# ICOM

Icom Inc.

VHF/UHF ALL MODE TRANSCEIVER

# IC-9700

Icom Inc.

# Table of contents

# Remote control

## ■ Remote control (CI-V) information

### ◇ CI-V connection

The transceiver's operating frequency, mode, VFO and memory selection, can be remotely controlled using a PC.
The Icom Communications Interface V (CI-V) controls the transceiver.
Select your connection method from the following:

• **A USB cable**

The required USB driver and driver installation guide can be downloaded from the Icom web site.

Go to " https://www.icomjapan.com/support ," and then click "Firmware / Software"

ⓘThe download procedure on the web page may be changed without notice.

ⓘMake the connection as short as possible. The transceiver may not be recognized by the controller, depending on the USB cable length.
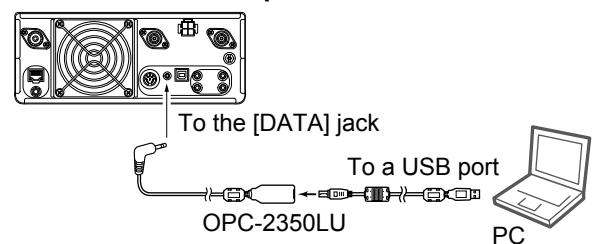
• **Connection example**

USB cable
To the [USB] port
(Type-B)
To a USB port
PC
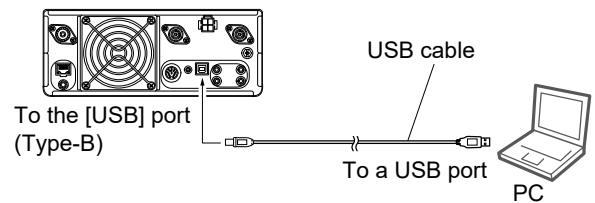
• **The optional OPC-2350LU (DATA CABLE)**

**NOTE: Before you start sending data, be sure to set the following items.**
• Set "DATA Function" to "CI-V."
 (SET > Connectors > **USB (B)/DATA Function**)

• **Connection example**
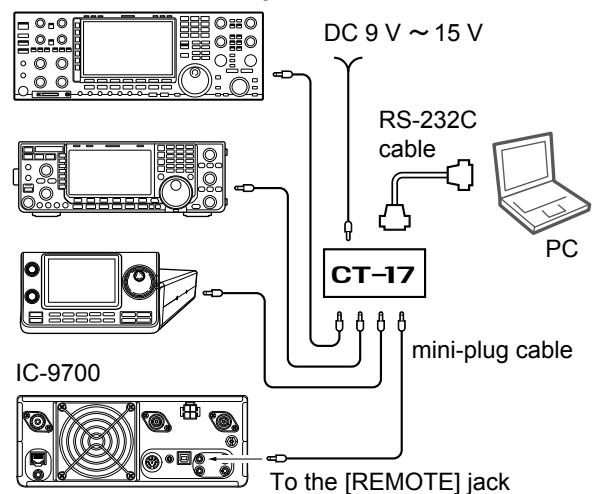
To the [DATA] jack
To a USB port
OPC-2350LU
PC

• **The optional CT-17 (CI-V LEVEL CONVERTER)**
Connects to a PC with an RS-232C port.

• **Connection example**

DC 9 V ～ 15 V
RS-232C cable
CT–17
PC
IC-9700
mini-plug cable
To the [REMOTE] jack

■  **Remote control (CI-V) information(Continued)**

◇**Preparing**

The Icom Communications Interface V (CI-V) is used for remote control.
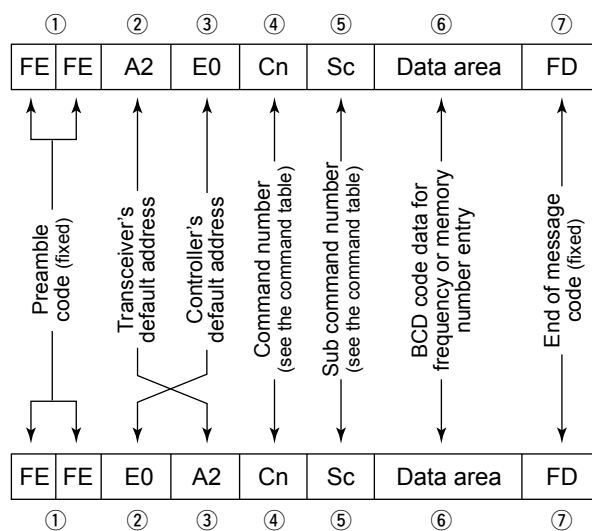
To control the transceiver, first set its address, data communication speed, and transceive function.

These settings are set in the Set mode (Refer to the IC-9700 instruction manual).
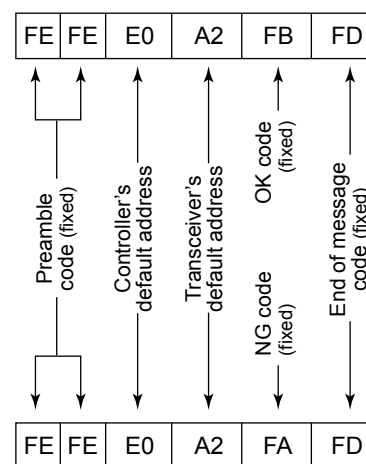
◇**About the data format**

The CI-V system can be written using the following data formats. Data formats differ according to command numbers. A data area or sub command is added for some commands.

**Controller to IC-9700**

| ① | | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |
|---|---|---|---|---|---|---|---|
| FE | FE | A2 | E0 | Cn | Sc | Data area | FD |

- Preamble code (fixed)
- Transceiver's default address
- Controller's default address
- Command number (see the command table)
- Sub command number (see the command table)
- BCD code data for frequency or memory number entry
- End of message code (fixed)

| FE | FE | E0 | A2 | Cn | Sc | Data area | FD |
|---|---|---|---|---|---|---|---|
| ① | | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |

**IC-9700 to controller**

**OK message to controller**

| FE | FE | E0 | A2 | FB | FD |
|---|---|---|---|---|---|

- Preamble code (fixed)
- Controller's default address
- Transceiver's default address
- OK code (fixed)
- End of message code (fixed)

| FE | FE | E0 | A2 | FA | FD |
|---|---|---|---|---|---|

- NG code (fixed)

**NG message to controller**

# Remote control

NOTE: Operation of some control dials overrides CI-V commands. If a control dial, such as the AF Volume dial that has a mark on it, is rotated after sending a CI-V command, the command will be overwritten by the operation.

## ◇Command table

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 00 | | See p. 13 | Send the frequency data (transceive) |
| 01 | | See p. 13 | Send the mode data (transceive) |
| 02[*1] | | See p. 13 | Read the band edge frequencies |
| 03[*1] | | See p. 13 | Read the operating frequency |
| 04[*1] | | See p. 13 | Read the operating mode |
| 05[*2] | | See p. 13 | Set the operating frequency |
| 06[*2] | | See p. 13 | Set the operating mode |
| 07 | | | Select the VFO mode |
| | 00 | | Select VFO A (In the satellite mode, selects the VFO mode.) |
| | 01 | | Select VFO B (In the satellite mode, "FA" (NG) is returned.) |
| | A0 | | Equalize VFO A and VFO B |
| | B0 | | Exchange MAIN and SUB Bands |
| | D0 | | Select the main band |
| | D1 | | Select the sub band |
| | D2* | 00 | Send/read main band selection |
| | | 01 | Send/read sub band selection |
| 08[*2] | | | Select the Memory mode |
| | | 0001 to 0099 | Select the Memory channel (Including the satellite mode) (0001=M-CH01, 0099=M-CH99) |
| | | 0100 to 0105 | Select program scan edge channel 1A/1B to 3A/3B (0100/0101 (1A ch/1B ch), 0104/0105 (3A ch/3B ch)) |
| | | 0106, 0107 | Select call channel C1/C2 (0106 (C1 ch), 0107 (C2 ch)) |
| 09 | | | Memory write |
| 0A | | | Memory copy to VFO |
| 0B | | | Memory clear |
| 0C[*1] | | See p. 13 | Read frequency offset |
| 0D[*2] | | See p. 13 | Send frequency offset |
| 0E | 00 | | Cancel the scan |
| | 01 | | Start a Programmed/memory scan |
| | 02 | | Start a Programmed scan |
| | 03 | | Start a ⊿F scan |
| | 12 | | Start a Fine programmed scan |
| | 13 | | Start a Fine ⊿F scan |
| | 22 | | Start a Memory scan |
| | 23 | | Start a Select memory scan |
| | 24 | | Start a Mode Select scan |
| | Ax[*2] (x=1 to 7) | | Select ⊿F scan span (x=1 (±5 kHz), x=2 (±10 kHz), x=3 (±20 kHz), x=4 (±50 kHz), x=5 (±100 kHz), x=6 (±500 kHz), x=7 (±1 MHz)) |
| | B0[*2] | | Clear the Select channel setting |
| | B1[*2] | | Set as select channel (The previously set number by CI-V is set after turning power ON, or "1" is selected if no selection is performed.) |
| | | 01 to 03 | Set the channel as a Select channel (01=SEL1, 02=SEL2, 03=SEL3) |
| | B2[*2] | 00 to 03 | Set the Select memory scan channel (00=ALL, 01=SEL1, 02=SEL2, 03=SEL3) |
| | D0[*2] | | Set Scan resume OFF |
| | D3[*2] | | Set Scan resume ON (Close&Delay) |
| 0F | [*1] | 00 | Read Split OFF setting |
| | | 01 | Read Split ON setting |
| | | 11 | Read DUP– operation |
| | | 12 | Read DUP+ operation |
| | | 13 | Read DD Repeater Simplex mode (RPS) |
| | 00[*2] | | Set Split function OFF |
| | 01[*2] | | Set Split function ON |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 0F | 10[*2] | | Set the simplex operation |
| | 11[*2] | | Set DUP– operation |
| | 12[*2] | | Set DUP+ operation |
| | 13[*2] | | Set DD Repeater Simplex mode (RPS) |
| 10* | | 00 to 11 | Send/read the tuning step (00=OFF (10 Hz or 1 Hz), 01=100 Hz, 02=500 Hz, 03=1 kHz, 04=5 kHz, 05=6.25 kHz, 06=10 kHz, 07=12.5 kHz, 08=20 kHz, 09=25 kHz, 10=50 kHz, 11=100 kHz) |
| 11* | | 00 | Send/read attenuator OFF setting |
| | | 10 | Send/read 10 dB attenuator setting |
| 13 | 00 | | Speech all data with voice synthesizer (S meter level, frequency and mode) |
| | 01 | | Speech the operating frequency and S meter level by voice synthesizer |
| | 02 | | Speech the operating mode by voice synthesizer ①The mode is announced after the ongoing speech. |
| 14* | 01 | 0000 ~ 0255 | Send/read the AF level (0000=Minimum to 0255=Maximum) |
| | 02 | 0000 ~ 0255 | Send/read the RF gain level (0000=Minimum to 0255=Maximum) |
| | 03 | 0000 ~ 0255 | Send/read the squelch level (0000=Minimum to 0255=Maximum) |
| | 06 | 0000 ~ 0255 | Send/read the NR level (0000=0%, 0255=100%) |
| | 07 | 0000 ~ 0255 | Send/read [TWIN PBT] (PBT1) position (0000=max. Counter Clockwise, 0128=center, 0255=max. Clockwise) |
| | 08 | 0000 ~ 0255 | Send/read [TWIN PBT] (PBT2) position (0000=max. Counter Clockwise, 0128=center, 0255=max. Clockwise) |
| | 09 | 0000 ~ 0255 | Send/read CW pitch (5 Hz steps) (0000=300 Hz, 0128=600 Hz, 0255=900 Hz) |
| | 0A | 0000 ~ 0255 | Send/read RF power (0000=Minimum to 0255=Maximum) |
| | 0B | 0000 ~ 0255 | Send/read MIC gain (0000=Minimum to 0255=Maximum) |
| | 0C | 0000 ~ 0255 | Send/read keying speed (0000=6 WPM to 0255=48 WPM) |
| | 0D | 0000 ~ 0255 | Send/read Notch filter setting (0000=max. Counter Clockwise, 0128=center, 0255=max. Clockwise) |
| | 0E | 0000 ~ 0255 | Send/read the COMP level (0000=0 to 0255=10) |
| | 0F | 0000 ~ 0255 | Send/read the Break-IN Delay setting (0000=2.0 d to 0255=13.0 d) |
| | 12 | 0000 ~ 0255 | Send/read NB level (0000=0% to 0255=100%) |
| | 15 | 0000 ~ 0255 | Send/read Monitor audio [MONI] level (0000=0% to 0255=100%) |
| | 16 | 0000 ~ 0255 | Send/read the VOX gain (0000=0% to 0255=100%) |
| | 17 | 0000 ~ 0255 | Send/read the Anti VOX gain (0000=0% to 0255=100%) |
| | 19 | 0000 ~ 0255 | Send/read LCD backlight brightness (0000=0% to 0255=100%) |
| 15[*1] | 01 | 00 or 01 | Read noise or S-meter squelch status (00=Close, 01=Open) |
| | 02 | 0000 to 0255 | Read S-meter level (0000=S0, 0120=S9, 0241=S9+60 dB) |
| | 05 | 00 or 01 | Read various squelch (tone squelch, and so on) status (00=Close, 01=Open) |
| | 07 | 00 or 01 | Read the OVF status (00=OVF indicator is OFF, 01=OVF indicator is ON) |
| | 11 | 0000 ~ 0255 | Read the PO meter level (0000=0% to 0143=50% to 0213=100%) |

