SECTION 3
CIRCUIT ADJUSTMENTS

3-1. ADJUSTMENT WITH COMMANDER

Service adjustments to this model can be performed using the supplied remote commander RM-W101.

a. ENTERING SERVICE MODE

With the unit on standby

→ [DISPLAY] → [5] → [VOL (+)] → [POWER]

This operation sequence puts the unit into service mode.
This screen display is:

category	item no. in decimal	item name	service data in decimal	NVM NG	service command	field frequency	channel no./ video input name
GEOM	006	HSIZ	031	■	SERVICE	60	S VIDEO 1

release ID	software version	service data in binary	reserved for factory	color system	power on time (decimal?)
SUS01	0.69U	0001 1111	FF FF	NTSC3	65535

	Flash DCXO	Status Byte #1 SSD	Status Byte #2 SSD
111 11 11 1 7 11	FG	xy 111 000000	000000

VDSP_C Flag
CO_LOCKED
VDSP
Detected Stereo Type (Direct Value from CZ_ Stereo_Mode)

S : for Sony
A : Aiwa
U S : US/Latin/Taiwan
E U : Europe
G A : General Area
J P : Japan
0 1 : serial no. of the M/P release for each destination

[111] Needed for Nicam DCXO aligment Purpose

[xy] Value of x = 0 - Unknown, 1 - BTSC, 2 - A2, 3 - NICAM,
4 - KOREAN, 5 - Japan, 6 - AV Stereo
Value of y = 0 - Mono, 1 - Stereo, 2 - Bilingual, 4 - SAP/Single

b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press [POWER] button on the commander), then press [POWER] button again, hereupon it becomes TV mode.

c. METHOD OF WRITE INTO MEMORY

1. Set to Service Mode.
2. Press [1] (UP) and [4] (DOWN), to select the adjustment item.
3. Change item by pressing [3], [6].
4. Press [MUTING] button to indicate WRITE on the screen.
5. Press [0] button to write into memory.

[1], [4]	Select the adjustment item.
↓	
[3], [6]	Raise/lower the data value.
↓	
[MUTING]	Writes.
↓	
[0]	Executes the writing.

d. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again to confirm adjustments were made.

e. OTHER FUNCTION VIA REMOTE COMMANDER

7, 0	All the data becomes the values in memory.
8, 0	All user control goes to the standard state.
Display, 0	Service data initialization (Be sure not to use usually.)
2, 5	Select Device or Category

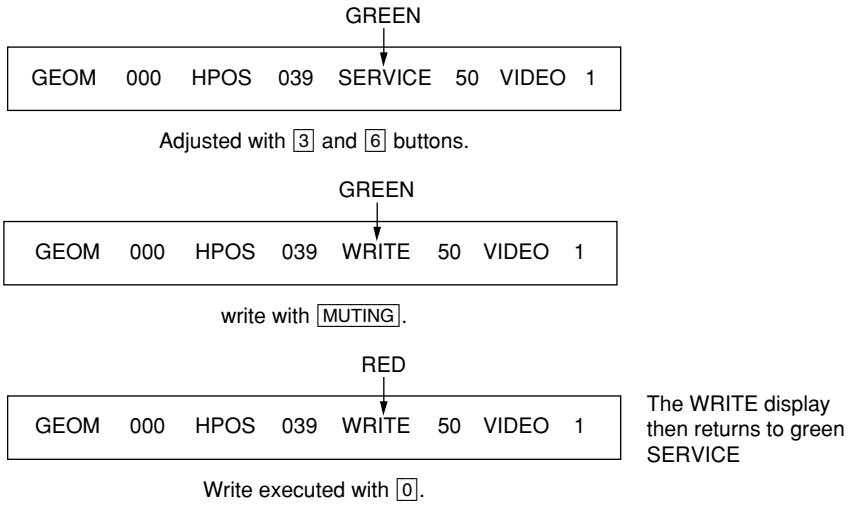
3-2. ADJUSTMENT METHOD

Item Number 000 HPOS

This explanation uses H POSITION as an example.

1. Select "000 HPOS" with the 1 and 4 buttons, or 2 and 5.
2. Raise/lower the data with the 3 and 6 buttons.
3. Select the optimum state. (The standard is IF for PAL reception.)
4. Write with the MUTING button. (The display changes to WRITE.)
5. Execute the writing with the 0 button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)

Example on screen display :-



Use the same method for all Items. Use 1 and 4 to select the adjustment item, use 3 and 6 to adjust, write with MUTING, then execute the write with 0.

Note : 1. In WRITE, the data for all items are written into memory together.

