

D 12 Amplifier
Software manual (5.1EN)
(Firmware V2.xx)

**WARNING!****References in the manual**

This refers to a potentially dangerous situation which may lead to personal injury.

CAUTION!

This refers to a potentially dangerous situation which may lead to damage to the equipment.

IMPORTANT!

This refers to a situation which may cause the equipment to malfunction.

Note: | Additional information.

General Information

D12 Amplifier
Software manual (Firmware V2.xx)

Version 5.1EN, 04/2007, D2013.E.05

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Keep this manual with the product or in a safe place so that it is available for future reference.

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Contents

1. Introduction.....	5
1.1 Block diagram of the D12 DSP software.....	5
2. The D12 operating software.....	6
2.1 D12 menu tree.....	6
2.2 D12 user interface.....	7
2.2.1 Conventions for the cursor and menu control.....	7
2.3 D12 Boot screen.....	8
2.4 D12 Main screen.....	8
2.4.1 D12 Settings menu.....	9
Input.....	9
Output (Output routing).....	9
Channel A (B).....	10
Setup Channel A (B).....	10
Source (Input routing).....	10
Speaker.....	10
Filter_1, Filter_2, Filter_3.....	11
Equalizer.....	12
Set.....	12
PEQ function.....	13
Notch function.....	13
Delay.....	13
Levels.....	14
System Check.....	14
System Check menu.....	15
Load Monitoring.....	16
Load Monitoring menu.....	16
Driver menu.....	16
Calibrate.....	17
Reset of Load Monitoring errors.....	18
Frequency Generator.....	18
Link A»B.....	18
AmpPreset.....	19
Remote.....	20
Lock.....	21
Options.....	22
Device Name.....	23
Display.....	24
Information.....	24
Log.....	24
PS Log.....	25
Channel A (B).....	25
Input Monitoring.....	27
Important notes on Input Monitoring.....	27
Input Monitoring menu.....	28
Power Supply.....	29
Buzzer.....	29
TSM Detection (Top/Sub-Mismatch).....	29
2.5 List of possible error messages.....	30
2.5.1 System Check, Load- and Input Monitoring.....	31
Possible error messages during calibration.....	31
Possible error messages during operation.....	31
2.5.2 Further messages.....	32
2.6 System Reset.....	32

3. D12 Firmware update.....	33
3.1 Firmware update via CAN-Bus and R10.....	33
3.2 Firmware update via D12 dbUpdate.....	33
3.2.1 D12 dbUpdate.....	33
3.2.2 Update procedure.....	34
4. Remote control & monitoring.....	35
4.1 Remote-Mode "dbCAN".....	35
4.2 Remote-Mode "RIB".....	35

1. Introduction

This manual describes the structure, access (user interface) and functions of the firmware of the d&b D12 amplifier. A detailed description of the D12 hardware and technical specifications is given in the D12 Hardware manual, which is also provided with the D12.

A number of publications with supplementary information on our products are available from the documentation section of our website at www.dbaudio.com. You can either download these directly or use the online order form to request a printed version. If the document you want is not detailed on the form please enter the title in the box after entering your address information.

1.1 Block diagram of the D12 DSP software

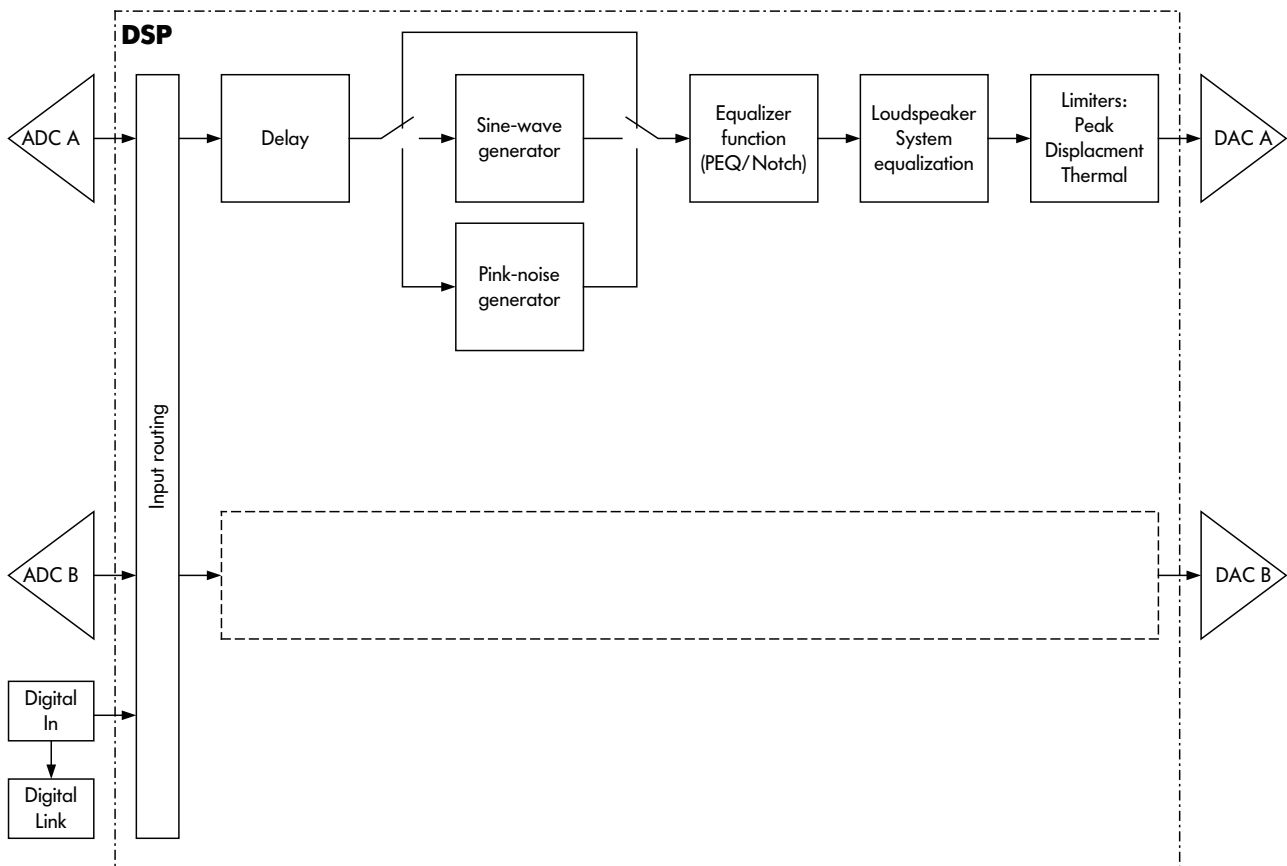


Fig. 1: Block diagram D12 DSP software

2. The D12 operating software

Key:

 : Further sub menu

 : Direct access within the resp. level of hierarchy

2.1 D12 menu tree

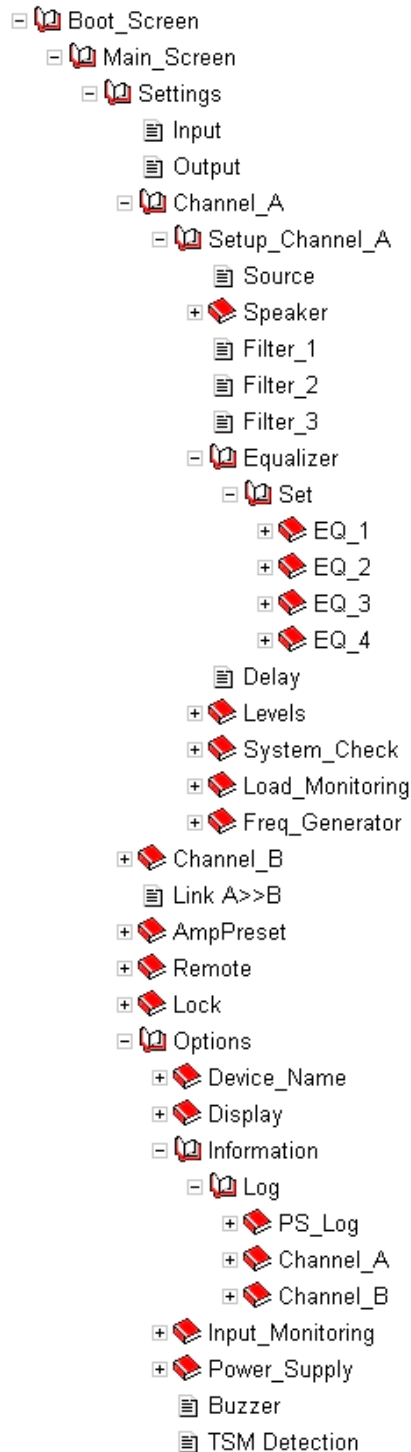


Fig. 2: D12 amplifier, Menu tree

Notes: The menu structure of Channel A is shown in detail. The same structure applies to Channel B.

The settings for the configuration switches Filter_1/2/3 are dependent on the loudspeaker configuration (Please refer to section 2.4.1 ⇒ Filter_1, Filter_2, Filter_3 on page 11).

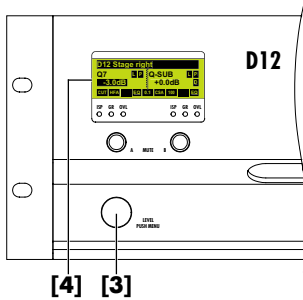


Fig. 3: D12 user interface

2.2 D12 user interface

The LCD [4] acts as a user interface for all of the menus within the D12. The cursor is controlled via the digital rotary encoder, LEVEL/PUSH MENU [3]. In the main menu the encoder acts as a level control. Pushing or turning the encoder gives access to different menu levels or enables configurations or values to be entered.

Also refer to the D12 Hardware manual, section 3. Controls and indicators.