# Remote control

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 15[*1] | 12 | 0000 ~ 0255 | Read SWR meter level (0000=SWR1.0, 0048=SWR1.5, 0080=SWR2.0, 0120=SWR3.0) |
| | 13 | 0000 ~ 0255 | Read ALC meter level (0000=Minimum to 0120=Maximum) |
| | 14 | 0000 ~ 0255 | Read COMP meter level (0000=0 dB, 0130=15 dB, 0210=25.5 dB) |
| | 15 | 0000 ~ 0255 | Read Vd meter level (0000=0 V, 0013=10 V, 0241=16 V) |
| | 16 | 0000 ~ 0255 | Read Id meter level (0000=0 A, 0121=10 A, 0241=20 A) |
| 16* | 02 | 00 to 03 | Send/read the Preamp/External Preamp (00=P.AMP (OFF)/EXT-P.AMP (OFF), 01=P.AMP (ON)/EXT-P.AMP (OFF), 02=P.AMP (OFF)/EXT-P.AMP (ON), 03=P.AMP (ON)/EXT-P.AMP (ON)) |
| | 12 | 01 to 03 | Send/read the AGC time constant (01=FAST, 02=MID, 03=SLOW) |
| | 22 | 00 or 01 | Send/read the Noise blanker (00=OFF, 01=ON) |
| | 40 | 00 or 01 | Send/read the Noise reduction (00=OFF, 01=ON) |
| | 41 | 00 or 01 | Send/read the Auto Notch function (00=OFF, 01=ON) |
| | 42 | 00 or 01 | Send/read the Repeater tone (00=OFF, 01=ON) |
| | 43 | 00 or 01 | Send/read the Tone squelch (00=OFF, 01=ON) |
| | 44 | 00 or 01 | Send/read the Speech compressor (00=OFF, 01=ON) |
| | 45 | 00 or 01 | Send/read the Monitor [MONI] function (00=OFF, 01=ON) |
| | 46 | 00 or 01 | Send/read the VOX function (00=OFF, 01=ON) |
| | 47 | 00 to 02 | Send/read the BK-IN function (00=BK-IN OFF, 01=Semi BK-IN ON, 02=Full BK-IN ON) |
| | 48 | 00 or 01 | Send/read the Manual Notch function (00=OFF, 01=ON) |
| | 4A | 00 or 01 | Send/read the AFC function (00=OFF, 01=ON) |
| | 4B | 00 or 01 | Send/read the DTCS function (00=OFF, 01=ON) |
| | 4F | 00 or 01 | Send/read the Twin peak filter (00=OFF, 01=ON) (Can be turned ON only when Mark and Shift are set to 2125 Hz and 170 Hz, respectively) |
| | 50 | 00 or 01 | Send/read the Dial lock function (00=OFF, 01=ON) |
| | 56 | 00 or 01 | Send/read the DSP IF filter type (00=SHARP, 01=SOFT) |
| | 57 | 00 to 02 | Send/read the Manual Notch width (00=WIDE, 01=MID, 02=NAR) |
| | 58 | 00 to 02 | Send/read SSB transmit bandwidth (00=WIDE, 01=MID, 02=NAR) (One of following values is applied, depending on the "COMP" status (ON or OFF): WIDE (Command: 1A 05 0017), MID (Command: 1A 05 0018) or NAR (Command: 1A 05 0019)) |
| | 59 | 00 or 01 | Send/read the sub band (the Dualwatch function) (00=OFF, 01=ON) |
| | 5A | 00 or 01 | Send/read the satellite mode (00=OFF, 01=ON) |
| | 5B | 00 to 02 | Send/read the DSQL (Digital Call Sign squelch)/CSQL (Digital Code squelch) setting (DV mode only) (00=OFF, 01=DSQL,02=CSQL) |
| | 5C | 00 to 02 | Set the GPS TX mode (00= OFF, 01= D-PRS, 02= NMEA) |
| | | 00 to 03, 06 to 09 | Set the Tone squelch function (00=OFF, 01=TONE, 02=TSQL, 03=DTCS, 06=DTCS (T)/DTCS (R), 07=TONE (T)/DTCS (R), 08=DTCS (T)/TSQL (R), 09=TONE (T)/TSQL (R)) |
| | 65 | 00 or 01 | Set the IP Plus function (00=OFF, 01=ON) |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 17[*3] | | | Send CW messages |
| 18 | 00 | | Turn OFF the transceiver |
| | 01[*4] | | Turn ON the transceiver |
| 19[*1] | 00 | | Read the transceiver ID |
| 1A* | 00 | | Send/read memory contents |
| | 01 | | Send/read band stacking register contents |
| | 02[*5] | | Send/read memory keyer contents |
| | 03 | | Send/read the selected IF filter width |
| | 04 | | Send/read the selected AGC time constant |
| | 05 | 0001 | SET > Tone Control/TBW > RX > Send/read SSB RX HPF/LPF settings |
| | | 0002 | 00 to 10 SET > Tone Control/TBW > RX > Send/read SSB RX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0003 | 00 to 10 SET > Tone Control/TBW > RX > Send/read SSB RX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0004 | SET > Tone Control/TBW > RX > Send/read AM RX HPF/LPF settings |
| | | 0005 | 00 to 10 SET > Tone Control/TBW > RX > Send/read AM RX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0006 | 00 to 10 SET > Tone Control/TBW > RX > Send/read AM RX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0007 | SET > Tone Control/TBW > RX > Send/read FM RX HPF/LPF settings |
| | | 0008 | 00 to 10 SET > Tone Control/TBW > RX > Send/read FM RX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0009 | 00 to 10 SET > Tone Control/TBW > RX > Send/read FM RX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0010 | SET > Tone Control/TBW > RX > Send/read DV RX HPF/LPF settings |
| | | 0011 | 00 to 10 SET > Tone Control/TBW > RX > Send/read DV RX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0012 | 00 to 10 SET > Tone Control/TBW > RX > Send/read Auto DV RX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0013 | SET > Tone Control/TBW > RX > Send/read CW RX HPF/LPF settings |
| | | 0014 | SET > Tone Control/TBW > RX > Send/read RTTY RX HPF/LPF settings |
| | | 0015 | 00 to 10 SET > Tone Control/TBW > TX > Send/read SSB TX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0016 | 00 to 10 SET > Tone Control/TBW > TX > Send/read SSB TX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0017 | SET > Tone Control/TBW > TX > Send/read SSB TX bandwidth for wide |
| | | 0018 | SET > Tone Control/TBW > TX > Send/read SSB TX bandwidth for mid |
| | | 0019 | SET > Tone Control/TBW > TX > Send/read SSB TX bandwidth for narrow |
| | | 0020 | SET > Tone Control/TBW > TX > SSB-D TX passband width |
| | | 0021 | 00 to 10 SET > Tone Control/TBW > TX > Send/read AM TX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0022 | 00 to 10 SET > Tone Control/TBW > TX > Send/read AM TX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0023 | 00 to 10 SET > Tone Control/TBW > TX > Send/read FM TX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0024 | 00 to 10 SET > Tone Control/TBW > TX > Send/read FM TX Tone (Treble) level (00=–5 to 10=+5) |
| | | 0025 | 00 to 10 SET > Tone Control/TBW > TX > Send/read DV TX Tone (Bass) level (00=–5 to 10=+5) |
| | | 0026 | 00 to 10 SET > Tone Control/TBW > TX > Send/read DV TX Tone (Treble) level (00=–5 to 10=+5) |

# Remote control

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0027 | SET > Function > Beep Level<br>(0000=Minimum to 0255=Maximum) |
| | | 0028 | SET > Function > Beep Level Limit<br>(00=OFF, 01=ON) |
| | | 0029 | SET > Function > Beep (Confirmation)<br>(00=OFF, 01=ON) |
| | | 0030 | SET > Function > Band Edge Beep<br>(00=OFF, 01=ON)<br>(ON = Beep sounds with a default amateur<br>band) |
| | | 02 | SET > Function > Band Edge Beep<br>(02=ON (User)) |
| | | 03 | SET > Function > Band Edge Beep<br>(03=ON (User) & TX Limit) |
| | | 0031 | SET > Function > Beep Sound (MAIN)<br>(0050=500 Hz to 0200=2000 Hz) |
| | | 0032 | SET > Function > Beep Sound (SUB)<br>(0050=500 Hz to 0200=2000 Hz) |
| | | 0033 | SET > Function > Sub Band Mute (TX) ><br>Speaker/Phones<br>(00=OFF, 01=ON) |
| | | 0034 | SET > Function > Sub Band Mute (TX) > USB<br>(00=OFF, 01=ON) |
| | | 0035 | SET > Function > Sub Band Mute (TX) > LAN<br>(00=OFF, 01=ON) |
| | | 0036 | SET > Function > RF/SQL Control<br>(00=Auto, 01=SQL, 02=RF+SQL) |
| | | 0037 | SET > Function ><br>FM/DV Center Error function<br>(00=OFF, 01=ON) |
| | | 0038 | SET > Function > TX Delay > 144M<br>(00=OFF, 01=10 ms, 02=15 ms,<br>03=20 ms, 04=25 ms, 05=30 ms) |
| | | 0039 | SET > Function > TX Delay > 430M<br>(00=OFF, 01=10 ms, 02=15 ms,<br>03=20 ms, 04=25 ms, 05=30 ms) |
| | | 0040 | SET > Function > TX Delay > 1200M<br>(00=OFF, 01=10 ms, 02=15 ms,<br>03=20 ms, 04=25 ms, 05=30 ms) |
| | | 0041 | SET > Function > Time-Out Timer<br>(00=OFF, 01=3 min., 02=5 min., 03=10 min.,<br>04=20 min., 05=30 min.) |
| | | 0042 | SET > Function > PTT Lock<br>(00=OFF, 01=ON) |
| | | 0043 | SET > Function > SPLIT > Quick SPLIT<br>(00=OFF, 01=ON)<br>(Setting the [SPLIT] key operation when it is<br>held down for 1 second.) |
| | | 0044 | SET > Function > SPLIT > FM SPLIT Offset |
| | | 0045 | SET > Function > SPLIT > SPLIT LOCK<br>(00=OFF, 01=ON) |
| | | 0046 | SET > Function > Auto Repeater<br>(00=OFF,<br>01=ON (DUP,TONE) for USA version) |
| | | 0047 | SET > Function > RTTY Mark Frequency<br>(00=1275 Hz, 01=1615 Hz, 02=2125 Hz) |
| | | 0048 | SET > Function > RTTY Shift Width<br>(00=170 Hz, 01=200 Hz, 02=425 Hz) |
| | | 0049 | SET > Function > RTTY Keying Polarity<br>(00=Normal, 01=Reverse) |
| | | 0050 | SET > Function > SPEECH ><br>SPEECH Language<br>(00=English, 01=Japanese) |
| | | 0051 | SET > Function > SPEECH > Alphabet<br>(00=Normal, 01=Phonetic Code) |
| | | 0052 | SET > Function > SPEECH ><br>SPEECH Speed<br>(00=Slow, 01=Fast) |
| | | 0053 | SET > Function > SPEECH ><br>RX Call Sign SPEECH<br>(00=OFF, 01=ON (Kerchunk), 02=ON (All)) |
| | | 0054 | SET > Function > SPEECH ><br>RX>CS SPEECH<br>(00=OFF, 01=ON) |
| | | 0055 | SET > Function > SPEECH ><br>S-Level SPEECH<br>(00=OFF, 01=ON) |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0056 | SET > Function > SPEECH ><br>MODE SPEECH<br>(00=OFF, 01=ON) |
| | | 0057 | SET > Function > SPEECH > SPEECH Level<br>(0000=0% to 0255=100%) |
| | | 0058 | SET > Function > [SPEECH/LOCK] Switch<br>(00=SPEECH/LOCK, 01=LOCK/SPEECH) |
| | | 0059 | SET > Function > Lock Function<br>(00=MAIN DIAL, 01=PANEL) |
| | | 0060 | SET > Function > Memo Pad Quantity<br>(00=5 ch, 01=10 ch) |
| | | 0061 | SET > Function > MAIN DIAL Auto TS<br>(00=OFF, 01=Low, 02=High) |
| | | 0062 | SET > Function > MIC Up/Down Speed<br>(00=Slow, 01=Fast) |
| | | 0063 | SET > Function > AFC Limit<br>(00=OFF, 01=ON) |
| | | 0064 | SET > Function > [NOTCH] Switch (SSB)<br>(00=Auto, 01=Manual, 02=Auto/Manual) |
| | | 0065 | SET > Function > [NOTCH] Switch (AM)<br>(00=Auto, 01=Manual, 02=Auto/Manual) |
| | | 0066 | SET > Function ><br>SSB/CW Synchronous Tuning<br>(00=OFF, 01=ON) |
| | | 0067 | SET > Function > CW Normal Side<br>(00=LSB, 01=USB) |
| | | 0068 | SET > Function > Screen Keyboard Type<br>(00=Ten-key, 01=Full Keyboard) |
| | | 0069 | SET > Function ><br>Screen Full Keyboard Layout<br>(00=English, 01=German, 02=French) |
| | | 0070 | SET > Function ><br>Screen Capture [POWER] Switch<br>(00=OFF, 01=ON) |
| | | 0071 | SET > Function > Screen Capture File Type<br>(00=PNG, 01=BMP) |
| | | 0072 | SET > Function > REF Adjust<br>(0000=0%, 0255=100%) |
| | | 0073 | SET > Function > REF Adjust (FINE)<br>(0000=0%, 0255=100%) |
| | | 0074 | SET > DV/DD Set > Standby Beep<br>(00=OFF, 01=ON, 02=ON (to me: High Tone),<br>03=ON (to me: Alarm/High Tone)) |
| | | 0075 | SET > DV/DD Set > Auto Reply<br>(00=OFF, 01=ON, 02=Voice) |
| | | 0076 | SET > DV/DD Set > DV Data TX<br>(00=PTT 01=Auto) |
| | | 0077 | SET > DV/DD Set > DV Fast Data > Fast Data<br>(00=OFF, 01=ON) |
| | | 0078 | SET > DV/DD Set > DV Fast Data ><br>GPS Data Speed<br>(00=Slow, 01=Fast) |
| | | 0079 | SET > DV/DD Set > DV Fast Data ><br>TX Delay (PTT)<br>(00=OFF, 01=1 sec. to 10=10 sec.) |
| | | 0080 | SET > DV/DD Set > Digital Monitor<br>(00=Auto, 01=Digital, 02=Analog) |
| | | 0081 | SET > DV/DD Set > Digital Repeater Set<br>(00=OFF, 01=ON) |
| | | 0082 | SET > DV/DD Set > DV Auto Detect<br>(00=OFF, 01=ON) |
| | | 0083 | SET > DV/DD Set > RX Record (RPT)<br>(00=ALL, 01=Latest Only) |
| | | 0084 | SET > DV/DD Set > BK<br>(00=OFF, 01=ON) |
| | | 0085 | SET > DV/DD Set > EMR<br>(00=OFF, 01=ON) |
| | | 0086 | SET > DV/DD Set > EMR AF Level<br>(0000=0%, 0255=100%) |
| | | 0087 | SET > DV/DD Set ><br>DD TX Inhibit (Power ON)<br>(00=OFF, 01=ON) |
| | | 0088 | SET > DV/DD Set > DD Packet Output<br>(00=Normal, 01=All) |
| | | 0089 | SET > QSO/RX Log > QSO Log<br>(00=OFF, 01=ON) |

For command 0044 data:

# Remote control

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0090 | SET > QSO/RX Log > RX History Log (00=OFF, 01=ON) |
| | | 0091 | SET > QSO/RX Log > CSV Format > Separator/Decimal (00=Separator is " , " and Decimal is " . ," 01=Separator is " ; " and Decimal is " . ," 02=Separator is " ; " and Decimal is " , ") |
| | | 0092 | SET > QSO/RX Log > CSV Format > Date (00="yyyy/mm/dd," 01="mm/dd/yyyy," 02="dd/mm/yyyy") |
| | | 0093 | SET > Connectors > External P.AMP > 144M (00=OFF, 01=ON) |
| | | 0094 | SET > Connectors > External P.AMP > 430M (00=OFF, 01=ON) |
| | | 0095 | SET > Connectors > External P.AMP > 1200M (00=OFF, 01=ON) |
| | | 0096 | SET > Connectors > External Speaker Separate (00=Separate, 01=Mix) |
| | | 0097 | SET > Connectors > Phones > Level (00=−15 dB to 30=+15 dB) |
| | | 0098 | SET > Connectors > Phones > L/R Mix (00=Separate, 01=Mix, 02=Auto) |
| | | 0099 | SET > Connectors > ACC AF/IF Output > AF/SQL Output Select (00=MAIN, 01=SUB) |
| | | 0100 | SET > Connectors > ACC AF/IF Output > Output Select (00=AF, 01=IF) |
| | | 0101 | SET > Connectors > ACC AF/IF Output > AF Output Level (0000=0% to 0255=100%) |
| | | 0102 | SET > Connectors > ACC AF/IF Output > AF SQL (00=OFF (Open), 01=ON) |
| | | 0103 | SET > Connectors > ACC AF/IF Output > AF Beep/Speech... Output (00=OFF, 01=ON) |
| | | 0104 | SET > Connectors > ACC AF/IF Output > ACC IF Output Level (0000=0% to 0255=100%) |
| | | 0105 | SET > Connectors > USB AF/IF Output > Output Select (00=AF, 01=IF) |
| | | 0106 | SET > Connectors > USB AF/IF Output > AF Output Level (0000=0%, 0255=100%) |
| | | 0107 | SET > Connectors > USB AF/IF Output > AF SQL (00=OFF (Open), 01=ON) |
| | | 0108 | SET > Connectors > USB AF/IF Output > AF Beep/Speech... Output (00=OFF, 01=ON) |
| | | 0109 | SET > Connectors > USB AF/IF Output > IF Output Level (0000=0%, 0255=100%) |
| | | 0110 | SET > Connectors > LAN AF/IF Output > Output Select (00=AF, 01=IF) |
| | | 0111 | SET > Connectors > LAN AF/IF Output > AF SQL (00=OFF (Open), 01=ON) |
| | | 0112 | SET > Connectors > MOD Input > ACC MOD Level (0000=0% to 0255=100%) |
| | | 0113 | SET > Connectors > MOD Input > USB MOD Level (0000=0% to 0255=100%) |
| | | 0114 | SET > Connectors > MOD Input > LAN MOD Level (0000=0% to 0255=100%) |
| | | 0115 | SET > Connectors > MOD Input > DATA OFF MOD (00=MIC, 01=ACC, 02=MIC,ACC, 03=USB, 04=MIC,USB, 05=LAN) |
| | | 0116 | SET > Connectors > MOD Input > DATA MOD (00=MIC, 01=ACC, 02=MIC,ACC, 03=USB, 04=MIC,USB, 05=LAN) |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0117 | SET > Connectors > ACC SEND Output > 144M (00=OFF, 01=ON) |
| | | 0118 | SET > Connectors > ACC SEND Output > 430M (00=OFF, 01=ON) |
| | | 0119 | SET > Connectors > ACC SEND Output > 1200M (00=OFF, 01=ON) |
| | | 0120 | SET > Connectors > USB SEND/Keying > USB SEND (00=OFF, 01=USB(A) DTR, 02=USB(A) RTS, 03=USB(B) DTR, 04=USB(B) RTS) (You cannot select the same setting for USB keying (CW) or USB keying (RTTY).) |
| | | 0121 | SET > Connectors > USB SEND/Keying > USB Keying (CW) (00=OFF, 01=USB(A) DTR, 02=USB(A) RTS, 03=USB(B) DTR, 04=USB(B) RTS) (You cannot select the same setting for USB SEND.) |
| | | 0122 | SET > Connectors > USB SEND/Keying > USB Keying (RTTY) (00=OFF, 01=USB(A) DTR, 02=USB(A) RTS, 03=USB(B) DTR, 04=USB(B) RTS) (You cannot select the same setting for USB SEND.) |
| | | 0123 | SET > Connectors > USB SEND/Keying > Inhibit Timer at USB connection (00=OFF, 01=ON) |
| | | 0124 | SET > Connectors > External Keypad > VOICE (00=OFF, 01=ON) |
| | | 0125 | SET > Connectors > External Keypad > KEYER (00=OFF, 01=ON) |
| | | 0126 | SET > Connectors > External Keypad > RTTY (00=OFF, 01=ON) |
| | | 0127 | SET > Connectors > CI-V > CI-V Transceive (00=OFF, 01=ON) |
| | | 0128 | SET > Connectors > CI-V > CI-V USB/LAN→REMOTE Transceive Address (0000=00h to 0223=DFh in Hexadecimal) |
| | | 0129 *1 | SET > Connectors > CI-V > CI-V USB Port (00=Link to [REMOTE], 01=Unlink to [REMOTE]) |
| | | 0130 | SET > Connectors > CI-V > CI-V USB Echo Back (00=OFF, 01=ON) |
| | | 0131 | SET > Connectors > CI-V > CI-V DATA Echo Back (00=OFF, 01=ON) |
| | | 0132 | SET > Connectors > CI-V > USB (B)/DATA Function > USB (B) Function (00=OFF, 01=RTTY Decode, 02=DV Data) |
| | | 0133 | SET > Connectors > CI-V > USB (B)/DATA Function > DATA Function (00=OFF, 01=RTTY Decode, 02=DV Data, 03= GPS/Weather, 04= CI-V) |
| | | 0134 | SET > Connectors > CI-V > USB (B)/DATA Function > GPS Out (00=OFF, 01=DATA→USB (B)) |
| | | 0135 | SET > Connectors > CI-V > USB (B)/DATA Function > DV Data/GPS Out Baud Rate (00=4800bps, 01=9600bps) |
| | | 0136 | SET > Connectors > CI-V > USB (B)/DATA Function > RTTY Decode Baud Rate (00=4800bps, 01=9600bps, 02=19200bps, 03=38400bps) |
| | | 0137 | SET > Network > DHCP (Valid after Restart) (00=OFF, 01=ON) |
| | | 0138 | SET > Network > IP Address (Valid after Restart) (0000000000000001=0.0.0.1 to 0255025502550254=255.255.255.254) (Valid when the DHCP (Valid after Restart) is set to OFF.) |

