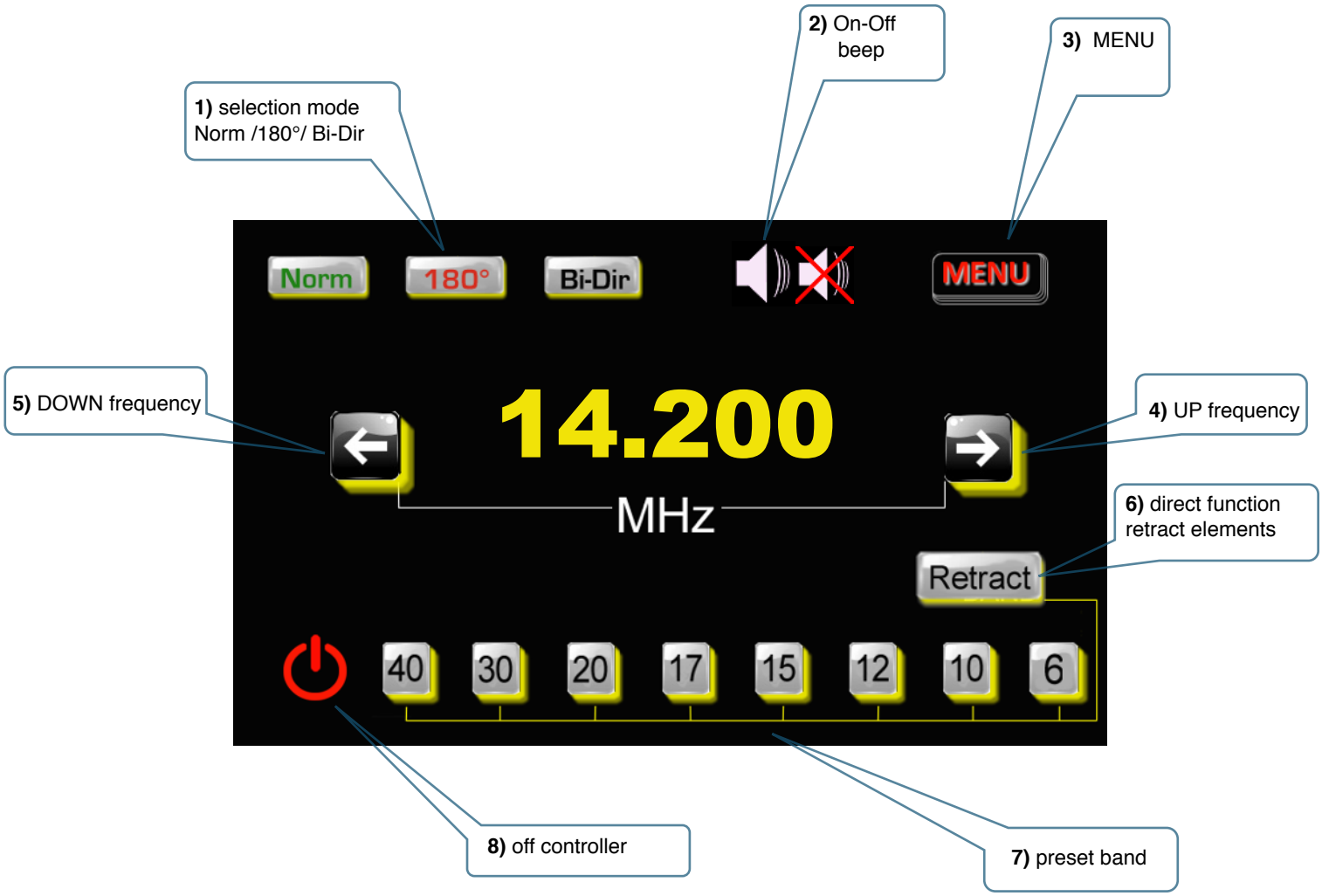
RCU-06

USER MANUAL

PREMISE

The following manual will show the features and how to use the new antenna electronic controller that, as you will see, it is by far the most simple and intuitive controllers ever.
The new RCU-06 UltraBeam collects and inherits the main features of the old controller, but thanks to a new software and hardware improves the capabilities and general features.
UltraBeam recommend before installation and use of the antenna a careful and thorough reading of the manual.
Many functions are of course identical (in principle) to the previous standard controller, so we will avoid to repeat them, you can still consult the manual "Controller Standard"
The new RCU-06 can be used and is 100% compatible with all models of antennas

