

microHAM



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Content

Chapter	Page
1. Warranty	3
2. Packing	4
3. Important warnings	5
4. Quick start	6
5. Parameters	7
6. Characteristics and functions	8
7. Principle of operation	9
8. Interconnections and connectors	12
9. Application notes	25
10. Configuration	38

1. Warranty

microHAM offer for this product life time warranty.

The product must not be modified in any way, except configuration, otherwise the warranty voids.

microHAM assumes no responsibility for damages on other devices or injuries on persons, as a consequence of using our products.

2. Packing

The product includes micro Band Decoder™, supply connector, PCCOM1 cable, printed manual and microHAM Device Configurator© program on a CD-ROM.

Please check the content of the shipment against this list. If the shipment is incomplete, please contact us at the following address:

support@microham.com or

fax : +421 2 4594 5100, or

by mail to :

microHAM
Matúškovo 709
92501
Slovakia

3. Important warnings

!!! Always check for proper polarity when connecting the power supply !!!

!!! Prevent shorts on output signals of micro Band Decoder™ !!!

4. Quick start

- Place the micro Band Decoder™ to a convenient place in your hamshack so, that the front panel is well visible.
- Connect power supply 12V to the micro Band Decoder™. Check the polarity of power supply !!!
- Connect micro Band Decoder™ to the computer using the PCCOM1 cable.
- Install "microHAM Device Configurator" (from the included CD) and configure micro Band Decoder for your transceiver.
- Connect micro Band Decoder to the transceiver.

For ICOM RIGs use cable IC1, connecting the stereo phono plug to CI-V connector on the rear panel of micro Band Decoder™, and mono phono plug to communication connector of the RIG (check manual of the RIG for position and marking of this connector).

For KENWOOD RIGs use cable TS1 or RIG232, depending on the type of RIG. Connect the cable to connector marked IF-232 or RS232 on the rear panel of micro Band Decoder™, and to the RIG.

For YAESU RIGs use cable described in table 7 at page 24.

After powering on, the micro Band Decoder™ immediately attempts to communicate with RIG according to its configuration. The factory configuration is the RIG, given in the purchase order. If no RIG has been given in the order or your RIG is not on list, the basic configuration is YAESU (PC-LPT) band data port + CW and PTT interface from the LPT port.

In case of successful communication, LED indicator appropriate to the detected band is lit on the front panel, and the proper output is active.

If the micro Band Decoder™ fails to communicate with the RIG, LED indicator of the last band flashes quickly and the according output is active.

5. Parameters

Supply voltage: 12 - 16V DC (up to 200mA without micro Antenna Switch™ or micro Antenna Selector™)

Current consumption: up to 200 mA without switching boxes, max. 600mA

Outputs: 10 x source output, depending on the input voltage, max. 400mA (with optional relay board also sink outputs)
4-bit BCD band data, TTL levels

CW output: open collector 30V, 600mA sink to ground

PTT output: open collector 30V, 600mA sink to ground

Connectors:

PC : DB9F

BAND DATA OUTPUTS : DB25F

CW, PTT : 2 x RCA female

CI-V : 3,5 Phono STEREO

IF-232 : DIN6F

ACC : DIN8F

RS-232 : DB9M

SET : 3,5 Phono MONO

Operating temperature range: 0 - 55 C (32 - 131 F)

Dimensions: W 175mm (6,89") x H 44 mm (1,73") x D 130 mm (5.12")

Weight: 600 g (1.32 lbs)

6. Characteristics and functions

- ♦ 10 decoded bands from 160m to 6m including WARC
- ♦ built-in level converter (similar to CI-V, IF-232, FIF-232) for communication between PC and RIG
- ♦ built-in CW, PTT interface from LPT and COM port (user selectable), with optional disable when the logging program is not running
- ♦ provides 10 voltage outputs, active depending to the band
- ♦ with optional RELAY BOARD, 10 source or sink outputs
- ♦ configurable from PC using "microHAM Device Configurator ©" program
- ♦ down loadable firmware with free updates (even with new types of RIG the micro Band Decoder™ will be still operational)
- ♦ steel-aluminium box for best suppression of EMI
- ♦ all inputs and outputs are filtered by chokes
- ♦ outputs signals for micro Antenna Selector™, which provides relay decoupled, programmable outputs for switching multiple antennas for one band (stacks, slopers, squares.) and/or one antenna for more bands (loggers, threebanders...)
- ♦ works also with RIGs that don't output band data information without computer (Kenwoods, Icom WARC bands ...)

7. Principle of operation

micro Band Decoder™ ("decoder") is a configurable accessory to the RIG, for automatic switching of other devices in the hamshack (antenna switches, band pass filters, stack boxes ...) depending on the current band on the transceiver.

Decoder operates in a way principally different from many other decoders. The band information source is not only the 4-bit code of YAESU RIGs or voltage output of ICOMs, but, first of all, the serial port of RIG usually used for communication between RIG and PC. Decoder communicates with RIG via this port, and from this port acquires the current working frequency.

Still, a PC can be connected to the decoder. This connection is used to reconfigure the decoder to change its behavior or to change the type of connected RIG, or to have the RIG connected to PC for contesting or automatisisation of hamshack. The basic interconnect is on Figure 1.

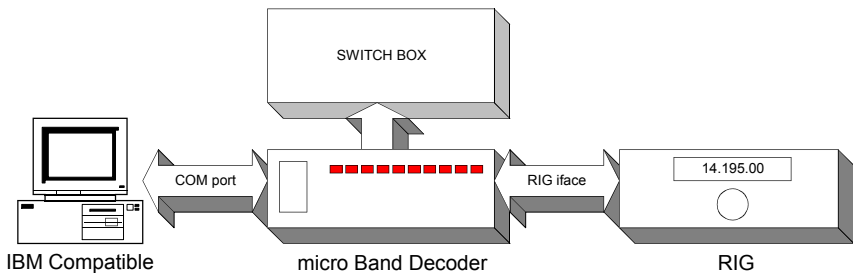


Figure 1

Figure 1 illustrates the basic function of decoder. After powering on, the decoder attempts to communicate with the RIG. If it fails, it switches to the last used band. In case of success, the decoder traces all changes in the RIGs frequency and activates its outputs accordingly. The decoder operates in this mode until it receives any data from the PC.

If the decoder receives data from the PC, it sends immediately without modification to the RIG. In this way, a complete compatibility

and portability with any SW is maintained. It is assumed, that on the PC, logging or other SW is running that communicates with the RIG. The decoder provides a level conversion for this connection, monitors the communication and filters information on the current working frequency.

In case the communication from PC ceases for more than 10 seconds, the decoder starts to communicate with the RIG automatically, until the PC interrupts it, etc.

On Figure 2 is a block diagram of the decoder.

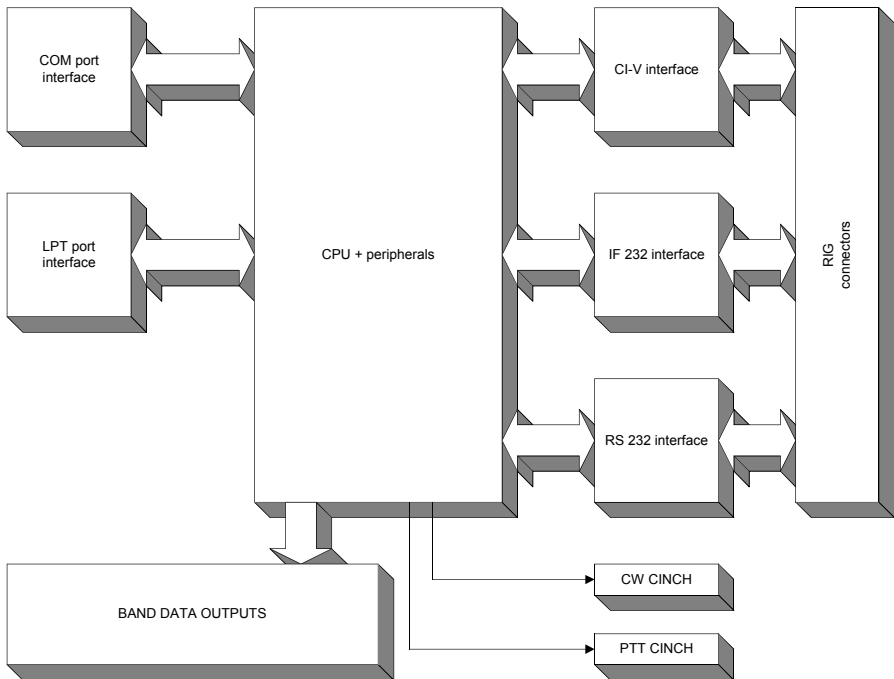


Figure 2

By connecting a switch to the SET connector on the rear panel of the decoder bandswitching can be done manually, if no data are being received from the RIG or the PC (e.g. in a case of failure or emergency). If the box "Allow external switch" is unchecked (default)

in the configuration (cf. page 40), activating the switch for less than a second will select the next band. However, any data (either parallel from ACC or serial from CI-V, IF-232 or RS-232) will prevent manual switching.