2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)				
Category	No.	Name	Dec	Dec				(Slave Address)	Common	50	60	w50	w60
GEOM	000	HPOS	031	063	ADJUST	Horizontal Shift (HS)	50/60/w50/w60 (+JPN RGB)	TV-Processor		42	42	42	42
	001	HPAR	031	063	ADJUST	Horizontal Parallelogram	50/60/w50/w60	(8Ah)		31	31	31	31
	002	HBOW	031	063	ADJUST	Horizontal Bow	50/60/w50/w60			31	31	31	31
	003	VLIN	031	063	ADJUST	Vertical Linearity	50/60/w50/w60			31	31	31	31
	004	VSCR	031	063	ADJUST	Vertical Scroll	50/60/w50/w60			31	31	31	31
	005	HSIZ	031	063	ADJUST	EW Width (EW)	50/60/w50/w60			25	25	25	25
	006	EWPW	031	063	ADJUST	EW Parabola/Width (PW)	50/60/w50/w60 (+JPN RGB)			31	31	31	31
	007	UCOP	017	063	ADJUST	EW Upper Corner Parabola	50/60/w50/w60			31	31	31	31
	008	LCOP	017	063	ADJUST	EW Lower Corner Parabola	50/60/w50/w60			31	31	31	31
	009	EWTZ	031	063	ADJUST	EW Trapezium	50/60/w50/w60			31	31	31	31
	010	VSLP	031	063	ADJUST	Vertical Slope (VS)	50/60/w50/w60			31	31	31	31
	011	VSIZ	015	063	ADJUST	Vertical Amplitude	50/60/w50/w60			15	15	15	15
	012	SCOR	014	063	ADJUST	S-Correction (SC)	50/60/w50/w60			25	25	25	25
	013	VPOS	031	063	ADJUST	Vertical Shift (VSH)	50/60/w50/w60			31	31	31	31
	014	HBL	000	001	FIX	RGB Blanking Mode	50/60/w50/w60			01	01	01	01
	015	WBF	007	015	FIX	Timing of Wide Blanking (WBF)	50/60/w50/w60			07	07	07	07
	016	WBR	007	015	FIX	Timing of Wide Blanking (WBR)	50/60/w50/w60			10	10	10	10
	017	SBL	000	001	FIX	Service Blanking	none		00				
	018	COPY	000	001	FIX	Copy the GEO data to all 50/60Hz NVM area	none		00				

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)																
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Col Temp (HIGH other)	Col Temp (LOW other)	Col Temp (NORM other)	Col Temp (HIGH YUV)	Col Temp (LOW YUV)	Col Temp (NORMAL YUV)	Col Temp (HIGH RGB)	Col Temp (LOW RGB)	Col Temp (NORM RGB)	Others	RGB	YUV	Pic mode 0	Pic mode 1	Pic mode 2	Pic mode 3
WHBL	000	BKOR	031	063	ADJUST	Black Level Offset R	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	TV-Processor		31	31	31	31	31	31	31	31	31							
	001	BKOG	031	063	ADJUST	Black Level Offset G	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	(8Ah)		31	31	31	31	31	31	31	31	31							
	002	RDRV	037	063	FIX	White Point R	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	TV-Pro (8AH)		37	37	37	37	37	37	37	37	37							
	003	GDRV	037	063	ADJUST	White Point G	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)			31	31	31	31	31	31	31	31	31							
	004	BDRV	037	063	ADJUST	White Point B	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)			31	31	31	31	31	31	31	31	31							
	005	LPG	000	001	FIX	RGB Gain Preset	none		01																
	006	PGR	031	127	FIX	Preset Gain R (PGR)	none		**																
	007	PGG	031	127	FIX	Preset Gain G (PGG)	none		**																
	008	PGB	031	127	FIX	Preset Gain B (PGB)	none		**																
	009	GNOF	000	015	FIX	Preset Gain Offset	none	CCC loop	15																
	010	SBRT	031	063	ADJUST	Sub-Brightness	Others/RGB/YUV												31	31	31				
	011	SBRO	000	003	FIX	Sub-Brightness Offset (Intelligent Pic)	none		00																
	012	EGL	000	001	FIX	Enable Gain Loop in CCC System	none		01																
	013	SGL	000	003	FIX	Selection of High Current in CCC System	none		00																
	014	AKB	000	001	FIX	Black Current Stabilization	none		00																
	015	CBS	000	001	FIX	Control Sequence of Beam Current Limiting	none		00																
	016	RGBB	000	003	FIX	RGB Blanking	none		00																
	017	BLBG	000	001	FIX	Blanking of Blue & Green Output	none		00																
	018	OFB	000	001	FIX	Black Level Offset Blue	none		01																
	019	NSBR	000	015	FIX	Non Standard Brightness Offset	none		05																
	020	WBP	000	003	FIX	Color Temp Setting (0:High, 1:Normal, 2,3:Low)	Picture Mode															00	01	02	01

