HAMPLUS

MBD-12F

Antenna Switch Controller

Operation Manual

V. 2.6

HAMPLUS

http://www.hamplus.com

MBD-12F

Automatic Antenna Switch Controller

MBD-12F is **a standalone,** intelligent controller, **no PC required for configuration**. **It is** compatible with all twelve-antenna switches manufactured by Hamplus. **The MBD-12F managing up to twelve antennas and six radios, one unit for each radio provide all the interlock necessary for a save operation.** It has a band decoder to receive the information coming from the connected radio equipment. In addition to antenna switching, the **MBD-12F** also offers eight frequency-driven **GPOs** (**G**eneral **P**urpose **O**utput), one **Band Data BCD Output**, one output to command **Band Pass Filter**.

The **MBD-12F** interface, using only the panel antenna keys, has a unique ability to select a dedicated receiving antenna or to lock the transmit antenna and use temporally receive on any other antenna you have so you can find the best signal to noise ratio on the station you are working. You can also control dedicated systems from **Top Beam's Waller Flag** receiving antenna.

Antennas with dedicated tuning needs, like 80m Yagi or vertical antennas with tuner can use the **GPI / O** for reading and triggering **external relay** or equipment. The **MBD-12F** also control up to eight **Rotator** using only one indicator on your desk, using the **RS-28** and **RS-48** Rotator switches.

There are four ways that antennas and enabled rotators can be selected;
1) Manually by the front panel of the **MBD-12F**,
2) Manually by frequency or band change on the front panel of the transceiver,
3) Automatically by frequency or band change by the remotely controlled transceiver,
4) Automatically by a remotely controlled personal computer via **Lan** port to the **MBD-12F**.

GPI/O = **G**eneral **P**urpose **I**nput and **O**utput

Functions and operation

1- Connect the MBD-12F to an antenna switch type AS-1202 / AS-1204 / AS-1206 ...

2- Startup

The **MBD-12F** storage the last antenna used for each band on an **EEPROM** memory. It does no lose the information removing power on the unit. The **MBD-12F** records last antenna selected any time you change band or turn off the unit. When you turn on the **MBD-12F**, it read the frequency form the radio and auto selected the last antenna you used on the last band. The **Rotator** and **GPI/O** configuration are saved in the **EEPROM** memory too.

3- Choose the antennas

To select an antenna, press one of the twelve push buttons. When the push button is pressed, it grounds he output pin that activate the corresponding relay on the antenna switch connector. It also activates the selected rotator for the antenna.

The **Busy Net** LED informs the antenna and the corresponding rotator programed for that antenna push button, and send the information to the others **MBD-12F** connected on the **busy-net,** so the antenna selected is in use, and cannot be selected by others unit. It does not allow another **MBD-12F** to select an antenna or rotator already in use. If you try to select an antenna in use the **busy-net LED** will flash for few seconds and the antenna won't be selected when you release the push button. When there is conflict the signaling flashes with cadence of 0.5 seconds as long as you try to select a used antenna or used rotator.

4- SPLIT Mode

This mode allows operation with two antennas. One for transmission and one for reception. **It temporally locks the transmit antenna and you can choose any other antenna to receive.** This function allows you quickly to select the best antenna to receive and keep transiting on the antenna you locked.

Procedure to enter "SPLIT" mode:

- **a-** First, select the transmission antenna #_x. The push button key will light and the busy-net LED will light on the other units indicting that the antenna #_x is in use.
- **b-** Then press the **PTT** of the radio and holding **it** down, and press the push button of the desired antenna for reception until all the push buttons LED stat flashing.
- **c-** When **you release the PTT**, the "Split" LED will light and the unit is now in "**SPLIT"** mode.
- **d-** **Now you can select any other antenna to receive, but only transmit on the locked antenna**. To change the receiving antenna simply press the push button of another antenna.
- **e-** Because you are using two antennas, one for RX and another for TX, two busy-net LED will light on the other units indicating that both antennas cannot be selected

Check the split function by pressing and releasing the **PTT** of the radio and observing the push button of the MBD-12F that must switch between the chosen antennas.

To exit the SPLIT mode:

You have two options

1. **Switch band on the radio.**
2. **Press the antenna button set to transmit, all the push button LED's will flash indicating that you are releasing the Split mode.**

5- EXCLUSIVE Antennas for RECEPTION (Permanent Split Mode)

The **MBD-12F** can configure receive-only antennas. It means you cannot transmit or select that antenna on that unit, if you are using several **MBD-12F** you need to configure the same antenna as receive only on all units. Whenever you select an antenna configured as **EXCLUSIVE** for **RECEIVE**, the **MBD-12F** will automatically activate the **SPLIT** mode and when leaving this antenna, the **MBD-12F** will disable the **SPLIT** mode**.**

Procedure for setting up an antenna for EXCLUSIVE Reception:

Do the same on all other **MBD-12F** connected to your antenna switch.

- **a-** Select the transmit antenna and press the **PTT**, and **hold it**, then press for ten seconds or more the button of the antenna you chose for **EXCLUSIVE** reception until all the buttons **LED'**s will flash for few times.
- **b-** The **Split LED** will light on indicating that you enter in split mode.
- **c-** Keep holding for 10 or more seconds until all the push buttons **LED** flash again.
- **d-** Then the **Split LED** will turn off, indicating that the selected antenna for reception is now **EXCLISIVE** for reception on this **MBD-12F** unit.

Checking the operation

Press on the **MBD-12F** the **EXCLUSIVE** Reception antenna button and see that the **SPLIT LED** indicator will light. Press the **PTT** of the radio and note that the **MBD-12F** switches from the **EXCLUSIVE** Receiving antenna to the antenna you selected before to transmit.

The advantage off **EXCLUSIVE** receive antenna is that you do not need to configure the **Split** mode all the time. Let us say you have a beverage antenna receiving only antenna. The **MBD-12F** will not let you transmit on the **EXCLUSIVE** receive antenna. Select the transmit antenna and after that select the exclusive receiver antenna, the **Split LED** will light on. When you push the **PTT** the transmit antenna will be selected.

Selecting any other antenna, the **Split LED** will turn off. Selecting again the **EXCLUSIVE** receive antenna the **SPLIT LED** will turn on, and two busy-net **LED** will light on the others **MBD-12F**.

With the **EXCLUSIVE** receive mode, the configuring will not change when you change band or select another antenna. It is permanent until you re-configure the receiving only antenna.

To remove an antenna from EXCLUSIVE Reception mode

- **a-** First, select on the **MBD-12F** any antenna not in receiving mode, the **SPLIT LED** should be not be light.
- **b-** Press the **PTT**, and hold it, then press for ten seconds or more the button of the antenna you want to exit the **EXCLUSIVE** reception mode. All the buttons **LED**'s will flash for few times.
- **c-** The **Split LED** will light, indicating that you enter the split mode.
- **d-** Keep holding for 10 or more seconds until all the push buttons **LED** flash again.
- **e-** Then the **Split LED** will turn off, indicating that exit the **EXCLISIVE** mode.
- **f-** Push the **PTT** now and check that now you transmit and receive on the same antenna. The busy-net **LED** will indicate that only one antenna is in use on this unit.

OBS: if you are configuring antenna push button #1, you may hold it long enough to enter the **MBD-12F** in configuration mode. The **LED**'s # 1 to # 8 will flash in sequence indicating the unit is waiting to select the mode.

Press the # 12 button to exit the configuration mode.

6- GPOs2 Activation

The GPOs2 are eight pins available on the **DB-9** connector labeled **GPO2** located on the back of the **MBD-12F**. These **GPOs2** are used to tune shortened antennas with **high Q coils**.

GPOs2 can be triggered in two ways. By frequency and or by band. Each **GPO2** is individually configured and is associated with one of the 12 antenna positions. This means that the eight **GPOs2** can be configured to a single antenna position or one can be configured for each of the twelve antenna positions.

To configure the GPOs2 see item 12 B

7- Antenna groups

On **MBD-12F** you can create groups of antennas. When a radio accesses one of the antennas in this group, all the antennas in this group inform **Busy Net** that they are busy. This means that no other radio has access to an antenna belonging to this group. Only the radio that is connected to one of the antennas in this group is allowed to use the other antennas in this group.

Example for a contest.

Create a group with the antennas for the 10m band. Only the radio operating in the 10m band will have access to the 10m band antennas. The other radios will not have access to any of the grouped antennas.

You can create several groups of antennas.

To configure a group of antennas, see item 12C

8- Switching Rotors

The **MBD-12F** also commands the **RS-24, RS-44, RS-28** and **RS-48** rotor switches. In this way a single rotor control can control up to 8 rotors.

To configure the rotor switch, see item 12A

9- Communication with Icom, Yaesu, Kenwood, Elecraft K-3 and Flex Radio

a. **ICOM - CI-V protocol** (CI-V port) for reading the frequency for the activation of the selected Antennas, Rotors and GPIs.
b. **YAESU- BCD protocol** for reading the band for the activation of the selected antennas and GPIs.
c. **Kenwood- RS-232 protocol** for frequency reading for the activation of Antennas and GPIs. K3 and Kenwood use the same RS-232 protocol.
d. **Elecraft K3- protocol BCD** and **RS-232**.
e. **Flex Radio, K3 and Kenwood use the same RS-232 protocol.**

10- Band Data Table

Band	Frequency	BCD
2200 m	0.0 to 399 KHz	1100
630 m	400 to 539 KHz	1101
160 m	.540 to 2.9 MHz	0001
80 m	3.0 to 4.8 MHz	0010
60 m	4.9 to 5.9 MHz	0000
40 m	6.0 to 8.9 MHz	0011
30 m	9.0 to 12.9MHz	0100
20 m	13.0 to 16.9MHz	0101
17 m	17.0 to 18.9MHz	0110
15 m	19.0 to 22.9MHz	0111
12 m	23.0 to 25.9MHz	1000
10 m	26.0 to 34.9MHz	1001
6 m	35.0 to 54.9MHz	1010
-------	above 55 MHz	1011

Frequency Band for communication via RS-232 and CI-V

Band 1 from 0 to 399KHz, **Band 2** from 400KHz to 539KHz, **Band 3** from 540KHz to 1.599MHz, **Band 4** from 1.6 to 1.799 MHz, **Band 5** 1.800 to 1.999, **Band 6** from 2.0 to 3.499MHz, **Band 7** from 3.5 to 3.999 MHZ, **Band 8** from 4.0 to 5.399 MHz, **Band 9** from 5.499 to 6.999 MHz, **Band 10** from 7.0 to 7.299 MHz, **Band 11** from 7.3 to 7.999 MHz, **Band 12** from 8.0 to 10.999 MHz, **Band 13** from 11.0 to 14.999 MHz, **Band 14** from 15.0MHz to 19.999 MHz, **Band 15** from 20.0 to 21.999 MHz, **Band 16** from 22.0 to 24.999 MHz, **Band 17** from 25.0 to 27.999MHz, **Band 18** from 28.0 to 29.999 MHz, **Band 19** from 30.0 to 59.999 MHz, **Band 20** From 60.0 to 143.499MHz, **Band 21** from 143.5 to 144.399MHz, **Band 23** 144.400 to 147.999MHz, **Band 23** 148.0 to 224.999MHz, **Band 24** 225.0 to 429.999MHz **Band 25** 430.0 to 449.999MHz, **Band 26** 450.0 to 999.999MHz, **Band 27** 1.0 GHz to 1.999GHz, **Band 28** 2.0 to 2.999GHz, **Band 29** 3.0 to 3.999GHz, **Band 30** 4.0 to 5.999GHz, **Band 31** 6.0 to 10.999GHz.

Antenna Memory per Band, Fixed or Mobile

All **MBD-12F** are shipped in **Mobile Memory** mode. In the **Mobile Memory** operation whenever a band is selected in the radio the antenna to be connected will be the last used in that band.

