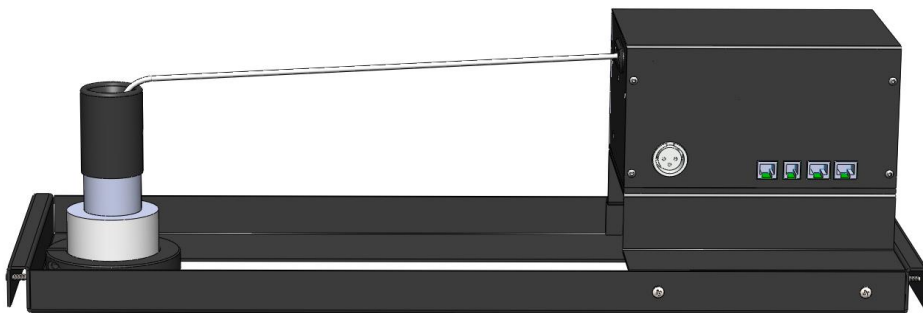


# ***CLOCKAUDIO®***

## **CCRM 4000-Retracta Motorized Ceiling Microphone**



## **Installation Manual and user Guide**

Contents	Page
Contents	1
Features	2
Parts supplied	3
Connections	4
Installation	5-8
Controls	9
DSP Connections	10
Mute Control	11
Master to DSP Connections	12
Slave Connections	13
IR Remote Control	14
Remote Control Information	15
Programming Master Cable Height	16
Programming Slave Cable Height	17
Microphone Angle Adjustment	18
Horizontal / Vertical Mounting	19
Slave Communication Link	20
Cautions / Troubleshooting	21
Specification	22
Warranty	23

### **IMPORTANT SAFETY INSTRUCTIONS**

- Read these instructions carefully as they contain important information concerning safety and safe operation of this equipment.
- Heed all warnings in this manual they are there for the safety of you and others.
- Keep these instructions in a safe place in case they need to be referred to later.
- Do not install near sources of heat or water. Clean with dry cloth only.
- Use only with the bracket supplied.
- Do not burn or incinerate the remote control battery. Danger of explosion.

**WARNING: Do not connect a supply Voltage until the CCRM 4000 is fixed securely in place, IR sensor connected (if fitted / Master only), Ceiling bezel is mounted in the ceiling tile, microphone and magnet has been passed through the Ceiling Bezel and all other connections have been made.**

**Do not power the system off when the cable is fully extended. Always retract the cable back to the ceiling bezel after use.**

**Do not angle the microphone more than 40 degrees or it will become jammed In the bezel**

## **Features**

- Control ports allow DSP connection and Link / daisy chain expansion to other CCRM 4000 Retractable units.
- A positive (+2.5V to +12V) signal applied to the MASTER DSP control port will simultaneously operate all slave units connected to the master.
- Logic Hi / Lo for DSP mute detection port.
- Master and Slave units are Identical in construction. Two rotary 0-9 digital decimal encoders are used to set Master (00) and 01 – 99 determines slave designation. The factory default is set to Master (00).
- XLR socket allows easy and fast connection of the audio to mixer or DSP. A 9-48 Volt phantom power is required.
- IR remote control is supplied with the master unit. Remote control can be used to activate the units in the absence of a DSP.
- IR receiver sensor with integral green programme mode LED and red range LED (supplied with master unit).
- Audio cable length 2.5 Metres.
- Supplied with 350 degree rotation, 40 degree knuckle joint angle microphone with cardioid polar pattern.
- Up to 99 slave units can be daisy chained to the master.
- Ceiling bezel fitted with detection switch.
- Universal mains switched mode power supply available as separate item. Operates up to 4 units.
- Automatic safety detection for cable hang-ups.

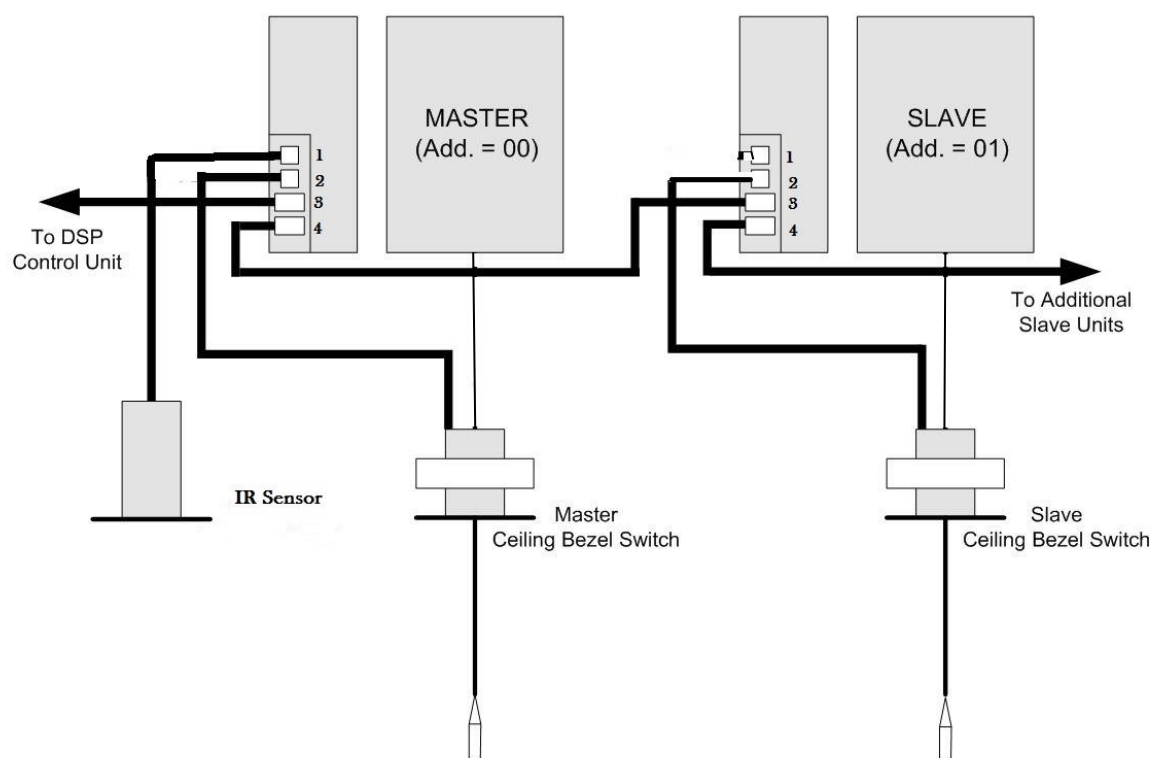
### **Parts supplied with CCRM 4000 Master**

