should be run at its nominal operating level in order to take advantage of the maximum signal-to-noise properties of that element. Loudspeaker amplifiers, as the last element in the chain, should be set only as loud as necessary, in order to avoid inducing unnecessary noise into the system.

TECHNICAL SUPPORT / FACTORY SERVICE

The dbx 12 Series EQs are all solid-state products with components chosen for high performance and excellent reli-

ability. Each unit has been tested and burned-in at the factory. No adjustment of any type should be required throughout the life of the unit.

If circumstances arise which necessitate repair, we recommend that your EQ be returned to the factory. This can only be done by receiving a RETURN AUTHORIZATION number from dbx customer service.

If you require technical support contact Customer Service. Be prepared to accurately describe the problem. Know the serial number of your unit (printed on a sticker attached to the chassis of the unit).

Contact information is printed on the back cover of this manual.

SPECIFICATIONS / CARACTÉRISTIQUES TECHNIQUES / TECHNISCHE DATEN / ESPECIFICACIONES

Inputs / Entrées / Eingänge / Entradas

Connectors:	1/4" TRS, female XLR (pin 2 hot), and barrier terminal strip
Connecteurs :	Jacks 6,35 mm, XLR femelle (point chaud = broche 2) et bornier
Anschlüsse:	6,3-mm-Stereoklinkenbuchsen, XLR-Buchsen weibl. (Inphase = Stift 2) und Klemmleiste
Conectores:	Clavijas jack estéreo 6,3 mm, XLR hembra (espiga 2 = en fase) y regleta de bornes
Type:	Electronically balanced/unbalanced, RF filtered
Type :	Symétrie, asymétrie électroniques, filtrées contre les interférences radio
Schaltung:	Elektronisch symmetriert/asymmetrisch, HF-geschützt
Tipo:	Electrónicamente balanceado/desbalanceado, con filtro RF
Impedance:	Balanced 40kΩ, unbalanced 20kΩ
Max Input Level:	>+21dBu balanced or unbalanced
CMRR:	>40dB, typically >55dB at 1kHz

Outputs / Sorties / Ausgänge / Salidas

Connectors:	1/4" TRS, male XLR (pin 2 hot), and barrier terminal strip
Connecteurs :	Jacks 6,35 mm, XLR femelle (point chaud = broche 2) et bornier
Anschlüsse:	6,3-mm-Stereoklinkenbuchsen, XLR-Buchsen männl. (Inphase = Stift 2) und Klemmleiste
Conectores:	Clavijas jack estéreo 6,3 mm, XLR macho (espiga 2 = en fase) y regleta de bornes
Type:	Impedance-balanced/unbalanced, RF filtered
Type :	Symétrique, asymétrique
Schaltung:	Impedanzsymmetriert/asymmetrisch, HF-geschützt
Tipo:	Balanceado por impedancia/desbalanceado, con filtro RF
Impedance:	Balanced 200Ω, unbalanced 100Ω
Max Output Level:	>+21dBu balanced/unbalanced into 2kΩ or greater >+18dBm balanced/unbalanced (into 600Ω)

System Performance / Caractéristiques système / Audiodaten / Datos audio

Bandwidth:	20Hz to 20kHz, +0.5/-1dB
Frequency Response:	<10Hz to >50kHz, +0.5/-3dB +/- 15db Range +/-6db Range
Dynamic Range:	109db 115db
Signal-to-Noise:	90db 97db
THD+Noise:	<0.04%, 0.02% typical at +4dBu, 1kHz <0.5% at 1kHz with 15dB gain reduction
Interchannel Crosstalk:	<-80dB, 20Hz to 20kHz (1215/1231)

Function Switches / Touches de fonction / Funktionstasten / Selectores de funciones

EQ BYPASS:	Bypasses the graphic equalizer section in the signal path "Bypasse" la section correcteur graphique Schaltet den graphischen Equalizerteil aus dem Signalweg aus Hace una derivación de la sección de ecualizador gráfico en el camino de la señal
LOW CUT (recessed): (enfoncé): (versenkt): (empotrado):	Activates the 40Hz 18dB/octave Bessel high-pass filter Active le filtre passe-haut 40Hz 18dB/octave de type Bessel Schaltet das Bessel-Hochpassfilter (40Hz, 18dB/Oktave) ein und aus Activa el filtro de paso alto de Bessel de 40Hz, 18dB/octava
RANGE (recessed): (enfoncé): (versenkt): (empotrado):	Selects either +/- 6dB or +/- 15dB slider boost/cut range Sélectionne la plage d'atténuation/accentuation +/- 6dB ou +/- 15dB Schaltet den Regelbereich der Schieberegler zwischen +/-6dB und +/-15dB um. Selecciona una de las dos gamas refuerzo/corte de los deslizadores: +/-6dB ó +/-15dB

Indicators / Témoins / Anzeigen / Indicadores

OUTPUT LEVEL: 4-LED bar graph (Green, Green, Yellow, Red) at -10, 0, +10, and +18dBu
 VUmètre 4-Leds (verte, verte, jaune, rouge) à -10, 0, +10, et +18dBu
 4-teilige LED-Zeile (grün - grün - gelb - rot) bei -10, 0, +10, +18dBu
 4 LEDs (verde, verde, amarillo, rojo) a -10, 0, +10 y +18dBu

