ICOM

CI-V REFERENCE GUIDE

ALL MODE TRANSCEIVER

IC-905

Icom Inc.

TABLE OF CONTENTS

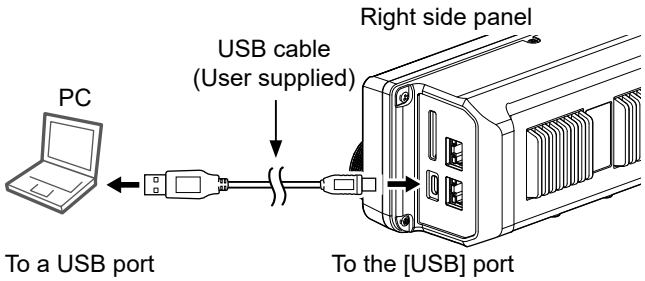
REMOTE CONTROL

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.
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/

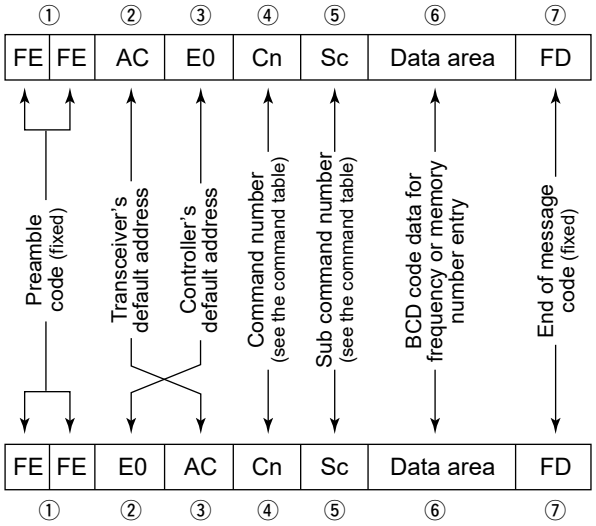
◇ Preparing

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

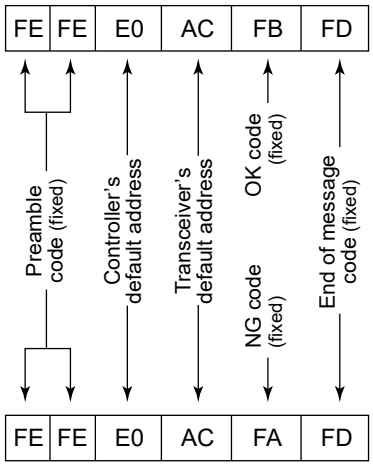
The CI-V system can be written using the following data formats. Data formats differ according to command numbers. A data area or sub command is added for some commands.