In the operation by **Fixed Memory** whenever a band is selected the antenna to be connected will be the same and not the last that was used in that band. Ex: 160m band> ant1, 80m band> ant2, 40m band> ant. 3 and so on. To choose the antenna that each band goes you must first be in the **Mobile Memory mode**. Then go through the radio and choose the desired antenna for each band. Then enter setup mode and follow the procedure to memorize your choice.

11- Firmware update via USB

To update the firmware, place the flash drive with the new Firmware in the USB port of the MBD-12F and reset the CPU by pressing the internal key or press and hold push buttons 10, then 11 and finally 12. This procedure starts the firmware update.

12- Configuration Mode

The setting mode is only possible when the Radio is properly connected to the **MBD-12F**.

To enter set up mode press and hold it the push button of the antenna that will receive the configuration plus the push button 1 until the confirmation signal appears. (+ or - ten seconds).

In this mode the push buttons available for setup blink.

To exit setup mode, press the push button 12 for 1 second.

A- Configure Rotors

Enter configuration mode by pressing the push button of the antenna you want to configure to the Rotor plus push button 1. After confirmation press the push button 1 to enter the Rotor configuration mode. After the confirmation signal the push buttons 1 to 8 will flash indicating the rotors 1 to 8. Press the push button corresponding to the desired rotor. The push button and red indicator light of the chosen rotor will be illuminated. The choice can be redone as many times as you want.

To undo your choice, press the illuminated push button**.**

To exit set up mode press the push button 12 for 1 second.

B- Configuring the GPO2

Enter setup mode by pressing the push button on the antenna you want to enable **GPO2** plus push button 1.

After confirmation press push button 2 to enter **GPO2 configuration mode**.

Press the push button1 for the frequency setting mode, the push button 2 for the Band configuration mode, or the push button 3 for frequency setting with command activation on the average frequency between the marked point and the previous point.

To trigger the GPOs2 by frequency:

The trigger points of the **GPOs2** are chosen by varying the frequency in the radius in order to obtain the desired frequency for the drive. Start with the lowest frequency and the **first GPO2** by pressing the push button 1. Raise the frequency to the next frequency and mark the **second GPO2** pressing the push button 2 and so on for the **next GPOs2**.

To trigger the GPOs2 on the average frequency between two points:

Choose the frequency of the starting point and press the push button corresponding to the chosen **GPO2**. This push button will blink. Advance the frequency on the radio dial to the desired point and press the blinking push button again. It will stop blinking and the midpoint will be marked.

To exit setup mode, press the push button 12 for 1 second.

To trigger the GPOs2 by Band:

GPO2 can be triggered by Band, it can be done by reading the **BCD** or frequency according to item 11. Put the radio in the desired band and press the push button corresponding to the **GPO2** that you want to trigger. Any available **GPO2** can be used in any band.

To exit setup mode, press the push button 12 for 1 second

Conector DB-9 GPO2

Pins	Function
1	Cmd1
2	Cmd2
3	Cmd3
4	Cmd4
5	Cmd5
6	Cmd6
7	Cmd7
8	Cmd8
9	+12v

All Cmds are Active Low

C- To configure an antenna group

1- First- choose the **Master Antenna**, the one that will be the reference for all antennas in this group.
2- Second- enter the **Configuration mode.**
   a- To enter the configuration mode, press the chosen antenna button to be the **Master Antenna** plus the **Ant1** button and keep them pressed for approximately two seconds. You are now in **Configuration mode** and from the **Ant1** button to the **Ant8** button, which are flashing, press the **Ant6** button. You are now in the antenna group configuration mode. From this moment on, only the **Master Antenna** button will be flashing.
   b- Now you will press, one at a time, the buttons of the antennas you want to place in this group. All the antenna buttons you placed in the group will be illuminated. Only the **Master Antenna** button will be flashing.
   c- To **save and exit** the configuration mode, press the button of the **Master Antenna**, the one that is flashing.

IMPORTANT

You **must memorize** which is the **Master Antenna** of the Group, because when you want to change or undo this group, you will have to enter the configuration mode through the **Master Antenna**.

SUJESTION

If you are going to create a group with antennas 4, 5 and 6, choose as the Master Antenna, antenna 4. If you always use the first antenna of the group to be the Master Antenna, it will be easier to remember in the future.

D- Undo or change an Antenna Group

a- Enter the configuration mode, press **Master Antenna** button plus the **Ant1** button and keep them pressed for approximately two seconds. You are now in **Configuration mode** and from the **Ant1** button to the **Ant8** button, which are flashing, press the **Ant6** button. You are now in the antenna group **configuration mode**. From this moment on, the **Master Antenna** button will be flashing and all other antennas in this group will be illuminated.

b- You can now add or remove antennas in this group. To remove press the buttons that are illuminated, to add press the buttons that are not illuminated. If you turn off all the illuminated buttons the group will be undone and only the **Master Antenna** button will be flashing.

c- To **save and exit**, press the button of the **Master Antenna**, the one that is flashing.

E- Set the Communication Speed (9600 - 19200 - 38400 - 57600 - 115200)

To configure the communication speed, enter setup mode. Then press the push button 4 to enter speed setting mode. After confirmation press the **push button 1 to 9600**, **2 for 19200, 3 for 38400, 4 for 57600, 5 for 115200**.

To exit setup mode, press the push button 12 for 1 second.

F- Set up operation for Fixed Antenna or Last Antenna Memory Mode

Enter configuration mode. Then press push button 5 to enter Memory setup mode. After confirmation press push button 1 for Last antenna Memory Mode or press push button 2 for Fixed Antenna Memory Mode.

To exit setup mode, press key 12 for 1 second.

In Last Antenna Memory mode each radio band is linked to the last antenna used in this band. In Fixed Antenna Memory mode, each radio band is linked to a previously chosen antenna.

To choose the antenna that each band will operate in the **Fixed Antenna Memory Mode**, you must first be in the **Last Antenna Memory Mode**. Then go through all the radio bands and choose the desired antenna for each one.

Then enter setup mode and follow the procedure to memorize your choice

G- Select and Store the Antennas for Operation in the Fixed Antenna Memory mode.

In the **Last Antenna Memory mode** select the desired antenna for each band, proceeding from the following way:

Set the radio to 160m and choose the 160m antenna on the **MBD-12F**. Then set the radio to 80m and choose the antenna for 80m on the **MBD-12F**. Do this for all bands. After choosing the antennas enter the setup mode by pressing the **push button 1**. After confirmation press the **push button 5** to enter the Memory configuration mode. After confirmation press the **push button 5** and the Fixed Antenna Memory mode will have all the antennas configured.

To exit setup mode, press the push button 12 for 1 second.

H- Procedure to enter SPLIT mode:

a- First select the transmission antenna.

b- Then press the **PTT** of the radio and holding down, so press the push button of the desired antenna for reception.

When the **PTT** is released, **SPLIT** mode is active and will be indicated by the illuminated **Split Led**.

Perform the function test by pressing and releasing the **PTT** of the radio and observing the push button of the **MBD-12F** that must switch between the chosen antennas.

To change the receiving antenna simply press the push button of another antenna.

To exit SPLIT mode switch band on the radio or press the antenna button set to transmit

I- Band Data out

The **DB-9 BCD Out** connector on the rear of the **MBD-12F** provides a **Band Data output** corresponding to the radio frequency that is connected.

When the **MBD-12F** receives the radio band information from the **Radio Band Data**, this same information will be passed to the **BCD Out** connector. When receiving the information through Frequency the conversion to **Band Data** will be done according to the table in item 1

DB-9 BCD Out connector

Pin	Function
1	Data A
2	Data B
3	Data C
4	Data D
5	NC
6	NC
7	NC
8	GND
9	NC

J- **DB-9 To Bandpasser connector**

Pins	Band	Frequency	Function
1	20 m	13.0 to 16.9 MHz	--------
2	40 m	6.0 to 8.9 MHz	--------
3	80 m	3.0 to 4.8 MHz	--------
4	160 m	0.0 to 2.9 MHz	--------
5	---------	----------	GND
6	---------	----------	--------
7	---------	----------	Bypass
8	10 m	26.0 to 34.9 MHz	---------
9	15 m	19.0 to 22.9 MHz	---------

All control pins are **Active Hight + 12V**

K- **TOPBEAM Waller Flag connector**

The **HD-15** connector labeled **TOPBEAM Waller Flag** on the rear of the **MBD-12F** provides power (+12V) and controls for triggering the filters of the **Waller Flag** receiving antenna control box. The commands follow the **Band data** table or the **Radio frequency**.

Connector DB-9 TOPBEAM Waller Flag

Pins	Band	Frequency	Data	Function	
1	160 m	0.0 to 2.99 MHz		0001	On Active Low
2	80 m CW	3.4 to 3.59 MHz		0010	On Active Low
3	80 m SSB	3.6 to 4.99 MHZ		0010	On Active Low
4	40 m	6.0 to 8.99 MHz		0011	On Active Low
5	30 m	9.0 to 12.9 MHz		0100	On Active Low
6 e 7	--------	----------	------	+12v	
8	--------	----------	------	PTT	
9 e 10	--------	----------	------	GND	
11	--------	----------	------	RTX On A. Low	
12	--------	----------	------	RX1 On A. Low	
13	--------	----------	------	RX2 On A. Low	
14	--------	----------	------	RX3 On A. Low	
15	--------	----------	------	RX4 On A. Low	

L- DB-9 To Radio connector

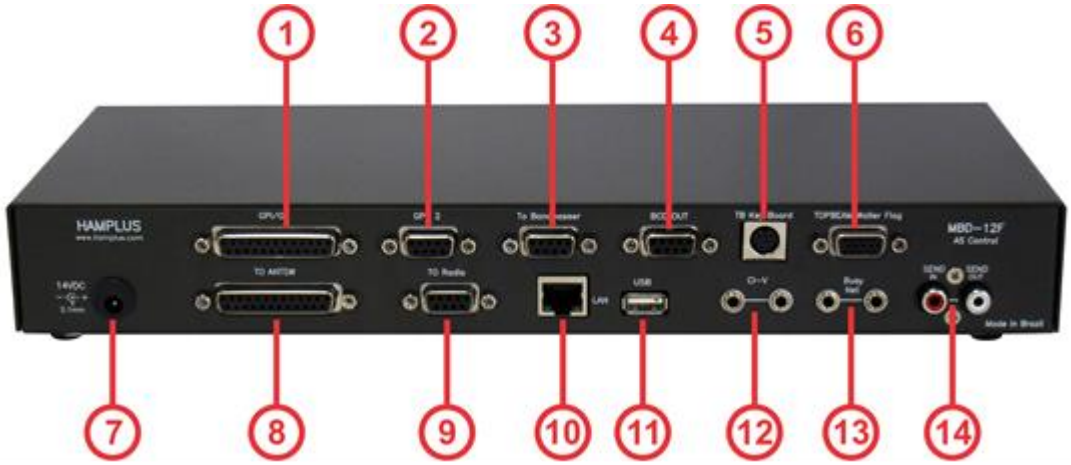
This connector receives from the Radio the power supply (+ 12v), the transmission command (Send) and the data for frequency reading via RS-232 or Band reading via Band Data BCD

Pins	Function
1	+12V from Radio
2	RX (RS-232)
3	TX (RS-232)
4	PTT (Send) from Radio
5	GND
6	BCD A from Radio
7	BCD B from Radio
8	BCD C from Radio
9	BCD D from Radio

M- DB-25 To ANTSW connector

This connector connects the **MBD-12F** to the Antenna Switch and the Rotor Switch. It also offers I2C Commands for the Expansion Interfaces.

