ICOM

CI-V REFERENCE GUIDE

ALL MODE TRANSCEIVER

IC-905

Icom Inc.

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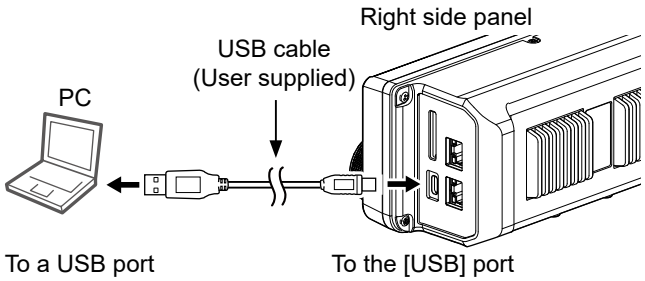
REMOTE CONTROL

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.
Connect the transceiver to a PC with a USB cable (User supplied).

- ⓘ Make the connection as short as possible. The transceiver may not be recognized by the PC, depending on the USB cable length.
- ⓘ When connecting to a USB port on your PC with the USB driver installed, USB (A) and USB (B) are named as "IC-905 Serial Port A (CI-V)" and "IC-905 Serial Port B."
- ⓘ The values that can be set with each command differ, depending on the transceiver version. See the transceiver's instruction manual for details.



To use the USB cable between the transceiver and a PC, you must first install a USB driver.
The latest USB driver and installation guide can be downloaded from the Icom website.

Carefully read the guide, before installing the driver.
https://www.icomjapan.com/support/

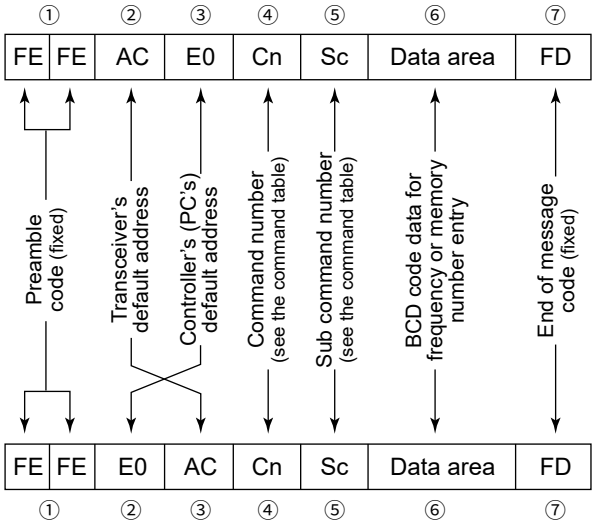
◇ Preparing

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-905 Basic manual).

◇ About the data format

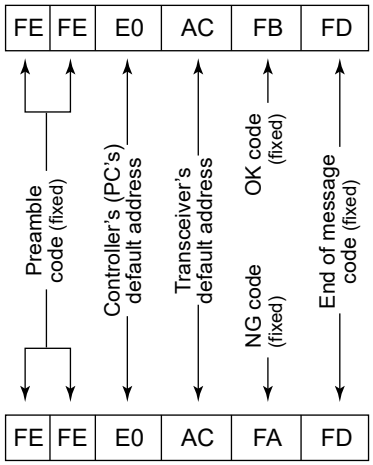
The CI-V system can be written using the following data formats. Data formats differ according to command numbers. A data area or sub command is added for some commands.

Controller (PC) to IC-905



IC-905 to controller (PC)

OK message to controller (PC)



NG message to controller (PC)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.	Data	Description
00		See p. 16.	Send the frequency data (transceive)
01		See p. 16.	Send the mode data (transceive)
02*1		See p. 16.	Read the band edge frequencies
03*1		See p. 16.	Read the operating frequency
04*1		See p. 16.	Read the operating mode
05*2		See p. 16.	Set the operating frequency
06*2		See p. 16.	Set the operating mode
07			Select the VFO mode
	00		Select VFO A
	01		Select VFO B
	A0		Equalize VFO A and VFO B ⓘ When the split frequency operation is OFF in the Memory mode or the Call channel mode, “FA” (NG) is returned.
	B0		Exchange VFO A and VFO B. ⓘ When the split frequency operation is OFF in the Memory mode or the Call channel mode, “FA” (NG) is returned.
08*2			Select the Memory mode
		00 00 ~ 00 99	Select the Memory channel (Memory channel: 00 00 ~ 00 99 Call channel: 00 00 (144C1), 00 01 (144C2), 00 02 (430C1), 00 03 (430C2), 00 04 (1200C1), 00 05 (1200C2), 00 06 (2400C1), 00 07 (2400C2), 00 08 (5600C1), 00 09 (5600C2), 00 10 (10GC1), 00 11 (10GC2)
	A0	00 00 ~ 01 00	Select the Memory group (Memory channel group: 00 00 ~ 00 99 Call channel group: 01 00)
09			Memory write
0A			Memory copy to VFO
0B			Memory clear
0C*1		See p. 17.	Read frequency offset
0D*2		See p. 17.	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 ~ 7)		Select ⊿F scan span (x=1 (±5kHz), x=2 (±10kHz), x=3 (±20kHz), x=4 (±50kHz), x=5 (±100kHz), x=6 (±500kHz), x=7 (±1MHz))

Cmd.	Sub cmd.	Data	Description
0E	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 ~ 03	Set the channel as a Select channel (01=SEL1, 02=SEL2, 03=SEL3)
	B2*2	00 ~ 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		00*1	Read Split OFF setting
		01*1	Read Split ON setting
		11*1	Read DUP– operation
		12*1	Read DUP+ operation
		13*1	Read DD Repeater Simplex mode (RPS)
	00*2		Set Split function OFF
	01*2		Set Split function ON
	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 ~ 12	Send/read the tuning step (00=OFF (10Hz or 1Hz) 01=100Hz, 02=500Hz, 03=1kHz, 04=5kHz, 05=6.25kHz, 06=10kHz, 07=12.5kHz, 08=20kHz, 09=25kHz, 10=50kHz, 11=100kHz, 12=250kHz)
11*		00	Send/read attenuator OFF setting
		10	Send/read 10 dB attenuator setting ⓘ You can set in the 144/430/1200 MHz bands.
13	00		Speech all data by 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 ⓘ The mode is announced after the ongoing speech.
14*	01	00 00 ~ 02 55	Send/read the AF level (00 00=Minimum ~ 02 55=Maximum)
	02	00 00 ~ 02 55	Send/read the RF gain level (00 00=Minimum ~ 02 55=Maximum)
	03	00 00 ~ 02 55	Send/read the squelch level (00 00=Minimum ~ 02 55=Maximum)
	06	00 00 ~ 02 55	Send/read the NR level (00 00=0% ~ 02 55=100%)
	07	00 00 ~ 02 55	Send/read [TWIN PBT] (PBT1) position (00 00=max. Counter Clockwise ~ 01 28=center ~ 02 55=max. Clockwise)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.	Data	Description
14*	08	00 00 ~ 02 55	Send/read [TWIN PBT] (PBT2) position (00 00=max. Counter Clockwise ~ 01 28=center ~ 02 55=max. Clockwise)
	09	00 00 ~ 02 55	Send/read CW pitch (5 Hz steps) (00 00=300 Hz ~ 01 28=600 Hz ~ 02 55=900 Hz)
	0A	00 00 ~ 02 55	Send/read the selected band's RF power (00 00=Minimum ~ 02 55=Maximum)
	0B	00 00 ~ 02 55	Send/read MIC gain (00 00=Minimum ~ 02 55=Maximum)
	0C	00 00 ~ 02 55	Send/read keying speed (00 00=6 WPM ~ 02 55=48 WPM)
	0D	00 00 ~ 02 55	Send/read Notch filter setting (00 00=max. Counter Clockwise ~ 01 28=center ~ 02 55=max. Clockwise)
	0E	00 00 ~ 02 55	Send/read the COMP level (00 00=0 ~ 02 55=10)
	0F	00 00 ~ 02 55	Send/read the Break-IN Delay setting (00 00=2.0d ~ 02 55=13.0d)
	12	00 00 ~ 02 55	Send/read NB level (00 00=0% ~ 02 55=100%)
	15	00 00 ~ 02 55	Send/read Monitor audio [MONI] level (00 00=0% ~ 02 55=100%)
	16	00 00 ~ 02 55	Send/read the VOX gain (00 00=0% ~ 02 55=100%)
	17	00 00 ~ 02 55	Send/read the Anti VOX gain (00 00=0% ~ 02 55=100%)
	19	00 00 ~ 02 55	Send/read LCD backlight brightness (00 00=0% ~ 02 55=100%)
15*[1]	01	00/01	Read noise or S-meter squelch status (00=Close, 01=Open)
	02	00 00 ~ 02 55	Read S-meter level (00 00=S0, 01 20=S9, 02 41=S9+60 dB)
	05	00/01	Read various squelch (tone squelch, and so on) status (00=Close, 01=Open)
	07	00/01	Read the OVF status (00=OVF indicator is OFF, 01=OVF indicator is ON)
	11	00 00 ~ 02 55	Read the Po meter level (00 00=0% ~ 01 43=50% ~ 02 13=100%)
	12	00 00 ~ 02 55	Read SWR meter level (00 00=SWR1.0, 00 48=SWR1.5, 00 80=SWR2.0, 01 20=SWR3.0)
	13	00 00 ~ 02 55	Read ALC meter level (00 00=Minimum ~ 01 20=Maximum)
	14	00 00 ~ 02 55	Read COMP meter level (00 00=0 dB ~ 01 30=15 dB ~ 02 10=25.5 dB)
	15*[8]	00 00 ~ 02 55	Read VD meter level (00 00=0 V ~ 00 40=5 V ~ 02 41=30 V)
	16	00 00 ~ 02 55	Read ID meter level (00 00=0 A ~ 01 21=2 A ~ 02 41=4 A)
16*	02	00/01	Send/read the Preamp (00=OFF, 01=ON)

Cmd.	Sub cmd.	Data	Description
16*	12	01 ~ 03	Send/read the AGC time constant (01=FAST, 02=MID, 03=SLOW)
	22	00/01	Send/read the Noise blanker (00=OFF, 01=ON)
	40	00/01	Send/read the Noise reduction (00=OFF, 01=ON)
	41	00/01	Send/read the Auto Notch function (00=OFF, 01=ON)
	42	00/01	Send/read the Repeater tone (00=OFF, 01=ON)
	43	00/01	Send/read the Tone squelch (00=OFF, 01=ON)
	44	00/01	Send/read the Speech compressor (00=OFF, 01=ON)
	45	00/01	Send/read the Monitor [MONI] function (00=OFF, 01=ON)
	46	00/01	Send/read the VOX function (00=OFF, 01=ON)
	47	00 ~ 02	Send/read the BK-IN function (00=BK-IN OFF, 01=Semi BK-IN ON, 02=Full BK-IN ON)
	48	00/01	Send/read the Manual Notch function (00=OFF, 01=ON)
	4A	00/01	Send/read the AFC function (00=OFF, 01=ON)
	4B	00/01	Send/read the DTCS function (00=OFF, 01=ON)
	4F	00/01	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	00/01	Send/read the Dial Lock function (00=OFF, 01=ON)
	56	00/01	Send/read DSP IF filter type in the operating band (00=SHARP, 01=SOFT)
	57	00 ~ 02	Send/read the Manual Notch width (00=WIDE, 01=MID, 02=NAR)
	58	00 ~ 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 00 17), MID (Command: 1A 05 00 18), or NAR (Command: 1A 05 00 19))
	5B	00 ~ 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 ~ 02	Send/read the GPS TX mode (00=OFF, 01=D-PRS, 02=NMEA)
	5D	00 ~ 03, 06 ~ 09	Send/read the Tone Squelch function (00=OFF, 01=TONE, 02=TSQL, 03=DTCS, 06=DTCS (T), 07=TONE (T)/DTCS (R), 08=DTCS (T)/TSQL (R), 09=TONE (T)/TSQL (R))

