

USER MANUAL  
MANUALE D'USO  
MANUEL DE  
L'UTILISATEUR  
BEDIENUNGSANLEITUNG

# **RDNET CONTROL 2** Master Control Unit





Before connecting and using this product, please read this instruction manual carefully and keep it on hand for future reference. The manual is to be considered an integral part of this product and must accompany it when it changes ownership as a reference for correct installation and use as well as for the safety precautions. RCF S.p.A. will not assume any responsibility for the incorrect installation and / or use of this product.

**WARNING:** To prevent the risk of fire or electric shock, never expose this product to rain or humidity.

## 1. SAFETY PRECAUTIONS

All the precautions, in particular the safety ones, must be read with special attention, as they provide important information.

### 2. POWER SUPPLY FROM MAINS (direct connection)

- a. The mains voltage is sufficiently high to involve a risk of electrocution; therefore, never install or connect this product when its power cable is plugged in.
- b. Before powering up, make sure that all the connections have been made correctly and the voltage of your mains corresponds to the voltage shown on the rating plate on the unit, if not, please contact your RCF dealer.
- c. The metallic parts of the unit are earthed by means of the power cable.
- d. Protect the power cable from damage.
- e. To prevent the risk of electric shock, never open the product: there are no parts inside that the user needs to access.

**3.** Make sure that no objects or liquids can get into this product, as this may cause a short circuit. This apparatus shall not be exposed to dripping or splashing. No objects filled with liquid, such as vases, shall be placed on this apparatus. No naked sources (such as lighted candles) should be placed on this apparatus.

**4.** Never attempt to carry out any operations, modifications or repairs that are not expressly described in this manual. Contact your authorized service centre or qualified personnel should any of the following occur:

- The product does not function (or functions in an anomalous way).
- The power supply cable has been damaged.
- Objects or liquids have got in the unit.
- The product has been subject to a heavy impact.

## IMPORTANT NOTES



## WARNING



5. If this product is not used for a long period, disconnect the power cable.
6. If this product begins emitting any strange odours or smoke, switch it off immediately and disconnect the power supply cable.
7. Do not connect this product to any equipment or accessories not foreseen. For suspended installation, only use the dedicated anchoring points and do not try to hang this product by using elements that are unsuitable or not specific for this purpose. Also check the suitability of the support surface to which the product is anchored (wall, ceiling, structure, etc.), and the components used for attachment (screw anchors, screws, brackets not supplied by RCF etc.), which must guarantee the security of the system / installation over time, also considering, for example, the mechanical vibrations normally generated by transducers. To prevent the risk of falling equipment, do not stack multiple units of this product unless this possibility is specified in the user manual.

**8. RCF S.p.A. strongly recommends this product is only installed by professional qualified installers (or specialised firms) who can ensure correct installation and certify it according to the regulations in force. The entire audio system must comply with the current standards and regulations regarding electrical systems.**

#### 9. Supports and trolleys

The equipment should be only used on trolleys or supports, where necessary, that are recommended by the manufacturer. The equipment / support / trolley assembly must be moved with extreme caution. Sudden stops, excessive pushing force and uneven floors may cause the assembly to overturn.

10. There are numerous mechanical and electrical factors to be considered when installing a professional audio system (in addition to those which are strictly acoustic, such as sound pressure, angles of coverage, frequency response, etc.).

#### 11. Hearing loss

Exposure to high sound levels can cause permanent hearing loss. The acoustic pressure level that leads to hearing loss is different from person to person and depends on the duration of exposure. To prevent potentially dangerous exposure to high levels of acoustic pressure, anyone who is exposed to these levels should use adequate protection devices. When a transducer capable of producing high sound levels is being used, it is therefore necessary to wear ear plugs or protective earphones. See the technical specifications in loudspeaker instruction manuals to know their maximum sound pressure levels.

## IMPORTANT NOTES

To prevent the occurrence of noise on microphone / line signal cables, use screened cables only and avoid putting them close to:

- Equipment that produces high-intensity electromagnetic fields (for example, high power transformers).
- Mains cables.
- Loudspeaker lines.