Pins	Function	Pins	Function
1	Ant 1	2	Ant 2
3	Ant 3	4	Ant 4
5	Ant 5	6	Ant 6
7	Ant 7	8	Ant 8
9	+12 out	10	GND
11	**SDA**	12	**SCL**
13	NC	14	Ant 9
15	Ant 10	16	Ant 11
17	Ant 12	18	Rotor 1
19	Rotor 2	20	Rotor 3
21	Rotor 4	22	Rotor 5
23	Rotor 6	24	Rotor 7
25	Rotor 8		



1- GPI/O (DB-25F connector with 16 GPI /O for control of external equipment)
2- GPO2 (DB-9F connector with eight Frequency drive GPOs)
3- To Bandpasser (DB-9F connector to control Band Pass Filter. Active + 12v 120mA)
4- BCD OUT (DB-9F connector for BCD output)
5- TB Key Board (8-pin Mini Din connector for Top Beam WF antenna control keypad)
6- TOPBEAM Waller Flag (HD-15F connector for activating Top Beam WF antennas)
7- AUX. POWER SUPPLY
8- To Switch (DB-25F connector for Switch Antenna and Rotor Switch)
9- To Radio (DB-9F connector for connection to the radio)
10- LAN (for remote operation)
11- USB (for software update)
12- CI-V (for communication with Icom radios)
13- Buzy Net (P2 connector for communication between MBD-12F controllers)
14- Send In/Out (RCA connector type for SEND connection. It has internal relay)

Settings List of MBD-12F

MBD-12F Settings

All settings can be made directly from the keyboard in just two steps. First step to enter the setup mode. The second step is to choose the function you want to set.

1- First step

How to enter setup mode

Press the antenna **push button** that will receive the settings and the **push button 1** until the confirmation signal appear, about ten seconds. After confirming, the push buttons available for configuration will flash. The **push button 12** flashes different cadence from the others and when pressed for more than one second the system exits the setting mode.

2- Second step

In setup mode choose the function to configure and press the corresponding button

1- Push Button 1 to set Rotators

- **a-** Push Button 1 -> Rotator 1
- **b-** Push Button 2 -> Rotator 2
- **c-** Push Button 3 -> Rotator 3
- **d-** Push Button 4 -> Rotator 4
- **e-** Push Button 5 -> Rotator 5
- **f-** Push Button 6 -> Rotator 6
- **g-** Push Button 7 -> Rotator 7
- **h-** Push Button 8 -> Rotator 8

To exit press the push button 12 for 1 second

2- Push Button 2 to set GPO2

- **a-** Push Button 1 By frequency, with the activation point at the frequency indicated on the Radio
- **b-** Push Button 2 By Band
- **c-** Push Button 3 By frequency with the activation at the midpoint between the chosen point and the previous point

To exit press the push button 12 for 1 second

3- Push Button 4 to set the communication speed

- **a-** Push Button 1 -> 9600
- **b-** Push Button 2 -> 19200
- **c-** Push Button 3 -> 34800
- **d-** Push Button 4 -> 57600
- **e-** Push Button 5 -> 115200

To exit press the push button 12 for 1 second

4- Push Button 5 to configure antenna memory mode

- **a-** Push Button 1 -> Last Antenna Memory Mode
- **b-** Push Button 2 -> Fixed antenna Memory Mode
- **c-** Push Button 5 -> To record the antennas chosen for the Fixed Antenna Memory mode
  To exit press the push button 12 for 1 second

5- Push Button 6 to configure Antenna Group

A- Configure Antenna Group

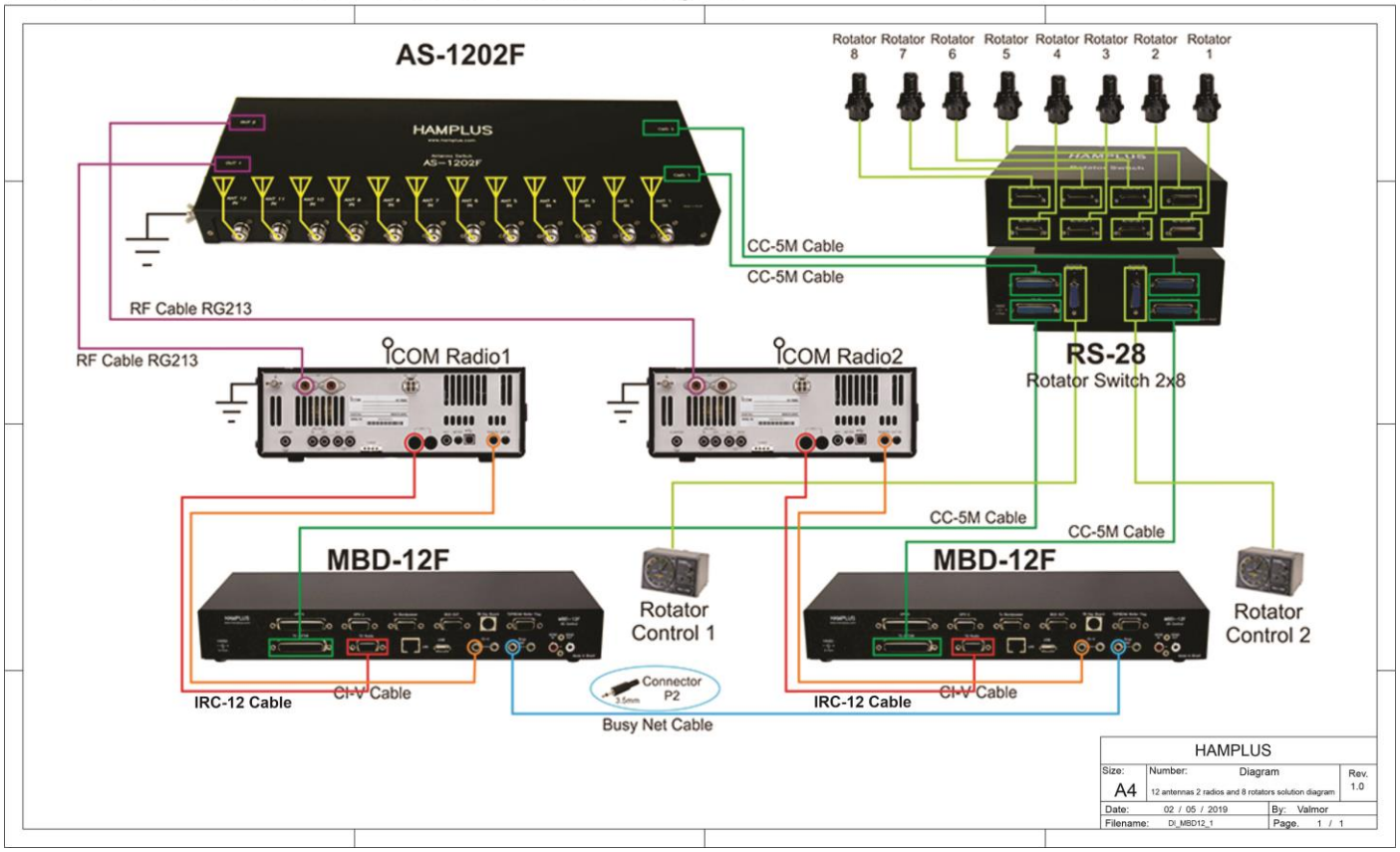
1- First- choose the **Master Antenna**, the one that will be the reference for all antennas in this group.
2- Second- enter the **Configuration mode.**
   a- To enter the configuration mode, press the chosen antenna button to be the **Master Antenna** plus the **Ant1** button and keep them pressed for approximately two seconds. You are now in **Configuration mode** and from the **Ant1** button to the **Ant8** button, which are flashing, press the **Ant6** button. You are now in the antenna group configuration mode. From this moment on, only the **Master Antenna** button will be flashing.
   b- Now you will press, one at a time, the buttons of the antennas you want to place in this group. All the antenna buttons you placed in the group will be illuminated. Only the **Master Antenna** button will be flashing.
   c- To **save and exit** the configuration mode, press the button of the **Master Antenna**, the one that is flashing.

B- Undo or Change an Antenna Group

a- Enter the configuration mode, press **Master Antenna** button plus the **Ant1** button and keep them pressed for approximately two seconds. You are now in **Configuration mode** and from the **Ant1** button to the **Ant8** button, which are flashing, press the **Ant6** button. You are now in the antenna group **configuration mode**. From this moment on, the **Master Antenna** button will be flashing and all other antennas in this group will be illuminated.
b- You can now add or remove antennas in this group. To remove press the buttons that are illuminated, to add press the buttons that are not illuminated. If you turn off all the illuminated buttons the group will be undone and only the **Master Antenna** button will be flashing.
c- To **save and exit**, press the button of the **Master Antenna**, the one that is flashing.

----------X----------

12 antennas 2 radios and 8 rotators solution diagram



Connection diagram of the Hamplus MDB-12F with Bandpass Filter - Model - DXE 419.