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
17*3			See p. 17.	Send CW messages
18	00			Turn OFF the transceiver
	01*4			Turn ON the transceiver
19*1	00			Read the transceiver ID
1A*	00		See pp. 18 and 19.	Send/read memory contents
	01		See p. 19.	Send/read band stacking register contents
	02*5		See p. 20.	Send/read memory keyer contents
	03		See p. 20.	Send/read the selected IF filter width
	04		See p. 20.	Send/read the selected AGC time constant
	05	SET > **Tone Control/TBW**		
		00 01	See p. 20.	RX > SSB > Send/read RX HPF/LPF settings
		00 02	00 ~ 10	RX > SSB > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		00 03	00 ~ 10	RX > SSB > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		00 04	See p. 20.	RX > AM > Send/read RX HPF/LPF settings
		00 05	00 ~ 10	RX > AM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		00 06	00 ~ 10	RX > AM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		00 07	See p. 20.	RX > FM > Send/read RX HPF/LPF settings
		00 08	00 ~ 10	RX > FM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		00 09	00 ~ 10	RX > FM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		00 10	See p. 20.	RX > DV > Send/read RX HPF/LPF settings
		00 11	00 ~ 10	RX > DV > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		00 12	00 ~ 10	RX > DV > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		00 13	00 ~ 10	RX > AM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		00 14	00 ~ 10	RX > AM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		00 15	See p. 20.	RX > CW > Send/read RX HPF/LPF settings
		00 16	See p. 20.	RX > RTTY > Send/read RX HPF/LPF settings
		00 17	00 ~ 10	TX > SSB > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **Tone Control/TBW**		
		00 18	00 ~ 10	TX > SSB > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		00 19	See p. 20.	TX > SSB > Send/read TX bandwidth for wide
		00 20	See p. 20.	TX > SSB > Send/read TX bandwidth for mid
		00 21	See p. 20.	TX > SSB > Send/read TX bandwidth for narrow
		00 22	See p. 20.	TX > SSB-D > Send/read TX bandwidth
		00 23	00 ~ 10	TX > AM > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		00 24	00 ~ 10	TX > AM > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		00 25	00 ~ 10	TX > FM > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		00 26	00 ~ 10	TX > FM > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		00 27	00 ~ 10	TX > DV > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		00 28	00 ~ 10	TX > DV > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		00 29	00 ~ 10	TX > ATV > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		00 30	00 ~ 10	TX > ATV > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		SET > **Function**		
		00 31	00 00 ~ 02 55	Send/read the Beep Level setting (00 00=Minimum ~ 02 55=Maximum)
		00 32	00/01	Send/read the Beep Level Limit setting (00=OFF, 01=ON)
		00 33	00/01	Send/read the Beep (Confirmation) setting (00=OFF, 01=ON)
		00 34	00/01	Send/read the Home CH Beep setting (00=OFF, 01=ON)
		00 35	00 ~ 03	Send/read the Band Edge Beep setting (00=OFF, 01=ON (Default), 02=ON (User), 03=ON (User) & TX Limit)
		00 36	00/01	Send/read the FM/DV Center Error setting (00=OFF, 01=ON)
		00 37	00 ~ 04	Send/read the Auto Power OFF setting (00=OFF, 01=30 min, 02=60 min, 03=90 min, 04=120 min)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **Function**		
		00 38	00 ~ 05	Send/read the TX Delay (144M) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 39	00 ~ 05	Send/read the TX Delay (430M) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 40	00 ~ 05	Send/read the TX Delay (1200M) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 41	00 ~ 05	Send/read the TX Delay (2400M) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 42	00 ~ 05	Send/read the TX Delay (5600M) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 43	00 ~ 05	Send/read the TX Delay (10G) setting (00=OFF, 01=10 ms, 02=15 ms, 03=20 ms, 04=25 ms, 05=30 ms)
		00 44	00 ~ 05	Send/read the Time-Out Timer setting (00=OFF, 01=3 min, 02=5 min, 03=10 min, 04=20 min, 05=30 min)
		00 45	00/01	Send/read the PTT Lock setting (00=OFF, 01=ON)
		00 46	00/01	SPLIT > Send/read the Quick SPLIT setting (00=OFF, 01=ON)
		00 47	See p. 20.	SPLIT > Send/read the SPLIT Offset setting
		00 48	00/01	SPLIT > Send/read the SPLIT LOCK setting (00=OFF, 01=ON)
		00 49	00/01	Send/read the Auto Repeater setting (00=OFF, 01=ON (DUP), 02=ON (DUP,TONE))
		00 50	00 ~ 02	Send/read the RTTY Mark Frequency setting (00=1275 Hz, 01=1615 Hz, 02=2125 Hz)
		00 51	00 ~ 02	Send/read the RTTY Shift Width setting (00=170 Hz, 01=200 Hz, 02=425 Hz)
		00 52	00/01	Send/read the RTTY Keying Polarity setting (00=Normal, 01=Reverse)
		00 53	00 ~ 06	Send/read the ATV Audio Sub Carrier Frequency setting (00=OFF, 01=4.5 MHz, 02=5.5 MHz, 03=6.0 MHz, 04=6.5 MHz, 05=7.02 MHz, 06=7.2 MHz)
		00 54	00/01	SPEECH > Send/read the SPEECH Language setting (00=Japanese, 01=English)
		00 55	00/01	SPEECH > Send/read the Alphabet setting (00=Normal, 01=Phonetic Code)
		00 56	00/01	SPEECH > Send/read the SPEECH Speed setting (00=Slow, 01=Fast)
		00 57	00 ~ 02	SPEECH > Send/read the RX Call Sign SPEECH setting (00=OFF, 01=ON (Kerchunk), 02=ON (All))
		00 58	00/01	SPEECH > Send/read the RX>CS SPEECH setting (00=OFF, 01=ON)
		00 59	00/01	SPEECH > Send/read the MIC Up/Down SPEECH setting (00=OFF, 01=ON)
		00 60	00/01	SPEECH > Send/read the S-Level SPEECH setting (00=OFF, 01=ON)
		00 61	00/01	SPEECH > Send/read the MODE SPEECH setting (00=OFF, 01=ON)
		00 62	00 00 ~ 02 55	SPEECH > Send/read the SPEECH Level setting (00 00=0% ~ 02 55=100%)
		00 63	00/01	Send/read the [SPEECH/LOCK] Switch setting (00=SPEECH/LOCK, 01=LOCK/SPEECH)
		00 64	00/01	Send/read the Lock Function setting (00=MAIN DIAL, 01=PANEL)
		00 65	00/01	Send/read the Memo Pad Quantity setting (00=5 ch, 01=10 ch)
		00 66	00/01	Send/read the Function of Touch for 1 sec MHz Digits setting (00=Band Stacking Register, 01=1 MHz Step Tuning)
		00 67	00 ~ 02	Send/read the MAIN DIAL Auto TS setting (00=OFF, 01=Low, 02=High)
		00 68	00/01	Send/read the MIC Up/Down Speed setting (00=Slow, 01=Fast)
		00 69	00/01	Send/read the AFC Limit setting (00=OFF, 01=ON)
		00 70	00 ~ 02	Send/read the [NOTCH] Switch (SSB) setting (00=Auto, 01=Manual, 02=Auto/Manual)
		00 71	00 ~ 02	Send/read the [NOTCH] Switch (AM) setting (00=Auto, 01=Manual, 02=Auto/Manual)
		00 72	00/01	Send/read the SSB/CW Synchronous Tuning setting (00=OFF, 01=ON)
		00 73	00/01	Send/read the CW Normal Side setting (00=LSB, 01=USB)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **Function**		
		00 74	00/01	Send/read the Power OFF Setting (for Remote Control) setting (00=Shutdown only, 01=Standby/Shutdown)
		00 75	See p. 22.	Front Key Customize > [VOX/BK-IN] setting
		00 76	See p. 22.	Front Key Customize > [AUTOTUNE/RX>CS/AFC] setting
		00 77	See p. 22.	Send/read the [A] setting
		00 78	See p. 22.	Send/read the [B] setting
		00 79	See p. 22.	Send/read the [△] setting
		00 80	See p. 22.	Send/read the [▽] setting
		00 81	00/01	Remote MIC Key > Mode Select > SSB setting (00=OFF, 01=ON)
		00 82	00/01	Remote MIC Key > Mode Select > CW setting (00=OFF, 01=ON)
		00 83	00/01	Remote MIC Key > Mode Select > RTTY setting (00=OFF, 01=ON)
		00 84	00/01	Remote MIC Key > Mode Select > AM setting (00=OFF, 01=ON)
		00 85	00/01	Remote MIC Key > Mode Select > FM setting (00=OFF, 01=ON)
		00 86	00/01	Remote MIC Key > Mode Select > DV setting (00=OFF, 01=ON)
		00 87	00/01	Remote MIC Key > Mode Select > DD setting (00=OFF, 01=ON)
		00 88	00/01	Remote MIC Key > Mode Select > ATV setting (00=OFF, 01=ON)
		00 89	00/01	Send/read the Keyboard Type setting (00=Ten-key, 01=Full Keyboard)
		00 90	00 ~ 02	Send/read the Full Keyboard Layout setting (00=English, 01=German, 02=French)
		00 91	00/01	Send/read the Screen Capture [POWER] Switch setting (00=OFF, 01=ON)
		00 92	00/01	Send/read the Screen Capture File Type setting (00=PNG, 01=BMP)
		00 93	00 00 ~ 02 55	Send/read the REF Adjust setting (00 00=0% ~ 02 55=100%)
		00 94	00 00 ~ 02 55	Send/read the REF Adjust (FINE) setting (00 00=0% ~ 02 55=100%)
		SET > **DV/DD**		
		00 95	00 ~ 03	Send/read the Standby Beep setting (00=OFF, 01=ON, 02=ON (to me:High Tone), 03=ON (to me:Alarm/High Tone))

