

# **RDNET CONTROL 8**

- 'RDNET' CONTROL UNIT
- UNITA' DI CONTROLLO DELLA RETE "RDNET"







## ENGLISH

SAFETY PRECAUTIONS	4
INSTALLATION	6
DESCRIPTION	6
FRONT PANEL	7
REAR PANEL	8
SUBNET CONNECTION	9
NOTES ABOUT THE RDNET SOFTWARE	10
RDNET SOFTWARE INSTALLATION	10
LOUDSPEAKER BYPASS SWITCH	14
RDNET SOFTWARE (release 1.0.0.68)	15
ASSIGN AN OBJECT TO A GROUP	25
ASSIGN AN OBJECT TO AN ALGORITHM	26
ASSIGNING MULTIPLE OBJECTS TO AN ALGORITHM	27
EXAMPLE OF ANOTHER OBJECT	28
RDNET SOFTWARE REPAIR AND REMOVE	28
SPECIFICATIONS	29

## ITALIANO

AVVERTENZE PER LA SICUREZZA	32
INSTALLAZIONE	34
DESCRIZIONE	34
PANNELLO FRONTALE	35
PANNELLO POSTERIORE	36
COLLEGAMENTO DELLE SOTTORETI	37
NOTE SUL SOFTWARE RDNET	38
INSTALLAZIONE DEL SOFTWARE RDNET	38
FUNZIONAMENTO DEL TASTO BYPASS DEI DIFFUSORI	42
UTILIZZO DEL SOFTWARE RDNET (rif. ver. 1.0.0.68)	43
ASSEGNAZIONE DI UN MODULO AD UN GRUPPO	53
ASSEGNAZIONE DI UN MODULO AD UN ALGORITMO	54
ASSEGNAZIONE MULTIPLA DI MODULI AD UN ALGORITMO	55
ESEMPIO DI UN ALTRO MODULO	56
RIPARAZIONE E DISINSTALLAZIONE DEL SOFTWARE RDNET	56
DATI TECNICI	57

**IMPORTANT**

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.

**SAFETY PRECAUTIONS**

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

**2.1 POWER SUPPLY FROM MAINS**

- 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.  
An apparatus with CLASS I construction shall be connected to a mains socket outlet with a protective earthing connection.
- d. Protect the power cable from damage.  
Make sure it is positioned in a way that it cannot be stepped on or crushed by objects.
- 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.

**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.

**IMPORTANT****WARNING**

**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.** Mechanical and electrical factors need 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.

**12.** To prevent the occurrence of noise, 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.

**13.** Situate this product far from any heat sources.

**14.** Never force the control elements (keys, knobs, etc. ).

**15.** Do not use solvents, alcohol, benzene or other volatile substances for cleaning the external parts of this product. Use a dry cloth.

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

## INSTALLATION



This device can be installed into a 19" rack cabinet (1 unit) with 4 screws, thanks to its rack ears.

## DESCRIPTION



**RDNET** is a proprietary protocol of a network that allows to connect up to 256 compatible audio devices (i.e. professional RCF loudspeakers mod. TTL55-A, TTL33-A, TTL31-A, etc.) to a computer (PC with Microsoft Windows® o. s.) to check and remote control them.

**RDNET CONTROL 8** unit routes all data between the PC and audio devices.

The RDNET system allows to monitor every device, checking voltages and currents, temperatures, audio signal RMS values, cooling fans, etc. .

The PC cyclically requires the **RDNET CONTROL 8** unit the operating state of audio devices that make up the communication network. All data are collected by the central unit that performs a sequential scan of all audio devices.

Digital address allocation is automatic.

Information relating to the functioning of all audio devices is acquired in real-time, feature that allows a network global view.

It is possible to check each single audio device and edit its parameters (e.g. output level, mute, equalization, delay, etc.) by using the PC software.

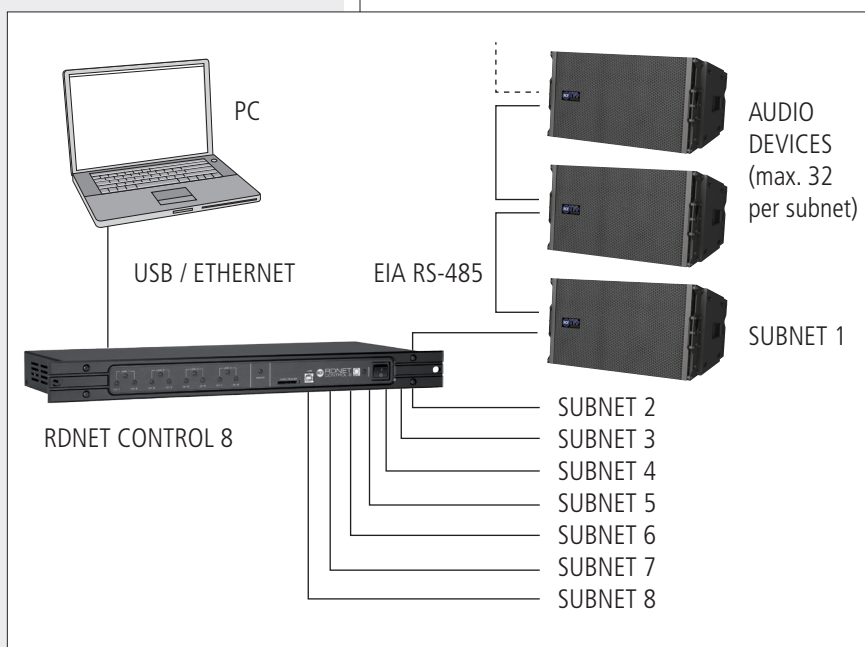
The audio device overall configuration can be saved as file in the PC and later reloaded.

It is possible to synchronize all parameter values of the **RDNET CONTROL 8** unit to the ones of the PC software preset.

The link between the PC and the **RDNET CONTROL 8** unit can be made through either the USB port or ETHERNET, the latter is useful when the PC is far or it is necessary to link the RDNET CONTROL 8 unit to an ETHERNET net already wired.

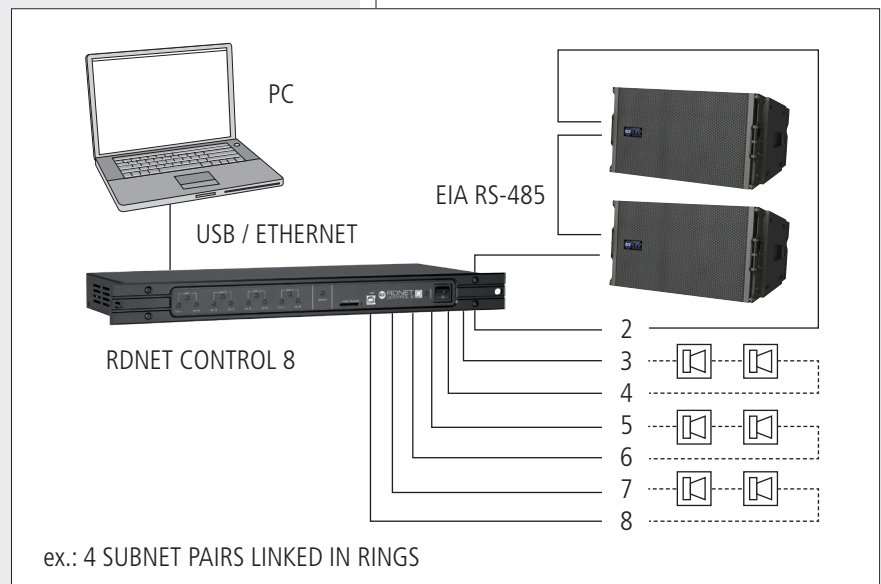
USB link shall be at least version 1.1 (2.0 is OK) and can be used when the PC is close to the central unit (a few metres).

The **RDNET CONTROL 8** unit can manage up to 8 subnets. Up to 32 audio devices can be connected to each subnet (8 subnets x 32 = total 256 audio devices).

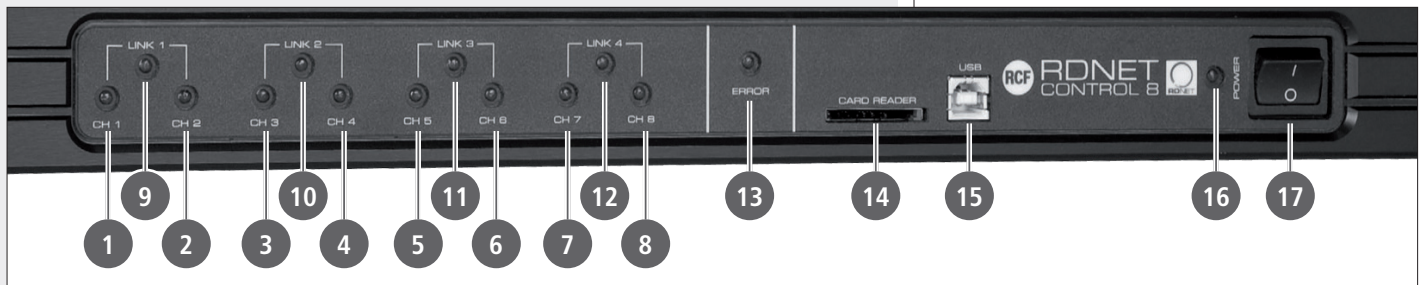


## SUBNET PAIRS LINKED IN RINGS

As future option, it will be possible to link subnet pairs in rings (to verify line integrity).  
When using 4 subnet pairs, the max. total quantity of audio devices that can be connected is 128.



## FRONT PANEL



- 1 **CH 1** LED indicating (when flashing) data transmission / reception in the subnet 1.
- 2 **CH 2** LED indicating (when flashing) data transmission / reception in the subnet 2.
- 3 **CH 3** LED indicating (when flashing) data transmission / reception in the subnet 3.
- 4 **CH 4** LED indicating (when flashing) data transmission / reception in the subnet 4.
- 5 **CH 5** LED indicating (when flashing) data transmission / reception in the subnet 5.
- 6 **CH 6** LED indicating (when flashing) data transmission / reception in the subnet 6.
- 7 **CH 7** LED indicating (when flashing) data transmission / reception in the subnet 7.
- 8 **CH 8** LED indicating (when flashing) data transmission / reception in the subnet 8.
- 9 **LINK 1** LED indicating (when lit) that subnets 1 and 2 are linked in a ring.
- 10 **LINK 2** LED indicating (when lit) that subnets 3 and 4 are linked in a ring.
- 11 **LINK 3** LED indicating (when lit) that subnets 5 and 6 are linked in a ring.
- 12 **LINK 4** LED indicating (when lit) that subnets 7 and 8 are linked in a ring.
- 13 **ERROR** LED indicating (when lit) an error during data transmission / reception.
- 14 **CARD READER** slot for an SD ('Secure Digital') flash memory.  
This slot is not enabled in the current firmware release.
- 15 **USB** port (type B) for the computer (local) link.
- 16 **POWER LED** indicating (when lit) that the unit is switched on.
- 17 **POWER** switch (I:ON, O:OFF).