## OPERATING PRECAUTIONS

- Never force the control elements (keys, knobs, etc. ).
- Do not use solvents, alcohol, benzene or other volatile substances for cleaning the external parts of this product.

## IMPORTANT NOTES



## OPERATING PRECAUTIONS

**RCF S.P.A. THANKS YOU FOR PURCHASING THIS PRODUCT, WHICH HAS BEEN DESIGNED TO GUARANTEE RELIABILITY AND HIGH PERFORMANCES**

## PRODUCT INFORMATION



RDNET CONTROL 2 is a hardware interface to connect RCF RDNET compatible devices to a Personal Computer (PC) by means of a USB connection.

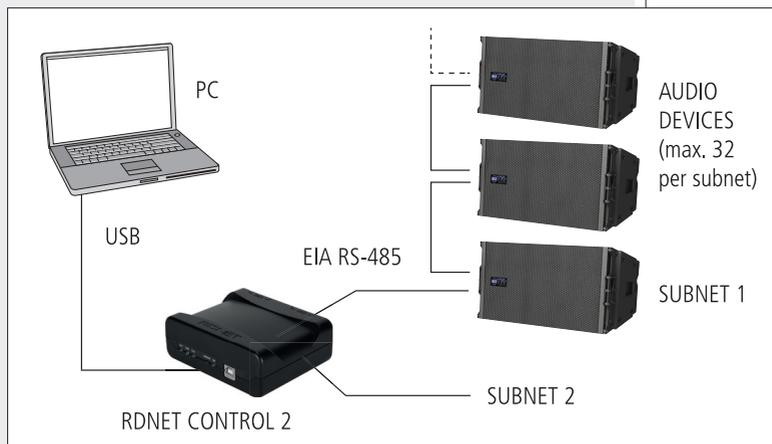
The RDNET system was purposely developed to create a data network for monitoring and command of more systems. The RDNET CONTROL 2 unit can manage up to 2 subnets. Up to 32 devices can be connected to each subnet (2 subnets x 32 = total 64 devices).

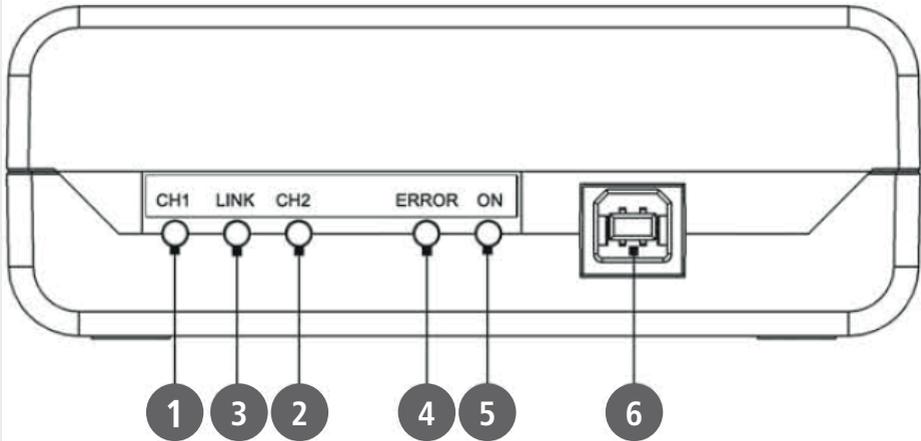
The addressing of the various devices is handled automatically by RDNET CONTROL 2 interface. Each device is assigned a unique address during the power on procedure of network.

For the RDNET network operating, it is necessary to install the appropriate Software on PC, on Microsoft Windows® environment. From PC it is possible to check the operating of each single device connected to the network and edit its parameters output level, mute, equalization, delay, etc.