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **DV/DD**		
		00 96	00 ~ 02	Send/read the Auto Reply setting (00=OFF, 01=ON, 02=Voice)
		00 97	00/01	Send/read the DV Data TX setting (00=PTT, 01=Auto)
		00 98	00/01	DV Fast Data > Send/read the Fast Data setting (00=OFF, 01=ON)
		00 99	00/01	DV Fast Data > Send/read the GPS Data Speed setting (00=Slow, 01=Fast)
		01 00	00 ~ 10	DV Fast Data > Send/read the TX Delay (PTT) setting (00=OFF, 01=1sec ~ 10=10sec)
		01 01	00 ~ 02	Send/read the Digital Monitor setting (00=Auto, 01=Digital, 02=Analog)
		01 02	00/01	Send/read the Digital Repeater Set setting (00=OFF, 01=ON)
		01 03	00/01	Send/read the DV Auto Detect setting (00=OFF, 01=ON)
		01 04	00/01	Send/read the RX Record (RPT) setting (00=ALL, 01=Latest Only)
		01 05	00/01	Send/read the BK setting (00=OFF, 01=ON)
		01 06	00/01	Send/read the EMR setting (00=OFF, 01=ON)
		01 07	00 00 ~ 02 55	Send/read the EMR AF Level setting (00 00=0% ~ 02 55=100%)
		01 08	00/01	Send/read the DD TX Inhibit (Power ON) setting (00=OFF, 01=ON)
		01 09	00/01	Send/read the DD Packet Output setting (00=Normal, 01=All)
		SET > **QSO/RX Log**		
		01 10	00/01	Send/read the QSO Log setting (00=OFF, 01=ON)
		01 11	00/01	Send/read the RX History Log setting (00=OFF, 01=ON)
		01 12	00 ~ 02	CSV Format > Send/read the Separator/Decimal setting (00=Separator is " , " and Decimal is " . ," 01=Separator is " ; " and Decimal is " . ," 02=Separator is " ; " and Decimal is " , ")
		01 13	00 ~ 02	CSV Format > Send/read the Date setting (00="yyyy/mm/dd," 01="mm/dd/yyyy," 02="dd/mm/yyyy")
		SET > **Connectors**		
		01 04	00/01	Send/read the Speaker MIC AF Output setting (00=OFF, 01=ON)
		01 15	00 ~ 02	Send/read the SP Jack Function setting (00=Speaker, 01=Phone, 02=Phone (L+R))
		01 16	00 ~ 30	Send/read the Phones Level setting (00=–15 ~ 30=+15)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **Connectors**		
		01 17	00/01	USB/AV-OUT AF/IF Output > Send/read the Output Select setting (00=AF, 01=IF)
		01 18	00 00 ~ 02 55	USB/AV-OUT AF/IF Output > Send/read the AF Output Level setting (00 00=0% ~ 02 55=100%)
		01 19	00/01	USB/AV-OUT AF/IF Output > Send/read the AF SQL setting (00=OFF (Open), 01=ON)
		01 20	00/01	USB/AV-OUT AF/IF Output > Send/read the AF Beep/Speech... Output setting (00=OFF, 01=ON)
		01 21	00 00 ~ 02 55	USB/AV-OUT AF/IF Output > Send/read the IF Output Level setting (00 00=0% ~ 02 55=100%)
		01 22	00/01	LAN AF/IF Output > Send/read the Output Select setting (00=AF, 01=IF)
		01 23	00/01	LAN AF/IF Output > Send/read the AF SQL setting (00=OFF (Open), 01=ON)
		01 24	00 00 ~ 02 55	MOD Input > Send/read the USB MOD Level setting (00 00=0% ~ 02 55=100%)
		01 25	00 00 ~ 02 55	MOD Input > Send/read the LAN MOD Level setting (00 00=0% ~ 02 55=100%)
		01 26	00 ~ 03	MOD Input > Send/read the DATA OFF MOD setting (00=MIC, 01=USB, 02=MIC, USB, 03=LAN)
		01 27	00 ~ 03	MOD Input > Send/read the DATA MOD setting (00=MIC, 01=USB, 02=MIC, USB, 03=LAN)
		01 28	00 00 ~ 02 55	MOD Input > Send/read the AV-IN MOD Level setting (00 00=0% ~ 02 55=100%)
		01 29	00 ~ 05	MOD Input > Send/read the ATV MOD setting (00=MIC, 01=AV-IN, 02=MIC, AV-IN, 03=USB, 04=MIC, USB, 05=LAN)
		01 30	00/01	SEND Output > Send/read the 144M setting (00=OFF, 01=ON)
		01 31	00/01	SEND Output > Send/read the 430M setting (00=OFF, 01=ON)
		01 32	00/01	SEND Output > Send/read the 1200M setting (00=OFF, 01=ON)
		01 33	00/01	SEND Output > Send/read the 2400M setting (00=OFF, 01=ON)
		01 34	00/01	SEND Output > Send/read the 5600M setting (00=OFF, 01=ON)
		01 35	00/01	SEND Output > Send/read the 10G setting (00=OFF, 01=ON)
		01 36	00 ~ 04	USB SEND/Keying > Send/read the USB SEND setting (00=OFF, 01=USB (A) DTR, 02=USB (A) RTS, 03=USB (B) DTR, 04=USB (B) RTS) ⓘ You cannot select the terminal which is already selected in the “USB Keying (CW)” or “USB Keying (RTTY)” item.
		01 37	00 ~ 04	USB SEND/Keying > Send/read the USB Keying (CW) setting (00=OFF, 01=USB (A) DTR, 02=USB (A) RTS, 03=USB (B) DTR, 04=USB (B) RTS) ⓘ You cannot select the terminal which is already selected in the “USB SEND” item.
		01 38	00 ~ 04	USB SEND/Keying > Send/read the USB Keying (RTTY) setting (00=OFF, 01=USB (A) DTR, 02=USB (A) RTS, 03=USB (B) DTR, 04=USB (B) RTS) ⓘ You cannot select the terminal which is already selected in the “USB SEND” item.
		01 39	00/01	External Keypad > Send/read the VOICE setting (00=OFF, 01=ON)
		01 40	00/01	External Keypad > Send/read the KEYER setting (00=OFF, 01=ON)
		01 41	00/01	External Keypad > Send/read the RTTY setting (00=OFF, 01=ON)
		01 42	00/01	CI-V > Send/read the CI-V Transceive setting (00=OFF, 01=ON)
		01 43	00/01	CI-V > Send/read the CI-V USB Echo Back setting (00=OFF, 01=ON)
		01 44	00 ~ 03	USB (B) Function > Send/read the USB (B) Function setting (00=OFF, 01=RTTY Decode, 02=DV Data, 03=Weather)
		01 45	00/01	USB (B) Function > Send/read the GPS Out setting (00=OFF, 01=ON) ⓘ It is valid when “USB (B) Function” is set to “OFF” or “DV Data.”
		01 46	00/01	Send/read the MIC Jack 8V Output setting (00=OFF, 01=ON)
		01 47	00/01	Send/read the REF OUT setting (00=Auto (CX-10G:ON), 01=ON)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	SET > **Display**		
		01 48	00 00 ~ 02 55	Send/read the LCD Backlight setting (00 00=0% ~ 02 55=100%)
		01 49	00/01	Send/read the LCD Backlight Auto Adjust setting (00=OFF, 01=ON)
		01 50	00 ~ 06	Send/read the Screen Saver setting (00=OFF, 01=1min, 02=2min, 03=5min, 04=15min, 05=30min, 06=60min)
		01 51	00/01	Send/read the Screen OFF [POWER] Switch setting (00=OFF, 01=ON)
		01 52	00/01	Send/read the Meter Peak Hold setting (00=OFF, 01=ON)
		01 53	00/01	Send/read the Multi-func. Meter Voltage Display setting (00=DC IN, 01=VD)
		01 54	00/01	Send/read the Memory Name setting (00=OFF, 01=ON)
		01 55	00/01	Send/read the Group Name Popup setting (00=OFF, 01=ON)
		01 56	00 ~ 03	Send/read the RX Call Sign Display setting (00=OFF, 01=Normal, 02=RX Hold, 03=Hold)
		01 57	00/01	Send/read the RX Position Indicator setting (00=OFF, 01=ON)
		01 58	00/01	Send/read the RX Position Display setting (00=OFF, 01=ON)
		01 59	00 ~ 04	Send/read the RX Position Display Timer setting (00=5sec, 01=10sec, 02=15sec, 03=30sec, 04=Hold)
		01 60	00/01	Send/read the Reply Position Display setting (00=OFF, 01=ON)
		01 61	00/01	Send/read the RX Picture Indicator setting (00=OFF, 01=ON)
		01 62	00/01	Send/read the DV RX Backlight setting (00=OFF, 01=ON)
		01 63	00 ~ 02	Send/read the TX Call Sign Display setting (00=OFF, 01=Your Call Sign, 02=My Call Sign)
		01 64	00/01	Send/read the Scroll Speed setting (00=Slow, 01=Fast)
		01 65	00/01	Send/read the Opening Message setting (00=OFF, 01=ON)
		01 66	00/01	Send/read the Power ON Check setting (00=OFF, 01=ON)
		01 67	00 ~ 02	Display Unit > Send/read the Latitude/Longitude setting (00=ddd°mm.mm′, 01=ddd°mm′ss″, 02=ddd.dddd°)
		01 68	00/01	Display Unit > Send/read the Altitude/Distance setting (00=m, 01=ft/mi)
		01 69	00 ~ 02	Display Unit > Send/read the Speed setting (00=km/h, 01=mph, 02=knots)
		01 70	00/01	Display Unit > Send/read the Temperature setting (00=°C, 01=°F)
		01 71	00 ~ 03	Display Unit > Send/read the Barometric setting (00=hPa, 01=mb, 02=mmHg, 03=inHg)
		01 72	00/01	Display Unit > Send/read the Rainfall setting (00=mm, 01=inch)
		01 73	00 ~ 03	Display Unit > Send/read the Wind Speed setting (00=m/s, 01=km/h, 02=mph, 03=knots)
		01 74	00/01	Send/read the Display Language setting (00=English, 01=Japanese)
		01 75	00/01	Send/read the System Language setting (00=English, 01=Japanese)
		SET > **Time Set**		
		01 76	20 20 01 01 ~ 20 99 12 31	Date/Time > Send/read the Date setting (20 20 01 01=2020/1/1 ~ 20 99 12 31=2099/12/31)
		01 77	00 00 ~ 23 59	Date/Time > Send/read the Time setting (00 00=00:00 ~ 23 59=23:59)
		01 78	00/01	Date/Time > Send/read the NTP Function setting (00=OFF, 01=ON)
		01 79	See p. 19.	Date/Time > Send/read the NTP Server Address setting (Up to 64 characters)
		01 80	00/01	Date/Time > Send/read the GPS Time Correct setting (00=OFF, 01=Auto)
		01 81	See p. 21.	Send/read the UTC Offset setting
		SET > **SD Card**		
		01 82	00 ~ 02	Import/Export > CSV Format > Send/read the Separator/Decimal setting (00=Separator is " , " and Decimal is " . ," 01=Separator is " ; " and Decimal is " . ," 02=Separator is " ; " and Decimal is " , ")
		01 83	00 ~ 02	Import/Export > CSV Format > Send/read the Date setting (00="yyyy/mm/dd," 01="mm/dd/yyyy," 02="dd/mm/yyyy")
		SCOPE > **SCOPE SET**		
		01 84	00/01	Send/read the Scope during Tx (CENTER Type) setting (00=OFF, 01=ON)
		01 85	00 ~ 02	Send/read the Max Hold setting (00=OFF, 01=10s Hold, 02=ON)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	SCOPE > **SCOPE SET**		
		01 86	00 ~ 02	Send/read the CENTER Type Display setting (00=Filter Center, 01=Carrier Point Center, 02=Carrier Point Center (Abs. Freq.))
		01 87	00/01	Send/read the Marker Position (FIX Type/SCROLL Type) setting (00=Filter Center, 01=Carrier Point)
		01 88	00/01	Send/read the VBW setting (00=Narrow, 01=Wide)
		01 89	00 ~ 03	Send/read the Averaging setting (00=OFF, 01=2, 02=3, 03=4)
		01 90	00/01	Send/read the Waveform Type setting (00=Fill, 01=Fill+Line)
		01 91	See p. 21.	Send/read the Waveform Color (Current) setting
		01 92	See p. 21.	Send/read the Waveform Color (Line) setting
		01 93	See p. 21.	Send/read the Waveform Color (Max Hold) setting
		01 94	00/01	Send/read the Waterfall Display setting (00=OFF, 01=ON)
		01 95	00 ~ 02	Send/read the Waterfall Speed setting (00=Slow, 01=Mid, 02=Fast)
		01 96	00 ~ 02	Send/read the Waterfall Size (Expand Screen) setting (00=Small, 01=Mid, 02=Large)
		01 97	00 ~ 07	Send/read the Waterfall Peak Color Level setting (00=Grid1 ~ 07=Grid8)
		01 98	00/01	Send/read the Waterfall Marker Auto-hide setting (00=OFF, 01=ON)
		01 99	See p. 21.	Fixed Edges > 144M > Send/read the No.1 setting
		02 00	See p. 21.	Fixed Edges > 144M > Send/read the No.2 setting
		02 01	See p. 21.	Fixed Edges > 144M > Send/read the No.3 setting
		02 02	See p. 21.	Fixed Edges > 144M > Send/read the No.4 setting
		02 03	See p. 21.	Fixed Edges > 430M > Send/read the No.1 setting
		02 04	See p. 21.	Fixed Edges > 430M > Send/read the No.2 setting
		02 05	See p. 21.	Fixed Edges > 430M > Send/read the No.3 setting
		02 06	See p. 21.	Fixed Edges > 430M > Send/read the No.4 setting
		02 07	See p. 21.	Fixed Edges > 1200M > Send/read the No.1 setting
		02 08	See p. 21.	Fixed Edges > 1200M > Send/read the No.2 setting
		02 09	See p. 21.	Fixed Edges > 1200M > Send/read the No.3 setting
		02 10	See p. 21.	Fixed Edges > 1200M > Send/read the No.4 setting
		02 11	See p. 21.	Fixed Edges > 2400M > Send/read the No.1 setting
		02 12	See p. 21.	Fixed Edges > 2400M > Send/read the No.2 setting
		02 13	See p. 21.	Fixed Edges > 2400M > Send/read the No.3 setting
		02 14	See p. 21.	Fixed Edges > 2400M > Send/read the No.4 setting
		02 15	See p. 21.	Fixed Edges > 5600M > Send/read the No.1 setting
		02 16	See p. 21.	Fixed Edges > 5600M > Send/read the No.2 setting
		02 17	See p. 21.	Fixed Edges > 5600M > Send/read the No.3 setting
		02 18	See p. 21.	Fixed Edges > 5600M > Send/read the No.4 setting
		02 19	See p. 21.	Fixed Edges > 10G > Send/read the No.1 setting
		02 20	See p. 21.	Fixed Edges > 10G > Send/read the No.2 setting
		02 21	See p. 21.	Fixed Edges > 10G > Send/read the No.3 setting
		02 22	See p. 21.	Fixed Edges > 10G > Send/read the No.4 setting
		AUDIO > **AUDIO SCOPE SET**		
		02 23	00/01	Send/read the FFT Scope Waveform Type setting (00=Line, 01=Fill)
		02 24	See p. 21.	Send/read the FFT Scope Waveform Color setting
		02 25	00/01	Send/read the FFT Scope Waterfall Display setting (00=OFF, 01=ON)
		02 26	See p. 21.	Send/read the Oscilloscope Waveform Color setting
		VOICE		
		02 27	00 00 ~ 02 55	Send/read the TX LEVEL setting (00 00=0% ~ 02 55=100%)
		02 28	00/01	VOICE TX SET > Send/read the Auto Monitor setting (00=OFF, 01=ON)
		02 29	01 ~ 15	VOICE TX SET > Send/read the Repeat Time setting (01=1sec ~ 15=15sec)
		KEYER > **KEYER 001**		
		02 30	00 ~ 04	Send/read the Number Style setting (00=Normal, 01=190→ANO, 02=190→ANT, 03=90→NO, 04=90→NT)
		02 31	01 ~ 08	Send/read the Count Up Trigger setting (01=M1 ~ 08=M8)
		02 32	00 01 ~ 99 99	Send/read Present Number setting (00 01=1 ~ 99 99=9999)
		KEYER > **CW-KEY SET**		
		02 33	00 00 ~ 02 55	Send/read Side Tone Level setting (00 00=0% ~ 02 55=100%)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	KEYER > **CW-KEY SET**		
		02 34	00/01	Send/read Side Tone Level Limit setting (00=OFF, 01=ON)
		02 35	01 ~ 60	Send/read Keyer Repeat Time setting (01=1sec ~ 60=60sec)
		02 36	28 ~ 45	Send/read Dot/Dash Ratio setting (28=1:1:2.8 ~ 45=1:1:4.5 in 0.1 steps)
		02 37	00 ~ 03	Send/read Rise Time setting (00=2ms, 01=4ms, 02=6ms, 03=8ms)
		02 38	00/01	Send/read Paddle Polarity setting (00=Normal, 01=Reverse)
		02 39	00 ~ 02	Send/read Key Type setting (00=Straight, 01=Bug, 02=Paddle)
		02 40	00 ~ 02	Send/read MIC Up/Down Keyer setting (00=OFF, 01=ON (UP/DOWN), 02=ON (A/B))
		DECODE > **RTTY DECODE SET**		
		02 41	00 ~ 03	Send/read the FFT Scope Averaging setting (00=OFF, 01=2, 02=3, 03=4)
		02 42	See p. 21.	Send/read the FFT Scope Waveform Color setting
		02 43	00/01	Send/read the Decode USOS setting (00=OFF, 01=ON)
		02 44	00/01	Send/read the Decode New Line Code setting (00=OFF, 01=ON)
		02 45	00/01	Send/read the TX USOS setting (00=OFF, 01=ON)
		02 46	See p. 21.	Send/read the Font Color (Receive) setting
		02 47	See p. 21.	Send/read the Font Color (Transmit) setting
		DECODE > **RTTY DECODE LOG**		
		02 48	00/01	Send/read the Decode Log setting (00=OFF, 01=ON)
		02 49	00/01	Log Set > Send/read the File Type setting (00=Text, 01=HTML)
		02 50	00/01	Log Set > Send/read the Time Stamp setting (00=OFF, 01=ON)
		02 51	00/01	Log Set > Send/read the Time Stamp (Time) setting (00=Local, 01=UTC)
		02 52	00/01	Log Set > Send/read the Time Stamp (Frequency) setting (00=OFF, 01=ON)
		RECORD > **Recorder Set**		
		02 53	00/01	Send/read the TX REC Audio setting (00=Direct, 01= Monitor)
		02 54	00/01	Send/read the RX REC Condition setting (00=Always, 01=Squelch Auto)
		02 55	00/01	Send/read the File Split setting (00=OFF, 01=ON)