## REAR PANEL



**18** 'Powercon' connector for the power cable.  
Operating voltage: 100 ÷ 240 V ac (50 – 60 Hz).

**19** **ETH** ETHERNET port (to link a remote computer).

#### RJ45 CONNECTOR (CAT5 cable):

pin  
1- TX+  
2- VDD  
3- TX-  
4- RX+  
5- digital ground  
6- RX-  
7- not used  
8- ground

**20** **CH1** Subnet 1 RDNET port, through either an RJ 45 connector (CAT5 cable ) or a 3-pole XLR socket.

Do NOT CONNECT BOTH RJ 45 AND XLR CONNECTORS AT THE SAME RDNET PORT!

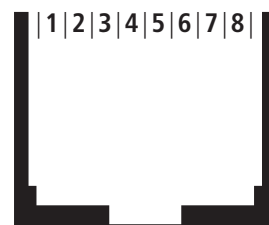


#### RJ 45 CONNECTOR

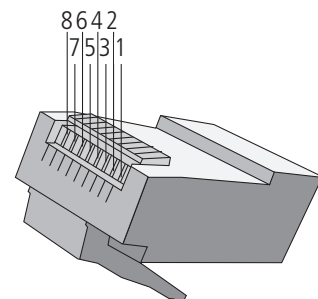
pin  
1 – available for other functions (for example: audio signal +, hot)  
2 – available for other functions (for example: audio signal –, cold)  
3 – available for other functions (for example: analogue ground)  
4 – **digital ground**  
5 – **digital ground**  
6 – available for other functions (for example: power supply)  
7 – **RS 485 A**  
8 – **RS 485 B**

#### XLR SOCKET

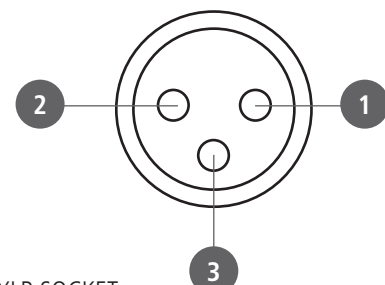
pin  
1 – **digital ground**  
2 – **RS 485 A**  
3 – **RS 485 B**



RJ 45 SOCKET



RJ 45 PLUG



XLR SOCKET



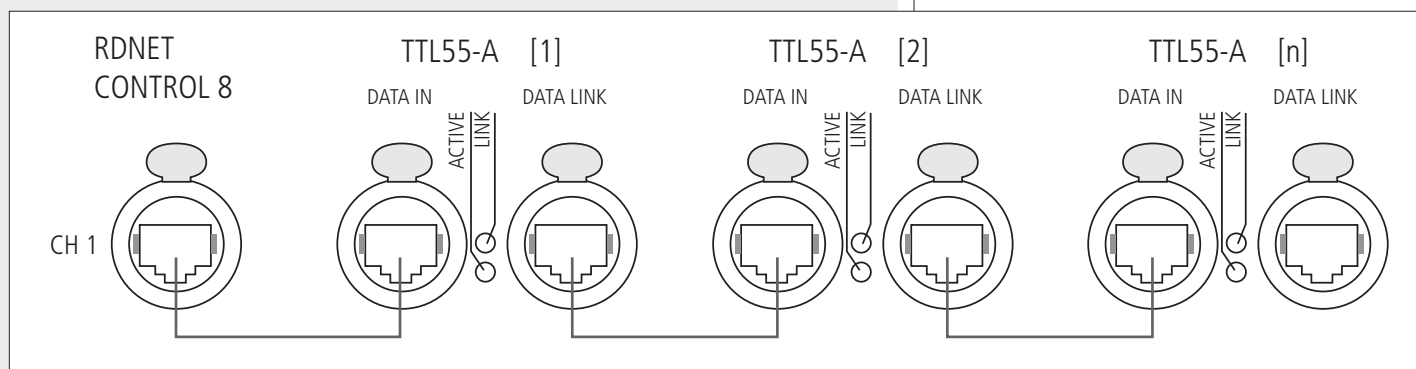
- 21 CH2 Subnet 2 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 22 CH3 Subnet 3 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 23 CH4 Subnet 4 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 24 CH5 Subnet 5 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 25 CH6 Subnet 6 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 26 CH7 Subnet 7 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).
- 27 CH8 Subnet 8 RDNET port, through either an RJ 45 connector (CAT5 cable) or a 3-pole XLR socket (see 20).

## SUBNET CONNECTION



Each of the 8 available **RDNET** ports of the **RDNET CONTROL 8** unit can be connected to max. 32 compatible audio devices (linked in 'daisy-chain').

Example: the **RDNET CONTROL 8** port 1 is connected to the DATA IN input of a RCF TTL-55A loudspeaker, of which DATA LINK parallel output is linked to the input of the following TTL55-A loudspeaker.

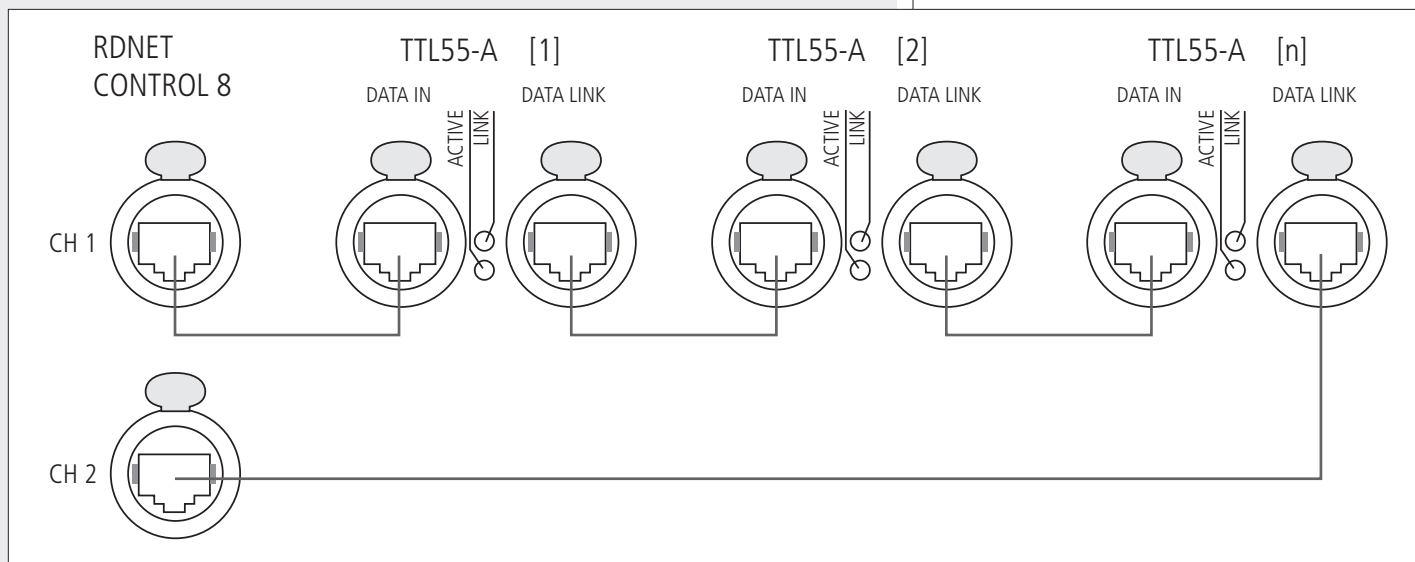


IN THE EXAMPLE ABOVE, [n] IS A NUMBER FROM 3 TO 32 (MAX. QUANTITY OF AUDIO DEVICES THAT CAN BE CONNECTED TO A SUBNET).

The total CAT 5 cable length of a subnet cannot exceed 900 metres (c. 2950 feet).

As future option, it will be possible to link subnet pairs in rings (to verify line integrity). For instance: the **RDNET CONTROL 8** port 1 is connected to the DATA IN input of a RCF TTL55A loudspeaker, of which DATA LINK parallel output is linked the input of the following TTL55A loudspeaker. The DATA LINK output of the last TTL55A loudspeaker of the line is connected the **RDNET CONTROL 8** port 2.





**LINK 1** , **LINK 2** , **LINK 3**  E **LINK 4**  FRONT PANEL LEDs INDICATE THE RING CONNECTION OF THE RESPECTIVE PAIR OF SUBNETS.



## NOTES ABOUT THE RDNET SOFTWARE



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 S.p.A. 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 S.p.A. has been advised of the possibility of such damages.  
Even if the SOFTWARE has any material, verifiable and reproducible program errors, RCF S.p.A. shall have no obligation to modify such errors.

## RDNET SOFTWARE INSTALLATION



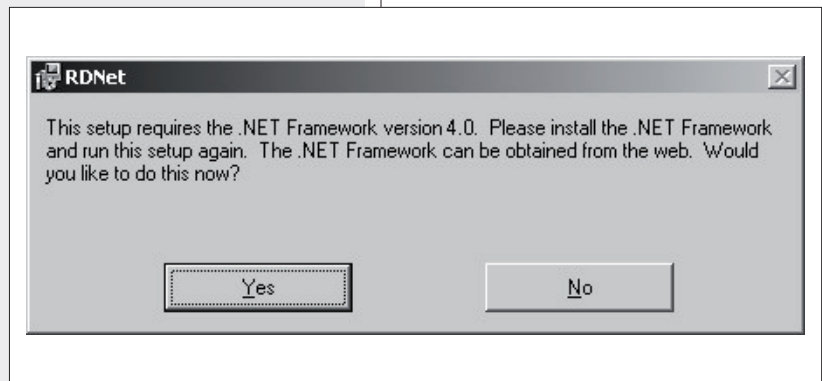
Minimum requirement: a PC with Microsoft 'Windows® XP', 'Vista' or '7' operating system, having an available USB port and / or ETHERNET.

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 (in case) disconnect the USB cable between the computer and the RDNET CONTROL 8 unit.