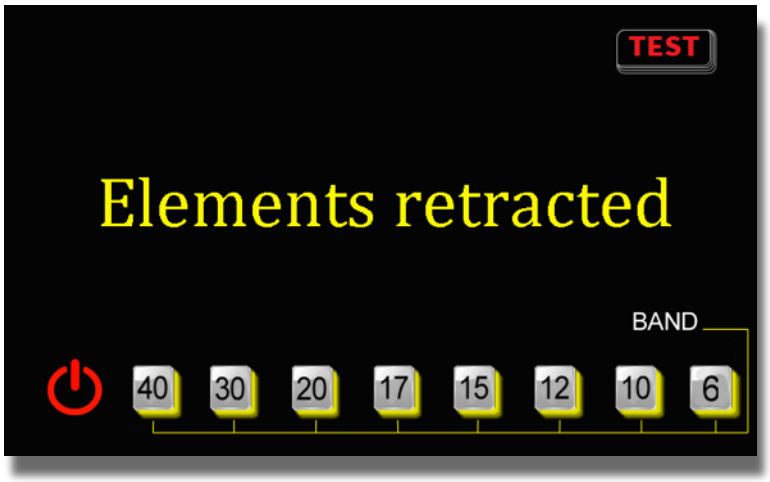
MAIN DISPLAY PAGE TOUCH COMMAND



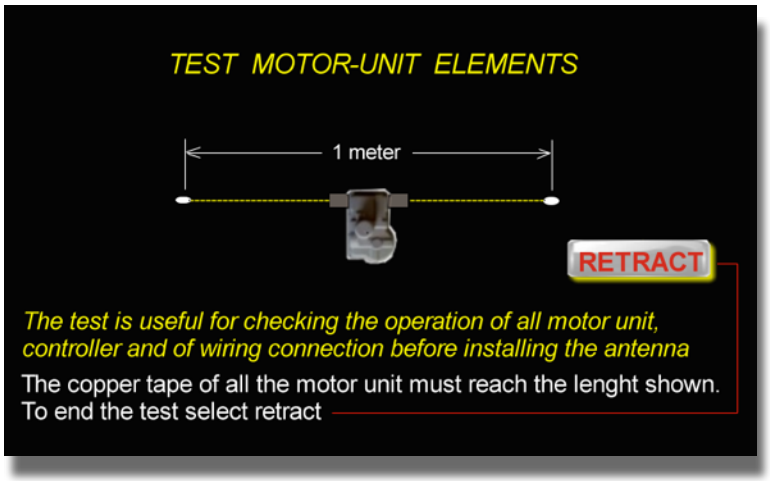
The main display provides all information about the antenna status and contains all the main touch useful commands to the antenna manual management and its functions.
1) Three commands to select the electronic antenna pointing Normal - Reverse - Bi-Directional
2) Command to enable or disable the beep during the movement of the elements
3) Control to access the menu
4-5) Modify the operating frequency up or down in steps of 100-50-25 kHz depending on the band.
6) Allows the direct retract of the elements without accessing the menu.
7) Preset to move directly to the desired band
8) Turn off the controller, to turn it on, touch the screen
Some commands will not be used if the controller is connected to the radio for frequency control.