Cmd.	Sub cmd.		Data	Description
1A*	05	RECORD > **Recorder Set**		
		02 56	00/01	Send/read the PTT Auto REC setting (00=OFF, 01=ON)
		02 57	00 ~ 03	Send/read the PRE-REC for PTT Auto REC setting (00=OFF, 01=5sec, 02=10sec, 03=15sec)
		RECORD > **Player Set**		
		02 58	00 ~ 03	Send/read the Skip Time setting (00=3sec, 01=5sec, 02=10sec, 03=30sec)
		SCAN > **SCAN SET**		
		02 59	00/01	Send/read the SCAN Speed setting (00=Slow, 01=Fast)
		02 60	00/01	Send/read the SCAN Resume setting (00=OFF, 01=ON)
		02 61	00 ~ 10	Send/read the Pause Timer setting (00=2sec ~ 09=20sec in 2 seconds, 10=HOLD)
		02 62	00 ~ 06	Send/read the Resume Timer setting (00=0sec ~ 05=5sec, 06=HOLD)
		02 63	00 ~ 04	Send/read the Temporary Skip Timer setting (00=5min, 01=10min, 02=15min, 03=While Scanning, 04=While Powered ON)
		02 64	00/01	Send/read the MAIN DIAL Operation (SCAN) setting (00=OFF, 01=Up/Down)
		GPS		
		02 65	00/01	GPS Set > Send/read the Position Input setting (00=Internal GPS, 01=Manual)
		02 66	00/01	GPS Set > GPS Option > Send/read the SBAS setting (00=OFF, 01=ON)
		02 67	00/01	GPS Set > GPS Option > Send/read the GLONASS setting (00=OFF, 01=ON)
		02 68	00/01	GPS Set > GPS Option > Send/read the Satellite Information Out setting (00=GPS/QZSS/GLONASS, 01=GPS Only)
		02 69	See p. 21.	GPS Set > Send/read the Manual Position setting
		02 70	00 ~ 02	Send/read the GPS TX Mode setting (00=OFF, 01=D-PRS, 02=NMEA)
		GPS > GPS TX Mode > **D-PRS**		
		02 71	See p. 19.	Send/read the Unproto Address setting (Up to 56 characters)
		02 72	00 ~ 03	Send/read the TX Format setting (00=Position, 01=Object, 02=Item, 03=Weather)
		GPS > GPS TX Mode > D-PRS > TX Format > **Position**		
		02 73	00 ~ 03	Send/read the Symbol setting (00=No.1, 01=No.2, 02=No.3, 03=No.4)
		02 74	See pp. 19 and 21.	Send/read the Symbol No.1 setting (2 characters)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Position**		
		02 75	See pp. 19 and 21.	Send/read the Symbol No.2 setting (2 characters)
		02 76	See pp. 19 and 21.	Send/read the Symbol No.3 setting (2 characters)
		02 77	See pp. 19 and 21.	Send/read the Symbol No.4 setting (2 characters)
		02 78	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42=-Z)
		02 79	00 ~ 03	Send/read the Comment setting (00=No.1, 01=No.2, 02=No.3, 03=No.4)
		02 80	See p. 19.	Send/read the Comment No.1 setting (Up to 43 characters)
		02 81	See p. 19.	Send/read the Comment No.2 setting (Up to 43 characters)
		02 82	See p. 19.	Send/read the Comment No.3 setting (Up to 43 characters)
		02 83	See p. 19.	Send/read the Comment No.4 setting (Up to 43 characters)
		02 84	00 ~ 02	Send/read the Time Stamp setting (00=OFF, 01=DHM, 02=HMS)
		02 85	00/01	Send/read the Altitude setting (00=OFF, 01=ON)
		02 86	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
		02 87	00 ~ 09	Send/read the Power setting (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W)
		02 88	00 ~ 09	Send/read the Height setting (00=3m, 01=6m, 02=12m, 03=24m, 04=49m, 05=98m, 06=195m, 07=390m, 08=780m, 09=1561m)
		02 89	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
		02 90	00 ~ 08	Send/read the Directivity setting (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN)
		GPS > GPS TX Mode > D-PRS > TX Format > **Object**		
		02 91	See p. 19.	Send/read the Object Name setting (Up to 9 characters)
		02 92	00/01	Send/read the Data Type setting (00=Live Object, 01=Kill Object)
		02 93	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)
		02 94	See p. 19.	Send/read the Comment setting (Up to 43 characters)
		02 95	See p. 21.	Send/read the Position setting
		02 96	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
		02 97	00 00 ~ 03 60	Send/read the Course setting (00 00=0º ~ 03 60=360º)
		02 98	00 00 ~ 18 50	Send/read the Speed setting (00 00=0km/h ~ 18 50=1850km/h)

Cmd.	Sub cmd.		Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Object**		
		02 99	00 ~ 09	Send/read the Power setting (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W)
		03 00	00 ~ 09	Send/read the Height setting (00=3m, 01=6m, 02=12m, 03=24m, 04=49m, 05=98m, 06=195m, 07=390m, 08=780m, 09=1561m)
		03 01	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
		03 02	00 ~ 08	Send/read the Directivity setting (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN)
		03 03	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42= -Z)
		03 04	00/01	Send/read the Time Stamp setting (00=DHM, 01=HMS)
		GPS > GPS TX Mode > D-PRS > TX Format > **Item**		
		03 05	See p. 19.	Send/read the Item Name setting (Up to 9 characters)
		03 06	00/01	Send/read the Data Type setting (00=Live Item, 01=Killed Item)
		03 07	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)
		03 08	See p. 19.	Send/read the Comment setting (Up to 43 characters)
		03 09	See p. 21.	Send/read the Position setting
		03 10	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
		03 11	00 00 ~ 03 60	Send/read the Course setting (00 00 ~ 03 60=0º ~ 360º)
		03 12	00 00 ~ 18 50	Send/read the Speed setting (00 00=0km/h ~ 18 50=1850km/h)
		03 13	00 ~ 09	Send/read the Power setting (00=0W, 01=1W, 02=4W, 03=9W, 04=16W, 05=25W, 06=36W, 07=49W, 08=64W, 09=81W)
		03 14	00 ~ 09	Send/read the Height setting (00=3m, 01=6m, 02=12m, 03=24m, 04=49m, 05=98m, 06=195m, 07=390m, 08=780m, 09=1561m)
		03 15	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
		03 16	00 ~ 08	Send/read the Directivity setting (00=Omni, 01=45ºNE, 02=90ºE, 03=135ºSE, 04=180ºS, 05=225ºSW, 06=270ºW, 07=315ºNW, 08=360ºN)
		03 17	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42= -Z)
		GPS > GPS TX Mode > D-PRS > TX Format > **Weather**		
		03 18	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Weather**		
		03 19	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42= -Z)
		03 20	See p. 19.	Send/read the Comment setting (Up to 43 characters)
		03 21	00 ~ 02	Send/read the Time Stamp setting (00=OFF, 01=DHM, 02=HMS)
		GPS > GPS TX Mode > **NMEA**		
		03 22*6	00/01	GPS Sentence > Send/read the RMC setting (00=OFF, 01=ON)
		03 23*6	00/01	GPS Sentence > Send/read the GGA setting (00=OFF, 01=ON)
		03 24*6	00/01	GPS Sentence > Send/read the GLL setting (00=OFF, 01=ON)
		03 25*6	00/01	GPS Sentence > Send/read the GSA setting (00=OFF, 01=ON)
		03 26*6	00/01	GPS Sentence > Send/read the VTG setting (00=OFF, 01=ON)
		03 27*6	00/01	GPS Sentence > Send/read the GSV setting (00=OFF, 01=ON)
		03 28	See p. 19.	Send/read the GPS Message setting (Up to 20 characters)
		GPS > **GPS Alarm**		
		03 29	See p. 21.	Send/read the Alarm Area (Group) setting
		03 30	00 ~ 02	Send/read the Alarm Area (RX/Memory) setting (00=Limited, 01=Extended, 02=Both)
		GPS		
		03 31	00 ~ 06	Send/read the GPS Auto TX setting (00=OFF, 01=30sec, 02=1min, 03=3min, 04=5min, 05=10min, 06=30min)
		DTMF > **DTMF SET**		
		03 32	00 ~ 03	Send/read the DTMF Speed setting (00=100ms, 01=200ms, 02=300ms, 03=500ms)
		VIDEO > **VIDEO SET**		
		03 33	00 00 ~ 02 55	Send/read the AV-IN Video Input Level setting (00 00=0% ~ 02 55=100%)
		03 34	00 00 ~ 02 55	Send/read the AV-OUT Video Output Level setting (00 00=0% ~ 02 55=100%)
		03 35	00 ~ 02	Send/read the View Mode setting (00=Normal, 01=Full, 02=Zoom)
		NB		
		03 36	00 00 ~ 02 55	Send/read the NB LEVEL setting (00 00=0% ~ 02 55=100%)