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

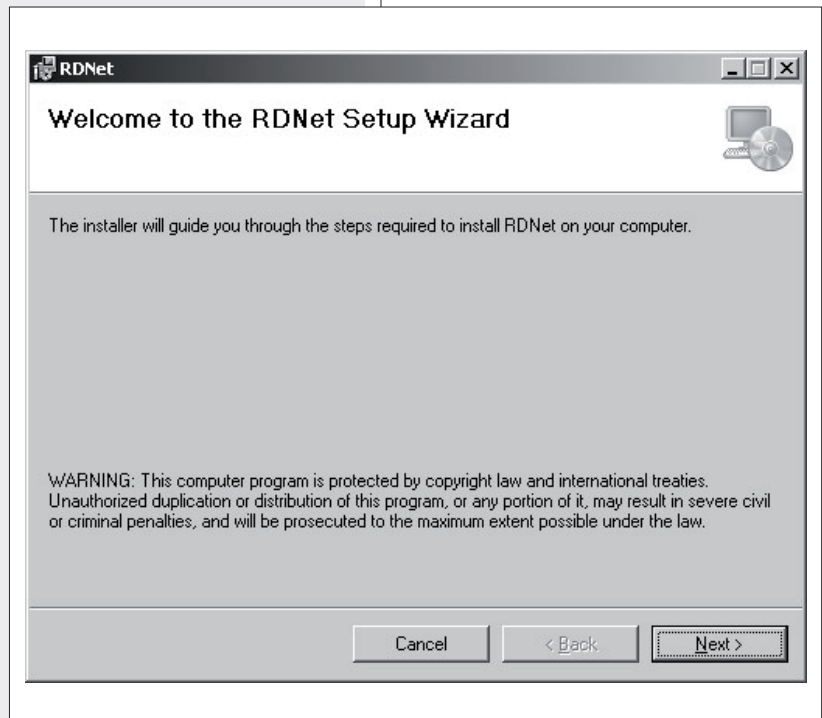
If the installed PC software does not include the release 4.0 of MS ".NET Framework" (necessary to install the RDNET software), it will be show the request for downloading from the web (for free).

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



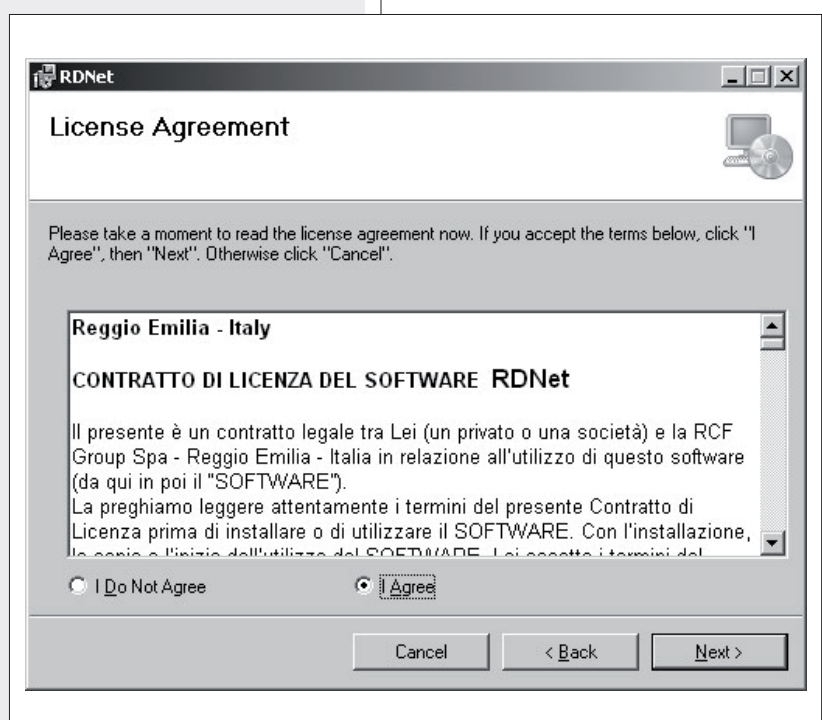
If '.NET Framework 4.0' has been previously installed, the RDNET software wizard starts.

Click the NEXT > button to proceed.



Read the license agreement.  
Click 'I Agree' to accept and proceed with the software installation.

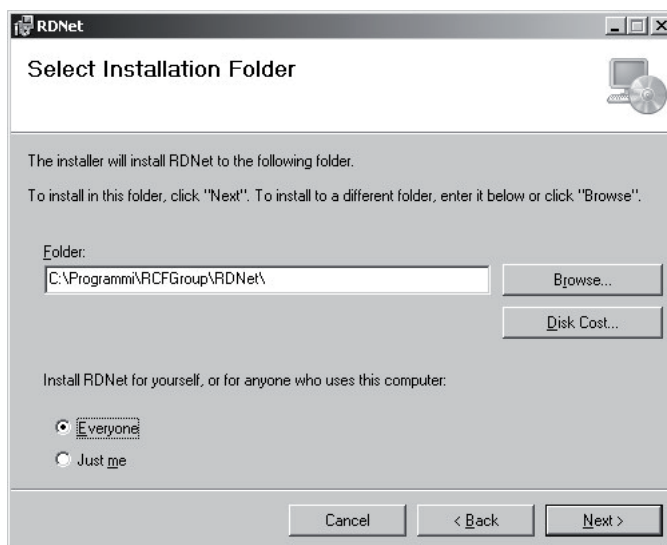
Click the NEXT > button to proceed.



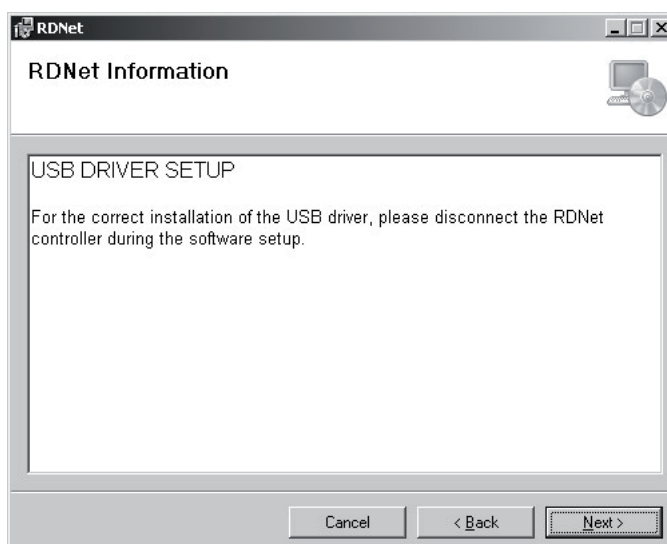
It is now possible to change the installation folder (directory) of the RDNET software (or keep the default path).

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

Click the NEXT > button to proceed.



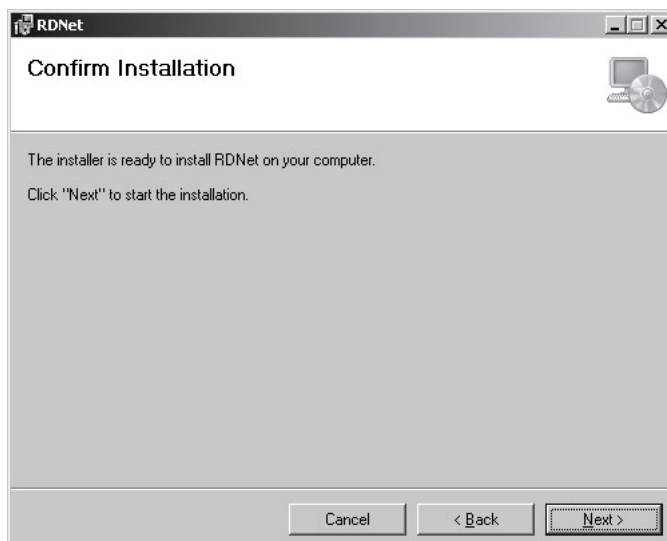
The wizard reminds you that it is necessary to disconnect the USB cable between the computer and the RDNET CONTROL 8 unit in order to install USB drivers properly. Check if the USB cable is actually disconnected before proceeding.



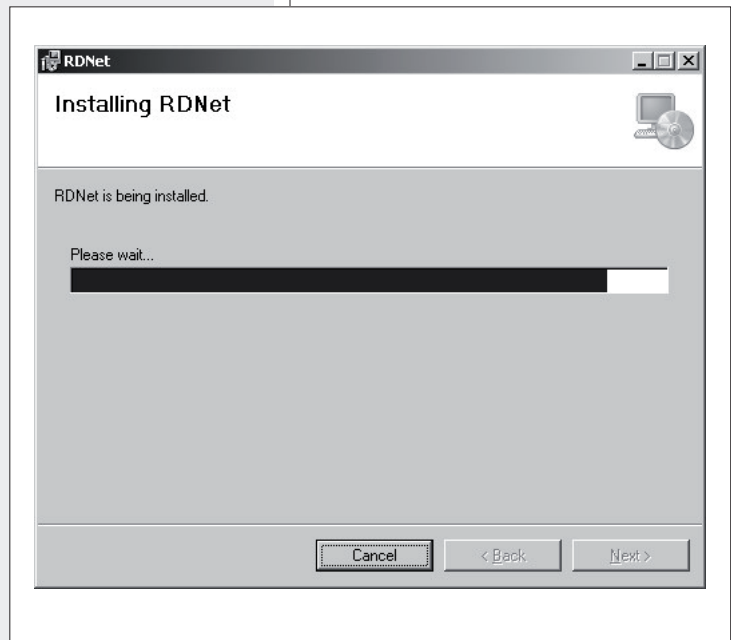
Then, it is required the installation confirmation.

If you are sure, click the NEXT > button to proceed and start the installation.

Await the installation is complete.



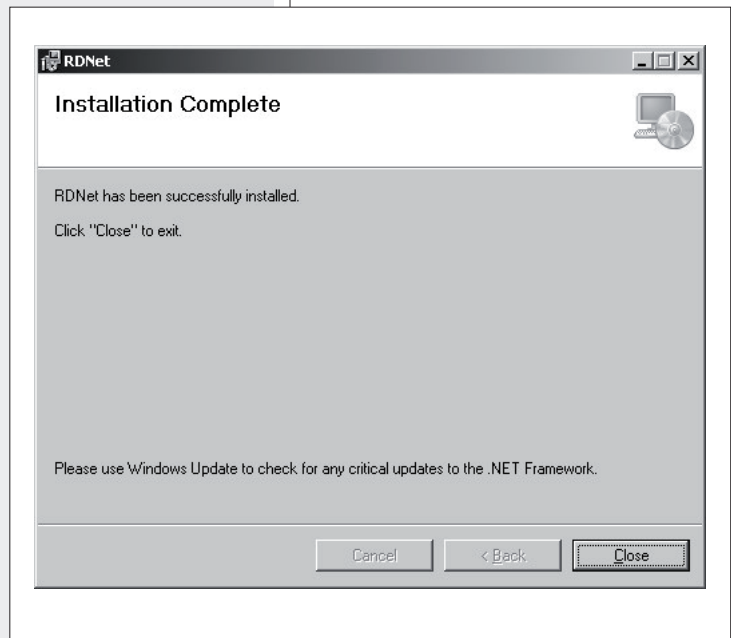
While waiting, the installation progress bar is shown.



