# RGO ONE V6 — HF Transceiver

## CAT Operation Manual

**This manual describes features that are implemented in firmware version 1.11 and higher. If you are using RGO ONE transceiver with lower version, please check in menu 37 and update if needed!*

RGO ONE V6 supports TS-480SAT compatible CAT (Computer Aided Transceiver) protocol over a standard USB connection. A virtual COM port installation must be done on your PC. Besides USB connection there is second TTL UART port wired to rear DB15 connector. Line connections are as follows:

- pin 4 – TTL CAT port ground
- pin 5 – TTL CAT port TX line
- pin 6 – TTL CAT port RX line

Communication speed in menu 22 affects only auxiliary TTL CAT port. Available COM speeds are 9600 kbits/s, 19200 kbits/s, 38400 kbits/s, 57600 kbits/s. This second CAT port can either communicate independently or also responds to the commands sent to USB port (Slave mode). This feature can be set in menu 3 “ttLPrt” with parameters: “nor” or “SYnC”.

CAT commands consist of function and parameter parts. Function part is usually two letters. Parameter part consists of digits of various length. All commands are terminated with a semicolon (;). Commands can read the current state by sending the command code alone, or write a new value by appending parameters.

Access to EX commands from 070 to 083 is possible only if service menu (menu 70 – menu 82) and band plan (menu 79) are enabled (To enable service and band plan menus hold down enc.1 and enc.2 buttons while switching on the radio).

| Function | Description | Parameter values |
|---|---|---|
| **AC** | Sets or reads internal antenna tuner status<br><br>Set: ACP1P2P3; | P1 = 1 always<br><br>P2 = 0 menu 34 off |

| Function | Description | Parameter values |
|---|---|---|
| | Read: AC;<br>Answer: ACP1P2P3; | P2 = 1 menu 34 on (ATU board required)<br><br>P3 = 0 stop tuner<br>P3 = 1 start tuning (tuning active) |
| **AI** | Sets or reads the Auto-Info function ON/OFF<br><br>Set: AIP1;<br>Read: AI;<br>Answer: AIP1; | P1 = 0 AI off<br>P1 = 1 sends if freq/mode/band is changed<br>P1 = 2 sends IF every 1.5 sec<br>P1 = 3 sends IF in both formats |
| **BD** | Moves frequency down one band (action only)<br><br>Set: BD; | No parameters<br>No response |
| **BU** | Moves frequency up one band (action only)<br><br>Set: BU; | No parameters<br>No response |
| **BW** | Sets or reads the bandwidth of intermediate frequency (IF).<br><br>Set: BWP1P2P2P2P2;<br>Read: BW;<br>Answer: BWP1P2P2P2P2; | P1 = 0 narrow FIL off<br>P1 = 1 narrow FIL on<br><br>P2 – IF bandwidth, 0000 – 9999 Hz |
| **EX** | Sets or reads extended menu parameters<br><br>Set: EXP1P1P1P2P2P2P2P3;<br>Read: EXP1P1P1P2P2P2P2;<br>Answer: EXP1P1P1P2P2P2P2P3; | P1 – menu number, 3 – digit format. The menu numbers are from 000 to 083.<br><br>P2 – for menu number 079 it varies from 0000 to 1010. For the other menu numbers P2 is always 0000.<br><br>P3 – menu parameter. It consists of 1 to 5 digits. |
| **EX000 – EX078;** | Sets or reads extended menu parameters | P1 = 000 – 078; 080 – 082; |

