

## TS-590SG White Paper

### Software Incompatibilities with the TS-590S

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Version 1.0

2 November 2014

#### Introduction

When Kenwood announced the arrival of the new TS-590SG in October 2014, many people probably assumed that it was an improved version of the original TS-590S.

Unfortunately, however, the TS-590SG CAT command set differs significantly from the equivalent commands in the TS-590S, such that the two radios are quite different from each other from a software control point of view.

**The major consequence of this is that third-party software written for the TS-590S may not run with the TS-590SG.**

Kenwood's motivation for changing the CAT commands is unknown. There are no obvious sound engineering reasons for doing this. In fact, the only plausible reason seems to be purely cosmetic – it allows the menu commands to be listed in numerical order in the Instruction Manual.

This Whitepaper details the differences between the CAT command sets of the two radios. It should be of interest to anyone who wishes to convert existing third-party software written for the TS-590S, to allow it to run with the TS-590SG.

Section 1 lists the differences between the menu commands in the two radios. These differences mean that the parameters to the "EX" CAT command are different.

Section 2 lists the other differences in the CAT commands between the TS-590SG and TS-590S.

## Section 1: Differences between the TS-590SG and TS-590S “EX” CAT Commands

This section details the many differences between the menu settings in the TS-590SG and TS-590S. Information on TS-590SG menu settings is available in the “TS-590GS Instruction Manual”, at <http://manual.kenwood.com/files/B5A-0180-00.pdf>.

**Every menu setting in the TS-590SG is different from the equivalent menu setting in the TS-590S.**

This means that third-party software written for the TS-590S will have to be changed wherever the “EX” CAT command is used.

The numbers ringed in red are the differing menu numbers.

Other items ringed in blue highlight the minor differences in parameter settings.

TS-590SG			
Category	No.	Description Display*	Settings** Default**
Operator Interface	00	Firmware version	—
		<b>FIRMWARE VERSION</b>	
	01	Power on message	HELLO/ EDIT
		<b>POWER ON MESSAGE</b>	KENWOOD
	02	Display brightness	OFF/ 1 ~ 6
		Off, 1: minimum, 6: maximum	
		<b>DISPLAY BRIGHTNESS</b>	4
		Display backlight color	1 ~ 10
	03	1: amber, 2 ~ 9: mixed colors, 10: green	
		<b>BACKLIGHT COLOR</b>	1
	04	Panel key response for double function 1: 0.2 second, 2: 0.5 second, 3: 1 second	1/2/3
Volume		<b>PANEL KEY RESPONSE FOR DOUBLE FUNCTIONS</b>	2
	05	Beep output level	OFF/ ~ 20 (1 step)
		OFF, 1: minimum, 20: maximum	
		<b>BEEP VOLUME</b>	10
	06	Sidetone volume	OFF/ ~ 20 (1 step)
		OFF, 1: minimum, 20: maximum	
		<b>SIDETONE VOLUME</b>	10
Voice Guide	07	VGS-1 message playback volume	OFF/ 1 ~ 20 (1 step)
		OFF, 1: minimum, 20: maximum	
		<b>MESSAGE PLAYBACK VOLUME</b>	10
	08	VGS-1 announcement volume	OFF/ 1 ~ 20 (1 step)
		OFF, 1: minimum, 20: maximum	
		<b>VOICE GUIDE VOLUME</b>	10
	09	VGS-1 announcement speed	0 ~ 4 (1 step)
		0: slow, 4: fast	
		<b>VOICE GUIDE SPEED</b>	1
	10	VGS-1 announcement language	EN/ JP
		EN: English, JP: Japanese	
		<b>VOICE GUIDE LANGUAGE</b>	EN
Tuning	11	VGS-1 auto announcement	OFF/ 1/2
		<b>AUTO ANNOUNCEMENT</b>	1
	12	MHz step	0.1/ 0.5/ 1 [MHz]
		<b>MHZ STEP</b>	1
	13	Tuning control adjustment rate	250/ 500/ 1000 [Hz]
		<b>TUNING CONTROL CHANGE RATE PER REVOLUTION</b>	1000
	14	Rounds off VFO frequencies changed by using the MULTI/CH control	OFF/ ON
		<b>FREQUENCY ROUNDING OFF WHEN USING MULTI/CH CONTROL</b>	ON