2.2.1 Conventions for the cursor and menu control

Position-Cursor

Turning the encoder moves the cursor through the menu. Turning to the right moves the cursor down in the menu tree or to the right. Turning to the left moves the cursor up in the menu tree or to the left. Pushing the encoder activates the Edit-Cursor, except for switching functions (e.g. "on/off"). In these instances pushing the encoder leads directly to a change in value or condition (toggle).

Edit-Cursor

The current value is displayed beside the cursor and is changed by turning the encoder. Turning to the right increases the value, to the left decreases it. A change is effective immediately except with the functions "Speaker Selection", "Lock", "Remote", "Device Name" and "Backlight" where a confirmation is required. Exit the edit mode by pushing the encoder and return to the Position-Cursor.

Information-Cursor

The Information-Cursor indicates fields within the menu tree where the displayed data cannot be changed.

Menu-Change

An arrow indicates another menu level. Selecting it with the Position-Cursor and pushing the encoder enters the corresponding sub-menu.

Back

Short click: exits the selected menu by moving back one level.
Long press (approx 1 sec.): navigates back to the main menu.

Scroll-Bar

Where a menu tree is longer than can be displayed, a Scroll-Bar is shown on the right hand side of the display for orientation.

Other Cursors or Signs

Highlight

A highlighted field is an indication that the data displayed can be changed in edit mode (see also Edit-Cursor above).

Pointer

In the sub-menus "Lock/Code" and "Device-Name" the field for text input is highlighted and additionally indicated by an arrow.



Fig. 4: D12 Boot screen

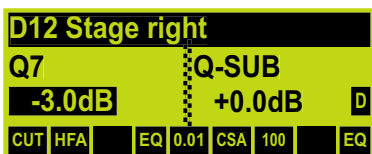


Fig. 5: D12 Main screen

2.3 D12 Boot screen

The boot procedure takes approximately 4 seconds during which the device name, the manufacturers name, d&b audiotechnik AG, and the firmware version is displayed.

The transition to the Main screen is carried out automatically.

2.4 D12 Main screen

The main screen displays all important settings and status informations in one view.

In the first line the device name is displayed. If no device name had been entered the firmware version will be displayed.

Depending on the selected output mode there are two different main screens as described in the table below.

Dual channel or Mix Top/Sub mode	2-Way Active mode
<p>Fig. 6: D12 Main screen in Dual channel / Mix Top/Sub mode</p> <p>Starting from the second line the main menu of the D12 in Dual channel or Mix Top/Sub mode is split into channel A and B and the following settings and information are displayed:</p> <p>Loudspeaker set ups (Speaker type) and input gain, status of the delay and Link A»B.</p> <p>The lowest line shows the status or value of the following settings for both channels: Filter_1, Filter_2, Filter_3 (value), EQ. In the center of this status line the dbCAN-Id (if remote mode dbCAN is selected) or the remote mode (if not dbCAN) is displayed. Please refer to the Remote menu section on page 20.</p> <p>Using the encoder (LEVEL/PUSH MENU) the input gain can be adjusted in steps of 0.5 dB (-57.5 dB to +6 dB). A brief press on the encoder alters between level control of channel A and B</p>	<p>Fig. 7: D12 Main screen in 2-Way Active mode</p> <p>Starting from the second line the main menu of the D12 in 2-Way Active mode is split in two sections and the following settings and information are displayed:</p> <p>Loudspeaker set up and input gain, the selected output mode (Active) the status and value of the delay. If the delay is switched off the initial delay time of 0.3 ms is displayed.</p> <p>Starting from the left the lower line shows the status or value of the following settings: Filter_1, Filter_2, Filter_3 (value), EQ. On the right hand side of this status line the remote mode (if selected) and the dbCAN-Id (if remote mode dbCAN is selected) is displayed. Please refer to the Remote menu section on page 20.</p> <p>Using the encoder (LEVEL/PUSH MENU) the input gain can be adjusted in steps of 0.5 dB (-57.5 dB to +6 dB).</p>

Tab. 1: Main screen depending on output modes

If an error occurs (the red OVL/Err-LED flashes), in the top line of the LCD an error message with channel information will alternate with the device name.

In Standby-Mode, the display alternates between the device name and "Standby".

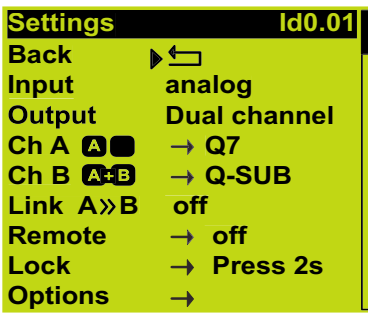


Fig. 8: D12 Settings menu

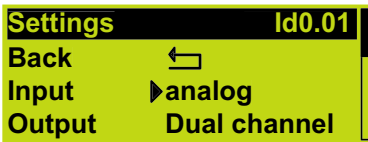


Fig. 9: D12 Settings, Input selection



Fig. 10: Supported sampling rates



Fig. 11: Non supported sampling rate e.g. 44.1 kHz

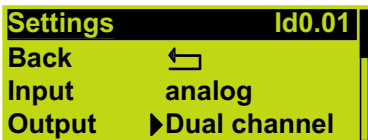
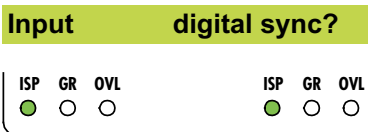


Fig. 12: D12 Settings, Output (Output routing)

2.4.1 D12 Settings menu

From the main screen the "Settings menu" is entered by pushing the encoder approx. 1 sec. It contains general settings for the device and gives further access to sub-menus.

In the first line the dbCAN-ID is displayed on the right hand side. A detailed description of the CAN-ID is given in the sub-menu "Remote" and the Remote section on page 20 in this manual.

Back

Exits the sub-menu.

Input

Selecting "Input" and pushing the encoder allows the setting of the input type. Turning the encoder one detent to the right and back toggles between analog and digital input.

analog:

The analog input section INPUT A/B and INPUT LINK A/B is active.

digital:

The digital AES/EBU INPUT and LINK is active.

Notes on the digital AES/EBU input ⇒ Sampling rates:

The input accepts signals with sampling rates of 48 or 96 kHz. The frequency is detected automatically and will be displayed as shown opposite.

Signals with other common sampling rates (32/44.1/88.2 kHz) are detected but cannot be used by the D12. They will be indicated with a question mark (?) as shown opposite.

The digital inputs are supervised for correct synchronising with the input signal. Short term interruptions or loss of quality will be indicated by flashing ISP-LEDs together with the message "sync?" instead of the detected sampling rate.

If no sampling rate is displayed there is either no input signal or signal with unusable quality or an unknown (non standard) sampling rate.

Output (Output routing)

Selecting "Output" and pushing the encoder allows the setting of the following output configurations

1. Dual channel
2. Mix Top/Sub
3. 2-Way Active

Depending on the selection the corresponding pin assignment of the loudspeaker output connectors will be set automatically.

Notes:

After a change of the output configuration the D12 outputs are muted. Use the respective MUTE A or MUTE B switches to unmute.

A detailed description of the D12 output configurations is given in the D12 Hardware manual, which is also supplied with the D12 Amplifier.

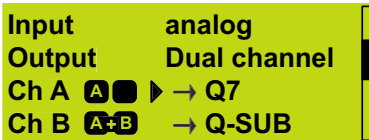


Fig. 13: D12 Channel A (B)

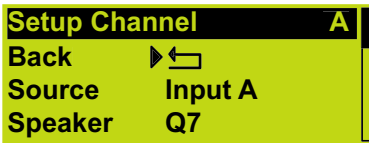


Fig. 14: D12 Setup Channel A (B)



Fig. 15: D12 Source, Input (routing)

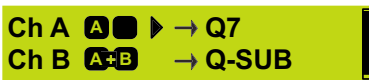


Fig. 16: D12 Source, Input indication



Fig. 17: D12 Speaker

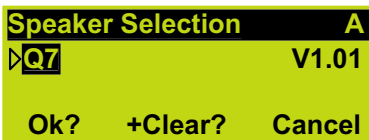


Fig. 18: D12 Speaker, Speaker Selection

Channel A (B)

For both Channel A and B the functions and sub-menus (menu structure) are similar. Therefore "Channel B" is stated in brackets (B).

Selecting "Channel A (B)" and pushing the encoder enters the sub-menu "Setup Channel A (B)".

Setup Channel A (B)

Source (Input routing)

Within the sub-menus "Channel A" and "Channel B" the input source for the respective channel can be selected.

Selecting "Source" and pushing the encoder allows the setting of the following routings:

- Input A:** The respective channel is fed from input A.
- Input B:** The respective channel is fed from input B.
- Input A+B:** The respective channel is fed from input A+B. (Input A+B are summed with a 6 dB attenuation)

The status of the selected input source is displayed within the settings menu as shown in the graphics opposite.

Notes on the digital AES/EBU input ⇒ Input routing:

According to the AES standard (AES3-2003 - Stereophonic mode) the AES channels are assigned to the D12 controller as follows:

- D12 Channel A:** AES left or A channel (subframe 1)
- D12 Channel B:** AES right or B channel (subframe 2)

Speaker

Speaker Selection

Selecting "Speaker" and pushing the encoder enters the sub-menu "Speaker Selection" which enables the selection of loudspeaker configurations for all current d&b loudspeakers, depending on the selected output mode.

On the right hand side the software version of the selected speaker configuration is displayed.

A change of the loudspeaker type has to be confirmed. This can be either done with selecting "Ok" or "+Clear". Both are marked with a flashing question mark (?).

Ok

Selecting "Ok" and pushing the encoder will confirm the configuration and exit the sub-menu "Speaker Selection".

+Clear

Selecting "+Clear" and pushing the encoder will confirm the configuration and exit the sub-menu "Speaker Selection" and clear the user settings of this channel. The following operations will be executed:

- Reset of configuration switches (Filter_1, Filter_2, Filter_3)
- Reset of Delay (the selected unit will be kept)
- Reset of all EQ settings
- Load- and Input Monitoring will be set to "off"
- The respective channel will be muted

Cancel (⇒ Back ↶)

Exits the sub-menu "Speaker Selection" while the previous configuration will remain active.