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
		0000 ~ 0099	Select the Memory channel (Memory channel: 0000 ~ 0099 Call channel: 0000 (144C1), 0001 (144C2), 0002 (430C1), 0003 (430C2), 0004 (1200C1), 0005 (1200C2), 0006 (2400C1), 0007 (2400C2), 0008 (5600C1), 0009 (5600C2), 0010 (10GC1), 0011 (10GC2)
	A0	0000 ~ 0100	Select the Memory group (Memory channel group: 0000 ~ 0099 Call channel group: 0100)
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	0000 ~ 0255	Send/read the AF level (0000=Minimum ~ 0255=Maximum)
	02	0000 ~ 0255	Send/read the RF gain level (0000=Minimum ~ 0255=Maximum)
	03	0000 ~ 0255	Send/read the squelch level (0000=Minimum ~ 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)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.	Data	Description
14*	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 the selected band's RF power (0000=Minimum ~ 0255=Maximum)
	0B	0000 ~ 0255	Send/read MIC gain (0000=Minimum ~ 0255=Maximum)
	0C	0000 ~ 0255	Send/read keying speed (0000=6 WPM ~ 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 ~ 0255=10)
	0F	0000 ~ 0255	Send/read the Break-IN Delay setting (0000=2.0d ~ 0255=13.0d)
	12	0000 ~ 0255	Send/read NB level (0000=0% ~ 0255=100%)
	15	0000 ~ 0255	Send/read Monitor audio [MONI] level (0000=0% ~ 0255=100%)
	16	0000 ~ 0255	Send/read the VOX gain (0000=0% ~ 0255=100%)
	17	0000 ~ 0255	Send/read the Anti VOX gain (0000=0% ~ 0255=100%)
	19	0000 ~ 0255	Send/read LCD backlight brightness (0000=0% ~ 0255=100%)
15*[1]	01	00/01	Read noise or S-meter squelch status (00=Close, 01=Open)
	02	0000 ~ 0255	Read S-meter level (0000=S0, 0120=S9, 0241=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	0000 ~ 0255	Read the Po meter level (0000=0% ~ 0143=50% ~ 0213=100%)
	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 ~ 0120=Maximum)
	14	0000 ~ 0255	Read COMP meter level (0000=0 dB ~ 0130=15 dB ~ 0210=25.5 dB)
	15*[8]	0000 ~ 0255	Read VD meter level (0000=0 V ~ 0040=5 V ~ 0241=30 V)
	16	0000 ~ 0255	Read ID meter level (0000=0 A ~ 0121=2 A ~ 0241=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 0017), MID (Command: 1A 05 0018), or NAR (Command: 1A 05 0019))
	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**		
		0001	See p. 20.	RX > SSB > Send/read RX HPF/LPF settings
		0002	00 ~ 10	RX > SSB > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		0003	00 ~ 10	RX > SSB > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		0004	See p. 20.	RX > AM > Send/read RX HPF/LPF settings
		0005	00 ~ 10	RX > AM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		0006	00 ~ 10	RX > AM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		0007	See p. 20.	RX > FM > Send/read RX HPF/LPF settings
		0008	00 ~ 10	RX > FM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		0009	00 ~ 10	RX > FM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		0010	See p. 20.	RX > DV > Send/read RX HPF/LPF settings
		0011	00 ~ 10	RX > DV > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		0012	00 ~ 10	RX > DV > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		0013	00 ~ 10	RX > AM > Send/read RX Tone (Bass) level (00=–5 ~ 10=+5)
		0014	00 ~ 10	RX > AM > Send/read RX Tone (Treble) level (00=–5 ~ 10=+5)
		0015	See p. 20.	RX > CW > Send/read RX HPF/LPF settings
		0016	See p. 20.	RX > RTTY > Send/read RX HPF/LPF settings
		0017	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**		
		0018	00 ~ 10	TX > SSB > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		0019	See p. 20.	TX > SSB > Send/read TX bandwidth for wide
		0020	See p. 20.	TX > SSB > Send/read TX bandwidth for mid
		0021	See p. 20.	TX > SSB > Send/read TX bandwidth for narrow
		0022	See p. 20.	TX > SSB-D > Send/read TX bandwidth
		0023	00 ~ 10	TX > AM > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		0024	00 ~ 10	TX > AM > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		0025	00 ~ 10	TX > FM > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		0026	00 ~ 10	TX > FM > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		0027	00 ~ 10	TX > DV > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		0028	00 ~ 10	TX > DV > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		0029	00 ~ 10	TX > ATV > Send/read TX Tone (Bass) level (00=–5 ~ 10=+5)
		0030	00 ~ 10	TX > ATV > Send/read TX Tone (Treble) level (00=–5 ~ 10=+5)
		SET > **Function**		
		0031	0000 ~ 0255	Send/read the Beep Level setting (0000=Minimum ~ 0255=Maximum)
		0032	00/01	Send/read the Beep Level Limit setting (00=OFF, 01=ON)
		0033	00/01	Send/read the Beep (Confirmation) setting (00=OFF, 01=ON)
		0034	00/01	Send/read the Home CH Beep setting (00=OFF, 01=ON)
		0035	00 ~ 03	Send/read the Band Edge Beep setting (00=OFF, 01=ON (Default), 02=ON (User), 03=ON (User) & TX Limit)
		0036	00/01	Send/read the FM/DV Center Error setting (00=OFF, 01=ON)
		0037	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**	
	0038	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)
	0039	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)
	0040	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)
	0041	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)
	0042	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)
	0043	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)
	0044	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)
	0045	00/01	Send/read the PTT Lock setting (00=OFF, 01=ON)
	0046	00/01	SPLIT > Send/read the Quick SPLIT setting (00=OFF, 01=ON)
	0047	See p. 20.	SPLIT > Send/read the SPLIT Offset setting
	0048	00/01	SPLIT > Send/read the SPLIT LOCK setting (00=OFF, 01=ON)
	0049	00/01	Send/read the Auto Repeater setting (00=OFF, 01=ON (DUP), 02=ON (DUP,TONE))
	0050	00 ~ 02	Send/read the RTTY Mark Frequency setting (00=1275 Hz, 01=1615 Hz, 02=2125 Hz)
	0051	00 ~ 02	Send/read the RTTY Shift Width setting (00=170 Hz, 01=200 Hz, 02=425 Hz)
	0052	00/01	Send/read the RTTY Keying Polarity setting (00=Normal, 01=Reverse)
	0053	00 ~ 03	Send/read the ATV Audio Sub Carrier Frequency setting (00=OFF, 01=4.5 MHz, 02=6.0 MHz, 03=6.5 MHz)
	0054	00/01	SPEECH > Send/read the SPEECH Language setting (00=Japanese, 01=English)
	0055	00/01	SPEECH > Send/read the Alphabet setting (00=Normal, 01=Phonetic Code)
	0056	00/01	SPEECH > Send/read the SPEECH Speed setting (00=Slow, 01=Fast)
	0057	00 ~ 02	SPEECH > Send/read the RX Call Sign SPEECH setting (00=OFF, 01=ON (Kerchunk), 02=ON (All))
	0058	00/01	SPEECH > Send/read the RX>CS SPEECH setting (00=OFF, 01=ON)
	0059	00/01	SPEECH > Send/read the MIC Up/Down SPEECH setting (00=OFF, 01=ON)
	0060	00/01	SPEECH > Send/read the S-Level SPEECH setting (00=OFF, 01=ON)
	0061	00/01	SPEECH > Send/read the MODE SPEECH setting (00=OFF, 01=ON)
	0062	0000 ~ 0255	SPEECH > Send/read the SPEECH Level setting (0000=0% ~ 0255=100%)
	0063	00/01	Send/read the [SPEECH/LOCK] Switch setting (00=SPEECH/LOCK, 01=LOCK/SPEECH)
	0064	00/01	Send/read the Lock Function setting (00=MAIN DIAL, 01=PANEL)
	0065	00/01	Send/read the Memo Pad Quantity setting (00=5 ch, 01=10 ch)
	0066	00/01	Send/read the Function of Touch for 1 sec MHz Digits setting (00=Band Stacking Register, 01=1 MHz Step Tuning)
	0067	00 ~ 02	Send/read the MAIN DIAL Auto TS setting (00=OFF, 01=Low, 02=High)
	0068	00/01	Send/read the MIC Up/Down Speed setting (00=Slow, 01=Fast)
	0069	00/01	Send/read the AFC Limit setting (00=OFF, 01=ON)
	0070	00 ~ 02	Send/read the [NOTCH] Switch (SSB) setting (00=Auto, 01=Manual, 02=Auto/Manual)
	0071	00 ~ 02	Send/read the [NOTCH] Switch (AM) setting (00=Auto, 01=Manual, 02=Auto/Manual)
	0072	00/01	Send/read the SSB/CW Synchronous Tuning setting (00=OFF, 01=ON)
	0073	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**	
	0074	00/01	Send/read the Power OFF Setting (for Remote Control) setting (00=Shutdown only, 01=Standby/Shutdown)
	0075	See p. 22.	Front Key Customize > [VOX/BK-IN] setting
	0076	See p. 22.	Front Key Customize > [AUTOTUNE/RX>CS/AFC] setting
	0077	See p. 22.	Send/read the [A] setting
	0078	See p. 22.	Send/read the [B] setting
	0079	See p. 22.	Send/read the [△] setting
	0080	See p. 22.	Send/read the [▽] setting
	0081	00/01	Remote MIC Key > Mode Select > SSB setting (00=OFF, 01=ON)
	0082	00/01	Remote MIC Key > Mode Select > CW setting (00=OFF, 01=ON)
	0083	00/01	Remote MIC Key > Mode Select > RTTY setting (00=OFF, 01=ON)
	0084	00/01	Remote MIC Key > Mode Select > AM setting (00=OFF, 01=ON)
	0085	00/01	Remote MIC Key > Mode Select > FM setting (00=OFF, 01=ON)
	0086	00/01	Remote MIC Key > Mode Select > DV setting (00=OFF, 01=ON)
	0087	00/01	Remote MIC Key > Mode Select > DD setting (00=OFF, 01=ON)
	0088	00/01	Remote MIC Key > Mode Select > ATV setting (00=OFF, 01=ON)
	0089	00/01	Send/read the Keyboard Type setting (00=Ten-key, 01=Full Keyboard)
	0090	00 ~ 02	Send/read the Full Keyboard Layout setting (00=English, 01=German, 02=French)
	0091	00/01	Send/read the Screen Capture [POWER] Switch setting (00=OFF, 01=ON)
	0092	00/01	Send/read the Screen Capture File Type setting (00=PNG, 01=BMP)
	0093	0000 ~ 0255	Send/read the REF Adjust setting (0000=0% ~ 0255=100%)
	0094	0000 ~ 0255	Send/read the REF Adjust (FINE) setting (0000=0% ~ 0255=100%)
	SET > **DV/DD**		
	0095	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**	
	0096	00 ~ 02	Send/read the Auto Reply setting (00=OFF, 01=ON, 02=Voice)
	0097	00/01	Send/read the DV Data TX setting (00=PTT, 01=Auto)
	0098	00/01	DV Fast Data > Send/read the Fast Data setting (00=OFF, 01=ON)
	0099	00/01	DV Fast Data > Send/read the GPS Data Speed setting (00=Slow, 01=Fast)
	0100	00 ~ 10	DV Fast Data > Send/read the TX Delay (PTT) setting (00=OFF, 01=1sec ~ 10=10sec)
	0101	00 ~ 02	Send/read the Digital Monitor setting (00=Auto, 01=Digital, 02=Analog)
	0102	00/01	Send/read the Digital Repeater Set setting (00=OFF, 01=ON)
	0103	00/01	Send/read the DV Auto Detect setting (00=OFF, 01=ON)
	0104	00/01	Send/read the RX Record (RPT) setting (00=ALL, 01=Latest Only)
	0105	00/01	Send/read the BK setting (00=OFF, 01=ON)
	0106	00/01	Send/read the EMR setting (00=OFF, 01=ON)
	0107	0000 ~ 0255	Send/read the EMR AF Level setting (0000=0% ~ 0255=100%)
	0108	00/01	Send/read the DD TX Inhibit (Power ON) setting (00=OFF, 01=ON)
	0109	00/01	Send/read the DD Packet Output setting (00=Normal, 01=All)
	SET > **QSO/RX Log**		
	0110	00/01	Send/read the QSO Log setting (00=OFF, 01=ON)
	0111	00/01	Send/read the RX History Log setting (00=OFF, 01=ON)
	0112	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 " , ")
	0113	00 ~ 02	CSV Format > Send/read the Date setting (00="yyyy/mm/dd," 01="mm/dd/yyyy," 02="dd/mm/yyyy")
	SET > **Connectors**		
	0114	00/01	Send/read the Speaker MIC AF Output setting (00=OFF, 01=ON)
	0115	00 ~ 02	Send/read the SP Jack Function setting (00=Speaker, 01=Phone, 02=Phone (L+R))
	0116	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**	
	0117	00/01	USB/AV-OUT AF/IF Output > Send/read the Output Select setting (00=AF, 01=IF)
	0118	0000 ~ 0255	USB/AV-OUT AF/IF Output > Send/read the AF Output Level setting (0000=0% ~ 0255=100%)
	0119	00/01	USB/AV-OUT AF/IF Output > Send/read the AF SQL setting (00=OFF (Open), 01=ON)
	0120	00/01	USB/AV-OUT AF/IF Output > Send/read the AF Beep/Speech... Output setting (00=OFF, 01=ON)
	0121	0000 ~ 0255	USB/AV-OUT AF/IF Output > Send/read the IF Output Level setting (0000=0% ~ 0255=100%)
	0122	00/01	LAN AF/IF Output > Send/read the Output Select setting (00=AF, 01=IF)
	0123	00/01	LAN AF/IF Output > Send/read the AF SQL setting (00=OFF (Open), 01=ON)
	0124	0000 ~ 0255	MOD Input > Send/read the USB MOD Level setting (0000=0% ~ 0255=100%)
	0125	0000 ~ 0255	MOD Input > Send/read the LAN MOD Level setting (0000=0% ~ 0255=100%)
	0126	00 ~ 03	MOD Input > Send/read the DATA OFF MOD setting (00=MIC, 01=USB, 02=MIC, USB, 03=LAN)
	0127	00 ~ 03	MOD Input > Send/read the DATA MOD setting (00=MIC, 01=USB, 02=MIC, USB, 03=LAN)
	0128	0000 ~ 0255	MOD Input > Send/read the AV-IN MOD Level setting (0000=0% ~ 0255=100%)
	0129	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)
	0130	00/01	SEND Output > Send/read the 144M setting (00=OFF, 01=ON)
	0131	00/01	SEND Output > Send/read the 430M setting (00=OFF, 01=ON)
	0132	00/01	SEND Output > Send/read the 1200M setting (00=OFF, 01=ON)
	0133	00/01	SEND Output > Send/read the 2400M setting (00=OFF, 01=ON)
	0134	00/01	SEND Output > Send/read the 5600M setting (00=OFF, 01=ON)
	0135	00/01	SEND Output > Send/read the 10G setting (00=OFF, 01=ON)
	0136	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.
	0137	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.
	0138	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.
	0139	00/01	External Keypad > Send/read the VOICE setting (00=OFF, 01=ON)
	0140	00/01	External Keypad > Send/read the KEYER setting (00=OFF, 01=ON)
	0141	00/01	External Keypad > Send/read the RTTY setting (00=OFF, 01=ON)
	0142	00/01	CI-V > Send/read the CI-V Transceive setting (00=OFF, 01=ON)
	0143	00/01	CI-V > Send/read the CI-V USB Echo Back setting (00=OFF, 01=ON)
	0144	00 ~ 03	USB (B) Function > Send/read the USB (B) Function setting (00=OFF, 01=RTTY Decode, 02=DV Data, 03=Weather)
	0145	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.”
	0146	00/01	Send/read the MIC Jack 8V Output setting (00=OFF, 01=ON)
	0147	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**	
	0148	0000 ~ 0255	Send/read the LCD Backlight setting (0000=0% ~ 0255=100%)
	0149	00/01	Send/read the LCD Backlight Auto Adjust setting (00=OFF, 01=ON)
	0150	00 ~ 06	Send/read the Screen Saver setting (00=OFF, 01=1min, 02=2min, 03=5min, 04=15min, 05=30min, 06=60min)
	0151	00/01	Send/read the Screen OFF [POWER] Switch setting (00=OFF, 01=ON)
	0152	00/01	Send/read the Meter Peak Hold setting (00=OFF, 01=ON)
	0153	00/01	Send/read the Multi-func. Meter Voltage Display setting (00=DC IN, 01=VD)
	0154	00/01	Send/read the Memory Name setting (00=OFF, 01=ON)
	0155	00/01	Send/read the Group Name Popup setting (00=OFF, 01=ON)
	0156	00 ~ 03	Send/read the RX Call Sign Display setting (00=OFF, 01=Normal, 02=RX Hold, 03=Hold)
	0157	00/01	Send/read the RX Position Indicator setting (00=OFF, 01=ON)
	0158	00/01	Send/read the RX Position Display setting (00=OFF, 01=ON)
	0159	00 ~ 04	Send/read the RX Position Display Timer setting (00=5sec, 01=10sec, 02=15sec, 03=30sec, 04=Hold)
	0160	00/01	Send/read the Reply Position Display setting (00=OFF, 01=ON)
	0161	00/01	Send/read the RX Picture Indicator setting (00=OFF, 01=ON)
	0162	00/01	Send/read the DV RX Backlight setting (00=OFF, 01=ON)
	0163	00 ~ 02	Send/read the TX Call Sign Display setting (00=OFF, 01=Your Call Sign, 02=My Call Sign)
	0164	00/01	Send/read the Scroll Speed setting (00=Slow, 01=Fast)
	0165	00/01	Send/read the Opening Message setting (00=OFF, 01=ON)
	0166	00/01	Send/read the Power ON Check setting (00=OFF, 01=ON)
	0167	00 ~ 02	Display Unit > Send/read the Latitude/Longitude setting (00=ddd°mm.mm′, 01=ddd°mm′ss″, 02=ddd.dddd°)
	0168	00/01	Display Unit > Send/read the Altitude/Distance setting (00=m, 01=ft/mi)
	0169	00 ~ 02	Display Unit > Send/read the Speed setting (00=km/h, 01=mph, 02=knots)
	0170	00/01	Display Unit > Send/read the Temperature setting (00=°C, 01=°F)
	0171	00 ~ 03	Display Unit > Send/read the Barometric setting (00=hPa, 01=mb, 02=mmHg, 03=inHg)
	0172	00/01	Display Unit > Send/read the Rainfall setting (00=mm, 01=inch)
	0173	00 ~ 03	Display Unit > Send/read the Wind Speed setting (00=m/s, 01=km/h, 02=mph, 03=knots)
	0174	00/01	Send/read the Display Language setting (00=English, 01=Japanese)
	0175	00/01	Send/read the System Language setting (00=English, 01=Japanese)
	SET > **Time Set**		
	0176	20200101 ~ 20991231	Date/Time > Send/read the Date setting (20200101=2020/1/1~ 20991231=2099/12/31)
	0177	0000 ~ 2359	Date/Time > Send/read the Time setting (0000=00:00 ~ 2359=23:59)
	0178	00/01	Date/Time > Send/read the NTP Function setting (00=OFF, 01=ON)
	0179	See p. 19.	Date/Time > Send/read the NTP Server Address setting (Up to 64 characters)
	0180	00/01	Date/Time > Send/read the GPS Time Correct setting (00=OFF, 01=Auto)
	0181	See p. 21.	Send/read the UTC Offset setting
	SET > **SD Card**		
	182	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 " , ")
	183	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**		
	184	00/01	Send/read the Scope during Tx (CENTER Type) setting (00=OFF, 01=ON)
	185	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**	
	0186	00 ~ 02	Send/read the CENTER Type Display setting (00=Filter Center, 01=Carrier Point Center, 02=Carrier Point Center (Abs. Freq.))
	0187	00/01	Send/read the Marker Position (FIX Type/SCROLL Type) setting (00=Filter Center, 01=Carrier Point)
	0188	00/01	Send/read the VBW setting (00=Narrow, 01=Wide)
	0189	00 ~ 03	Send/read the Averaging setting (00=OFF, 01=2, 02=3, 03=4)
	0190	00/01	Send/read the Waveform Type setting (00=Fill, 01=Fill+Line)
	0191	See p. 21.	Send/read the Waveform Color (Current) setting
	0192	See p. 21.	Send/read the Waveform Color (Line) setting
	0193	See p. 21.	Send/read the Waveform Color (Max Hold) setting
	0194	00/01	Send/read the Waterfall Display setting (00=OFF, 01=ON)
	0195	00 ~ 02	Send/read the Waterfall Speed setting (00=Slow, 01=Mid, 02=Fast)
	0196	00 ~ 02	Send/read the Waterfall Size (Expand Screen) setting (00=Small, 01=Mid, 02=Large)
	0197	00 ~ 07	Send/read the Waterfall Peak Color Level setting (00=Grid1 ~ 07=Grid8)
	0198	00/01	Send/read the Waterfall Marker Auto-hide setting (00=OFF, 01=ON)
	0199	See p. 21.	Fixed Edges > 144M > Send/read the No.1 setting
	0200	See p. 21.	Fixed Edges > 144M > Send/read the No.2 setting
	0201	See p. 21.	Fixed Edges > 144M > Send/read the No.3 setting
	0202	See p. 21.	Fixed Edges > 144M > Send/read the No.4 setting
	0203	See p. 21.	Fixed Edges > 430M > Send/read the No.1 setting
	0204	See p. 21.	Fixed Edges > 430M > Send/read the No.2 setting
	0205	See p. 21.	Fixed Edges > 430M > Send/read the No.3 setting
	0206	See p. 21.	Fixed Edges > 430M > Send/read the No.4 setting
	0207	See p. 21.	Fixed Edges > 1200M > Send/read the No.1 setting
	0208	See p. 21.	Fixed Edges > 1200M > Send/read the No.2 setting
	0209	See p. 21.	Fixed Edges > 1200M > Send/read the No.3 setting
	0210	See p. 21.	Fixed Edges > 1200M > Send/read the No.4 setting