Item remarks ** please refer to page 23

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)																							
Category	No.	Name	Dec	Dec				(Slave Address)	Common	YUV	50pal (TV)	50pal (Video)	50secam (TV)	50secam (Video)	60TV	60Video	50YUV	60YUV	50RGB	60RGB	Pic mode 0	Pic mode 1	Pic mode 2	Pic mode 3	Dynamic*Eco std (Jpn)	Dynamic*Eco much (Jpn)	Standard*Eco std (Jpn)	Standard*Eco much (Jpn)	Eco std (Jpn)	Eco much (Jpn)	TV	Video	TV Wide	Video Wide	AVM (Jpn)	AV Wide (Jpn)
SADJ	000	PMAX	063	063	ADJUST	Picture Maximum	(TV / Video)*(Normal / Wide) / <Normal / Wide> (+JPN RGB)	TV-Processor																							37	37	37	37	37	37
	001	SHUE	007	015	ADJUST	Sub-Hue	TV / Video																								07	07				
	002	SSHP	015	063	FIX	Sub-Sharpness	TV / Video / YUV (+JPN RGB)			**																					**	**				
	003	SSHO	000	003	FIX	Sub-Sharpness Offset (Intelligent Pic)	none		02																											
	004	SCOL	031	063	ADJUST	Sub-Color	50pal(tv)/50pal(video)/50secam(tv)/50secam(video)/ 60TV/60video/50YUV/60YUV/50RGB/60RGB				31	31	31	31	31	31	31	31	31	31																
	005	SCOO	000	003	FIX	Sub-Color Offset (Intelligent Pic)	none		02																											
	006	PIC	031	127	FIX	Picture Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															100	80	95	100												
	007	COL	031	127	FIX	Color Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															56	50	40	50												
	008	BRT	031	127	FIX	Brightness Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															50	50	60	50												
	009	HUE	031	127	FIX	Hue Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															50	50	50	50												
	010	SHP	031	127	FIX	Sharpness Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															60	50	50	50												

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)												
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Others	RGB	YUV	PAL(TV)	NTSC(TV)	SECAM(TV)	PAL(Video)	NTSC(Video)	SECAM(Video)	S-INPUT	SECAM	NTSC	TV
YC	000	PFRQ	000	003	FIX	Peaking Center Frequency and Delay		TV-Processor	**													
	001	RPA	####	003	FIX	Ratio Pre & Over Shoot	TV/other			02												02
	002	RPO	002	003	FIX	Ratio of Positive & Negative Peaks	TV/other			02												02
	003	YDLY	012	015	FIX	Y-Delay	(PAL/NTSC/SECAM)*(TV/VIDEO)+YUV/S-INPUT					**	**	**	**	**	**	**	**			
	004	CMAT	000	003	FIX	PAL-SECAM or NTSC (Japan/USA) Matrix	(JPN RGB)		00													
	005	ACL	001	001	FIX	Automatic Color Limiting			01													
	006	CB	000	001	FIX	Chroma Bandpass Center Frequency	valid only with TV (*Video:0 fix)		01													
	007	SBO	001	003	FIX	SECAM Black Offset			00													
	008	CHSE	001	003	FIX	PAL/NTSC Ident Sensitivity			02													
	009	CLO	000	001	FIX	Center Frequency of Cloche(Bell) Filter			00													
	010	CTRP	000	001	FIX	Chroma Trap Mode	SECAM/others			00											01		
	011	BPS	000	001	FIX	Bypass of Chroma Base-band Delay Line	NTSC/others			**												**	
	012	FCO	000	001	FIX	Forced Color On			00													
	013	TINT	031	063	FIX	Base-Band Tint Control	YUV/others			31		31											
	014	TUV	000	001	FIX	Tint Control on UV Signals			00													