<p>Dual channel mode:</p> <p>In "Dual channel mode" the following d&b loudspeaker set ups can be selected for both channels:</p> <ul style="list-style-type: none"> - C-Series (except C3) - E-Series - Q-Series - B1/B2 subwoofers - Ci-Series - M4 passive - MAX/MAX12 passive - Linear 	<p>Mix Top/Sub mode:</p> <p>In "Mix Top/Sub mode" the following d&b loudspeaker set ups can be selected while TOP cabinets are selectable on Channel A and SUB cabinets on Channel B.</p> <p>Channel A - TOP cabinets:</p> <ul style="list-style-type: none"> - C-Series TOPs (except C3) - E-Series TOPs - Q-Series TOPs - Ci-Series TOPs - M4 passive - MAX/MAX12 passive - Linear <p>Channel B - SUB cabinets:</p> <ul style="list-style-type: none"> - C-Series subwoofers - E-Series subwoofers - Q-Series subwoofers - B1/B2 subwoofers - Ci-Series subwoofers 	<p>2-Way Active mode:</p> <p>In "2-Way Active mode" the following d&b loudspeaker set ups can be selected:</p> <ul style="list-style-type: none"> - J-Series - C3 - F1222 - M2 - M4 active - MAX/MAX12 active
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Tab. 2: D12 Speaker Selection depending on selected output modes

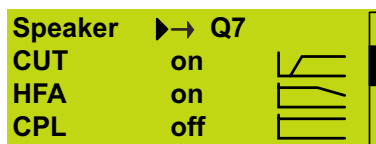


Fig. 19: D12 Configuration switches (Filter_1, Filter_2, Filter_3)

Filter_1, Filter_2, Filter_3

The name of the filter is displayed on the left of the LCD followed by its status or value and a pictogram or graphic representation of the filters frequency response.

The type of filters available depend on the loudspeaker configuration selected.


The display [---] indicates, that the respective filter is not available for the loudspeaker type selected.

on/off

The schematic change in response is indicated by the pictogram.

[Value] (Filter_3)

"Filter_3" can be set to different values. The schematic change in response is indicated by the pictogram.

Filter_1	Filter_2	Filter_3
Configuration of crossover frequencies TOP/SUB. e.g. CUT, 100 Hz, Infra, +B2	Compensation towards listening distance. e.g. HFA, HFC. CSA (Cardioid Subwoofer Array) 	Array-EQ (compensation of coupling effects) => CPL Range: -9 dB ... 0 dB Cut (Lo shelf) 0 dB ... +5 dB Boost (65 Hz, Bell)

Tab. 3: Settings Filter_1, _2, _3

- Notes:**
- A detailed description of the filters available for each loudspeaker is given in the respective loudspeaker manuals.
 - A detailed description of the CSA function (Cardioid Subwoofer Array) is given in the technical information TI 330 (d&b code D5330.E.).

Equalizer ▶off Set →

Fig. 20: D12 Equalizer

Equalizer ▶off Set →

Fig. 21: D12 Equalizer, Master-Funktion

Equalizer on Set ▶ →

Fig. 22: D12 Equalizer, Set

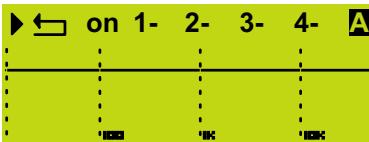
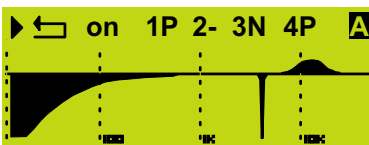


Fig. 23: D12 Equalizer, Set menu

Equalizer ▶on 1- 2- 3- 4- A

Equalizer ▶on▶1- 2- 3- 4- A

Equalizer ▶on▶1 off A
F 26 Hz
Q 0.99 BW 1.01oct
G -18.0dB



Equalizer

A 4-band parametric equalizer providing optional Boost/Cut ("PEQ") or Notch filtering is incorporated for each channel independently into the signal path before the limiting circuit. The EQ function has a Master on/off while each of the four bands can be switched independently. In Dual channel or Mix Top/Sub mode the EQ sections of both channels can be linked using the "Link A»B" function in the "Settings menu".

Note: If several EQ bands are set with a high boost in the same frequency range, this **may cause** overflows within the DSP. These errors are recognized internally and the D12 will mute the channel. The error message "DSP Error 16" is displayed. By changing the filters or by switching off the EQ-Function the error can be cleared.

on/off

Master switch for the EQ function.

Set

Selecting "Set" enters the sub-menu and gives access to the four EQ bands. Turning the encoder to right and pushing the encoder gives access to the individual EQ bands.

on/off

Within the sub-menu "Set" the master switch for the EQ function is also accessible.

EQ [number]

Turning and pushing the encoder within at least one of the EQs allows access to the individual EQ filters directly, without the necessity to revert to the "Set menu".

off/PEQ/Notch

Pushing the encoder enables selection of either the "off", "PEQ" (Parametric Equalizer) or "Notch" function.

The status of the respective EQ band is indicated as follows:

- The respective EQ Band is switched "off" (flat)
- P** The respective EQ Band is switched to "PEQ" function
- N** The respective EQ Band is switched "Notch" function

The resulting overall frequency response of all (active) filters is shown at the bottom of the display.

▶ ↩ 1 PEQ A
 F 26 Hz
 Q 0.99 BW 1.01oct
 G -18.0dB

Fig. 24: D12 Equalizer, PEQ function

▶ ↩ 3 Notch A
 F 3460 Hz
 Q 25.00 BW 0.04oct
 G -----

Fig. 25: D12 Equalizer, Notch function

Delay ▶ off 0.3 ms

Fig. 26: D12 Delay

Delay ▶ on 0.3 ms

Delay on ▶ 10.0 ms

Delay on 3.4 ▶ m

Delay on 8.9 ▶ ft

PEQ function

Parametric Equalizer (PEQ)

The following parameters can be edited:

F

Filter centre frequency adjustable from 20 Hz to 20 kHz in 3 % steps.

Q

The Q of the filter is adjustable from 0.5 ... 25 in 10 % steps. In addition, the bandwidth (BW) as a result of the Q is displayed as a value (2.0 ... 0.04 octaves) in a non-editable field.

G

Gain, adjustable from -18 dB to +6 dB in 0.2 dB steps.

Notch function

The following parameters can be edited:

F

Filter centre frequency adjustable from 20 Hz to 20 kHz in 3 % steps.

Q

The Q of the filter is adjustable from 0.5 ... 25 in 10 % steps. In addition, the bandwidth (BW) as a result of the Q is displayed as a value (2.0 ... 0.04 octaves) in a non-editable field.

G

The parameter "Gain" (G) cannot be edited in "Notch" mode. The centre frequency is fully attenuated ($\Rightarrow -\infty$ dB).

Delay

A signal delay incorporated for each channel independently to allow delay settings of up to 340 msec. (100 m/328.1 ft).

on/off

Switches the delay on/off without affecting the entered delay value.

[Value]

Delay time adjustable from 0.3 to 340 ms in steps of 0.1 ms, or a corresponding value depending on the unit selected.

[Unit]

Enables selection of the delay unit in either milliseconds [ms]; metres [m]; or feet [ft].

Levels ▶ →

Fig. 27: D12 Levels

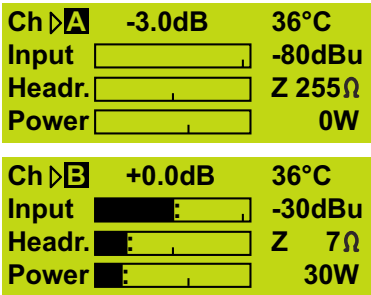


Fig. 28/29: D12 Levels screen

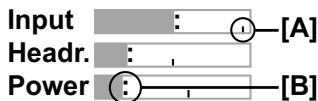


Fig. 30: D12 Levels monitor bar graphs

Levels

Selecting "Levels" and pushing the encoder enters the sub-menu.

Turning the encoder one detent to the right and back toggles between channel A and B.

Pushing the encoder exits the sub-menu.

In the "Levels screen" the following values are displayed as bar graphs and/or as numeric values:

Input gain/Temperature of the device

In the first line the input gain setting of the respective channel is displayed as the numeric value in dB and the temperature of the either amplifier or power supply (whichever value is higher).

Input

Input signal level as bar graph and the numeric value is displayed in dBu. The small vertical mark [A] represents the threshold of input level where an input overload occurs (red OVL LED). The colon [B] acts as a peak hold for 1 s.

Headr. (Headroom)

The bar graph shows the relationship between modulation and gain reduction (GR). The small vertical mark [A] indicates the gain reduction threshold (0 dB headroom), the colon [B] acts as a peak hold for 1 s. The gain reduction (GR) LED (yellow) indicates a gain reduction of more than 3 dB.

Impedance Z

The impedance of the loudspeaker(s) presented to the output of the D12, displayed only as a numeric value in ohms. The value is measured with the actual output signal and may therefore vary with its spectral content. The measurement range reaches from 0 ohms (short circuit) to 255 ohms (open loop, $I = 0$, $Z \Rightarrow \infty$). When the signal is too low the maximum of 255 ohms will be displayed.

Power

The actual output power, displayed as bar graph and as a numeric value in watts, the colon [B] acts as a peak hold for 1 s.

System Check

System Check is a powerful and convenient tool to check the condition of either a single d&b loudspeaker or a complete d&b sound system driven by the D12. It is preferably used in conjunction with the d&b Remote network and the ROPE C software (from version 1.1.3).

System Check uses the amplifiers' capability to measure the impedance connected to its outputs using a sine wave signal created by the DSP section of its controller.