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0139 *1 | 0000000000 000001 ~ 0255025502 550254 | SET > Network > DHCP (Valid after Restart) Read the IP address set by the DHCP server (0000000000000001=0.0.0.1 to 0255025502 550254=255.255.255.254) (When the DHCP setting (Valid after Restart) is set to OFF, the manually set IP address (static IP address) is returned.) |
| | | 0140 | 01 ~ 30 | SET > Network > Subnet Mask (Valid after Restart) (01=128.0.0.0 (1 bit) to 30=255.255.255.252 (30 bit)) (Valid when the DHCP (Valid after Restart) setting is set to OFF.) |
| | | 0141 | 0000000000 000001 ~ 0255025502 550254, FF | SET > Network > Default Gateway (Valid after Restart) (0000000000000001=0.0.0.1 to 0255025502 550254=255.255.255.254, FF=Blank) (Valid when the DHCP (Valid after Restart) setting is set to OFF.) |
| | | 0142 | 0000000000 000001 ~ 0255025502 550254, FF | SET > Network > Primary DNS Server (Valid after Restart) (0000000000000001=0.0.0.1 to 0255025502 550254=255.255.255.254, FF=Blank) (Valid when the DHCP (Valid after Restart) setting is set to OFF.) |
| | | 0143 | 0000000000 000001 ~ 0255025502 550254, FF | SET > Network > 2nd DNS Server (Valid after Restart) (0000000000000001=0.0.0.1 to 0255025502 550254=255.255.255.254, FF=Blank) (Valid when the DHCP (Valid after Restart) setting is set to OFF.) |
| | | 0144 | See p. 15 | SET > Network > Network Name (Up to 15 characters) |
| | | 0145 | 00 or 01 | SET > Network > Network Control (Valid after Restart) (00=OFF, 01=ON) |
| | | 0146 | 00 or 01 | SET > Network > Power OFF Setting (for Remote Control) (00=Shutdown only, 01=Standby/Shutdown) |
| | | 0147 | 000001 ~ 065535 | SET > Network > Control Port (UDP) (Valid after Restart) (000001=1 to 065535=65535) |
| | | 0148 | 000001 ~ 065535 | SET > Network > Serial Port (UDP) (Valid after Restart) (000001=1 to 065535=65535) |
| | | 0149 | 000001 ~ 065535 | SET > Network > Audio Port (UDP) (Valid after Restart) (000001=1 to 065535=65535) |
| | | 0150 | 00 or 01 | SET > Network > Internet Access Line (Valid after Restart) (00=FTTH (Fiber To The Home), 01=ADSL/ CATV) |
| | | 0151 | See p. 15 | SET > Network > Network Radio Name (Up to 16 characters) |
| | | 0152 | 0000 ~ 0255 | SET > Display > LCD Backlight (0000=0% to 0255=100%) |
| | | 0153 | 00 or 01 | SET > Display > Display Type (00=A, 01=B) |
| | | 0154 | 00 or 01 | SET > Display > Display Font (00=Basic, 01=Round) |
| | | 0155 | 00 or 01 | SET > Display > Meter Peak Hold (Bar) (00=OFF, 01=ON) |
| | | 0156 | 00 or 01 | SET > Display > Memory Name (00=OFF, 01=ON) |
| | | 0157 | 00 or 01 | SET > Display > MN-Q Popup (MN OFF→ON) (00=OFF, 01=ON) |
| | | 0158 | 00 or 01 | SET > Display > BW Popup (PBT) (00=OFF, 01=ON) |
| | | 0159 | 00 or 01 | SET > Display > BW Popup (FIL) (00=OFF, 01=ON) |
| | | 0160 | 00 to 03 | SET > Display > RX Call Sign Display (00=OFF, 01=Normal, 02=RX Hold, 03=Hold) |
| | | 0161 | 00 or 01 | SET > Display > RX Position Indicator (00=OFF, 01=ON) |
| | | 0162 | 00 to 02 | SET > Display > RX Position Display (00=OFF, 01=ON (Main/Sub), 02=ON (Main Only)) |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0163 | 00 to 04 | SET > Display > RX Position Display Timer (00=5 sec, 01=10 sec, 02=15 sec, 03=30 sec, 04=Hold) |
| | | 0164 | 00 or 01 | SET > Display > Reply Position Display (00=OFF, 01=ON) |
| | | 0165 | 00 to 02 | SET > Display > TX Call Sign Display (00=OFF, 01=Your Call Sign, 02=My Call Sign) |
| | | 0166 | 00 or 01 | SET > Display > Scroll Speed (00=Slow, 01=Fast) |
| | | 0167 | 00 to 03 | SET > Display > Screen Saver (00=OFF, 01=15 min., 02=30 min., 03=60 min.) |
| | | 0168 | 00 or 01 | SET > Display > Opening Message (00=OFF, 01=ON) |
| | | 0169 | 00 or 01 | SET > Display > Power ON Check (00=OFF, 01=ON) |
| | | 0170 | 00 to 02 | SET > Display > Display Unit > Latitude/Longitude (00=ddd°mm.mm', 01=ddd°mm'ss", 02=ddd.dddd°) |
| | | 0171 | 00 or 01 | SET > Display > Display Unit > Altitude/Distance (00=m, 01=ft/mi) |
| | | 0172 | 00 to 02 | SET > Display > Display Unit > Speed (00=km/h, 01=mph, 02=knots) |
| | | 0173 | 00 or 01 | SET > Display > Display Unit > Temperature (00=°C, 01=°F) |
| | | 0174 | 00 to 03 | SET > Display > Display Unit > Barometric (00=hPa, 01=mb, 02=mmHg, 03=inHg) |
| | | 0175 | 00 or 01 | SET > Display > Display Unit > Rainfall (00=mm, 01=inch) |
| | | 0176 | 00 to 03 | SET > Display > Display Unit > Wind Speed (00=m/s, 01=km/h, 02=mph, 03=knots) |
| | | 0177 | 00 or 01 | SET > Display > Display Language (00=English, 01=Japanese) |
| | | 0178 | 00 or 01 | SET > Display > System Language (00=English, 01=Japanese) |
| | | 0179 | 20000101 ~ 20991231 | SET > Time Set > Date/Time > Date (20000101=2000/01/01 to 20991231=2099/12/31) |
| | | 0180 | 0000 ~ 2359 | SET > Time Set > Date/Time > Time (0000=00:00 to 2359=23:59) |
| | | 0181 | 00 or 01 | SET > Time Set > Date/Time > NTP Function (00=OFF, 01=ON) |
| | | 0182 | See p. 15 | SET > Time Set > Date/Time > NTP Server Address |
| | | 0183 | 00 or 01 | SET > Time Set > Date/Time > GPS Time Correct (00=OFF, 01=Auto) |
| | | 0184 | See p. 16 | SET > Time Set > UTC Offset |
| | | 0185 | 00 to 02 | SET > SD Card > Import/Export > CSV Format > Separator/Decimal (00=Separator is " , " and Decimal is " . ," 01=Separator is " ; " and Decimal is " . ," 02=Separator is " ; " and Decimal is " , ") |
| | | 0186 | 00 to 02 | SET > SD Card > Import/Export > CSV Format > Date (00=""yyyy/mm/dd," 01="mm/dd/yyyy," 02="dd/mm/yyyy") |
| | | 0187 | 00 or 01 | SCOPE > Scope during Tx (CENTER TYPE) (00=OFF, 01=ON) |
| | | 0188 | 00 to 02 | SCOPE > Max Hold (00=OFF, 01=10s Hold, 02=ON) |
| | | 0189 | 00 ~ 02 | SCOPE > CENTER Type Display (00=Filter center, 01=Carrier point center, 02=Carrier point center (Abs. Freq.)) |
| | | 0190 | 00 or 01 | SCOPE > Marker Position (Fix Type/SCROLL Type) (00=Filter center, 01 Carrier point) |
| | | 0191 | See p. 16 | SCOPE > VBW |
| | | 0192 | 00 to 03 | SCOPE > Averaging (00=OFF, 01=2, 02=3, 03=4) |
| | | 0193 | 00 or 01 | SCOPE > Waveform Type (00=Fill, 01=Fill+Line) |
| | | 0194 | See p. 16 | SCOPE > Waveform Color (Current) |
| | | 0195 | See p. 16 | SCOPE > Waveform Color (Line) |
| | | 0196 | See p. 16 | SCOPE > Waveform Color (Max Hold) |

# Remote control

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0197 | 00 or 01 | SCOPE > Waterfall Display (00=OFF, 01=ON) |
| | | 0198 | 00 to 02 | SCOPE > Waterfall Speed (00=Slow, 01=Mid, 02=Fast) |
| | | 0199 | 00 to 02 | SCOPE > Waterfall Size (Expand Screen) (00=Small, 01=Mid, 02=Large) |
| | | 0200 | 00 to 07 | SCOPE > Waterfall Peak Color Level (00=Grid 1 to 07=Grid 8) |
| | | 0201 | 00 or 01 | SCOPE > Waterfall Marker Auto-hide (00=OFF, 01=ON) |
| | | 0202 | See p. 17 | SCOPE > Fixed Edges > 144M > No.1: |
| | | 0203 | See p. 17 | SCOPE > Fixed Edges > 144M > No.2: |
| | | 0204 | See p. 17 | SCOPE > Fixed Edges > 144M > No.3: |
| | | 0205 | See p. 17 | SCOPE > Fixed Edges > 430M > No.1: |
| | | 0206 | See p. 17 | SCOPE > Fixed Edges > 430M > No.2: |
| | | 0207 | See p. 17 | SCOPE > Fixed Edges > 430M > No.3: |
| | | 0208 | See p. 17 | SCOPE > Fixed Edges > 1200M > No.1: |
| | | 0209 | See p. 17 | SCOPE > Fixed Edges > 1200M > No.2: |
| | | 0210 | See p. 17 | SCOPE > Fixed Edges > 1200M > No.3: |
| | | 0211 | 00 or 01 | AUDIO SCOPE SET > FFT Scope Waveform Type (00=Line, 01=Fill) |
| | | 0212 | See p. 16 | AUDIO SCOPE SET > FFT Scope Waveform Color |
| | | 0213 | 00 or 01 | AUDIO SCOPE SET > FFT Scope Waterfall Display (00=OFF, 01=ON) |
| | | 0214 | See p. 16 | AUDIO SCOPE SET > Oscilloscope Waveform Color |
| | | 0215 | 0000 ~ 0255 | VOICE TX > TX LEVEL (0000=0%, 0255=100%) |
| | | 0216 | 00 or 01 | VOICE TX SET > Auto Monitor (00=OFF, 01=ON) |
| | | 0217 | 01 to 15 | VOICE TX SET > Repeat Time (01=1 sec. to 15=15 sec.) |
| | | 0218 | 00 to 04 | KEYER 001 > Number Style (00=Normal, 01=190→ANO, 02=190→ANT, 03=90→NO, 04=90→NT) |
| | | 0219 | 01 to 08 | KEYER 001 > Count Up Trigger (01=M1 to 08=M8) |
| | | 0220 | 0001 to 9999 | KEYER 001 > Present Number (0001=1 to 9999=9999) |
| | | 0221 | 0000 ~ 0255 | CW-KEY SET > Side Tone Level (0000=0% to 0255=100%) |
| | | 0222 | 00 or 01 | CW-KEY SET > Side Tone Level Limit (00=OFF, 01=ON) |
| | | 0223 | 01 to 60 | CW-KEY SET > Keyer Repeat time (01=1 sec. to 60=60 sec.) |
| | | 0224 | 28 to 45 | CW-KEY SET > Dot/Dash Ratio (28=1:1:2.8 to 45=1:1:4.5; 0.1 steps) |
| | | 0225 | 00 to 03 | CW-KEY SET > Rise Time (00=2 msec., 01=4 msec., 02=6 msec., 03=8 msec.) |
| | | 0226 | 00 or 01 | CW-KEY SET > Paddle Polarity (00=Normal, 01=Reverse) |
| | | 0227 | 00 to 02 | CW-KEY SET > Key Type (00=Straight, 01=Bug, 02=Paddle) |
| | | 0228 | 00 or 01 | CW-KEY SET > MIC Up/Down Keyer (00=OFF, 01=ON) |
| | | 0229 | 00 to 03 | RTTY DECODE SET > FFT Scope Averaging (00=OFF, 01=2, 02=3, 03=4) |
| | | 0230 | See p. 16 | RTTY DECODE SET > FFT Scope Waveform Color |
| | | 0231 | 00 or 01 | RTTY DECODE SET > Decode USOS (00=OFF, 01=ON) |
| | | 0232 | 00 or 01 | RTTY DECODE SET > Decode New Line Code (00=CR, LF, CR+LF, 01=CR+LF) |
| | | 0233 | 00 or 01 | RTTY DECODE SET > TX USOS (00=OFF, 01=ON) |
| | | 0234 | 00 or 01 | RTTY DECODE SET > Displayed Characters during Tx (Satellite) (00=Displayed Characters during RX, 01=Displayed Characters during TX) |
| | | 0235 | See p. 16 | RTTY DECODE SET > Font Color (Receive) |
| | | 0236 | See p. 16 | RTTY DECODE SET > Font Color (Transmit) |
| | | 0237 | 00 or 01 | RTTY DECODE LOG > Decode Log (00=OFF, 01=ON) |