TS-590S			
Category	No.	Description Display*	Settings** Default**
Operator Interface	87	Power on message	HELLO/ EDIT
		<b>POWER ON MESSAGE</b>	KENWOOD
	00	Display brightness	OFF/ 1 ~ 6
		Off, 1: minimum, 6: maximum	
		<b>DISPLAY BRIGHTNESS</b>	4
		Display backlight color	1/2
	01	1: amber, 2: green	
		<b>BACKLIGHT COLOR</b>	1
	02	Panel key response for double function 1: 0.2 second, 2: 0.5 second, 3: 1 second	1/2/3
		<b>PANEL KEY RESPONSE FOR DOUBLE FUNCTIONS</b>	2
Volume	03	Beep output level	OFF/ 1 ~ 9 (1 step)
		OFF, 1: minimum, 9: maximum	
		<b>BEEP VOLUME</b>	4
	04	Sidetone volume	OFF/ 1 ~ 9 (1 step)
		OFF, 1: minimum, 9: maximum	
		<b>SIDETONE VOLUME</b>	4
	05	VGS-1 message playback volume	OFF/ 1 ~ 9 (1 step)
Voice Guide		OFF, 1: minimum, 9: maximum	
		<b>MESSAGE PLAYBACK VOLUME</b>	4
	06	VGS-1 announcement volume	OFF/ 1 ~ 7 (1 step)
		OFF, 1: minimum, 7: maximum	
		<b>VOICE GUIDE VOLUME</b>	4
	07	VGS-1 announcement speed	0 ~ 4 (1 step)
		0: slow, 4: fast	
Tuning		<b>VOICE GUIDE SPEED</b>	1
	08	VGS-1 announcement language	EN/ JP
		EN: English, JP: Japanese	
		<b>VOICE GUIDE LANGUAGE</b>	EN
	09	VGS-1 auto announcement	OFF/ ON
		<b>AUTO ANNOUNCEMENT</b>	ON
	10	MHz step	0.1/ 0.5/ 1 [MHz]
		<b>MHZ STEP</b>	1
	11	Tuning control adjustment rate	250/ 500/ 1000 [Hz]
		<b>TUNING CONTROL CHANGE RATE PER REVOLUTION</b>	1000
	12	Rounds off VFO frequencies changed by using the MULTI/CH control	OFF/ ON
		<b>FREQUENCY ROUNDING OFF WHEN USING MULTI/CH CONTROL</b>	ON