System Check is related to the Load Monitoring feature of the D12. Both functions share the same measuring principle and impedance reference values. While System Check uses a single measuring run Load Monitoring supervises continuously by recurring measurements. System Check creates a detailed report about the connected loads whereas Load Monitoring is confined to an error message if a fault is detected.

Note: This section describes the System Check menus within the D12. A more detailed description of System Check and its application is given in the technical information TI 360 (d&b code D5360.E.).

System Check ▶ →

Fig. 31: D12 System Check

Selecting "System Check" and pushing the encoder enters the sub-menu.

System Check menu

Check

Note: Ensure the system has been calibrated before running the procedure and the respective channel is not muted.

Selecting "Check Now" directly starts the measurement while the progress of the procedure is displayed. It can be cancelled/interrupted and restarted at any time by pushing the encoder during the procedure.

A System Check can be executed while the system is transmitting program, at high level, however, the accuracy of the measurement will decrease.

After a successful check run "Ok" will appear.

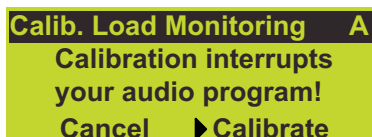
Confirm to get back to the System Check menu.

If the check procedure was not successful a respective error message will be given out.

Also refer to section 2.5.1 Possible error messages during calibration on page 31.

Calibrate

Selecting "Calibrate Now" enters into the sub-menu "Calib. Load Monitoring" and as a precautionary measure the following message will be given:



Calib. Load Monitoring A
Calibration interrupts
your audio program!
Cancel Calibrate

Selecting "Calibrate" starts the calibration procedure while the progress of the procedure is displayed. It can be cancelled/interrupted and restarted at any time by pushing the encoder during the procedure.

After a successful calibration the reference value will be displayed and "Ok" will appear in the bottom line of the calibration screen.

Confirm to get back to the System Check menu.

If the calibration was not successful (e.g. no load connected) a respective error message will be given out.

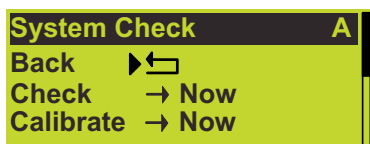
Also refer to section 2.5 List of possible error messages on page 30.

Last Check/Calibration

Further down in the System Check menu a report about the connected loads is given for both the LF, MF and HF section.

Last Check: The actual values derived from the last check are displayed.

Calibration: The reference values derived from the last calibration are displayed.



System Check A
Back
Check → Now
Calibrate → Now

Fig. 32: D12 System Check menu



Check Calibrate Now



Check Calibrate LF . .



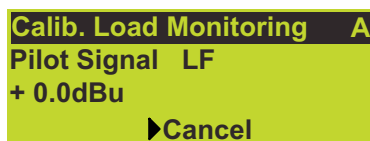
Check Calibrate HF . .




Check Calibrate Ok



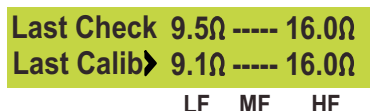
Calibrate Calibrate Now



Calib. Load Monitoring A
Pilot Signal LF
+ 0.0dBu
Cancel



Calib. Load Monitoring A
Finished
LF 9.1Ω HF 16.0Ω
Ok



Last Check 9.5Ω ---- 16.0Ω
Last Calib 9.1Ω ---- 16.0Ω
LF MF HF

Load Monitoring

Features

d&b Load Monitoring is designed to identify a possible loudspeaker malfunction. It is especially designed to fulfil the requirements of the European Standard EN 60849 "Elektroakustische Notfallwarnsysteme" (equivalent to international standard IEC 60849 "Sound Systems for Emergency Purposes").

Function

A Calibration process carried out with the completely set up system determines the impedance for each channel and calculates upper and lower impedance limits from it.

While the system is operating d&b Load Monitoring continuously checks the load impedance separately for both frequencies being able to detect any changes in loudspeaker impedance and report an error if the limits are exceeded. To do so Load Monitoring uses inaudible Pilot Signals, which are faded in for approximately 2 seconds in user defined intervals.

Notes: The resolution of Load Monitoring regarding failures of single components depends on the type and the number of loudspeakers connected to each channel. A detailed description is given in the technical information TI 360 (d&b code D5360.E.).

The Load Monitoring does not function when:

- the amplifier is switched off or to standby mode
- the respective channel is muted.
- the pilot signal level is too low.

Selecting "Load Monitoring" and pushing the encoder enters the sub-menu.



Fig. 33: D12 Load Monitoring

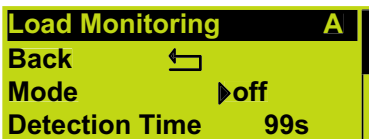


Fig. 34: D12 Load Monitoring menu

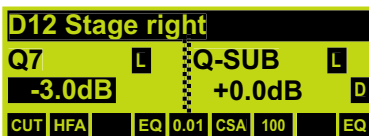


Fig. 35: D12 Load Monitoring indication in the main menu



Fig. 36: D12 Load Monitoring menu LF Driver menu

Load Monitoring menu

Mode

Selecting "Mode" within the "Load Monitoring menu" and pushing the encoder (Mode on – indicated as "■" in the main menu) activates "Load Monitoring".

Detection Time

The maximum time within a loudspeaker malfunction will be detected by the system. The interval of the pilot signals is derived from this parameter.

Note: For applications complying to the EN 60849 (IEC 60849) standard the Detection Time must be set to less than 100 sec.

Driver menu

For this example the LF Driver menu is described, the same menu is also available for the HF and/or MF Driver.

Note: All settings (except "Last-Err") are determined during the Calibration process. Only experienced users should edit the following settings.

LF Driver		A
Back		▶ ◀
Min	- 20%	
Max	+30%	
Calibration	0.0 Ω	
Last Mon	0.0 Ω	
Last Check	0.0 Ω	
Last Error	0.0 Ω	
Pilot Freq	10Hz	
Pilot Level	-24.5dBu	
Threshold	15V	

Fig. 37: D12 LF Driver menu

Definition of values:

Min

Lower limit of the impedance window witch is by default set to -20 %.

Max

Upper limit of the impedance window witch is by default set to +30 %.

Calibration

The impedance reference values derived by the calibration.

Last Mon

Impedances detected by the last measurement.

Last Check

Impedances detected by the last System Check (see also section 2.4.1 System Check on page 14).

Last Error

Last determined impedance values that led to an impedance error.

These values will be kept even after acknowledgment of the error message. They will only be overwritten when another error occurs. A calibration will reset them to 0.

Pilot Freq.

Test frequency of the pilot signal for the respective driver.

Pilot Level

Reference level of the pilot signal derived during the calibration procedure.

Threshold

Large signal threshold. If the output signal exceeds this voltage level during the measurement the tolerance limits for this particular measurement are increased in order to compensate for the reduced accuracy.

Calibrate

Ensure that all components of the system are wired and working correctly before executing the calibration!

Selecting "Calibrate Now" enters the sub-menu "Calib. Load Monitoring" and as a precautionary measure the following message will be given:

Calib. Load Monitoring A
Calibration interrupts
your audio program!
 Cancel ▶ Calibrate

Selecting "Calibrate" starts the calibration procedure while the progress of the procedure is displayed. It can be cancelled/interrupted and restarted at any time by pushing the encoder during the procedure.

After a successful calibration the reference values will be displayed and "Ok" will appear in the bottom line of the calibration screen.

Confirm to get back to the Load Monitoring menu.

If the calibration was not successful a respective error message will be displayed. Also refer to section 2.5.1 Possible error messages during calibration on page 31.

IMPORTANT!

Calib. Load Monitoring A
 Pilot Signal LF
 + 0.0dBu
 ▶Cancel

Calib. Load Monitoring A
 Finished
 LF 9.1Ω HF 16.0Ω
 ▶Ok

Freq. Generator ▶ → off

Frequency Generator A
Back ▶◀ Mode off
Level -42.0dBu
Frequency 1000Hz

Fig. 38: D12 Frequency Generator

Frequency Generators
are used by
Load Monitoring
▶Ok

Fig. 39: D12 Frequency Generator message

D12 Stage right
Q7 Q-SUB
-3.0dB +0.0dB D
CUT HFA EQ 0.01 CSA 100 EQ

Fig. 40: D12 Frequency Generator, status indication in the main menu.

Link A»B ▶ off

Fig. 41: D12 Link A»B function

D12 Stage right
Q7 ▶Q-SUB
-3.0dB ▶ +0.0dB
CUT HFA EQ 0.01 CSA 100 EQ

Fig. 42: D12 Link A»B indication in the main menu

Reset of Load Monitoring errors

To reset error indications either:

- Power Off/On at the device or remotely.
- Switch the Load Monitoring Off/On at the device or remotely.

Frequency Generator

Each amplifier channel is equipped with an independent signal generator offering pink noise or sine wave signal.

The generator can e.g. be used to check the connected loudspeakers or to identify room resonances. The generator is inserted in the signal path after the delay and before the loudspeaker equalization. The test tone will sum with any input signal present.

Notes: As a precautionary measure the frequency generator will always be off (Mode = off) after the D12 is powered on.

The frequency generator provides the Pilot Signals for the "Load Monitoring" function. When using "Load Monitoring" the frequency generator function is not available and a message will be given as shown in the graphic opposite.

Mode

Selecting "Mode" and pushing the encoder allows the following settings:

off: generator off.

Sine: sine wave generator (indicated as "🎵" on the main screen).

Pink: pink noise generator (indicated as "🔊" on the main screen).

Level

Level of the frequency generator in dBu, covering a 63.5 dB range from -57.5 dB to +6 dB in 0.5 dB steps. The level value corresponds to a level at the controller signal input. The actual output voltage depends on the channel input gain, the frequency dependent gain of the selected loudspeaker configuration and EQ settings if used.