| Function | Description | Parameter values |
|---|---|---|
| **EX080 – EX082;** | Set: EXP1P1P1P2P2P2P2P3;<br>Read: EXP1P1P1P2P2P2P2;<br>Answer: EXP1P1P1P2P2P2P2P3;<br><br>Note: Menu entries 8, 37, 38, 39, 40 and 82 cannot be set/read | P2 = 0000;<br>P3 – can be one, two, three or four digit. Boolean parameters are only one digit – 0 or 1, 0, 1 or 2, 0, 1, 2 or 3. |
| **EX014 – EX017** | Sets or reads CW/SSB messages<br><br>Set: EXP1P1P1P2P2P2P2P3;<br>Read: EXP1P1P1P2P2P2P2;<br>Answer: EXP1P1P1P2P2P2P2P3;<br><br>* SSB memories will be available only when the audio speech processor module is installed in the transceiver. | P1 = 014 - 017;<br>P2 = 0000;<br>P3 – the CW/SSB message. It can be up to 48 ASCII characters. |
| **EX079** | Sets or reads extended menu parameters<br><br>Set: EXP1P1P1P2P2P2P2P3;<br>Read: EXP1P1P1P2P2P2P2;<br>Answer: EXP1P1P1P2P2P2P2P3; | P1 = 079;<br>P2 – the first two digits are band number; second two digits are:<br>00 – band low limit;<br>10 – band high limit;<br>For example:<br>P2 = 0100 – band 2; low limit<br>P2 = 0101 – band 2; high limit<br>P3 = 03500 – frequency, 5 - digit format |
| **EX083** | Sets or reads extended menu parameters<br><br>Set: EXP1P1P1P2P2P2P2P3;<br>Read: EXP1P1P1P2P2P2P2;<br>Answer: EXP1P1P1P2P2P2P2P3; | P1 = 083;<br>P2 = 0000;<br>P3 = 00000 – 65535; Encoded in binary format. First 8 MSB bits encode capacitance C, bit 9 encodes HiZ/LoZ. Last 7 LSB encodes inductance L. |
| **FA** | Sets or reads VFO A frequency<br><br>Set: FAP1;<br>Read: FA;<br>Answer: FAP1; | P1 = frequency in Hz, 11 - digit format.<br>Example: FA00014000000; |

| Function | Description | Parameter values |
|---|---|---|
| **FB** | Sets or reads VFO B frequency<br><br>Set: FBP1;<br>Read: FB;<br>Answer: FBP1; | P1 = frequency in Hz, 11 - digit format.<br>Example: FB00007074000; |
| **FR** | Sets or reads the RX VFO<br><br>*Set: FRP1;<br>Read: FR;<br>Answer: FRP1;<br><br>* Function set is not possible when SPLIT function is active. When P1=2 will activate current memory channel | P1 = 0 VFO A<br>P1 = 1 VFO B<br>P1 = 2 M.CH |
| **FS** | Sets or reads fine tuning status<br><br>Set: FSP1;<br>Read: FS;<br>Answer: FSP1; | P1 = 0 fine tuning OFF<br>P1 = 1 fine tuning ON (step = 1 Hz) |
| **FT** | Sets or reads the TX VFO<br><br>*Set: FTP1;<br>Read: FT;<br>Answer: FTP1;<br>*Will set SPLIT if opposite VFO is assigned for TX. Will deactivate split if the same VFO is assigned for transmit. When P1=2 will activate current memory channel | P1 = 0 VFO A<br>P1 = 1 VFO B<br>P1 = 2 M.CH |
| **FW** | Reads the radio firmware version<br>Read: FW;<br>Answer: FWXXXX; | Returns radio FW version<br>Example answer:<br>FW0108; |
| **GT** | Sets or reads AGC speed<br><br>Set: GTP1P1P1;<br>Read: GT;<br>Answer: GTP1P1P1; | P1 = 000 AGC off<br>P1 = 001 fast<br>P1 = 002 slow |

| Function | Description | Parameter values |
|---|---|---|
| **ID** | Reads the radio ID model number (for RGO ONE V6 – 006)<br><br>Read: ID;<br>Answer: IDXXX; | Returns radio model version<br><br>Example answer:<br>ID006; |
| **IF** | Retrieves full transceiver status in one block<br><br>Read: IF;<br>Answer: IF<P1..P15>; | P1–P15 as per TS-480 protocol<br><br>Encodes: VFO freq, RIT/XIT offset, RIT/XIT on/off, TX state, mode, etc. |
| **KS** | Sets or reads electronic keyer speed<br><br>Set: KSP1P1P1;<br>Read: KS;<br>Answer: KSP1P1P1; | P1 = 005 (min) to 045 (max) WPM |
| **KY** | Converts characters into Morse code (as per TS-480 protocol)<br><br>Set: KYP1P2;<br>Read: KY;<br>Answer: KYP1; | P1 = 0 keyer buffer empty<br>P1 = 1 keyer buffer full (busy)<br>P2 – 24 symbols fixed format parameter. “ ” (space) character must be used for the unused characters. These space characters will not be converted. If all P2 parameter characters are spaces, the transceiver stops sending the message. |
| **LK** | Sets or reads the key lock function<br><br>Set: LKP1P2;<br>Read: LK;<br>Answer: LKP1P2; | P1 = 0 unlock<br>P1 = 1 lock<br><br>P2 = 0 always |
| **MC** | Recalls or reads memory channel<br>Set: MCP1P2P2;<br>Read: MC;<br>Answer: MCP1P2P2; | P1 = 0<br>P2 = 00 - 99 |
| **MD** | Sets or reads the operating mode<br><br>Set: MDP1; | P1 = 1 LSB<br>P1 = 2 USB<br>P1 = 3 CW |