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Category	No.	Description	Settings**
		Display*	Default**
Tuning (continued)	15	9 kHz frequency step size for the <b>MULTI/CH</b> control in AM mode on the AM broadcast band	OFF/ ON
		<b>MULTI/CH CONTROL 9KHZ STEP CHANGE IN AM BROADCAST BAND</b>	K type: OFF E type: ON
	16	Frequency step size for the <b>MULTI/CH</b> control in SSB mode	OFF/ 0.5/ 1/ 2.5/ 5/ 10 [kHz]
		<b>MULTI/CH CONTROL</b>	5
	17	Frequency step size for the <b>MULTI/CH</b> control in CW/ FSK mode	OFF/ 0.5/ 1/ 2.5/ 5/ 10 [kHz]
		<b>CW MULTI/CH CONTROL</b>	0.5
	18	Frequency step size for the <b>MULTI/CH</b> control in AM mode	OFF/ 5/ 6.25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz]
Memory Channel		<b>AM MULTI/CH CONTROL</b>	5
	19	Frequency step size for the <b>MULTI/CH</b> control in FM mode	OFF/ 5/ 6.25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz]
		<b>FM MULTI/CH CONTROL</b>	10
	20	Shiftable RX frequency during split transmission	OFF/ ON
		<b>SHIFTABLE RX FREQUENCY DURING SPLIT TRANSMISSION</b>	OFF
	21	Number of quick memory channels	3/ 5/ 10 [ch]
		<b>NUMBER OF QUICK MEMORY CHANNELS</b>	5
Scan	22	Tunable memory recall frequencies	OFF/ ON
		<b>TUNABLE MEMORY RECALL FREQUENCIES</b>	OFF
	23	Program scan partially slowed	OFF/ ON
		<b>PROGRAM SCAN PARTIALLY SLOWED</b>	ON
	24	Slow down frequency range for the program scan	100/ 200/ 300/ 400/ 500 [Hz]
		<b>PROGRAM SLOW-SCAN RANGE</b>	300
	25	Program scan hold	OFF/ ON
Auto Mode		<b>PROGRAM SCAN HOLD</b>	OFF
	26	Scan resume method	TO/ CO
		<b>SCAN RESUME METHOD</b>	TO
	27	Auto mode operation	ON/ OFF
		<b>AUTO MODE OPERATION</b>	OFF
	28	SSB filter type selection	1/ 2
		<b>SSB FILTER TYPE SELECTION</b>	1 (HI/LO)
DSP Function	29	SSB DATA filter type selection	1/ 2
		<b>SSB DATA FILTER TYPE SELECTION</b>	2 (WIDTH/SHIFT)
	30	Auto notch tracking speed	0 ~ 4 (1 step)
		<b>AUTO NOTCH TRACKING SPEED</b>	2
	31	TX filter for SSB/AM low cut	10/ 100/ 200/ 300/ 400/ 500 [Hz]
		<b>TX FILTER FOR SSB/AM LOW CUT</b>	300
	32	TX filter for SSB/AM high cut	2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz]
		<b>TX FILTER FOR SSB/AM HIGH CUT</b>	2700

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13	9 kHz frequency step size for the <b>MULTI/CH</b> control in AM mode on the AM broadcast band	OFF/ ON
	<b>MULTI/CH CONTROL 9KHZ STEP CHANGE IN AM BROADCAST BAND</b>	K type: OFF E type: ON

*TS-590S Menu 14 is not implemented in TS-590SG.*

15	Frequency step size for the <b>MULTI/CH</b> control in AM mode	5/ 6.25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz]
	<b>AM MULTI/CH CONTROL</b>	5
16	Frequency step size for the <b>MULTI/CH</b> control in FM mode	5/ 6.25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz]
	<b>FM MULTI/CH CONTROL</b>	10

17	Number of quick memory channels	3/ 5/ 10 [ch]
	<b>NUMBER OF QUICK MEMORY CHANNELS</b>	5
18	Tunable memory recall frequencies	OFF/ ON
	<b>TUNABLE MEMORY RECALL FREQUENCIES</b>	OFF
19	Program scan partially slowed	OFF/ ON
	<b>PROGRAM SCAN PARTIALLY SLOWED</b>	ON
20	Slow down frequency range for the program scan	100/ 200/ 300/ 400/ 500 [Hz]
	<b>PROGRAM SLOW-SCAN RANGE</b>	300
21	Program scan hold	OFF/ ON
	<b>PROGRAM SCAN HOLD</b>	OFF
22	Scan resume method	TO/ CO
	<b>SCAN RESUME METHOD</b>	TO
23	Auto mode operation	ON/ OFF
	<b>AUTO MODE OPERATION</b>	OFF

24	Auto notch tracking speed	0 ~ 4 (1 step)
	<b>AUTO NOTCH TRACKING SPEED</b>	2
25	TX filter for SSB/AM low cut	10/ 100/ 200/ 300/ 400/ 500 [Hz]
	<b>TX FILTER FOR SSB/AM LOW CUT</b>	300
26	TX filter for SSB/AM high cut	2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz]
	<b>TX FILTER FOR SSB/AM HIGH CUT</b>	2700