1. CCRM 4000 Retracta unit complete with microphone
2. IR receiver sensor (CCRM 4000IR)
3. IR remote control (CCRM 4000R)
4. Safety hook and wire harness
5. Installation manual
6. Ceiling tile fixing bracket (CCRM 4000Rack)
7. Ceiling Bezel (CCRM 4000B)
8. 18 VDC universal power supply (PS-018)

### **Parts supplied with CCRM-4000 Slave**

1. CCRM 4000 Retracta unit complete with microphone
2. Ceiling Bezel (CCRM 4000B)
3. Safety hooks and wire harness
4. Installation manual
5. Ceiling tile fixing bracket (CCRM 4000Rack)

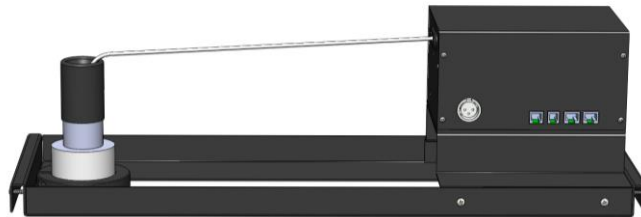
## CONNECTIONS BLOCK DIAGRAM



Important: When using a DSP to control the system make sure that the DSP control signal is already outputting to SK3 on the CCRM 4000 master (+2.5 to 12 Volts) before powering the system up otherwise the DSP command will not be recognised by the system and will fail to operate.

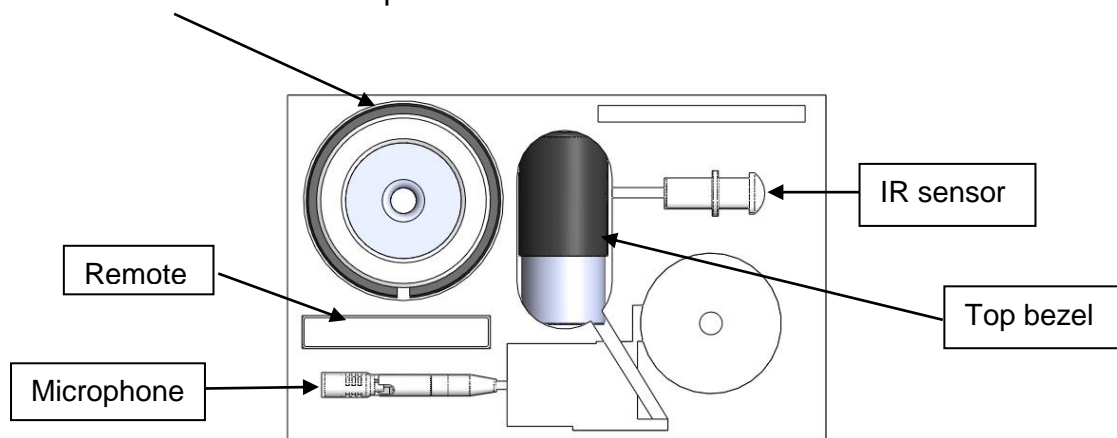
## Installation

The CCRM 4000 is supplied partially disassembled and simply requires reassembly / push to fit. Below is picture of the fully assembled unit.

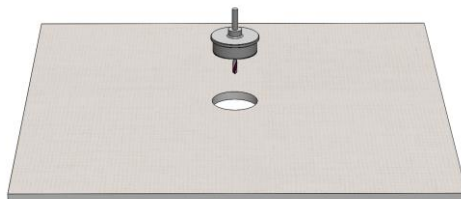


**To prevent unnecessary damage to the system it's vitally important to follow the instructions below:**

1. Remove the CCRM 4000 system from its transportation box and remove the 2 foam end caps. The transportation box and packing should be stored as this is the best packaging to use in the unlikely event of returning the system to your dealer.
2. Cut the tape securing the large cardboard box to the large black ceiling frame.
3. Carefully move the box out of the ceiling frame and set to one side being careful not to snag or cause the microphone cable to kink. **Do not remove the microphone and top bezel assembly at this stage.**
4. Remove the small cardboard box located under the CCRM 4000. This contains the PSU (master only).
5. Now open the large cardboard box and remove from the packaging the large lower bezel with bezel clamp.

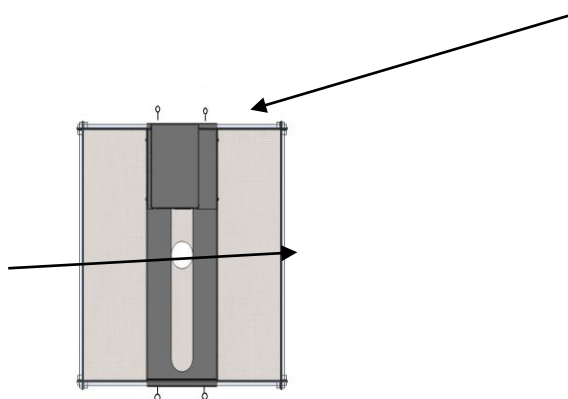


To install this system a 65 mm (2.5") hole must be cut into the ceiling tile to allow the large lower bezel just removed from the packaging to be fixed to the tile. The hole should ideally be cut in the centre of the tile and must not be closer than 76mm (3") from the edge of the tile or it will not be possible to align the CCRM 4000 support bracket over the hole.



Take the entire CCRM 4000 kit up to the final location site. Carefully align the CCRM 4000 complete with ceiling tile bracket so that the large slot is directly over the hole that has previously been cut in the ceiling for the bezel. Make sure that the front and back of the bracket fits snugly over the ceiling tile "T-Bar rails". Secure the ceiling bracket to the T Bar rails using the four eye bolts finger tight.