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| | | 0238 | 00 or 01 | RTTY DECODE LOG > Log Set > File Type (00=Text, 01=HTML) |
| 1A* | 05 | 0239 | 00 or 01 | RTTY DECODE SET > Log Set > Time Stamp (00=OFF, 01=ON) |
| | | 0240 | 00 or 01 | RTTY DECODE SET > Log Set > Time Stamp (Time) (00=Local, 01=UTC) |
| | | 0241 | 00 or 01 | RTTY DECODE SET > Log Set > Time Stamp (Frequency) (00=OFF, 01=ON) |
| | | 0242 | 00 or 01 | QSO RECORDER > Recorder Set > TX REC Audio (00=Direct, 01=Monitor) |
| | | 0243 | 00 or 01 | QSO RECORDER > Recorder Set > RX REC Condition (00=Always, 01=Squelch Auto) |
| | | 0244 | 00 or 01 | QSO RECORDER > Recorder Set > File Split (00=OFF, 01=ON) |
| | | 0245 | 00 or 01 | QSO RECORDER > Recorder Set > REC Operation (00=MAIN/SUB Separate, 01=MAIN/SUB Link) |
| | | 0246 | 00 or 01 | QSO RECORDER > Recorder Set > PTT Auto REC (00=OFF, 01=ON) |
| | | 0247 | 00 to 03 | QSO RECORDER > Recorder Set > PRE-REC for PTT Auto REC (00=OFF, 01=5 sec., 02=10 sec., 03=15 sec.) |
| | | 0248 | 00 to 03 | QSO RECORDER > Player Set > Skip Time (00=3 sec., 01=5 sec., 02=10 sec., 03=30 sec.) |
| | | 0249 | 00 or 01 | SCAN SET > SCAN Speed (00=Slow, 01=Fast) |
| | | 0250 | 00 or 01 | SCAN SET > SCAN Resume (00=OFF, 01=ON) |
| | | 0251 | 00 to 10 | SCAN SET > Pause Timer (00=2 sec. to 09=20 sec.; 2 sec. steps, 10=HOLD) |
| | | 0252 | 00 to 06 | SCAN SET > Resume Timer (00=0 sec. to 05=5 sec., 06=HOLD) |
| | | 0253 | 00 to 04 | SCAN SET > Temporary Skip Timer (00=5 min., 01=10 min., 02=15 min., 03=While Scanning, 04=While Powered ON) |
| | | 0254 | 00 or 01 | SCAN SET > MAIN DIAL Operation (SCAN) (00=OFF, 01=Up/Down) |
| | | 0255 | 00 to 02 | GPS > GPS Set > GPS Select (00=OFF, 01=External GPS, 02=Manual) |
| | | 0256 | 00 or 01 | GPS > GPS Set > GPS Receiver Baud Rate (00=4800bps, 01=9600bps) |
| | | 0257 | See p. 17 | GPS > GPS Set > Manual Position |
| | | 0258 | 00 to 02 | GPS > GPS TX Mode (00=OFF, 01=D-PRS, 02=NMEA) |
| | | 0259 | See p. 17 | GPS > GPS TX Mode > D-PRS > Unproto Address (Up to 56 characters) |
| | | 0260 | 00 to 03 | GPS > GPS TX Mode > D-PRS > TX Format (00=Position, 01=Object, 02=Item, 03=Weather) |
| | | 0261 | 00 to 04 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Symbol (00=No.1, 01=No.2, 02=No.3, 03=No.4) |
| | | 0262 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > the GPS-A Symbol No.1 setting (2 characters) |
| | | 0263 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > the GPS-A Symbol No.2 setting (2 characters) |
| | | 0264 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > the GPS-A Symbol No.3 setting (2 characters) |
| | | 0265 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > the GPS-A Symbol No.4 setting (2 characters) |
| | | 0266 | 00 to 42 | GPS > GPS TX Mode > D-PRS > TX Format > Position > SSID (00=---, 01=(-0), 02=-1 to 16=-15, 17=-A to 42=-Z) |

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| | | 0267 | 00 to 03 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Comment (00=1 to 03=4) |
| 1A* | 05 | 0268 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Comment 1 (Up to 43 characters) |
| | | 0269 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Comment 2 (Up to 43 characters) |
| | | 0270 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Comment 3 (Up to 43 characters) |
| | | 0271 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Comment 4 (Up to 43 characters) |
| | | 0272 | 00 to 02 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Time Stamp (00=OFF, 01=DHM, 02=HMS) |
| | | 0273 | 00 or 01 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Altitude (00=OFF, 01=ON) |
| | | 0274 | 00 to 02 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Data Extension (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity) |
| | | 0275 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Power (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W) |
| | | 0276 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Height (00=3 m (10 ft), 01=6 m (20 ft), 02=12 m (40 ft), 03=24 m (80 ft), 04=49 m (160 ft), 05=98 m (320 ft), 06=195 m (640 ft), 07=390 m (1280 ft), 08=780 m (2560 ft), 09=1561 m (5120 ft)) |
| | | 0277 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Gain (00=0 dB to 09=9 dB) |
| | | 0278 | 00 to 08 | GPS > GPS TX Mode > D-PRS > TX Format > Position > Directivity (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN) |
| | | 0279 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Object Name (Up to 9 characters) |
| | | 0280 | 00 or 01 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Data Type (00=Live Object, 01=Kill Object) |
| | | 0281 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Symbol (2 characters) |
| | | 0282 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Comment (Up to 43 characters) |
| | | 0283 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Position |
| | | 0284 | 00 to 02 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Data Extension (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity) |
| | | 0285 | 000 to 360 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Course (0º to 360º; 1 degree steps) |
| | | 0286 | 00 to 1850 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Speed (0 km/h to 1850 km/h) |
| | | 0287 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Power (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W) |
| | | 0288 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Height (00=3 m (10 ft), 01=6 m (20 ft), 02=12 m (40 ft), 03=24 m (80 ft), 04=49 m (160 ft), 05=98 m (320 ft), 06=195 m (640 ft), 07=390 m (1280 ft), 08=780 m (2560 ft), 09=1561 m (5120 ft)) |
| | | 0289 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Gain (00=0 dB to 09=9 dB) |
| | | 0290 | 00 to 08 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Directivity (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN) |
| 1A* | 05 | 0291 | 00 to 42 | GPS > GPS TX Mode > D-PRS > TX Format > Object > SSID (00=---, 01=(-0), 02=-1 to 16=-15, 17=-A to 42=-Z) |
| | | 0292 | 00 or 01 | GPS > GPS TX Mode > D-PRS > TX Format > Object > Time Stamp (00=DHM, 01=HMS) |
| | | 0293 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Item Name (Up to 9 characters) |
| | | 0294 | 00 or 01 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Data Type (00=Live Item, 01=Killed Item) |
| | | 0295 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Symbol (2 characters) |
| | | 0296 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Comment (Up to 43 characters) |
| | | 0297 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Position |
| | | 0298 | 00 to 02 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Data Extension (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity) |
| | | 0299 | 000 to 360 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Course (0º to 360º; 1 degree steps) |
| | | 0300 | 00 to 1850 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Speed (0 km/h to 1850 km/h) |
| | | 0301 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Power (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W) |
| | | 0302 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Height (00=3 m (10 ft), 01=6 m (20 ft), 02=12 m (40 ft), 03=24 m (80 ft), 04=49 m (160 ft), 05=98 m (320 ft), 06=195 m (640 ft), 07=390 m (1280 ft), 08=780 m (2560 ft), 09=1561 m (5120 ft)) |
| | | 0303 | 00 to 09 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Gain (00=0 dB to 09=9 dB) |
| | | 0304 | 00 to 08 | GPS > GPS TX Mode > D-PRS > TX Format > Item > Directivity (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN) |
| | | 0305 | 00 to 42 | GPS > GPS TX Mode > D-PRS > TX Format > Item > SSID (00=---, 01=(-0), 02=-1 to 16=-15, 17=-A to 42=-Z) |
| | | 0306 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Weather > Symbol (2 characters) |
| | | 0307 | 00 to 42 | GPS > GPS TX Mode > D-PRS > TX Format > Weather > SSID (00=---, 01=(-0), 02=-1 to 16=-15, 17=-A to 42=-Z) |
| | | 0308 | See p. 17 | GPS > GPS TX Mode > D-PRS > TX Format > Weather > Comment (Up to 43 characters) |
| | | 0309 | 00 to 02 | GPS > GPS TX Mode > D-PRS > TX Format > Weather > Time Stamp (00=OFF, 01=DHM, 02=HMS) |
| | | 0310 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (RMC) (00=OFF, 01=ON) |
| | | 0311 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (CGA) (00=OFF, 01=ON) |
| | | 0312 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (GLL) (00=OFF, 01=ON) |
| | | 0313 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (GSA) (00=OFF, 01=ON) |
| | | 0314 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (VTG) (00=OFF, 01=ON) |
| | | 0315 *6 | 00 or 01 | GPS > GPS TX Mode > NMEA > GPS Sentence (GSV) (00=OFF, 01=ON) |

◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0316 | See p. 17 | GPS > GPS TX Mode > NMEA > GPS Message (Up to 20 characters) |

Left table:

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 1A* | 05 | 0316 — See p. 17 | GPS > GPS TX Mode > NMEA > GPS Message (Up to 20 characters) |
| | | 0317 — See p. 17 | GPS > GPS Alarm> Alarm Area (Group) |
| | | 0318 — 00 to 03 | GPS > GPS Alarm> Alarm Area (RX/Memory) (00=Limited, 01=Extended, 02=Both) |
| | | 0319 — 00 to 08 | GPS > GPS Auto TX (00=OFF, 01**=5 sec., 02=10 sec., 03=30 sec., 04=1 min., 05=3 min., 06=5 min., 07=10 min., 08=30 min.) **When 4 kinds of GPS sentences are selected, you cannot select "01." |
| | | 0320 — 00 to 03 | DTMF SET > DTMF Speed (00=100ms, 01=200ms, 02=300ms, 03=500 ms) |
| | | 0321 — 0000 to 0255 | Set the NB LEVEL (144 MHz) (0000=0% to 0255=100%) |
| | | 0322 — 00 to 09 | Set the NB DEPTH (144 MHz) (00=1 to 09=10) |
| | | 0323 — 0000 to 0255 | Set the NB WIDTH (144 MHz) (0000=1 to 0255=100) |
| | | 0324 — 0000 to 0255 | Set the NB LEVEL (430 MHz) (0000=0% to 0255=100%) |
| | | 0325 — 00 to 09 | Set the NB DEPTH (430 MHz) (00=1 to 09=10) |
| | | 0326 — 0000 to 0255 | Set the NB WIDTH (430 MHz) (0000=1 to 0255=100) |
| | | 0327 — 0000 to 0255 | Set the NB LEVEL (1200 MHz) (0000=0% to 0255=100%) |
| | | 0328 — 00 to 09 | Set the NB DEPTH (1200 MHz) (00=1 to 09=10) |
| | | 0329 — 0000 to 0255 | Set the NB WIDTH (1200 MHz) (0000=1 to 0255=100) |
| | | 0330 — 00 to 20 | Set the VOX DELAY (00=0.0 sec. to 20=2.0 sec.; 0.1 sec steps) |
| | | 0331 — 00 to 03 | Set the VOX voice delay (00=OFF, 01=Short, 02=Mid, 03=Long) |
| | | 0332 — 00 or 01 | Set TX PWR LIMIT (144M) function (00=OFF, 01=ON) |
| | | 0333 — 0000 to 0255 | Set the TX PWR LIMIT (144M) (0000=1 to 0255=100) |
| | | 0334 — 00 or 01 | Set the TX PWR LIMIT (430M) function (00=OFF, 01=ON) |
| | | 0335 — 0000 to 0255 | Set the TX PWR LIMIT (430M) (0000=1 to 0255=100) |
| | | 0336 — 00 or 01 | Set the TX PWR LIMIT (1200M) function (00=OFF, 01=ON) |
| | | 0337 — 0000 to 0255 | Set the TX PWR LIMIT (1200M) (0000=1 to 0255=100) |
| | | 0338 — 00 or 01 | Set the Received Call sign Display ("Name" or "Call Sign") (00=Call Sign, 01=Name) |
| | | 0339 — 00 to 02 | Set the Compass Direction (00=Heading Up, 01=North Up, 02=South Up) |
| | | 0340 — 00 or 01 | SET > Function > Home CH Beep (00=OFF, 01=ON) |
| | | 0341 — 00 or 01 | SET > Connectors > PTT Port Function (00=PTT Input, 01=PTT Input + SEND Output) |
| | | 0342 — 00 or 01 | SET > Display > RX Picture Indicator (00=OFF, 01=ON) |
| | | 0343 — See p. 17 | SET > Function > Front Key Customize > [VOX/BK-IN] |
| | | 0344 — See p. 18 | SET > Function > Front Key Customize > [AUTOTUNE/AFC] |
| | | 0345 — See p. 18 | SET > Function > Front Key Customize > [TONE/RX>CS] |
| | | 0346 — See p. 18 | SET > Function > MIC Key Customize > [UP] |
| | | 0347 — See p. 18 | SET > Function > MIC Key Customize > [DN] |
| | | 0348 — See p. 17 | SCOPE > Fixed Edges > 144M > No.4 |
| | | 0349 — See p. 17 | SCOPE > Fixed Edges > 430M > No.4 |
| | | 0350 — See p. 17 | SCOPE > Fixed Edges > 1200M > No.4 |
| | 06 | See p. 18 | DATA mode with filter set |
| | 07 | See p. 19 | Set the Satellite memory contents |
| | 08 | 00 or 01 | NTP server access (00=Terminate, 01=Initiate) |

Right table:

| Cmd. | Sub cmd. | | Data | Description |
|---|---|---|---|---|
| 1A* | 09[*1] | | 00 to 02 | Read NTP server access result (00=Accessing, or have not accessed after Power ON, 01=Succeeded, 02=Failed) |
| | 0A[*1] | | 00 or 01 | Read the OVF indicator status (00=OFF, 01=ON) |
| | 0B | | 00 to 02 | Picture TX (PICT TX) (00=OFF, 01=ON, 02=Repeat ON) (Returns ON even if the setting is OFF during batch transmission of images.) |
| | 0C | | 00 or 01 | Send/read the RPT MONI setting (00=OFF, 01=ON) |
| 1B* | 00 | | See p. 20 | Send/read the Repeater tone frequency |
| | 01 | | See p. 20 | Send/read the TSQL tone frequency |
| | 02 | | See p. 20 | Send/read the DTCS code and polarity |
| | 07 | | See p. 20 | Send/read the CSQL code (DV mode) |
| 1C | 00* | | 00 or 01 | Send/read the transceiver's status (00=RX, 01=TX) |
| | 02* | | 00 or 01 | Send/read the Transmit frequency monitor (XFC) (00=OFF, 01=ON) |
| | 03[*1] | | See p. 13 | Read the transmit frequency |
| 1E | 00[*1] | | | Read number of available TX frequency band |
| | 01[*1] | | See p. 13 | Read TX band edge frequencies |
| | 02[*1] | | | Read number of user-set TX frequency band |
| | 03* | | See p. 13 | Set the user-set TX band edge frequencies |
| 1F* | 00 | | See p. 20 | SET > My Station > My Call Sign (DV) |
| | 01 | | See p. 20 | CS > Send/read the UR, R1, R2 setting |
| | 02 | | See p. 20 | SET > My Station > TX Message (DV) |
| 20 | 00 | 00* | 00 or 01[*7] | Send/read the Auto DV RX Call signs output (00=OFF, 01=ON) |
| | | 01 | See p. 21 | Output DV RX Call signs for transceive |
| | | 02[*1] | See p. 21 | Read Auto DV RX Call signs |
| | 01 | 00* | 00 or 01[*7] | Send/read the Auto DV RX message output (00=OFF, 01=ON) |
| | | 01 | See p. 21 | Output DV RX message for transceive |
| | | 02[*1] | See p. 21 | Read Auto DV RX message |
| | 02 | 00* | 00 or 01[*7] | Send/read the Auto DV RX status output (00=OFF, 01=ON) |
| | | 01 | See p. 21 | Output DV RX status for transceive |
| | | 02[*1] | See p. 21 | Read Auto DV RX status |
| | 03 | 00* | 00 or 01[*7] | Send/read the Auto DV RX GPS/D-PRS data output (00=OFF, 01=ON) |
| | | 0100 | See p. 22 | Output DV RX GPS/D-PRS Position for transceive |
| | | 0101 | See p. 22 | Output DV RX D-PRS Object status for transceive |
| | | 0102 | See p. 22 | Output DV RX D-PRS Item status for transceive |
| | | 0103 | See p. 22 | Output DV RX D-PRS Weather status for transceive |
| | | 0200[*1] | See p. 22 | Read Auto DV RX GPS/D-PRS Position status |
| | | 0201[*1] | See p. 22 | Read Auto DV RX D-PRS Object status |
| | | 0202[*1] | See p. 22 | Read Auto DV RX D-PRS Item status |
| | | 0203[*1] | See p. 22 | Read Auto DV RX D-PRS Weather status |
| | 04 | 00* | 00 or 01[*7] | Send/read Auto DV RX GPS/D-PRS message output (00=OFF, 01=ON) |
| | | 01 | See p. 23 | Output DV RX D-PRS message for transceive |
| | | 02[*1] | See p. 23 | Read Auto DV RX D-PRS message status |
| 21* | 00 | | See p. 24 | RIT frequency |
| | 01 | | 00 or 01 | RIT setting (00=OFF, 01=ON) |
| 22 | 00 | | See p. 24 | Set the DV TX data (Up to 30 byte) |
| | 01 | 00* | 00 or 01 | Set the Auto DV RX data output |
| | | 01 | See p. 24 | Set the DV RX data for transceive (Up to 30 byte) |
| | 02* | | 00 or 01 | SET > DV/DD Set > DV Data TX (00=PTT, 01=Auto) |
| | 03* | | 00 or 01 | SET > DV/DD Set > DV Fast Data > Fast Data (00=OFF, 01=ON) |
| | 04* | | 00 or 01 | SET > DV/DD Set > DV Fast Data > GPS Data Speed (00=Slow, 01=Fast) |
| | 05* | | 00 to 10 | SET > DV/DD Set > DV Fast Data > TX Delay (PTT) (00=OFF, 01=1 sec. to 10=10 sec.) |