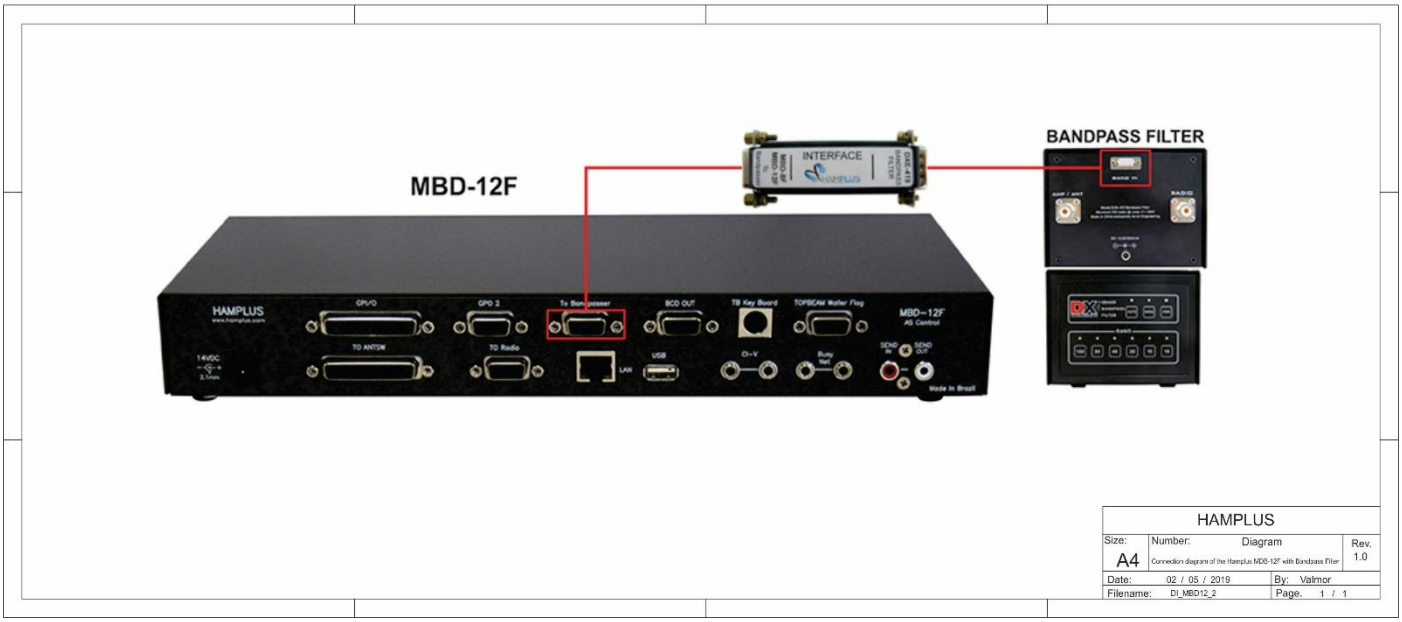
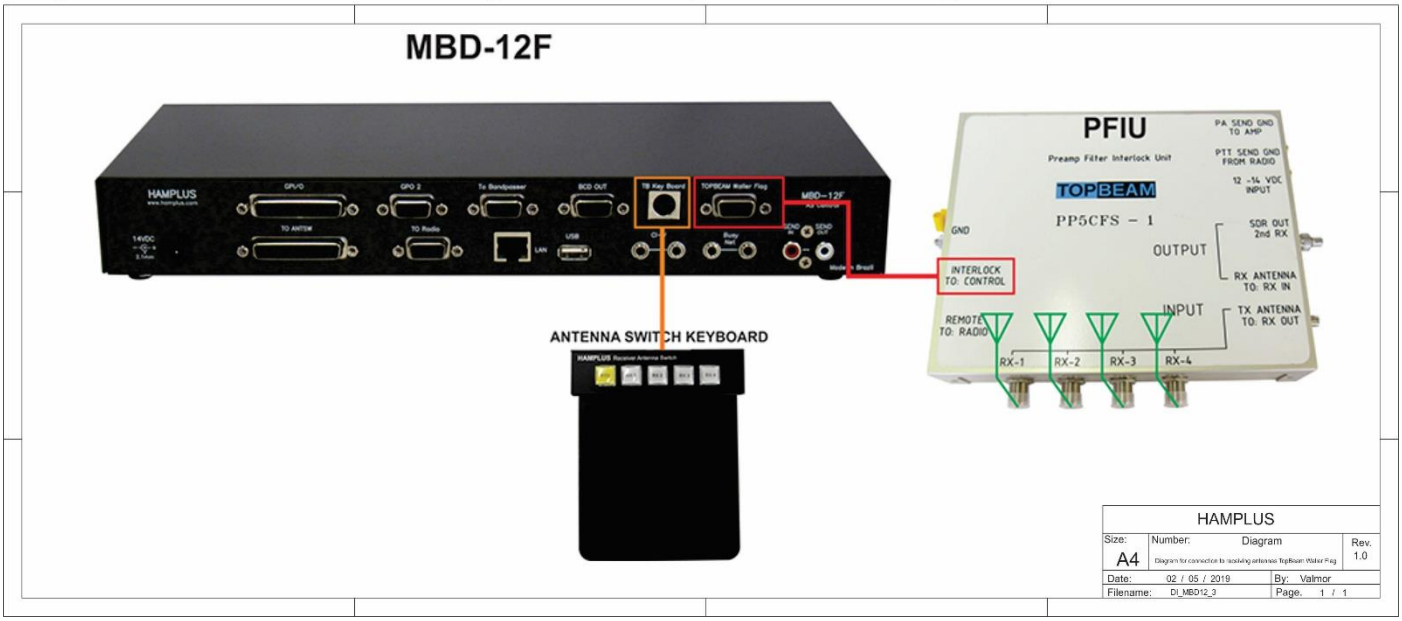
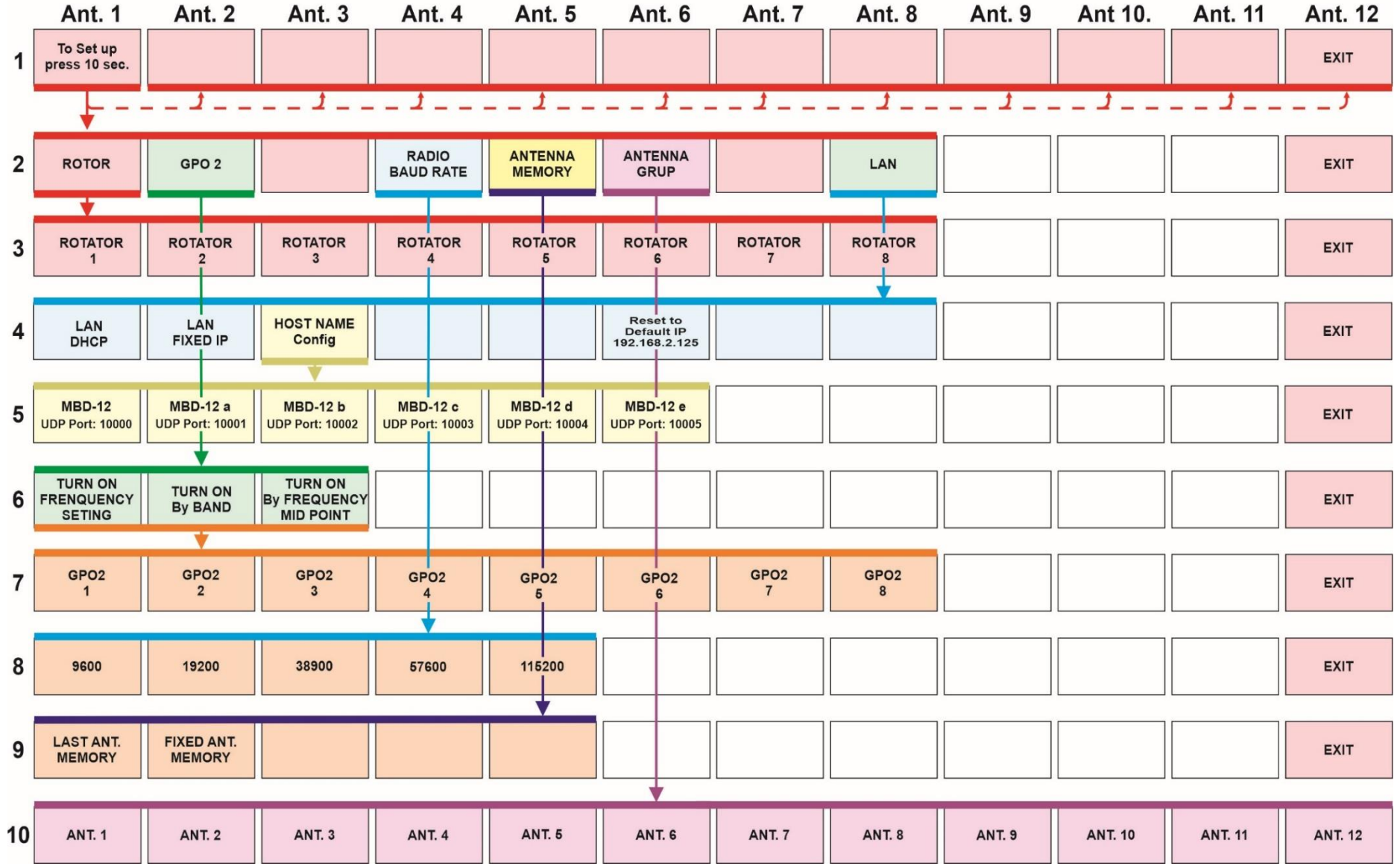