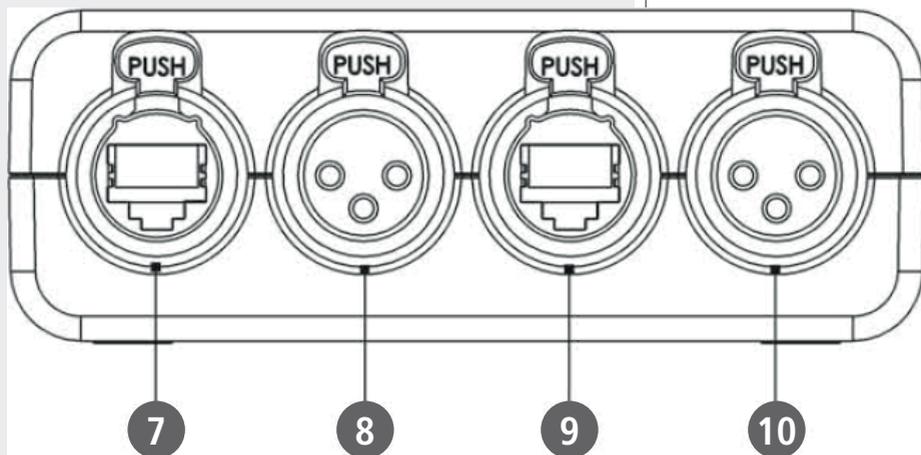
The network and devices configuration can be saved as file in the PC and later reloaded. RDNET is a "real-time" system: Information relating to the functioning of the devices is acquired in real-time, a feature that allows a global view of connected devices.

For the correct working of USB (1.1 or 2.0) communication between PC and RDNET CONTROL2 it is recommended to use the USB cable supplied.





- 1** CH1 INDICATOR LIGHT  
This indicator light, green LED, flashes to indicate data transmission or reception in the subnet 1.
- 2** CH2 INDICATOR LIGHT  
This indicator light, green LED, flashes to indicate data transmission or reception in the subnet 2.
- 3** LINK INDICATOR LIGHT  
This indicator light, green LED, will be used for future applications.
- 4** ERROR INDICATOR LIGHT  
This indicator light, red LED, lights up to indicate errors during data transmission or reception.
- 5** ON INDICATOR LIGHT  
This indicator light, green LED, lights up to indicate that device is on and powered by USB.
- 6** USB CONNECTOR  
USB type B connector, for computer link, by means of cable provided. The RDN2 CONTROL 2 is powered by USB connector.



- 7** RJ45 CONNECTOR CH1  
 Connector for Subnet 1 RDNET connection by means of CAT5 cable.  
 For connections refer to "CHANNEL CONNECTIONS" paragraph.  
 If this connector is used DO NOT CONNECT the connector CH1 XLR socket **8**.
- 8** XLR CONNECTOR CH1  
 Connector for Subnet 1 RDNET connection.  
 For connections refer to "CHANNEL CONNECTIONS" paragraph.  
 If this connector is used DO NOT CONNECT the connector CH1 RJ45 socket **7**.
- 9** RJ45 CONNECTOR CH2  
 Connector for Subnet 2 RDNET connection by means of CAT5 cable.  
 For connections refer to "CHANNEL CONNECTIONS" paragraph.  
 If this connector is used DO NOT CONNECT the connector CH2 XLR socket **10**.
- 10** XLR CONNECTOR CH2  
 Connector for Subnet 2 RDNET connection. For connections refer to "CHANNEL CONNECTIONS" paragraph.  
 If this connector is used DO NOT CONNECT the connector CH2 RJ45 socket **9**.



**DO NOT CONNECT BOTH RJ 45 AND XLR CONNECTORS TO THE SAME RDNET PORT!**

### RJ 45 CONNECTOR

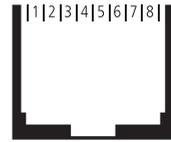
Pin

1. Available for other functions (for example: audio signal +, hot)
2. Available for other functions (for example: audio signal -, cold)
3. Available for other functions (for example: analogue ground)
4. Digital ground
5. Digital ground
6. Available for other functions (for example: power supply)
7. RS 485 A
8. RS 485 B

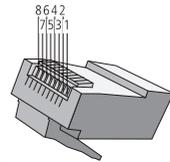
### XLR SOCKET

Pin

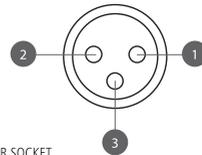
1. Digital ground
2. RS 485 A
3. RS 485 B