When the switch has been closed for more than one second the decoder's status will be displayed by the LEDs on the front as follows:

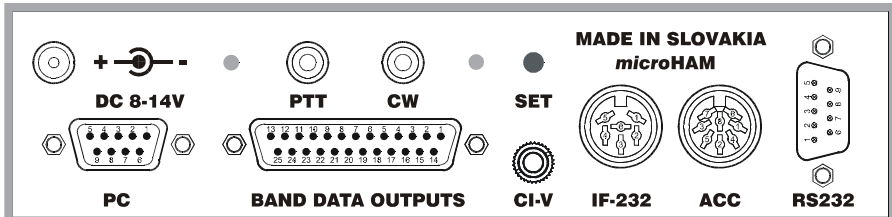
160m	Band information source is 4-bit band data input ACC
80m	RTS/CTS handshake is used
40m	CW and PTT from COM port enabled
30m	CW and PTT from LPT port enabled
20m	CW and PTT generation disabled, when frequency is out of bands
17m	CW and PTT generation disabled, when no connection between RIG and logging SW
15m	reserved
12m	reserved
10m	PC sends no data, decoder communicates with RIG
6m	PC communicates with RIG, decoder monitors the communication
10m & 6m	microHAM Device Configurator© communicates with the decoder

Decoder is configured using microHAM Device Configurator© program. The configuration information is stored in the decoder into a nonvolatile EEPROM memory, until it is overwritten by an another configuration. The configuration remains unchanged after switching the decoder off.

Features of the decoder are given by its firmware. Using the microHAM Device Configurator© program the firmware version can be changed. Check out new versions of firmware on our website www.microham.com.

Decoder integrates CW and PTT converter both from COM and LPT port of PC. The appropriate port can be chosen using microHAM Device Configurator©.

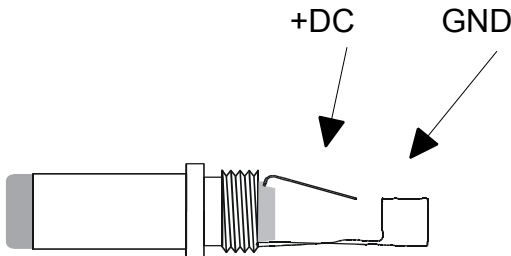
8. Interconnections and connectors



All connectors for connecting PC, RIG and Switch box are situated on the rear panel of decoder.

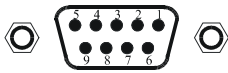
DC Connector

This connector is for power supply connection. The positive voltage is on the center and the ground is on the ring. Check the proper polarity of connected power supply. We recommend supply voltage in the range of 12 – 16V, with regard to the switch box. For the band decoder alone, 8 – 14 V is sufficient. Power connector is included.



PC Connector

Connector for connecting the decoder to computer COM port. Used to configure and control the decoder remotely, as the input for level converter if PC is used for connection logging and controlling the RIG (contests, PC diary). Signals have RS232 levels.



decoder rear panel view
connector type DB9F



DB9M (decoder side)

(computer COM port side) DB9F

PCCOM1

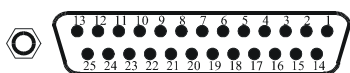
<i>Pin number</i>	<i>Signal (direction from PC)</i>
1	CD
2	RXD
3	TXD
4	DTR
5	Signal GND
6	DSR
7	RTS
8	CTS
9	RI

Table 1

For connecting to PC use the **PCCOM1** direct interconnection cable.

BAND DATA OUTPUTS Connector

This is output connector. Switch boxes, such as micro Antenna Switch™, micro Antenna Selector™, micro Stack Switch™ etc. are connected to this connector. This connector contains also other signals : 4-bit band data output (YAESU or PC style, even with no YAESU nor PC is present), power supply for external switch box (max. 400mA including the active output signal), CW, PTT and L/R signal from LPT port if connected, and signals for intelligent peripheral devices such as the micro Antenna Selector™. Band outputs for switch boxes are designed as voltage sources and have built-in short and overload protection.



decoder rear panel view,
connector type DB25F

Outputs 14, 16, 17 have double meaning. When ACC connector is connected to LPT port of PC, on these pins signals L/R, PTT and CW can be found. When ACC is connected to band data port of YAESU RIGs, signals from pins 1, 2 and 7 of ACC connector are redirected to here for further use, e.g. to connect QSK PA. Numbering of ACC connector is different from YAESU, but the position of the signal on the connector is the same.

Installation of optional RELAY BOARD

micro Band Decoder can be fitted by an optional RELAY BOARD. This module decouples outputs of the band decoder using relays, significantly increasing spurious signal immunity (voltage spikes, surges, RFI...) on control lines leading to antenna switches. It is vital to use RELAY BOARD for micro Band Decoder, if you are going to control antenna switch situated outside the hamshack, or when using control leads longer than 5m (16ft). It is also necessary to use RELAY BOARD when connecting TTD 6 way remote antenna switch, or any other custom antenna switch with common positive.

Instructions :

1. disconnect micro Band Decoder from power supply.
2. unscrew 4 screws on the top cover of micro Band Decoder and remove the cover.
3. remove all jumpers from the double-line header.
4. plug on the RELAY BOARD onto the header in the position shown on the fig1.



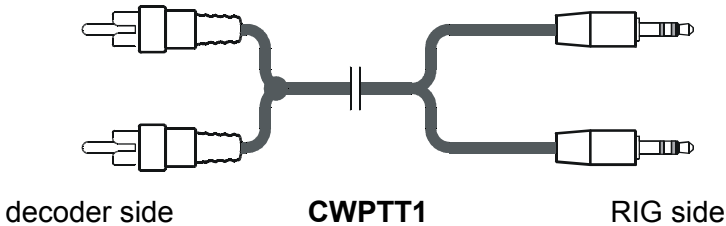
5. place 2 security nuts to fix the RELAY BOARD onto the header.
6. Set the ACTIVE OUTPUT jumper to the appropriate position.
All microHAM switches, as well as WX0B and Ameritron switches use + on the working output and common GND. For these switches set JUMPER to position "+" (as on the picture).
For TopTen Devices 6 way switch™, or other custom switch with common + and active GND set JUMPER to position "GND".
7. Replace and fasten the top cover.
8. Connect the power supply.

<i>Pin number</i>	<i>Signal (dir. from BD)</i>	<i>Description</i>
1	+VDC IN	DC IN power supply
2	Band Data 0	A of 4 bit band data
3	Peripheral	Don't connect, reserve
4	Peripheral	Don't connect, reserve
5	Peripheral	Don't connect, reserve
6	Peripheral	Don't connect, reserve
7	Band Data 1	B of 4 bit band data
8	Band Data 2	C of 4 bit band data
9	Band Data 3	D of 4 bit band data
10	Band 30m	Output 30m
11	Band 17m	Output 17m
12	Band 12m	Output 12m
13	Band 6m	Output 6m
14	ACC 1	ACC1, L/R from LPT
15	Peripheral	Don't connect, reserve
16	ACC 2	ACC2, PTT from LPT
17	ACC 7	ACC 7, CW from LPT
18	GND	Power GND
19	GND	Power GND
20	Band 160m	Output 160m
21	Band 80m	Output 80m
22	Band 40m	Output 40m
23	Band 20m	Output 20m
24	Band 15m	Output 15m
25	Band 10m	Output 10m

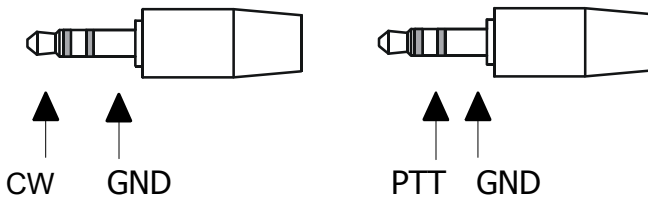
CW a PTT Connector

These connectors are of RCA female type. They output keying signals from PC to RIG. The source of the signal can be chosen between COM port or LPT port, as required. If COM port is chosen, signals come from PC connector, if LPT port is chosen, signals come from ACC connector.