Item remarks ** please refer to page 23

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)									
Category	No.	Name	Dec	Dec				(Slave Address)	Common	50	60	others	YUV	TV	Video	Teletext	TV-ip	No signal
SYNC	000	SYS	000	001	FIX	Synchronization on YSYNC Input			00									
	001	FO	000	003	FIX	Phase 1 Time Constant	TV IP ON/TV IP OFF/Video/Teletext/Auto Tuning or No signal(RF)							03	03	01	00	00
	002	VID	000	001	FIX	Video Ident Mode	50/60			00	00							
	003	FSL	000	001	FIX	Forced Slicing Level for Vertical Sync			00									
	004	SSL	000	001	FIX	Slicing Level Sync Separator	50/60			00	00							
	005	SVID	001	007	FIX	Source Selection for Video Identification	YUV/Others					00	07					
	006	FORF	000	003	FIX	Forced Field Frequency			03									
	007	MVK	000	001	FIX	Macro Vision Keying			01									

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)											
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Others	RGB	Live	TV (Dyn)	TV (Others)	Video (Dyn)	Video (Others)	ColorTemp (HIGH)	ColorTemp (Others)	Color Temp(LOW)	Color Temp (NORMAL)
PICT	000	CADL	007	015	FIX	Cathode Drive Level			00											
	001	CFA	000	003	FIX	Comb Filter Mode			**											
	002	SOC	002	003	FIX	Soft Clipping Level		(8Ah)	00											
	003	PWL	001	001	FIX	Peak White Limiting Switch			01											
	004	WHTL	006	015	FIX	Peak White Limiting			00											
	005	GAM	001	001	FIX	Gamma			00											
	006	WTS	001	003	FIX	Gamma Control and White Stretch	Live/Others			01		01								
	007	TFR	000	001	FIX	DC Transfer Ratio of Luminance Signal	Live/Others (+JPN RGB)			01	00	01								
	008	COR	003	003	FIX	Coring	(TV/Video)*(Dyna/others)						00	00	00	00				
	009	CORO	000	001	FIX	Coring Offset (Intelligent Pic)			00											
	010	BKS	003	003	FIX	Black Stretch	RGB/others			02	02									
	011	AAS	001	001	FIX	Black Area to Switch off the Black Stretch			00											
	012	DSK	000	001	FIX	Dynamic Skin Control			00											
	013	BLS	000	001	FIX	Blue Stretch	col temp (HIGH/OTHERS)										00	00		
	014	NBLS	000	001	FIX	Operation Blue Stretch Circuit			00											
	015	NRR	000	001	FIX	Non Red Reduction	col temp (HIGH/LOW/NORMAL)										01		01	01

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TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)			
Category	No.	Name	Dec	Dec				(Slave Address)	Common	YUV	TV	Video
SW	000	CV2	000	001	FIX	CVBS2 Input Signal Selection			00			
	001	SVO	001	003	FIX	Function of IFVO/SVO/CVBSI Pin @ 48	TV/Video/YUV			02	01	01
	002	DFL	000	001	FIX	Flash Protection			00			

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
VIF	000	OIFD	036	063	FIX	Offset IF Demodulator		TV-Processor	36
	001	AGCT	031	063	FIX	AGC Take-over		(8Ah)	31
	002	STM	000	001	FIX	Search Tuning Mode			01
	003	GD	000	001	FIX	Group Delay on CVBS1 Signal			00
	004	AGCS	001	003	FIX	IF AGC Speed			01
	005	FFI	000	001	FIX	Fast Filter IF PLL			00
	006	OAMP	003	003	FIX	Video Output Signal Amplitude (only L & L'System)			03
	007	VAI	000	001	FIX	System I Output Signal Amplitude Correction (only L & L'System)			00

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)				
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Pic mode 0	Pic mode 1	Piv mode 2	Pic mode 3
VM	000	RGBD	003	007	FIX	Delayof RGB Output to VM Output	none	TV-Processor	02				
	001	VMA	003	003	FIX	Amplitude of VM Output	none	(8Ah)	**				
	002	VMAP	002	003	FIX	VM setting (0:High, 1:Low, 2,3:OFF)	Picture Mode			00	01	02	00
	003	VMMO	003	003	FIX	VM Mode			01				

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TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
SDEM	000	FMWS	000	003	FIX	Window Selection for FM Demodulator		TV-Processor	02
	001	QSS	001	001	FIX	Quasi Split Sound (QSS) Amplifier Mode (except GA Model)		(8Ah)	01
	002	BPB	000	001	FIX	Bypass of Sound Bandpass Filter			00
	003	AMLO	000	001	FIX	Audio Output Signal for AM Sound			00
	004	HPVC	000	001	FIX	Head Phone Volume Control			00

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
TXT	000	TXV	039	063	FIX	Teletext Vertical Position for Philips		Text Decoder	39
	001	THD	005	127	FIX	Teletext H-sunc Active Edge Shift			05
	002	TBR	004	015	FIX	Teletext RGB Brightness			11

