JUMA-TRX2 serial protocol description OH2NLT 22.08.2007

JUMA-TRX2 serial interface protocol can be selected from TRX2 user setup. Long push of DISPLAY button gives setup menu for the user. Short pushes of the DISPLAY button walks through various JUMA-TRX2 setups. Stop at RS232 = xxxxx selection. Now you can select desired serial protocol with VFO knob. Long push of the DISPLAY button leaves the setup menu. All the setup changes are immediately effective and stored to the EEPROM memory during next power off sequence. In all serial protocol modes the default serial settings are 9600-8-n-1.

Available JUMA-TRX2 serial protocols

JUMA-TRX2 protocol JUMA-TRX2 external keyboard protocol JUMA-TRX2 test commands Yaesu CAT emulation

JUMA-TRX2 protocol

Not yet defined and implemented in JUMA-TRX2 software version 1.01

JUMA-TRX2 external keyboard protocol

This is simple one direction control protocol for JUMA-TRX2 voice memory option control. Commands can be sent to JUMA-TRX2 with JUMA external keyboard or a PC program. If voice memory option card is not installed these commands have no effect. Response messages are echoed to serial interface for debug purposes. This feature is useful if PC with a terminal program is connected to the JUMA-TRX2 serial interface. Voice memory action is also showed on the JUMA-TRX2 LCD display.

First a command is selected and then a memory location number where the action is addressed.

Available commands (capital letters)

T R M S E Memory numl

Actions

Ρ

Memory numbers Numbers 0 to 9

Ρ

Selects play mode. Stored message is played from JUMA-TRX2 speaker.

Т

Selects transmit mode. Stored message is transmitted with current TX settings.

R

Selects record mode. Audio with current RX settings is recorded (stored) to selected memory location.

Μ

Selects record from microphone mode. Audio from JUMA-TRX2 microphone is recorded (stored) to selected memory location.

S

Stops current action immediately. Play, TX and record commands can be stopped with this command before EOM (end of the memory) is reached.

Е

Erase all. This command is not normally used. Erase all command deletes all messages and removes all EOM markers.

Numbers 0 – 9

After an action is selected a memory number that can be from 0 to 9 defines the voice memory location and starts selected action.

Examples

Record message from microphone to memory location 1. Select M for microphone input Select 1 for memory #1 and start recording Press S to stop recording

Play message from memory location 1. Press P to play Select 1 for memory #1 and start playback Playback stops when whole message is played. Playback action can also be stopped with S command.

JUMA-TRX2 test commands

Various different test commands are provided for JUMA-TRX2 hardware functionality testing. These commands are not needed or used during normal JUMA-TRX2 operation. Test commands are good help in troubleshooting. Below is a very brief description of available commands. User should see program source code listing for particular command functional details. Commands are single letter commands given from PC terminal. Please note that small and capital letters are different commands.

Available commands in JUMA-TRX2 software v1.01

I info, SW version etc A convert and print all analog inputs E dump EEPROM content C clear EEPROM factory default reset counter W writes from PC terminal to JUMA-TRX2 LCD display B LCD bar graph test s mute audio, stop SCAF filter clocking S audio on, start SCAF filter clocking p print CW speed pot & S-meter A/D conversion values d print some internal VFO select logic values o print reference oscillator calibration value m print internal timing ms counter value t write test data to SPI bus c continous test data write to SPI bus + increase multiband PA RF attenuator value - decrease multiband PA RF attenuator value f print SPI bus control data Z intentional divide by zero, CPU error trap test

A convert and print all analog inputs Do A/D conversion for all analog inputs and print raw conversion result values.

E dump EEPROM content

Dump EEPROM contents. Dump contains stored user defaults and calibration constants.

C clear EEPROM factory default reset counter

JUMA-TRX2 software keeps track how many factory default resets have occurred. This counter is shown (printed to the serial interface) on every start up. This counter can be reset to zero with this command.

W writes from PC terminal to JUMA-TRX2 LCD display

Write characters from PC terminal to the JUMA-TRX2 LCD display. W-command is useful help to test LCD compatibility and general operation. Test loop can be stopped with Esc character.

B LCD bar graph test

Runs bar graph display up and down on the JUMA-TRX2 LCD display. This test verifies LCD display module soft font compatibility. Any character from PC terminal will stop the test loop.

s mute audio, stop SCAF filter clocking Mute JUMA-TRX2 audio. Stopping JUMA-TRX2 main board SCAF filter clocks generates mute.

S audio on, start SCAF filter clocking

Restart JUMA-TRX2 main board SCAF filter clocks. Opens the audio path.

p print CW speed pot & S-meter A/D conversion values Print CW speed potentiometer value and S-meter value.

d prints some internal VFO select logic values Print some internal variables used in VFO select logic.

o prints reference oscillator calibration value Print DDS reference oscillator calibration value. Nominal value is 18000000Hz

m print internal timing ms counter value Print internal 1ms tick counter value. Can be used to verify JUMA-TRX2 software timing.

t writes test data to SPI bus

Write once 0x5501 test data to the SPI bus. This command can be used to verify SPI bus I/O functions in the main board and multiband PA board.

c continuous test data write to SPI bus

Same as t-command but writes continuously increasing test data word to the SPI bus. Test loop can be stopped with sending any character from PC terminal.

+ increase multiband PA RF attenuator value
- decreace multiband PA RF attenuator value
Increase or decrease multiband PA board RF attenuator value.

f print SPI bus control data Print current SPI bus control data. Data correspond current main board and multi band PA SPI I/O state.

Z intentional divide by zero, CPU error trap test Performs intentional divide by zero that causes CPU error trap. Command is used to test error trap logic.

Yaesu CAT emulation

Some Yaesu CAT control protocol commands are implemented in the JUMA-TRX2 software. There is no exact 1:1 match in JUMA-TRX2 functionality and the original Yaesu FT897 CAT specification. Essential commands such as set frequency, read frequency, read s-meter, set mode etc are implemented. Implementation of these essential commands allows JUMA-TRX2 to be controlled by rig control programs. Particular rig control program must be set to Yaesu FT897 control mode.

Implemented Yaesu CAT commands 0x03 Read RX frequency and mode 0xE7 Read RX status (S-meter) 0xF7 Read TX status 0x02 Set split on 0x82 Set split off 0x81 Toggle VFO select 0x07 Set operating mode bits 0x01 Set operating frequency 0x08 PTT on 0x88 PTT off 0x00 VFO lock on 0x88 VFO lock off For more details see JUMA-TRX2 software source code and Yaesu CAT specification.