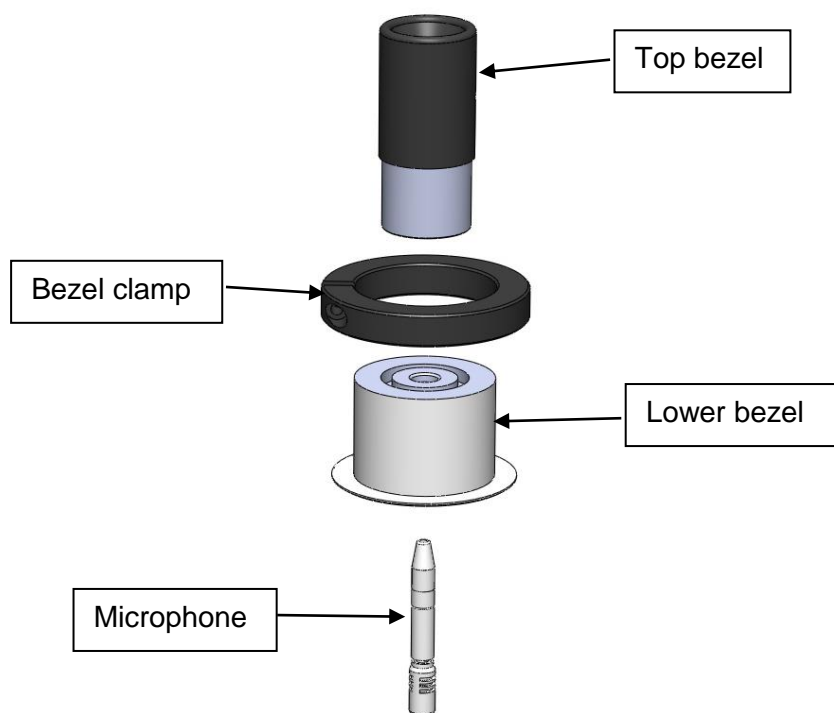
65mm (2.5") Hole



Insert the bottom part of the bezel up through the ceiling tile through the hole and slot in the tile bracket. Secure the bezel in place with the securing ring, using a 5mm Allen key (not supplied).

Now carefully remove from the foam packing the IR sensor, remote control and safety cable fixing kits and set aside. Next remove the top bezel along with the microphone and magnet assembly.

1. Insert the microphone through the lower ceiling bezel and then push fit the top part of the bezel to the lower bezel making sure the magnet is inside the top part of the bezel.

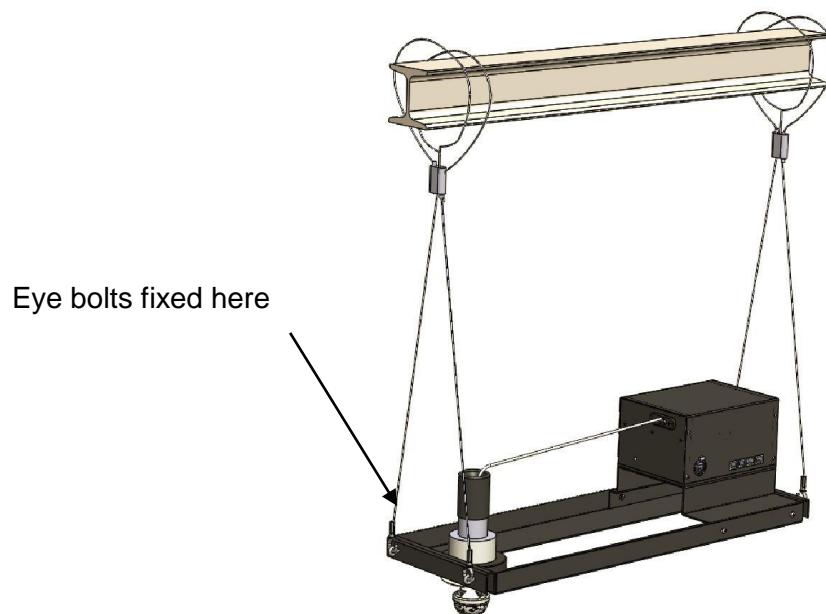


**Any kinks or bends in the cable can be straightened by gripping the cable with your hands and passing it through a clean dry cloth a few times.**

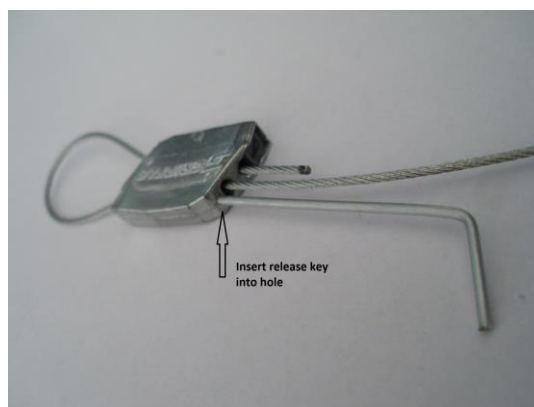


### Safety harness

For safety reasons the frame to ceiling tile fixing eye bolt (2 at each end of the bracket) are used to secure the frame and also used to suspend the CCRM 4000 and bracket. Unravel the Y cable harnesses and attach the hooks to the eye bolts at each end of the ceiling tile bracket.