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	NVM Address / Initial Value (Detailed)								
Category	No.	Name	Dec	Dec					Common	TV-L(Euro)	TV	Video	Off	SRS/WOW	Trusurround	Istereo	Imono
SDSP	000	AVM	002	007	FIX	AVL Mode		SSD	02								
	001	AVV	005	015	FIX	AVL Reference Level		(B0h)	09								
	002	BBL	000	015	FIX	BBE Contour			**								
	003	BBH	000	015	FIX	BBE Process			**								
	004	BBLW	000	015	FIX	BBE Contour Offset			**								
	005	SVOF	000	015	FIX	Surround /Effect Mode Volume Offset	Off(SRS/WOW)/Trusurround/Istereo/Imono						00	07	00	02	00
	006	IVOF	000	007	FIX	Master Volume Positive Offset			06								
	007	EVOF	000	007	FIX	Master Volume Negative Offset			06								
	008	LAD	000	031	FIX	Decoder Level Adjust			05								
	009	LAM	000	031	FIX	Mono Level Adjust			05								
	010	LAN	000	031	FIX	Nicam Level Adjust			17								
	011	LAS	000	031	FIX	SAP Level Adjust			08								
	012	LAA	000	031	FIX	ADC Level Adjust	Tv/Video(Non Euro)I TV-L/TV-non L/Video			00	00	00					
	013	SEF	003	007	FIX	Incredible Mono/Stereo Effect	Istereo/Imono									05	03
	014	A1L	000	255	FIX	AUX1 Volume Left			00								
	015	A1R	000	255	FIX	AUX1 Volume Right			00								
	016	BAS	008	015	FIX	Main Bass Offset			**								
	017	TRE	008	015	FIX	Main Treble Offset			**								
	018	EQ1	008	015	FIX	Equalizer Main Channel Band (100 Hz) Offset			**								
	019	EQ2	008	015	FIX	Equalizer Main Channel Band (300 Hz) Offset			**								
	020	EQ3	008	015	FIX	Equalizer Main Channel Band (1000 Hz) Offset			**								
	021	EQ4	008	015	FIX	Equalizer Main Channel Band (3000 Hz) Offset			**								
	022	EQ5	008	015	FIX	Equalizer Main Channel Band (8000 Hz) Offset			**								
	023	BFCT	005	007	FIX	DBE, DUB and BBE Control			**								
	024	SCEN	001	015	FIX	SRS3D Center Control			04								
	025	SSPA	000	015	FIX	SRS3D Space Control			01								
	026	BBHW	000	015	FIX	BBE process offset in WOW mode			**								
	027	STRE	002	007	FIX	Treble Offset for surround mode			**								
	028	BBHT	000	015	FIX	BBE Offset in TV mode			00								
	029	DWA	000	000	FIX	DWA			00								
	030	TTRE	002	007	FIX	Treble Offset in TV Mode			02								

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TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	Common
Category	No.	Name	Dec	Dec					
SDEC	000	MPTU	003	015	FIX	Upper Threshold for MPX pilot detection (BTSC)		SSD	02
	001	MPTL	009	015	FIX	Lower Threshold for MPX pilot detection (BTSC)		(B0h)	05
	002	SPTU	003	015	FIX	Upper Threshold for SAP carrier detection			08
	003	SPTL	006	015	FIX	Lower Threshold for SAP carrier detection			15
	004	C1TH	000	031	FIX	Normal Threshold for detection of SC1			00
	005	C1AP	000	031	FIX	Auto Program Threshold for detection of SC1			00
	006	SPTH	000	031	FIX	Noise Threshold for automute of SAP			00
	007	SPHY	004	015	FIX	Hysteresis size for automute of SAP			03
	008	FMTH	000	031	FIX	Noise Threshold for automute of SC2 in FM A2 standard			18
	009	FMHY	004	015	FIX	Hysteresis size for automute of SC2 in FM A2 standard			07
	010	BTTH	000	031	FIX	Noise Threshold for automute of BTSC stereo carrier			00
	011	BTHY	004	015	FIX	Hysteresis size for automute of BTSC stereo			03
	012	EJTH	000	031	FIX	Noise Threshold for automute of EIAJ FM subcarrier			00
	013	EJHY	004	015	FIX	Hysteresis size for automute of EIAJ FM subcarrier			04
	014	ONLY	000	001	FIX	Reproduce only related NICAM on DEC output			00
	015	EXAM	000	001	FIX	Fall back source in case of automute in standard L (DDEP)			00
	016	NIMT	000	001	FIX	NICAM auto mute function depend on bit error rate (DDEP)			00
	017	NILE	100	255	FIX	NICAM lower error limit (DDEP)			50
	018	NIUE	200	255	FIX	NICAM upper error limit (DDEP)			200
	019	EPMD	001	003	FIX	DEMDEC Easy Programming (DDEP)			02
	020	STDS	019	031	FIX	Bits multiplexed for ASD and SSS modes			31
	021	OVMA	001	001	FIX	FM overmodulation adaption			00
	022	FLBW	000	003	FIX	FM/AM demodulator filter bandwidth			03
	023	IDMD	000	003	FIX	FM ident speed in SSS mode			00
	024	FPAL	000	001	FIX	Line fequency for BTSC decoding			00
	025	OVMT	001	002	FIX	Overmodulation level threshold relative to nominal			03
	026	DCXI	000	001	FIX	NICAM DCXO Scaling Control Inverter			**
	027	DCXG	000	007	FIX	NICAM DCXO Scaling Control Gain			**
	028	DCLL	011	015	FIX	NICAM DCXO Scaling Control Limit (L)			00
	029	DCLH	000	031	FIX	NICAM DCXO Scaling Control Limit (H)			**
	030	IDEU	001	003	FIX	IDMOD setting for European A2 STD			00
	031	IDKR	001	003	FIX	IDMOD setting for Korean M STD			00
	032	IDJP	001	003	FIX	IDMOD setting for EIAJ STD			01