Cmd.	Sub cmd.		Data	Description
1A*	05	**NB**		
		03 37	00 ~ 09	Send/read the NB DEPTH setting (00=1 ~ 09=10)
		03 38	00 00 ~ 02 55	Send/read the NB WIDTH setting (00 00=1 ~ 02 55=100)
		VOX		
		03 39	00 ~ 20	Send/read the VOX DELAY setting (00=0.0s ~ 20=2.0s in 0.1s steps)
		03 40	00 ~ 03	Send/read the VOICE DELAY setting (00=OFF, 01=SHORT, 02=MID, 03=LONG)
		TX PWR LIMIT		
		03 41	00/01	Send/read the TX PWR LIMIT (144M) function setting (00=OFF, 01=ON)
		03 42	00 00 ~ 02 55	Send/read the TX PWR LIMIT (144M) setting (00 00=0 ~ 02 55=100)
		03 43	00/01	Send/read the TX PWR LIMIT (430M) function setting (00=OFF, 01=ON)
		03 44	00 00 ~ 02 55	Send/read the TX PWR LIMIT (430M) setting (00 00=0 ~ 02 55=100)
		03 45	00/01	Send/read the TX PWR LIMIT (1200M) function setting (00=OFF, 01=ON)
		03 46	00 00 ~ 02 55	Send/read the TX PWR LIMIT (1200M) setting (00 00=0 ~ 02 55=100)
		03 47	00/01	Send/read the TX PWR LIMIT (2400M) function setting (00=OFF, 01=ON)
		03 48	00 00 ~ 02 55	Send/read the TX PWR LIMIT (2400M) setting (00 00=0 ~ 02 55=100)
		03 49	00/01	Send/read the TX PWR LIMIT (5600M) function setting (00=OFF, 01=ON)
		03 50	00 00 ~ 02 55	Send/read the TX PWR LIMIT (5600M) setting (00 00=0 ~ 02 55=100)
		03 51	00/01	Send/read the TX PWR LIMIT (10G) function setting (00=OFF, 01=ON)
		03 52	00 00 ~ 02 55	Send/read the TX PWR LIMIT (10G) setting (00 00=0 ~ 02 55=100)
		CD		
		03 53	00/01	Send/read the Call Sign Display/Name Display setting (00=Call Sign Display, 01=Name Display)
		GPS Position		
		03 54	00 ~ 02	Send/read the Compass Direction setting (00=Heading Up, 01=North Up, 02=South Up)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.		Data	Description
1A*	06		See p. 23.	Send/read the DATA mode setting
	07		00/01	Send/read the NTP server access (00=Terminate, 01=Initiate)
	08*1		00 ~ 02	Read NTP server access result (00=Accessing, or have not accessed after Power ON, 01=Succeeded, 02=Failed)
	09*1		00/01	Read the OVF indicator status (00=OFF, 01=ON)
	0A		00 ~ 02	Send/read the Share Pictures function status (00=OFF, 01=ON, 02=ON (Repeat)) ⓘ While transmitting the picture using the DV Fast Data function, sends ON even if the status is set to OFF.
	0B		00/01	Send/read the RPT MONI setting (00=OFF, 01=ON)
1B*	00		See p. 23.	Send/read the Repeater tone frequency
	01		See p. 23.	Send/read the TSQL tone frequency
	02		See p. 23.	Send/read the DTCS code and polarity
	07		See p. 23.	Send/read the CSQL code (DV mode)
1C	00*		00/01	Send/read the transceiver's status (00=RX, 01=TX)
	02*		00/01	Send/read the Transmit frequency monitor (XFC) (00=OFF, 01=ON)
	03*1		See p. 16.	Read the transmit frequency
1E	00*1			Read number of available TX frequency band
	01*1		See p. 16.	Read TX band edge frequencies
	02*1			Read number of user-set TX frequency band
	03*		See p. 16.	Send/read the user-set TX band edge frequencies
1F*	00		See p. 23.	SET > My Station > Send/read the My Call Sign setting
	01		See p. 23.	CS > Send/read the UR, R1, R2 setting
	02		See p. 23.	SET > My Station > Send/read the TX Message setting
20	00	00*	00/01*7	Send/read the Auto DV RX Call signs output (00=OFF, 01=ON)
		01	See p. 24.	Output DV RX Call signs for transceive
		02*1	See p. 24.	Read Auto DV RX Call signs
	01	00*	00/01*7	Send/read the Auto DV RX message output (00=OFF, 01=ON)
		01	See p. 24.	Output DV RX message for transceive
		02*1	See p. 24.	Read Auto DV RX message
	02	00*	00/01*7	Send/read the Auto DV RX status output (00=OFF, 01=ON)
		01	See p. 24.	Output DV RX status for transceive
		02*1	See p. 24.	Read Auto DV RX status

Cmd.	Sub cmd.		Data	Description
20	03	00*	00/01	Send/read the Auto DV RX GPS/D-PRS data output (00=OFF, 01=ON)
		01 00	See p. 25.	Output DV RX GPS/D-PRS Position for transceive
		01 01	See p. 25.	Output DV RX D-PRS Object status for transceive
		01 02	See p. 26.	Output DV RX D-PRS Item status for transceive
		01 03	See p. 26.	Output DV RX D-PRS Weather status for transceive
		02 00*1	See p. 25.	Read Auto DV RX GPS/D-PRS Position status
		02 01*1	See p. 25.	Read Auto DV RX D-PRS Object status
		02 02*1	See p. 26.	Read Auto DV RX D-PRS Item status
		02 03*1	See p. 26.	Read Auto DV RX D-PRS Weather status
	04	00*	00/01	Send/read Auto DV RX GPS/D-PRS message output (00=OFF, 01=ON)
		01	See p. 26.	Output DV RX D-PRS message for transceive
		02*1	See p. 26.	Read Auto DV RX D-PRS message status
21*	00		See p. 27.	Send/read the RIT frequency
	01		00/01	Send/read the RIT setting (00=OFF, 01=ON)
	02		00/01	Send/read the ⊿TX setting (00=OFF, 01=ON)
22	00		See p. 27.	Set the DV TX data (Up to 30 byte)
	01	00*	00/01	Set the Auto DV RX data output (00=OFF, 01=ON)
		01	See p. 27.	Set the DV RX data for transceive
	02*		00/01	SET > DV/DD Set > Send/read the DV Data TX setting (00=PTT, 01=Auto)
	03*		00/01	SET > DV/DD Set > DV Fast Data > Send/read the Fast Data setting (00=OFF, 01=ON)
	04*		00/01	SET > DV/DD Set > DV Fast Data > Send/read the GPS Data Speed setting (00=Slow, 01=Fast)
	05*		00 ~ 10	SET > DV/DD Set > DV Fast Data > Send/read the TX Delay (PTT) setting (00=OFF, 01=1sec ~ 10=10sec)
23	00*1		See p. 27.	Read the position status
	01*		00/01	GPS > GPS Set > Send/read the Position Input setting (00=Internal GPS, 01=Manual)
	02*		See p. 21.	GPS > GPS Set > Send/read the Manual Position setting
24	00	00*	00/01	Send/read TX output power setting (00=OFF, 01=ON)
		01	00/01	Set the TX output power for transceive (00=OFF, 01=ON)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.	Data	Description
25*		See p. 27.	Send/read the selected or unselected VFO frequency
26*		See p. 27.	Send/read the selected or unselected VFO's operating mode and filter
27*	00	See p. 28.	Read the Scope waveform data (Only when "Scope ON/OFF status" (Command: 27 10) and "Scope wave data output" (Command: 27 11) are set to "ON," outputs the waveform data to the controller (PC).)
	10	00/01	Send/read the Scope ON/OFF status (00=OFF, 01=ON)
	11	00/01	Send/read the Scope wave data output (00=OFF, 01=ON)
	12	00	Send/read the Main or Sub scope setting (00=Main (fixed))
	13	00	Send/read the Single/Dual scope setting (00=Single (fixed))
	14	00 00 ~ 00 03	Send/read the Scope Center mode, Fixed mode, SCROLL-C mode, or SCROLL-F mode setting (00 00=CENTER mode, 00 01=FIX mode, 00 02=SCROLL-C mode, 00 03=SCROLL-F mode)
	15	See p. 28.	Send/read the Span setting in the Center mode or SCROLL-C mode Scope
	16	00 01 ~ 00 04	SCOPE > SCOPE SET > Send/read the Scope Edge Number setting in the Fixed mode or SCROLL-F mode (00 01=Fixed Edges No.1, 00 02=Fixed Edges No.2, 00 03=Fixed Edges No.3, 00 04=Fixed Edges No.4)
	17	00 00/ 00 01	Send/read the Scope Hold function ON/OFF status (00 00=OFF, 00 01=ON)
	19	See p. 28.	Send/read the Scope Reference level setting
	1A	00 00 ~ 00 02	Send/read the Sweep speed setting (00 00=FAST, 00 01=MID, 00 02=SLOW)
	1B	00/01	SCOPE > SCOPE SET > Send/read the Scope during Tx (CENTER TYPE) setting (00=OFF, 01=ON)
	1C	00 ~ 02	SCOPE > SCOPE SET > Send/read the CENTER Type Display setting (00=Filter Center, 01=Carrier Point Center, 02=Carrier Point Center (Abs. Freq.))
	1D	00 00/ 00 01	Send/read the Scope VBW setting (00 00=NAR, 00 01=WIDE)
	1E	See p. 29.	Send/read the Scope Fixed Edge frequencies
27*	20	00/01	SCOPE > SCOPE SET > Send/read Marker Position (FIX Type/SCROLL Type) setting (00=Filter Center, 01=Carrier Point)
28	00	00 ~ 08	Transmit the Voice TX Memory (00=Stop, 01=T1 ~ 08=T8)

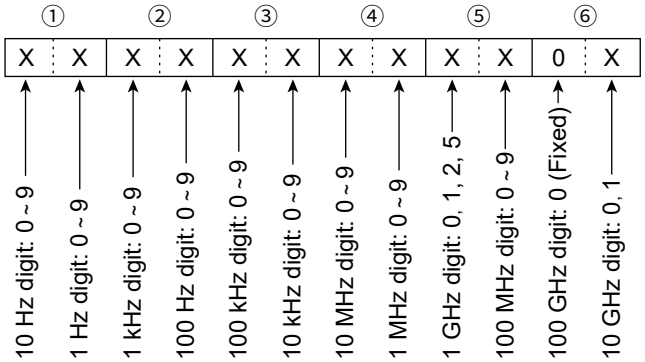
*(Asterisk) Send/read data
*1 Read only data
*2 Send only data
*3 In the CW mode, if the [PTT] or an external TX switch is ON, or the Break-in function is ON, a message will be transmitted as CW code when you send it from your PC.
*4 Sending the power ON command (18 01) turns ON the transceiver when the transceiver is OFF (Standby/Shutdown).
*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 In the 10 GHz band, the drain voltage can be read only while transmitting, because the power amplifier control method is different from other bands.