FIRST START TEST AND PRE-ASSEMBLY

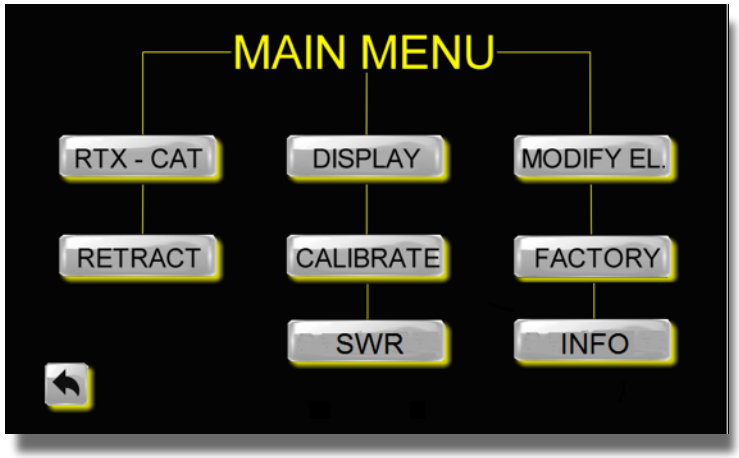
At first power on the controller is present in the "Elements Retracted"
Before starting the antenna assembly UltraBeam always advisable to perform a general test in order to ensure that all received parts have not been damaged during transport, this will avoid unpleasant surprises during installation.
The test will allow you to check in a few minutes the Controller - Wiring - Motor unit



1) Place the motor unit in a line on the floor or on a table
2) Connect the wiring to the motor unit and the controller, the DB25 should be locked in any case with the screws.
3) Power up the controller with the supplied 24V switching power supply
4) Press the TEST command
5) If everything is ok the copper tape will come out of the motor unit with a total length of 1 meter
6) Press the RETRACT command to retract the tape
During the TEST the display will still show the instructions just described
If the test result is positive you can install the antenna
For an installed antenna it is always recommended a final test before it is raised. In this case you need to select any band to verify if the ribbon moves correctly inside all elements.



If instead of pressing the command "Test" it is pressed one of the band preset, the tape will exit a length equal to approximately half the wavelength of the selected band, this does not cause any particular problem and for the purpose of test the result would be the same but the greater length of copper output from the motor unit may be excessive for the space available to the test, and the risk of bending the tape would be greater, for this reason the test function was created.

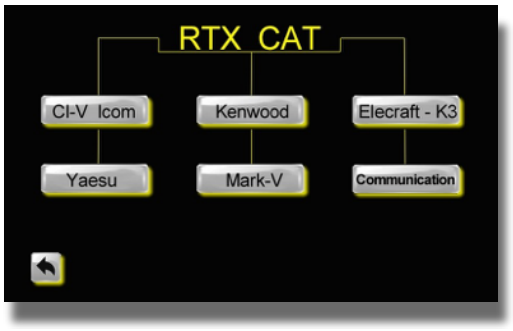


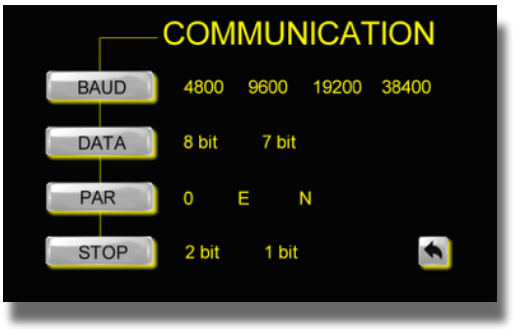
All menu functions are shown in a single page to provide a clear and immediate reading.
The display will automatically show *for the most important functions* a quick start guide that teaches about the specific techniques of the selected function, this will avoid wrong and / or appropriate maneuvers.
The menu pages will automatically close after 60" if no selection or modification has been made and the display will automatically return to the main page.