Diagram for connection to receiving antennas TopBeam Waller Flag



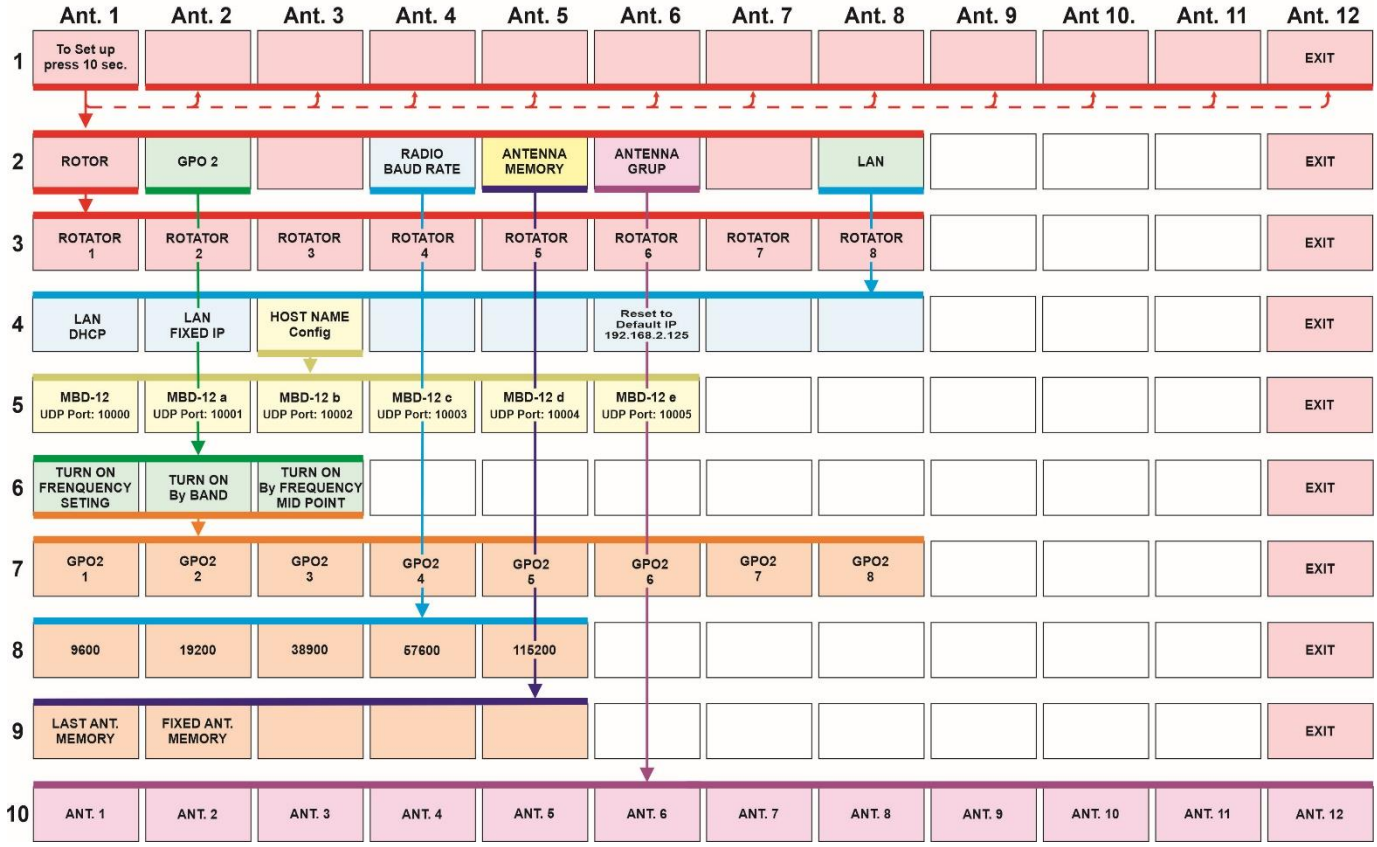
MBD-12F

Quick Reference Map to Configure



MBD-12F

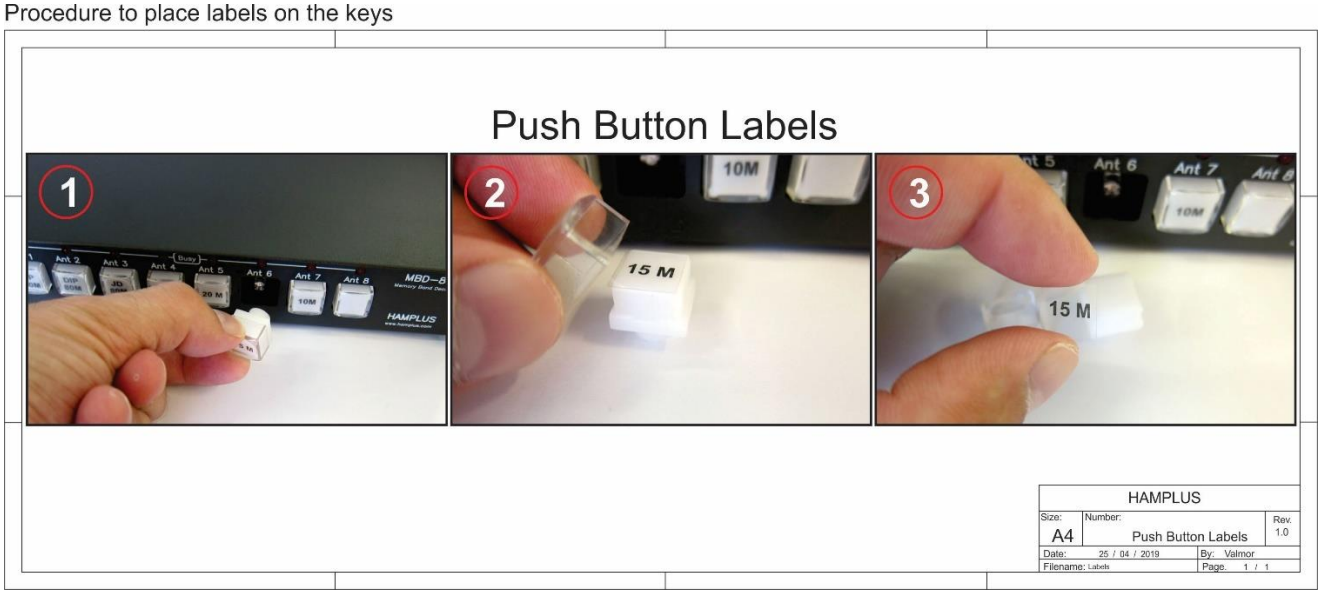
Quick Reference Map to Configure



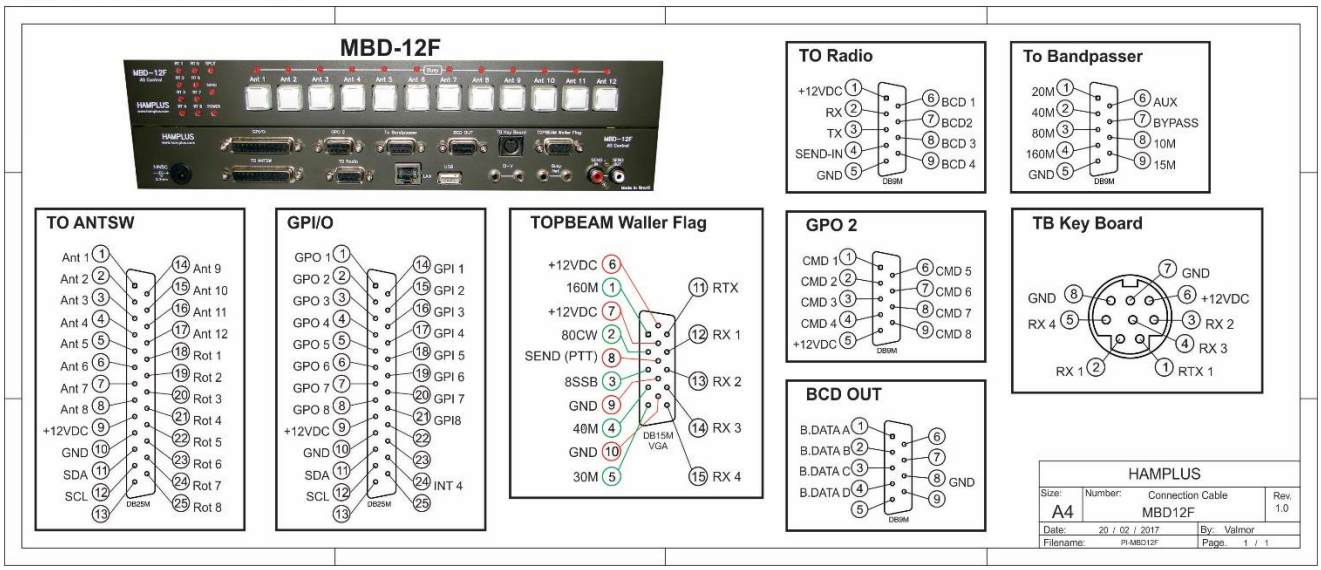
Labels - print on transparent paper with laser printer

160 m	80 m	40 m	20 m	18 m	17 m	15 m	12 m	10 m	6 m	2 m	70 cm	80 m 40 m	20 m 15 m 10 m
IC 756	IC 7300	IC 7600	IC 7610	IC 7700	IC 897D	IC 1000	MULTI BAND	LOG	WARC				

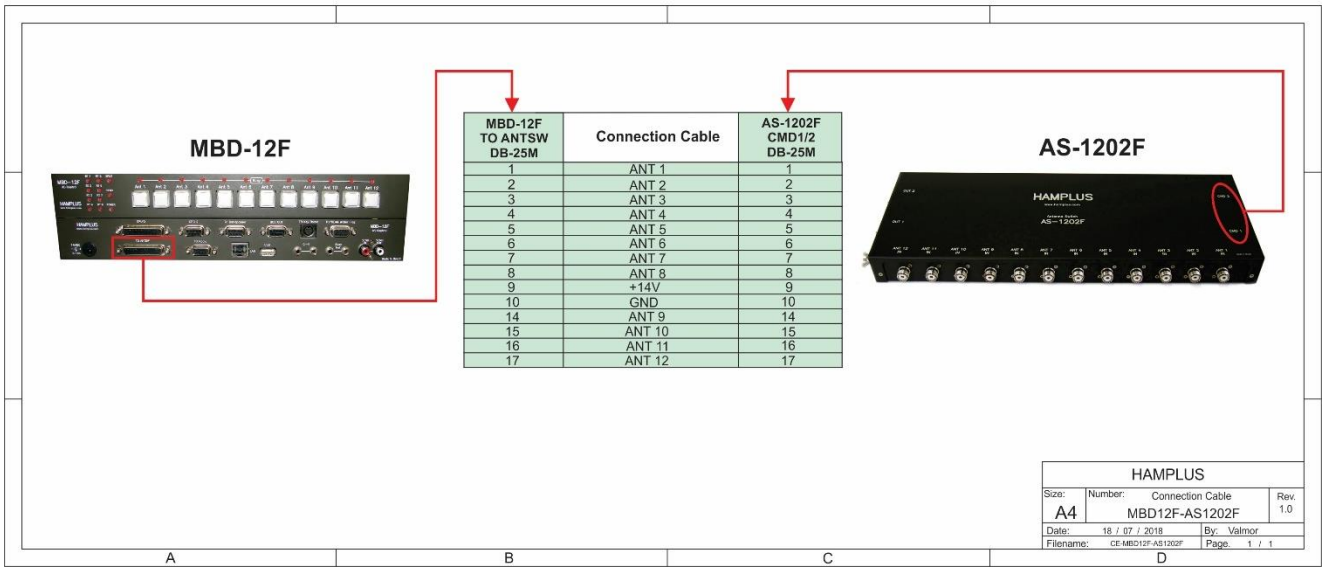
Procedure to place labels on the keys



MBD-12F IDENTIFICATION PIN

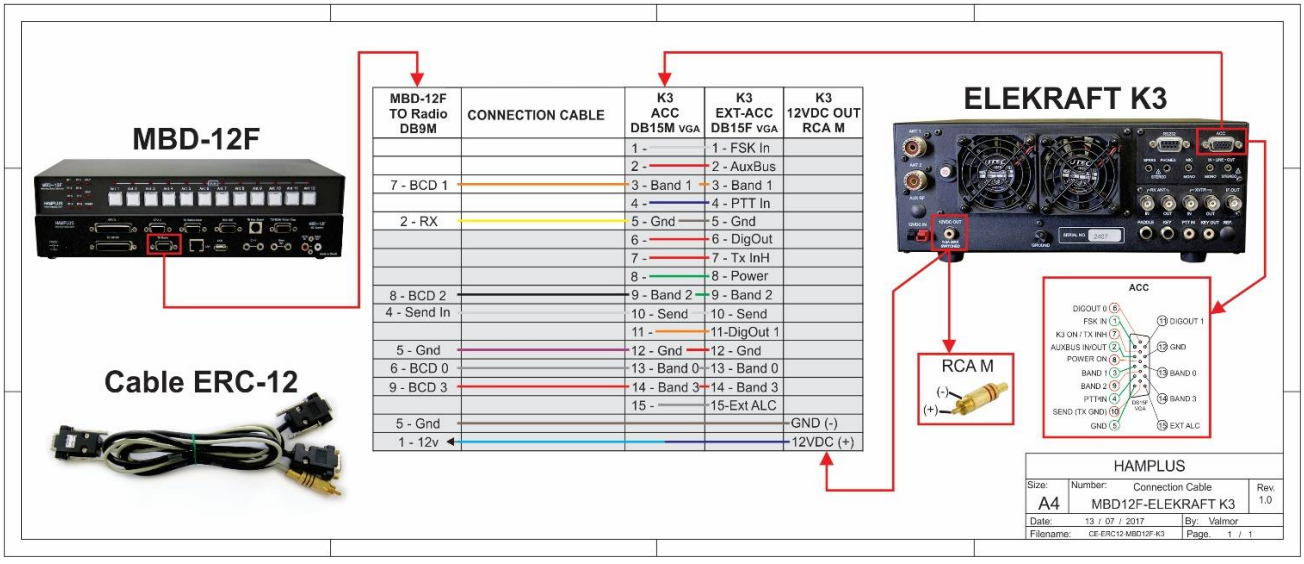


MBD-12F / AS-1202F Connection Cable



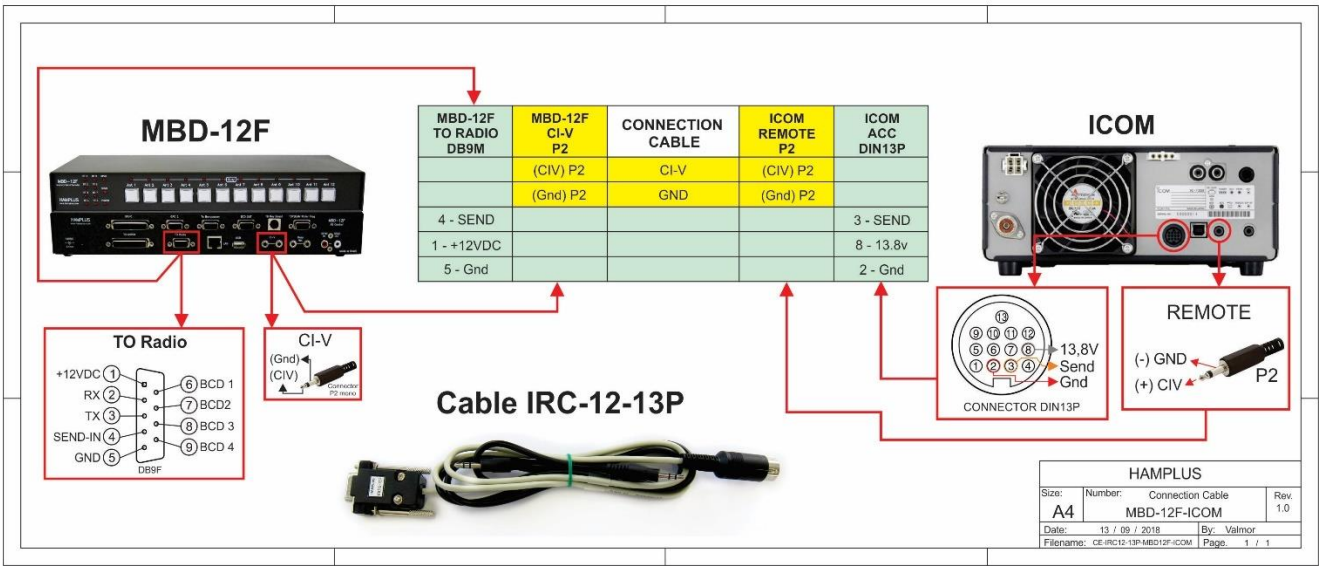
MBD-12F TO ANTSW DB-25M	Connection Cable	AS-1202F CMD1/2 DB-25M
1	ANT 1	1
2	ANT 2	2
3	ANT 3	3
4	ANT 4	4
5	ANT 5	5
6	ANT 6	6
7	ANT 7	7
8	ANT 8	8
9	+14V	9
10	GND	10
14	ANT 9	14
15	ANT 10	15
16	ANT 11	16
17	ANT 12	17