# Remote control

## ◇ Command table (Continued)

| Cmd. | Sub cmd. | Data | Description |
|---|---|---|---|
| 23 | 00*[1] | See p. 24 | Read the position status |
| | 01* | 00, 02, 03 | GPS > GPS Set > GPS Select (00=OFF, 02=External GPS, 03=Manual) |
| | 02* | See p. 17 | GPS > GPS Set > Manual Position |
| 24 | 00 00* | 00 or 01 | Send/read TX output power setting (00=OFF, 01=ON) |
| | 01 | 00 or 01 | Set the TX output power for transceive (00=OFF, 01=ON) |
| 25* | | See p. 24 | Set the selected or unselected VFO frequency (Only MAIN band) |
| 26* | | See p. 24 | Set the selected or unselected VFO's operating mode and filter (Only MAIN band) |
| 27 | 00 | See p. 25 | Read the Scope waveform data (Only when "Scope ON/OFF status" (Command: 27 10) and "Scope data output" (Command: 27 11) are set to "ON," outputs the waveform data to the controller.) |
| | 10* | 00 or 01 | Send/read the Scope ON/OFF status (00=OFF, 01=ON) |
| | 11*, *8 | 00 or 01 | Send/read the Scope wave data output (00=OFF, 01=ON) |
| | 12* | 00 or 01 | Send/read the Main or Sub scope setting (00=Main, 01=Sub) |
| | 14* | See p. 25 | Send/read the Scope Center mode, Fixed mode, SCROLL-C mode, or SCROLL-F mode scope |
| | 15* | See p. 25 | Send/read the Span setting in the Center mode or SCROLL-C mode Scope |
| | 16* | See p. 25 | Send/read the Edge number setting in the Fixed mode or SCROLL-F mode Scope |
| | 17* | See p. 25 | Send/read the Scope hold function ON/OFF status |
| | 19* | See p. 25 | Send/read the Scope Reference level setting |
| | 1A* | See p. 26 | Send/read the Sweep speed setting |
| | 1B* | 00 or 01 | SCOPE > Scope during Tx (CENTER TYPE) (00=OFF, 01=ON) |
| | 1C* | 00 to 02 | SCOPE > CENTER Type Display (00=Filter center, 01=Carrier point center, 02=Carrier point center (Abs. Freq.)) |
| | 1D* | See p. 16 | Send/read the Scope VBW setting |
| | 1E* | See p. 26 | Send/read the Scope Fixed edge frequencies |
| | 20 | 00 or 01 | Send/read the Marker Position (FIX Type/ SCROLL Type) setting (00=Filter Center, 01=Carrier Point) |
| 28 | 00 | 00 to 08 | Voice TX Memory (00=Stop, 01=T1 to 08=T8) |

*(Asterisk) Send/read data
*[1] Read only data
*[2] Send only data
*[3] In the CW mode, if the [TRANSMIT] or an external TX switch is ON, or the Break-in function is ON, a message will be transmitted as CW code when you send it from your PC.
*[4] When sending the power ON command (18 01), you need to repeatedly send "FE" before the standard format. The following is the approximate number of needed repetitions.
 • 115200 bps: 119 "FE"s
 • 57600 bps: 59 "FE"s
 • 38400 bps: 40 "FE"s
 • 19200 bps: 20 "FE"s
 • 9600 bps: 9 "FE"s
 • 4800 bps: 5 "FE"s

**Example: When using 4800 bps**

| | | Preamble | | | | 9700's address | | Controller's address | Command | | Sub command | | Post amble | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | E | F | E | F | E | A | 2 | E 0 | 1 | 8 | 0 | 1 | F | D |

×5

*[5] To insert a counter, first clear the other channel's counter.
*[6] Set at least 1 GPS sentence to ON.
 Up to 4 GPS sentences can be set to ON at the same time.
*[7] Output setting is automatically set to OFF after turning OFF the transceiver.
*[8] When you use the [USB] port, select "Unlink from [REMOTE]" in the "CI-V USB port" item, and select "115200" in the "CI-V Baud Rate" item.
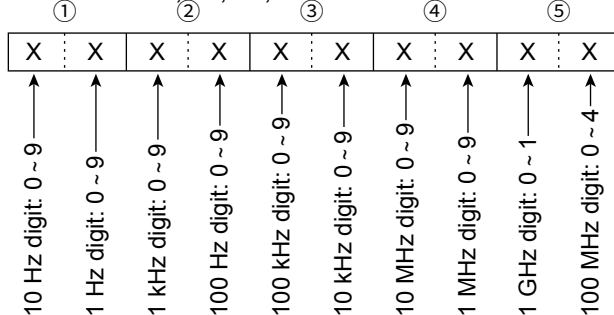
[MENU] » SET > Connectors > **CI-V**

You can use the [LAN] port, regardless of those settings. You cannot use the [REMOTE] terminal, regardless of those settings.

## ◇ Command formats

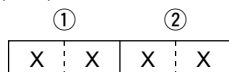### • Operating frequency
Command: 00, 03, 05, 1C 03

①  ②  ③  ④  ⑤

| X | X | X | X | X | X | X | X | X | X |
|---|---|---|---|---|---|---|---|---|---|

10 Hz digit: 0 ~ 9
1 Hz digit: 0 ~ 9
1 kHz digit: 0 ~ 9
100 Hz digit: 0 ~ 9
100 kHz digit: 0 ~ 9
10 kHz digit: 0 ~ 9
10 MHz digit: 0 ~ 9
1 MHz digit: 0 ~ 9
1 GHz digit: 0 ~ 1
100 MHz digit: 0 ~ 4

### • Operating mode
Command: 01, 04, 06

①  ②

| X | X | X | X |
|---|---|---|---|

| ①Operating mode | | ②Filter setting |
|---|---|---|
| 00:LSB | 05 :FM | 01:FIL1 |
| 01:USB | 07 :CW-R | 02:FIL2 |
| 02:AM | 08 :RTTY-R | 03:FIL3 |
| 03:CW | 17 :DV | — |
| 04:RTTY | 22 :DD* | — |

\* 22 Command (DD) can be selected when setting the 1200 MHz band to other than the satellite mode.

ⓘFilter setting, (②) can be skipped with command 01 and 06. In that case, "FIL1" is selected with command 01 and the default filter setting of the operating mode is automatically selected with command 06.

### • Band edge frequency settings
Command: 02*, 1E 01, 1E 03

①②③④⑤⑥⑦⑧⑨⑩⑪⑫

| X:X | X:X | X:X | X:X | X:X | X:X | 2:D | X:X | X:X | X:X | X:X | X:X |
|---|---|---|---|---|---|---|---|---|---|---|---|

Edge number*: 01 ~ 30
10 Hz digit: 0 ~ 9
1 Hz digit: 0 ~ 9
1 kHz digit: 0 ~ 9
100 Hz digit: 0 ~ 9
100 kHz digit: 0 ~ 9
10 kHz digit: 0 ~ 9
10 MHz digit: 0 ~ 9
1 MHz digit: 0 ~ 9
1 GHz digit: 0 ~ 1
100 MHz digit: 0 ~ 4
Separator (fixed)
10 Hz digit: 0 ~ 9
1 Hz digit: 0 ~ 9
1 kHz digit: 0 ~ 9
100 Hz digit: 0 ~ 9
100 kHz digit: 0 ~ 9
10 kHz digit: 0 ~ 9
10 MHz digit: 0 ~ 9
1 MHz digit: 0 ~ 9
1 GHz digit: 0 ~ 1
100 MHz digit: 0 ~ 4

Lower edge        Higher edge

\* When obtaining the edge number (by command "02"), the edge number (①) is not returned.

### • Duplex Offset frequency setting
Command: 0C, 0D

①  ②  ③

| X | X | X | X | X | X |
|---|---|---|---|---|---|

1 kHz digit: 0 ~ 9
100 Hz digit: 0 ~ 9
100 kHz digit: 0 ~ 9
10 kHz digit: 0 ~ 9
10 MHz digit: 0 ~ 9
1 MHz digit: 0 ~ 9
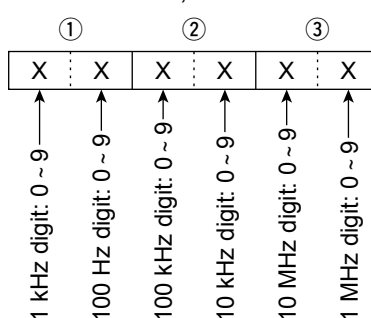
ⓘOnly the 1200 MHz band can input 10 MHz digits.

### • Codes for CW message contents
Command: 17   Up to 30 characters
To send CW messages, use the following character codes.

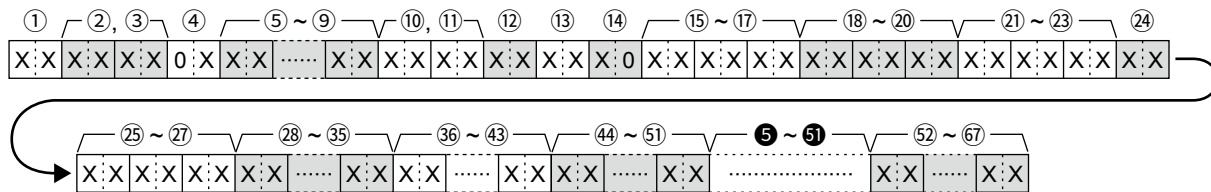| Character | ASCII code | Character | ASCII code |
|---|---|---|---|
| 0 ~ 9 | 30 ~ 39 | ' | 27 |
| A ~ Z | 41 ~ 5A | ( | 28 |
| a ~ z | 61 ~ 7A | ) | 29 |
| / | 2F | = | 3D |
| ? | 3F | + | 2B |
| . | 2E | " | 22 |
| – | 2D | @ | 40 |
| , | 2C | Space | 20 |
| : | 3A | | |

ⓘ"FF" stops sending CW messages.
ⓘ"^" is used to transmit a string of characters with no inter-character space.

# Remote control

◇ Command formats (Continued)
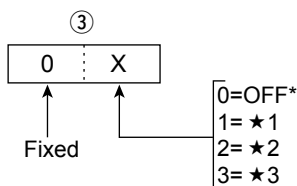
**• Memory content**
Command: 1A 00



① **Frequency band setting**
01: 144 MHz frequency band
02: 430 MHz frequency band
03: 1.2 GHz frequency band

②, ③ **Memory channel number**
0001 ~ 0099: Memory channel 1 to 99
0100, 0101: Program Scan Edge channel 1A, 1B
0102, 0103: Program Scan Edge channel 2A, 2B
0104, 0105: Program Scan Edge channel 3A, 3B
0106, 0107: Call channel C1, C2

④ **Select memory setting**



\* For program scan edge channel, call channel,
  set to "0."

⑤ ~ ⑨ **Operating frequency setting**
See "Operating frequency." (p. 13)
⑩, ⑪ **Operating mode setting**
See "Operating mode." (p. 13)

⑫ **Data mode setting**
1 byte data (XX)
00: Data mode OFF
01: Data mode ON

⑬ **Duplex and Tone settings**
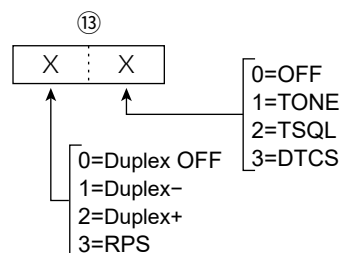


ⓘ RPS can be set when DD mode is selected, and
  Duplex (−, +) can be set when other than DD
  mode is selected.

⑭ **Digital squelch setting**



0=Digital squelch function OFF
1=Digital call sign squelch function ON (DSQL)
2=Digital code squelch function ON (CSQL)
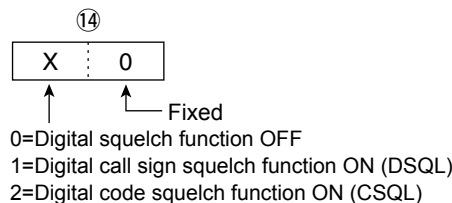
⑮ ~ ⑰ **Repeater tone frequency setting**
⑱ ~ ⑳ **Tone squelch frequency setting**
See "Repeater tone/tone squelch frequency
    setting." (p. 20)

㉑ ~ ㉓ **DTCS code setting**
See "DTCS code and polarity setting." (p. 20)

㉔ **DV Digital code squelch setting**
See "DV Digital code squelch setting." (p. 20)

㉕ ~ ㉗ **Duplex offset frequency setting**
See "Duplex Offset frequency setting." (p. 13)

㉘ ~ ㉟ **UR (Destination) call sign setting**
    (8 characters; fixed)
㊱ ~ ㊸ **R1 (Access repeater) call sign setting**
    (8 characters; fixed)
㊹ ~ ㊿ **R2 (Gateway/Link repeater) call sign setting**
    (8 characters; fixed)
See "DV TX call signs setting." (p. 20)

㊿ ~ 67 **Memory name setting**
    (16 characters; fixed)
See "Codes for character entries." (p. 15)

To clear the memory channel contents on 1A 00:
②, ③ :Memory channel (0001~0099)
④ : "FF," ⑤ ~ :None

**NOTE:**
• The same data as ⑤ ~ ⑤ are stored in ❺ ~ ⑤.
• When the Split function is ON, the data of ❺ ~ ⑤ is
  used for transmit.
• Even if the Split function is OFF, enter the data into ❺
  ~ ⑤ to match your transceiver. We recommend that
  you set the same data as ⑤ ~ ⑤.

# Remote control

◇ **Command formats (Continued)**

• **Codes for character entries**

Command: 1A 00,
             1A 05 0144, 0151, 0182, 0259,
                 0279, 0281, 0293, 0316
             1A 05 0262 ~ 1A 05 0265,
             1A 05 0268 ~ 1A 05 0271

- Character codes— Letters and Numbers

| Character | ASCII code | Character | ASCII code |
|-----------|-----------|-----------|-----------|
| A ~ Z | 41 ~ 5A | a ~ z | 61 ~ 7A |
| 0 ~ 9 | 30 ~ 39 | | |

- Character codes— Symbols

| Character | ASCII code | Character | ASCII code |
|-----------|-----------|-----------|-----------|
| ! | 21 | # | 23 |
| $ | 24 | % | 25 |
| & | 26 | \ | 5C |
| ? | 3F | " | 22 |
| ' | 27 | ` | 60 |
| ^ | 5E | + | 2B |
| – | 2D | * | 2A |
| / | 2F | . | 2E |
| , | 2C | : | 3A |
| ; | 3B | = | 3D |
| < | 3C | > | 3E |
| ( | 28 | ) | 29 |
| [ | 5B | ] | 5D |
| { | 7B | } | 7D |
| \| | 7C | _ | 5F |
| ~ | 7E | @ | 40 |

| Command | Set item/selectable characters |
|---------|-------------------------------|
| 1A 00 | Memory name<br>All characters are usable. |
| 1A 05 0144 | SET > Network > Network Name<br>(up to 15 characters) |
| 0151 | SET > Network > Network Radio Name<br>(up to 16 characters) |
| 0182 | SET > Time Set > Date/Time ><br>NTP Server Address |

• **Band stacking register**

Command: 1A 01



**NOTE:**
When sending the contents, the codes, such as operating frequency and operating mode*, should be added after the frequency band code and the register code, as shown below.
* See ⑤ to �51 on 'Memory content setting.' (p. 14)

① Frequency band codes

| Code | Freq. band | Frequency range (unit: MHz) |
|------|-----------|----------------------------|
| 01 | VHF | 144.000000 ~ 148.000000 |
| 02 | UHF | 430.000000 ~ 450.000000 |
| 03 | 1.2GHz | 1240.000000 ~ 1300.000000 |

② Register codes

| Code | Registered number |
|------|-------------------|
| 01 | 1 (Display on left side) |
| 02 | 2 (Display in center) |
| 03 | 3 (Display on Right side) |

To read the contents, the register code should be added after the frequency band code, as shown below.
Example: When reading the frequency displayed in the center of the display in the VHF band, use code "0202."