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Category	No.	Description	Settings**
		Display*	Default**
DSP Function (continued)	33	TX filter for SSB-DATA low cut	10/ 100/ 200/ 300/ 400/ 500 [Hz]
		TX FILTER FOR SSB-DATA LOW CUT	300
	34	TX filter for SSB-DATA high cut	2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz]
		TX FILTER FOR SSB-DATA HIGH CUT	2700
	35	Speech processor effect	SOFT/ HARD
Equalizer		SPEECH PROCESSOR EFFECT	HARD
	36	DSP TX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1: Bass boost1, bb2: Bass boost2, c: Conventional, U: User (Reserved for ARCP software)	OFF/ HB1/ HB2/ FP/ BB1/ BB2/ C/ U
		DSP TX EQUALIZER	OFF
	37	DSP RX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1: Bass boost1, bb2: Bass boost2, FLAT: Flat U: User (Reserved for ARCP software)	OFF/ HB1/ HB2/ FP/ BB1/ BB2/ FLAT/ U
		DSP RX EQUALIZER	OFF
CW	38	Electronic keyer mode	A/ B
		ELECTRONIC KEYS MODE	B
	39	Keying priority over playback	OFF/ ON
		KEYING PRIORITY OVER PLAYBACK	OFF
	40	CW RX pitch/ TX sidetone frequency	300 ~ 1000 (50 [Hz] step)
		CW RX PITCH/TX SIDETONE FREQUENCY	800
	41	CW rise time	1/ 2/ 4/ 6 [ms]
		CW RISE TIME	6
	42	CW keying dot, dash weight ratio	AUTO/ 2.5 ~ 4.0 (0.1 step)
		CW WEIGHTING	AUTO
	43	Reverse CW keying auto weight ratio	OFF/ ON
		REVERSED CW WEIGHTING	OFF
	44	Bug key function	OFF/ ON
		BUG KEY FUNCTION	OFF
	45	Reversed dot and dash keying	OFF/ ON
		REVERSED DOT AND DASH KEYING	OFF
	46	MIC UP/DWN key paddle function	PF/ PA
		PF: PF key PA: Paddle	
	47	MIC UP/DWN KEY FUNCTION	PF
		Auto CW TX when keying in SSB	OFF/ ON
		AUTO CW TX WHEN KEYING IN SSB	OFF
	48	Frequency correction for changing SSB to CW	OFF/ ON
		FREQUENCY CORRECTION FOR SSB-TO-CW CHANGE	OFF

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27	TX filter for SSB-DATA low cut	10/ 100/ 200/ 300/ 400/ 500 [Hz]
	TX FILTER FOR SSB-DATA LOW CUT	300
28	TX filter for SSB-DATA high cut	2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz]
	TX FILTER FOR SSB-DATA HIGH CUT	2700
29	Speech processor effect	SOFT/ HARD
	SPEECH PROCESSOR EFFECT	HARD
30	DSP TX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1: Bass boost1, bb2: Bass boost2, c: Conventional, U: User (Reserved for ARCP software)	OFF/ HB1/ HB2/ FP/ BB1/ BB2/ C/ U
	DSP TX EQUALIZER	OFF
31	DSP RX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1: Bass boost1, bb2: Bass boost2, FLAT: Flat U: User (Reserved for ARCP software)	OFF/ HB1/ HB2/ FP/ BB1/ BB2/ FLAT/ U
	DSP RX EQUALIZER	OFF
32	Electronic keyer mode	A/ B
	ELECTRONIC KEYS MODE	B
33	Keying priority over playback	OFF/ ON
	KEYING PRIORITY OVER PLAYBACK	OFF
34	CW RX pitch/ TX sidetone frequency	300 ~ 1000 (50 [Hz] step)
	CW RX PITCH/TX SIDETONE FREQUENCY	800
35	CW rise time	1/ 2/ 4/ 6 [ms]
	CW RISE TIME	6
36	CW keying dot, dash weight ratio	AUTO/ 2.5 ~ 4.0 (0.1 step)
	CW WEIGHTING	AUTO
37	Reverse CW keying auto weight ratio	OFF/ ON
	REVERSED CW WEIGHTING	OFF
38	Bug key function	OFF/ ON
	BUG KEY FUNCTION	OFF
39	Reversed dot and dash keying	OFF/ ON
	REVERSED DOT AND DASH KEYING	OFF
40	MIC UP/DWN key paddle function	PF/ PA
	PF: PF key PA: Paddle	
41	MIC UP/DWN KEY FUNCTION	PF
	Auto CW TX when keying in SSB	OFF/ ON
	AUTO CW TX WHEN KEYING IN SSB	OFF
42	Frequency correction for changing SSB to CW	OFF/ ON
	FREQUENCY CORRECTION FOR SSB-TO-CW CHANGE	OFF