Item remarks ** please refer to page 23

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	NVM Address / Initial Value (Detailed)		
Category	No.	Name	Dec	Dec					Common	50	60
OPTM	000	ASHT	006	007	FIX	Auto shut off timer (data * 5 min)			00		
	001	OSDB	000	015	FIX	OSD brightness		MMR/Micro 60h	00		
	002	OSDH	005	015	FIX	OSD Horizontal Position		MMR/Micro 60h	05		
	003	OSDV	037	063	FIX	OSD Vertical Position	50 / 60	MMR/Micro 60h		63	31
	004	MUTE	000	001	FIX	No Signal Mute Switch (1=enabled)			00		
	005	RFUL	015	015	FIX	RF Signal Change Counter after Unlocked (Disable when 0fh)			04		
	006	RFLK	015	015	FIX	RF Signal Change Counter after Locked (Disable when 0fh)			00		
	007	AVUL	015	015	FIX	AV Signal Change Counter after Unlocked (Disable when 0Fh)			04		
	008	AVLK	015	015	FIX	AV Signal Change Counter after Locked (Disable when 0Fh)			00		
	009	LANG	000	003	FIX	OSD language shipping condition			00		
	010	HTXT	000	001	FIX	Sync seperator sw		TV-Processor(8A)	00		
	011	CMSS	000	001	FIX	Sync sw		TV-Processor(8A)	01		
	012	DCXO	060	295	FIX	DCXO Value		SFR/Micro 60h/DSP	59		
	013	EXBL	000	015	FIX	Extended Blanking Timer to Eliminate White Noise			07		
	014	TSYS	000	003	FIX	Memorize TV Sys in NVM at Test Reset [0:B/G, 1:I, 2:M, 3:D/K] (GA Model)			00		
	015	TVOU	001	001	FIX	TV OUT mute condition 0:Always mute off, 1:mute without signal			00		

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	Common	Note
Category	No.	Name	Dec	Dec						
OPTB	000	IALL	000	001	FIX	Standard Write Switch (not memorized in NVM)			00	
	001	OPB1	000	255	FIX	Option 1 (System related)			*****	For remark *****
	002	OPB2	000	255	FIX	Option 2 (Video Signal related)			*****	Refer to option
	003	OPB3	000	255	FIX	Option 3 (Stereo Decoding related)			*****	Bit setting on
	004	OPB4	000	255	FIX	Option 4 (Miscellaneous)			*****	Page 24 - 26
	005	OPB5	000	255	FIX	Option 5 (Miscellaneous)			*****	
	006	OPB6	000	255	FIX	Option 6 (OSD Language related)			*****	

NOTE

- shaded items are no data.
- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory. In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

Data Variant depend on models

Category	No	Name	Model	Data
WHBL	006	PGR	Without VM	61
	007	PGG	Without VM	61
	008	PGB	Without VM	61

Category	No	Name	Model	Data
VM	001	VMA	Without VM	00

Category	No	Name	Model	Table							
				PAL (TV)	NTSC (TV)	SECAM (TV)	PAL (VIDEO)	NTSC (VIDEO)	SECAM (VIDEO)	YUV	S-Input
YC	003	YDLY	Non-Comb Model	02	02	10	2	2	2	09	09