As an option for these signals it can be chosen, that they are not transmitted to output RCA connectors, if frequency is out of bands and/or no requests from PC to RIG (i.e. logging SW is not running). Keying signals are indicated by LED indicators next to RCA connectors. Output signals CW and PTT can be connected to RIG using universal cable **CWPTT1**



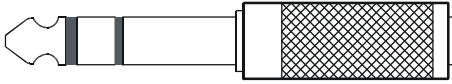
CW port = **red**, PTT port = **black**



Both types are of open collector type. The cable is terminated by two 3,5 JACK STEREO connectors, CW is red and PTT is black. On the CW JACK, sleeve is GND and tip is signal. On the PTT JACK, sleeve is GND and ring is signal.

The majority of RIGs uses for CW keying JACK connector connected to tip and sleeve, the difference is in the size of

connector. If your RIG has 6,3 input, use the supplied 3,5F / 6,3M reduction.



Connection of PTT is a trade-off, because there are many different connectors and methods of connection for controlling PTT (T/R), even in devices of the same manufacturer. Probably you will have to build your own reduction according to RIGs manual. Alternatively we can manufacture a reduction for you upon request.

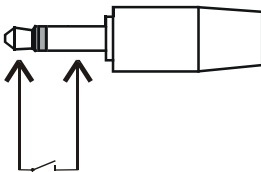
In the CWPTT1 set there is also a reduction 2x3,5F / 3,5M. Use this reduction for RIGs with keying inputs combined into single 3,5 or 6,3 JACK.

For all ICOM rigs you can use **IC2** reduction and for all KENWOOD rigs you can use **TS2** reduction. Both these reductions frees up the ACC or REMOTE connector for further use (e.g. PA control).

SET Connector

This connector is of 3,5 SF type. Connector is used for external SPST switch connection. With this switch status of decoder can be checked or re-switch to different antenna port. Look at page 47 to learn, how to configure decoder for external switch.

Wire external switch to 3,5 mono phone plug. The switch is connected between TIP and SLEEVE :



ACC Connector

This connector has a dual function. Using **FT1** or **FT2** cable, connect decoder to RIGs with band data connector (YAESU). Using **PCLPT1** cable connect decoder to LPT port of PC. As for band data only 4 pins are used, the remaining signals are connected to BAND DATA OUTPUTS connector, and also processed by the decoder (CW, PTT). Band data signals have TTL levels.



decoder rear panel view
connector type DIN8F

<i>Pin number</i>	<i>LPT number</i>	<i>Meaning</i>	<i>YAESU number</i>	<i>Meaning</i>
1	14	L/R	1	+13V
2	16	PTT	2	TX GND
3	18	GND	3	GND
4	2	Band data 0	4	Band data 0
5	7	Band data 1	5	Band data 1
6	9	Band data 3	7	Band data 3
7	17	CW	8	LINEAR
8	8	Band data 2	6	Band data 2

Table 3

Cable interconnecting decoder and YAESU RIG



DIN8M (decoder side)

(RIG side) DIN8M/262

FT1

Cable connecting decoder and LPT port of PC.



DB25M (LPT port side)

(decoder side) DIN8M

PCLPT1

8.1 Connectors for connecting communication port of RIG

Use only one of the following connectors to connect to CAT of RIG. Don't connect any cables to unused connectors!

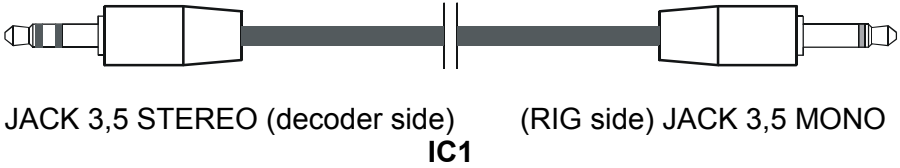
CI-V Connector

This connector is of 3,5 SF type. On this connector, communication signals from PC are present, converted to TTL levels. Using cable **IC1** you can connect every ICOM RIG with built-in communication module (virtually all except IC751A, for this, module UX14 is needed) and every other type of RIG with TX/RX signals in TTL levels (firmware upgrade may be needed).

<i>Pin description</i>	<i>Signal (direction from decoder)</i>
tip	TX
ring	RX
sleeve	GND

Table 4

Using IC1 cable, check the proper orientation of the cable: **STEREO JACK** to decoder and **MONO JACK to RIG !!!**



For YAESU models FT 990, 1000, 1000D use **FT4** cable and for YAESU models FT 100, 100D, 817, 897 use **FT3** cable

IF-232 Connector

This connector contains communication and control signals from PC connector, converted to TTL levels with inverted polarity. This interface is used for older KENWOOD RIGs, such as TS 440, 450, 690, 850, 950.



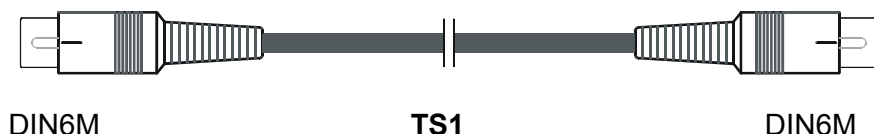
decoder or RIG rear panel view, connector type DIN6F

<i>Pin number</i>	<i>Signal (direction from RIG)</i>
1	Signal GND
2	/TX
3	/RX
4	CTS
5	RTS
6	NC

Table 5

This interface can be configured with or without using handshake signals (RTS, CTS) or not. This feature is for compatibility purposes, as some of the logging SW don't use handshake signals or send PTT to RTS pin. Using RTS for handshake excludes using it for PTT, but the communication is more reliable. The decoder doesn't need handshaking and provides the proper level of CTS, when communicating without handshake.

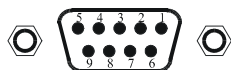
To connect the listed RIGs, use cable **TS1**.



To connect even older models use the same cable together with the appropriate communication module. For example, use IF10C for TS140, 680; IF10B for TS940 ...

RS-232 Connector

This type of connector is used, when connecting new types of RIGs with RS232 CAT interface, such as TS 570, 870, 2000, FT 1000MP, 1000MPmarkV ... Communication signals are routed from PC to RS-232 connector, again, it can be configured with or without handshake. For FT 847 use RIG232X cable.



decoder rear panel view,
connector type DB9M

For connecting the decoder to RIG use the **RIG232** cable.



<i>Pin number</i>	<i>Signal (direction from RIG)</i>
1	NC
2	TX
3	RX
4	NC
5	Signal GND
6	NC
7	CTS
8	RTS
9	NC

Table 6

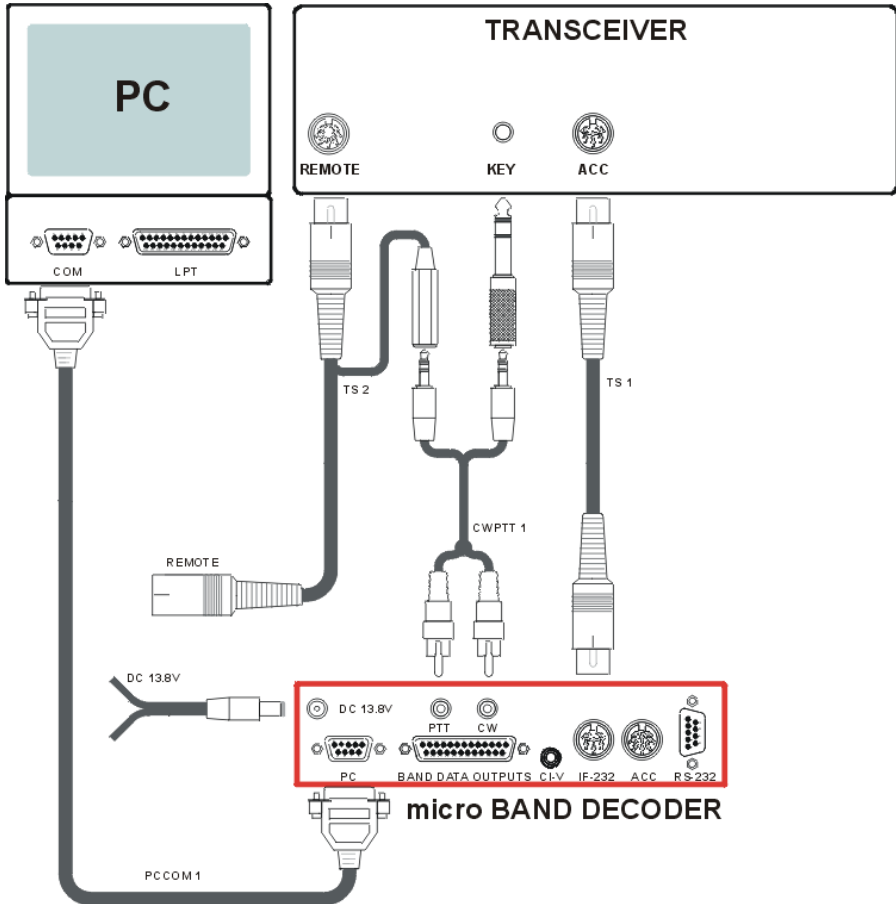
Cables and reductions selection guide :