As soon as the installation ends (no error), the 'Installation Complete' window will appear.

Click the CLOSE button to exit.

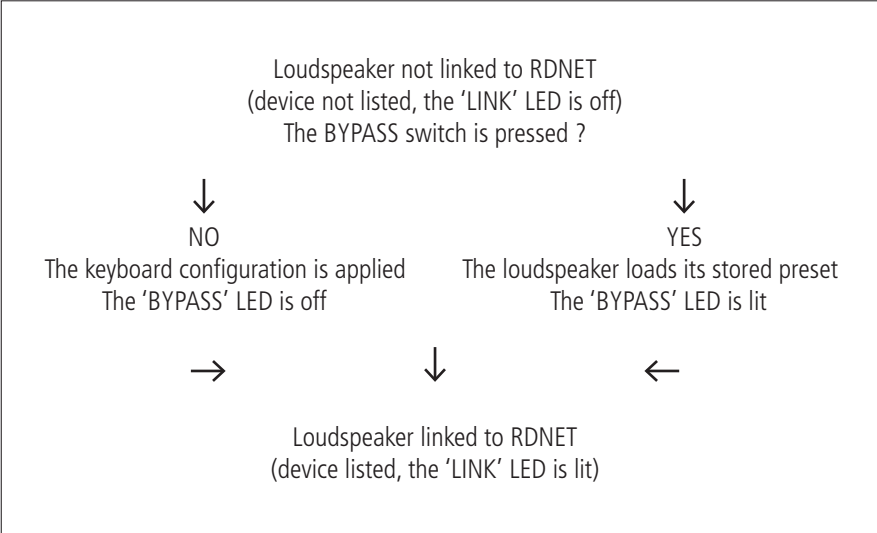
Connect the USB cable or ETHERNET between the computer and the RDNET CONTROL 8 unit before running the software.



# LOUDSPEAKER BYPASS SWITCH



In every RDNET compatible loudspeaker, when pressing the BYPASS switch, it is possible to recall a previously stored preset and disable the loudspeaker keyboard. The following flowchart indicates the BYPASS function:



All data concerning the selected preset and the operating mode are sent to the computer.

IT IS POSSIBLE TO EDIT ALL PARAMETERS AND STORE THEM IN LOUDSPEAKERS BY USING THE PC SOFTWARE.

IF THE RDNET NET IS DISCONNECTED, THIS PROCEDURE WILL RESTART FROM THE BEGINNING. FILTER DATA CANNOT BE SENT TO LOUDSPEAKERS FROM PC. THE ONLY WAY TO KNOW IF LOUDSPEAKER DATA ARE IDENTICAL TO THE PC SOFTWARE SETTINGS IS TO CHECK THAT THE LOUDSPEAKER (OR ANY OTHER DEVICE) IS SYNCHRONIZED.

IF THE SOFTWARE IS 'ONLINE', LOUDSPEAKER MAIN SETTINGS ARE REMOTE CONTROLLED THROUGH RDNET NETWORK. IF THE SOFTWARE IS 'OFFLINE', LOUDSPEAKER MAIN SETTINGS DEPEND ON ITS INPUT PANEL BYPASS SWITCH (THAT RECALLS THE LAST SAVED CONFIGURATION). SEE THE FOLLOWING TABLE.



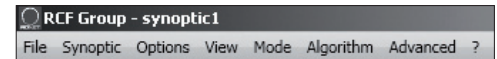
RDNET software (network status)	Loudspeaker BYPASS switch	Loudspeaker BYPASS LED	Loudspeaker configuration
offline	OFF	OFF	According to the loudspeaker front panel
offline	ON	ON	Last saved configuration
online	OFF	OFF	Settings through RDNET network
online	ON	ON	Settings through RDNET network



AS SOON AS THE RDNET CONTROL 8 UNIT IS TURNED ON, ALL DEVICES WILL BE LISTED AND CYCLICALLY SCANNED ('POLLING').

Every listed device confirms its operation by turning its 'LINK' LED on.  
10 times a second, each device is checked in a single daisy-chain and (when required) the current status is sent to the PC software.

Run the software (in Windows: Start > Programs > RCF Group > RDNet > RDNet):  
it appears the main window with 8 menus:  
'File', 'Synoptic', 'Options', 'View', 'Mode', 'Algorithm', 'Advanced', '?'.  
'?'



## STATUS BAR



The status bar (main window bottom) includes:

- The connection status (Connected / Disconnected)
- Devices found in each of the 8 lines (slaves: n n n n n n n n)
- Synoptic zoom (default: 100%)
- A LED type indicator that flashes when the PC is connected.

Right-click the zoom value to visualize the respective 4 synoptic zoom options:



**100%:** it resets the default zoom

**Fit:** it automatically fits the zoom, according to the number and positions of the present objects

**Zoom In:** 10% zoom in

**Zoom Out:** 10% zoom out.

It is also possible to adjust the zoom by pressing and holding the computer keyboard Ctrl key and turning the mouse scroll wheel at the same time.

## FILE

**Exit:** RDNET software quit.

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

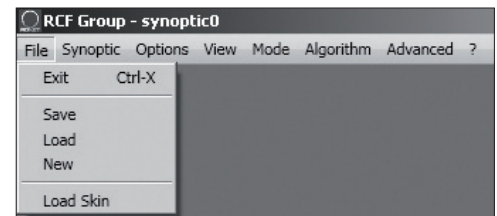
**Load:** it loads a configuration previously saved as .rds file .

**New:** new configuration.

**LOAD AND NEW SELECTIONS DELETE THE CURRENT CONFIGURATION!**



**Load Skin:** it loads a software skin (.xaml file).



# SYNOPTIC

**Add Object:** it opens a window where it is possible to add one or more objects (among all available, which correspond to different loudspeakers, e.g. RCF TTL55A) to the synoptic.

First choose the line (to which the loudspeaker is linked), then the loudspeaker (double-click the respective object): the object is added to the synoptic.

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

**Locked:** it locks all object positions in the synoptic (to be selected as soon as the synoptic is complete).

**Selection Top Align:** it makes all selected objects aligned at the same synoptic level (the same of the highest object).

# OPTIONS

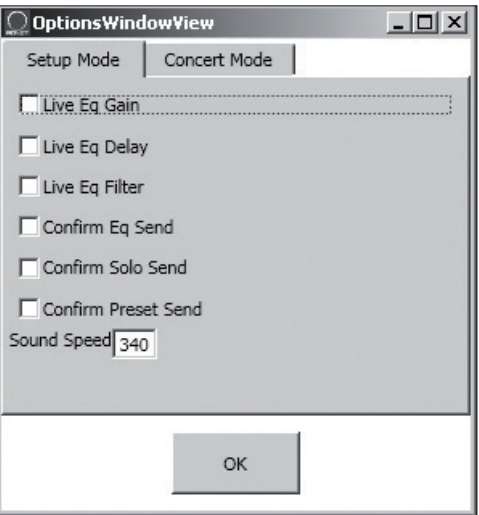
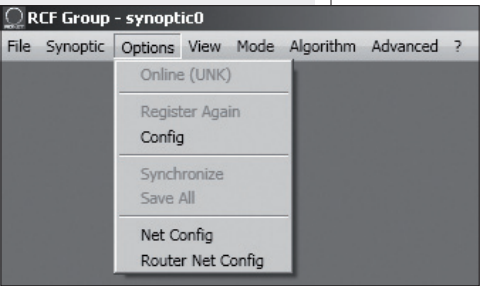
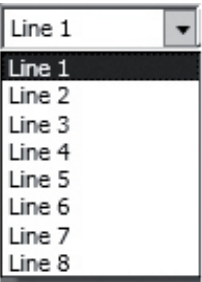
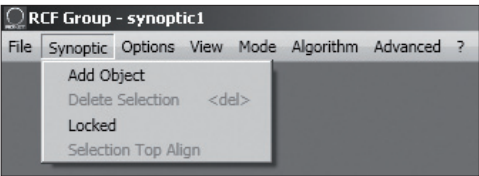
**Online:** it enables the link between the PC and the RDNET CONTROL 8 unit.

**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 modes: 'Setup' and 'Concert'. In both it is possible to enable (or disable for safety reasons) one or more of the 6 listed functions and set the current sound speed:

- ☐ **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 loudspeaker turned on at a time).
- ☐ **Confirm Preset Send:** it enables the confirmation request when sending a preset to a loudspeakers (e.g. TTL55A: field and cluster loudspeaker number settings).

**Sound Speed:** current sound speed setting (the sound speed depends on the air temperature), indicated in metres per second (340 m/s at 15°C / 59°F, 343 m/s at 20°C / 68°F, 346 m/s at 25°C / 77°F, 349 m/s at 30°C / 86°F).





**Synchronize:** it aligns all parameter values of all loudspeakers that are linked to RDNET to the current software configuration.

**Save All:** it stores all configurations to all loudspeaker memories.

**Net Config:** it opens the 'NetConfigView' window, in which it is possible to connect the RDNET CONTROL 8 unit via Ethernet after setting both the IP address ('Server IP') and the port ('Server Port').

Click '**Discovery**' to search IP addresses.

Click '**Connect**' to enable Ethernet.

**Router Net Config:** it opens a window where it is possible to send (by clicking 'Send') the 'Server IP', the 'Server Subnet Mask', the 'Server Gateway' and the 'Server Port' to the RDNET CONTROL 8 unit.

Auto Discovery Port: setting of the port that allows to find the 'master' unit.

## VIEW

**Comm Log:** log view.

## MODE

Selection of the protection mode between '**Concert**' and '**Setup**', settable in the **Options > Config** menu.

## ALGORITHM (for expert users only)

AN ALGORITHM INCLUDES COMMON SETTINGS FOR MORE OBJECTS.