Cmd.	Sub cmd.	Data	Description
1A*	05	SCOPE > **SCOPE SET**	
	0211	See p. 21.	Fixed Edges > 2400M > Send/read the No.1 setting
	0212	See p. 21.	Fixed Edges > 2400M > Send/read the No.2 setting
	0213	See p. 21.	Fixed Edges > 2400M > Send/read the No.3 setting
	0214	See p. 21.	Fixed Edges > 2400M > Send/read the No.4 setting
	0215	See p. 21.	Fixed Edges > 5600M > Send/read the No.1 setting
	0216	See p. 21.	Fixed Edges > 5600M > Send/read the No.2 setting
	0217	See p. 21.	Fixed Edges > 5600M > Send/read the No.3 setting
	0218	See p. 21.	Fixed Edges > 5600M > Send/read the No.4 setting
	0219	See p. 21.	Fixed Edges > 10G > Send/read the No.1 setting
	0220	See p. 21.	Fixed Edges > 10G > Send/read the No.2 setting
	0221	See p. 21.	Fixed Edges > 10G > Send/read the No.3 setting
	0222	See p. 21.	Fixed Edges > 10G > Send/read the No.4 setting
	AUDIO > **AUDIO SCOPE SET**		
	0223	00/01	Send/read the FFT Scope Waveform Type setting (00=Line, 01=Fill)
	0224	See p. 21.	Send/read the FFT Scope Waveform Color setting
	0225	00/01	Send/read the FFT Scope Waterfall Display setting (00=OFF, 01=ON)
	0226	See p. 21.	Send/read the Oscilloscope Waveform Color setting
	VOICE		
	0227	0000 ~ 0255	Send/read the TX LEVEL setting (0000=0% ~ 0255=100%)
	0228	00/01	VOICE TX SET > Send/read the Auto Monitor setting (00=OFF, 01=ON)
	0229	01 ~ 15	VOICE TX SET > Send/read the Repeat Time setting (01=1sec ~ 15=15sec)
	KEYER > **KEYER 001**		
	0230	00 ~ 04	Send/read the Number Style setting (00=Normal, 01=190→ANO, 02=190→ANT, 03=90→NO, 04=90→NT)
	0231	01 ~ 08	Send/read the Count Up Trigger setting (01=M1 ~ 08=M8)
	0232	0001 ~ 9999	Send/read Present Number setting (0001=1 ~ 9999=9999)
	KEYER > **CW-KEY SET**		
	0233	0000 ~ 0255	Send/read Side Tone Level setting (0000=0% ~ 0255=100%)