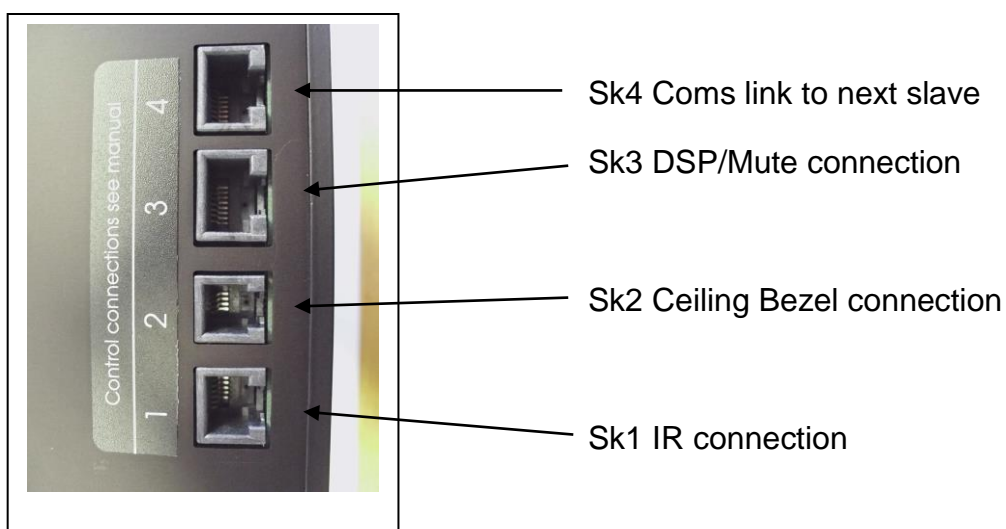
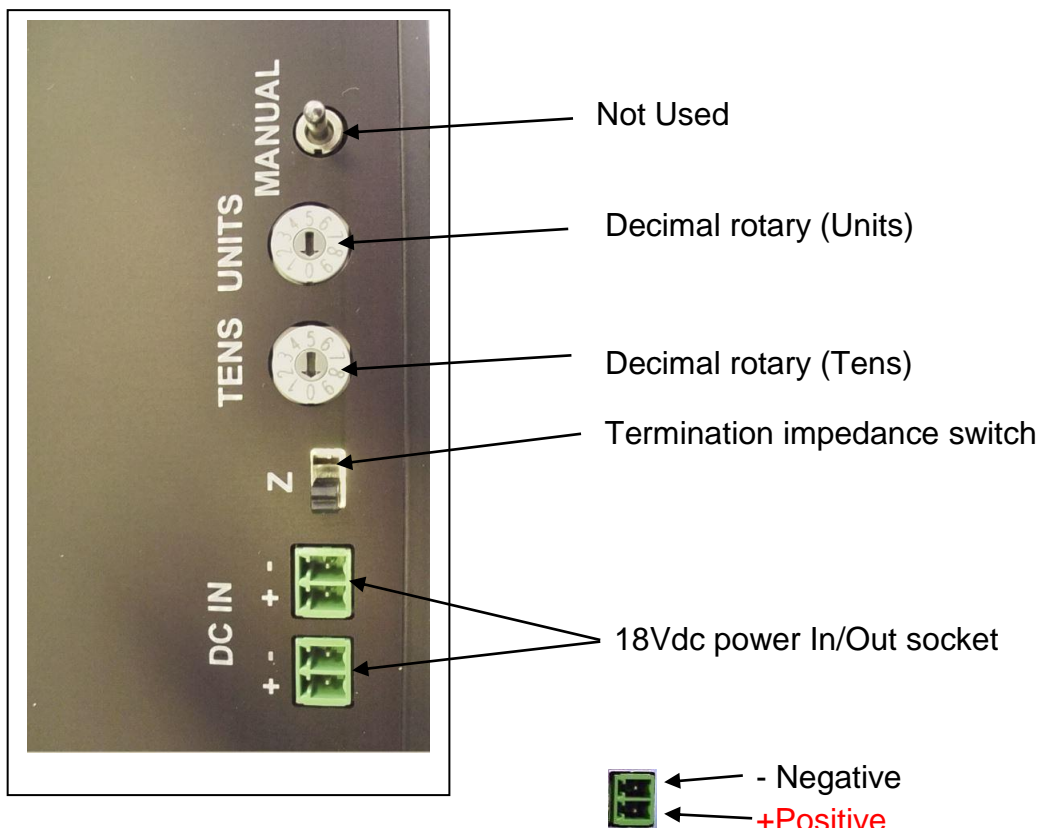
Push the free end of the cable harness through one of the holes located on the Gripper. Now loop the free end of the cable over a secure fixing such as a ceiling truss eye bolt or any structure capable of taking 2Kgs of weight. Now pass the cable through the remaining hole in the Gripper and then pull on the cable to adjust / take up the slack. Do the same with the other Y cable at the other end of the ceiling tile bracket. Cable can be slacked or removed by inserting the supplied release key into the hole as shown below:



**Gripper**

Insert key to  
release cable

## Controls and Connections



### DSP Connections

The table below lists the pin functions for DSP control signals to the master unit. Slave units require just a daisy cable link (standard straight RJ45 male to male cable required) between master and slave units. Check that the DSP control signal is present logic +2.5 to 12 Volts is required. **It is important that the DSP + command signal is already present before powering the system up.**

The logic control signal (pin 1) is an optically isolated input with a dedicated return connection (pin 2). Voltages as low as 2.5V DC are recognised as a 'logic high' input which will command the master unit (and any connected slaves) to deploy their microphones to a preset height. A 'logic low' (0V DC) will command all units to raise their microphones to the ceiling.

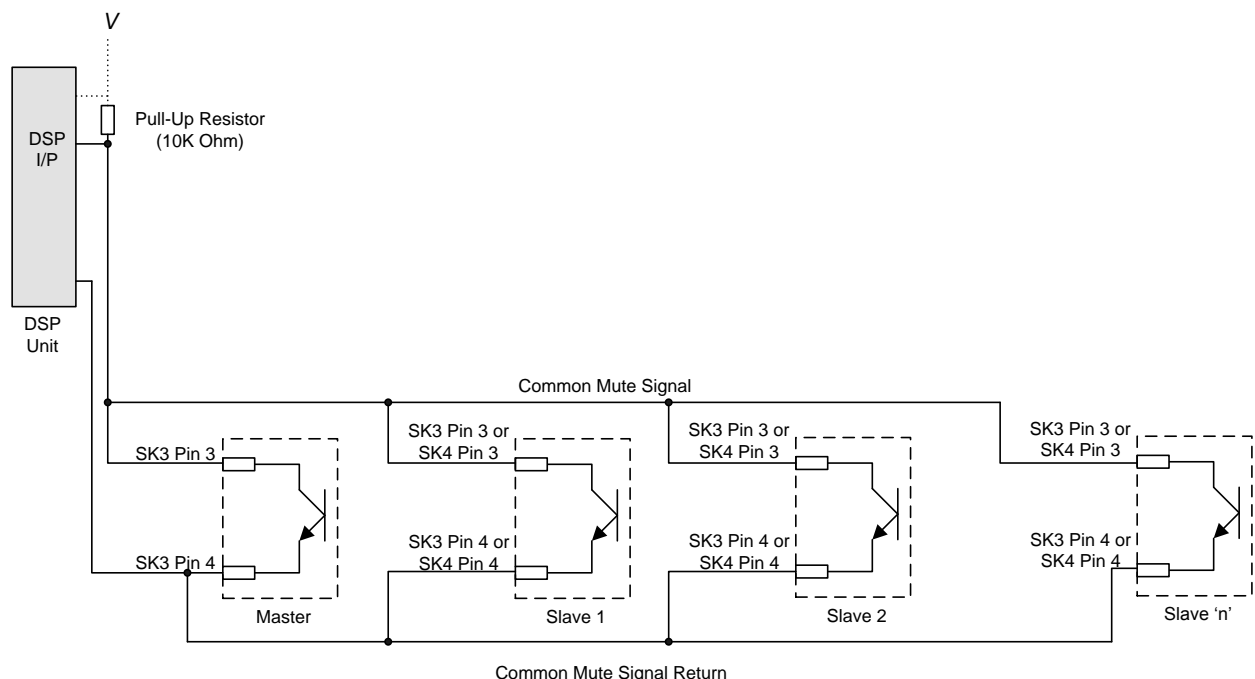
SK3 Pin No.	Function:
DSP MUTE FEEDBACK	
1	Logic Control Signal Input:  Between +2.5V DC and +12V DC: Microphones down to set-height.  0V: Microphones up to ceiling bezel switch.
2	GND Return for Logic Control Signal.  <b>Note: This is not a common GND for the unit, it is the return leg of an optically isolated input.</b>
3	Mute Feedback Signal.  Open collector output that requires a pull-up resistor (10K Ohm) at the DSP to function correctly.  0V: Microphones not deployed (Mute)  High Impedance (Pulled-Up to voltage): Microphone deployed (Un-Mute)
4	GND Return for Mute Feedback Signal.  <b>Note: This is not a common GND for the unit, it is the return leg of an optically isolated output.</b>
5	RS485 (+) Communications (Not used on master unit)
6	RS485 (-) Communications (Not used on master unit)
7	RS485 0V (Not used on master unit)
8	Unused