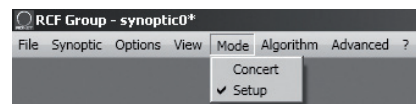
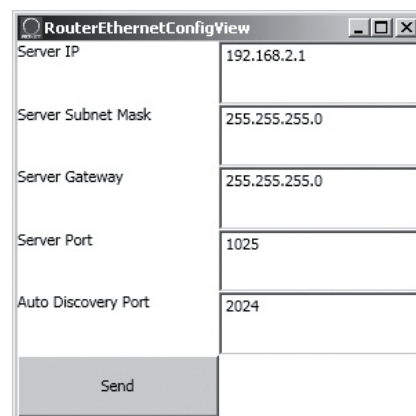
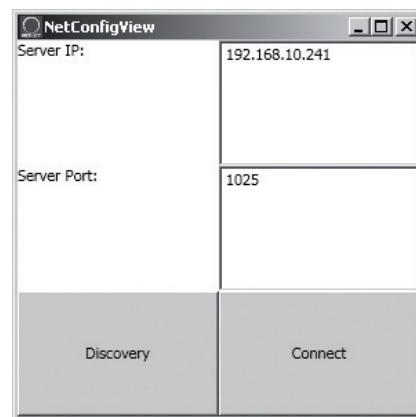
AN OBJECT (CORRESPONDING TO A LOUDSPEAKER) CAN BE ASSIGNED TO MORE ALGORITHMS AND, THEREFORE, AFFECTED TO ALL RESPECTIVE SETTINGS.

NOTE: BE CAREFUL NOT TO CONFUSE ALGORITHMS WITH GROUPS (FUNCTION EXPLAINED IN THE FOLLOWING 'ASSIGN AN OBJECT TO A GROUP' MANUAL SECTION)!

EVERY OBJECT CAN BELONG TO A SINGLE GROUP ONLY.

Click **Algorithm > View** to open the 'AlgorithmListView' window that shows the list of created and available algorithms.

AlgorithmListView					
ID: 0	Kind: MASTER	Name: Master 0	Count: 1	View	Delete Obj Select
ID: 1	Kind: CURVE	Name: Curve 1	Count: 1	View	Delete Obj Select
ID: 2	Kind: TILT	Name: Tilt 2	Count: 1	View	Delete Obj Select

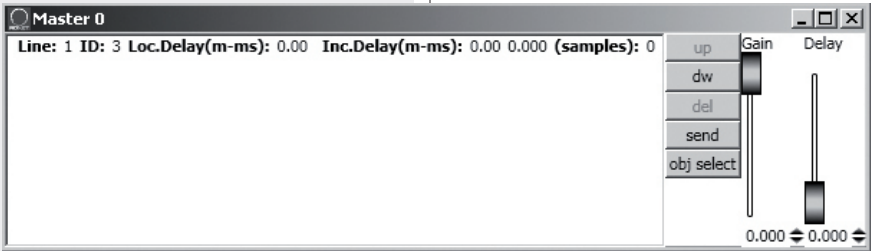


THE ASSIGNMENT OF AN OBJECT TO AN ALGORITHM (AND ITS CREATION) CAN BE MADE FROM THE OBJECT ITSELF (SEE THE 'ASSIGN AN OBJECT TO AN ALGORITHM' MANUAL SECTION).



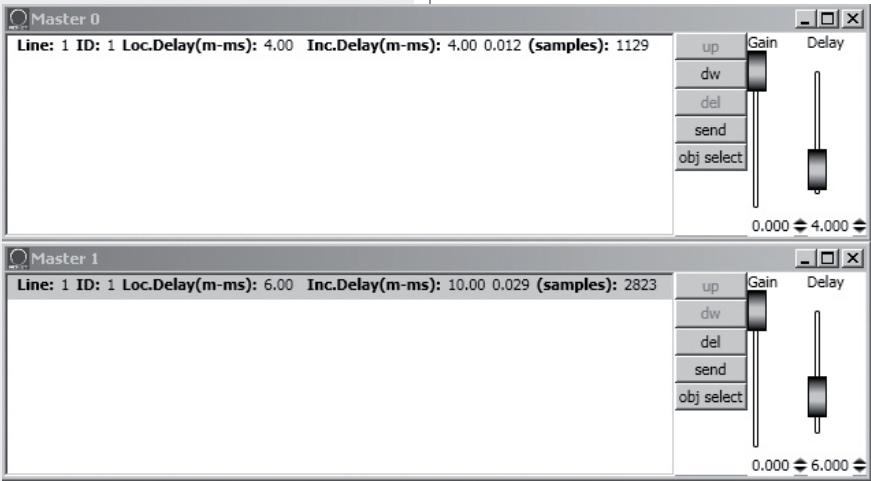
- ID:** it indicates the progressive number (starting from 0) of current algorithms.
  - Kind:** algorithm kind.
  - 3 kinds:** MASTER, CURVE and TILT (their functions are described here below).
  - Name:** algorithm name (freely assignable).
  - Count:** number indication of all objects currently assigned to that algorithm.
- View:** it opens the window including the algorithm parameters.  
**Delete:** it deletes the algorithm (pay attention: all its settings will be lost!)  
**Obj Select:** it makes the information of all objects assigned to that algorithm lined with red.

Click **View** of a **MASTER** algorithm to see its respective setting window:



On the left there is the object list (objects can be identified by 'Line' and 'ID' numbers).  
**Loc.Delay:** audio signal delay value (indicated in the equivalent distance in metres, max. 20 metres) set by the algorithm Delay control.  
**Inc.Delay:** audio signal total delay, which is the sum of all delays of all algorithms upstream (with lower ID numbers, to which the object has already been assigned) and the delay of the current selected algorithm.  
Its value is indicated in the equivalent distance in metres, in seconds (time) and samples.  
The maximum total delay cannot exceed 21.25 m (equivalent distance), corresponding to 6000 samples.

**EXAMPLE**  
An object has been assigned to 2 MASTER algorithms: in the first (MASTER 0) the delay (Loc.Delay) is set to 4 metres, in the second (MASTER 1) the delay is 6 metres. The total delay (Inc.Delay) indicated in the second algorithm (MASTER 1) is 10 metres (4 m + 6 m).



## BUTTONS

**up:** it moves up (one location) the selected line (corresponding to an object), function that is useful to sort more lines.

**dw:** it moves down (one location) the selected line (corresponding to an object), function that is useful to sort more lines.

**del:** it deletes the selected line (corresponding to an object), attention: the object will no longer be affected by the algorithm settings!

**send:** it sends the algorithm settings to the loudspeaker corresponding to the selected object.

**obj select:** it shows all the objects assigned to that algorithm by lining the respective information with red.

## CURSORS

**Gain:** audio signal gain setting from 0 to -20 dB (20 dB attenuation).

**Delay:** audio signal delay setting.

## USE EXAMPLE

It is possible to get common settings for two front line-arrays (made of loudspeakers) of a stage, by using MASTER algorithms, for instance:

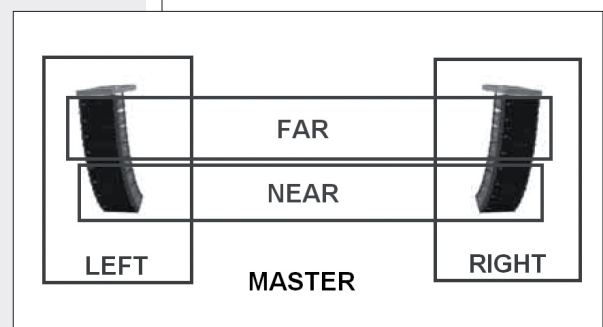
MASTER: common settings for all loudspeakers (both left and right channels)

LEFT: common settings for all left loudspeakers only

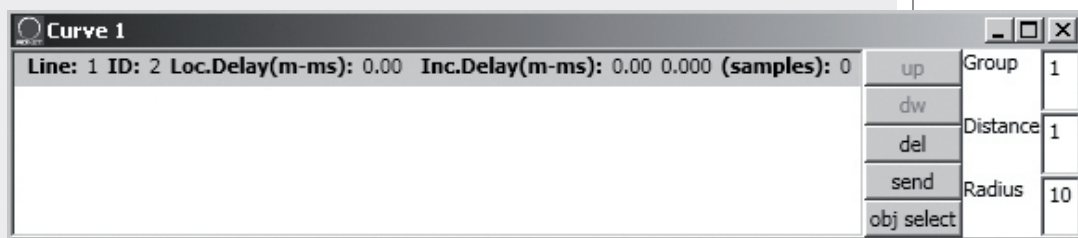
RIGHT: common settings for all right loudspeakers only

FAR: common settings for all far-field loudspeakers only

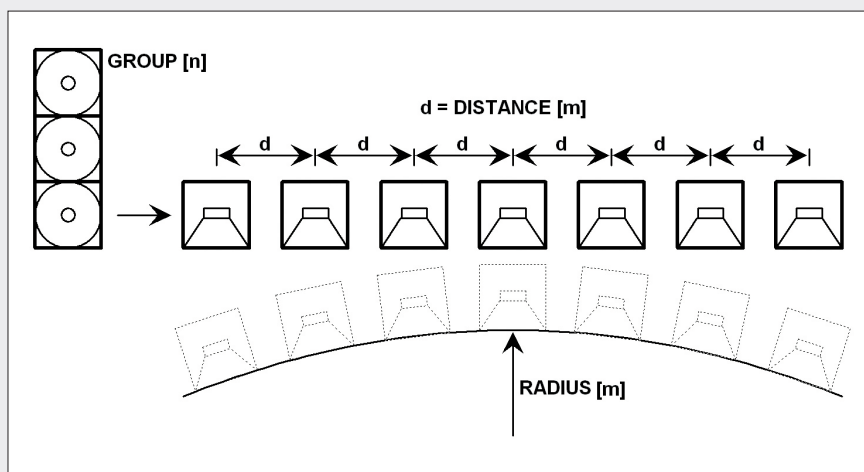
NEAR: common settings for all near-field loudspeakers only.



Click **View** of a **CURVE** algorithm to see its respective setting window:



The CURVE algorithm can be useful when using subwoofers (loudspeakers designed for very low frequencies), placed on the ground at the centre under the stage, to improve their efficiency by creating a 'virtual curve' of subwoofer positions.

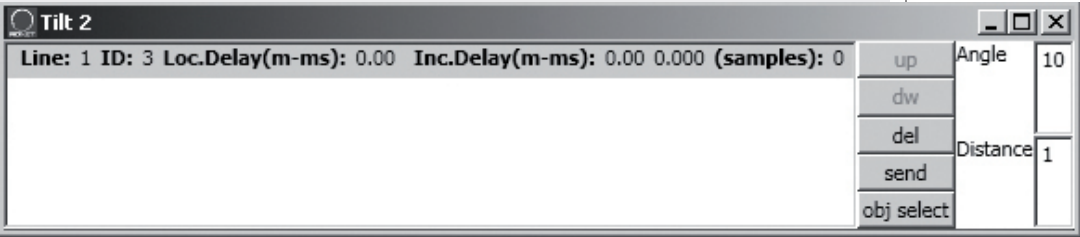


The 3 parameters (to be set) in the window on the right:  
**Group:** quantity of subwoofers grouped at the same position  
**Distance:** distance (in metres) between a subwoofer group axis and those adjacent  
**Radius:** curve radius (in metres).