Remote control (CI-V) information

◇ Command formats

• **Operating frequency**

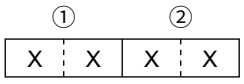
Command: 00, 03, 05, 1C 03



ⓘ When the 5600 MHz or lower band is selected, the number of digits is 10 (① ~ ⑤).
When the 10 GHz band is selected, the number of digits is 12 (① ~ ⑥) from 100 GHz to 1 Hz.

• **Operating mode**

Command: 01, 04, 06



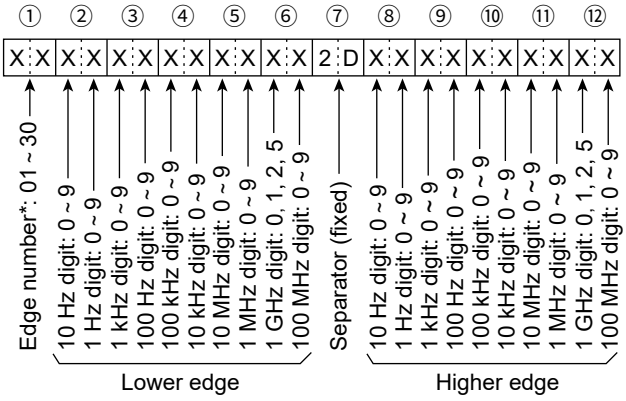
①Operating mode		②Filter setting
00 : LSB	07 : CW-R	01 : FIL1
01 : USB	08 : RTTY-R	02 : FIL2
02 : AM	17 : DV	03 : FIL3
03 : CW	22 : DD*	—
04 : RTTY	23 : ATV*	—
05 : FM	—	—

* The operating mode can be set when the 1200 MHz or higher band is selected.

ⓘ Filter setting, (②) can be skipped with command 01. In that case, “FIL1” is selected with command 01.

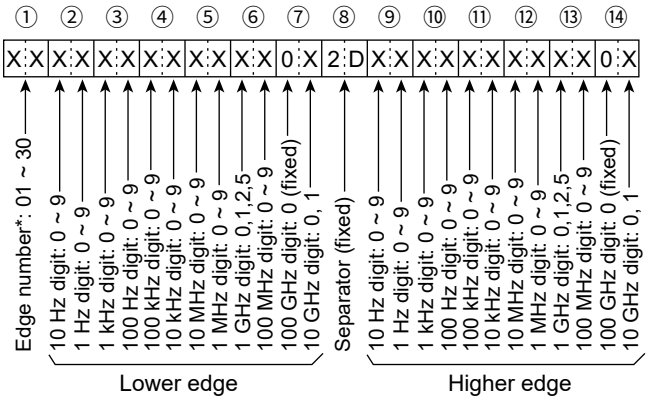
• **Band edge frequency settings**

Command: 02*, 1E 01, 1E 03



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

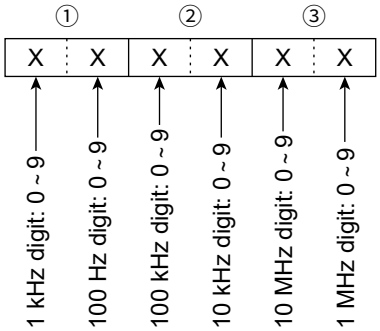
ⓘ When the 10 GHz band is selected, the each Edge frequency is 12 digits (6 bytes) from 100 GHz to 1 Hz.



Remote control (CI-V) information

◇ Command formats

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



ⓘ The 10 MHz digit can be set when the 1200 MHz or higher band is selected.

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

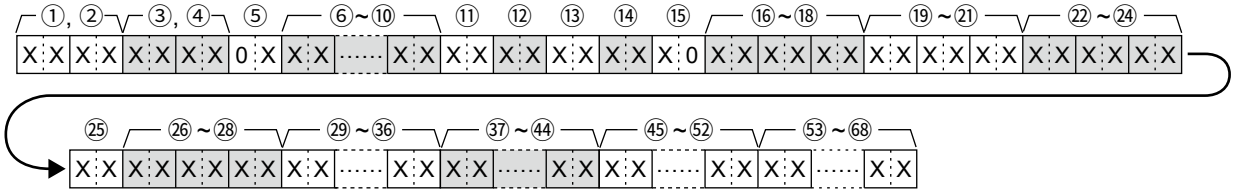
Character	ASCII code	Character	ASCII code
0 ~ 9	30 ~ 39	’	27
A ~ Z	41 ~ 5A	(	28
a ~ z	61 ~ 7A	)	29
/	2F	=	3D
?	3F	+	2B
.	2E	”	22
−	2D	@	40
,	2C	Space	20
:	3A		

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

Remote control (CI-V) information

◇ Command formats

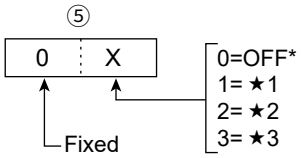
• **Memory content**
Command: 1A 00



①, ②: Memory group number
00 00 ~ 00 99: Memory channel group
01 00: Call channel group

③, ④: Memory channel numbers
- When Memory channel group is selected,
  00 00 ~ 00 99: 00 ~ 99
- When Call channel group is selected,
  00 00, 00 01: 144 C1, C2
  00 02, 00 03: 430 C1, C2
  00 04, 00 05: 1200 C1, C2
  00 06, 00 07: 2400 C1, C2
  00 08, 00 09: 5600 C1, C2
  00 10, 00 11: 10G C1, C2

⑤: Split and Select memory setting



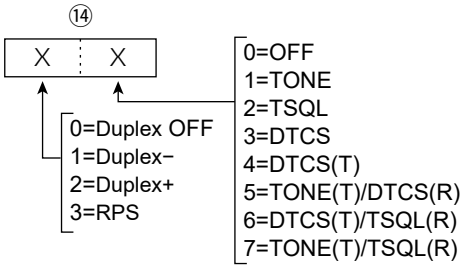
* Set 0 for Call channel.

⑥~⑩: Operating frequency setting
ⓘ See “Operating frequency.” (p. 16)

⑪, ⑫: Operating mode setting
ⓘ See “Operating mode.” (p. 16)

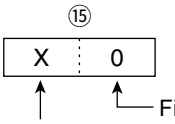
⑬: Data mode setting
1 byte data (XX)
00: Data mode OFF
01: Data mode ON

⑭: 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.

⑮: Digital squelch setting



0=Digital squelch function OFF
1=Digital call sign squelch function ON (DSQL)
2=Digital code squelch function ON (CSQL)

⑯~⑱: Repeater tone frequency setting
⑲~㉑: Repeater tone frequency setting
ⓘ See “Repeater tone/tone squelch frequency setting.” (p. 23)

㉒~㉔: DTCS code setting
ⓘ See “DTCS code and polarity setting.” (p. 23)

㉕: DV Digital code squelch setting
ⓘ See “DV Digital code squelch setting.” (p. 23)

㉖~㉘: Duplex offset frequency setting
ⓘ See “Duplex Offset frequency setting.” (p. 17)

㉙~㊱: UR (Destination) call sign setting (8 characters, fixed)
㊲~㊹: R1 (Access repeater) call sign setting (8 characters, fixed.)
㊺~㊿: R2 (Gateway/Link repeater) call sign setting (8 characters, fixed)
ⓘ See “DV TX call signs setting.” (p. 23)

㊿~㊽: Memory name setting (16 characters, fixed)
ⓘ See “Codes for character entries.” (p. 19)

To clear the memory channel contents on 1A 00:
①, ②: Memory channel group (00 00 ~ 00 99)
You cannot specify group “01 00” (Call channel group)
③, ④: Memory channel (00 00 ~ 00 99)
⑤: “FF,” ⑥ ~ : None

Remote control (CI-V) information

◇ Command formats

• **Codes for character entries**

Command: 1A 00,
1A 05 01 79,
02 71, 02 74 ~ 02 77,
02 80 ~ 02 83,
02 91, 02 93, 02 94,
03 05, 03 08, 03 20, 03 28

- Character codes— Letters and Numbers

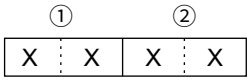
Character	ASCII code	Character	ASCII code
A ~ Z	41 ~ 5A	a ~ z	61 ~ 7A
0 ~ 9	30 ~ 39		

- 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

• **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 ⑥ ~ ㊷ on “Memory content.” (p. 18)

①: Frequency band codes

Code	Freq. band	Frequency range (unit: MHz)
01	144	144.000000 ~ 148.000000
02	430	430.000000 ~ 450.000000
03	1200	1240.000000 ~ 1300.000000
04	2400	2300.000000 ~ 2450.000000
05	5600	5650.000000 ~ 5925.000000
06	10G	10000.000000 ~ 10500.000000

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 UHF band, use code “02 02.”

Remote control (CI-V) information

◇ Command formats

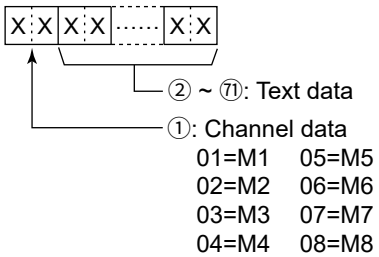
• Keyer memory character entries
Command: 1A 02

- 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 $\overline{BT}$, enter ^4254
*	2A	Inserts the contest number (can be used for 1 channel only)

ⓘ Information
- "FA" (NG) is returned if you insert the content number in more than 1 channel.
- Spaces after the end of the sentence are not necessary.
- To clear the Keyer memory contents, send one or more spaces.

• Keyer memory content
Command: 1A 02



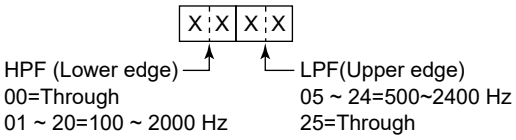
• IF filter width settings
Command: 1A 03

Mode	Data	Steps
SSB/CW/RTTY	00 ~ 09	50 ~ 500 Hz (50 Hz)
SSB/CW	10 ~ 40	600 Hz ~ 3.6 kHz (100 Hz)
RTTY	10 ~ 31	600 Hz ~ 2.7 kHz (100 Hz)
AM	00 ~ 49	200 Hz ~ 10.0 kHz (200 Hz)

• AGC time constant settings
Command: 1A 04

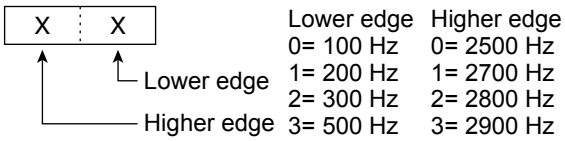
Data	AGC time constant (sec.)	
	SSB/CW/RTTY	AM
00	OFF	OFF
01	0.1	0.3
02	0.2	0.5
03	0.3	0.8
04	0.5	1.2
05	0.8	1.6
06	1.2	2.0
07	1.6	2.5
08	2.0	3.0
09	2.5	4.0
10	3.0	5.0
11	4.0	6.0
12	5.0	7.0
13	6.0	8.0

• RX HPF/LPF setting for each operating mode
Command: 1A 05 00 01, 00 04, 00 07, 00 10, 00 15, 00 16

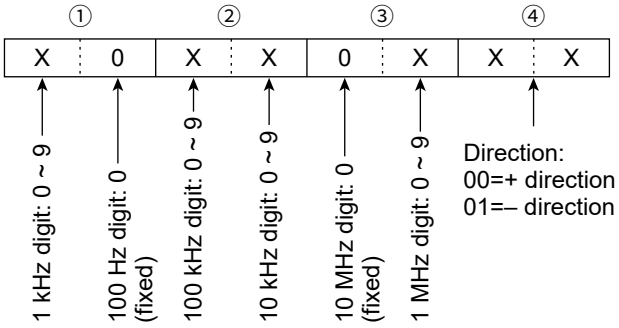


ⓘ The value of the HPF should be smaller than the LPF.