RJ 45 SOCKET



RJ 45 PLUG

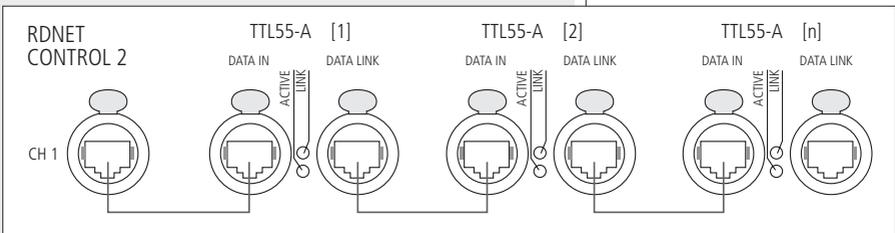


XLR SOCKET



**Each of the 2 available RDNET ports of the RDNET CONTROL 2 unit can be connected to max 32 compatible devices (linked in "daisy-chain").**

Example: the RDNET CONTROL 2 port 1 is connected to the DATA IN input of a TTL55-A loudspeaker, of which DATA LINK parallel output is linked to the input of the following TTL55-A loudspeaker.



In the example above, [n] is a number from 3 to 32 (max. quantity of devices that can be connected to a subnet). The total CAT 5 cable length of a subnet cannot exceed 900 metres (c. 2950 feet).



The RDNET software is protected by international copyright laws and is to be used to configure the RCF RDNET system only.

It is not allowed to modify or change or try to decompile this software.

In no event shall RCF be liable to end-users for any damage whatsoever, including but not limited to financial damages for loss of business profits or business information due to the software use or inability to use this product. The foregoing provision is effective even if RCF has been advised of the possibility of such damages. Even if the software has any material, verifiable and reproducible program errors, RCF shall have no obligation to modify such errors.

## RDNET SOFTWARE INSTALLATION



**Minimum requirement:** a PC with Microsoft Windows® XP, Vista or 7 operating system, having an available USB port.

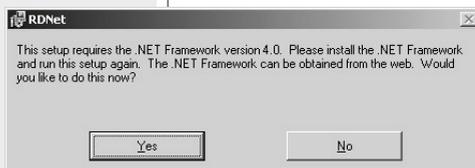
Before installing a new software release, it is necessary to remove the previous version (if installed) by running Start > Programs > RCF Group > RDNet > Uninstall and disconnect the USB cable between the computer and the RDNET CONTROL 2 unit.

Run setup.exe (inside the 'setup folder') to start the software installation.

If the installed PC software does not include the release 4.0 of MS ".NET Framework" (necessary to install the RDNET software), it will be show the request for downloading from the web (for free).

If internet is available, click the YES button to open the web page where it is possible to download the last release of ".NET Framework" software, then install it.

If ".NET Framework 4.0" has been previously installed, the RDNET ware wizard starts. Click the NEXT> button to proceed.



Read the license agreement.

Click "I Agree" to accept and proceed with the software installation.

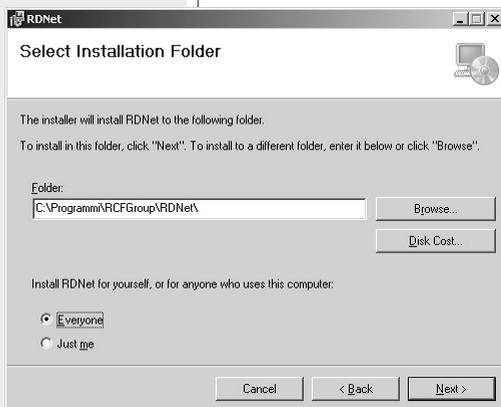
Click the NEXT > button to proceed.



It is now possible to change the installation folder (directory) of the RDNET software (or keep the default path).

Choose if the software can be used by "Everyone" or "Just me".

Click the NEXT> button to proceed.

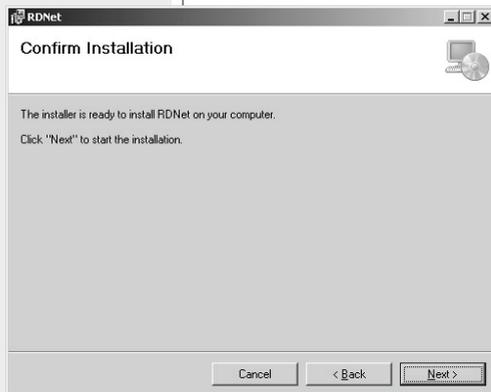


The wizard reminds you that it is necessary to disconnect the USB cable between the computer and the RDNET CONTROL 2 unit in order to install A drivers properly.