## **DSP Mute Control**

As detailed on the previous page, each unit is provided with an optically isolated open-collector output for the mute signal which is accessed through the DSP socket on the master. Muting of the microphones has to be performed by a DSP. If using IR remote then it will not be possible to mute.

The drawing below represents an equivalent circuit for the mute signal which shows how the open collector output on each Retacta is connected in parallel when the units are connected together using the correct RJ45 connection cable.

### **Mute Signal Equivalent Circuit**



To function correctly, the common mute signal from all units must be connected via an external pull-up resistor (not supplied) to an arbitrary voltage (V) at the DSP as illustrated above. The arbitrary pull-up voltage (e.g. 5V DC or 12V DC) can either be supplied by the DSP itself (preferred option), or by an external voltage source, although if an external voltage source is used, the 0V return must be common with the DSP 0V.

When the microphones are not deployed, the voltage on the common mute signal will be pulled to the common signal return (logic low at the DSP input). The DSP input will only switch to the logic high state when all microphones are deployed and resting at the preset height.

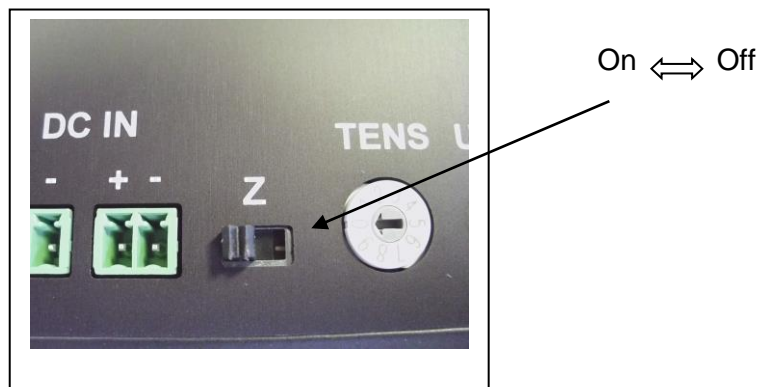
**Note that the common mute signal must be provided with an external voltage through a 10K Ohm pull-up resistor, the mute signal will not function without this.**

### **Master Unit Cable Wiring Connections using a DSP**

1. Connect socket (3) to the DSP making sure that all parameters are met in accordance to the instructions shown under "Mute Control" and Logic Hi /Lo 2.5V – 12V required for activation.
2. Connect the XLR microphone audio output to DSP audio input. If connected to a mixer then the mute will not be detected and the microphone will always be live. The DSP is used to mute the microphone. **Note Phantom power must be supplied to the XLR microphone socket.**

### **Termination Impedance (Z switch)**

On each of the units is a slide switch "Z" In a multi system 10 or more units it is only the final slave unit that needs to have this switch ON and all other unit switches must be OFF.



### **IR SENSOR INSTALLATION**

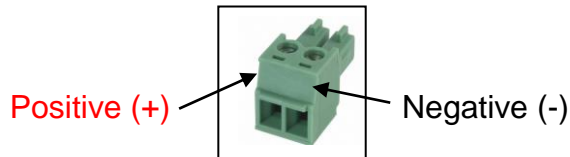
Mount the IR sensor in a position (ceiling or wall) where it will be convenient to see all the Retracta movements whilst maintaining good line of site with the IR sensor. Do not place any obstruction in front of the sensor as this will prevent operation. Drill a 16mm (5/8") diameter hole. Pass the sensor through the hole and secure it using the C clip. Connect the cable to the IR sensor input socket number 1 on the Retracta unit. IR sensor has 2 coloured LED's: Green = in programme mode, Red = will show each time a button is pressed on the remote.



### **Slave wiring connections**

When adding a second Retracta unit (slave 01)

1. Connect a DC supply cable between the Master and slave DC input sockets. Make sure that the correct polarity is applied to the Phoenix plug supplied



2. Connect socket (4) on the master to socket (3) on the slave unit using an RJ45 straight through cable. (If further slaves are connected then link between socket (4) and socket (3) of the next slave and so on (daisy chain).
3. Bezel cable. Connect the cable to socket (2) on the slave.
4. Connect the DSP microphone audio input to the XLR audio out socket.
5. Make sure that the “Units” decimal rotary switch is set to “1” (01)



### **Further Slave wiring connections**

1. Up to 99 Slaves can be linked together in the same / identical way as described above under “adding a second cable Retracta”.
2. Repeat the same instructions shown under heading of Slave wiring connections and link between / daisy chain between sockets 3 and 4 of each slave unit.
3. Make sure that the “Units” decimal rotary switch on each subsequent slave units are set to “2” for the 2nd slave, “3” for the 3rd slave etc etc....

### **IR Remote control operation**

The remote is primarily intended to allow the initial programming of the desired height for each individual winch in the system. The preferred operation is then by logic input from a DSP logic high of 2.5V to 12V is required to release microphone to programmed height and a logic 0 low will raise the microphone. The IR remote Up/Down buttons can be used if a DSP is not used. Open the battery compartment pull and remove the battery insulator / protector.