• **Memory keyer character entries**
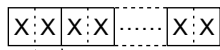
Command: 1A 02
- Character codes

| Character | ASCII code | Description |
|-----------|-----------|-------------|
| 0 ~ 9 | 30 ~ 39 | Numbers |
| A ~ Z | 41 ~ 5A | Letters |
| space | 20 | Word space |
| / | 2F | Symbol |
| ? | 3F | Symbol |
| , | 2C | Symbol |
| . | 2E | Symbol |
| @ | 40 | Symbol |
| ^ | 5E | Example: to send B̅T̅,<br>enter ^4254 |
| * | 2A | Inserts contest number<br>(can be used for 1 channel only) |

# Remote control

◇ Command formats (Continued)

### • Memory keyer content
Command: 1A 02

X X X X ⋯⋯ X X

└─ ② ~ ⑦①: Text data

①: Channel data

| 01=M1 | 05=M5 |
|---|---|
| 02=M2 | 06=M6 |
| 03=M3 | 07=M7 |
| 04=M4 | 08=M8 |

### • IF filter width settings
Command: 1A 03

| Mode | Data | Steps |
|---|---|---|
| SSB/CW/RTTY | 0 to 9 | 50 ~ 500 Hz (50 Hz) |
| SSB/CW | 10 to 40 | 600 Hz ~ 3.6 kHz (100 Hz) |
| RTTY | 10 to 31 | 600 ~ 2.7 kHz (100 Hz) |
| AM | 0 to 49 | 200 Hz ~ 10.0 kHz (200 Hz) |

### • AGC time constant settings
Command: 1A 04

| Data | AGC time constant (sec.) | |
|---|---|---|
| | SSB/CW/RTTY | AM |
| 0 | OFF | OFF |
| 1 | 0.1 | 0.3 |
| 2 | 0.2 | 0.5 |
| 3 | 0.3 | 0.8 |
| 4 | 0.5 | 1.2 |
| 5 | 0.8 | 1.6 |
| 6 | 1.2 | 2.0 |
| 7 | 1.6 | 2.5 |
| 8 | 2.0 | 3.0 |
| 9 | 2.5 | 4.0 |
| 10 | 3.0 | 5.0 |
| 11 | 4.0 | 6.0 |
| 12 | 5.0 | 7.0 |
| 13 | 6.0 | 8.0 |

### • RX HPF/LPF setting for each operating mode
Command: 1A 05 0001, 0004, 0007, 0010, 0013, 0014

X X X X
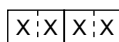
HPF (Lower edge) ─┘ └─ LPF(Upper edge)
00=Through                05 ~ 24=500~2400 Hz
01 ~ 20=100 ~ 2000 Hz     25=Through
*The value of the HPF should be smaller than the LPF.

### • SSB/SSB-DATA transmission passband width settings
Command: 1A 05 0017 ~ 1A 05 0020

X X

└─ Lower edge
└─ Higher edge
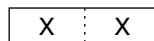
| Lower edge | Higher edge |
|---|---|
| 0= 100 Hz | 0= 2500 Hz |
| 1= 200 Hz | 1= 2700 Hz |
| 2= 300 Hz | 2= 2800 Hz |
| 3= 500 Hz | 3= 2900 Hz |

### • Split offset frequency setting
Command: 1A 05 0044

①        ②        ③        ④
X 0    X X    0 X    X X

- 1 kHz digit: 0 ~ 9
- 100 Hz digit: 0 (fixed)
- 100 kHz digit: 0 ~ 9
- 10 kHz digit: 0 ~ 9
- 10 MHz digit: 0 (fixed)
- 1 MHz digit: 0 ~ 9
- ④ Direction: 00=+ direction 01=− direction
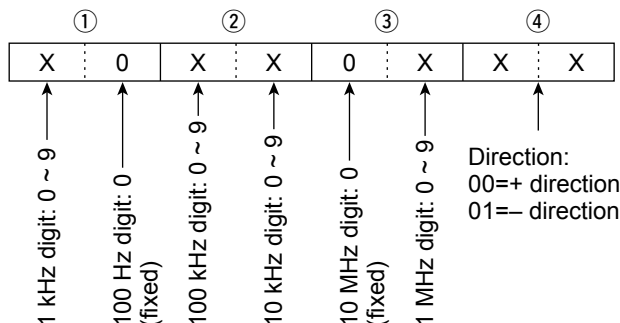
### • UTC Offset setting
Command: 1A 05 0184

X X X X    X X

Offset time          Shift direction
0000 ~ 1400          00=+ (plus)
                     01=− (minus)
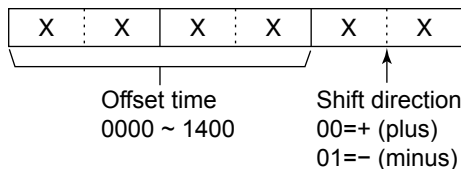
### • Scope VBW (Video Band Width) settings
Command: 1A 05 0191, 27 1D

X X    X X

00=MAIN      00=Narrow
01=SUB       01=Wide
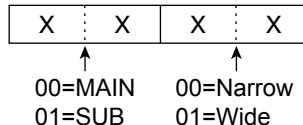
### • Color settings
Command: 1A 05 0194, 0195, 0196, 0212, 0214, 0230, 0235, 0236

①    ②    ③    ④    ⑤    ⑥
0 X X X    0 X X X    0 X X X

R (Red)        G (Green)       B (Blue)
0000 ~ 0255    0000 ~ 0255     0000 ~ 0255
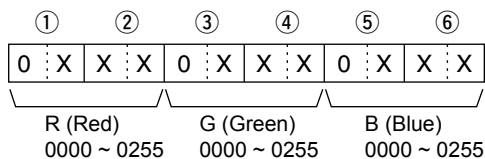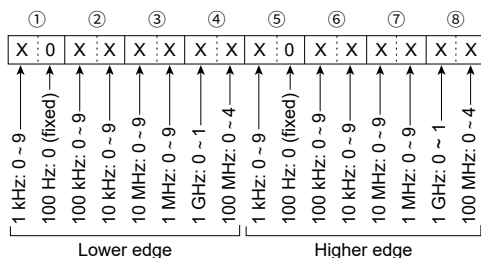
◇ Command formats (Continued)

**• Bandscope edge frequency settings**
Command: 1A 05 0202 ~ 1A 05 0210
         1A 05 0348 ~ 1A 05 0350

① ② ③ ④ ⑤ ⑥ ⑦ ⑧
| X | 0 | X | X | X | X | X | X | X | 0 | X | X | X | X | X | X |

1 kHz: 0 ~ 9
100 Hz: 0 (fixed)
100 kHz: 0 ~ 9
10 kHz: 0 ~ 9
10 MHz: 0 ~ 9
1 MHz: 0 ~ 9
1 GHz: 0 ~ 1
100 MHz: 0 ~ 4
1 kHz: 0 ~ 9
100 Hz: 0 (fixed)
100 kHz: 0 ~ 9
10 kHz: 0 ~ 9
10 MHz: 0 ~ 9
1 MHz: 0 ~ 9
1 GHz: 0 ~ 1
100 MHz: 0 ~ 4

Lower edge          Higher edge

**• Manually entered position data**
Command: 1A 05 0257, 0283, 0297, 23 02

① ~ ⑤    ⑥ ~ ⑪    ⑫ ~ ⑮
| X | X | ...... | X | X | X | X | ...... | X | X | X | ...... | X | X |

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫* ⑬* ⑭* ⑮*
| X | X | X | X | X | X | 0 | 0 | X | 0 | X | X | X | X | X | X | X | 0 | 0 | X | X | X | X | X | X | X | 0 | X |

10 degree digit: 0 ~ 9
1 degree digit: 0 ~ 9
10 minute digit: 0 ~ 5
1 minute digit: 0 ~ 9
0.1 minute digit: 0 ~ 9
0.01 minute digit: 0 ~ 9
0.001 minute digit: 0 ~ 9
0 (Fixed)
0 (Fixed)
South latitude=0/North latitude=1
100 degree digit: 0 ~ 1
10 degree digit: 0 ~ 9
1 degree digit: 0 ~ 9
10 minute digit: 0 ~ 5
1 minute digit: 0 ~ 9
0.1 minute digit: 0 ~ 9
0.01 minute digit: 0 ~ 9
0.001 minute digit: 0 ~ 9
0 (Fixed)
0 (Fixed)
West longitude=0/East longitude=1
10000 meter digit: 0 ~ 1
1000 meter digit: 0 ~ 9
100 meter digit: 0 ~ 9
10 meter digit: 0 ~ 9
1 meter digit: 0 ~ 9
0.1 meter digit: 0 ~ 9
0 (Fixed)
+=0/−=1

Latitude    Longitude    Altitude

① ~ ⑤: Latitude (dd°mm.mmm format)
⑥ ~ ⑪: Longitude (ddd°mm.mmm format)
⑫ ~ ⑮: Altitude (0.1 meter steps)

* When reading the contents with no altitude, sends ⑫, ⑬, ⑭ and ⑮ as "FF."
* When sending the contents with no altitude, set ⑫, ⑬, ⑭ and ⑮ to "FF."

**• Unproto Address setting**
Command: 1A 05 0259
Set an unproto address of up to 56 characters.
See "Codes for character entries." (p. 15)

**• Entering Object name or Item name**
Command: 1A 05 0279, 0293
Enter an Object or Item name of up to 9 characters.
See "Codes for character entries." (p. 15)

**• D-PRS Symbol setting**
Command: 1A 05 0262 ~ 1A 05 0265,
         1A 05 0281, 0295, 0306

| X | X | X | X |

First digit    Second digit
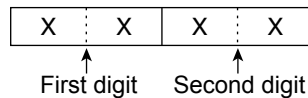
∕, \, 0 to 9, A to Z can be used for the first digit character.
See "Codes for character entries" for the second digit character. (p.15)

**• D-PRS Comment setting**
Command: 1A 05 0268 ~ 1A 05 0271
         1A 05 0282, 0296, 0308
Set a comment of up to 43 characters.
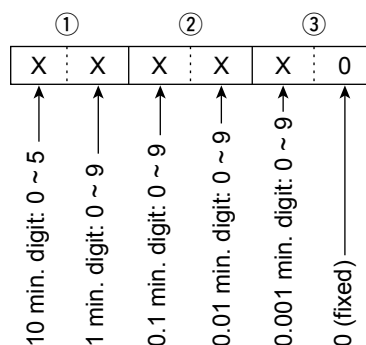See "Codes for character entries." (p. 15)

**• GPS message setting**
Command: 1A 05 0316
Set a GPS message of up to 20 characters.
See "Codes for character entries." (p. 15)

**• Alarm area (Group) setting**
Command: 1A 05 0317

① ② ③
| X | X | X | X | X | 0 |

10 min. digit: 0 ~ 5
1 min. digit: 0 ~ 9
0.1 min. digit: 0 ~ 9
0.01 min. digit: 0 ~ 9
0.001 min. digit: 0 ~ 9
0 (fixed)

**• [VOX/BK-IN] setting**
Command: 1A 05 0343

| Data | Function |
|------|----------|
| 00 | VOX/BK-IN |
| 01 | CD |
| 02 | PRESET |
| 03 | Home CH |
| 04 | Temporary Skip |
| 05 | Voice/Keyer/RTTY Memory 1 |
| 06 | Voice/Keyer/RTTY Memory 2 |
| 07 | Voice/Keyer/RTTY Memory 3 |
| 08 | Voice/Keyer/RTTY Memory 4 |

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◇ Command formats (Continued)

• **[AUTOTUNE/AFC] setting**
Command: 1A 05 0344

| Data | Function |
|------|----------|
| 00 | AUTOTUNE/AFC |
| 01 | AUTOTUNE/AFC/RX>CS |
| 02 | TONE/RX>CS |
| 03 | CD |
| 04 | CD/RX>CS |
| 05 | PRESET |
| 06 | PRESET/RX>CS |
| 07 | Home CH |
| 08 | Home CH/RX>CS |
| 09 | Temporary Skip |
| 10 | Temporary Skip/RX>CS |
| 11 | Voice/Keyer/RTTY Memory 1 |
| 12 | Voice/Keyer/RTTY Memory 2 |
| 13 | Voice/Keyer/RTTY Memory 3 |
| 14 | Voice/Keyer/RTTY Memory 4 |

• **[TONE/RX>CS] setting**
Command: 1A 05 0345

| Data | Function |
|------|----------|
| 00 | AUTOTUNE/AFC |
| 01 | TONE/RX>CS |
| 02 | CD/RX>CS |
| 03 | PRESET/RX>CS |
| 04 | Home CH/RX>CS |
| 05 | Temporary Skip/RX>CS |

• **MIC Key Customize setting**
Command: 1A 05 0346, 0347

| Data | Function |
|------|----------|
| 00 | No funtion |
| 01 | UP |
| 02 | DOWN |
| 03 | UP (VFO: kHz) |
| 04 | DOWN (VFO: kHz) |
| 05 | XFC |
| 06 | CALL |
| 07 | VFO/MEMO |
| 08 | DR |
| 09 | FROM/TO (DR) |
| 10 | Home CH |
| 11 | BAND UP |
| 12 | BAND DOWN |
| 13 | SCAN |
| 14 | Temporary Skip |
| 15 | SPEECH |
| 16 | MAIN/DUAL |
| 17 | MODE |
| 18 | Voice/Keyer/RTTY Memory 1 |
| 19 | Voice/Keyer/RTTY Memory 2 |
| 20 | Voice/Keyer/RTTY Memory 3 |
| 21 | Voice/Keyer/RTTY Memory 4 |
| 22 | T-CALL |
| 23 | RX>CS |
| 24 | TS |
| 25 | MPAD |
| 26 | SPLIT |
| 27 | A/B |

• **Data mode with filter width settings**
Command: 1A 06

①   ②

| X | X | X | X |
|---|---|---|---|

00=Data mode OFF*   01=FIL1
01=Data mode ON   02=FIL2
   03=FIL3
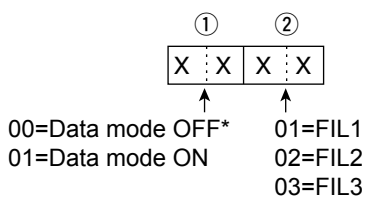
*When 00 is set, also set 00 to ②.