RTX - CAT

The controller can change the frequency and band in a completely automatic way if connected to the radio (see radios supported - Page 7)
The function allows you to select the radio protocol in use
The current radio protocols are not specific for the model but by brand *.
Each manufacturer has its own specific protocol, then simply select the brand of your radio.
In order for the controller to communicate with the radio you need to use appropriate cables that have a proper pin-out (Pag.9)

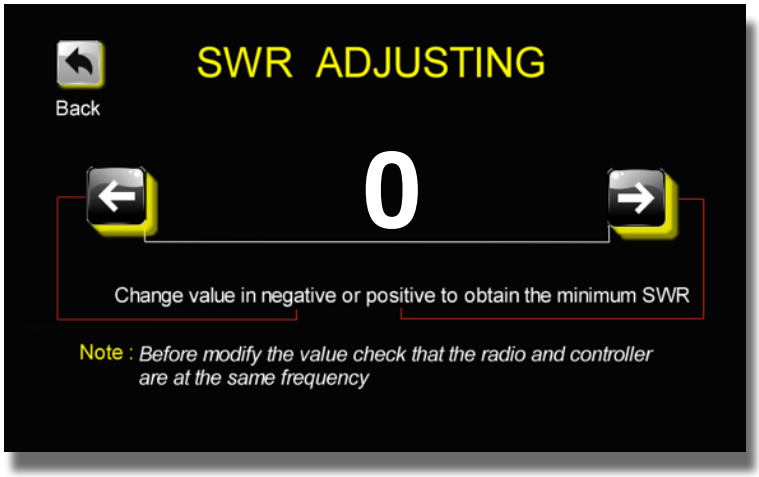
Note: The selection of **protocols** *is required only when you connect the radio to the serial- DATA-IN, if you are using the dedicated Icom CI-V input, it is not necessary to select the protocol, the radio will communicate automatically.*





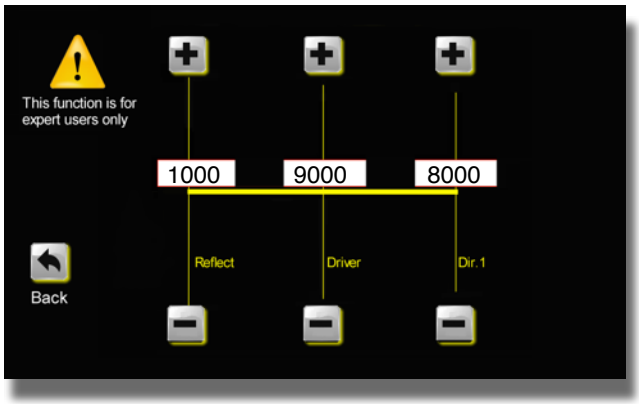
COMMUNICATION

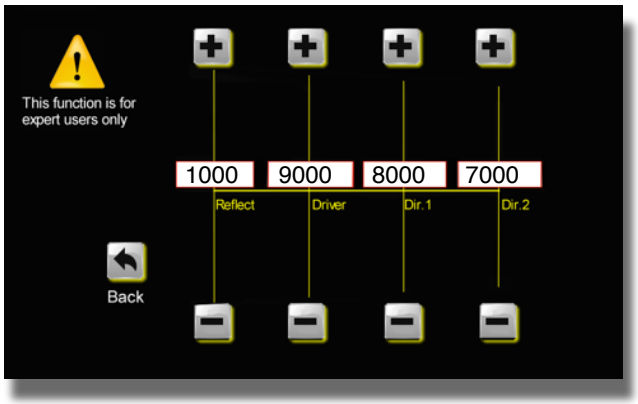
When a protocol is selected all parameters are set correctly in automatic mode, you will only need to check your radio that CAT function is enabled and that the baud rate is identical to that set in the controller as shown in this window, you will not have to change or set any parameters.
If the radio does not communicate with the controller it is possible that there is a problem in the cable or error in the radio menu.
However if for any reasons of your system set-up you require to change the speed or other parameters set by controller, you will be able to do it from the communication function, this feature is only recommended for experts OM.
Note: if you have made changes to the parameters from the Communication menu,
later you should not to re-select it otherwise the controller will automatically reset the protocol parameters to default.
So first select your protocol and then changed values in "communication"