**Warning: Do not use both the IR Remote control and DSP together it will not work. The microphones must be at the ceiling bezel then use the remote or DSP to operate the unit.**

#### **IR Remote Layout**

Aux: Used to programme the remote.  
 Up: Used to rewind cable upwards  
 Down: Used to deploy cable downwards.  
 Enter: Used to complete / store a programme.  
 Setup: Only used to programme the remote.  
 Numeric buttons: Used to input Master / slave designation and programme remote.



The red LED indicator shows with each press of any button. If the LED fails to light then replace the battery

Replacement battery type Lithium 3V CR2025

**WARNING: DANGER OF EXPLOSION DO NOT BURN OR INCINERATE THE BATTERY.**



#### **Remote code 0515**

when the battery is replaced it may be necessary to re code the remote. Press Aux, Press and hold Setup until red LED lights, enter 0515 on the key pad. Remote coding is now set.

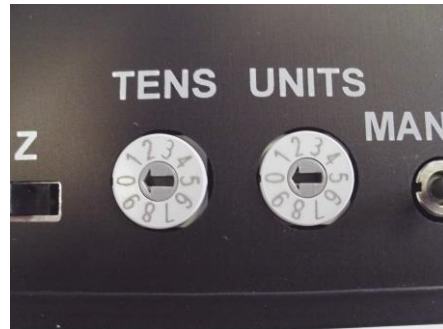
## **IR REMOTE CONTROL ADDITIONAL INFORMATION**

- When programming an incorrect address code for example 32 when there are only 3 units connected it will just be ignored / nothing will happen if either the up-arrow & down-arrow keys are then pressed. Wait 5 seconds and re enter the correct address code.
- During initial programming of the cable height the Up & Down buttons work on a press and hold basis, where the microphone will continue to move either up or down all the time the button is pressed. The cable will stop when either button is released.
- If there is a pause of longer than 5 seconds between button pressing before the ENTER button is pressed the sequence will need to be started again from the beginning. Once the green programme LED is lit there is no time out limit.
- A green LED will light on the IR sensor to indicate that programme mode has been entered. The LED will extinguish when you exit the programme mode (press Enter). Thereafter each time a remote button is pressed a red LED will flash indicating a command has been received and the transmitter is in range.
- IR range is approx. 7.5m (25 feet). Do not use the IR remote control if a DSP is being used to operate the Retractor. Only use the IR remote for setting the height after installation.
- Do not mix IR and DSP operation together i.e. when microphones are at the ceiling bezel if IR is used to deploy the microphones then the IR must be used to retract the microphones. If the microphone is at the ceiling bezel and DSP is used to deploy the microphones then the DSP must be used to retract the microphones.



### **Programming cable height on master unit**

The remote control is used to set up the cable height and also to deploy and retract the microphone. For a single unit installation (Master) this has already been factory defaulted to Master (Master unit decimal code setting is 00)



- Point the remote at the IR receiver and press 00 followed by the ENTER button (Green LED will light on the IR sensor showing it's in programme mode). Press the Up / Down buttons on the remote set the correct height of the microphone, press the ENTER button to store this height position into the memory (green LED will go out). Immediately afterwards the microphone will retract to the ceiling bezel to confirm that the operation has been successful.
- Test by briefly pressing the Down button on the remote and the microphone will move down and stop at the programmed height. Press the Up button and the microphone will retract back up to the Bezel. If an incorrect height has been programmed then repeat the above instructions.

### **Programming cable height on a second unit (slave designation 01)**

Make sure 01 has been selected on the slave “unit.



Point the remote at the IR Sensor press 01 followed by the ENTER button (green programme LED on the IR sensor will light). Press the Up / Down buttons on the remote set the correct height of the microphone, press the ENTER button to store the desired height in the memory (green LED will extinguish).

Immediately afterwards the microphone will retract to the ceiling bezel to confirm that the operation has been successful.

Briefly press the Down button and the microphone will move down and stop at the programmed height. Press the up button and the microphone will retract back up to the Bezel. If an incorrect height has been programmed then repeat the above instructions