• SSB/SSB-DATA transmission passband width settings
Command: 1A 05 00 19 ~ 00 22



• Split offset frequency setting
Command: 1A 05 00 47

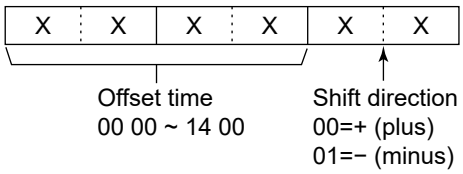


Remote control (CI-V) information

◇ Command formats

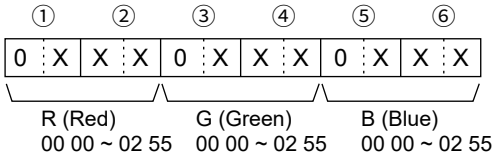
• **UTC Offset setting**

Command: 1A 05 01 81



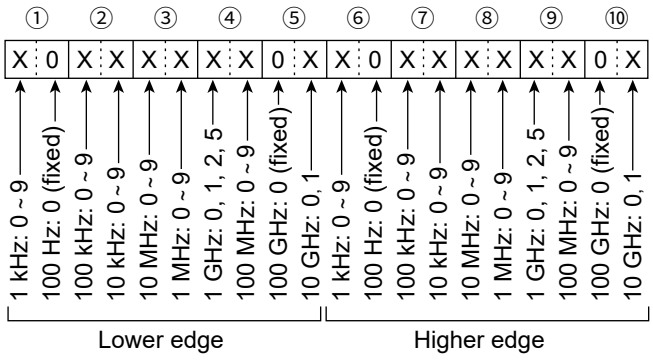
• **Color settings**

Command: 1A 05 01 91, 01 92, 01 93, 02 24, 02 26, 02 42, 02 46, 02 47



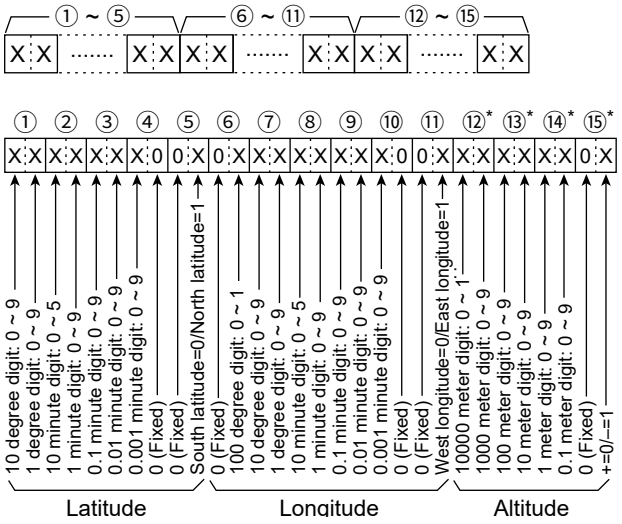
• **Bandscope edge frequency settings**

Command: 1A 05 01 99 ~ 02 22



• **Manually entered position data**

Command: 1A 05 02 69, 02 95, 03 09, 23 02



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.”

• **D-PRS Symbol setting**

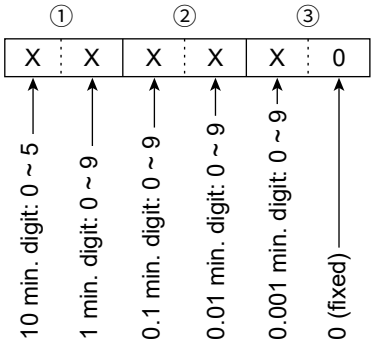
Command: 1A 05 02 74 ~ 02 77, 02 93, 03 07, 03 18



- /, \, 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. 19)

• **Alarm area (Group) setting**

Command: 1A 05 03 29



Remote control (CI-V) information

◇ Command formats

• [VOX/BK-IN] setting

Command: 1A 05 00 75

Data	Function
00	TRANSMIT
01	VOX/BK-IN
02	P.AMP/ATT
03	NOTCH
04	NB
05	NR
06	SPLIT
07	A/B
08	VFO/MEMO
09	CD
10	PRESET
11	Home CH
12	Temporary Skip
13	Voice/Keyer/RTTY Memory 1
14	Voice/Keyer/RTTY Memory 2
15	Voice/Keyer/RTTY Memory 3
16	Voice/Keyer/RTTY Memory 4

• [AUTOTUNE/RX>CS/AFC] setting

Command: 1A 05 00 76

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

• Remote MIC Key setting

Command: 1A 05 00 77 ~ 00 80

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

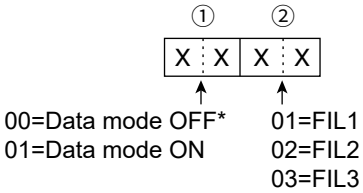
* Only for European version.

Remote control (CI-V) information

◇ Command formats

• Data mode with filter width settings

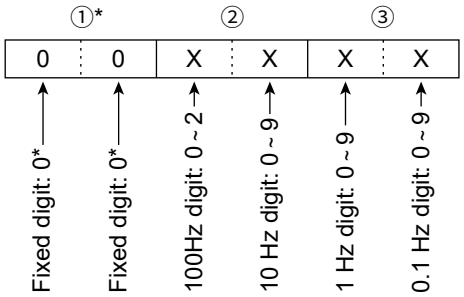
Command: 1A 06



*When 00 is set, also set 00 to ②.

• Repeater tone/tone squelch frequency settings

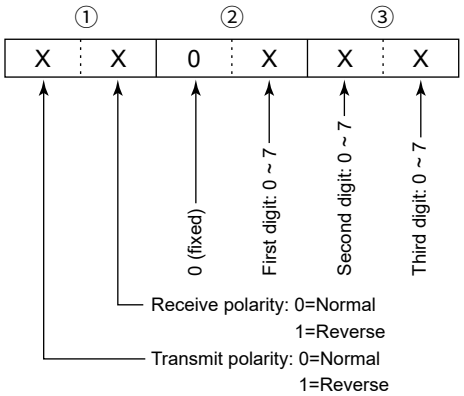
Command: 1B 00, 1B 01



*Not necessary when setting a frequency.

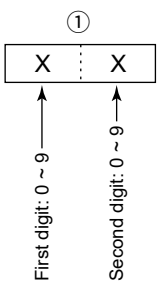
• DTCS code and polarity setting

Command: 1B 02



• DV Digital code squelch setting

Command: 1B 07

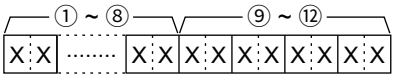


• DV MY call sign setting

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: Your own call sign setting (8 characters)

⑨ ~ ⑫: Note setting (4 characters)

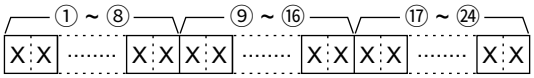
• DV TX call signs setting (24 characters or 8 characters)

Command: 1F 01

Set “UR,” “R1,” and “R2” call signs of 8 characters (fixed), or only the “UR” call sign.

See “Character’s code of the call sign.”

When setting “UR,” “R1,” and “R2” call signs

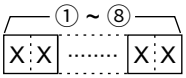


① ~ ⑧: UR (Destination) call sign setting (8 characters)

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 signs



① ~ ⑧: UR (Destination) call sign setting (8 characters)

Character’s 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.

See “Codes for character entries.” (p. 19)

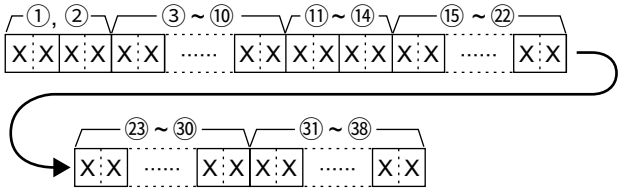
“FF” stops sending or reading messages.

Remote control (CI-V) information

◇ Command formats

• DV RX call sign data

Command: 20 00 01, 00 02



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

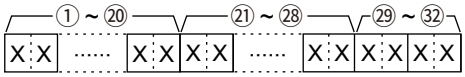
③ ~ ⑩: Call sign of the caller station (8 characters, fixed)
⑪ ~ ⑭: Note of the caller station (4 characters, fixed)
⑮ ~ ㉒: Call sign of the called station (8 characters, fixed)
㉓ ~ ㉚: Call sign of the access/area repeater (R1) (8 characters, fixed)
㉛ ~ ㊳: Call sign of the link/gateway repeater (R2) (8 characters, fixed)

See “Codes for character entries.” (p. 19)

ⓘ FF: When no call sign is received since the transceiver power was turned ON.

• DV RX message

Command: 20 01 01, 01 02

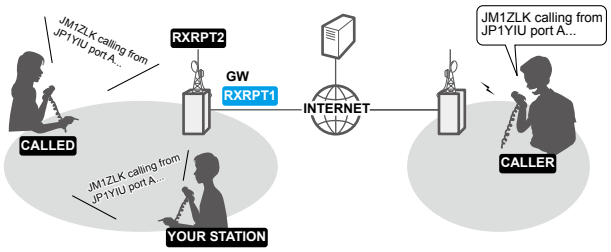


① ~ ⑳: Message (20 characters)
㉑ ~ ㉘: Call sign of the caller station (8 characters)
㉙ ~ ㉜: Note of the caller station (4 characters)

See “Codes for character entries.” (p. 19)

ⓘ 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 02 01, 02 02

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.

Remote control (CI-V) information

◇ Command formats

• **GPS/D-PRS data**

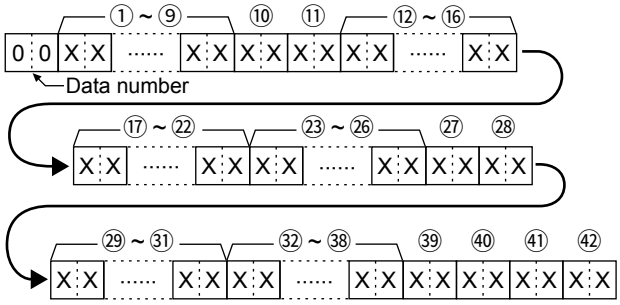
Command: 20 03 01 00, 01 01, 01 02, 01 03,
02 00, 02 01, 02 02, 02 03

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 01 00, 02 00



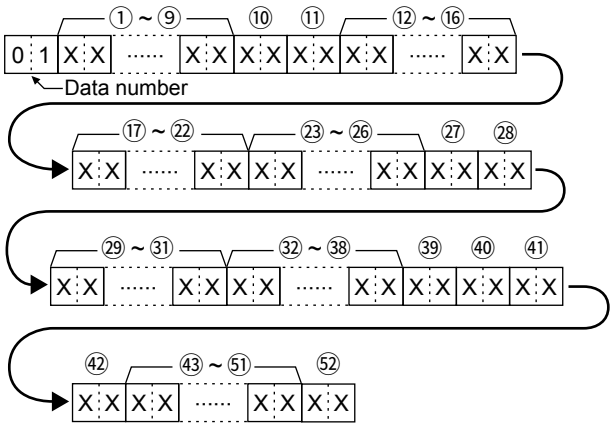
① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol (2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉖: Altitude (0.1 meter steps)
㉗, ㉘: Course (1 degree steps)
㉙ ~ ㉛: Speed (0.1 km/h steps)
㉜ ~ ㊳: Date (UTC: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

	㊴ Power	㊵ Height	㊶ Gain	㊷ Directivity
Data	(W)	(m/ft)	(dB)	(deg)
00	0	3/10	0	Omni-direction
01	1	6/20	1	45° NE
02	4	12/40	2	90° E
03	9	24/80	3	135° SE
04	16	49/160	4	180° S
05	25	98/320	5	225° SW
06	36	195/640	6	270° W
07	49	390/1280	7	315° NW
08	64	780/2560	8	360° N
09	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 01 01, 02 01



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 ~ ㊷: See the table below.