MBD-12F / ELEKRAFT K3 - Connection Cable

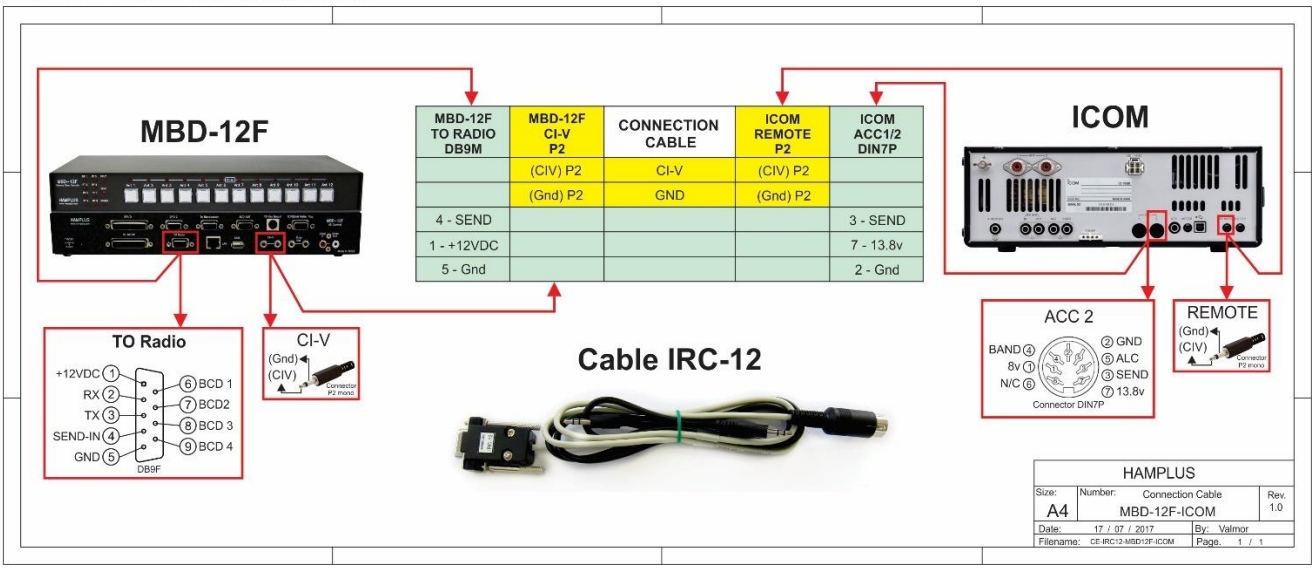


MBD-12F TO Radio DB9M	CONNECTION CABLE	K3 ACC DB15M VGA	K3 EXT-ACC DB15F VGA	K3 12VDC OUT RCA M
		1 -	1 - FSK In	
		2 -	2 - AuxBus	
7 - BCD 1		3 - Band 1	3 - Band 1	
		4 -	4 - PTT In	
2 - RX		5 - Gnd	5 - Gnd	
		6 -	6 - DigOut	
		7 -	7 - Tx InH	
		8 -	8 - Power	
8 - BCD 2		9 - Band 2	9 - Band 2	
4 - Send In		10 - Send	10 - Send	
		11 -	11-DigOut 1	
5 - Gnd		12 - Gnd	12 - Gnd	
6 - BCD 0		13 - Band 0	13 - Band 0	
9 - BCD 3		14 - Band 3	14 - Band 3	
		15 -	15-Ext ALC	
5 - Gnd				GND (-)
1 - 12v				12VDC (+)