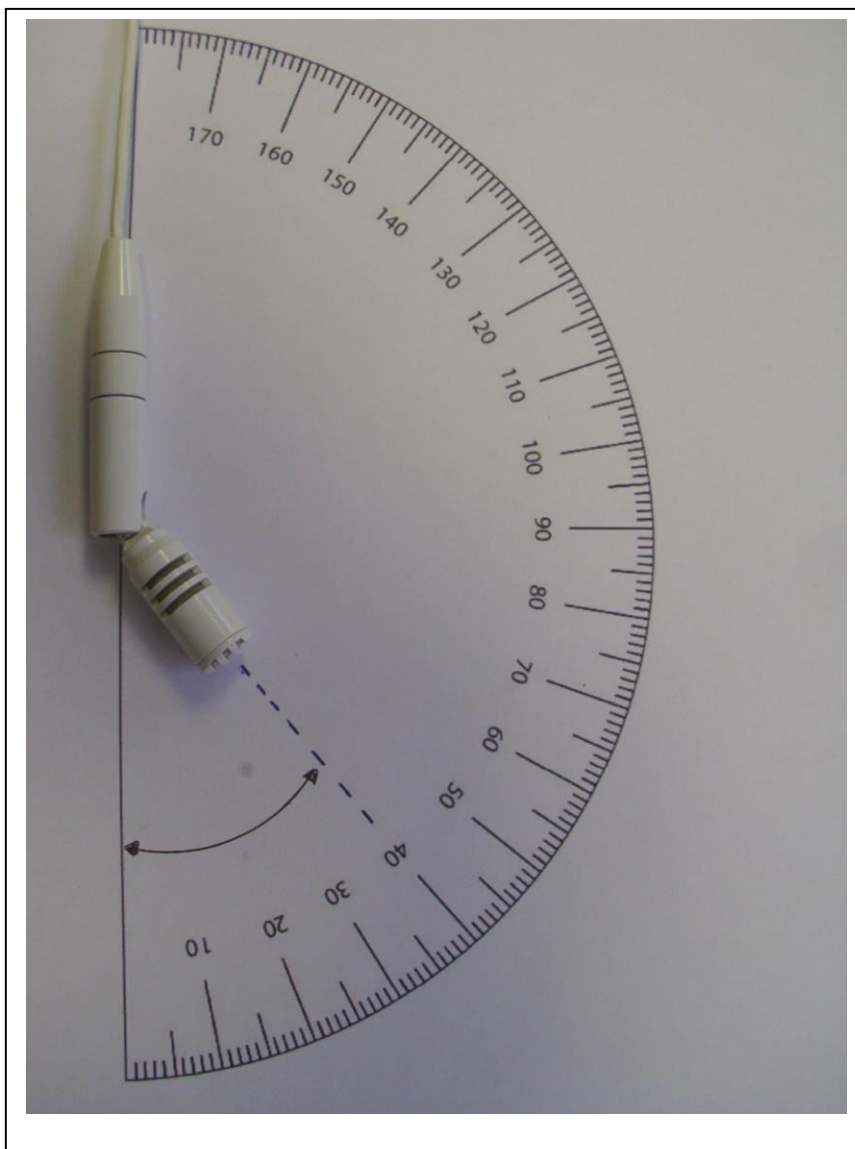
### **Programming multiple units**

As each additional slave units is added it will be necessary on each of the slaves to change the “**units**” decimal rotary address switch to “2” for the 2<sup>nd</sup> slave / “3” on the 3<sup>rd</sup> slave etc... then as described above repeat the button sequences on the remote to set each of the cable heights on each of the slaves in turn. Don’t forget to enter the slaves assigned number on the remote (02 or 03, 04 etc) before completing the programming sequence. If 10 or more Retractable are being used then it will be necessary to change the **Tens** rotary address on the 10<sup>th</sup> slave to “1” and Units rotary switch to “0” (10), for the 11<sup>th</sup> slave select “11” and so on. If you have now completed the installation of several Retractable you can now check that all microphones are deployed simply by pressing the down button.

### **Microphone adjustment**

After installation has been completed it is important to operate the unit a few times to allow the cable to settle and find its natural final rest position. The microphone can then be aligned correctly and the knuckle joint angle positioned for best audio reception.

**Important: The microphone angle is limited to 40 degrees from vertical as shown below.**



**NOTE: If the cable hits an obstruction such as a desk / floor or is held preventing the upward motion (0.5lbs pull) of the cable motor will immediately stop. Remove the obstruction and then press the up button on the remote, or up command if using a DSP. The unit can now be operated normally. Should this fail to restore normal operation disconnect and reconnect the supply Voltage to the CCRM 4000.**

### Horizontal / Vertical mounting

Fig A shows a unit mounted horizontal using the optional pair of metal brackets **not supplied**. The maximum distance that the unit can be mounted from the bezel is 500mm (19.68") which will allow approx 2 Metre (6' 6") cable drop.

Fig A

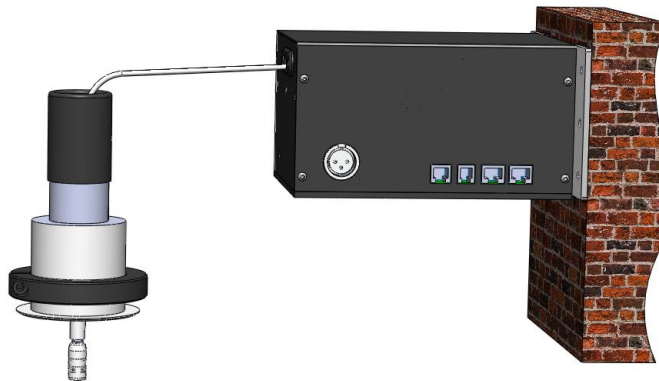
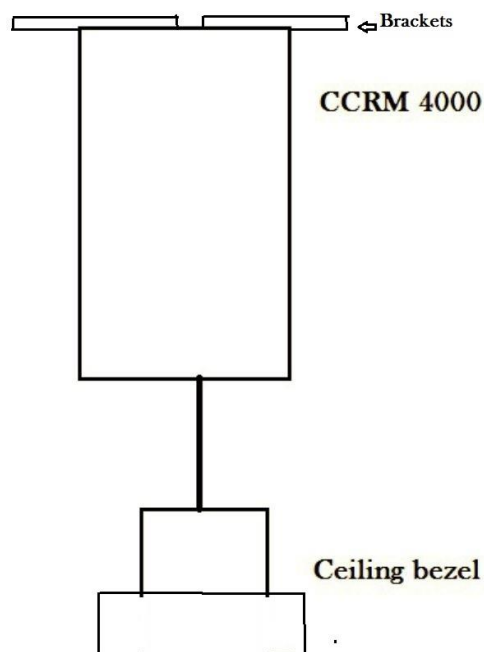


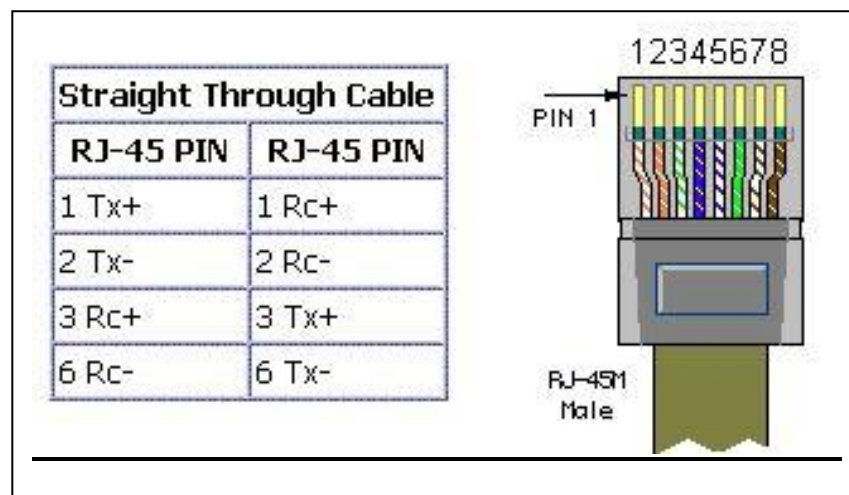
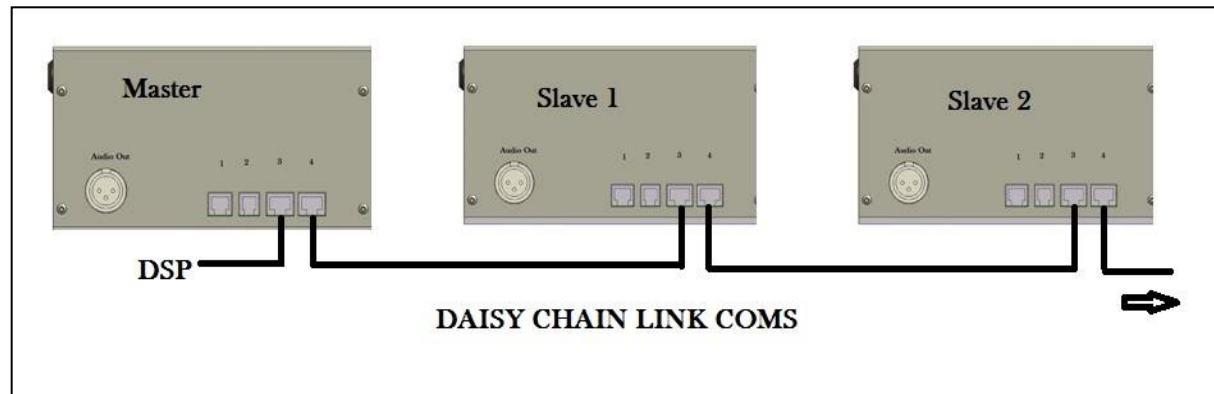
Fig B shows unit mounted vertical and inline with the bezel.