	㊴ Power	㊵ Height	㊶ Gain	㊷ Directivity
Data	(W)	(m/ft)	(dB)	(deg)
00	0	3/10	0	Omni-direction
01	1	6/20	1	45° NE
02	4	12/40	2	90° E
03	9	24/80	3	135° SE
04	16	49/160	4	180° S
05	25	98/320	5	225° SW
06	36	195/640	6	270° W
07	49	390/1280	7	315° NW
08	64	780/2560	8	360° N
09	81	1561/5120	9	—

㊸ ~ ㊶: Name
(9 ASCII characters (00h ~ EFh))
㊷: Type (01= Live, 00= 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.

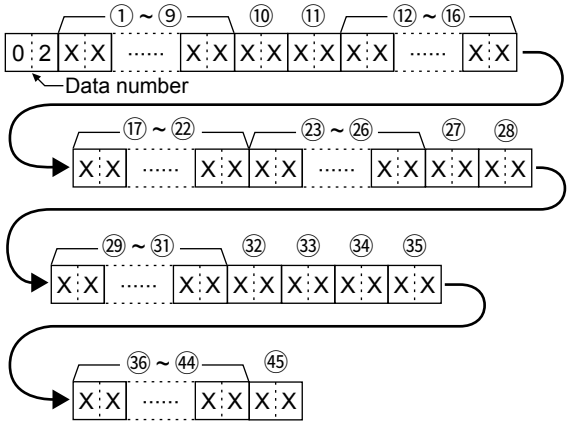
Remote control (CI-V) information

◇ Command formats

• GPS/D-PRS data (Continued)

Item

Command: 20 03 01 02, 02 02



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 ~ ㉟: See the table below.

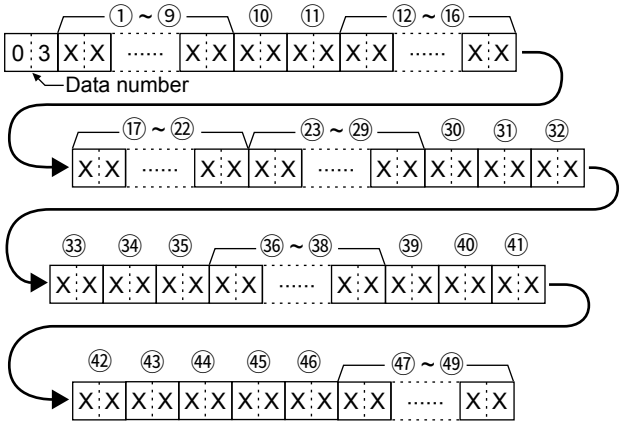
	㉜ **Power**	㉝ **Height**	㉞ **Gain**	㉟ **Directivity**
Data	(W)	(m/ft)	(dB)	(deg)
00	0	3/10	0	Omni-direction
01	1	6/20	1	45° NE
02	4	12/40	2	90° E
03	9	24/80	3	135° SE
04	16	49/160	4	180° S
05	25	98/320	5	225° SW
06	36	195/640	6	270° W
07	49	390/1280	7	315° NW
08	64	780/2560	8	360° N
09	81	1561/5120	9	—

㊱ ~ ㊹: Name
(9 ASCII characters (00h ~ EFh))
㊺: Type (01= Live, 00= 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 01 03, 02 03

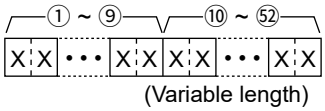


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol (2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉙: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day,
H: Hour, M: Minute, S: Second)
㉚, ㉛: Wind direction (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°C steps)
㊳: Temperature (00= + degree, 01= – 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 04 01, 04 02

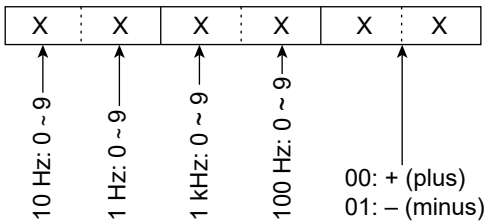


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩ ~ ㊿: Message
(Up to 43 ASCII characters (00h ~ EFh))
ⓘ FF: No signal has been received since the power was turned ON.

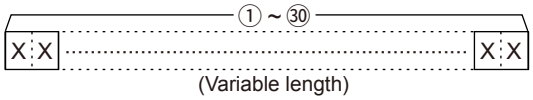
Remote control (CI-V) information

◇ Command formats

• **RIT frequency settings**
Command: 21 00



• **DV TX data**
Command: 22 00

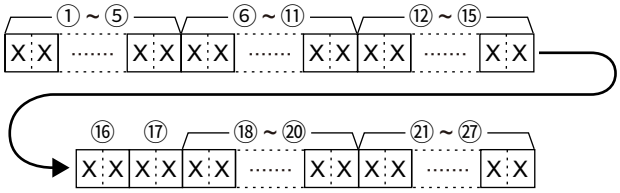


① ~ ㉚: TX data (Up to 30 Byte)
ⓘ "FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.

• **DV RX data (transceive)**
Command: 22 01 01

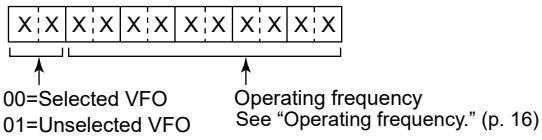
① ~ ㉚: RX data (Up to 30 Byte)
ⓘ "FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.

• **MY position data**
Command: 23 00



① ~ ⑤: 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**
Command: 25

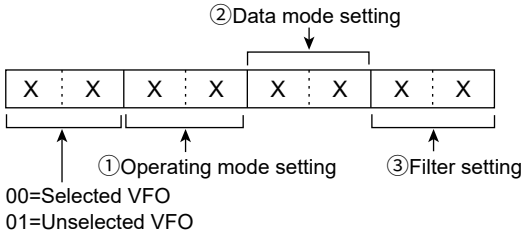


ⓘ When using the DR function, the transceiver returns "FA" (NG) because these cannot be set to 01.

- 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**
Command: 26

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.



ⓘ When using the 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 B changes
- When VFO B is selected
  00 = operating mode of VFO B changes
  01 = operating mode of VFO A changes

① **Operating mode setting**		② **Data mode setting**	③ **Filter setting**
00:LSB	07:CW-R	00: Data mode OFF*2	01:FIL1
01:USB	08:RTTY-R	01: Data mode ON	02:FIL2
02:AM	17:DV	—	03:FIL3
03:CW	22:DD*1	—	—
04:RTTY	23:ATV*1	—	—
05:FM	—	—	—

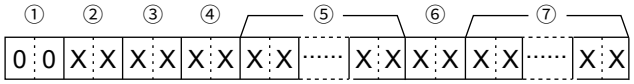
*1 The commands can be set when the 1200 MHz or higher band is selected.
*2 When 00 is set, also set 00 to ③.

Remote control (CI-V) information

◇ Command formats

• **Scope waveform data**
Command: 27 00

Outputs the waveform data to the controller (PC).



①: 00 (Fixed)
②: Order of division data (Current): 01~11
③: Division number (Maximum): 01(LAN), 11(USB)
ⓘ When data is sent to the controller (PC) using 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 "00" (①), the order of division data (Current) (②), the division number (Maximum) (③), and the waveform data (⑦).

④: Spectrum scope mode data:
- 00 = Center mode scope
- 01 = Fixed mode scope
- 02 = SCROLL-C mode scope
- 03 = SCROLL-F mode scope

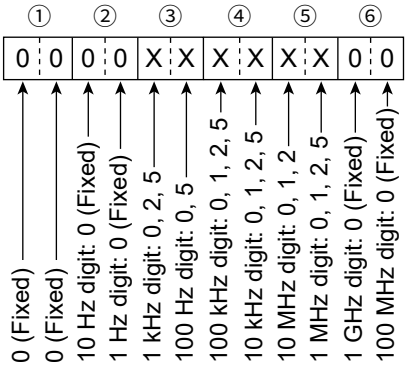
⑤: Waveform information:
The waveform information differs, depending on the Spectrum scope mode.
- In the Center mode:
  Center frequency and span are sent.
  See page 16 for Operating frequency data, and the Scope span settings (② ~ ⑥).
  ⓘ When the 5600 MHz or lower band is selected, the Center frequency is 10 digits (5 bytes).
  When the 10 GHz band is selected, the Center frequency is 12 digits (6 bytes) from 100 GHz to 1 Hz.
- 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 ~ ⑭ on page 29.
  ⓘ When the Higher Edge or Lower Edge frequency is in the 10 GHz band, the each Edge frequency is 12 digits (6 bytes) from 100 GHz to 1 Hz.
  When the Lower Edge frequency is negative, the 100 GHz digit is set to "F," and the other than 100 GHz digit are set to absolute value of the frequency.

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.

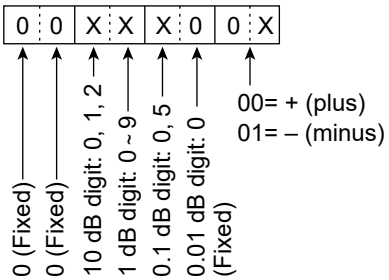
⑦: Waveform data:
The transceiver outputs the drawn waveform data. The data range or data length of the waveform data is judged by the controller (PC). (The data range is basically the same as the display size of the scope on the controller (PC).)
- Data range: 00 ~ A0 (0 ~ 160)
- Data length: 475

• **Scope span settings**
(in the Center mode and SCROLL-C mode Scope)
Command: 27 15



Span (kHz)	
2500	2.5
5000	5
10000	10
25000	25
50000	50
100000	100
250000	250
500000	500
1000000	1000
2500000	2500
5000000	5000
10000000	10000
25000000	25000

• **Scope Reference level settings**
Command: 27 19

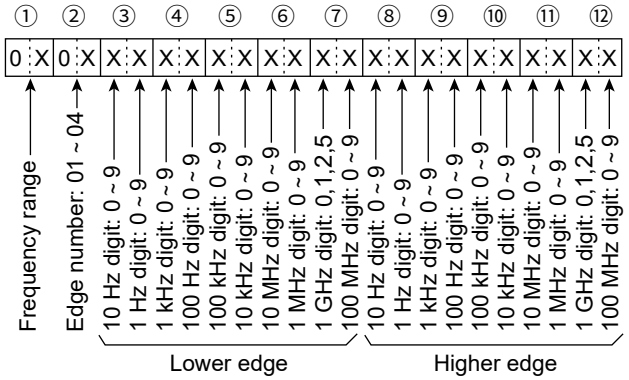


Adjustable range: –20.0 dB ~ +20.0 dB
in 0.5 dB steps.

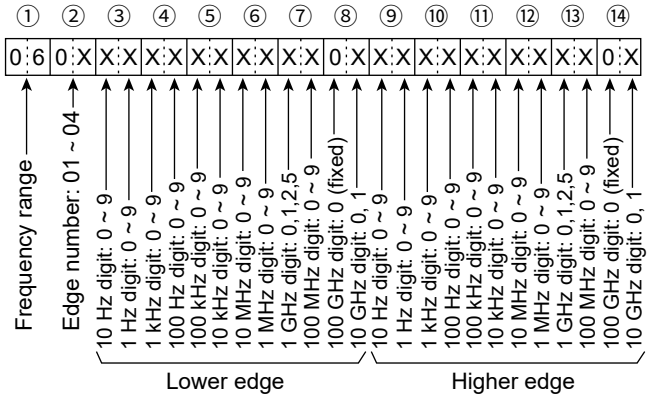
Remote control (CI-V) information

◇ Command formats

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



ⓘ Entry of less than 1 kHz digits are ignored.
ⓘ When “06” is selected in ①, the each Edge frequency is 12 digits (6 bytes) from 100 GHz to 1 Hz.



① Selectable Frequency ranges:

Data	Frequency range (unit: MHz)
01	144.000000 ~ 148.000000
02	430.000000 ~ 450.000000
03	1240.000000 ~ 1300.000000
04	2300.000000 ~ 2450.000000
05	5650.000000 ~ 5925.000000
06	10000.000000 ~ 10500.000000

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

How the World Communicates



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