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Category	No.	Description Display*	Settings** Default**
CW (continued)	49	No Break-in operation while adjusting keying speed <b>NO BREAK-IN OPERATION WHILE ADJUSTING KEYING SPEED</b>	OFF/ ON OFF
FSK	50	FSK shift <b>FSK SHIFT</b>	170/ 200/ 425/ 850 [Hz] 170
	51	FSK keying polarity <b>REVERSED FSK KEY-DOWN POLARITY</b>	OFF/ ON OFF
	52	FSK tone frequency <b>FSK TONE FREQUENCY</b>	1275/ 2125 [Hz] 2125
FM	53	MIC gain for FM <b>FM MIC GAIN</b>	1 ~ 3 1
TX Control	54	Fine transmission power tuning <b>FINE TRANSMIT POWER CHANGE STEPS</b>	OFF/ ON OFF
	55	Time-out timer <b>TIME-OUT TIMER</b>	OFF/ 3/ 5/ 10/ 20/ 30 (min) OFF
Transverter	56	Xverter/ power down of Xverter <b>XVERTER/ POWER DOWN OF XVERTER</b>	OFF/ 1/ 2 OFF
Antenna Tuner	57	TX hold when AT completes the tuning <b>ANTENNA TUNER TX HOLD</b>	OFF/ ON OFF
	58	In-line AT while receiving <b>ANTENNA TUNER FOR RECEPTION</b>	OFF/ ON OFF
Linear Amp	59	Linear amplifier control relay for HF band <b>HF LINEAR AMPLIFIER CONTROL RELAY</b>	OFF/ 1/ 2/ 3/ 4/ 5 OFF
	60	Linear amplifier control relay for 50 MHz band <b>50MHZ LINEAR AMPLIFIER CONTROL RELAY</b>	OFF/ 1/ 2/ 3/ 4/ 5 OFF
Message	61	Constant recording <b>CONSTANT RECORDING</b>	OFF/ ON ON
	62	Repeat the playback <b>PLAYBACK REPEAT</b>	OFF/ ON OFF
	63	Interval time for repeating the playback <b>PLAYBACK INTERVAL TIME</b>	0 ~ 60 [s] (1 step) 10
Split/ Transfer	64	Split frequency transfer in master/ slave operation <b>TRANSFER SPLIT FREQUENCY DATA TO ANOTHER TRANSCEIVER</b>	OFF/ ON OFF
	65	Permit to write the transferred Split frequencies to the target VFOs <b>COPY SPLIT FREQUENCY DATA TO VFO</b>	OFF/ ON OFF
TX Inhibit	66	TX inhibit <b>TX INHIBIT</b>	OFF/ ON OFF