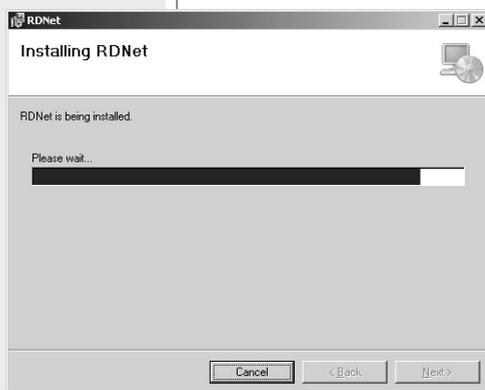
Check if the USB cable is actually disconnected before proceeding.



Then, it is required the installation confirmation.  
If you are sure, click the NEXT > button to proceed and start the installation.  
Await the installation is complete.



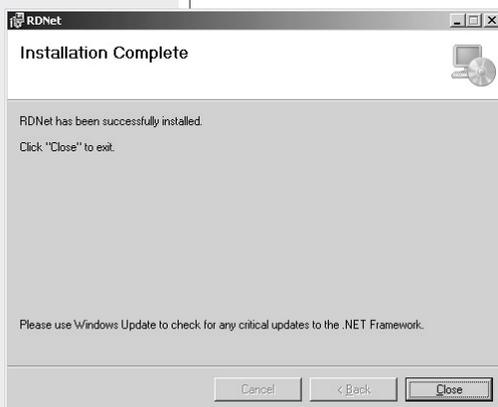
While waiting, the installation progressbar is shown.



As soon as the installation ends (nor), the "Installation Complete" window will appear.

Click the CLOSE button to exit.

Connect the USB cable between the computer and the RDNET CONTROL 2 before running the PC software.





As soon as the RDNET CONTROL 2 unit is turned on, all devices will be listed and cyclically scanned ("polling").

Every listed device confirms its state by turning its LINK LED on.

10 times a second, each device is checked in a single daisy-chain and (when required) the current state is sent to the PC software.

Run the software (in Windows: Start > Programs > RCF Group > RDNet > RDNet).

It appears the main window with 7 menus:  
FILE - SYNOPTIC - OPTIONS - VIEW - MODE - ADVANCED - ?

## FILE

**Exit:** RDNET software quit.

**Save:** it saves the current configuration as a file (groups and equalizations included).

**Load:** it loads a configuration previously saved as a file.

**New:** new configuration.

## LOAD AND NEW SELECTIONS DELETE THE CURRENT CONFIGURATION'.

**Load skin:** it loads a software skin.

## SYNOPTIC

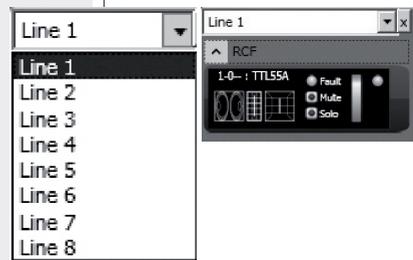
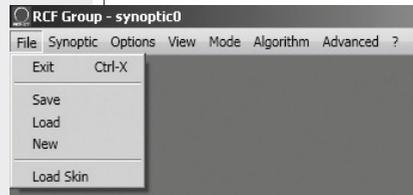
**Add Object:** a sliding menu opens on the left, a list of all RDNET supported appliances.

This menu allows appliances to be added to mimic diagram in Offline mode (when the connection between PC and HUB is inactive and no diffuser is detected on the network).

To add an appliance, select the sub-network where the appliance is to be added to ("line") from pop-up menu and double click on appliance itself. In normal operation, appliances registered by RDNET network automatically appear in the mimic diagram without using the "Add Object" function.