CABLE	Connector name	Connected device	Purpose
IC1	CI-V	All IC transceivers	CAT - serial
IC2	from CWPTT1	All IC transceivers - ACC2 connector	PTT - reduction
TS1	IF-232	All models of TS 450, 690, 850, 950	CAT - serial
TS2	from CWPTT1	All model of TS 450, 690, 850, 950 – REMOTE connector	PTT - reduction
FT1	ACC	FT 900, 920, 990, 1000, 1000D, 1000MP, 1000MPmkV, 1000MPmkVfield	BAND DATA - parallel
FT2	ACC	FT 100, 100D, 817, 897	BAND DATA - parallel
FT3	CI-V	FT 100, 100D, 817, 897	CAT - serial
FT4	CI-V	FT 1000, 1000D	CAT - serial
RIG232	RS-232	FT 1000MP, 1000MPmkV, 1000MPmkV Field	CAT - serial
RIG232X	RS-232	FT 847	CAT - serial
CWPTT1	CW, PTT	Transceiver keying CW & PTT	
PCLPT1	ACC	Computer LPT port	BAND DATA - parallel
PAYAESU1	BD outputs	FL 7000, VL 1000	Auto PA tracking
PAICKL1	BD outputs	IC-2KL, IC-4KL	Auto PA tracking
PAICPW1	BD outputs	IC PW-1	Auto PA tracking
BPF-SRC	BD outputs	Source driven Band pass filters	Auto BPF tracking
BPF-SNK	BD outputs	Sink driven Band pass filters	Auto BPF tracking

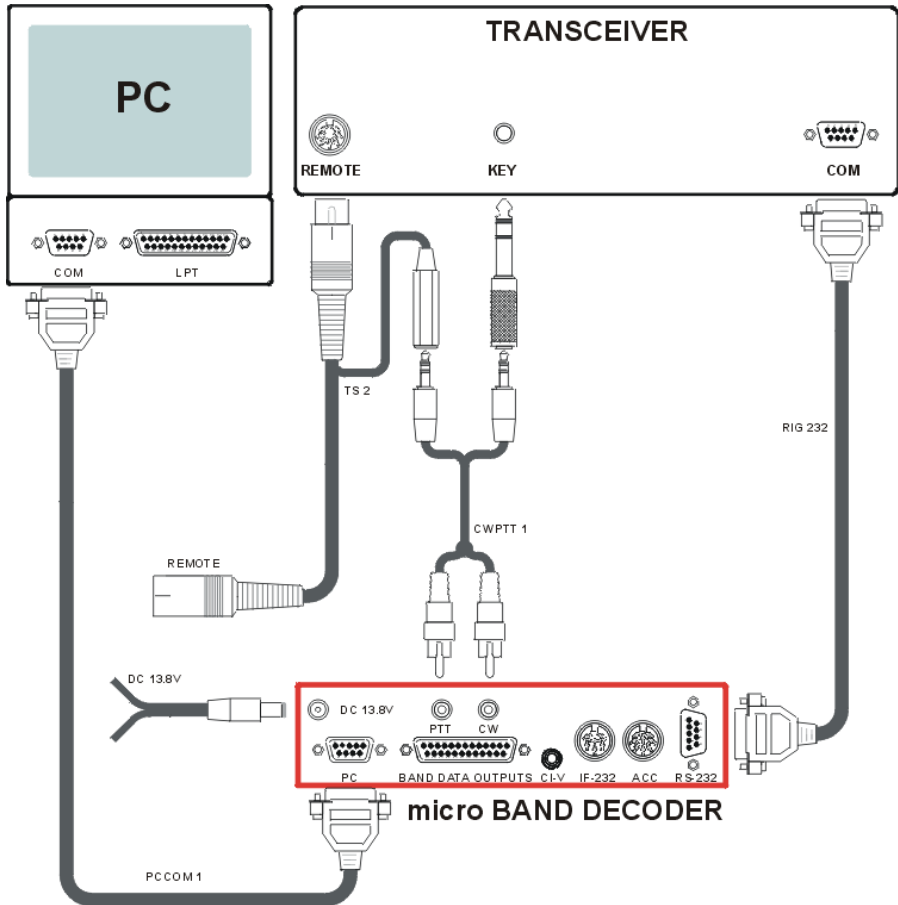
Table 7

9. Application Notes

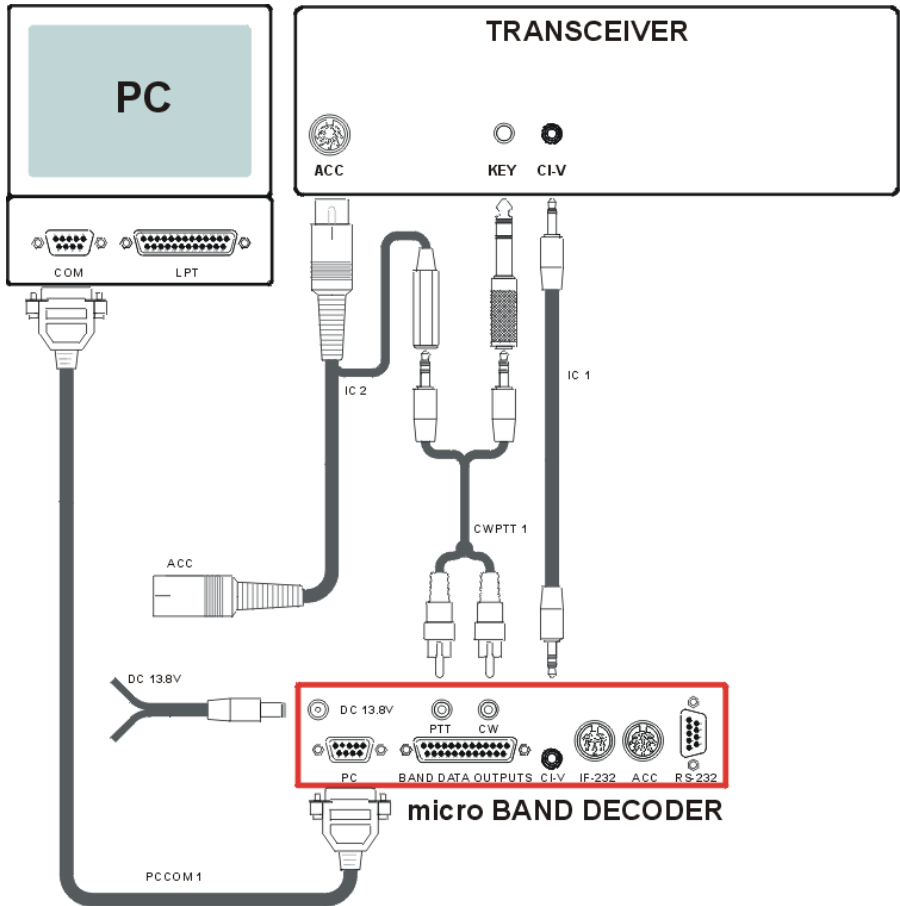
Setting and connecting of micro Band Decoder + Kenwood rigs with IF232 interface : TS 450, 690, 850, 950 ... with COM keying logging software.