SWR ADJUSTING

This new feature allows you to quickly adjust the minimum SWR where necessary.
Although the default action of the elements already allow the antenna to resonate on all bands, it is possible that because of the inevitable variables that each installation presents (height, length and type of coaxial, dsturbing objects etc.) you might see a discrepancy between the actual resonant frequency and the one indicated by the controller.
So just as you would with a dipole where you will lengthen or shorten the two
end so that it can resonate at the desired frequency, even in this case (if necessary) is possible to correct the length of the elements to move the resonance point, so if for example the antenna resonates higher than the frequency indicated by the controller, this means it is short so you will increase the value, vice versa if lower you will decrease. This must be done on all bands and in three different pointing ways Norm./180° / Bi-Dir
Select a band and put radio and controller at the same frequency (normally center band) for example 20 meters 14.200 Mhz, 7,100 meters on 40 etc. etc.
Select the "SWR ADJUSTING" function
Bring the radio in transmission (RTTY) and check your SWR, if necessary correct the value indicated by the display (-100 / + 100) to obtain the minimum SWR, once reached the minimum value exit from the menu.
Completed this procedure, when you will change frequency within the band in which the calibration is completed the controller will adjust automatically the length of the elements so that the antenna retains its resonance. This usually will results in a value of 1.1 SWR on all bands, only because of insufficient height, disturbing objects or other factors such value could be higher, in which case you can intervene by adjusting elements with the procedure already described in the “standard” manual controller.





MODIFY ELEMENTS

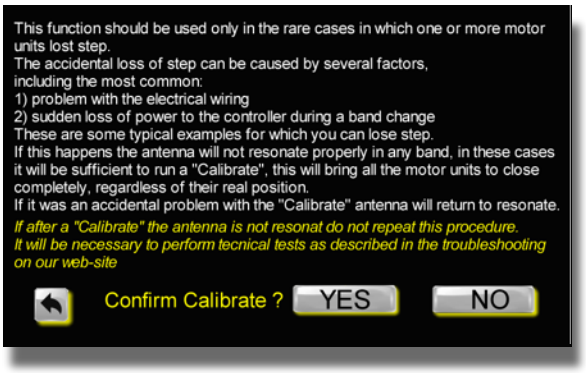
This function shows the total length in mm. of every single element of your antenna
For dual driver antenna models it is possible that the function display only the elements in the band in use, however this does not apply to all models and is at the discretion of UltraBeam.
When a change is made in the MAIN DISPLAY it will show "CUSTOM" only in the band and mode where the change was made, selecting the "Factory Default" menu will restore the factory preset and the CUSTOM wording will disappear.
Warning: adjusting the measures determined by the manufacturer without an adequate competence may compromise "even a lot” the antenna performance, so although it is possible to freely change all lengths, the use of this function is recommended only for experienced users.

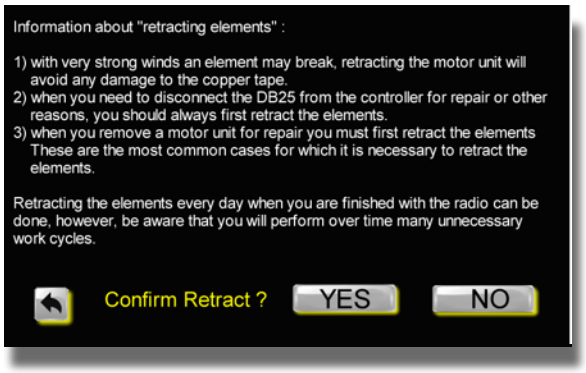
Note: When you have activated the 180 ° pointing the measures of reflector and director are reversed (though not identical) so if the 180 ° pointing is inserted, if you change the reflector actually you change the director and vice versa.

CALIBRATE

This function should be used only in the rare cases in which one or more motor units lost step.
The accidental loss of step can be caused by several factors, including the most common:
1) problem with the electrical wiring (poor electrical contact between the controller and motor)
2) sudden loss of power to the controller during a band change
3) increased friction in the sliding of the copper tape
4) poor contact of the DB25 to the controller or a motor unit connector
5) controller supply problem (low voltage)
These are some typical examples for which you can lose step, the condition in which obviously the antenna will not resonate properly in any band, in these cases it will be sufficient to run a "Calibrate", this will bring all the motor units to close completely, regardless of their real position.
If it was an accidental problem simply select any band and the antenna will return to resonate.
Otherwise if after the calibration the antenna continue to not resonate, it will be mandatory do visual and technical inspections as described in Troubleshooting UltraBeam, in order to establish the causes.