Remote control (CI-V) information

◇ Command table

Cmd.	Sub cmd.	Data	Description
1A*	05	KEYER > **CW-KEY SET**	
		0234	00/01	Send/read Side Tone Level Limit setting (00=OFF, 01=ON)
		0235	01 ~ 60	Send/read Keyer Repeat Time setting (01=1sec ~ 60=60sec)
		0236	28 ~ 45	Send/read Dot/Dash Ratio setting (28=1:1:2.8 ~ 45=1:1:4.5 in 0.1 steps)
		0237	00 ~ 03	Send/read Rise Time setting (00=2ms, 01=4ms, 02=6ms, 03=8ms)
		0238	00/01	Send/read Paddle Polarity setting (00=Normal, 01=Reverse)
		0239	00 ~ 02	Send/read Key Type setting (00=Straight, 01=Bug, 02=Paddle)
		0240	00 ~ 02	Send/read MIC Up/Down Keyer setting (00=OFF, 01=ON (UP/DOWN), 02=ON (A/B))
		DECODE > **RTTY DECODE SET**	
		0241	00 ~ 03	Send/read the FFT Scope Averaging setting (00=OFF, 01=2, 02=3, 03=4)
		0242	See p. 21.	Send/read the FFT Scope Waveform Color setting
		0243	00/01	Send/read the Decode USOS setting (00=OFF, 01=ON)
		0244	00/01	Send/read the Decode New Line Code setting (00=OFF, 01=ON)
		0245	00/01	Send/read the TX USOS setting (00=OFF, 01=ON)
		0246	See p. 21.	Send/read the Font Color (Receive) setting
		0247	See p. 21.	Send/read the Font Color (Transmit) setting
		DECODE > **RTTY DECODE LOG**	
		0248	00/01	Send/read the Decode Log setting (00=OFF, 01=ON)
		0249	00/01	Log Set > Send/read the File Type setting (00=Text, 01=HTML)
		0250	00/01	Log Set > Send/read the Time Stamp setting (00=OFF, 01=ON)
		0251	00/01	Log Set > Send/read the Time Stamp (Time) setting (00=Local, 01=UTC)
		0252	00/01	Log Set > Send/read the Time Stamp (Frequency) setting (00=OFF, 01=ON)
		RECORD > **Recorder Set**	
		0253	00/01	Send/read the TX REC Audio setting (00=Direct, 01= Monitor)
		0254	00/01	Send/read the RX REC Condition setting (00=Always, 01=Squelch Auto)
		0255	00/01	Send/read the File Split setting (00=OFF, 01=ON)

Cmd.	Sub cmd.	Data	Description
1A*	05	RECORD > **Recorder Set**	
		0256	00/01	Send/read the PTT Auto REC setting (00=OFF, 01=ON)
		0257	00 ~ 03	Send/read the PRE-REC for PTT Auto REC setting (00=OFF, 01=5sec, 02=10sec, 03=15sec)
		RECORD > **Player Set**	
		0258	00 ~ 03	Send/read the Skip Time setting (00=3sec, 01=5sec, 02=10sec, 03=30sec)
		SCAN > **SCAN SET**	
		0259	00/01	Send/read the SCAN Speed setting (00=Slow, 01=Fast)
		0260	00/01	Send/read the SCAN Resume setting (00=OFF, 01=ON)
		0261	00 ~ 10	Send/read the Pause Timer setting (00=2sec ~ 09=20sec in 2 seconds, 10=HOLD)
		0262	00 ~ 06	Send/read the Resume Timer setting (00=0sec ~ 05=5sec, 06=HOLD)
		0263	00 ~ 04	Send/read the Temporary Skip Timer setting (00=5min, 01=10min, 02=15min, 03=While Scanning, 04=While Powered ON)
		0264	00/01	Send/read the MAIN DIAL Operation (SCAN) setting (00=OFF, 01=Up/Down)
		GPS	
		0265	00/01	GPS Set > Send/read the Position Input setting (00=Internal GPS, 01=Manual)
		0266	00/01	GPS Set > GPS Option > Send/read the SBAS setting (00=OFF, 01=ON)
		0267	00/01	GPS Set > GPS Option > Send/read the GLONASS setting (00=OFF, 01=ON)
		0268	00/01	GPS Set > GPS Option > Send/read the Satellite Information Out setting (00=GPS/QZSS/GLONASS, 01=GPS Only)
		0269	See p. 21.	GPS Set > Send/read the Manual Position setting
		0270	00 ~ 02	Send/read the GPS TX Mode setting (00=OFF, 01=D-PRS, 02=NMEA)
		GPS > GPS TX Mode > **D-PRS**	
		0271	See p. 19.	Send/read the Unproto Address setting (Up to 56 characters)
		0272	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**	
		0273	00 ~ 03	Send/read the Symbol setting (00=No.1, 01=No.2, 02=No.3, 03=No.4)
		0274	See pp. 19 and 21.	Send/read the Symbol No.1 setting (2 characters)

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◇ Command table

Cmd.	Sub cmd.	Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Position**	
	0275	See pp. 19 and 21.	Send/read the Symbol No.2 setting (2 characters)
	0276	See pp. 19 and 21.	Send/read the Symbol No.3 setting (2 characters)
	0277	See pp. 19 and 21.	Send/read the Symbol No.4 setting (2 characters)
	0278	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42=-Z)
	0279	00 ~ 03	Send/read the Comment setting (00=No.1, 01=No.2, 02=No.3, 03=No.4)
	0280	See p. 19.	Send/read the Comment No.1 setting (Up to 43 characters)
	0281	See p. 19.	Send/read the Comment No.2 setting (Up to 43 characters)
	0282	See p. 19.	Send/read the Comment No.3 setting (Up to 43 characters)
	0283	See p. 19.	Send/read the Comment No.4 setting (Up to 43 characters)
	0284	00 ~ 02	Send/read the Time Stamp setting (00=OFF, 01=DHM, 02=HMS)
	0285	00/01	Send/read the Altitude setting (00=OFF, 01=ON)
	0286	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
	0287	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)
	0288	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)
	0289	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
	0290	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**		
	0291	See p. 19.	Send/read the Object Name setting (Up to 9 characters)
	0292	00/01	Send/read the Data Type setting (00=Live Object, 01=Kill Object)
	0293	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)
	0294	See p. 19.	Send/read the Comment setting (Up to 43 characters)
	0295	See p. 21.	Send/read the Position setting
	0296	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
	0297	000 ~ 360	Send/read the Course setting (000=0º ~ 360=360º)
	0298	0000 ~ 1850	Send/read the Speed setting (0000=0km/h ~ 1850=1850km/h)

Cmd.	Sub cmd.	Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Object**	
	299	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)
	300	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)
	301	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
	302	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)
	303	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42= -Z)
	304	00/01	Send/read the Time Stamp setting (00=DHM, 01=HMS)
	GPS > GPS TX Mode > D-PRS > TX Format > **Item**		
	305	See p. 19.	Send/read the Item Name setting (Up to 9 characters)
	306	00/01	Send/read the Data Type setting (00=Live Item, 01=Killed Item)
	307	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)
	308	See p. 19.	Send/read the Comment setting (Up to 43 characters)
	309	See p. 21.	Send/read the Position setting
	310	00 ~ 02	Send/read the Data Extension setting (00=OFF, 01=Course/Speed, 02=Power/Height/Gain/Directivity)
	311	000 ~ 360	Send/read the Course setting (000 ~ 360=0º ~ 360º)
	312	0000 ~ 1850	Send/read the Speed setting (0000=0km/h ~ 1850=1850km/h)
	313	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)
	314	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)
	315	00 ~ 09	Send/read the Gain setting (00=0dB ~ 09=9dB)
	316	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)
	317	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**		
	318	See pp. 19 and 21.	Send/read the Symbol setting (2 characters)