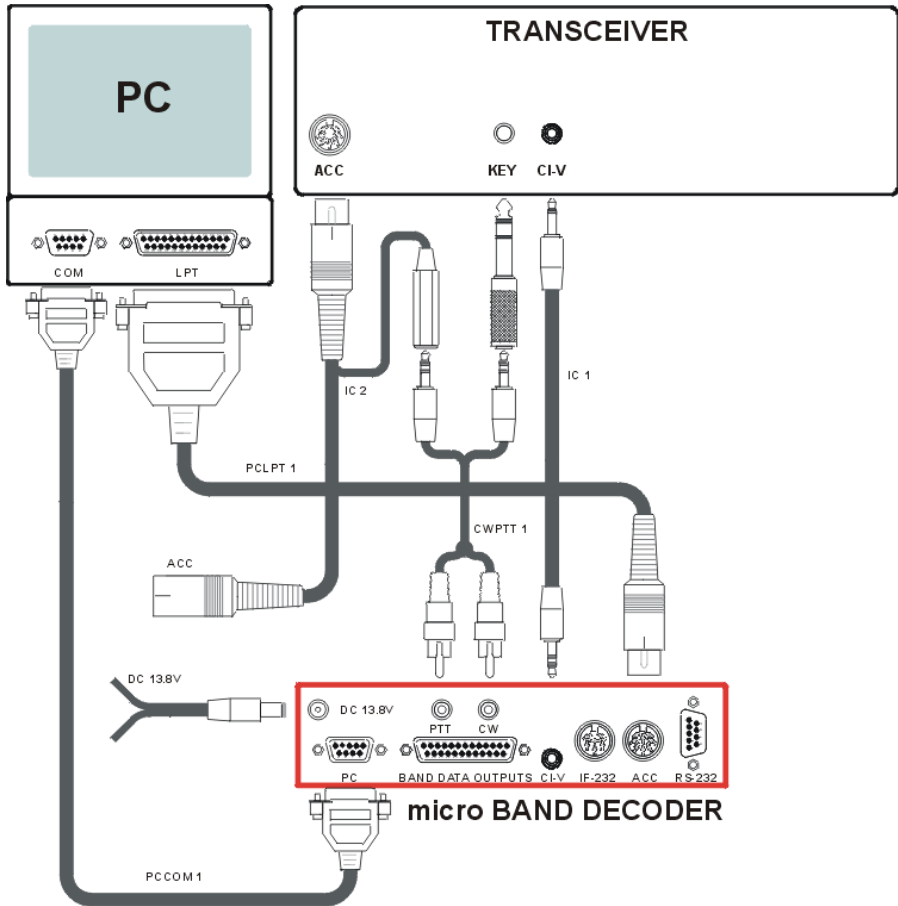
Setting and connecting of {micro Band Decoder + Kenwood} rigs with RS232 interface : TS 570, 870, 2000 ... with COM keying logging software.



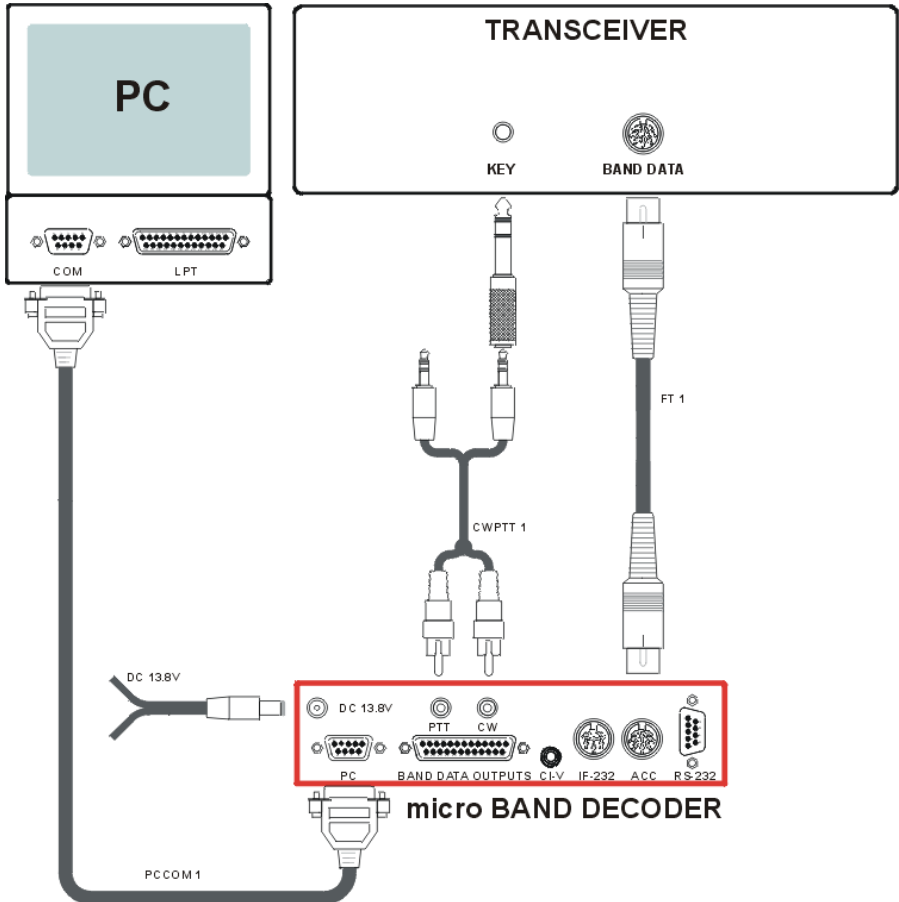
Setting and connection of micro Band Decoder + Icom rigs with CI-V interface and COM port keying logging software. Supports all Icom HF model + non standard IC735.



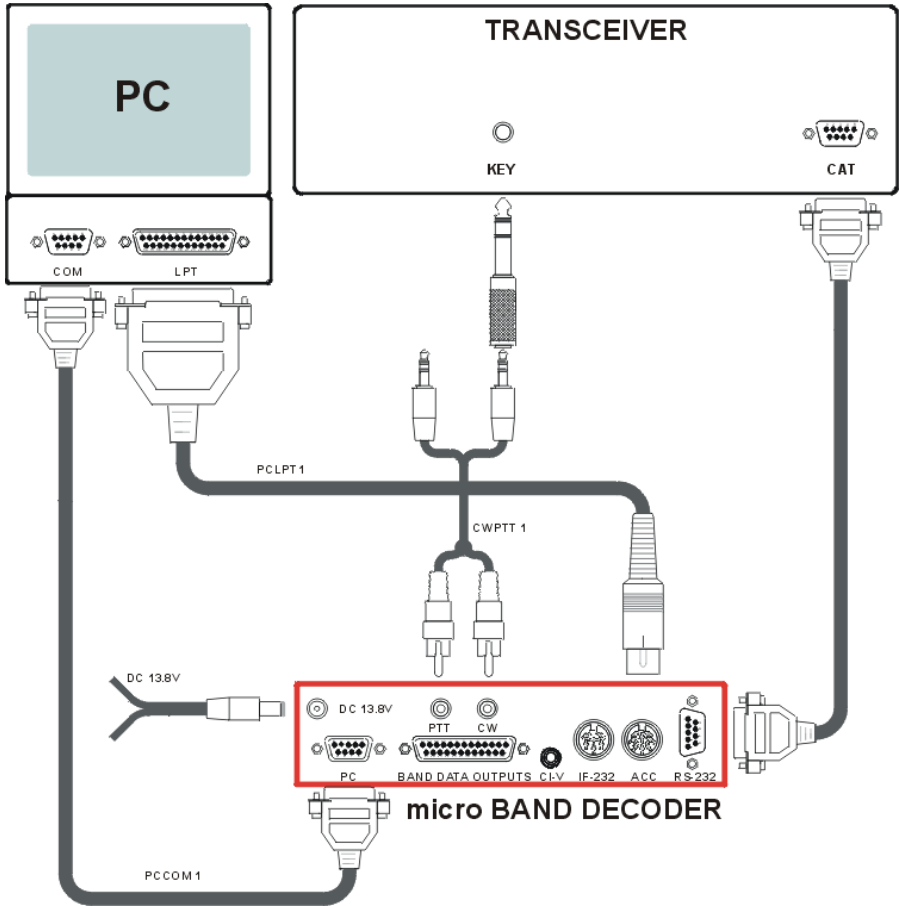
Setting and connection of {micro Band Decoder + Icom} rigs with CI-V interface and LPT port keying logging software. Supports all Icom HF model + non standard IC735.