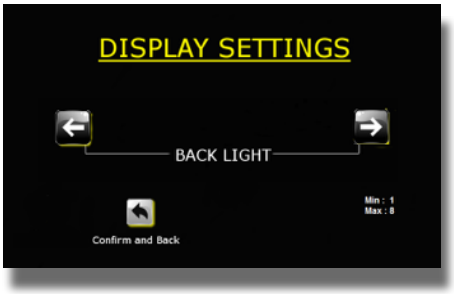
http://www.ultrabeam.it/site/index.php?option=com_phocadownload&view=category&id=5&Itemid=55&lang=en





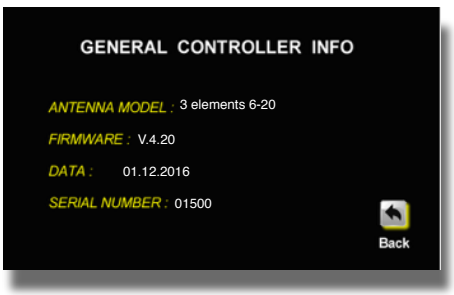
ELEMENTS HOMING (RETRACT)

Such function exists as inherent in the antenna, whose motor drives must necessarily be retracted for shipping and for the installation.
Having said that this function is not considered to be essential whenever you turn off the radio station, the controller can be switched off, leaving the antenna on last used frequency just as you do with the radio.
The next time you turn the antenna it will be ready to be used on the same frequency in which it is left.
However, this function can and should be used in cases where there are extreme weather conditions (strong wind). Retract the elements in these cases can prevent the tape to bent, in rare cases in which an element is broken.
In any case, you are free to retract the elements every time you want.
To retract the elements select MENU> Retract> Yes



DISPLAY SETTING

Adjust the brightness of the display



INFO CNTROLLER

Show all controller information

-Software antenna model
-Firmware
-Dates of manufacture and testing
-Serial number

DATA-IN CAT RADIO

The new RCU-06 add new ports for communication with several radio protocols. This unit allow different setup
 one for the Jack 3.5 mm dedicated to all ICOM radio
the other for the RS232 dedicated to CAT Yaesu, Kenwood, FlexRadio, Elecraft and many others using the same protocols.

AMPLIFIER

SECOND CONTROLLER

3)

2)

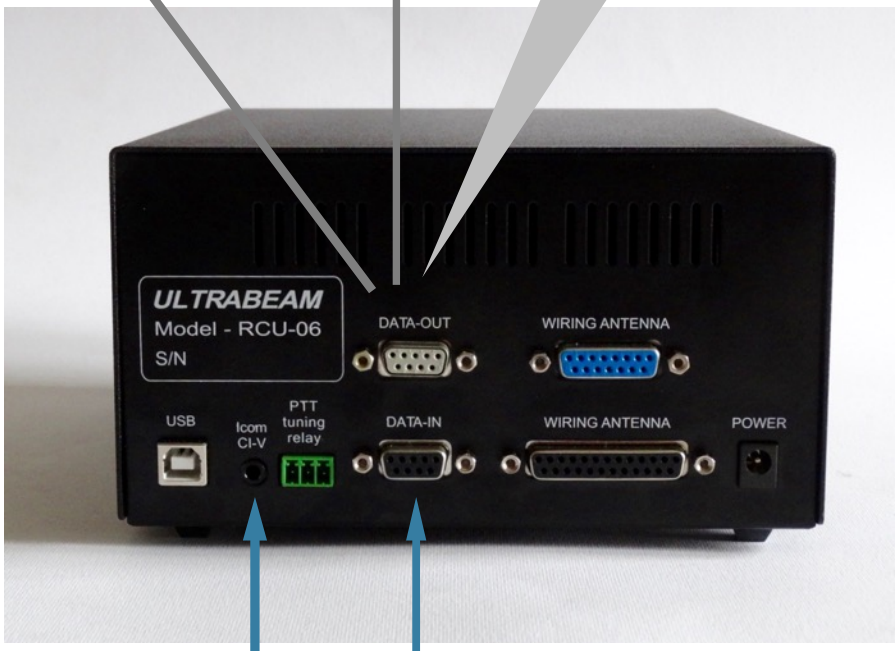
1)

DATA-OUT

A second serial port replicate the radio protocol send to Data-IN and CI-V.
This feature allows the use of a second controller or other devices.