Frequency

Frequency adjustable in the range of 10 Hz to 20 kHz in 1 Hz steps.

Link A»B

In "Dual channel" and "Mix Top/Sub" mode EQ and/or Delay settings of both channels can be linked using the "Link A»B" function. The control of these functions is then done in the Channel A menu, in the Channel B menus the linked functions cannot be edited.

On the "Main screen" the "Link A»B" function is indicated by altering the centre line to arrows as shown in the graphic opposite.

Selecting "Link A»B" and pushing the encoder allows the setting of the following modes:

off: Both controller channels are operated independently.

EQ: The EQ function of controller Channel B is linked to controller Channel A.

Delay: The Delay function of controller Channel B is linked to controller Channel A.

EQ+Delay: Both the EQ and Delay function of controller Channel B are linked to controller Channel A.

Notes: In "2-Way Active mode" the "Link A»B" is used permanently to link the channels and cannot be modified. In this mode also the "MUTE A" and the "MUTE B" switches are linked. Therefore the device can be muted/unmuted by either the "MUTE A" or "MUTE B" switch. After leaving "2-Way Active mode" the "Link A»B" will be set to "off".

AmpPreset

D12 amplifiers from firmware version V2.12 provide AmpPresets which contain all important user settings of the whole device like input, output and channel configurations, EQ and delay settings.

Using the D12 AmpPresets a sound system can be operated in different configurations (e.g. "Conference", "Music" or "Emergency Call") without the need of transmitting all the detailed settings of the devices used.

There are three types of AmpPreset memories:

User: Nine AmpPresets which can be accessed locally or via the d&b Remote network (R10 Service software from V1.0.6). These AmpPresets are used to set the complete D12 to a previously defined configuration for a particular application and can be named individually.

Alarm: Three AmpPresets which can only be accessed via the d&b Remote network (R10 Service software from V1.0.6). Intended for use in alarm systems to protect the system settings against local modifications.

Backup: Three AmpPresets which can only be accessed the d&b Remote network (R10 Service software from V1.0.6). Intended for temporary use to backup the current system settings when another AmpPreset is loaded.

Selecting "AmpPreset" and pushing the encoder enters the sub-menu.

The D12 menu item AmpPreset indicates the last loaded AmpPreset number and will be marked with "*" if any settings had been modified since loading. The menu below provides the functions Select, Load, Save, Clear and a name field to manage the AmpPresets.

Select

Turning and pushing the encoder provides access to the nine user preset memories to be loaded, saved or cleared.

To load, save or clear the selected AmpPreset first scroll to the respective menu item (Load, Save or Clear) and push the encoder to select the desired function. "O.k.?" will appear (flashing) to confirm the selected function.

Load

Restore the settings of a stored AmpPreset.

Save

Store the current amplifier settings into the selected preset memory and name it.

Clear

The selected AmpPreset memory will be cleared and "empty" will be displayed.

```
AmpPreset ▶→ 1 *
```

```
AmpPreset      Last 1*
Back ◀         Select▶ 9
Preset Name
Load Save Clear
```

Fig. 43: D12 AmpPreset menu

```
AmpPreset      Last 1*
Back ◀         Select 9
MyPreset
Load Save ▶Clear Ok?
Load Save Clear ▶Ok!
```

```
AmpPreset      Last 1*
Back ◀         Select 9
▶(empty)
---- Save Clear
```

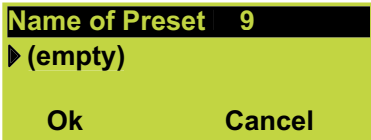


Fig. 44: D12 Preset Name

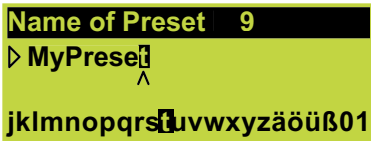


Fig. 45: D12 Device Name edit mode

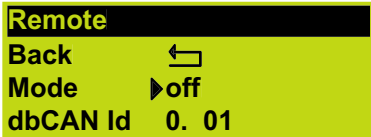
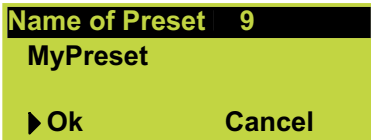
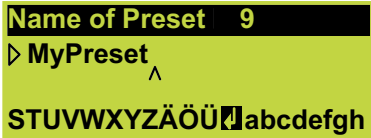


Fig. 46: D12 Remote menu

IMPORTANT!

Preset Name

Enables the assignment or editing of a Preset Name (maximum 15 characters):

1. Selecting the "Preset Name field" enters the sub-menu and the cursor is positioned at the beginning of the field.
2. Pushing the encoder enters edit mode. The pointer, (^), indicates the entry position for new or edited characters. A variety of characters (e.g. capital and lower case letters, numbers 0-9 and special characters) is displayed in the bottom line.
3. By turning the encoder, each character can be highlighted. Turning left moves the cursor to the beginning of the list (A ⇐), turning right to the end of the list (⇒ @).
4. By pushing the encoder, the highlighted letter is entered in the upper line and the pointer advances one place.
5. Repeat steps 1 to 4 until the complete device name is entered.
6. Exit edit mode by moving the cursor to the return sign (↵) and pushing the encoder.

Notes:

- An existing entry can be completed by the return sign at any position. Succeeding letters are deleted automatically.
- Single characters can be kept by simply pushing the encoder, the pointer advancing one place after each entry.
- The editing position can be scrolled through the characters by pushing and turning the encoder simultaneously.

Ok

Selecting "Ok" and pushing the encoder will confirm the new setting and exit the sub-menu.

Cancel (⇒ Back ↵)

Exits the sub-menu leaving the previous name installed.

Remote

Mode

Selecting "Mode" the following modes for remote control are available:

- off:** no remote control.
- RIB/TI212:** remote control according to TI212 (Basic remote and RIB Remote. (indicated as "RIB T" in the main screen)

Selecting the "RIB/TI212" mode (Basic remote) the D12 will be switched into standby mode. The D12 now can be switched on by applying an permanent DC voltage of 18 to 28 V to pin 7 (+) and 8 (-) of one of the remote connectors (RJ 45). Please refer to section 4. Remote control & monitoring on page 35.

RIB: remote control via d&b RIB/ROPE.
(indicated as "RIB" in the main screen)

Note: Control via d&b RIB only in conjunction with the d&b ROPE 2.0 or ROPE 3 remote software.

RIB/RS232: remote control via RS232 and the SERVICE connector of the D12. (indicated as "RIB2" in the main screen)

dbCAN: remote control via dbCAN (CAN-Bus)/ROPE C.
In 2-Way Active mode indicated as "CAN" and the "dbCAN Id" e.g. 7.63 in the main screen.
In Dual channel or Mix Top/Sub mode indicated with the "dbCAN Id" e.g. 7.63 in the main screen.

Sub net 0 to 7

dbCAN Id	▷0.	01
dbCAN Id	▷7.	01
dbCAN Id	7.▷01	
dbCAN Id	7.▷63	

Device Id 01 to 63

Lock	▶ →	Press 2s
Lock		
Back	←	
Lock now	▶ →	
Mode		Press 2s

Fig. 47: D12 Lock menu

D12 Stage right		
J12	Active	🔒
-3.0dB	D	0.3ms
HFC	LFC	C-5 EQ
CAN		0.01

Fig. 48: D12 Lock indication

Show	▶ →	Main Screen
------	-----	-------------

Password	▶ →	
----------	-----	--

dbCAN Id

Setting the "dbCAN identifiers [n].[nn]". The first digit represents the CAN sub net. Eight sub-nets can be defined (values 0 to 7). Using the two digit device ID for each sub-net 63 devices can be defined (values 01 to 63).

Lock

Selecting "Lock" and pushing the encoder enters the sub-menu.

Lock now

Pushing the encoder switches the device into "Lock" mode according to the mode selected below and exits the sub-menu "Lock". In 2-Way Active Mode a locked device is indicated by "🔒" in the Main screen.

Mode

Selecting "Mode" and pushing the encoder toggles between two options to protect the device against unintentional operation.

Press 2s: prevents accidental operation by locking the front panel controls.

Password: password protection that prevents operation by unauthorized persons.

Show

Selecting "Show" and pushing the encoder allows two different screens to be displayed when the device is locked.

Main Screen: switch to the "Main screen".

Levels Screen: switch to the "Levels screen".

Selecting "Password" and pushing the encoder enters the sub-menu "Edit Password".

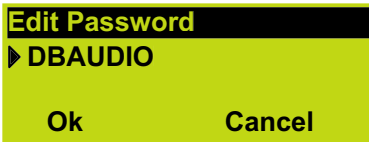
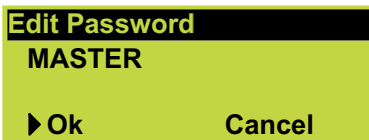
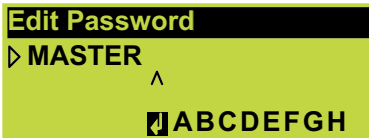


Fig. 49: D12 Edit Password



Fig. 50: D12 Password edit mode



Edit Password

Enables the input of a new, or editing of an existing password (maximum 7 characters).

Note: | Factory (default) password DBAUDIO.

1. Selecting "Password" enters the "Edit Password" mode and the cursor is positioned at the beginning of the "Password".
2. Pushing the encoder enters edit mode. The pointer (^), indicates the entry position for new or edited characters. The selection of characters (Capital letters) is displayed in the bottom line.
3. By turning the encoder, each character can be highlighted. Turning left moves the cursor to the beginning of the list (A ⇐), turning right to the end of the list (⇒ Z).
4. By pushing the encoder, the highlighted letter is entered into the password line and the pointer advances one place.
5. Repeat steps 1 to 4 until the complete password is entered.
6. Exit edit mode by moving the cursor to the return sign (↵) and pushing the encoder.