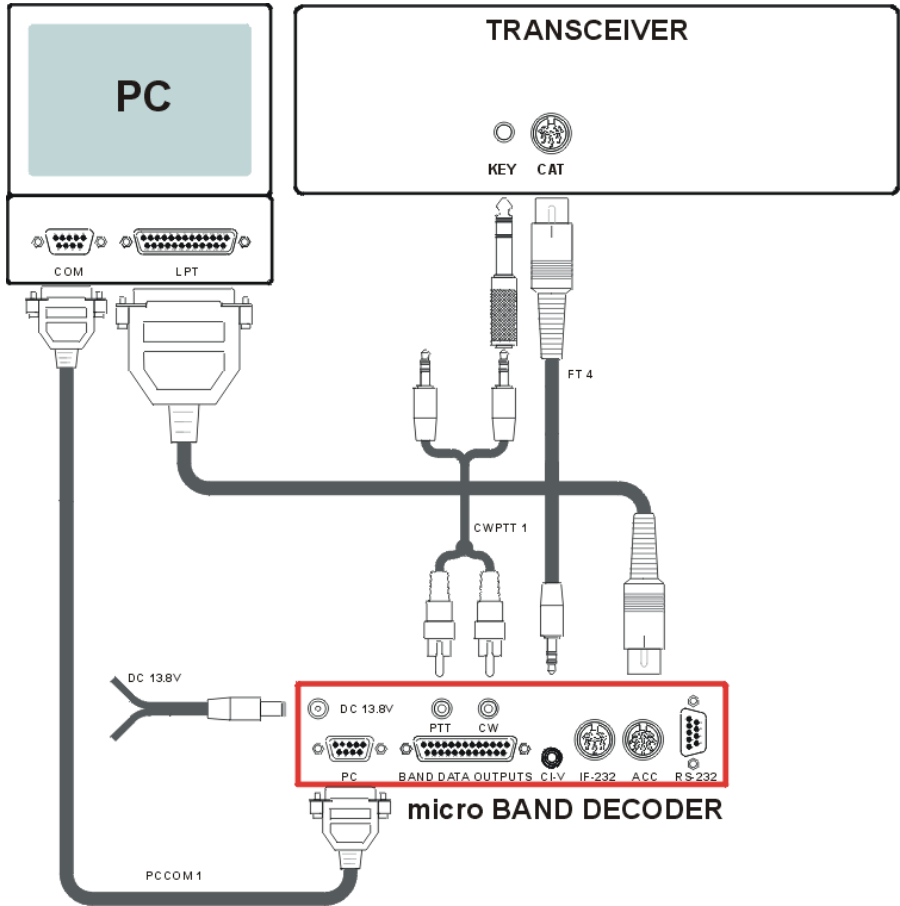
Setting and connection of micro Band Decoder + Yaesu rigs with DIN8 BAND DATA connector : FT 900, 920, 990, 1000, 1000D, 1000MP, 1000MPmkV, 1000MPmkVField .. This connection make use of 4 bit band data info from rig. Support COM port keying logging software.



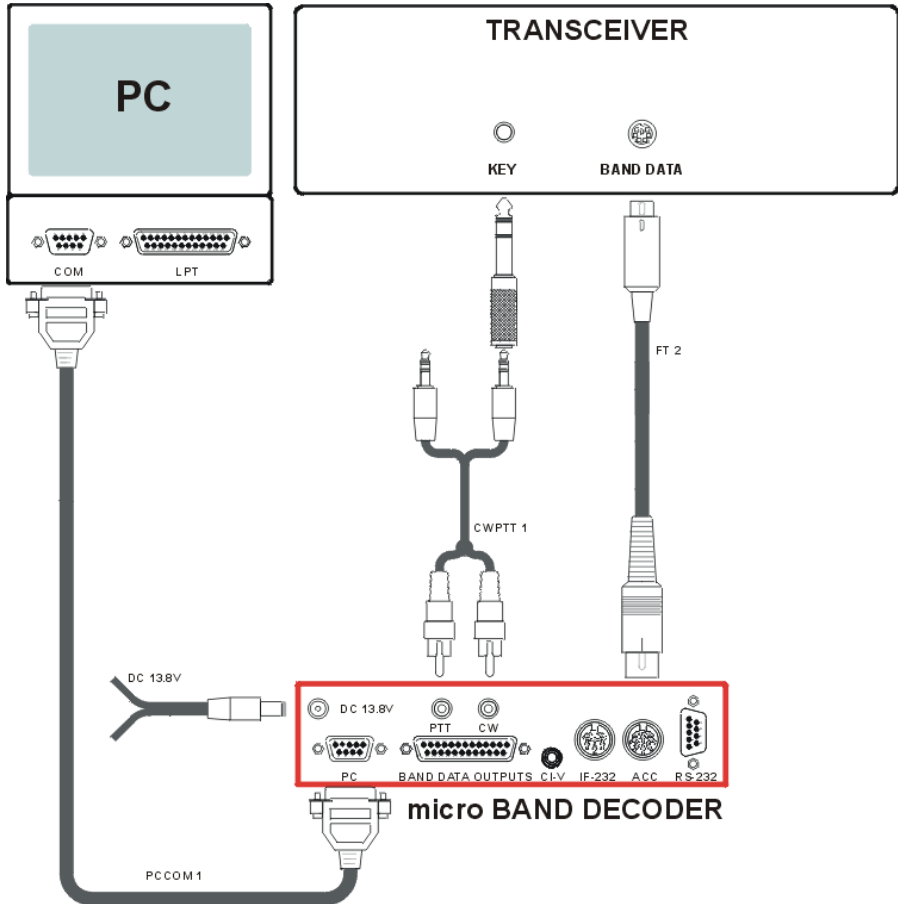
Setting and connection of micro Band Decoder + Yaesu rigs with RS232 interface : FT 1000MP, 1000MPmkV, 1000MPmkVField ..
This connection make use of CAT band data info from rig. Support COM or LPT port keying logging software.



Setting and connections of micro Band Decoder + Yaesu rig DIN6 CAT with FIF232 interface : FT 1000, 1000D. This connection make use of CAT band data info from rig. Support COM or LPT port keying logging software.

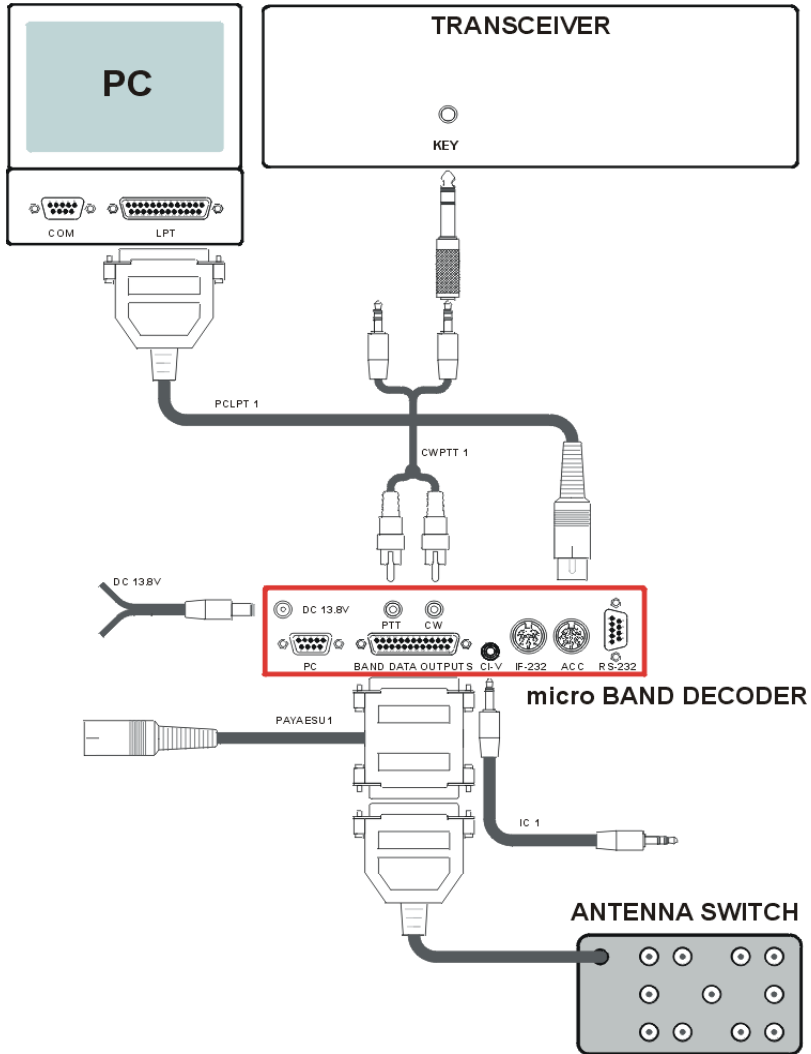


Setting and connection of micro Band Decoder + Yaesu rigs with MINIDIN8 BAND DATA connector : FT 100, 100D, 817, 897 .. This connection make use of 4 bit band data info from logging software from LPT port. Support COM port keying logging software.