In each line (corresponding to an object):  
**Loc.Delay:** audio signal delay value (indicated in the equivalent distance in metres, max. 20 metres) that depends on the 3 parameter settings  
**Inc.Delay:** audio signal total delay (the sum of all delays, considering also all algorithms upstream of the selected one).

About the buttons **up**, **dw**, **del**, **send**, **obj select**, please refer to the previous **MASTER** algorithm.

Click **View** of a **TILT** algorithm to see its respective setting window:

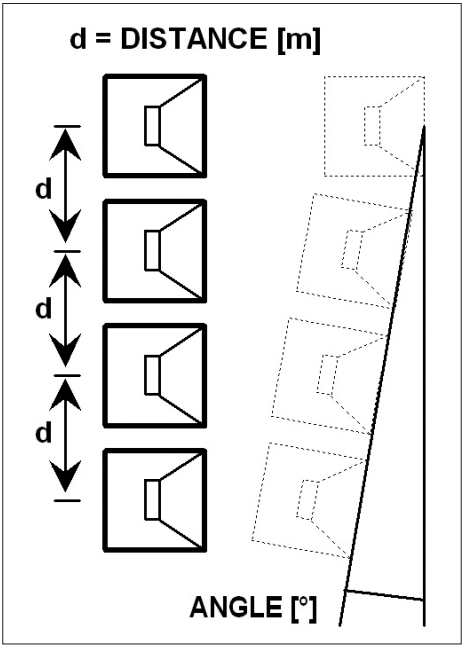


The TILT algorithm can be useful when using subwoofers in a suspended cluster to get a better near-field coverage, by creating a sort of virtual vertical tilt of subwoofers.

The 2 parameters (to be set) in the window on the right:  
**Angle:** vertical tilt angle (degrees)  
**Distance:** distance (in metres) between a subwoofer axis and those adjacent.


In each line (corresponding to an object):  
**Loc.Delay:** audio signal delay value (indicated in the equivalent distance in metres, max. 20 metres) that depends on the 2 parameter settings  
**Inc.Delay:** audio signal total delay (the sum of all delays, considering also all algorithms upstream of the selected one).

About the buttons **up**, **dw**, **del**, **send**, **obj select**, please refer to the previous **MASTER** algorithm.



**ADVANCED**

**Firmware Upgrade:** loudspeaker (or any other audio device) firmware upgrade.

1. Link the RDNET CONTROL 8 unit to the computer through the USB cable or ETHERNET.  
Turn the RDNET CONTROL 8 unit on without connecting any loudspeaker and wait until LEDs stop flashing (after c.10-15 seconds).
2. Link the 'DATA INPUT' of the only loudspeaker that needs to be upgraded to the CH1  connector of the RDNET CONTROL 8 unit (and disconnect all the other loudspeakers).
3. Turn the loudspeaker on wait until its 'STATUS' LED stops flashing.
4. In the software home page, select:  
**ADVANCED > Firmware Upgrade.**
5. Select the file concerning a new specific firmware for that loudspeaker.
6. Click YES on 'Send to object 0?' request.
7. Await until the progress bar indicates the installation end, then the CH1 LED will stop flashing and the loudspeaker will automatically reboot.
8. Wait for the loudspeaker reboot (at the end, its 'STATUS' LED stops flashing).  
Now the upgrade is complete.
9. Return to the point 2 for a new loudspeaker firmware upgrade.
10. As soon as the firmware upgrade is applied to all loudspeakers, these can be linked in daisy-chain to RDNET and all the system can be managed by the RDNET CONTROL 8 unit.

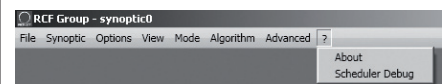
**Router Firmware Upgrade:** RDNET CONTROL 8 unit firmware upgrade.

1. Link the RDNET CONTROL 8 unit to the computer through the USB cable and turn it on without connecting any loudspeaker.
2. Wait until its front panel LEDs stop flashing (after c.10-15 seconds).
3. In the software home page, select **ADVANCED > Router Firmware Upgrade** to open the respective window, then click 'LOAD' and choose the 'CONTROL8.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 8 unit will automatically reboot.

**'?' MENU**

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

**Scheduler Debug:** it shows found errors (if any).



SYNOPTIC

When online, the **RDNET CONTROL 8** unit sequentially scans all audio devices, which are automatically assigned to digital addresses.

The software synoptic is compared to the real settings and any difference is pointed out: the loudspeaker objects (or of any other audio device) shown in the software without being really present in the net have their **Fault** indicator lit, while for other objects there is a comparison between software and real data: if differences are found, a yellow exclamation mark will be shown in the top left-hand corner of objects. Loudspeakers linked to the net are automatically added to the software synoptic, therefore the software shows an object per each loudspeaker (or any other audio device) that has been found.

When offline, it is possible to add objects through the 'Synoptic > Add Object' menu (by double-clicking each object that needs to be added).

TO UNDERSTAND CHARACTERISTICS AND FUNCTIONS OF ALL LOUDSPEAKERS (OR AUDIO DEVICES), ALWAYS REFER TO THEIR RESPECTIVE USER MANUALS.

For example, here is shown the module of RCF TTL55-A loudspeaker.

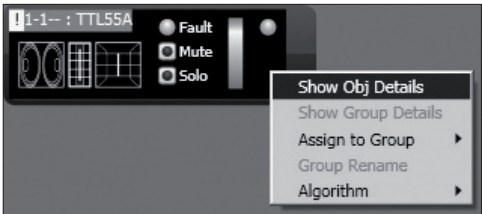
In the top left-hand corner, the object shows (in the following order): the exclamation mark (if present) indicating differences between software and real data, the subnet (line) to which the loudspeaker is linked (i.e. 1), the digital address (i.e. 1), the assigned group (the dash indicates that the object does not belong to any group), the model (i.e. TTL55-A).

These indications are lined with red when the object is selected for editing.

At the centre: the **Fault** indicator (communication error), the **Mute** switch (to temporarily disable the loudspeaker), the **Solo** key that allows to listen to the selected loudspeaker only (all the others are muted).

On the right: two indicators of the signal level: the first is a bar, the second is a single LED to indicate the peaks (green: OK, orange: - 6 dB, red - 3 dB).

Right-click the object and choose (left-click) '**Show Obj Details**' or simply (left) double-click the object to show its settings.



The first line on the top includes the **Group** parameter, the **Mute** and **Solo** commands and the **Recall** indicator.

Click the double arrow >> to open the equalization setting window. Note: This button is disabled if the loudspeaker is assigned to a group.

At the centre: pairs of level bars, a pair per each loudspeaker way: **Low, Low, Mid, High**. In each pair, the left bar indicates the signal level of its respective way, the right bar indicates the compressor operation.

The **ok** LEDs indicate the proper operation of the respective ways. Each **Mute** switch mutes its respective way only.

**FAN 1**: cooling fan no.1 speed.

**FAN 2**: cooling fan no.2 speed.

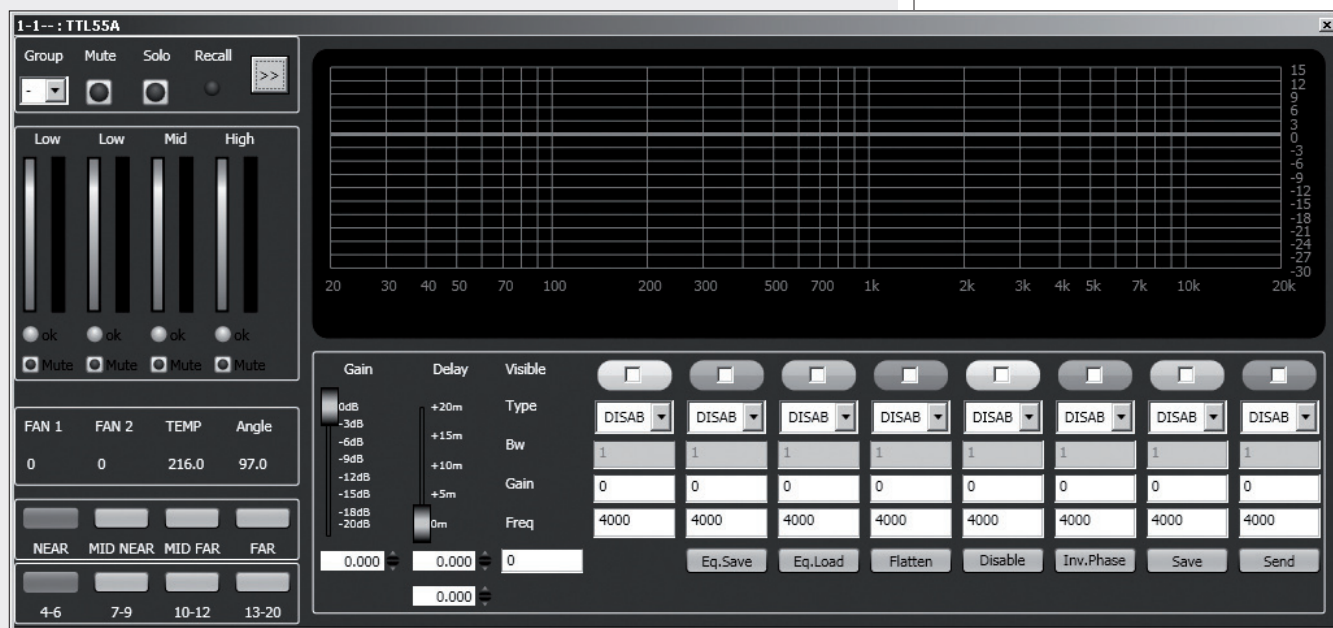
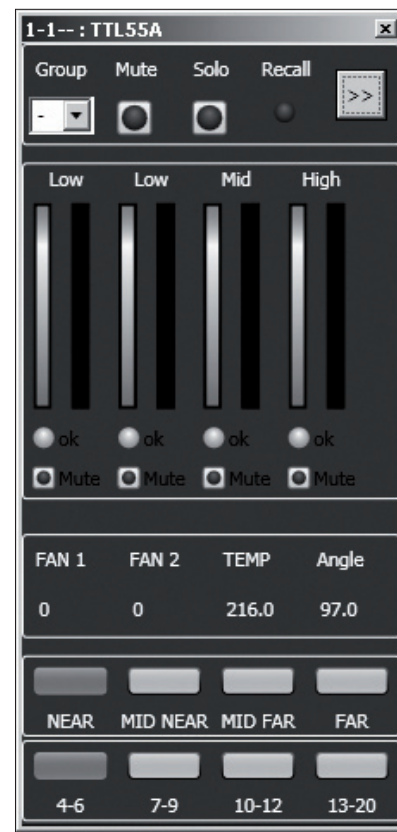
**TEMP**: internal temperature (°C).