Category	No	Name	Model	Table		
				TV	Video	YUV
SADJ	002	SSHP	21"Non-Comb models & All 14" models	35	38	35

Category	No	Name	Model	Data
PICT	000	PFRQ	Non-Comb models	01

Category	No	Name	Model	Data
YC	000	PFRQ	Non-Comb models	00

Category	No	Name	Model	Table	
				NTSC	Others
YC	011	BPS	Non-Comb models	00	00

Category	No	Name	
SDSP	002	BBL	00
	003	BBH	00
	004	BBLW	06
	016	BAS	13
	017	TRE	14
	018	EQ1	09
	019	EQ2	09
	020	EQ3	09
	021	EQ4	10
	022	EQ5	11
	023	BFCT	00
	026	BBHW	00
	027	STRE	01

Category	No	Name	Stereo models	Non-stereo models
SDEC	26	DCXI	01	00
	027	DCXG	03	00
	029	DCLH	06	00

ITEM INFORMATION
No. OPB1

Item	Speed Search		M/N(US)	L'	M	B/G	I	D/K	DEC
KV-BT21M90	0	1	0	0	1	1	1	1	79

SPEED SEARCH (Time of speed search)	00 = disabled (original cycle speed) 01 = 4 time speed from the original 10 = 6 time speed from the original 11 = 8 time speed from the original
TV System Selection	0 = disabled, 1 = enabled

No. OPB2

Item	D1(JPN)	AV Multi/ PAM(GA)	Component	Composite (SCART)		SECAM	Color Decording		DEC
KV-BT21M90	0	0	0	1	0	1	0	0	20

D1	(D1 Terminal)	0 = not available, 1 = available
AV Multi/	(AV Multi Terminal) - JP	0 = not available, 1 = available
PAM	Portable Audio Mode - GA	0 = not available, 1 = available
Component	(Component [YCbCr] Terminals)	0 = not available, 1 = available
Composite	(No. of Composite Terminals)	00 = no composite terminal (Euro:no Scart) BX1L:No Video
(SCART)	(No. of SCART Terminals)	01 = 1 composite terminal (Euro:1 Scart) BX1L:2 Video in 10 = 2 composite terminals (Euro:2 Scart) BX1L:3 Video in 11 = 3 composite terminals (Euro:no terminal) BX1L:4 Video in
SECAM	(SECAM Color System)	0 = not available, 1 = available
Color decoding	(Color Crystal Selection)	00 = PAL/NTSC/SECAM (Multi) 01 = NTSC (3.58MHz) 10 = PAL/NTSC/SECAM (4.43MHz) 11 = PAL/NTSC (Tri-Norma)

No. OPB3

Item	HDEV	NICAM ST	NICAM BI	A2 ST	Thai Bilingual	JP/US ST	Korean ST	MONO	DEC
KV-BT21M90	0	1	1	1	0	0	0	0	112

HDEV	(High Deviation Mode)	0 = disabled, 1 = enabled
NICAM ST	(NICAM Stereo)	0 = disabled, 1 = enabled
NICAM BI	(NICAM Stereo)	0 = disabled, 1 = enabled
A2 ST/BI	(A2 [West German] Stereo/Bilingual)	0 = disabled, 1 = enabled
Thai Bilingual	(A2 [Thai] Bilingual) or Force SAP if JP/US ST is act	0 = disabled, 1 = enabled
JP/US ST	(JP/US Stereo)	0 = disabled, 1 = enabled
Korean ST	(Korean Stereo)	0 = disabled, 1 = enabled
MONO	(Monaural Model)	0 = Stereo (SSD) Model 1 = Monuaral Model

No. OPB4

Item	Firmware/ SMAT	1 spk Models	VM	Equalizer	Surround	V-Chip	Top	Text	DEC
KV-BT21M90	1	0	0	0	0	0	0	0	128

Firmware	(SSD Firmware Downloading)	0 = disabled, 1 = enabled
SMAT	Surround Matrix	0 = Active, 1 = Passive
1 spk Models	1 Speaker Models	0 = 2 or 3 Speaker Models, 1 = 1 speaker Models
VM	(Velocity Modulation)	0 = disabled, 1 = enabled
Equalizer	(5-band Equalizer Model)	0 = Bass/Treble Model, 1 = Equalizer Model
Surround	(US/GA Surround Selection)	0 = Off/Simulated/Surround 1 = Off/Simulated/WOW/TruSurround (US) 1 = Off/Simulated/SRS (3D) Surround (GA)
V-Chip	(V-Chip Model)	0 = Channel Block Model (no rating) 1 = Parental Control Model (rating)
TOP	(Forced TOP)	0 = Auto Mode (TOP/FLOF), 1 = Forced TOP
TEXT	(Teletext Model)	0 = Non-Teletext Model, 1 = Teletext Model