EQ BYPASS:	1 LED: red/rouge/rot/rojo
CLIP:	1 LED: red/rouge/rot/rojo
LOW CUT:	1 LED: red/rouge/rot/rojo
+/-6dB:	1 LED: yellow/jaune/gelb/amarillo
+/-15dB:	1 LED: red/rouge/rot/rojo

Power Supply / Secteur / Netzteil / Alimentación de corriente

Operating Voltage: 100VAC 50/60Hz, 120VAC 60Hz, 230VAC 50/60Hz

Tension:

Netzspannung:

Tensión de regimen:

Power Consumption: 1215 24W; 1231 24W

Consommation:

Leistungsaufnahme:

Consumo de energía:

Mains Connection: IEC receptacle

Connecteur secteur : Prise châssis IEC

Netzanschluss: IEC-Kaltgerätebuchse

Conexión de red: tomacorriente IEC

Physical / Données physiques / Abmessungen und Gewicht / Dimensiones físicas

Dimensions: 1215: 3.5" H X 19" W X 7.9" D (8.9cm x 48.3cm x 20.1cm)
 1231: 5.25" H X 19" W X 7.9" D (13.4cm x 48.3cm x 20.1cm)

Dimensions (h x l x p): 1215: 89 x 483 x 201 mm

Abmessungen (H x B x T): 1231: 134 x 483 x 201 mm

Dimensiones (al x an x prf):

Weight: 1215: 8.5 lbs.

1231: 10.6 lbs.

Poids: 1215: 3.9 kg

Nettogewicht: 1231: 4.8 kg

Peso neto:

Shipping Weight: 1215: 9.5 lbs.

1231: 11.6 lbs.

Poids à l'expédition: 1215: 4,3 kg

Bruttogewicht: 1231: 5,3 kg

Peso de embarque:

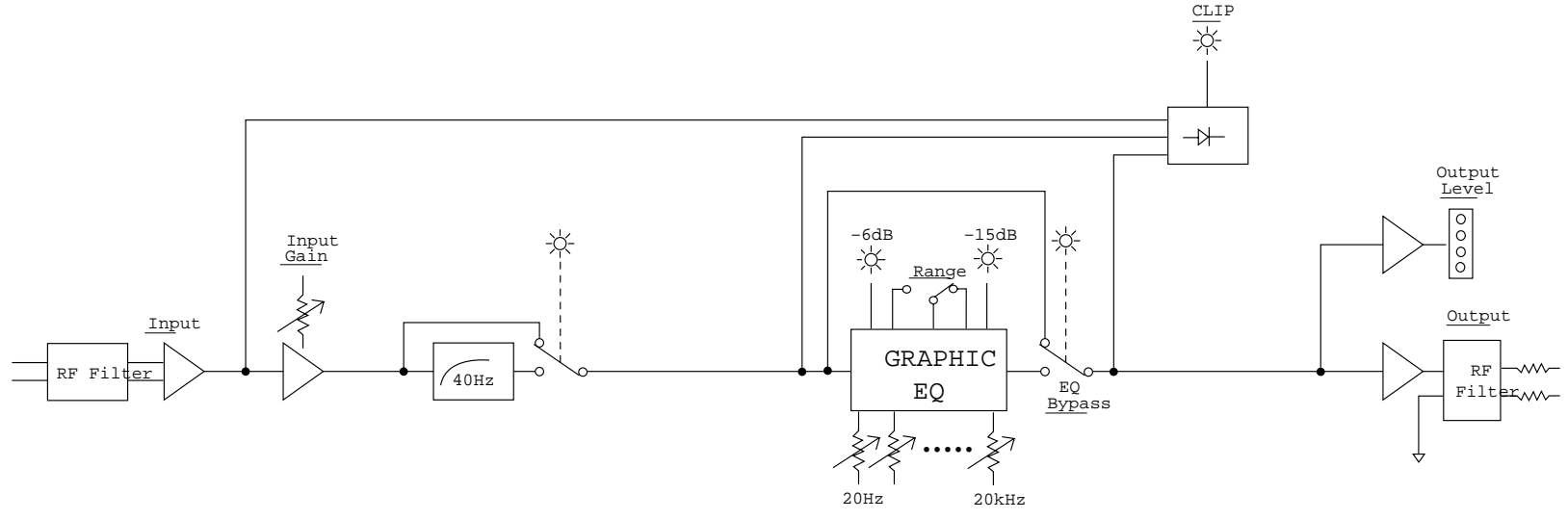
Note: Specifications subject to change.

Note : Caractéristiques sujettes à modifications.

Anm.: Technische Änderungen vorbehalten.

Nota: Especificaciones sujetas a cambio.

dbx 1231 Graphic Equalizer
Block Diagram
07/06/99





IAL PRODUCTS



PROFESSIONA

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 A Harman International Company