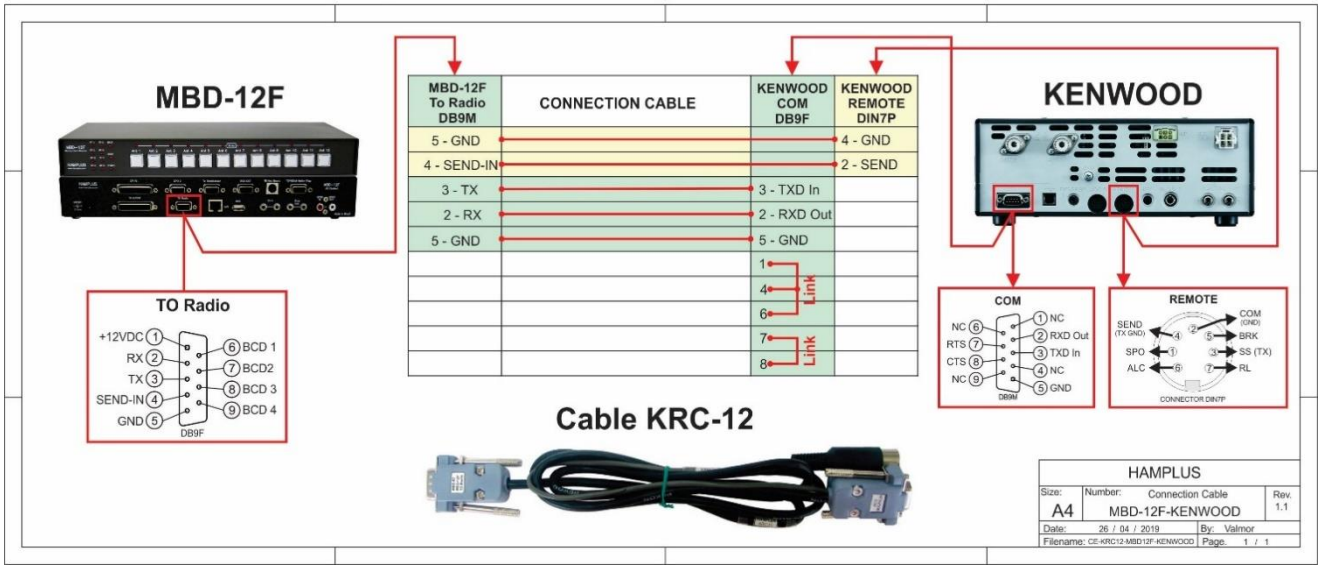
MBD-12F / ICOM Connection Cable



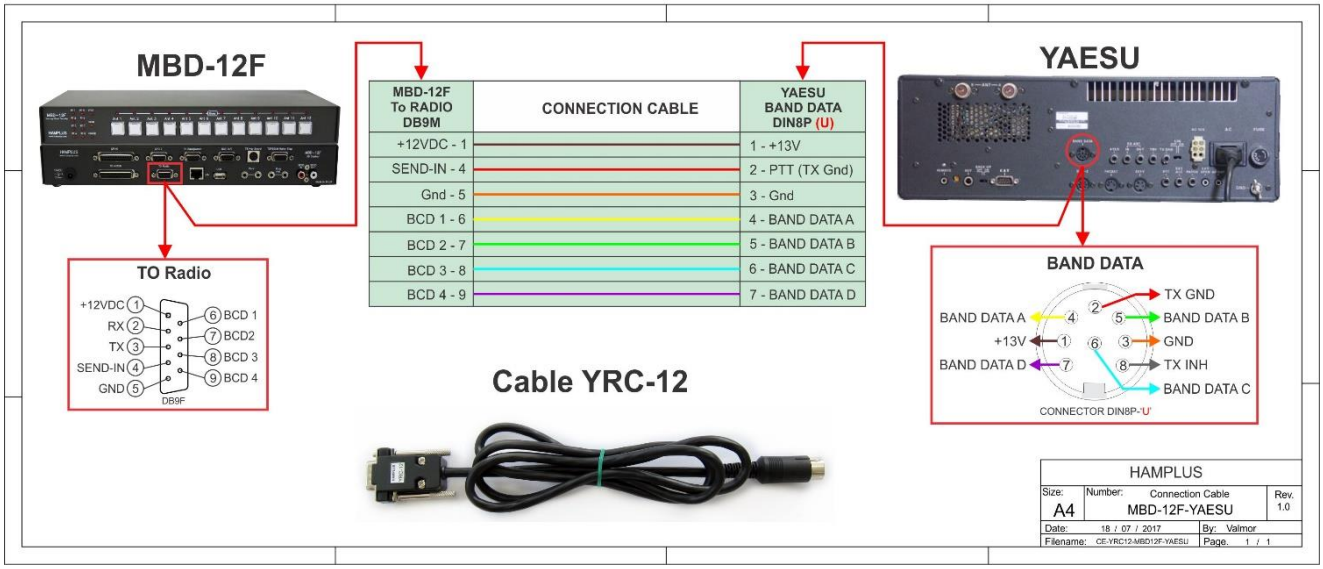
MBD-12F / ICOM Connection Cable



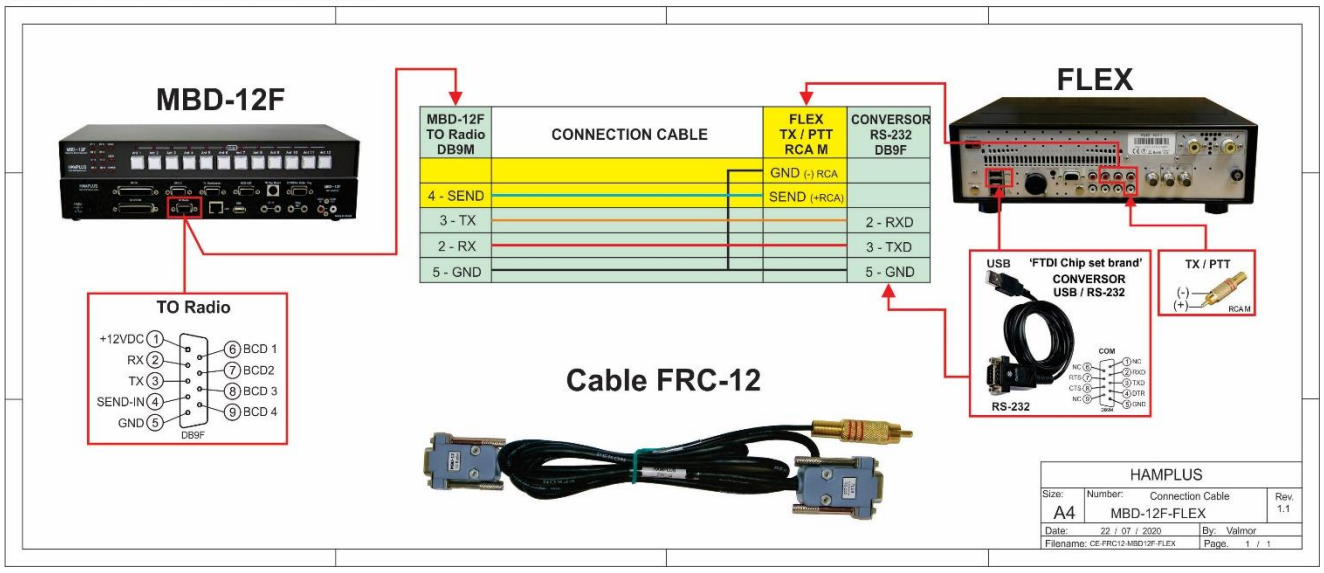
MBD-12F / KENWOOD Connection Cable

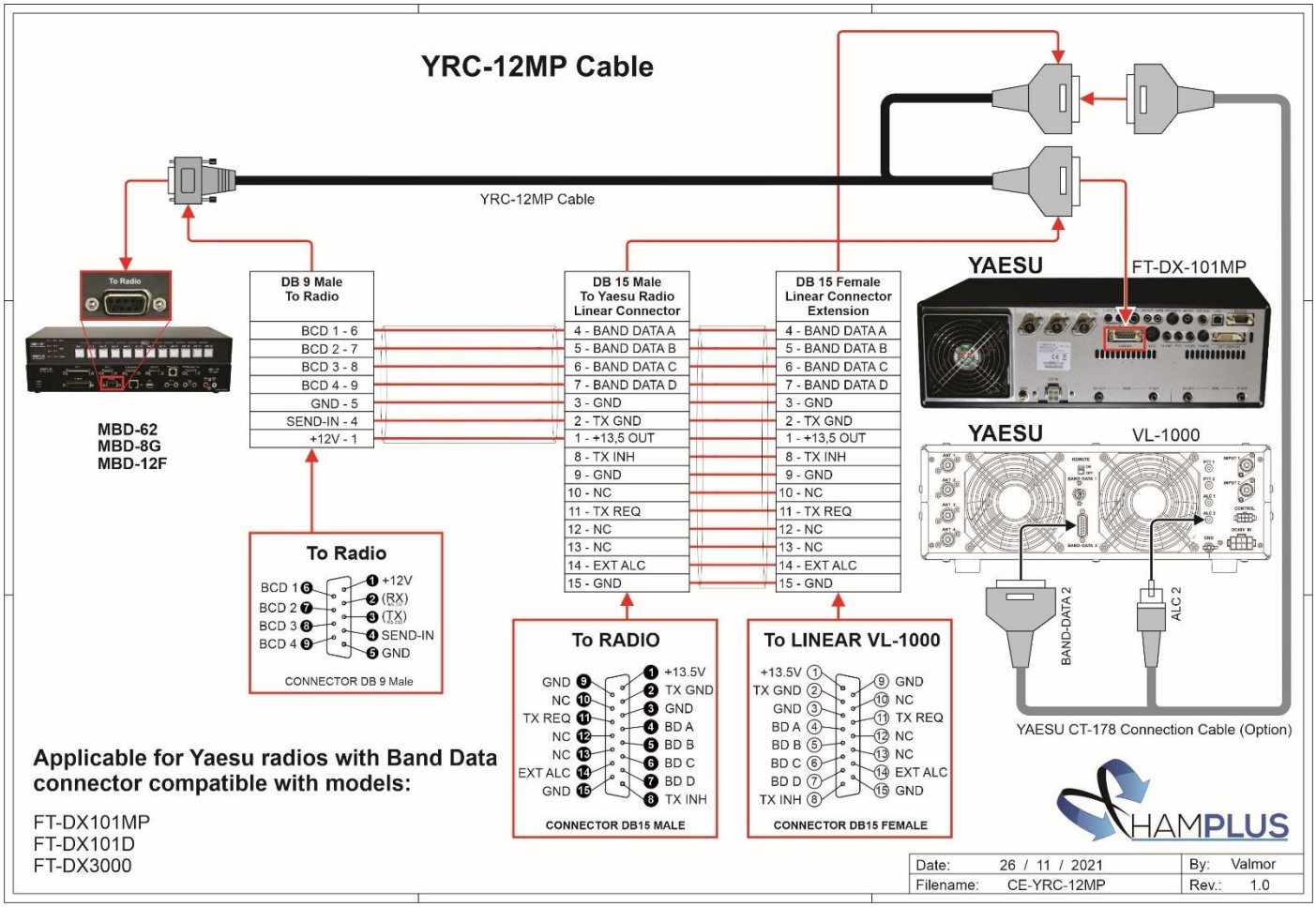


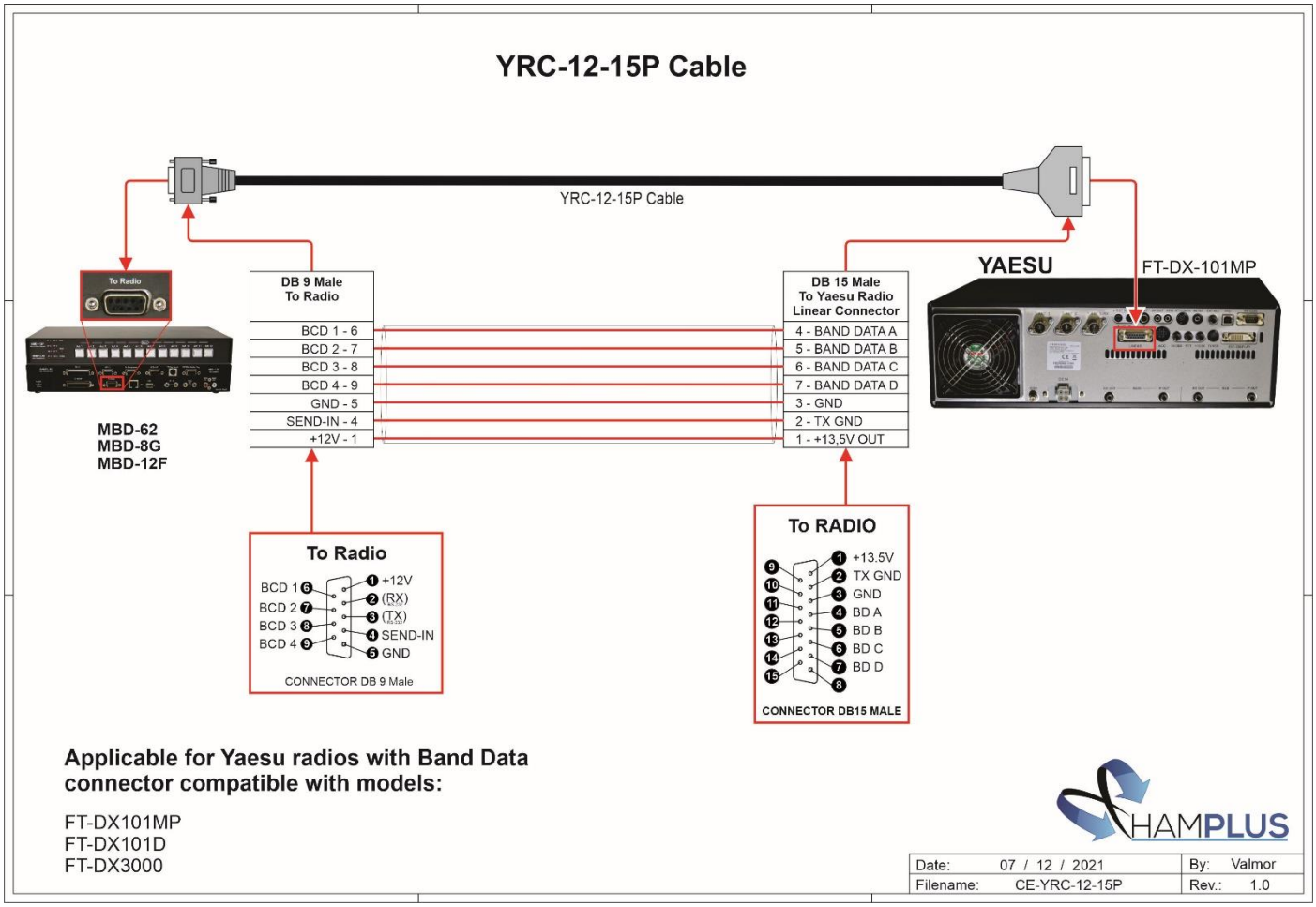
MBD-12F / YAESU Connection Cable



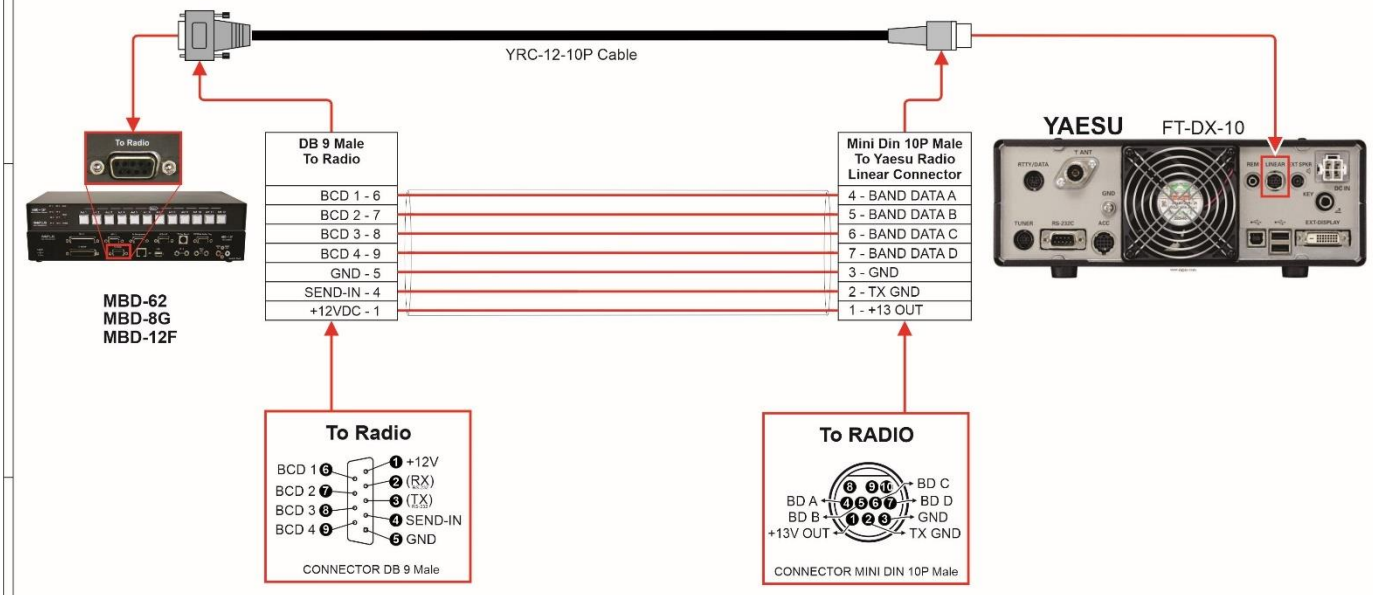
MBD-12F / FLEX Connection Cable




YRC-12MP Cable
YRC-12MP Cable
To Radio
MBD-62
MBD-8G
MBD-12F
DB 9 Male
To Radio
BCD 1 - 6
BCD 2 - 7
BCD 3 - 8
BCD 4 - 9
GND - 5
SEND-IN - 4
+12V - 1
DB 15 Male
To Yaesu Radio
Linear Connector
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13,5 OUT
8 - TX INH
9 - GND
10 - NC
11 - TX REQ
12 - NC
13 - NC
14 - EXT ALC
15 - GND
DB 15 Female
Linear Connector
Extension
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13,5 OUT
8 - TX INH
9 - GND
10 - NC
11 - TX REQ
12 - NC
13 - NC
14 - EXT ALC
15 - GND
YAESU
FT-DX-101MP
YAESU
VL-1000
BAND-DATA 2
ALC 2
YAESU CT-178 Connection Cable (Option)
To Radio
BCD 1
BCD 2
BCD 3
BCD 4
+12V
(RX)
(TX)
SEND-IN
GND
CONNECTOR DB 9 Male
To RADIO
GND
NC
TX REQ
NC
NC
EXT ALC
GND
+13.5V
TX GND
GND
BD A
BD B
BD C
BD D
TX INH
CONNECTOR DB15 MALE
To LINEAR VL-1000
+13.5V
TX GND
GND
BD A
BD B
BD C
BD D
TX INH
GND
NC
TX REQ
NC
NC
EXT ALC
GND
CONNECTOR DB15 FEMALE
Applicable for Yaesu radios with Band Data connector compatible with models:
FT-DX101MP
FT-DX101D
FT-DX3000
HAMPLUS
Date: 26 / 11 / 2021
By: Valmor
Filename: CE-YRC-12MP
Rev.: 1.0