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◇ Command table

Cmd.	Sub cmd.	Data	Description
1A*	05	GPS > GPS TX Mode > D-PRS > TX Format > **Weather**	
	319	00 ~ 42	Send/read the SSID setting (00= - - -, 01=(- 0), 02= -1 ~ 16= -15, 17= -A ~ 42= -Z)
	320	See p. 19.	Send/read the Comment setting (Up to 43 characters)
	321	00 ~ 02	Send/read the Time Stamp setting (00=OFF, 01=DHM, 02=HMS)
	GPS > GPS TX Mode > **NMEA**		
	0322*6	00/01	GPS Sentence > Send/read the RMC setting (00=OFF, 01=ON)
	0323*6	00/01	GPS Sentence > Send/read the GGA setting (00=OFF, 01=ON)
	0324*6	00/01	GPS Sentence > Send/read the GLL setting (00=OFF, 01=ON)
	0325*6	00/01	GPS Sentence > Send/read the GSA setting (00=OFF, 01=ON)
	0326*6	00/01	GPS Sentence > Send/read the VTG setting (00=OFF, 01=ON)
	0327*6	00/01	GPS Sentence > Send/read the GSV setting (00=OFF, 01=ON)
	0328	See p. 19.	Send/read the GPS Message setting (Up to 20 characters)
	GPS > **GPS Alarm**		
	0329	See p. 21.	Send/read the Alarm Area (Group) setting
	0330	00 ~ 02	Send/read the Alarm Area (RX/Memory) setting (00=Limited, 01=Extended, 02=Both)
	GPS		
	0331	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**		
	0332	00 ~ 03	Send/read the DTMF Speed setting (00=100ms, 01=200ms, 02=300ms, 03=500ms)
	VIDEO > **VIDEO SET**		
	0333	0000 ~ 0255	Send/read the AV-IN Video Input Level setting (0000=0% ~ 0255=100%)
	0334	0000 ~ 0255	Send/read the AV-OUT Video Output Level setting (0000=0% ~ 0255=100%)
	0335	00 ~ 02	Send/read the View Mode setting (00=Normal, 01=Full, 02=Zoom)
	NB		
	0336	0000 ~ 0255	Send/read the NB LEVEL setting (0000=0% ~ 0255=100%)

Cmd.	Sub cmd.	Data	Description
1A*	05	**NB**	
	0337	00 ~ 09	Send/read the NB DEPTH setting (00=1 ~ 09=10)
	0338	0000 ~ 0255	Send/read the NB WIDTH setting (0000=1 ~ 0255=100)
	VOX		
	0339	00 ~ 20	Send/read the VOX DELAY setting (00=0.0s ~ 20=2.0s in 0.1s steps)
	0340	00 ~ 03	Send/read the VOICE DELAY setting (00=OFF, 01=SHORT, 02=MID, 03=LONG)
	TX PWR LIMIT		
	0341	00/01	Send/read the TX PWR LIMIT (144M) function setting (00=OFF, 01=ON)
	0342	0000 ~ 0255	Send/read the TX PWR LIMIT (144M) setting (0000=0 ~ 0255=100)
	0343	00/01	Send/read the TX PWR LIMIT (430M) function setting (00=OFF, 01=ON)
	0344	0000 ~ 0255	Send/read the TX PWR LIMIT (430M) setting (0000=0 ~ 0255=100)
	0345	00/01	Send/read the TX PWR LIMIT (1200M) function setting (00=OFF, 01=ON)
	0346	0000 ~ 0255	Send/read the TX PWR LIMIT (1200M) setting (0000=0 ~ 0255=100)
	0347	00/01	Send/read the TX PWR LIMIT (2400M) function setting (00=OFF, 01=ON)
	0348	0000 ~ 0255	Send/read the TX PWR LIMIT (2400M) setting (0000=0 ~ 0255=100)
	0349	00/01	Send/read the TX PWR LIMIT (5600M) function setting (00=OFF, 01=ON)
	0350	0000 ~ 0255	Send/read the TX PWR LIMIT (5600M) setting (0000=0 ~ 0255=100)
	0351	00/01	Send/read the TX PWR LIMIT (10G) function setting (00=OFF, 01=ON)
	0352	0000 ~ 0255	Send/read the TX PWR LIMIT (10G) setting (0000=0 ~ 0255=100)
	CD		
	0353	00/01	Send/read the Call Sign Display/Name Display setting (00=Call Sign Display, 01=Name Display)
	GPS Position		
	0354	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.
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)
		0100	See p. 25.	Output DV RX GPS/D-PRS Position for transceive
		0101	See p. 25.	Output DV RX D-PRS Object status for transceive
		0102	See p. 26.	Output DV RX D-PRS Item status for transceive
		0103	See p. 26.	Output DV RX D-PRS Weather status for transceive
		0200*1	See p. 25.	Read Auto DV RX GPS/D-PRS Position status
		0201*1	See p. 25.	Read Auto DV RX D-PRS Object status
		0202*1	See p. 26.	Read Auto DV RX D-PRS Item status
		0203*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.)
	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	0000 ~ 0003	Send/read the Scope Center mode, Fixed mode, SCROLL-C mode, or SCROLL-F mode setting (0000=CENTER mode, 0001=FIX mode, 0002=SCROLL-C mode, 0003=SCROLL-F mode)
	15	See p. 28.	Send/read the Span setting in the Center mode or SCROLL-C mode Scope
	16	0001 ~ 0004	SCOPE > SCOPE SET > Send/read the Scope Edge Number setting in the Fixed mode or SCROLL-F mode (0001=Fixed Edges No.1, 0002=Fixed Edges No.2, 0003=Fixed Edges No.3, 0004=Fixed Edges No.4)
	17	0000/ 0001	Send/read the Scope Hold function ON/OFF status (0000=OFF, 0001=ON)
	19	See p. 28.	Send/read the Scope Reference level setting
	1A	0000 ~ 0002	Send/read the Sweep speed setting (0000=FAST, 0001=MID, 0002=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	0000/ 0001	Send/read the Scope VBW setting (0000=NAR, 0001=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)

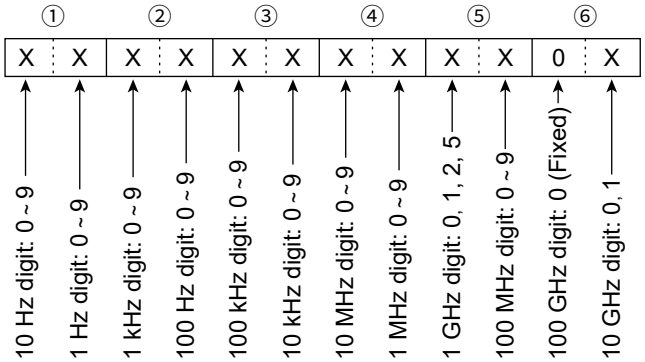
*(Asterisk) Send/read data
*1 Read only data
*2 Send only data
*3 In the CW mode, if the [PTT] or an external TX switch is ON, or the Break-in function is ON, a message will be transmitted as CW code when you send it from your PC.
*4 Sending the power ON command (18 01) turns ON the transceiver when 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**

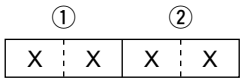
Command: 00, 03, 05, 1C 03



ⓘ 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



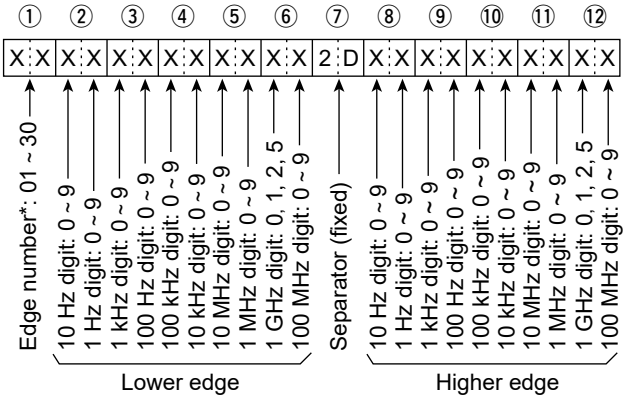
①Operating mode		②Filter setting
00 : LSB	07 : CW-R	01 : FIL1
01 : USB	08 : RTTY-R	02 : FIL2
02 : AM	17 : DV	03 : FIL3
03 : CW	22 : DD*	—
04 : RTTY	23 : ATV*	—
05 : FM	—	—

* 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.

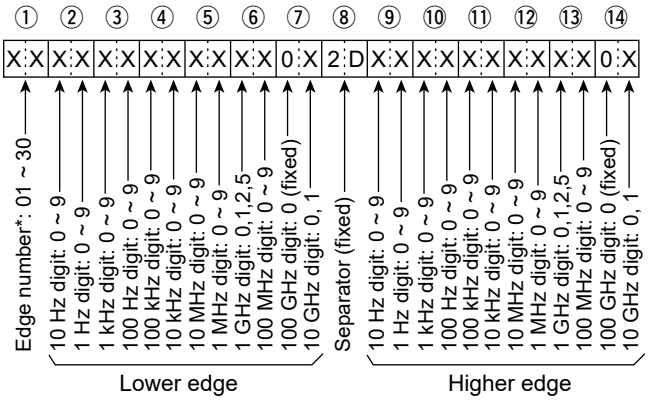
• **Band edge frequency settings**

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.