Notes: | An existing entry can be completed by the return sign at any position. Succeeding letters are deleted automatically.

Single characters can be kept by simply pushing the encoder, the pointer advancing one place after each entry.

The editing position can be scrolled through the characters by pushing and turning the encoder simultaneously.

Ok

Selecting "Ok" and pushing the encoder will confirm the new setting and exit the sub-menu "Password".

Cancel (⇒ Back ↶)

Exits the sub-menu leaving the previous password installed.

Unlocking the device

An attempt to change the status of the device in "Lock" mode will be met by the message "Unlock: Press knob 2s" being briefly displayed. Unlock the device as follows:

Press 2s

Push and hold the encoder for a minimum of 2 seconds until the message "Unlock: Press knob 2s" disappears from the first line of the LCD.

Password

Push and hold the encoder for a minimum of 2 seconds until "Please Enter Password" is displayed. The password is entered as described above under "Password". An incorrectly entered password will revert the device to the screen selected for "Lock" mode.

Notes: | If the password had been lost a protected D12 can be released through a System-Reset (See Section 2.6 System Reset on page 32).

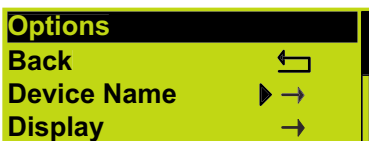


Fig. 51: D12 Options menu



Fig. 52: D12 Device Name

Options

The "Options" menu allows further settings and status retrieval in addition to the operational configurations and parameters of the device.

Device Name

Enables the assignment or editing of a device name (maximum 15 characters):

1. Selecting "Device Name" enters the sub-menu and the cursor is



Fig. 53: D12 Device Name edit mode



1. The cursor is positioned at the beginning of the "Device Name". As a factory preset "D12" followed by the firmware version is entered.
2. Pushing the encoder enters edit mode. The pointer, (^), indicates the entry position for new or edited characters. A variety of characters (e.g. capital and lower case letters, numbers 0-9 and special characters) is displayed in the bottom line.
3. By turning the encoder, each character can be highlighted. Turning left moves the cursor to the beginning of the list (A ⇐), turning right to the end of the list (⇒ @).
4. By pushing the encoder, the highlighted letter is entered in the upper line and the pointer advances one place.
5. Repeat steps 1 to 4 until the complete device name is entered.
6. Exit edit mode by moving the cursor to the return sign (↵) and pushing the encoder.

Notes:

An existing entry can be completed by the return sign at any position. Succeeding letters are deleted automatically.

Single characters can be kept by simply pushing the encoder, the pointer advancing one place after each entry.

The editing position can be scrolled through the characters by pushing and turning the encoder simultaneously.

Ok

Selecting "Ok" and pushing the encoder will confirm the new setting and exit the sub-menu "Device name".

Cancel (⇒ Back ↶)

Exits the sub-menu leaving the previous device name installed.

Display ▶ →

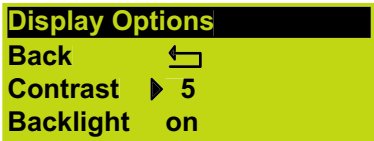


Fig. 54: D12 Display Options

Information ▶ →

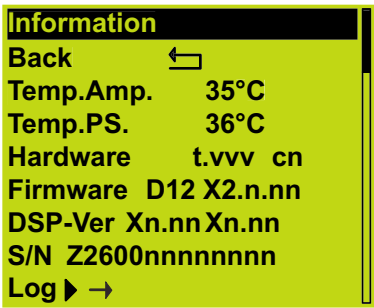


Fig. 55: D12 Information menu

Log ▶ →

Fig. 56: D12 Log book

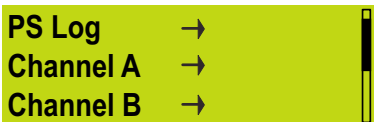
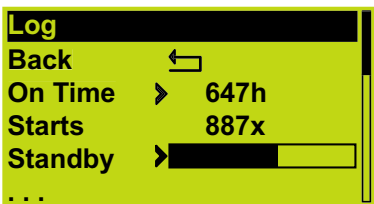


Fig. 57: D12 Log book screens

Display

Selecting "Display" and pushing the encoder enters the sub-menu "Display Options".

Display Options

Contrast

Enables adjustment of the display contrast.

Backlight

Enables the following settings:

off: display illumination permanently off.

On: display illumination permanently on.

timeout 10s: display is illuminated when the encoder or a MUTE switch is pressed and switches off 10 seconds after the last operation.

Note: | In "Standby mode" the display illumination reverts to "timeout 10s".

Information

Selecting "Information" and pushing the encoder enters the sub-menu.

Temp. Amp.

The temperature of the D12 heat sink.

Temp. PS

The temperature of the D12 Power Supply.

Hardware

Hardware type and variant [t.vvv] and identification [cn].

Firmware

The version of software installed in the D12.

DSP-Ver

The version of active software installed in the D12 DSPs.

S/N

Serial number of the device.

Log

Selecting "Log" and pushing the encoder enters the sub-menu.

The log book contains information relating to the use and environmental conditions experienced throughout the operating life of the D12.

The bar graphs indicate the time the D12 had been in certain condition related to the total time the device has been connected to mains power supply and switched on.

For example a half filled "Standby bar graph" would indicate that the D12 has been in "Standby mode" for half its operating life.

The following information will be recorded:

On time

Hours counter. Indicating the amount of time the D12 has been connected to a mains power supply and switched on.

Starts

How often the device had been switched on.

Standby

Proportion of the "On Time" the D12 has been in Standby mode.

SysErr

A numerical value indicating the number of times the D12 has entered the error condition "SysErr".

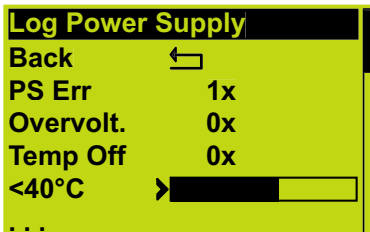
RemoteErr

A numerical value indicating the number of times the D12 has entered the error condition "RemoteErr".

DSP Halt

A numerical value indicating the number of times the D12 has entered the error condition "DSP Halt" due to a internal fault.

PS Log ▶→



PS Log

Selecting "PS Log" and pushing the encoder enters the sub-menu.

PS Err

A numerical value indicating the number of times the D12 has entered the error condition "PS Err".

Overvolt.

A numerical value indicating the number of times the D12 has entered the error condition "Overvoltage".

Temp Off

A numerical value indicating the number of times the D12 has switched off with the error condition "Overtemperature" due to overheating.

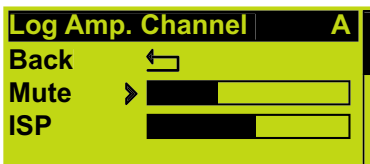
Temp. (Temperature Log)

Proportionate temperature ranges.

These display the proportion of "On Time" the D12 has been operated within the temperature ranges listed.

Channel A ▶→

Channel B ▶→



Channel A (B)

Selecting "Channel A (B)" and pushing the encoder enters the sub-menu.

Mute

Proportion of the "On Time" the D12 was muted.

ISP

Proportion of the "On Time" an input signal was present at the D12.

GainRed

Proportion of the "On Time" the D12 has been operated with gain reduction.

Overload

Proportion of the "On Time" the D12 has been operated with too high input level or output current.

Amp Prot

A numerical value indicating the number of times the D12 has entered the error condition "Amp Protect", possibly due to a current overload caused by a low impedance or short circuit connected to the output.

Amp Err

A numerical value indicating the number of times the D12 has entered the error condition "Amp Error" due to an internal fault.

Temp Off

A numerical value indicating the number of times the D12 has switched off with the error condition "Overtemperature" due to overheating.

ImpErrLf

A numerical value indicating the number of times the D12 has entered the error condition "ImpErrLf" due to a Load Monitoring fault.

ImpErrHf

A numerical value indicating the number of times the D12 has entered the error condition "ImpErrHf" due to a Load Monitoring fault.

InpMonErr

A numerical value indicating the number of times the D12 has entered the error condition "InpMonErr" due to a Input Monitoring fault, possibly caused by a missing external pilot signal.

T/S Mis.

A numerical value indicating the number of times the D12 has entered the error condition "T/S Mis." due to a TOP/SUB mismatch at the output connectors of the D12 in Dual Channel mode as long as the "TSM Detection" function was not set to off.

DSP Halt

A numerical value indicating the number of times the D12 has entered the error condition "DSP Halt" due to an internal fault.

Temp. (Temperature Log)

Proportionate temperature ranges.

These display the proportion of "On Time" the D12 has been operated within the temperature ranges listed.

Input Monitoring

According to the European Standard EN 60849 "Elektroakustische Notfallwarnsysteme" (equivalent to international standard IEC 60849 "Sound Systems for Emergency Purposes") the complete signal chain needs to be monitored. Therefore the "d&b Input Monitoring" functionality allow the detection of a incoming pilot signal to be inserted into the signal chain in front.

Important notes on Input Monitoring

Input Monitoring can supervise the D12 analog or digital inputs. It is not linked to the channel input routing, therefore it is possible to monitor an input connector while it is not routed to an amplifier channel.

Depending on the selected input mode of the D12 the following Input Monitoring modes are functional:

D12 Input mode	Analog Pilot	Digital Pilot	Digital Lock
analog	Yes	No	No
digital	Yes	Yes	Yes

Tab. 4: Input Monitoring modes depending on D12 Input mode

The sub-menus "Input A" and "Input B" within the "Input Monitoring" menu are related to the D12's input connectors according to the following conventions:

D12 input mode is set to "analog"

The analog input connectors INPUT A/B of the D12 can be monitored for incoming pilot signals.

Setting the D12 to input mode analog and monitor the digital input or whether the digital input has locked to the incoming digital audio signal is not possible. (as indicated in the table above - Tab. 4) In this case a error message "A/B: Input monitoring Fault" will be given out on the LCD.