YRC-12-15P Cable
YRC-12-15P Cable
To Radio
MBD-62
MBD-8G
MBD-12F
DB 9 Male
To Radio
BCD 1 - 6
BCD 2 - 7
BCD 3 - 8
BCD 4 - 9
GND - 5
SEND-IN - 4
+12V - 1
DB 15 Male
To Yaesu Radio
Linear Connector
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13,5V OUT
YAESU
FT-DX-101MP
To Radio
BCD 1
BCD 2
BCD 3
BCD 4
+12V
(RX)
(TX)
SEND-IN
GND
CONNECTOR DB 9 Male
To RADIO
+13.5V
TX GND
GND
BD A
BD B
BD C
BD D
CONNECTOR DB15 MALE
Applicable for Yaesu radios with Band Data
connector compatible with models:
FT-DX101MP
FT-DX101D
FT-DX3000
HAMPLUS
Date: 07 / 12 / 2021
By: Valmor
Filename: CE-YRC-12-15P
Rev.: 1.0

YRC-12-10P Cable

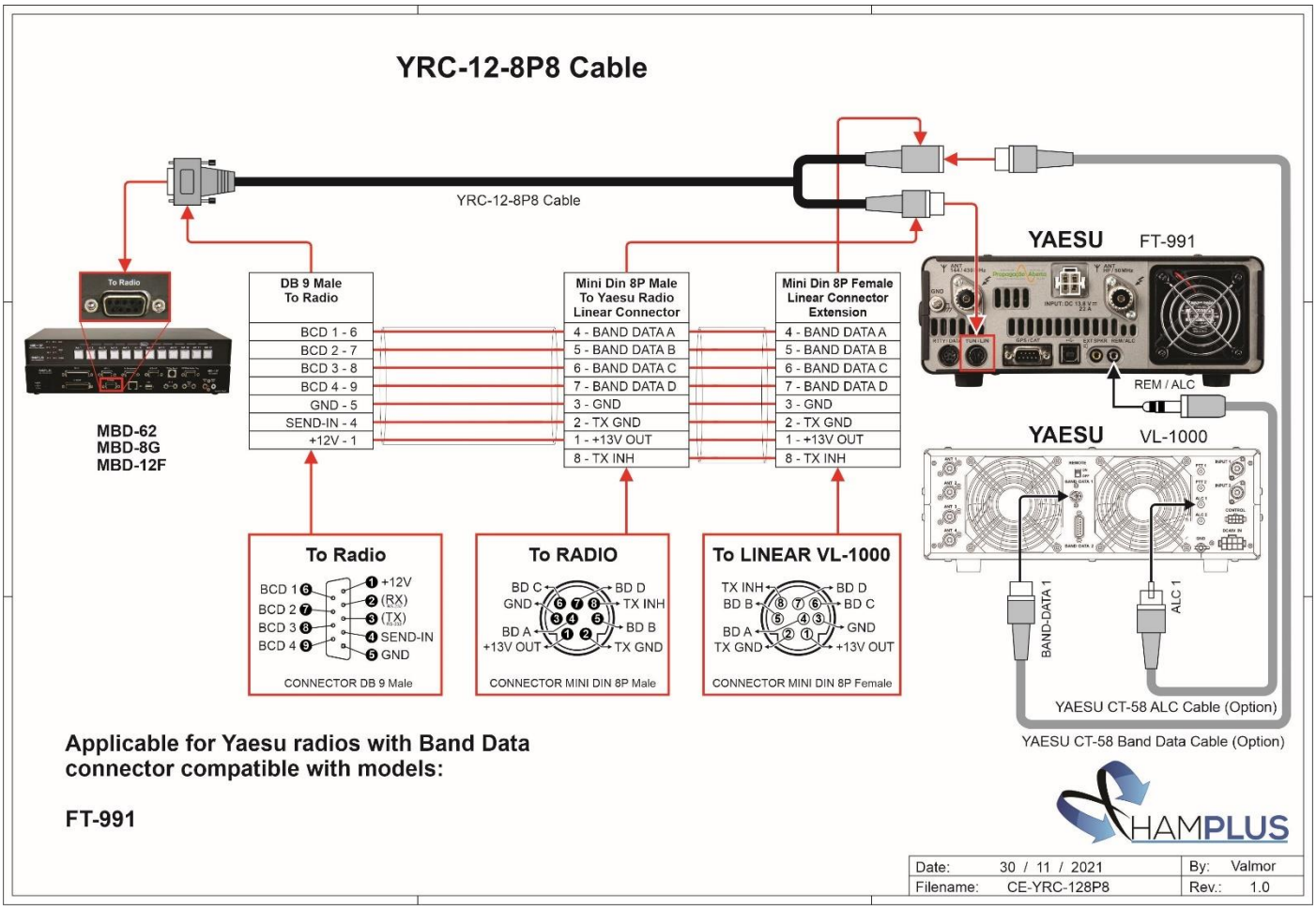


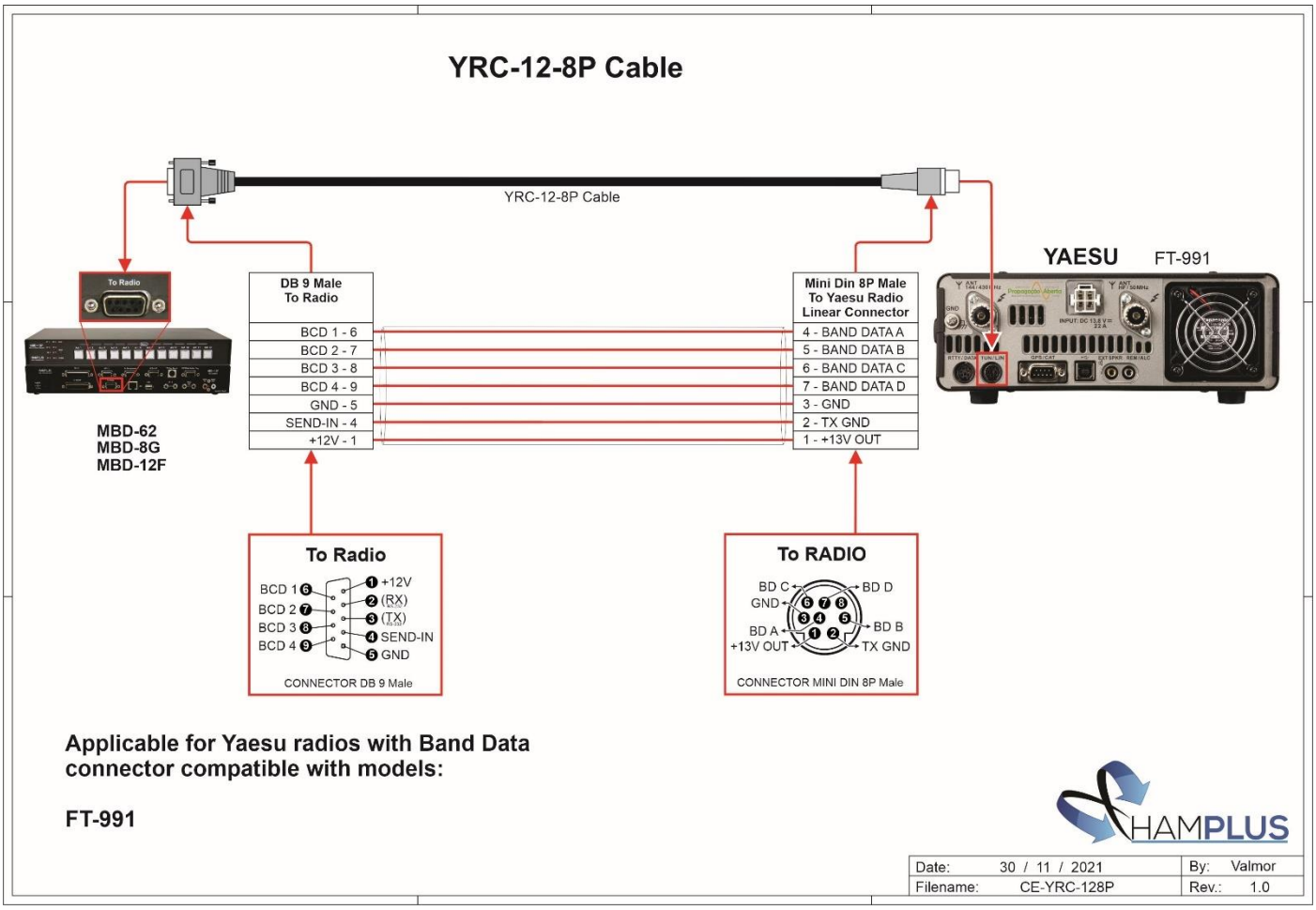
Applicable for Yaesu radios with Band Data connector compatible with models:

FT-DX10
FT-DX1200
FT-450D

HAMPLUS

Date:	07 / 12 / 2021	By:	Valmor
Filename:	CE-YRC-12-10P	Rev.:	1.0


YRC-12-8P8 Cable
YRC-12-8P8 Cable
To Radio
MBD-62
MBD-8G
MBD-12F
DB 9 Male
To Radio
BCD 1 - 6
BCD 2 - 7
BCD 3 - 8
BCD 4 - 9
GND - 5
SEND-IN - 4
+12V - 1
Mini Din 8P Male
To Yaesu Radio
Linear Connector
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13V OUT
8 - TX INH
Mini Din 8P Female
Linear Connector
Extension
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13V OUT
8 - TX INH
YAESU FT-991
REM / ALC
YAESU VL-1000
BAND-DATA 1
ALC 1
YAESU CT-58 ALC Cable (Option)
YAESU CT-58 Band Data Cable (Option)
To Radio
BCD 1
BCD 2
BCD 3
BCD 4
+12V
(RX)
(TX)
SEND-IN
GND
CONNECTOR DB 9 Male
To RADIO
BD C
GND
BD A
+13V OUT
BD D
TX INH
BD B
TX GND
CONNECTOR MINI DIN 8P Male
To LINEAR VL-1000
TX INH
BD B
BD A
TX GND
BD D
BD C
GND
+13V OUT
CONNECTOR MINI DIN 8P Female
Applicable for Yaesu radios with Band Data
connector compatible with models:
FT-991
HAMPLUS
Date: 30 / 11 / 2021
By: Valmor
Filename: CE-YRC-128P8
Rev.: 1.0


YRC-12-8P Cable
YRC-12-8P Cable
YAESU FT-991
To Radio
DB 9 Male
To Radio
BCD 1 - 6
BCD 2 - 7
BCD 3 - 8
BCD 4 - 9
GND - 5
SEND-IN - 4
+12V - 1
Mini Din 8P Male
To Yaesu Radio
Linear Connector
4 - BAND DATA A
5 - BAND DATA B
6 - BAND DATA C
7 - BAND DATA D
3 - GND
2 - TX GND
1 - +13V OUT
MBD-62
MBD-8G
MBD-12F
To Radio
BCD 1 +12V
BCD 2 (RX)
BCD 3 (TX)
BCD 4 SEND-IN
GND
CONNECTOR DB 9 Male
To RADIO
BD C
BD D
GND
BD A
BD B
+13V OUT
TX GND
CONNECTOR MINI DIN 8P Male
Applicable for Yaesu radios with Band Data
connector compatible with models:
FT-991
HAMPLUS
Date: 30 / 11 / 2021
By: Valmor
Filename: CE-YRC-128P
Rev.: 1.0

MBD-12F

31 DE MAIO DE 2022

4S INFORMATICA
Rua Joe Collaco, 954 Florianopolis Brazil