◇ Command formats (Continued)

・**Satellite memory content setting**
Command: 1A 07
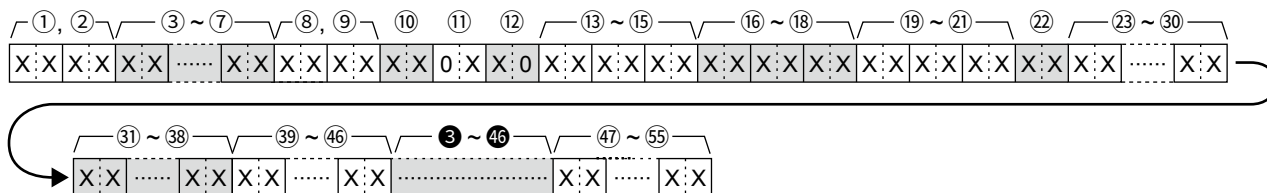


①, ② Satellite memory channel number
0001 ~ 0099: Satellite memory channel 1 to 99

③ ~ ⑦ Operating frequency setting
See "Operating frequency." (p. 13)

⑧, ⑨ Operating mode setting
See "Operating mode." (p. 13)

⑩ Data mode setting
1 byte data (XX)
00: Data mode OFF
01: Data mode ON

⑪ Tone settings



⑫ Digital squelch setting



0=Digital squelch function OFF
1=Digital call sign squelch function ON (DSQL)
2=Digital code squelch function ON (CSQL)
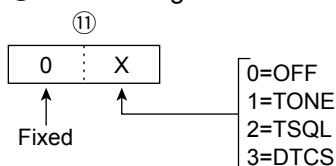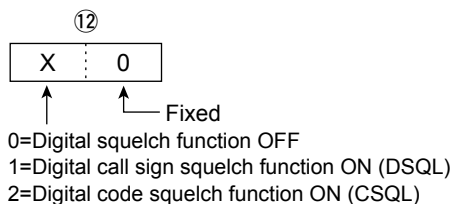
⑬ ~ ⑮ Repeater tone frequency setting
⑯ ~ ⑱ Tone squelch frequency setting
See "Repeater tone/tone squelch frequency
setting." (p. 20)

⑲ ~ ㉑ DTCS code setting
See "DTCS code and polarity setting." (p. 20)

㉒ DV Digital code squelch setting
See "DV Digital code squelch setting." (p. 20)

㉓ ~ ㉚ UR (Destination) call sign setting
        (8 characters; fixed)
㉛ ~ ㊳ R1 (Access repeater) call sign setting
        (8 characters; fixed)
㊴ ~ ㊻ R2 (Gateway/Link repeater) call sign setting
        (8 characters; fixed)
See "DV TX call signs setting." (p. 20)

㊼ ~ 67 Memory name setting
        (16 characters; fixed)
See "Codes for character entries." (p. 15)

**NOTE:**
• The same data as ③ ~ ㊻ are stored in ❸ ~ ㊻.
• ❸ ~ ㊻ is used for the uplink frequency (transmit).
• ③ ~ ㊻ is used for the downlink frequency (receive).

◇ Command formats (Continued)

**• Repeater tone/tone squelch frequency settings**
Command: 1B 00, 1B 01

①*    ②    ③

| 0 | 0 | X | X | X | X |
|---|---|---|---|---|---|

- Fixed digit: 0*
- Fixed digit: 0*
- 100Hz digit: 0 ~ 2
- 10 Hz digit: 0 ~ 9
- 1 Hz digit: 0 ~ 9
- 0.1 Hz digit: 0 ~ 9
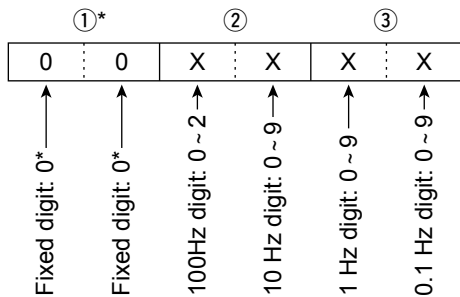
*Not necessary when setting a frequency.

**• DTCS code and polarity setting**
Command: 1B 02

①    ②    ③

| X | X | 0 | X | X | X |
|---|---|---|---|---|---|

- 0 (fixed)
- First digit: 0 ~ 7
- Second digit: 0 ~ 7
- Third digit: 0 ~ 7
- Receive polarity: 0=Normal / 1=Reverse
- Transmit polarity: 0=Normal / 1=Reverse
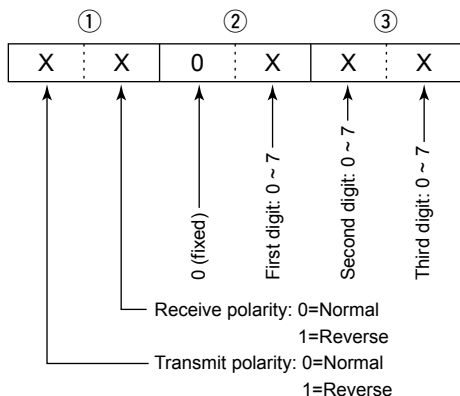
**• DV Digital code squelch setting**
Command: 1B 07

①

| X | X |
|---|---|

- First digit: 0 ~ 9
- Second digit: 0 ~ 9
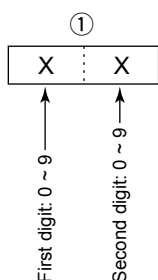
**• DV MY call sign setting**
Command: 1F 00
Set your own call sign and note of up to 12 characters.
See "Character's code of the call sign."

① ~ ⑧    ⑨ ~ ⑫

| X | X | ...... | X | X | X | X | X | X | X | X |
|---|---|--------|---|---|---|---|---|---|---|---|
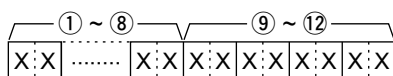
① ~ ⑧: Your own call sign setting (8 characters)
⑨ ~ ⑫: Note setting (4 characters)

**• DV TX call signs setting**
(24 characters or 8 characters)
Command: 1F 01
Set "UR," "R1," and "R2" call signs of 8 characters (fixed), or only the "UR" call sign.
See "Character code of the call sign."

### When setting "UR," "R1," and "R2" call signs

① ~ ⑧    ⑨ ~ ⑯    ⑰ ~ ㉔

| X | X | ...... | X | X | X | X | ...... | X | X | X | X | ...... | X | X |
|---|---|--------|---|---|---|---|--------|---|---|---|---|--------|---|---|
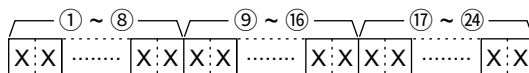
① ~ ⑧: UR (Destination) call sign setting (8 characters)
⑨ ~ ⑯: R1 (Access/Area repeater) call sign setting (8 characters)
⑰ ~ ㉔: R2 (Link/Gateway repeater) call sign setting (8 characters)

### When setting only the "UR" call sign

① ~ ⑧

| X | X | ...... | X | X |
|---|---|--------|---|---|
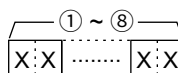
① ~ ⑧: UR (Destination) call sign setting (8 characters)

### Character code of the call sign

| Character | ASCII code |
|-----------|------------|
| 0 ~ 9 | 30 ~ 39 |
| A ~ Z | 41 ~ 5A |
| (Space) | 20 |
| / | 2F |

**• DV TX message setting**
Command: 1F 02
Set the transmit message of up to 20 characters.
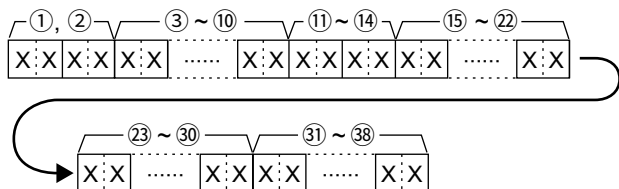"FF" stops sending or reading messages.

| Character | ASCII code | Character | ASCII code |
|-----------|------------|-----------|------------|
| A ~ Z | 41 ~ 5A | a ~ z | 61 ~ 7A |
| 0 ~ 9 | 30 ~ 39 | Space | 20 |
| ! | 21 | # | 23 |
| $ | 24 | % | 25 |
| & | 26 | \ | 5C |
| ? | 3F | " | 22 |
| ' | 27 | ` | 60 |
| ^ | 5E | + | 2B |
| – | 2D | * | 2A |
| / | 2F | . | 2E |
| , | 2C | : | 3A |
| ; | 3B | = | 3D |
| < | 3C | > | 3E |
| ( | 28 | ) | 29 |
| [ | 5B | ] | 5D |
| { | 7B | } | 7D |
| | | 7C | _ | 5F |
| ~ | 7E | @ | 40 |

◇ Command formats (Continued)

**• DV RX call sign data**
Command: 20 0001, 20 0002



①**Header flag data** (First byte)

| Data | | Description |
|---|---|---|
| **bit7** | (0: Fixed) | — |
| **bit6** | (0: Fixed) | — |
| **bit5** | (0: Fixed) | — |
| **bit4** | 0/1 | 0=Voice, 1=Data |
| **bit3** | 0/1 | 0=Direct, 1=Through repeater |
| **bit2** | 0/1 | 0=No Break-in, 1=Break-in |
| **bit1** | 0/1 | 0=Data, 1=Control |
| **bit0** | 0/1 | 0=Normal, 1=EMR |

②**Header flag data** (Second byte)

| Data | | | Description |
|---|---|---|---|
| **bit2** | **bit1** | **bit0** | |
| 1 | 1 | 1 | Repeater control |
| 1 | 1 | 0 | Send auto acknowledge |
| 1 | 0 | 1 | (Not used) |
| 1 | 0 | 0 | Request to re-transmit |
| 0 | 1 | 1 | Send acknowledge |
| 0 | 1 | 0 | Receive no reply |
| 0 | 0 | 1 | Repeater disabled |
| 0 | 0 | 0 | NULL |

③ ~ ⑩: Call sign of the caller station
(8 characters, fixed)
⑪ ~ ⑭: Note of the caller station
(4 characters, fixed)
⑮ ~ ㉒: Call sign of the called station
(8 characters, fixed)
㉓ ~ ㉚: Call sign of the access/area repeater (R1)
(8 characters, fixed)
㉛ ~ ㊳: Call sign of the link/gateway repeater (R2)
(8 characters, fixed)
ⓘFF: When no call sign is received since the transceiver power was turned ON.

**• DV RX message**
Command: 20 0101, 20 0102
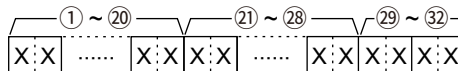


① ~ ⑳: Message (20 characters)
㉑ ~ ㉘: Call sign of the caller station (8 characters)
㉙ ~ ㉜: Note of the caller station (4 characters)
See "Codes for character entries." (p. 15)
ⓘFF: When no call sign is received since the transceiver power was turned ON.

Example: When a Gateway call is received
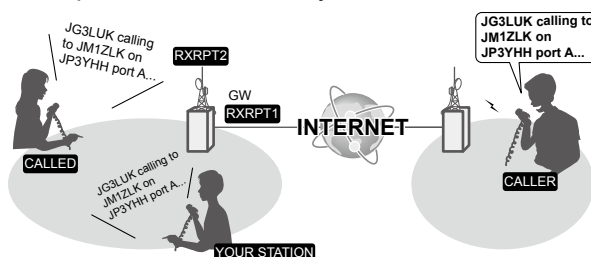


CALLER: Caller's call sign
CALLED: Called station call sign
RXRPT1: Call sign of the repeater that was accessed by the caller station
ⓘIf it was a call through a gateway and the internet, this item displays the gateway call sign of the repeater you received the call from.
RXRPT2: Call sign of the repeater you received the call from

**• DV RX Status setting**
Command: 20 0201, 20 0202

| Data | | Function | Description |
|---|---|---|---|
| **bit7** | 0 | (Fixed) | — |
| **bit6** | 0/1 | Receiving a voice call | While receiving a digital voice signal, select "1." (Regardless of DSQL and CSQL setting) |
| **bit5** | 0/1 | Last call finisher | When the last call was finished by you, select "1." |
| **bit4** | 0/1 | Receiving a signal | When the audio tone can be heard, select "1." |
| **bit3** | 0/1 | Receiving a BK call | While receiving a BK call, select "1." |
| **bit2** | 0/1 | Receiving a EMR call | While receiving a EMR call, select "1." |
| **bit1** | 0/1 | Receiving a signal other than DV | When "DV" and "FM" are blinking, select "1." |
| **bit0** | 0/1 | Packet loss status | While displaying packet loss, "1" is returned. |

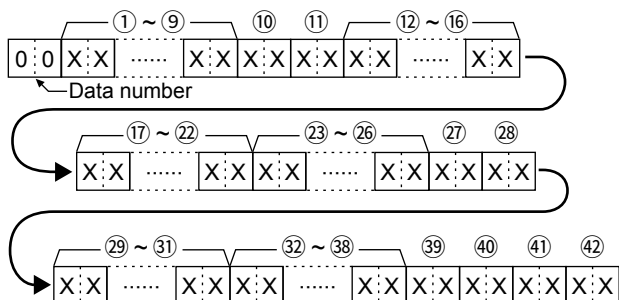◇ **Command formats (Continued)**

• **GPS/D-PRS data**
Command: 20 03 0100, 0200, 0101, 0201, 0102, 0202, 0103, 0203

## Data number and description

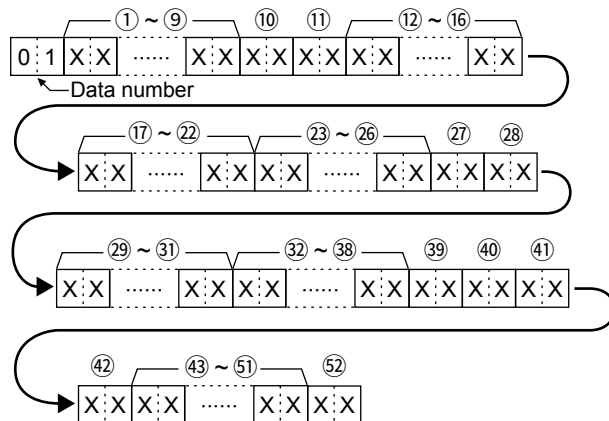| Data number | Description |
|---|---|
| 00 | D-PRS— Position |
| 01 | D-PRS— Object |
| 02 | D-PRS— Item |
| 03 | D-PRS— Weather |

## Position
Command: 20 03 0100, 0200



①~⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol
(2 ASCII characters (00h ~ EFh))
⑫~⑯: Latitude (dd°mm.mmm format)
⑰~㉒: Longitude (ddd°mm.mmm format)
㉓~㉖: Altitude (0.1 meter steps)
㉗, ㉘: Course (1 degree steps)
㉙~㉛: Speed (0.1 km/h steps)
㉜~㊳: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day, H: Hour, M: Minute, S: Second)
㊴: Power (see the table below)
㊵: Height (see the table below)
㊶: Gain (see the table below)
㊷: Directivity (see the table below)

| | Power | Height | Gain | Directivity |
|---|---|---|---|---|
| **Data** | (W) | (m/ft) | (dB) | (deg) |
| 0 | 0 | 3/10 | 0 | Omni-direction |
| 1 | 1 | 6/20 | 1 | 45º NE |
| 2 | 4 | 12/40 | 2 | 90º E |
| 3 | 9 | 24/80 | 3 | 135º SE |
| 4 | 16 | 49/160 | 4 | 180º S |
| 5 | 25 | 98/320 | 5 | 225º SW |
| 6 | 36 | 195/640 | 6 | 270º W |
| 7 | 49 | 390/1280 | 7 | 315º NW |
| 8 | 64 | 780/2560 | 8 | 360º N |
| 9 | 81 | 1561/5120 | 9 | — |

ⓘThe item, that is not contained the received data, is filled with "FF."
ⓘFF: No signal has been received since the power was turned ON.

## Object
Command: 20 03 0101, 0201



①~⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol
(2 ASCII characters (00h ~ EFh))
⑫~⑯: Latitude (dd°mm.mmm format)
⑰~㉒: Longitude (ddd°mm.mmm format)
㉓~㉖: Altitude (0.1 meter steps)
㉗, ㉘: Course (1 degree steps)
㉙~㉛: Speed (0.1 km/h steps)
㉜~㊳: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day, H: Hour, M: Minute, S: Second)
㊴: Power (see the table below)
㊵: Height (see the table below)
㊶: Gain (see the table below)
㊷: Directivity (see the table below)

| | Power | Height | Gain | Directivity |
|---|---|---|---|---|
| **Data** | (W) | (m/ft) | (dB) | (deg) |
| 0 | 0 | 3/10 | 0 | Omni-direction |
| 1 | 1 | 6/20 | 1 | 45º NE |
| 2 | 4 | 12/40 | 2 | 90º E |
| 3 | 9 | 24/80 | 3 | 135º SE |
| 4 | 16 | 49/160 | 4 | 180º S |
| 5 | 25 | 98/320 | 5 | 225º SW |
| 6 | 36 | 195/640 | 6 | 270º W |
| 7 | 49 | 390/1280 | 7 | 315º NW |
| 8 | 64 | 780/2560 | 8 | 360º N |
| 9 | 81 | 1561/5120 | 9 | — |

㊸~㊿: Name
(9 ASCII characters (00h ~ EFh))
52: Type (1= Live, 0= Killed)

ⓘThe item, that is not contained the received data, is filled with "FF."
ⓘFF: No signal has been received since the power was turned ON.