**Delete Selection:** it deletes (after confirming) the selected object.

**Locked:** if enabled (tick), it locks the position of all modules on the mimic diagram.



## OPTIONS

**Online:** it enables the link between the PC and the RDNET CONTROL 2 unit.

**Register Again:** reconfiguration and digital re-addressing of all audio devices connected to RDNET (to be used in case of communication errors).

**Config:** 2 protection levels, Setup and Concert. In each level, it is possible to enable (or disable for safety reasons) one or more of the 5 listed functions:

- **Live Eq Gain:** it enables the real-time GAIN setting (in the equalization window).
- **Live Eq Delay:** it enables the real-time DELAY setting (in the equalization window).
- **Live Eq Filter:** it enables the real-time equalization.
- **Confirm Eq Send:** it enables the EQ confirmation request when clicking the SEND button.
- **Confirm Solo Send:** it enables the confirmation request when activating the SOLO function (only one device turned on at a time).

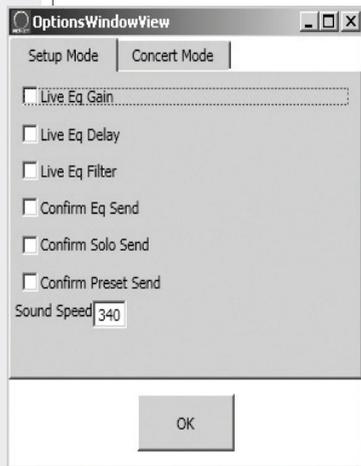
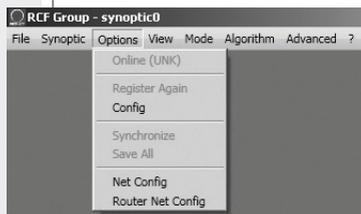
**Synchronize:** it aligns all equalization

## VIEW

**Comm Log:** log view of network communications and error.

## MODE

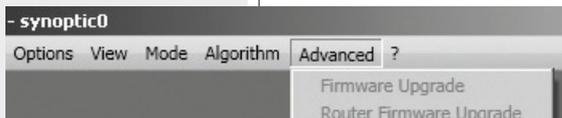
Selection of the protection level, 'Setup' or 'Concert', sellable in the Options > Config menu.



## ADVANCED

**Firmware Upgrade:** device firmware upgrade. Supported only by some RDNET devices.

**Router Firmware Upgrade:** RDNET CONTROL 2 unit firmware upgrade.



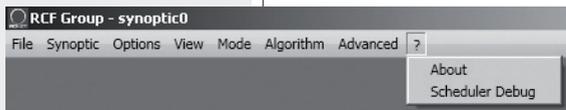
## HOW TO UPGRADE THE RDNET CONTROL 2 UNIT FIRMWARE

1. Link the RDNET CONTROL 2 unit to the computer through the USB cable and turn it on without connecting any device.
2. Wait until its front panel LEDs stop flashing .
3. In the software home page, select ADVANCED> Router Firmware Upgrade to open the respective window, then click LOAD and choose the CONTROL2.RDU file.
4. The download automatically begins. A new window appears reminding you to disconnect the USB cable and then reconnect it later. Click OK when complete.
5. Await until the progress bar indicates the installation end, then disconnect the USB cable and reconnect it later. The RDNET CONTROL 2 unit will automatically reboot.

## HOW TO UPGRADE THE RDNET CONTROL 2 UNIT FIRMWARE

## MENU “?”

**About:** it opens a window indicating the current software release.



## USE IN “ON LINE” MODE

When online, the RDNET CONTROL 2 unit sequentially scans all devices, which are automatically assigned to digital addresses.

The software synoptic is compared to the real settings and any difference is pointed out: the device objects shown in the software without being really present in the net have their “Comm” indicator red, while for the remaining ones, it has to be checked if program equalization data is synchronized with realdata; otherwise, “Eq.Sync” led remains off. Devices linked to the net are automatically added to the software synoptic.

Therefore the software shows an object per each device that has been found.

## USE IN “ON LINE” MODE

## ASSIGNING AN OBJECT TO A GROUP

Each object can be assigned to a group in order to get parameter value changes common to all objects that belong to the same group.