Fig B



### Slave wiring communication link connections

When adding slave units to the master, connect RJ45 (straight in line connections) from socket 4 on the master to socket 3 on the 1<sup>st</sup> slave then connect socket 4 on the 1<sup>st</sup> slave to socket 3 on the next slave in line etc etc....



### Audio Out Socket

An XLR audio output socket is provided for connection to a mixer or DSP. Phantom power adaptor is inbuilt and requires an external 9-48VDC phantom power to be applied.



### Cautions

1. Never grab hold of or stop the cable whilst the cable is being deployed. This may cause jamming of the mechanism of the cable.
2. Do Not Exceed the Maximum carrying weight of 0.5lbs on the cable. This will cause the internal safety device to operate.
3. Do not add / extend the cable length. There is insufficient space to accommodate any extra cable length.
4. Do not operate the mechanism in any other angle / position than specified and ensure cable exit of the Retracta is in line with ceiling bezel.

**IMPORTANT DO NOT ATTEMPT ANY OTHER DISSASSEMBLY OF OTHER PARTS WITHOUT PRIOR PERMISSION FROM CLOCKAUDIO.**

### Troubleshooting guide

Microphone does not move up or down	<ul style="list-style-type: none"> <li>• Check that the DSP control signal is present logic +2.5 to 12 Volts is required. <b>It is important that the DSP command signal is already present before powering the system up.</b></li> <li>• Check DC supply is present at Retracta (microphone will move down and up when power is applied).</li> <li>• Check logic input cable connections between DSP and DSP input port</li> <li>• Perform a reset by switching the dc supply off / on.</li> </ul>
Microphone is picking up noise as it is being raised / lowered.	<ul style="list-style-type: none"> <li>• This is normal. The microphone must be muted by the DSP during the raising / lowering transitions.</li> </ul>
Remote control not operating	<ul style="list-style-type: none"> <li>• Have you removed the battery insulator before use?</li> <li>• Check that there is clear view of transmitter to IR sensor. The Red LED on the IR sensor should light each time a button is pressed.</li> <li>• Check remote Red LED is showing when buttons are pressed. Check or replace the remote battery.</li> <li>• Check remote sensor is connected to the remote sensor socket on the Master Retracta.</li> <li>• Check that the correct code (if adjusting height) for the winch has been inputted followed by the enter button Green light should show.</li> </ul>

**Specifications**

Power supply requirements: 18VDC 0.5A

Weight: 2.7Kg (5.95lb)

6Kgs (13.22lb) with bracket

Dimensions: 140mm (5.51") W x 170mm (6.69") H x 104mm (4.09") D

Cable length 2.5 Metres (8.20ft).

Polar response Cardioid

Ceiling tile bracket dimensions L 620mm (24.5") W 215mm (8.5")

H with CCRM4000 180mm (7 ").

Safety harness cable capable of holding 10Kg (22lb) each Total 40Kg (88lb).

**At the end of the life of this equipment**

**Dispose of according to local regulations**



## **Warranty**

Thank you for purchasing a Clockaudio product. We are confident that this product will give you many years of trouble free operation and is backed up with a 2 year warranty.

This product is guaranteed for 24 months from the date of purchase. Any defect that arises due to faulty materials or workmanship will either be replaced, or repaired free of charge by the agent from whom you purchased the unit. Please note charges will be incurred on any product returned for service / repair not in warranty or has been subject to customer abuse or incorrect wiring.

The guarantee is subject to the following provisions:

- The warranty does not cover accidental damage, misuse, cabinet parts, knobs, batteries or consumable items. Any product returned to Clockaudio failing to meet the terms listed will incur a repair and postage charge.
- The product must be correctly installed and operated in accordance with the instructions supplied with the product.
- Unauthorised modifications and alterations to the original specifications will render the warranty void
- The product must be used for the sole purpose that it was designed for.
- The warranty given is strictly with the original owner and becomes invalid if the product is resold or becomes damaged by inexperienced repair.
- Product purchased outside of the countries served by Clockaudio designated / approved Agents are not covered by the warranty.
- Specifications / improvements are subject to change without notice.
- Clockaudio disclaims any liability for incidental or consequential damages.
- The warranty is in addition to and does not diminish your statutory legal rights
- As part of a continuous product improvement programme we reserve the right to change specification without prior notice.

Clockaudio Limited Unit C Wellington Gate, Silverthorne Way Waterlooville  
Hampshire PO7 7XY England  
Tel: +44 23 92251193 Fax: +44 23 92251201

Clockaudio North America Inc. 2891 du Meunier Unit 103 Vaudreuil Dorion  
QC Canada J7V 8P2 Tel: + 1 450 4249797 Fax: + 1 450 4243660

Clockaudio Pte. Ltd 627A Aljunied Road BizTech Centre #01-02 Singapore 389842  
Tel: +65 67484738

[www.clockaudio.com](http://www.clockaudio.com)

CLOCKAUDIO IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LABOUR COSTS FOR REMOVING AND REPLACING DEFECTIVE PRODUCTS OR PARTS. THIS DOES NOT AFFECT YOUR STATUTORY RIGHTS.