D12 input mode is set to "digital"

In this case "Input A/B" within the "Input Monitoring" are related to the AES channel. The analog input connectors INPUT A/B or the DIGITAL AES/EBU input connector of the D12 can be monitored for incoming pilot signals or whether the digital input has locked to the incoming digital audio signal (Clock).

Example:

The D12 input mode is set to digital while the analog input connectors are monitored for incoming pilot signals (Analog Pilot). The program signal is fed to the digital input while for emergency calls the D12 will be switched (routed) to the analog inputs of the D12 and the program fed to the digital input will be interrupted.

MUTE A/B

Note: As the MUTE A/B switches will isolate the D12 digital controller from the power amplifiers the MUTE A/B switches will not affect the input connectors of the D12 and therefore "Input Monitoring" remains working. (refer also to the D12 Hardware manual in section "Controls and indicators – MUTE A/B".

Input Monitoring ► → off

Selecting "Input Monitoring" and pushing the encoder enters the sub-menu.

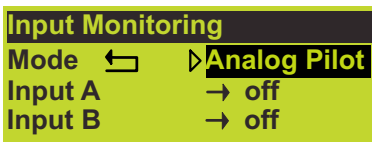


Fig. 58: D12 Input Monitoring menu

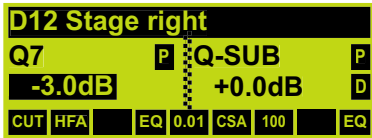
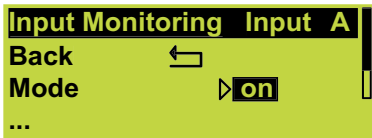


Fig. 59: D12 Input Monitoring, indication in the main screen



Fig. 60: D12 Input Monitoring, Detection Time



Fig. 61: D12 Input Monitoring, Notch Filter

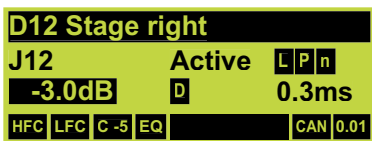


Fig. 62: D12 Input Monitoring, indication of activated Notch



Input Monitoring menu

Mode

Selecting "Mode" and pushing the encoder allows the setting of the following functions:

Analog Pilot: monitor incoming pilot signal at the analog inputs

Digital Pilot: monitor incoming pilot signal at the digital input

Digital Lock: monitor whether the digital input has locked

Input A / Input B

Selecting either "Input A" or "Input B" and pushing the encoder allows the following settings for each channel independently.

Mode

Selecting "Mode" within the "Input A or B" sub-menu and pushing the encoder activates "Input Monitoring" (indicated as "I" in the main screen) An error message will be generated if no signal is detected.

Detection Time

The maximum time interval an interruption of the monitored pilot signal or digital clock is accepted without creating an error message.

Note: For applications complying to the EN 60849 (IEC 60849) standard the Detection Time must be set to less than 100 sec.

Notch on/off

A notch filter is available to remove the pilot signal from the program signal. However, if activated, the Notch filter remains active even the Input Monitoring is set to off (Mode off). The on/off status of the Notch filter is indicated with "n" in the main screen as shown in the graphic opposite - Fig. 62.

Frequency

Center frequency of the notch filter adjustable from 1 Hz to 20 kHz in 1 Hz steps.

Freq. Fine

Fine tuning of the center frequency ± 1 Hz, 1/100 Hz steps.

Quality

The Q of the filter is adjustable from 4 ... 42 in 1 detent steps. The centre frequency is fully attenuated ($\Rightarrow -\infty$ dB).

Detected? no (yes)

The signal level in dBu detected at the set pilot frequency is displayed on the right hand side. "Detected?" is followed by the message ("yes" or "no") depending on the threshold level (see "Threshold" below).

Threshold

Detection threshold for an external Pilot Signal of the set frequency, adjustable in a range of -122 dBu to +21 dBu in 1 dB steps.

Power Supply ▶ →

Power Supply
Back ▶ ←
Mains 230V
Frequency 50Hz

Fig. 63: D12 Power Supply monitor

Buzzer ▶ off

Fig. 64: D12 Buzzer function

TSM Detection ▶ on

Fig. 65: D12 TSM Detection

IMPORTANT!

Power Supply

Selecting "Power Supply" and pushing the encoder enters the sub-menu.

Mains

The actual measured mains voltage the device is connected to in volts. The typical accuracy is 2 %.

Frequency

The detected mains frequency.

Buzzer

An additional acoustical signal for error messages.

on/off

Turning the buzzer on or off.

TSM Detection (Top/Sub-Mismatch)

In "Dual channel mode" all four pins (TOP and SUB pins) of the output connectors are driven. This could cause damage to TOPs when a SUB configuration is selected on the respective channel.

The D12 will monitor the current through the different output pins and will detect if a wrong cabinet type is connected.

The error message "Top/Sub-Mismatch" will be displayed on the LCD and the respective channel will be muted.

If the pin assignment of the used wiring differs from the d&b standard "TSM Detection" can be set to "off" in order to avoid the detection of an error.

The "TSM Detection" is by factory default set to "on". If it is changed to "off" this setting will be kept also after the D12 had been powered off.

2.5 List of possible error messages

The following list describes the possible error messages of the D12. Error messages can be either related to the device ("Device") or to a single or both channels of the device ("Channel"). Channel related error messages will be supplemented with the channel information.

- Device** **System Error [nnn]:** an internal fault has occurred. Switch (reboot) the D12 off and on again. The number [nnn] can provide your d&b service partner with information on the cause of the fault.
- Device** **Program Error [nnn]:** a fault has occurred in the control processor. Switch (reboot) the D12 off and on again.
- Device** **Overvoltage ([xxx] V):** mains overvoltage. The actual RMS voltage is displayed. The D12 will switch into standby mode.
- Device** **Undervoltage ([xxx] V):** mains undervoltage. The actual RMS voltage is displayed. The D12 will switch to standby mode.
- Device** **Power Supply Error [nnn]:** a fault has occurred in the switched mode power supply. The number [nnn] can provide your d&b service partner with information on the exact cause of the fault.
- Device** **PS Temp. Warning ([xx] °C):** the temperature of the Power Supply is very high, the air flow should be checked (fan filter) or the load should be reduced.
- Device** **PS Overtemperature ([xx] °C):** the temperature of the Power Supply is too high and the device will be muted, the loudspeaker output switched off. After cooling down to a permitted operating temperature the D12 will switch on automatically.
- Device** **Remote Error [nnn]:** a fault has occurred in the remote control connection. This error message may appear if remote control is selected but no network is connected or no other device is found on the network.
- Channel** **Invalid DSP Program:** the operating software for the DSP(s) is not present or contains errors. The D12 will switch to mute. Switch the D12 off and on again (reboot). If the fault recurs consult your d&b service partner.
- Channel** **Invalid Speaker Data:** the DSP data of the loudspeaker configuration selected is not present or contains errors. The D12 will switch to mute.
- Channel** **DSP Error [nnn]:** an error has occurred in the digital signal processor (s) (DSP(s)), the D12 will switch to mute. Switch the D12 off and on again (reboot). The number [nnn] can provide your d&b service partner with information on the cause of the fault.
- Channel** **Amp. Error:** an internal fault has occurred in the amplifier(s), the D12 will switch to mute and the loudspeaker output switched off. The D12 does not contain any user serviceable components, the device must be returned to a d&b service partner.
- Channel** **Amp. Protect:** output current too high, possibly caused by a short circuit or fault in a loudspeaker cable or another low impedance condition. The D12 will be muted and the loudspeaker output switched off. Once the cause of the fault has been identified and removed, the D12 has to be switched to standby mode (long press on MUTE A switch) to clear the error status.

- Channel** **Amp. Temp. Warning ([xx] °C):** the temperature of the D12 heat sink is very high, the air flow should be checked (fan filter) or the load should be reduced.
- Channel** **Amp. Overtemperature ([xx] °C):** the temperature of the D12 heat sink is too high and will be muted, the loudspeaker output switched off. After cooling down to a permitted operating temperature the D12 will switch on automatically.
- Channel** **Top/Sub-Mismatch:** In conjunction with the "Dual channel mode" a TOP cabinet is connected to a SUB configured channel.

2.5.1 System Check, Load- and Input Monitoring

Possible error messages during calibration

During the calibration procedure of the System Check and Load Monitoring function the following error messages may appear:

- Device** **Power is off:** the D12/E-PAC is in Standby mode and a calibration is not possible.
- Channel** **Amp is muted:** the respective channel of the D12 is muted and a calibration is not possible.
- Channel** **Current too low:** the pilot signal level was increased to the maximum, but a sufficient current had not been reached. Check connections and wiring.
- Channel** **Current too high:** the maximum current was exceeded at minimum pilot signal level. Check the wiring for short circuits.
- Channel** **Cancelled (by User):** the user has interrupted the calibration either locally or remotely.

Possible error messages during operation

During operation the following error messages related to Load Monitoring (LM) and Input Monitoring (IM) could appear:

IMPORTANT!

If both Load- and Input Monitoring are activated and if both detect an error Load Monitoring obtains highest priority and therefore only the error messages related to Load Monitoring are displayed.

- Channel (LM)** **SpkrFault ([xxΩ/xxΩ]):** both LF and HF paths of the connected loudspeaker have failed or the loudspeaker has been disconnected. The display shows the value (ohms) which led to the error.
- Channel (LM)** **SpkrFault LF ([xxΩ]):** the LF path of the connected loudspeaker has failed. The display shows the value (ohms) which led to the error.
- Channel (LM)** **SpkrFault HF ([xxΩ]):** the HF path of the connected loudspeaker has failed. The display shows the value (ohms) which led to the error.
- Channel (IM)** **Input Monitoring Fault:** a Input Monitoring error has occurred e.g. the detection of an incoming pilot signal has failed. This message applies to all operating modes of Input Monitoring.