◇ Command formats
• GPS/D-PRS data (Continued)

**Item**

Command: 20 03 0102, 0202
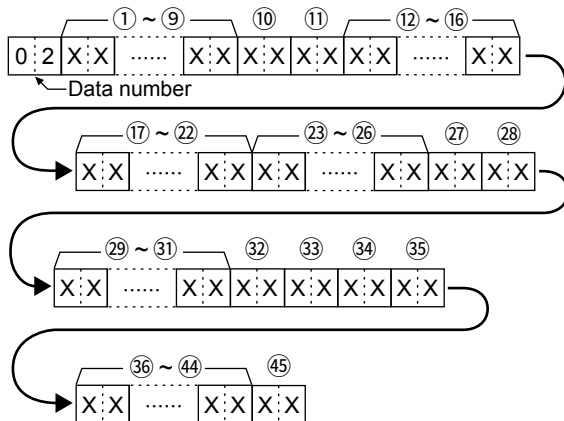


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol
(2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉖: Altitude (0.1 meter steps)
㉗, ㉘: Course (1 degree steps)
㉙ ~ ㉛: Speed (0.1 km/h steps)
㉜: Power (see the table below)
㉝: Height (see the table below)
㉞: Gain (see the table below)
㉟: Directivity (see the table below)

| | Power | Height | Gain | Directivity |
|---|---|---|---|---|
| **Data** | (W) | (m/ft) | (dB) | (deg) |
| 0 | 0 | 3/10 | 0 | Omni-direction |
| 1 | 1 | 6/20 | 1 | 45º NE |
| 2 | 4 | 12/40 | 2 | 90º E |
| 3 | 9 | 24/80 | 3 | 135º SE |
| 4 | 16 | 49/160 | 4 | 180º S |
| 5 | 25 | 98/320 | 5 | 225º SW |
| 6 | 36 | 195/640 | 6 | 270º W |
| 7 | 49 | 390/1280 | 7 | 315º NW |
| 8 | 64 | 780/2560 | 8 | 360º N |
| 9 | 81 | 1561/5120 | 9 | — |

㊱ ~ ㊹: Name
(9 ASCII characters (00h ~ EFh))
㊺: Type (1= Live, 0= Killed)

ⓘThe item, that is not contained the received data, is filled with "FF."
ⓘFF: No signal has been received since the power was turned ON.

**Weather**

Command: 20 03 0103, 0203
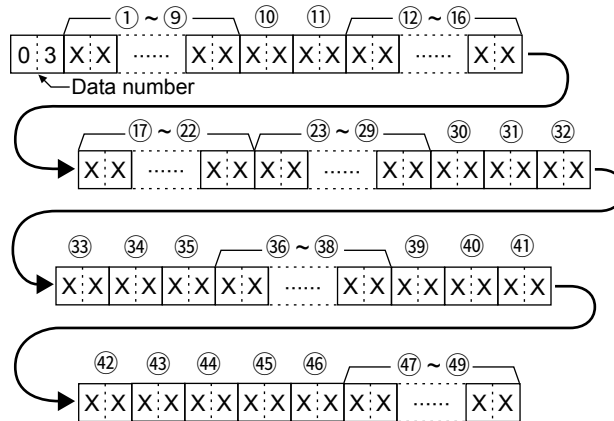


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol
(2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉙: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day, H: Hour, M: Minute, S: Second)
㉚, ㉛: Wind direction (1 degree steps)
㉜, ㉝: Wind speed (0.1 m/s steps)
㉞, ㉟: Gust speed (0.1 m/s steps)
㊱ ~ ㊲: Temperature (0.1 ºC steps)
㊳ : Temperature (0= + degree, 1= – degree)
㊴, ㊵: Rainfall (0.1 mm steps)
㊶, ㊷: Rainfall (24 hours) (0.1 mm steps)
㊸, ㊹: Rainfall (Midnight) (0.1 mm steps)
㊺, ㊻: Humidity (1% steps)
㊼ ~ ㊾: Barometric pressure (0.1 hPa steps)

ⓘThe item, that is not contained the received data, is filled with "FF."
ⓘFF: No signal has been received since the power was turned ON

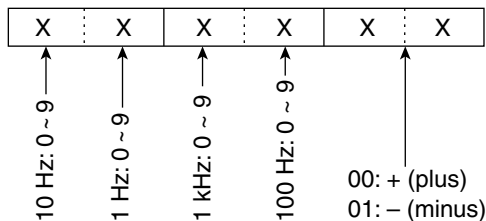• **GPS/D-PRS message**

Command: 20 0401, 0402



(Variable length)
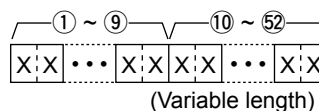
① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩ ~ ㊾: Message
(Up to 43 ASCII characters (00h ~ EFh))
ⓘFF: When no call sign is received since the transceiver power was turned ON.

◇ Command formats (Continued)

### • RIT frequency settings
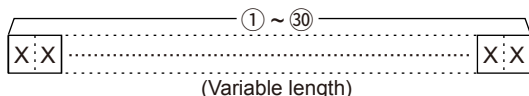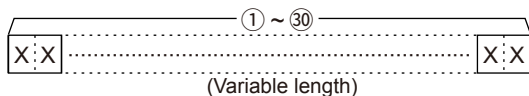Command: 21 00

| X | X | X | X | X | X |
|---|---|---|---|---|---|

- 10 Hz: 0 ~ 9
- 1 Hz: 0 ~ 9
- 1 kHz: 0 ~ 9
- 100 Hz: 0 ~ 9
- 00: + (plus)
- 01: − (minus)

### • DV TX data
Command: 22 00

| X X | ················ | X X |
|-----|------------------|-----|

① ~ ㉚

(Variable length)

① ~ ㉚: Tx, data (Up to 30 Byte)
("FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.)
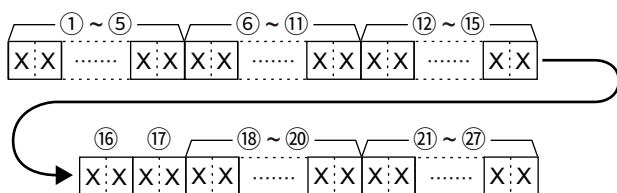
### • DV RX data (transceive)
Command: 22 0101

| X X | ················ | X X |
|-----|------------------|-----|

① ~ ㉚

(Variable length)

① ~ ㉚: Rx, data (Up to 30 Byte)
("FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.)

### • MY position data
Command: 23 00

① ~ ⑤ / ⑥ ~ ⑪ / ⑫ ~ ⑮

| X X | ······· | X X X | ······· | X X X | ······· | X X |

⑯ ⑰ / ⑱ ~ ⑳ / ㉑ ~ ㉗

| X X X X X | ······· | X X X | ······· | X X |

① ~ ⑤: Latitude (dd°mm.mmm format)
⑥ ~ ⑪: Longitude (ddd°mm.mmm format)
⑫ ~ ⑮: Altitude (0.1 meter steps)
⑯, ⑰: Course (1 degree steps)
⑱ ~ ⑳: Speed (0.1 km/h steps)
㉑ ~ ㉗: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day, H: Hour, M: Minute, S: Second)

### • Selected or unselected VFO frequency settings (Only MAIN band)
Command: 25

| X X | X X X X X X X X X X |
|-----|---------------------|

*00=Selected VFO
01=Unselected VFO
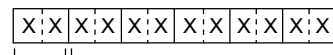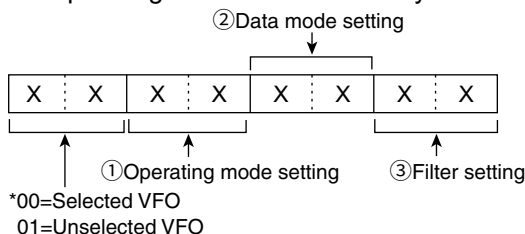
Operating frequency
See "Operating frequency." (p. 13)

ⓘYou cannot set the SUB band frequency.
*00/01 can be set in the VFO mode. (In the satellite mode, "FA" (NG) is returned.)
In the memory channel mode, call channel mode, or DR function, the transceiver returns "FA" (NG) because these cannot be set to 01.

•When VFO A is selected
00=frequency of VFO A changes
01=frequency of VFO B changes

•When VFO B is selected
00=frequency of VFO B changes
01=frequency of VFO A changes

### • Selected or unselected VFO's operating mode and filter settings (Only MAIN band)
Command: 26
ⓘYou cannot set the SUB band operating mode and filter settings.
Both data and filter settings can be skipped. In that case, "DATA OFF" and the default filter setting of the operating mode is automatically selected.

②Data mode setting

| X | X | X | X | X | X | X | X |
|---|---|---|---|---|---|---|---|

*00=Selected VFO
01=Unselected VFO
①Operating mode setting
③Filter setting

*00/01 can be set in the VFO mode. (In the satellite mode, "FA" (NG) is returned.)
In the memory channel mode, call channel mode, or DR function, the transceiver returns "FA" (NG) because these cannot be set to 01.

•When VFO A is selected
00=operating mode of VFO A changes
01=operating mode of VFO A changes of VFO B changes

•When VFO B is selected
00=operating mode of VFO A changes of VFO B changes
01=operating mode of VFO A changes of VFO A changes

| ①Operating mode setting | | ②Data mode setting | ③Filter setting |
|---|---|---|---|
| 00:LSB | 05:FM | 00: Data mode OFF[2] | 01:FIL1 |
| 01:USB | 07:CW-R | 01: Data mode ON | 02:FIL2 |
| 02:AM | 08:RTTY-R | — | 03:FIL3 |
| 03:CW | 17:DV | — | — |
| 04:RTTY | 22:DD[1] | — | — |

[1] 22 Command (DD) can be selected when setting the 1200 MHz band to other than the satellite mode.
[2] When 00 is set, also set 00 to ③.

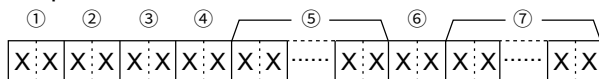◇ Command formats (Continued)

**• Scope waveform data**
Command: 27 00
Outputs the waveform data to the controller.



① Main or Sub scope data
   • 00=Main scope, 01=Sub scope
② Order of division data (Current): 01~11
③ Division number (Maximum): 01(LAN), 11(USB)
   When data is sent to the controller through the LAN port, all data is sent together. However, when the data is sent through the USB port, the data is divided by 11 and sent in sequential order.

   The 1st data sends only the wave information (① ~ ⑥) without the waveform data (⑦).
   The 2nd or later data sends the minimum wave information (① ~ ③) with waveform data (⑦).

④ Center or Fixed mode data
   • 00 = Center mode scope
     01 = Fixed mode scope
     02 = SCROLL-C mode scope
     03 = SCROLL-F mode scope

⑤ Waveform information
   The waveform information differs, depending on the Spectrum scope mode.
   • In the Center mode:
     Center frequency and span are sent.
     See the Operating frequency on page 13, and the Scope span settings ② ~ ⑥ on the right.

   • In the Fixed, SCROLL-C, and SCROLL-F modes:
     Lower edge and higher edge frequencies are sent.
     See the Scope Fixed edge frequency settings ③ ~ ⑫ on page 26.

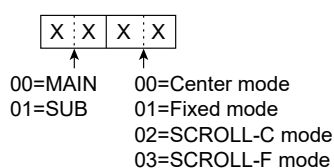⑥ Out of range information
   • 00 = In range, 01 = Out of range
     If the scope data is out of range, the waveform data (⑦) is omitted.

⑦ Waveform data
   The transceiver outputs the drawn waveform data. The data range or data length of the waveform data is judged by the controller. (The data range is basically the same as the display size of the scope on the controller.)
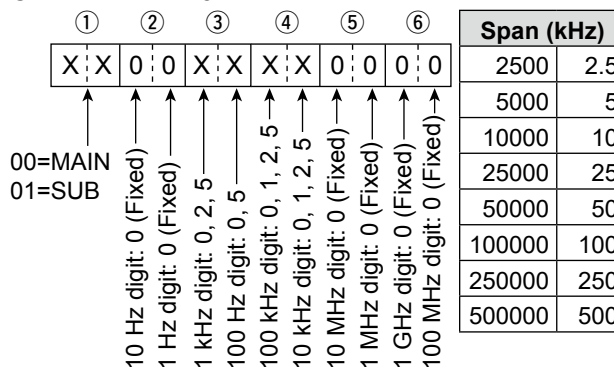
| Data range | 0 ~ 160 |
|---|---|
| Data length | 475 |

**• Spectrum scope mode settings**
Command: 27 14



00=MAIN      00=Center mode
01=SUB       01=Fixed mode
             02=SCROLL-C mode
             03=SCROLL-F mode

**• Scope span settings**
Command: 27 15



00=MAIN
01=SUB

| Span (kHz) | |
|---|---|
| 2500 | 2.5 |
| 5000 | 5 |
| 10000 | 10 |
| 25000 | 25 |
| 50000 | 50 |
| 100000 | 100 |
| 250000 | 250 |
| 500000 | 500 |

**• Scope Edge number settings**
Command: 27 16



00=MAIN      01=Edge 1
01=SUB       02=Edge 2
             03=Edge 3
             04=Edge 4
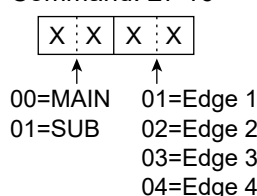
**• Scope Hold settings**
Command: 27 17



00=MAIN      00=Hold OFF
01=SUB       01=Hold ON
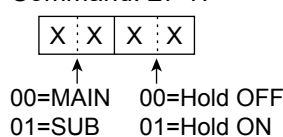
**• Scope Reference level settings**
Command: 27 19
Common settings for the Main and Sub scopes.



00=Main scope                        00= + (plus)
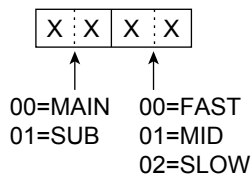01=Sub scope                         01= – (minus)
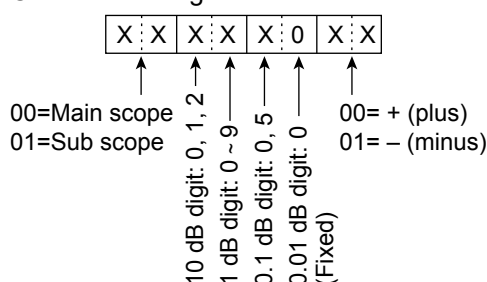
ⓘAdjustable range: –20.0 dB ~ +20.0 dB in 0.5 dB steps.

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# Remote control

◇ Command formats (Continued)

• **Scope Sweep speed settings**
Command: 27 1A

| X | X | X | X |

↑ (left pair): 00=MAIN, 01=SUB
↑ (right pair): 00=FAST, 01=MID, 02=SLOW

• **Scope Fixed edge frequency settings**
Command: 27 1E

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

X X 0 X X X X X X X X X X X X X X X X X X X X X X X

- ① Frequency range
- ② Edge number: 01 ~ 04
- ③ 10 Hz digit: 0 ~ 9
- 1 Hz digit: 0 ~ 9
- ④ 1 kHz digit: 0 ~ 9
- 100 Hz digit: 0 ~ 9
- ⑤ 100 kHz digit: 0 ~ 9
- 10 kHz digit: 0 ~ 9
- ⑥ 10 MHz digit: 0 ~ 9
- 1 MHz digit: 0 ~ 9
- ⑦ 1 GHz digit: 0 ~ 1
- 100 MHz digit: 0 ~ 4
- ⑧ 10 Hz digit: 0 ~ 9
- 1 Hz digit: 0 ~ 9
- ⑨ 1 kHz digit: 0 ~ 9
- 100 Hz digit: 0 ~ 9
- ⑩ 100 kHz digit: 0 ~ 9
- 10 kHz digit: 0 ~ 9
- ⑪ 10 MHz digit: 0 ~ 9
- 1 MHz digit: 0 ~ 9
- ⑫ 1 GHz digit: 0 ~ 1
- 100 MHz digit: 0 ~ 4

Lower edge (③–⑦)     Higher edge (⑧–⑫)

ⓘEntry of less than 1 kHz digits is ignored.

① Selectable Frequency ranges

| Data | Frequency range (MHz) |
|------|-----------------------|
| 01 | 144.000 ~ 148.000 |
| 02 | 430.000 ~ 450.000 |
| 03 | 1240.000 ~ 1300.000 |

② Selectable Edge number: 01=1, 02=2, 03=3, 04=4

How the World Communicates

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