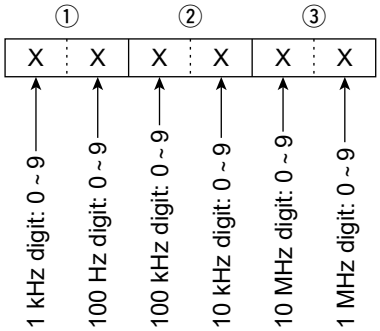


Remote control (CI-V) information

◇ 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		

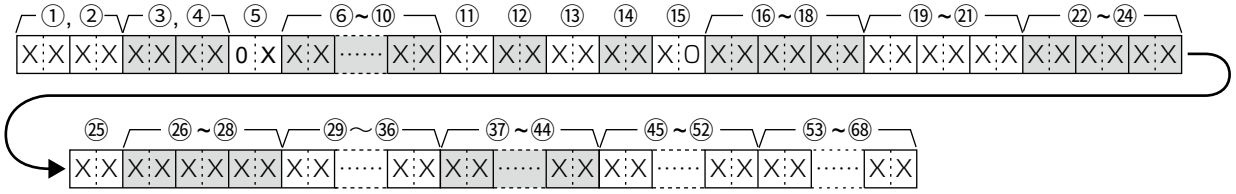
ⓘ “FF” stops sending CW messages.

ⓘ “^” is used to transmit a string of characters with no inter-character space.

Remote control (CI-V) information

◇ Command formats

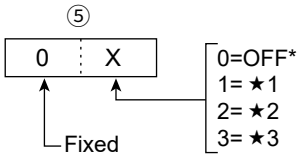
• **Memory content**
Command: 1A 00



①, ②: Memory group number
0000 ~ 0099: Memory channel group
0100: Call channel group

③, ④: Memory channel numbers
- When Memory channel group is selected,
  0000 ~ 0099: 00 ~ 99
- When Call channel group is selected,
  0000, 0001: 144 C1, C2
  0002, 0003: 430 C1, C2
  0004, 0005: 1200 C1, C2
  0006, 0007: 2400 C1, C2
  0008, 0009: 5600 C1, C2
  0010, 0011: 10G C1, C2

⑤: Split and Select memory setting



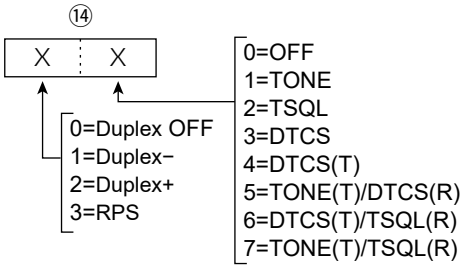
* Set 0 for Call channel.

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

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

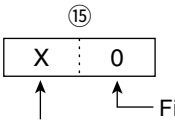
⑬: Data mode setting
1 byte data (XX)
00: Data mode OFF
01: Data mode ON

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 (0000~0099)
You cannot specify group “0100” (Call channel group)
③, ④: Memory channel (0000~0099)
⑤: “FF,” ⑥ ~ : None

Remote control (CI-V) information

◇ Command formats

• **Codes for character entries**

Command: 1A 00,
1A 05 0179, 0271, 0291, 0293, 0294, 0305, 0308, 0320, 0328
1A 05 0274 ~ 1A 05 0277,
1A 05 0280 ~ 1A 05 0283

- 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

Cmd.	Sub cmd.		Set item/selectable characters
1A	00		Memory name All characters are usable.
	05	0179	NTP Server Address A ~ Z, a ~ z, 0 ~ 9, ., -

• **Band stacking register**

Command: 1A 01

①		②	
X	X	X	X

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 ~ ㊿ 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 “0202.”

Remote control (CI-V) information

◇ Command formats

• Keyer memory character entries

Command: 1A 02

- Character codes

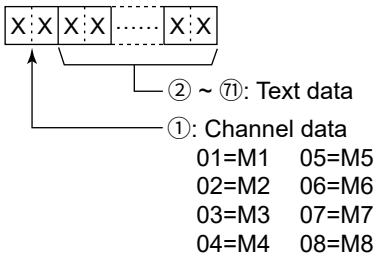
Character	ASCII code	Description
0 ~ 9	30 ~ 39	Numbers
A ~ Z	41 ~ 5A	Letters
Space	20	Word space
/	2F	Symbol
?	3F	Symbol
,	2C	Symbol
.	2E	Symbol
@	40	Symbol
^	5E	Example: to send $\overline{BT}$, enter ^4254
*	2A	Inserts the contest number (can be used for 1 channel only)

ⓘ 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	0 ~ 9	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	0 ~ 49	200 Hz ~ 10.0 kHz (200 Hz)

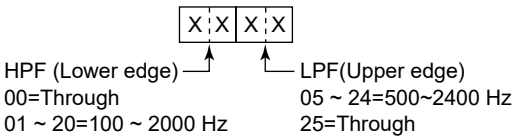
• AGC time constant settings

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

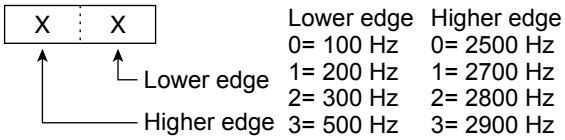
Command: 1A 05 0001, 0004, 0007, 0010, 0015, 0016



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

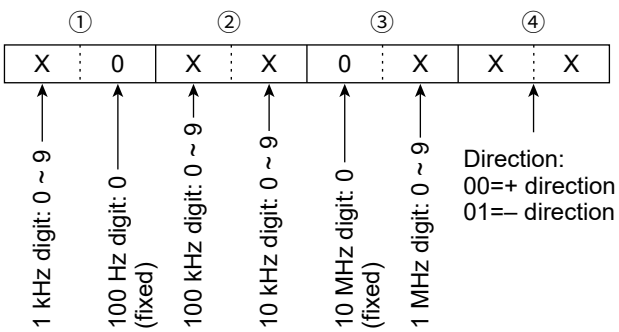
• SSB/SSB-DATA transmission passband width settings

Command: 1A 05 0019 ~ 0022



• Split offset frequency setting

Command: 1A 05 0047

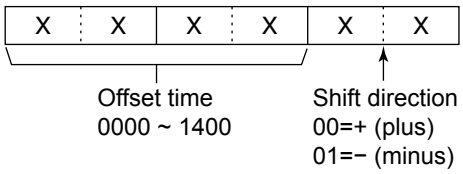


Remote control (CI-V) information

◇ Command formats

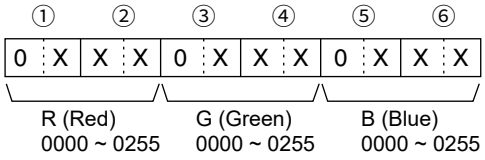
• **UTC Offset setting**

Command: 1A 05 0181



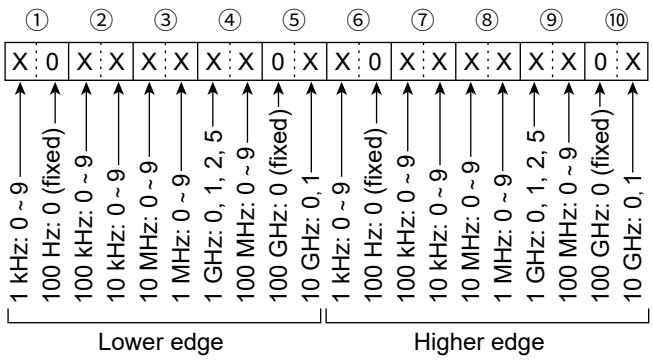
• **Color settings**

Command: 1A 05 0191, 0192, 0193, 0224,
0226, 0242, 0246, 0247



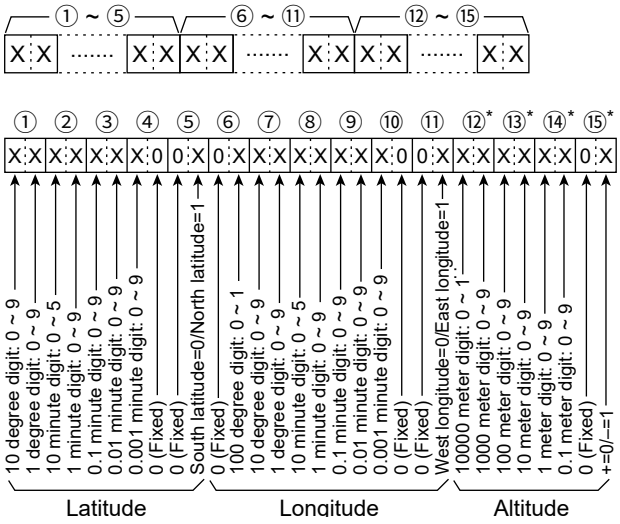
• **Bandscope edge frequency settings**

Command: 1A 05 0199 ~ 1A 05 0222



• **Manually entered position data**

Command: 1A 05 0269, 0295, 0309,
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.”