2.5.2 Further messages

The following messages are for information on the status of the D12 and not error messages:

Standby: Indicates the D12 is in standby mode.

Unlock: Press knob 2s: indicates that the D12 has been locked to protect it against accidental or unauthorised operation. Push and hold the encoder for a minimum of 2 seconds until "Lock" disappears from the lower status line of the LCD.

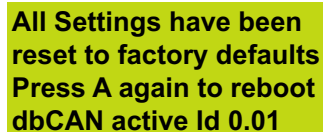
2.6 System Reset

IMPORTANT!

Following a system reset operation all user settings of the D12 will be lost except the "dbCAN Id" which will be kept as indicated in the "Reset screen" which will be displayed after a system reset.

- Isolate the D12 from the mains power supply by switching off the power switch.
- Push and hold down the MUTE A switch while switching on the power supply to the D12 again and release the MUTE A switch.

The following "Reset screen" will be displayed:



**All Settings have been
reset to factory defaults
Press A again to reboot
dbCAN active Id 0.01**

Fig. 66: D12 Reset screen

IMPORTANT!

To restart the unit after the system reset press the MUTE A switch again.

3. D12 Firmware update

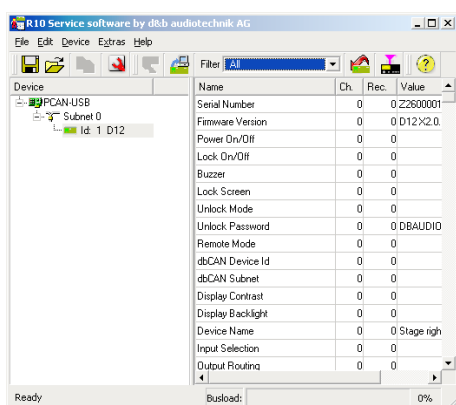


Fig. 67: d&b R10 Service software

3.1 Firmware update via CAN-Bus and R10

In conjunction with the d&b Remote network and the R10 Service software a firmware update can be carried out via CAN-Bus. R10 allows to update the firmware of multiple devices connected to the network at one time.

The R10 Service software is not supplied with the D12. It can be downloaded from the d&b website in the "Support - Downloads area" under: www.dbaudio.com.

Note: For further information on R10 and the firmware update via CAN-Bus please refer to the R10 manual and observe the instructions given on the respective web site!

3.2 Firmware update via D12 dbUpdate

"D12-dbUpdate" is a control software for loading new firmware and/or loudspeaker set ups into the D12 amplifier.

The software is not supplied with the D12. It can be downloaded from the d&b website in the "Support - Downloads area" under: www.dbaudio.com.

Note: Please observe the instructions given on the respective web site!

3.2.1 D12 dbUpdate

Note: A firmware update will erase all user settings of the device. The device name and the log files will be kept. Note all settings you want to restore after the update.

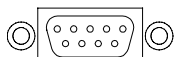


Fig. 68: SERVICE connector (D-SUB-9)

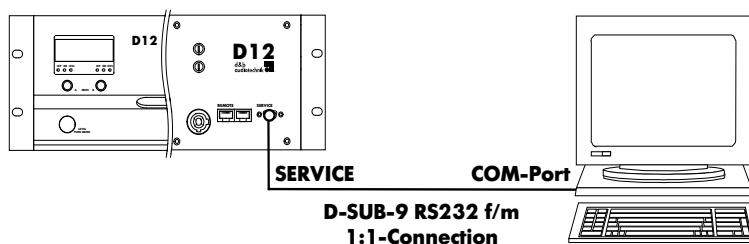


Fig. 69: 1:1 RS232 connection between D12 and PC

Pin	Signal	Remark
2	RxD	
3	TxD	
5	GND	Signal ground

Tab. 5: D-SUB-9 pin assignment on d&b devices

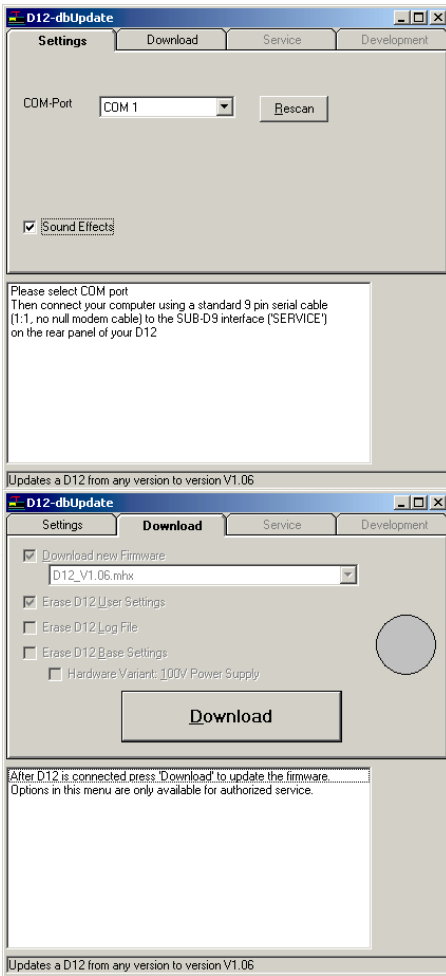


Fig. 71: D12 dbUpdate dialog screen - Download

3.2.2 Update procedure

After starting the respective file "D12-dbUpdate.exe" the update procedure is detailed in several steps via dialog screens.

Settings menu

- Select the respective interface (COM port).
- Connect the computer to the SERVICE connector of the D12.

Download

- Press "Download" to start the update procedure.
- Follow the instructions (power off and on the D12)
- the download will take about 1 minute

During the update:

- the display of the D12 is switched off and
- the ISP-LED (green) lights up.

After the update:

- the D12 automatically reboots.

4. Remote control & monitoring

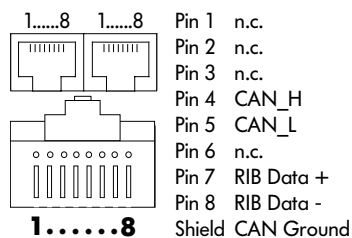


Fig. 72: Pin assignment for remote control (RJ45)

The D12 is fitted with a two-wire serial remote control interface, (2 x RJ 45) carrying both the RIB and CAN-Bus signals. All pins of both connectors are wired in parallel allowing either to be used as the input or output. Where remote control networking conforms to a "Bus or Ring topology" one connector is used for the incoming signal and the second connector allows for direct connection to another device or for terminating in case of a CAN-Bus network. The interface connections for the RIB (pin 7/8) are opto-coupled, while the connections for the CAN-Bus (pin 4/5) are hard wired to common ground (protective earth).

4.1 Remote-Mode "dbCAN"

All functions of the D12 can be remotely interrogated via the dbCAN (CAN-Bus).

Note: A detailed description of remote control via dbCAN (CAN-Bus) is given in the technical information TI 312 (d&b code D5312.E.)

4.2 Remote-Mode "RIB"

The D12 can be remotely interrogated via the d&b Remote Interface Bridge (RIB). Please refer to the RIB Object address table below.

Address	Read/Write	Object	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
			Binary: 2 ⁶ Val: 64	Binary: 2 ⁵ Val: 32	Binary: 2 ⁴ Val: 16	Binary: 2 ³ Val: 8	Binary: 2 ² Val: 4	Binary: 2 ¹ Val: 2	Binary: 2 ⁰ Val: 1	
0	R	Status Base Device		Gen-Error	SW-Rem	LockCmd	LockMode	PWR Ok	PWR On	
0	W	Status Base Device				LockCmd			PWR On	
1	R/W	Switch Settings 2		Setup_B_4	Setup_B_3	Setup_A_4	Setup_A_3	Delay On B	Delay On A	
2	R/W	Potentiometer A	Attenuation in steps of 0.5dB, 7-bit coded (0=+6dB, 127=-57.5dB)							
3	R/W	Switch Settings A	MUTE	Setup_Bit2	EQ A	Setup_Bit1	Setup_Bit0	Filter 2	Filter 1	
4	R/W	Potentiometer B	Attenuation in steps of 0.5dB, 7-bit coded (0=+6dB, 127=-57.5dB)							
5	R/W	Switch Settings B	MUTE	Setup_Bit2	EQ B	Setup_Bit1	Setup_Bit0	Filter 2	Filter 1	
6	RD/W/R	Delay time coarse A	Delay in steps of 10 ms, 7-bit coded (max. 34 = 340 ms)							
7	RD/W/R	Delay time fine A	Delay in steps of 0.1 ms, 7-bit coded (max. 127 =12.7 ms)							
8	R	Errors Base Device		Tmp Error	Tmp Warn	AMP Prot. B	AMP Prot. A	AMP Error B	AMP Error A	
9	RD/W/R	Delay time coarse B	Delay in steps of 10 ms, 7-bit coded (max. 34 = 340 ms)							
10	R	Output Signal + EN60849						Present B	Present A	
10	W	Output Signal	EN-B-Bit1	EN-B-Bit0	EN-A-Bit1	EN-A-Bit0	Calib A+B**)			
11	RD/W/R	Delay time fine B	Delay in steps of 0.1 ms, 7-bit coded (max. 127 =12.7 ms)							
12	R/W	LED's Controller A	ISP	GR	OVL		ImpErr A Hf	ImpErr A Lf	ImpErr A	
13	R	Headroom/GainRed A	0..63:Headroom, 64..127:GainRed, 7-bit coded (0=32dB Hdrm, 64=0dB, 127=31.5dB GR)							
14	R/W	LED's Controller B	ISP	GR	OVL		ImpErr B Hf	ImpErr B Lf	ImpErr B	
15	R	Headroom/GainRed B	0..63:Headroom, 64..127:GainRed, 7-bit coded (0=32dB Hdrm, 64=0dB, 127=31.5dB GR)							

Tab. 6: D12 RIB Object address table