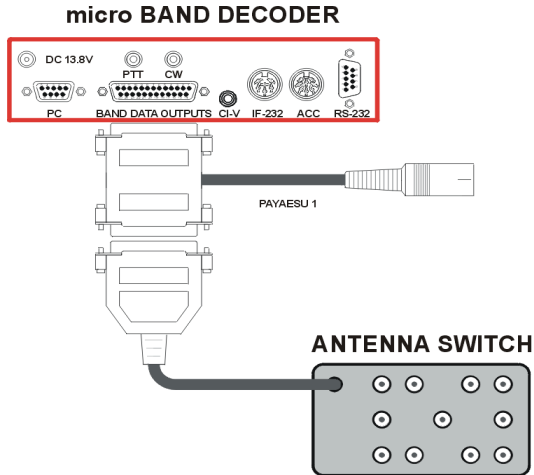




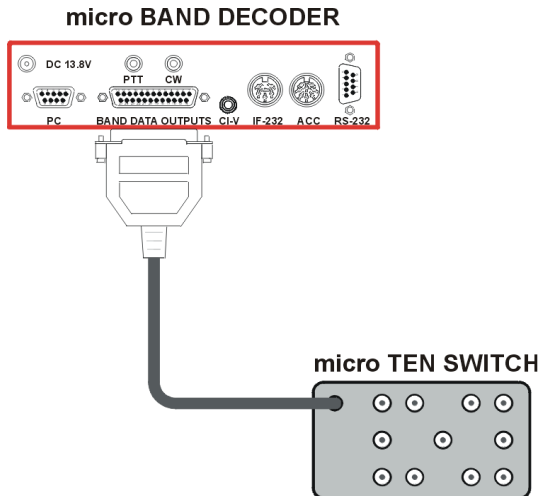
Setting and connections of micro Band Decoder + PC-LPT for general connection in stations with not supported rig or old rig model without computer interface. This connection make use of 4 bit band data info from logging software from LPT port. Support COM and LPT port keying.



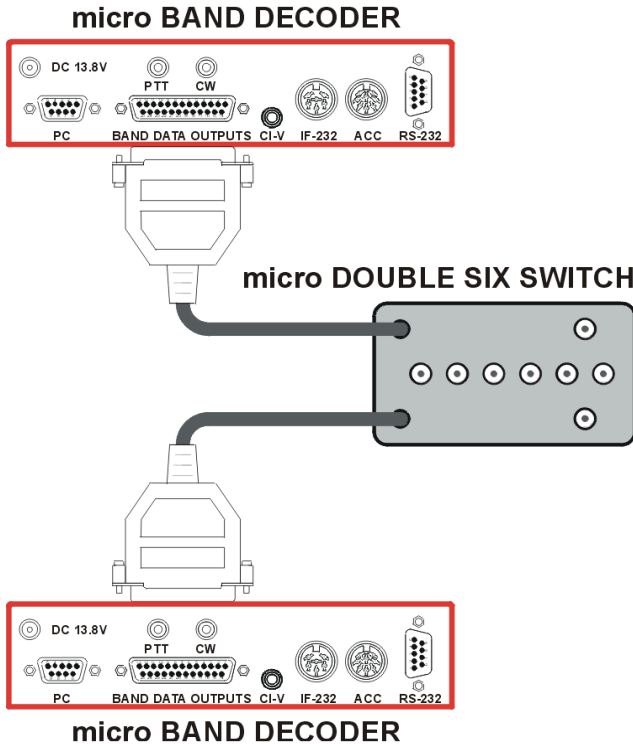
Setting and connection of micro Band Decoder + Yaesu PA with 4 bit band data info : FL-7000, VL-1000 and Antenna Switch.



Setting and connection of micro Band Decoder + micro TEN SWITCH



Setting and connection of micro Band Decoder + micro DOUBLE SIX SWITCH



micro DOUBLE SIX SWITCH connects directly to two micro Band Decoder-s, forming a system for automatic switching of antennas for SO2R. Using the supplied configuration software, choose the switching of antenna ports (at the required bands). Use one antenna port for more bands (multiband antennas), or two or more antenna ports on one band (frequency split), on your choice; both decoders need to be configured in the same way.

If micro DOUBLE SIX SWITCH is going to be placed outside the hamshack, it is necessary to have the micro Band Decoder fitted by the optional RELAY BOARD.

(In this case,) jumper on the RELAY BOARD must be set to "+".

10. Configuration

Description of decoder configuration is valid for firmware version 1.8 and microHAM Device Configurator© v.1.1. In case of upgraded FW or SW, please download the latest version of the manual and/or description of the upgrade. All versions of FW, SW and manuals are available on our website www.microham.com.

The behavior of the decoder, i.e. type of connected RIG, if and how to manage CW and PTT signals and other parameters are configured from PC using Windows program microHAM Device Configurator©. ("uDC")

After installing uDC program to the PC's hard disk and running it, the following window is displayed.



Program items :

Device: First choose the device to be configured - in this case, choose micro Band Decoder.



Configuration : This pull-down contains configuration data processing commands.

Reset to default... resets device to default values
Load from file... loads previously stored configuration to the decoder. Clicking on this item, standard browsing window opens, where path and name of file to be load can be chosen.

Save to file... stores the current configuration to disk. Again, standard

browsing window opens, where path and name of the file configuration to be saved into, can be chosen.

Read from device... clicking this item, the program reads the current configuration from the decoder and displays it in the main window.

Write to device... clicking this item, the current configuration displayed on the main window is sent to the decoder. The previous configuration of the decoder is overwritten and the decoder will work according to the new configuration.

Advanced setting... see page 41.



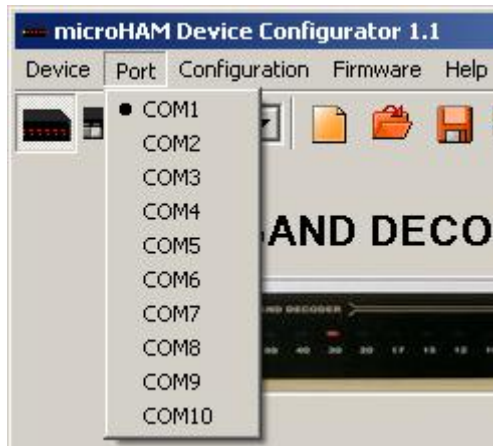
Firmware : This pull down contains commands working with firmware of decoder.

Read version Clicking this item reads and displays current version of firmware, hardware and case of the decoder and its serial number.

Upgrade firmware... this option uploads (upgrades) a new firmware to the decoder. Clicking on this item a browser window is open, where the file containing the required FW can be chosen. This is then automatically sent to the decoder. Check the new FW version choosing Firmware/Read version



Port : In this pull-down choose COM port of PC, to which the decoder is connected using PCCOM1 cable in PC connector.



Advanced settings

Band data source : In this window, choose band data information source. Choose between YAESU (PC) input or CAT port of RIG. YAESU (PC) input is connected using FT1 cable for YAESU RIGs,

micro BAND DECODER advanced settings

Band data source | CW & PTT | Band plan | Outputs | Special

RIG (band data source):

[custom settings]

CAT parameters:

RIG interface: CI-V

Baud rate: 19200 bps

CAT protocol: Icom general

Icom address: 00

or PCLPT1 cable for PC LPT port, connecting it to ACC connector. If you choose this source of band information, you can also interconnect PC and decoder using COM port and use it as a CW and PTT port and level converter for RIG. Choose type of level converter and source connector in the RIG interface item. When CAT port is used as band information source, use cable and

appropriate connector according to RIG type. Additionally, the ACC connector and PCLPT1 cable can be used to connect port LPT of PC, but only as a source of CW and PTT signal.