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43	No Break-in operation while adjusting keying speed <b>NO BK-IN WHILE ADJUSTING KEYING SPEED</b>	OFF/ ON OFF
44	FSK shift <b>FSK SHIFT</b>	170/ 200/ 425/ 850 [Hz] 170
45	FSK keying polarity <b>REVERSED FSK KEY-DOWN POLARITY</b>	OFF/ ON OFF
46	FSK tone frequency <b>FSK TONE FREQUENCY</b>	1275/ 2125 [Hz] 2125
47	MIC gain for FM <b>FM MIC GAIN</b>	1 ~ 3 1
48	Fine transmission power tuning <b>FINE TRANSMIT POWER CHANGE STEPS</b>	OFF/ ON OFF
49	Time-out timer <b>TIME-OUT TIMER</b>	OFF/ 3/ 5/ 10/ 20/ 30 (min) OFF
50	Xverter/ power down of Xverter <b>XVERTER/ POWER DOWN OF XVERTER</b>	OFF/ 1/ 2 OFF
51	TX hold when AT completes the tuning <b>ANTENNA TUNER TX HOLD</b>	OFF/ ON OFF
52	In-line AT while receiving <b>ANTENNA TUNER FOR RECEPTION</b>	OFF/ ON OFF
53	Linear amplifier control relay for HF band <b>HF LINEAR AMPLIFIER CONTROL RELAY</b>	OFF/ 1/ 2/ 3 OFF
54	Linear amplifier control relay for 50 MHz band <b>50MHZ LINEAR AMPLIFIER CONTROL RELAY</b>	OFF/ 1/ 2/ 3 OFF
55	Constant recording <b>CONSTANT RECORDING</b>	OFF/ ON ON
56	Repeat the playback <b>PLAYBACK REPEAT</b>	OFF/ ON OFF
57	Interval time for repeating the playback <b>PLAYBACK INTERVAL TIME</b>	0 ~ 60 [s] (1 step) 10
58	Split frequency transfer in master/ slave operation <b>TRANSFER SPLIT FREQUENCY DATA TO ANOTHER TRANSCEIVER</b>	OFF/ ON OFF
59	Permit to write the transferred Split frequencies to the target VFOs <b>COPY SPLIT FREQUENCY DATA TO VFO</b>	OFF/ ON OFF
60	TX inhibit <b>TX INHIBIT</b>	OFF/ ON OFF

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Category	No.	Description Display*	Settings** Default**	Ref. Page
PC (Communication)	67	COM port communication speed*** <b>COM PORT BAUDRATE</b>	4800/ 9600/ 19200/ 38400/ 57600/ 115200 9600 (bps)	60
	68	USB port communication speed*** <b>USB PORT BAUDRATE</b>	4800/ 9600/ 19200/ 38400/ 57600/ 115200 115200 (bps)	60
	69	Audio input line selection for data communications <b>AUDIO INPUT LINE SELECTION FOR DATA COMMUNICATIONS</b>	ACC2/ USB ACC2	61
	70	Audio source of SEND/PTT transmission for data mode <b>SOURCE OF SEND/PTT TRANSMISSION</b>	FRONT/ REAR FRONT	61
External Audio (Input/ Output)	71	Audio level of USB input for data communications <b>AUDIO LEVEL OF USB INPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4	61
	72	Audio level of USB output for data communications <b>AUDIO LEVEL OF USB OUTPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4	61
	73	Audio level of ACC2 input for data communications <b>AUDIO LEVEL OF ACC2 INPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4	61
	74	Audio level of ACC2 output for data communications <b>AUDIO LEVEL OF ACC2 OUTPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4	61
	75	Mixing beep tones for ACC2/USB audio output <b>MIXING BEEP TONES FOR ACC2/USB AUDIO OUTPUT</b>	OFF/ ON OFF	61
	76	Data VOX <b>VOX OPERATION WITH DATA INPUT</b>	OFF/ ON OFF	31
	77	Data VOX delay time <b>DATA VOX DELAY TIME</b>	0 ~ 100 (5 step) 50	32
	78	Data VOX gain for the USB audio input <b>USB VOX GAIN</b>	0 ~ 9 (1 step) 4	32
External Accessory Control	79	Data VOX gain for the ACC2 terminal <b>ACC2 VOX GAIN</b>	0 ~ 9 (1 step) 4	32
	80	PKS polarity <b>REVERSED PKS POLARITY</b>	OFF/ ON OFF	66
	81	Busy lockout (TX) <b>BUSY FREQUENCY TRANSMISSION LOCKOUT</b>	OFF/ ON OFF	33
	82	CTCSS mute control <b>CTCSS MUTE CONTROL</b>	1/ 2 1	61
	83	PSQ control signal logic <b>PSQ OUTPUT LOGIC</b>	LO/ OPEN LO	61