Some example:

1. Manage a second UltraBeam controller, if your setup has two UltraBeam antennas.
2. Manage a Linear Amplifier
3. Add a second controller and from this control a Linear Amplifier



CI-V

CAT

ICOM RADIO

YAESU-KEWOOD-FLEXRADIO-K3

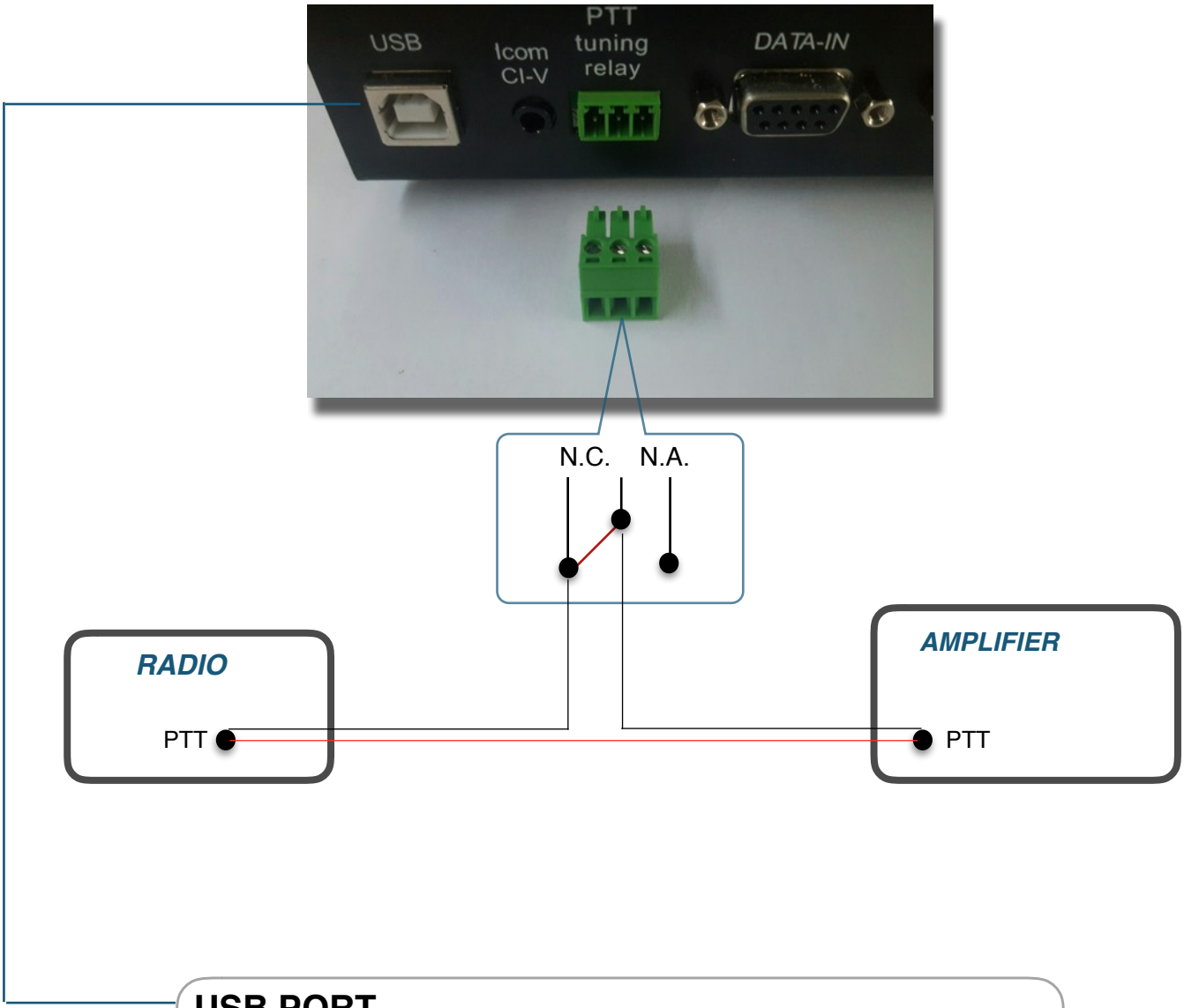
Is possible to use both data in CI-V and DATA-IN but only one will be active at time.
This feature allows to connect two radio without changing cable.
For radio connected by serial on Data - In is necessary select the appropriate protocol “RTX-CAT”
The radio link with Icom CI-V is automatic and there is no need of any setup, be sure to utilize the 9600-baud rate.