| Function | Description | Parameter values |
|---|---|---|
| | Read: MD;<br>Answer: MDP1; | P1 = 4 FM<br>P1 = 5 AM<br>P1 = 6 Digi (FSK/Data)<br>P1 = 7 CW-R (reverse CW) |
| **MG** | Sets or reads microphone gain<br><br>Set: MGP1P1P1;<br>Read: MG;<br>Answer: MGP1P1P1; | P1 = 000 to 010 |
| **ML** | Sets or reads TX monitor level (for current operating mode CW or SSB)<br><br>Set: MLP1P1P1;<br>Read: ML;<br>Answer: MLP1P1P1; | P1 = 000 TX monitor off<br>P1 = 001–010 monitor level |
| **MR** | Reads Memory channel data<br>Read: MRP1P2P3P3;<br>Answer: MRP1P2P3P3P4P5P6P7P8P9P10P11; | P1 = 0 RX; P1 = 1 TX<br>P2 = 0<br>P3 = 00 – 99 Channel number<br>P4 – Frequency 11 digits<br>P5 – Mode (sends MD command)<br>P6 = 0/1/2/3 Step 1/10/100Hz, 1kHz<br>P7 = 0/1 NB OFF/ON<br>P8 = 0/1 PRE OFF/ON<br>P9 = 0/1 ATT OFF/ON<br>P10 = 2/3 AGC F/S<br>P11 = 0/1 FIL OFF/ON |
| **MW** | Store data to the Memory channel<br><br>Set: MWP1P2P3P3P4P5P6P7P8P9P10P11 | P1 = 0/1 RX/TX frequency<br>P2 = 0<br>P3 = 00 – 99 Channel number<br>P4 – Frequency 11 digits<br>P5 – Mode (sends MD command)<br>P6 = 0/1/2/3 Step 1/10/100Hz, 1kHz<br>P7 = 0/1 NB OFF/ON<br>P8 = 0/1 PRE OFF/ON<br>P9 = 0/1 ATT OFF/ON |

| Function | Description | Parameter values |
|---|---|---|
| | | P10 = 2/3 AGC F/S<br>P11 = 0/1 FIL OFF/ON |
| **NB** | Sets or reads Noise Blanker (NB) status<br><br>Set: NBP1;<br>Read: NB;<br>Answer: NBP1; | P1 = 0 NB off<br>P1 = 1 NB on (NB board required) |
| **NL** | Sets or reads Noise Blanker level<br><br>Set: NLP1P1P1;<br>Read: NL;<br>Answer: NLP1P1P1; | P1 = 001 to 016<br>(NB board required) |
| **PA** | Sets or reads receiver pre-amplifier status<br><br>Set: PAP1;<br>Read: PA;<br>Answer: PAP1P2; | P1 = 0 Preamp off<br>P1 = 1 Preamp on<br><br>P2 = 0 always |
| **PB** | Plays or reads CW/SSB memory messages<br><br>Set: PBP1;<br>Read: PB;<br>Answer: PBP1P1P1;<br><br>Memory queue of three sequential memories to be played. For example first play memory 1, second play memory 3, third play memory 2. The answer in this case will be: PB132; | P1 = 0 stop playing<br>P1 = 1 play channel 1<br>P1 = 2 play channel 2<br>P1 = 3 play channel 3<br>P1 = 4 play channel 4<br><br>000 = inactive<br>132 = playing CH1 first, then CH3, then CH2 |
| **PC** | Sets or reads RF output power<br><br>Set: PCP1P1P1;<br>Read: PC;<br>Answer: PCP1P1P1; | P1 = 000 to 050<br><br>Example: PC050 - maximum output (50 W) |
| **PL** | Sets or reads speech processor level | P1 = 000–010 input level<br>P2 = 000–010 output level |