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61	COM port communication speed*** <b>COM PORT BAUDRATE</b>	4800/ 9600/ 19200/ 38400/ 57600/ 115200 9600 (bps)
62	USB port communication speed*** <b>USB PORT BAUDRATE</b>	4800/ 9600/ 19200/ 38400/ 57600/ 115200 115200 (bps)
63	Audio input line selection for data communications <b>AUDIO INPUT LINE SELECT FOR DATA COMMUNICATIONS</b>	ACC2/ USB ACC2
64	Audio level of USB input for data communications <b>AUDIO LEVEL OF USB INPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4
65	Audio level of USB output for data communications <b>AUDIO LEVEL OF USB OUTPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4
66	Audio level of ACC2 input for data communications <b>AUDIO LEVEL OF ACC2 INPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4
67	Audio level of ACC2 output for data communications <b>AUDIO LEVEL OF ACC2 OUTPUT FOR DATA COMMUNICATIONS</b>	0 ~ 9 (1 step) 4
68	Mixing beep tones for ACC2/USB audio output <b>MIXING BEEP TONES FOR ACC2/USB AUDIO OUTPUT</b>	OFF/ ON OFF
69	Data VOX <b>VOX OPERATION WITH DATA INPUT</b>	OFF/ ON OFF
70	Data VOX delay time <b>DATA VOX DELAY TIME</b>	0 ~ 100 (5 step) 50
71	Data VOX gain for the USB audio input <b>USB VOX GAIN</b>	0 ~ 9 (1 step) 4
72	Data VOX gain for the ACC2 terminal <b>ACC2 VOX GAIN</b>	0 ~ 9 (1 step) 4
73	PKS polarity <b>REVERSED PKS POLARITY</b>	OFF/ ON OFF
74	Busy lockout (TX) <b>BUSY FREQUENCY TRANSMISSION LOCKOUT</b>	OFF/ ON OFF
75	CTCSS mute control <b>CTCSS MUTE CONTROL</b>	1/ 2 1
76	PSQ control signal logic <b>PSQ OUTPUT LOGIC</b>	LO/ OPEN LO



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Category	No.	Description	Settings**
		Display*	Default**
External Accessory Control (continued)	84	PSQ source output condition	OFF/ BSY/ SQL/ SND/ BSY-SND/ SQL-SND
		<b>PSQ SOURCE</b>	SQL
Timer	85	DRV connector output function	DRO/ ANT
		<b>DRV CONNECTOR FUNCTION</b>	DRO
	86	APO (Auto Power Off) function	OFF/ 60/ 120/ 180 [min]
		<b>AUTO POWER OFF</b>	OFF
PF Keys	87	Front panel PF A key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>FRONT PANEL PF A KEY ASSIGNMENT</b>	200 [VOICE1]
	88	Front panel PF B key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>FRONT PANEL PF B KEY ASSIGNMENT</b>	201 [VOICE2]
	89	Front panel RIT key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>RIT KEY ASSIGNMENT</b>	165 [RIT]
	90	Front panel XIT key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>XIT KEY ASSIGNMENT</b>	166 [XIT]
	91	Front panel CL key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>CL KEY ASSIGNMENT</b>	167 [CL]
	92	Front panel MULTI/CH key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MULTI CH KEY ASSIGNMENT</b>	131 [PWR]
	93	Front panel MULTI/CH key assignment (CW)	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>CW MULTI CH KEY ASSIGNMENT</b>	133 [KEY]
	94	Microphone PF 1 key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC PF 1 KEY ASSIGNMENT</b>	151 [A/B]
	95	Microphone PF 2 key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC PF 2 KEY ASSIGNMENT</b>	148 [SPLIT]
	96	Microphone PF 3 key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC PF 3 KEY ASSIGNMENT</b>	154 [M>V]
	97	Microphone PF 4 key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC PF 4 KEY ASSIGNMENT</b>	203 [MONITOR]
	98	Microphone DWN key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC DOWN KEY ASSIGNMENT</b>	207 [DOWN]
	99	Microphone UP key assignment	0 ~ 99, 120 ~ 170, 200 ~ 209, OFF
		<b>MIC UP KEY ASSIGNMENT</b>	208 [UP]