For the CAT option, the following additional settings have to be determined :

RIG type : Choose type of connected RIG. Updated list of supported RIGs is displayed on our website.

www.microham.com/Downloads/RIGlist.txt

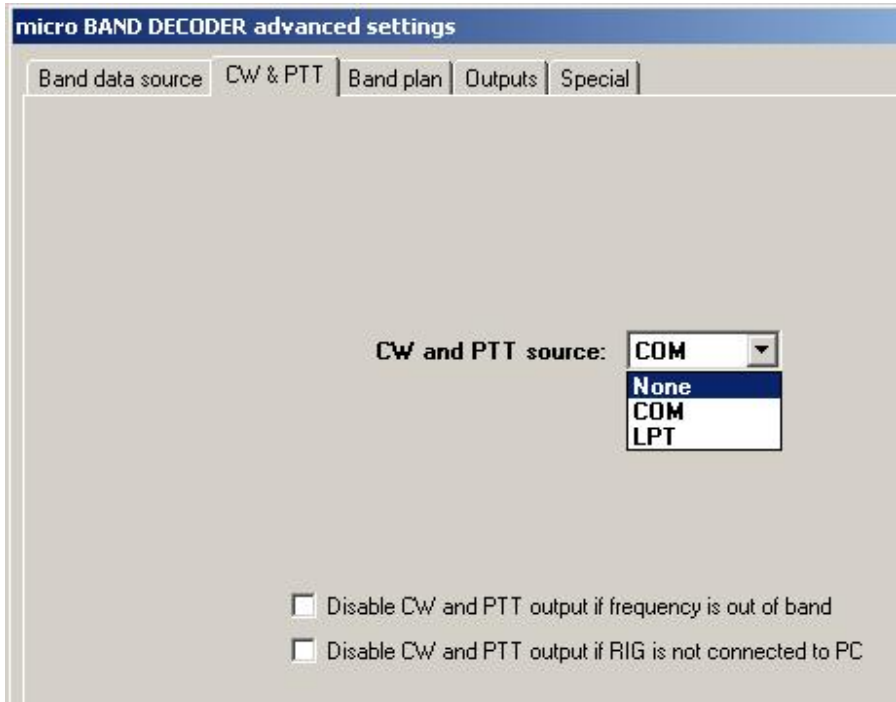
All ICOM RIGs are supported. All KENWOOD RIGs starting with models TSx50 are supported. Most YAESU models are supported.

RIG interface : This item is set automatically according to the RIG type. Determines, which interface will be used for communication and which connector will be active : RS232, IF-232, CI-V.

Baud rate : Data transmission speed used for communication. Preset values are 1200 bps for ICOM and 4800 bps for KENWOOD. If choosing a different speed, don't forget to change it also in the RIG setup and in the logging SW (if used).

CAT protocol : This item is set automatically according to type of RIG. This item describes method of communication.

Icom address : For ICOM RIGs, the RIG address according to RIG type is displayed. This address can be modified, if needed. In this case, don't forget to do it also in the RIG setup and in the logging SW setup (if used).



CW & PTT source : In this window, the source port for RIG keying signal can be chosen. Options are : signals from COM port to PC connector, signals from LPT port to ACC connector, or no RIG keying.

Disable CW & PTT output. Ticking these items, special features can be enabled for keying :

1. Disable CW and PTT signals from PC, when detected frequency of the RIG is out of bands. The band definition is given in the Band Plan window. This feature is active only if the band information source is CAT with a valid type of RIG. It is not functional, when the band data source is the 4-bit code. This feature ensures that you will not transmit outside permitted frequencies by mistake (e.g. SPLIT VFO on 80m and 40m).

2. Disable CW and PTT, if RIG is not connected to PC. This function ensures that CW and PTT signals will not be generated during the PC startup (COM and LPT ports change levels when the port is initialised) or there is no connection between the logging SW and the RIG.

Band plan : This is a table, where band boundaries can be defined, according to your license and/or the local regulations. After tuning outside defined boundaries, LED indicator with the last valid band will flash. The last valid output for switch box remains active. CW and PTT signals will be disabled, if this option has been chosen. If the "Use defaults" check box is ticked, editing of band boundaries is disabled and default values for band boundaries are displayed and used.

micro BAND DECODER advanced settings

Band data source | CW & PTT | **Band plan** | Outputs | Special

☐ Use default band boundaries

Band	Lowest frequency	Split frequency	Highest frequency
160m	1800	1850	2000
80m	3500	3600	4000
40m	7000	7150	7300
30m	10100	10140	10150
20m	14000	14150	14350
17m	18068	18110	18168
15m	21000	21200	21450
12m	24890	24930	24990
10m	28000	28300	29700
6m	50000	50100	54000

Frequencies are referred in kHz


Outputs : A remarkable feature of micro Band Decoder is, that any band can be associated to any output or even combination of outputs. Choose one of the switches from the "Antenna Switch" table and assigned the outputs to any of the ports. micro Band Decoder supports several types of switches also from other brands.

micro BAND DECODER advanced settings

Band data source | CW & PTT | Band plan | **Outputs** | Special

Antenna switch: **micro TEN SWITCH**

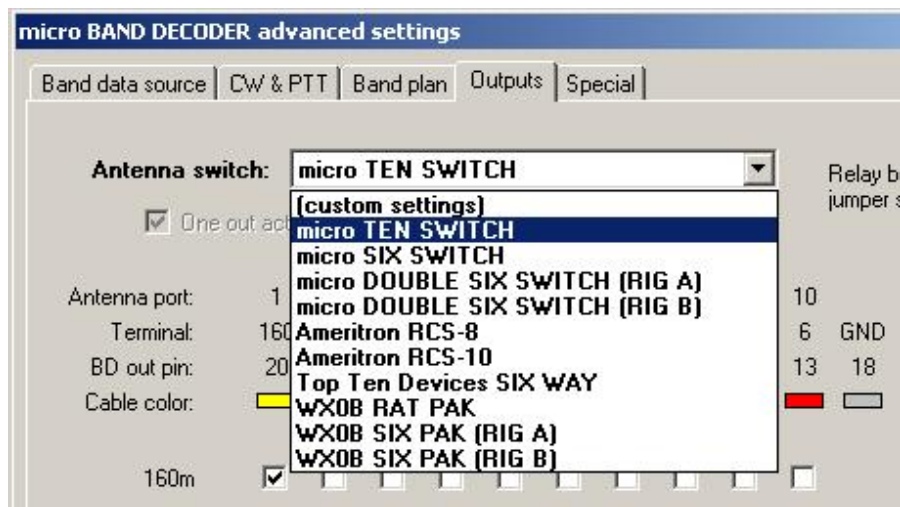
☒ One out active only ☐ Allow external switch

Relay board jumper settings:  GND +

Antenna port:	1	2	3	4	5	6	7	8	9	10
Terminal:	160	80	40	30	20	17	15	12	10	6
BD out pin:	20	21	22	10	23	11	24	12	25	13
Cable color:										

160m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
80m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
40m	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
30m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
20m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
17m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
15m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
12m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No Split
10m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No Split
6m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No Split

Color marking of wires corresponds to microHAM's antenna switches.



Thanks to freely configurable outputs there is no need to externally connect output control wheels via diode matrices. Simply, if you need e.g. a single antenna port for 20, 15 and 10m, click the check boxes for these bands in the column under the required antenna port.



Outputs can also be splitted. It means, that within one band, two antenna ports can be switched, depending on the frequency. The split frequency is set in the Band Plan. This situation is illustrated in the previous figure for 80m band, where for the lower part of the band the antenna port Nr. 4, and for the upper part port Nr. 3 is used. It is quite common to automatically switch ports in this band, where for CW a better matched antenna can be used than for the SSB part of the band. (or for 80m/75m switching).

Enabling external switch, you can choose one of two antennas by switching two antenna ports. For this, check the "Allow external switch" check box, then connect a simple SPST switch to the SET connector on the rear panel of micro Band Decoder using a phono plug.

This situation is also illustrated on the previous figure on the 160m band, where with open switch the port Nr. 2, and with closed switch port Nr. 1 is selected. This way you can switch e.g. between DX vertical and dipole for local QSO.

You can of course apply these settings to any band, as needed.

Special : choose one of the special features of micro Band Decoder in this section. The first feature is controlling an Icom IC PW-1 power amplifier. In this case, the micro Band Decoder simulates a Icom transceiver for the PW-1, regardless of the actual type of your transceiver. Adjust the communication speed and address of the simulated Icom transceiver. Use PAICPW1 reduction to connect the decoder to the PW-1.

The second special feature is controlling older types of Icom PA's, namely IC-2KL and IC-4KL. Again, micro Band Decoder simulates an Icom transceiver and produce analog signal for tracking KL's. Use PAICKL1 reduction for the connection.

The third feature is generation of special control signals used in future microHAM products for automatic antenna switching.

micro BAND DECODER advanced settings

Band data source | CW & PTT | Band plan | Outputs | **Special**

☒ Enable IC-Pw1 control (PAICPw1 reduction is needed)

Baud rate: 9600 bps ▼

Simulated Icom address: 50

☐ Enable IC-2KL or IC-4KL control (PAICKL1 reduction is needed)

☐ Enable micro SELECTOR control

Final Inspection : S/N #

Outputs

Interfaces

Date