**Angle**: loudspeaker (vertical) tilt.

**NEAR / MID NEAR / MID FAR / FAR**: loudspeaker field setting.

**4-6 / 7-9 / 10-12 / 13-20**: cluster loudspeaker number setting.

Click the double arrow >> button to open the equalization setting window.



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

**DELAY**: signal delay setting, express both in the range of 0 ÷ 20 metres (that is the correspondent distance) and in seconds.

NOTE: THE VALUE ON THE RIGHT OF THE DISTANCE (IN METRES) IS THE SAMPLE NUMBER.

**EQ.SAVE**: it saves the current equalization as .rde file.

**EQ.LOAD**: it loads an equalization previously saved as .rde file.

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

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

**INV.PHASE**: when selected, the signal phase is inverted.

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

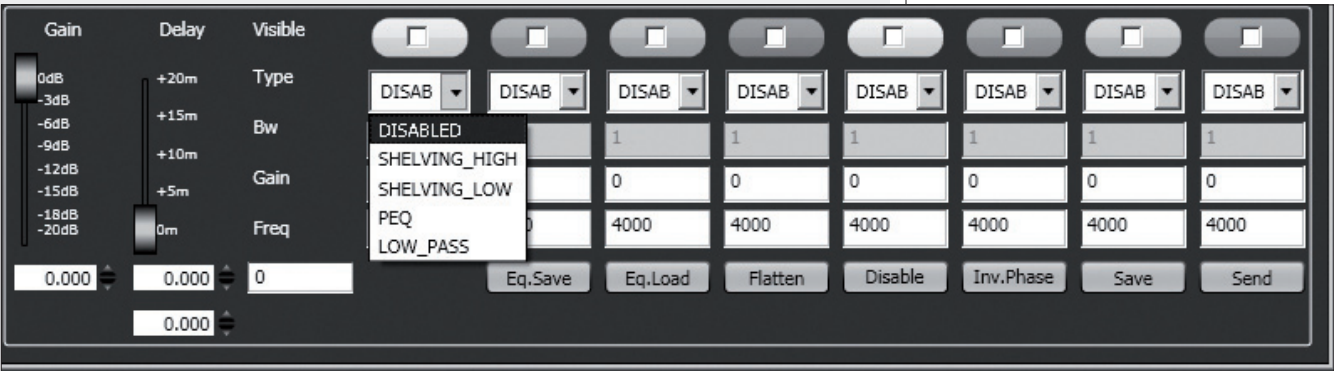
**SAVE**: it sends and stores the equalization to the selected loudspeaker.

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

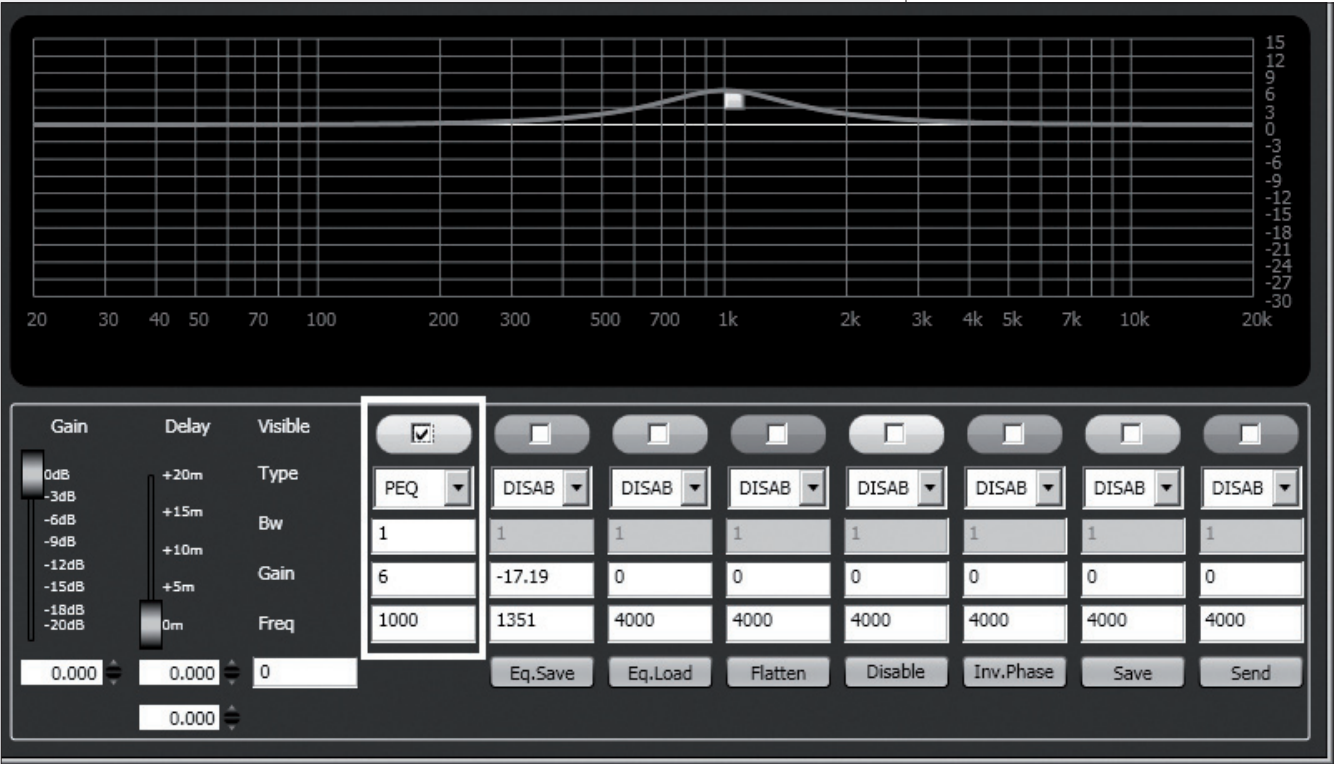
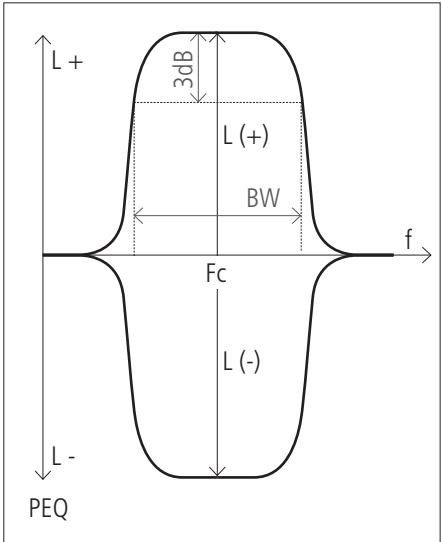




It is possible to set up to 8 selectable filters:



- 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 **Fc** 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.



# ASSIGN AN OBJECT TO A GROUP

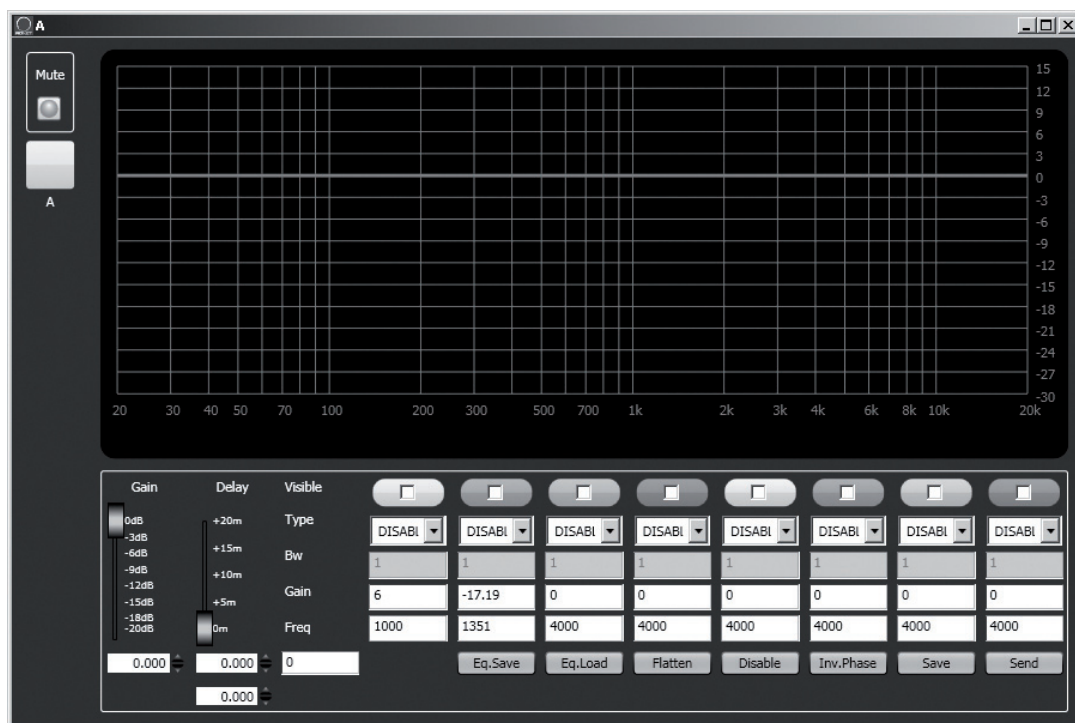
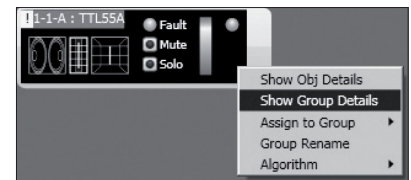
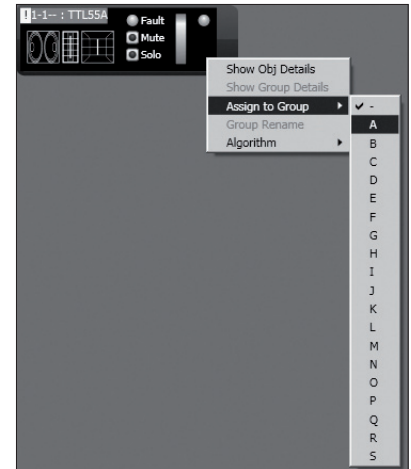


Each object can be assigned to a group in order to get parameter value changes common to all objects that belong to the same group.