**TS-590S**

77	PSQ source output condition	OFF/ BSY/ SQL/ SND/ BSY-SND/ SQL-SND
	<b>PSQ SOURCE</b>	SQL
78	APO (Auto Power Off) function	OFF/ 60/ 120/ 180 [min]
	<b>AUTO POWER OFF</b>	OFF
79	Front panel PF A key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>FRONT PANEL PF A KEY ASSIGNMENT</b>	200 [VOICE1]
80	Front panel PF B key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>FRONT PANEL PF B KEY ASSIGNMENT</b>	201 [VOICE2]
81	Microphone PF 1 key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC PF 1 KEY ASSIGNMENT</b>	130 [A/B]
82	Microphone PF 2 key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC PF 2 KEY ASSIGNMENT</b>	128 [SPLIT]
83	Microphone PF 3 key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC PF 3 KEY ASSIGNMENT</b>	132 [M>V]
84	Microphone PF 4 key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC PF 4 KEY ASSIGNMENT</b>	203 [MONITOR]
85	Microphone DWN key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC DOWN KEY ASSIGNMENT</b>	206 [DOWN]
86	Microphone UP key assignment	0 ~ 87, 100 ~ 134, 200 ~ 208, OFF
	<b>MIC UP KEY ASSIGNMENT</b>	207 [UP]

## Section 2: Other CAT Command Differences between the TS-590SG and TS-590S

The following table lists other differences between the CAT command sets in each of the two radios. Full details are in the “TS-590S/TS-590SG PC Control Command Reference Guide”, at [http://www.kenwood.com/i/products/info/amateur/pdf/ts\\_590\\_g\\_pc\\_command\\_e.pdf](http://www.kenwood.com/i/products/info/amateur/pdf/ts_590_g_pc_command_e.pdf)

Beware: the manual lists many of the commands as being common to both radios. This is not actually true in some cases.

Command	TS-590SG	TS-590S
AI		P1=4 only supported from firmware version 2.0.
AN	When DRV is used, the P3 setting shows the ON/OFF status of the antenna output.	
CD0	TS-590SG only.	
CD1	TS-590SG only.	
CD2	TS-590SG only.	
DA		AM-DATA mode only supported from firmware version 2.0.
EQ		New AM-DATA and C TX EQ/FLAT RX EQ parameters. Only supported from firmware version 2.0.
ES		TS-590S only. Supported from firmware v 1.08.
EX	Command parameters totally different from TS-590S. See Appendix 1 of this Whitepaper for details.	Command parameters totally different from TS-590SG. See Appendix 1 of this Whitepaper for details.
ID	Answer code= 023	Answer code = 021
LM		Parameter options 3, 4 and 9(?) only supported from firmware version 2.0.
MC	Extended channel number encoding.	
RI		Supported from firmware v 1.08.
SH/SL		Manual lists options for AM/AM-DATA mode, but TS-590S does not have AM-DATA mode.
SP		Supported from firmware version 2.0.
SU		Does not support parameter P13.
TP	TS-590SG only	
UR/UT	Repeats the same mistake that was in the TS-590S manual. The paragraph starting “Each parameter...” should read:  Each parameter has a range from 00-30 (where 00 is +6dB and each value decreases the step by 1dB, to a minimum of -24dB at 30).	Repeats the same mistake that was in the TS-590S manual. The paragraph starting “Each parameter...” should read:  Each parameter has a range from 00-30 (where 00 is +6dB and each value decreases the step by 1dB, to a minimum of -24dB at 30).
VR		Read and Answer are supported from firmware version 2.0.