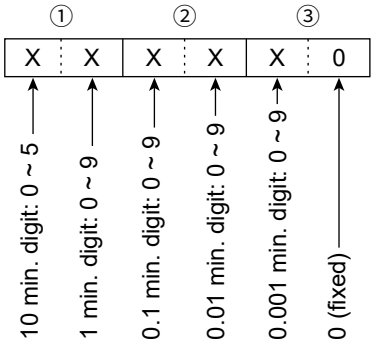
• **D-PRS Symbol setting**

Command: 1A 05 0274 ~ 1A 05 0277,
1A 05 0293, 0307, 0318

- /, \, 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 0329



Remote control (CI-V) information

◇ Command formats

• **[VOX/BK-IN] setting**
Command: 1A 05 0075

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 0076

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 0077 ~ 0080

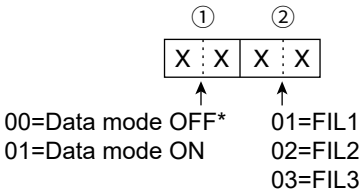
Data	Function
00	No function
01	UP
02	DOWN
03	UP (VFO: kHz)
04	DOWN (VFO: kHz)
05	VOL UP
06	VOL DOWN
07	XFC
08	CALL
09	VFO/MEMO
10	DR
11	FROM/TO (DR)
12	Home CH
13	BAND/GROUP UP
14	BAND/GROUP DOWN
15	SCAN
16	Temporary Skip
17	SPEECH
18	MODE
19	RF Power
20	Voice/Keyer/RTTY Memory 1
21	Voice/Keyer/RTTY 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

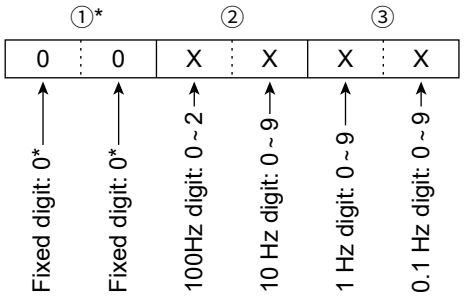
◇ Command formats

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



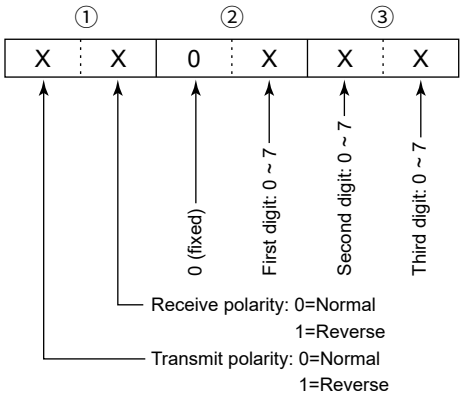
*When 00 is set, also set 00 to ②.

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

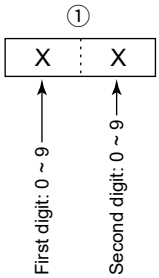


*Not necessary when setting a frequency.

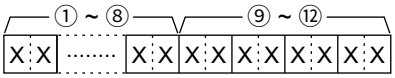
• DTCS code and polarity setting
Command: 1B 02



• DV Digital code squelch setting
Command: 1B 07

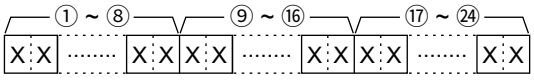


• DV MY call sign setting
Command: 1F 00
Set your own call sign and note of up to 12 characters.
See “Character’s code of the call sign.”



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

• DV TX call signs setting (24 characters)
Command: 1F 01
Set “UR,” “R1,” and “R2” call signs of 8 characters (fixed).
See “Character’s code of the call sign.”



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)

Character’s code of the call sign

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

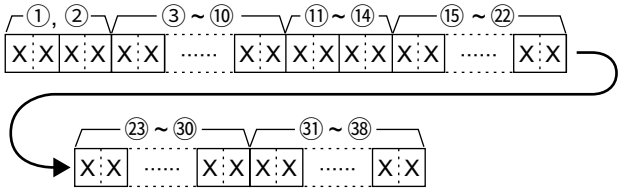
• DV TX message setting
Command: 1F 02
Set the transmit message of up to 20 characters.
See “Codes for character entries.” (p. 19)
“FF” stops sending or reading messages.

Remote control (CI-V) information

◇ Command formats

• DV RX call sign data

Command: 20 0001, 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

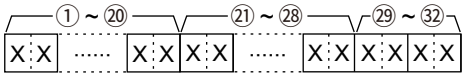
③ ~ ⑩: Call sign of the caller station (8 characters, fixed)
⑪ ~ ⑭: Note of the caller station (4 characters, fixed)
⑮ ~ ㉒: Call sign of the called station (8 characters, fixed)
㉓ ~ ㉚: Call sign of the access/area repeater (R1) (8 characters, fixed)
㉛ ~ ㊳: Call sign of the link/gateway repeater (R2)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

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 0101, 0102

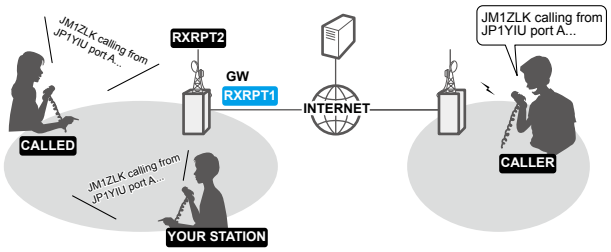


① ~ ⑳: Message (20 characters)
㉑ ~ ㉘: Call sign of the caller station (8 characters)
㉙ ~ ㉜: Note of the caller station (4 characters)

See “Codes for character entries.” (p. 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 0201, 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.

Remote control (CI-V) information

◇ Command formats

• **GPS/D-PRS data**

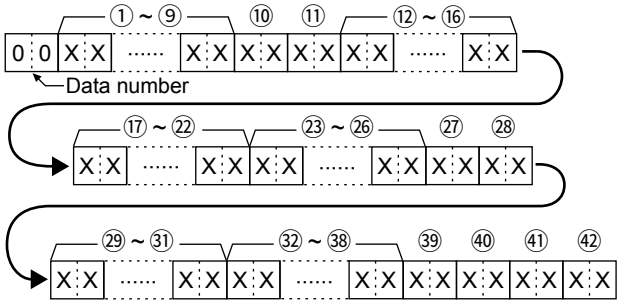
Command: 20 03 0100, 0101, 0102, 0103,
0200, 0201, 0202, 0203

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



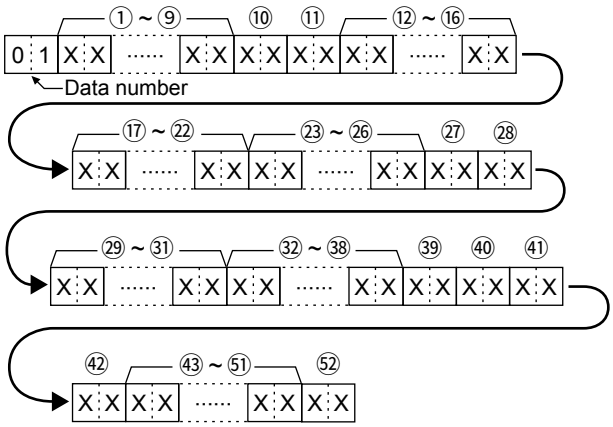
① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol (2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉖: Altitude (0.1 meter steps)
㉗, ㉘: Course (1 degree steps)
㉙ ~ ㉛: Speed (0.1 km/h steps)
㉜ ~ ㊳: Date (UTC: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

	㊴ **Power**	㊵ **Height**	㊶ **Gain**	㊷ **Directivity**
Data	(W)	(m/ft)	(dB)	(deg)
0	0	3/10	0	Omni-direction
1	1	6/20	1	45° NE
2	4	12/40	2	90° E
3	9	24/80	3	135° SE
4	16	49/160	4	180° S
5	25	98/320	5	225° SW
6	36	195/640	6	270° W
7	49	390/1280	7	315° NW
8	64	780/2560	8	360° 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 ~ ㊷: See the table below.

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

㊸ ~ ㊶: Name
(9 ASCII characters (00h ~ EFh))
㊷: 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.