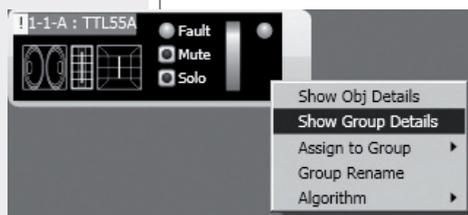
Right-click with the mouse on the object and choose 'Assign to Group', then the proper group (from A to S, for example 'A').

After assigning an object to a group, its external edge gets coloured and the group letter is indicated after the subnet and the digital address (example: 1.1-A:TTL55-A).

## ASSIGN AN OBJECT TO A GROUP



Right-click again the object and now choose 'Show Group Details' to open the common equalization window (settings can be made in the same way as a single object as long as assigned to a group).



The following screen appears on the group.

**GAIN:** signal level attenuation (value: from 0 to -20 dB).

**DELAY:** signal delay setting, express in the range of 0 + 20 metres (that is the correspondent distance). Note: the value on the right of the distance (in metres) is the sample number.

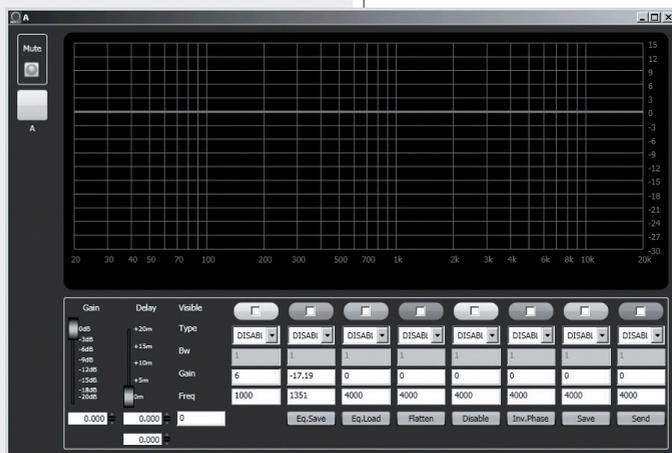
**Eq. SAVE:** it allows saving current equalization in a file (\*.rde), on computer (a dialogue box opens to save the file).

**Eq. LOAD:** it allows opening an equalization file (\*.rde) previously saved on computer.

**FLATTEN:** it disables all filters (the frequency response gets 'flat').

**DISABLE:** it disables the equalization, but without changing filter settings.

**INVERTED PH:** when selected, the signal phase is inverted.



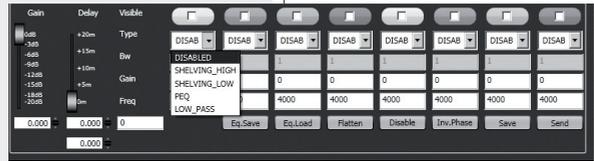


**NORMALLY THE SIGNAL PHASE DOES NOT NEED TO BE INVERTED. THE PHASE INVERSION MAY BE USEFUL TO COMPENSATE OR MINIMISE POSSIBLE UNDESIRED ACOUSTICAL DESTRUCTIVE INTERFERENCES, DUE TO PARTICULAR LOUDSPEAKER POSITIONS.**

**SAVE:** it sends and stores the equalization to the selected device.

**SEND:** it sends (without storing) the equalization to the selected device.

It is possible to set up to 8 selectable filters:



**DISABLED:** the filter is disabled.

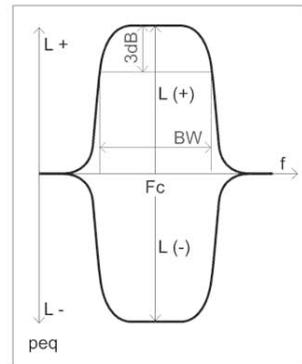
**SHELVING\_HIGH:** increase or decrease the level of all frequencies above the selected frequency by the specified amount.

**SHELVING\_LOW:** increase or decrease the level of all frequencies below the selected frequency by the specified amount.