| Function | Description | Parameter values |
|---|---|---|
| | Set: PLP1P1P1P2P2P2;<br>Read: PL;<br>Answer: PLP1P1P1P2P2P2; | P2 = 000 compressor off |
| **RA** | Sets or reads receiver attenuator status<br><br>Set: RAP1;<br>Read: RA;<br>Answer: RAP1P2; | P1 = 00 attenuator off<br>P1 = 01 attenuator on<br><br>P2 = 00 always |
| **RC** | Clears the RIT offset frequency (action only)<br><br>Set: RC; | No parameters<br>Resets RIT offset to 0 Hz<br>No response |
| **RD** | Moves RIT offset frequency DOWN (or reads current offset if no param)<br><br>Set: RD; or RDP1P1P1;<br>Read: RDP2;<br>Answer: RDP2; | P1 = 00000–00500 with 10Hz step (0 – 5kHz)<br>(if no param: moves one step down )<br><br>P2 = 0 (read response) |
| **RG** | Sets or reads RF gain<br><br>Set: RGP1;<br>Read: RG;<br>Answer: RGP1; | P1 = 000–100<br><br>RG097 - 97% gain (typical default) |
| **RM** | Sets or reads the meter function<br><br>Set: RMP1;<br>Read: RM;<br>Answer: RMP1P2P2P2P2; | P1 = 0 RF power meter<br>P1 = 1 ALC meter<br>P1 = 2 SWR meter<br>P1 = 3 COMP meter<br><br>P2 = 0000–0015 (meter reading) |
| **RT** | Sets or reads RIT on/off status<br><br>Set: RTP1;<br>Read: RT;<br>Answer: RTP1; | P1 = 0 RIT off<br>P1 = 1 RIT on |

| Function | Description | Parameter values |
|---|---|---|
| **RU** | Moves RIT offset frequency UP<br>(or reads current offset if no param)<br><br>Set: RU; or RUP1P1P1P1P1;<br>Read: RU;<br>Answer: RUP2; | P1 = 00000–00500 with 10Hz step (0 – 5kHz)<br>(if no param: moves one step up)<br><br>P2 = 0 (read response) |
| **RX** | Sets the transceiver to receive mode<br><br>Set: RX; | Action command — forces RX state |
| **SD** | Sets or reads CW break-in delay<br><br>Set: SDP1P1P1P1;<br>Read: SD;<br>Answer: SDP1P1P1P1; | P1 = 0000–1200 (milliseconds)<br><br>P1 = 0000 - QSK (full break-in) mode |
| **SM** | Reads S-meter signal level<br><br>Read: SMP1;<br>Answer: SMP1P2P2P2P2; | P1 = 0 (always)<br>P2 = 0000–0015 (signal level)<br><br>P2 = 0000 - no signal<br>P2 = 0015 - maximum S9+ |
| **SN** | Reads the radio main microcontroller serial number<br><br>Read: SN;<br>Answer: SNXXXXXXXX XXXXXXXX XXXXXXXX; | Returns microprocessor serial number (3 space-separated 8 – digit numbers)<br>Needed for software unlock and software code generation.<br>Example answer:<br>ID20303656 32435012 0030002B; |
| **TX** | Sets the transceiver to transmit mode<br><br>Set: TXP1; | P1 = 0 normal TX (mic/key)<br>P1 = 2 TUNE transmission |
| **UN** | Unlocks transceiver software features. Used for service/manufacture purposes.<br><br>Set: UNP1P1P1P1P1P1; | P1 = 6 – digit passcode for the transceiver software unlocking. |
| **VD** | Sets or reads VOX delay time (SSB) | P1 = 0000–1200 (milliseconds) |

| Function | Description | Parameter values |
|---|---|---|
| | Set: VDP1P1P1P1;<br>Read: VD;<br>Answer: VDP1P1P1P1; | |
| **VG** | Sets or reads VOX gain<br><br>Set: VGP1P1P1;<br>Read: VG;<br>Answer: VGP1P1P1; | P1 = 000–010<br>P1 = 000 VOX function off |
| **XT** | Sets or reads XIT on/off status<br><br>Set: XTP1;<br>Read: XT;<br>Answer: XTP1; | P1 = 0 XIT off<br>P1 = 1 XIT on |