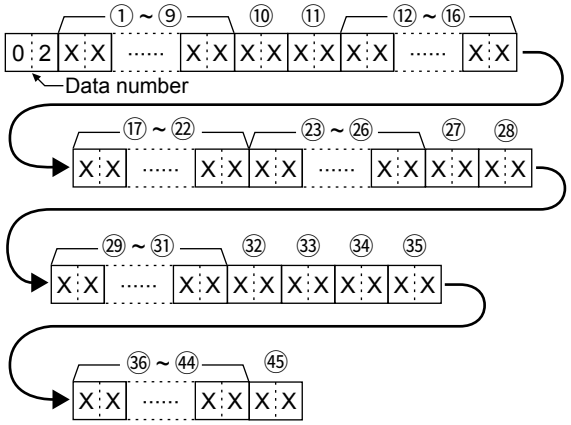
Remote control (CI-V) information

◇ 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 ~ ㉟: See the table below.

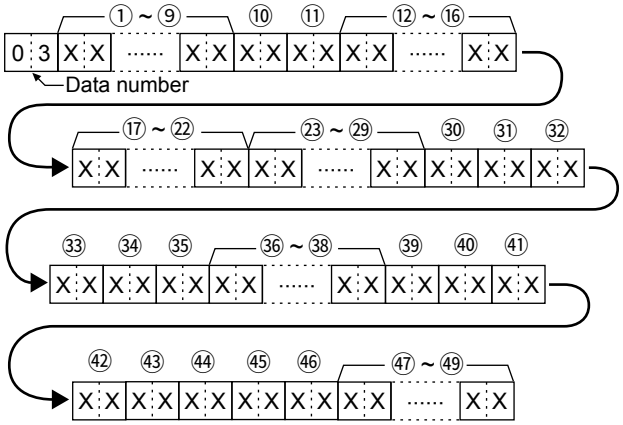
	㉜ **Power**	㉝ **Height**	㉞ **Gain**	㉟ **Directivity**
Data	(W)	(m/ft)	(dB)	(deg)
0	0	3/10	0	Omni-direction
1	1	6/20	1	45° NE
2	4	12/40	2	90° E
3	9	24/80	3	135° SE
4	16	49/160	4	180° S
5	25	98/320	5	225° SW
6	36	195/640	6	270° W
7	49	390/1280	7	315° NW
8	64	780/2560	8	360° N
9	81	1561/5120	9	—

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

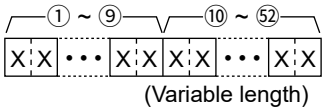


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩, ⑪: Symbol (2 ASCII characters (00h ~ EFh))
⑫ ~ ⑯: Latitude (dd°mm.mmm format)
⑰ ~ ㉒: Longitude (ddd°mm.mmm format)
㉓ ~ ㉙: Date (UTC: yyyymmddHHMMSS)
(y: Year, m: Month, d: Day,
H: Hour, M: Minute, S: Second)
㉚, ㉛: Wind direction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

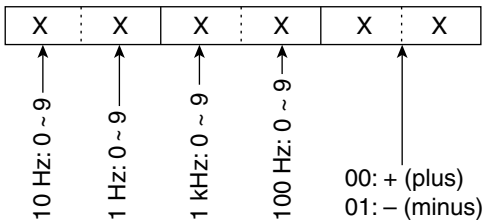


① ~ ⑨: Call sign/SSID
(9 ASCII characters (A ~ Z, 0 ~ 9, /, -, space))
⑩ ~ ㊿: Message
(Up to 43 ASCII characters (00h ~ EFh))
ⓘ FF: No signal has been received since the power was turned ON.

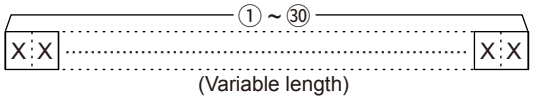
Remote control (CI-V) information

◇ Command formats

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



• **DV TX data**
Command: 22 00

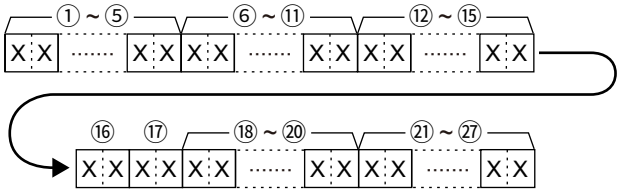


① ~ ㉚: TX data (Up to 30 Byte)
ⓘ "FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.

• **DV RX data (transceive)**
Command: 22 0101

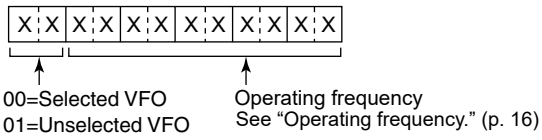
① ~ ㉚: RX data (Up to 30 Byte)
ⓘ "FA" to "FF" are entered after converted to "FF 0A" to "FF 0F" automatically. Up to 60 Byte data can be entered in this case.

• **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

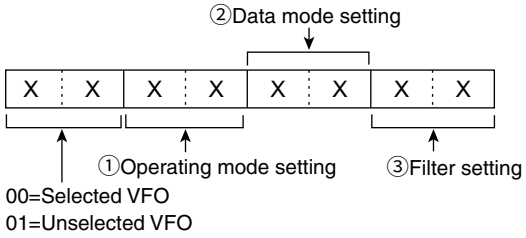


ⓘ When using the DR function, the transceiver returns "FA" (NG) because these cannot be set to 01.

- 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	—	—	—

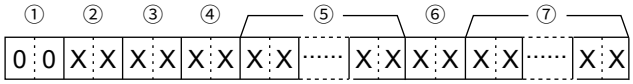
*1 The commands can be set when the 1200 MHz or higher band is selected.
*2 When 00 is set, also set 00 to ③.

Remote control (CI-V) information

◇ Command formats

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

Outputs the waveform data to the controller.



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 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

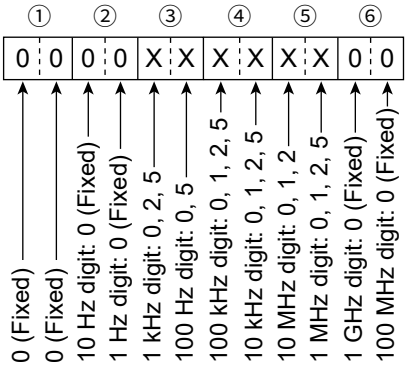
⑤: Waveform information:
The waveform information differs, depending on the Spectrum scope mode.
- In the Center mode:
  Center frequency and span are sent.
  See page 16 for Operating frequency data, and the Scope span settings (② ~ ⑥).
  ⓘ When the 5600 MHz or lower band is selected, the Center frequency 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.

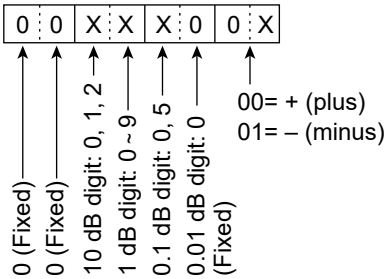
⑦: Waveform data:
The transceiver outputs the drawn waveform data. The data range or data length of the waveform data is judged by the controller. (The data range is basically the same as the display size of the scope on the controller.)
- Data range: 0 ~ 160
- Data length: 475

• **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

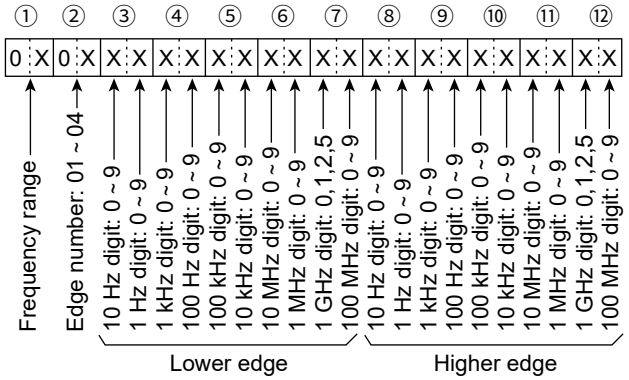


Adjustable range: –20.0 dB ~ +20.0 dB
in 0.5 dB steps.

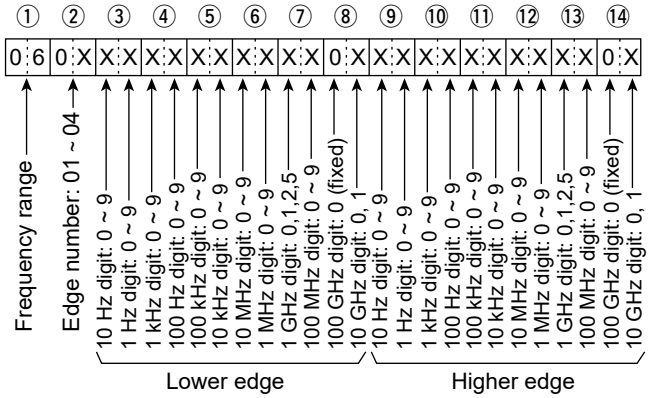
Remote control (CI-V) information

◇ 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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