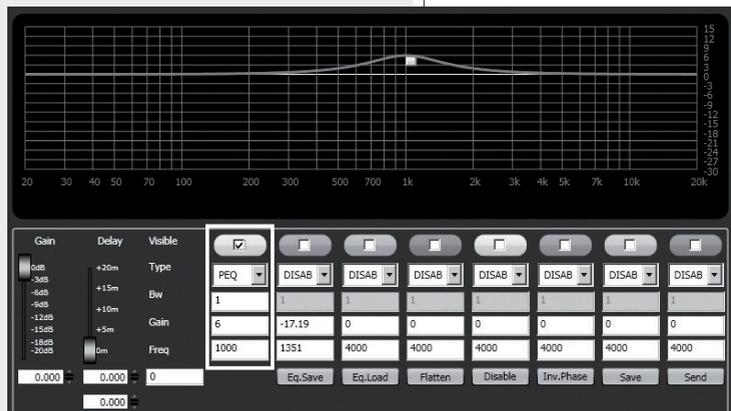
**PEQ:** Parametric equalizer that allows to adjust the level  $L$  at the settable centre frequency  $F_c$  and specify the bandwidth  $BW$  (the adjusted level can be widened or narrowed).

**LOW\_PASS (available as first filter only):** Butterworth 24 dB/octave low-pass filter (note: filter GAIN control is disabled).

**HIGH\_PASS (available as second filter only):** Butterworth 24 dB/octave hi-pass filter (Note: filter GAIN control is disabled).



Frequency and gain can be adjusted either graphically (through the mouse), by enabling the 'Visible' option (to visualize the filter intervention) and moving the little coloured square or in an analytical way, by inserting the values in the cells and then activating the 'Visible' option. The overall equalization is shown as a red line, the intervention of a single filter as a line of its respective colour and lower thickness.



The first object of a group gives its own data to the group, sharing them with all next objects that will be assigned to the same group. The group common data are the gain, the delay and the equalization.

RDNET always check if these data are the same of loudspeakers(or others audio devices), if not, the "Eq. Sync" LED on loudspeaker goes off, indicating that the loudspeaker parameters are not synchronized with the software configuration.

The user can synchronize the system according to the software configuration. If all objects belonging to the same group are removed, that group will also be removed and common data will be lost.

When an object is removed from a group, it will maintain all group data until changes are applied.

## RDNET SOFTWARE REPAIR AND REMOVE

If the RDNET software needs to be repaired (in case of errors, for instance due to damaged files) or removed, run the setup.exe file of the installation software.

The window will show 2 options:

- Select "Repair RDNet" to repair the software
- Select "Remove RDNet" to remove the software.

Then click the Finish button to proceed.

An alternative way to remove the software (in Windows):

Start > Programs > RCF Group >RDNet > Uninstall

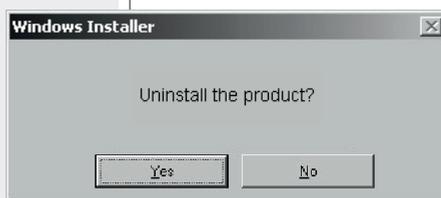
Click Yes to confirm.

## NOTE

Each device can have different parameters.

**TO UNDERSTAND CHARACTERISTICS AND FUNCTIONS OF ALL DEVICES. ALWAYS REFER THEIR RESPECTIVE USER MANUALS.**

## RDNET SOFTWARE REPAIR AND REMOVE





<b>Network</b>	Standard EIA RS-485 up to 2 managed subnet max. 32 devices connected to each subnet
<b>RDNET connections</b>	2 RJ 45 connectors (EtherCon) for CAT 5 cable 2 three-pole XLR socket (as alternative to RJ 45)
<b>PC connection</b>	USB (type B)
<b>Power supply</b>	Powered by USB Type B socket
<b>Mechanical characteristics</b>	ABS Plastic BOX Black color
<b>Dimensions (w, h, d)</b>	111 mm, 40.5 mm, 89.5 mm
<b>Net weight</b>	175 gr
	RDNET CONTROL 2 IS READY FOR USE WITH SOME DEVICES EX. DVA T12.
	OTHER DEVICES MAY BE ADDED SUCCESSIVELY, DOWNLOADING THE SOFTWARE FOR RDNET CONTROL 2 PLUG-IN, FROM RCF WEBSITE <a href="http://WWW.RCF.IT">WWW.RCF.IT</a>



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