Note: Check the right pin-out as page 9

RELE' PTT

The controller offer an acoustic and visual aids during the moving of elements. We, for extra measure, add a switch to raise the protection of an erroneous transmission during tune.
During band change an integrated relè let you inhibit transmission of an external amplifier.
An external connector let wire easily the PTT cable of your Amplifier, the internal relè can manage 1A, more than sufficient for normal operation.

NC with stopped elements
NA with stopped elements



USB PORT

The USB port is ONLY for dedicated connection to PC.
Its use is for firmware update and PC program.

NOT connect any Radio USB.

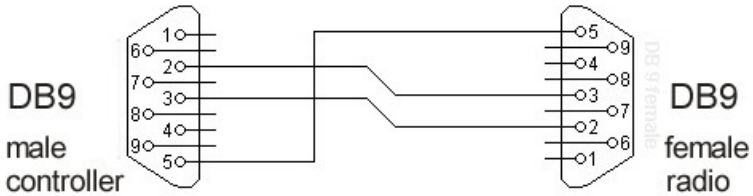
CAT RADIO WORING

ICOM

The common Icom cable jack 3.5 male/male Mono/Stereo can be used.

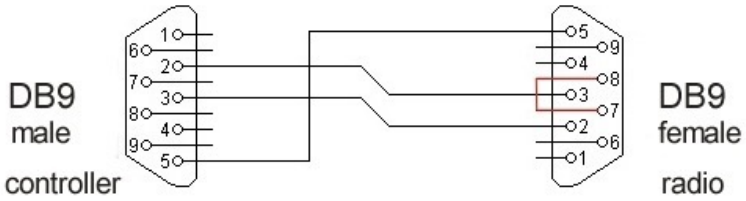
YAESU - K3 - FLEX

The following sketch is for all Yaesu Radio and can be used also for K3 and Flex, etc.
For more info take look on your Radio Manual to be sure of pin-out.



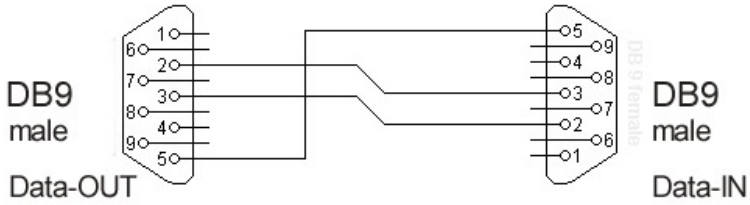
KENWOOD

The Kenwood use a similar pin-out with a jumper between 7 and 8 pin.



DATA-OUT / DATA-IN

This cable is use to connect two UltraBeam controller.
It uses the Yaesu pin-out but with a Male/male connector.
You can connect the first controller “master” to the Data-In of a second one “slave”,
you can connect also old models.



Note:
The routing of Data-Out will be delivered to the second controller independent of the Radio connection on Data-IN or CI-V
You can use this data routing for another appliance like amplifier, etc. please refer to appliance documentation.