Right-click 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** : TTL55A).

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).



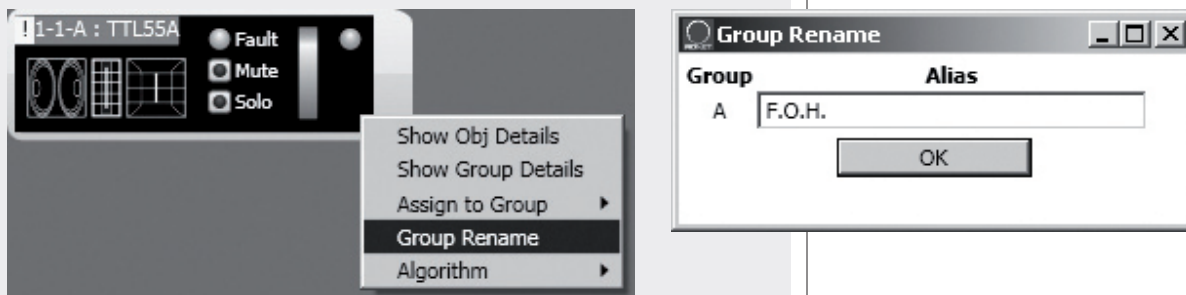
THE FIRST OBJECT OF A GROUP GIVES ITS OWN DATA TO THE GROUP, SHARING THEM WITH ALL NEXT OBJECTS THAT WILL BE ASSIGNED TO THE SAME GROUP. THE GROUP COMMON DATA ARE THE GAIN, THE DELAY AND THE EQUALIZATION. RDNET ALWAYS CHECK IF THESE DATA ARE THE SAME OF LOUDSPEAKERS (OR OTHERS AUDIO DEVICES), IF NOT, THE YELLOW EXCLAMATION MARK IS SHOWN IN THE TOP LEFT-HAND CORNER OF THE OBJECT, 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.



It is possible to rename the group of the selected object by choosing 'Group rename'. In the 'Group Rename' window, write a name in the 'Alias' text line and then click OK.

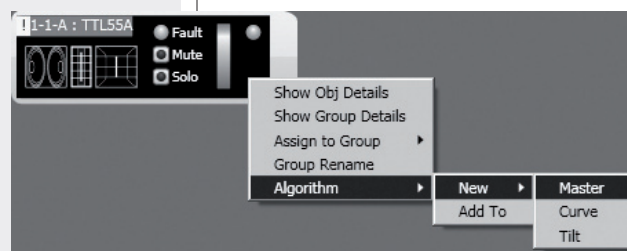


## ASSIGN AN OBJECT TO AN ALGORITHM

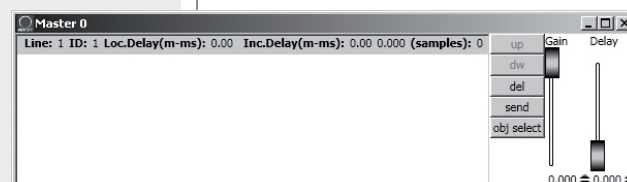


Every object can be assigned to an algorithm, so that it is affected by its parameters (common to all assigned objects).

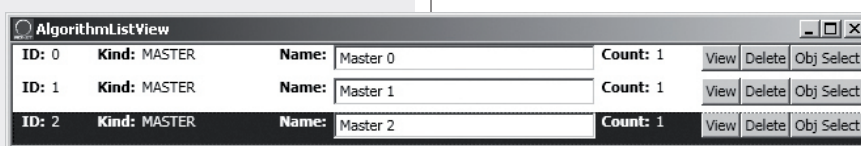
How to create a new algorithm: right-click the object and select 'Algorithm > New' and the algorithm kind among **MASTER**, **CURVE** and **TILT**.



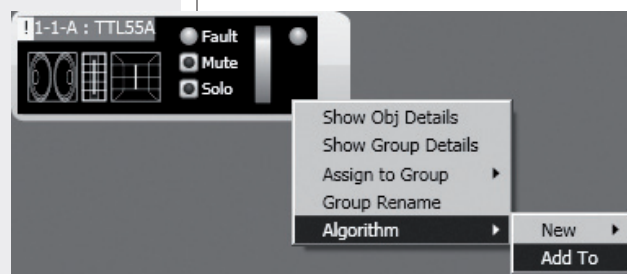
For instance, when selecting **MASTER**, a new algorithm will be created and its respective window will be shown.



To assign an object to an existing algorithm, first open the current algorithm list (menu: **Algorithm > View**) and select the one to which the object will be assigned (example: the ID2 MASTER 'Master 2' algorithm).



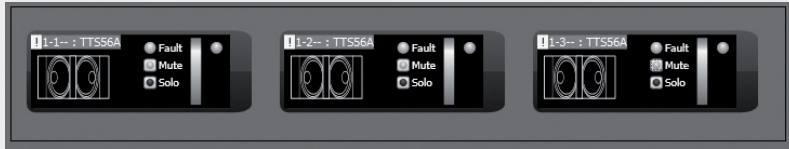
Then right-click the object and select 'Algorithm > Add To' to assign it to the previously chosen algorithm.



# ASSIGNING MULTIPLE OBJECTS TO AN ALGORITHM



It is possible to select more objects at the same time drawing a rectangle (with the mouse, press and hold its left button) that includes all necessary objects.



Then, all selected objects can be assigned to the same algorithm (right-click one object).



For instance, if choosing the CURVE algorithm (suitable for subwoofers), the loudspeaker list is properly sorted, example: when selecting 3 subwoofers, the second (the central one) will not be delayed.

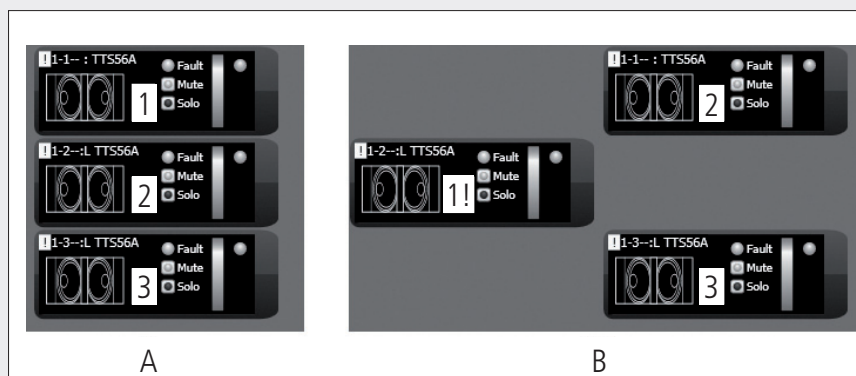
Curve 1									
Line: 1	ID: 1	Loc.Delay(m-ms):	0.05	Inc.Delay(m-ms):	0.05	0.000	(samples):	14	
Line: 1	ID: 2	Loc.Delay(m-ms):	0.00	Inc.Delay(m-ms):	0.00	0.000	(samples):	0	
Line: 1	ID: 3	Loc.Delay(m-ms):	0.05	Inc.Delay(m-ms):	0.05	0.000	(samples):	14	
									up
									dw
									del
									send
									obj select
								Group	1
								Distance	1
								Radius	10

**Therefore, it is very important to properly place all objects inside the synoptic, in order to avoid an incorrect application of the CURVE and TILT algorithms.**

Objects are sorted from left to right. If 2 or more objects are placed in the same horizontal position, it will also take into account their vertical position, from top to bottom.

Example:

- In the figure A, the objects are placed properly, as their sequence respects their digital addresses.
- In the figure B, the second object is wrongly placed to the left than the other 2, therefore, if the 3 objects are assigned to an algorithm at the same time, the second object will be the first of the algorithm list.



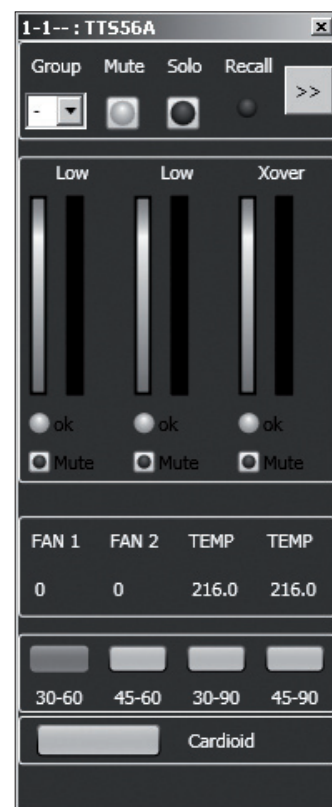
## EXAMPLE OF ANOTHER OBJECT



Each loudspeaker (or any other audio device) can have different parameters.

**To understand characteristics and functions of all loudspeakers (or audio devices), always refer to their respective user manuals.**

For instance, considering the **TTS56A** subwoofer object, it is possible to set the crossover pass band (4 options: **30-60, 45-60, 30-90, 45-90** Hz) and activate the '**Cardioid**' function, which inserts an equalization and a delay in order to create a cardioid pattern by using groups made of 3 subwoofers.



## 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.

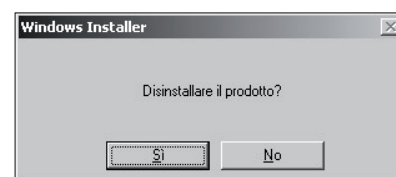
The window will show 2 options:

- 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 'Si' (Yes) to confirm.





- Network:**
- EIA RS-485 standard connection
  - up to 8 managed subnets
  - max. 32 audio devices connected to each subnet

- RDNET connections:**
- 8 RJ 45 connectors (EtherCon) for CAT 5 cable
  - 8 three-pole XLR plugs (as alternative to RJ 45)

- PC connection:**
- local: USB (type B)
  - remote (alternative to USB): Ethernet (RJ 45)

- Data storage:** SD card (max. 4 GB)

- Power supply:**
- operating voltage: 100 ÷ 240 V ac (universal), 50 - 60 Hz (automatic selection)
  - consumption: < 15 W
  - connector: 'Powercon' type

- Mechanical characteristics:**
- Dimensions (w, h, d): 482 mm, 44 mm, 182 mm (one 19" rack unit)
  - Net weight: 2 kg (4.4 lbs)
  - Chassis materials: pre-galvanised and painted steel