No. OPB5

Item	Full Surround	No Surround	Forced 60	ASD	Tilt	IP Plus	IP	Wide	DEC
KV-BT21M90	0	0	0	1	1	1	1	0	30

Full Surround	(Full Surround option)	0 = Normal Surround Model 1 = Full Surround Model (Off/simulated/surround/ SRS/WOW/TruSurround)
No Surround	(No Surround Model)	0 = Surround Model, 1 = Non-Surround Model
Forced 60	(Forced 60Hz in no signal)	0 = 50Hz, 1 = 60Hz
ASD	(Automatic Standard Detection)	0 = disabled, 1 = enabled
Tilt	(Tilt Correction/PIC Rotation)	0 = disabled, 1 = enabled
IP Plus	(Intelligent Picture Plus)	0 = disabled, 1 = enabled
IP	(Intelligent Picture)	0 = disabled, 1 = enabled
Wide	(Wide Mode/V-Compressed)	0 = disabled, 1 = enabled

No. OPB6

Item	GA US	Latin	Feature 2	Feature 1	OSD Language Selection				DEC
KV-BT21M90	1	0	0	0	1	0	0	0	136

GA US (US Model Destination)
0 = US/CANADA/Latin
1 = Taiwan/Korea/Philippine
(Wake-up timer enable)
(GA Surround Spec:OFF,
SIMULATED, SRS)

Latin (US Model Latin Destination)
0 = US/CANADA (No Volume Figure Display)
1 = Latin (Volume Figure Display)

Feature 2 (Temporary for BX1L)
0 = Comb Not available
1 = Comb available

Feature 1 (Temporary for BX1L)
0 = PiP Not Available
1 = PiP available

OSD Language Selection
(English always available except JP)

US
01xx = French
0x1x = Spanish
0xx1 = Portuguese

US
(GA NTSC)
1x1x = Complicated Chinese
1xx1 = Korean

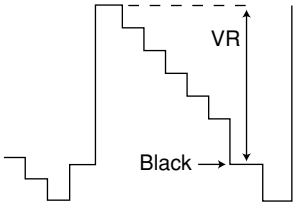
GA
1xxx = Simplified Chinese
x1xx = Arabic
xx1x = Thai
xxx1 = Vietnamese

EU
0000 = Destination ADE
0001 = Destination BL
0010 = Destination KR
0011 = Destination U

3-3. PICTURE QUALITY ADJUSTMENTS

PMX/CONTRAST ADJUSTMENT

1. Select Video Mode.
2. Input PAL CB to TV set.
3. Set PICT 03 "PWL" to 00h and WHBL 21 "BLBG" to 01h.
4. Set the following condition:
   PICTURE 100%, COLOR 0%, BRIGHTNESS 50%.
5. Connect an oscilloscope to pin ④ (R output) of CN004.
6. Set to Service Mode "PWL" to 00h, “BLBG” to 01h.
7. Select SADJ00 "PMX" with [1] and [4] of the commander then adjust VR within spec with [3] and [6].

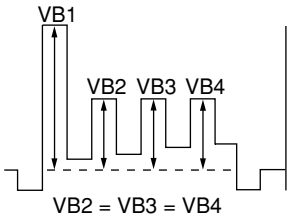


1.23 ± 0.03 Vp-p = for NTSC VM Models
1.46 ± 0.03 Vp-p = for 21" without VM Models
1.65 ± 0.03 Vp-p = with VM Models except NTSC models
1.10 ± 0.03 Vp-p = for 21" NTSC non VM Models
1.38 ± 0.03 Vp-p = for 14" Models

8. Then press [MUTING] → [0] to write the data
9. Set "PWL" and "BLBG" back to initial data repectively. (PWL: 01h and BLGG: 00h)

SUB COLOR ADJUSTMENT

1. Select Video and set Picture mode.
2. Input PAL 100% CB to TV set.
3. Set PICT 06 "WTS" to 00h.
4. Set the following condition:
   PICTURE 100%, COLOR 50%, BRIGHTNESS 50%.
5. Connect an oscilloscope to pin ② (B output) of CN004.
6. Select to Service Mode and adjust SADJ04 "SCOL" with [1] and [4] of commander then adjust to VB2 = VB3 = VB4 with [3] and [6].

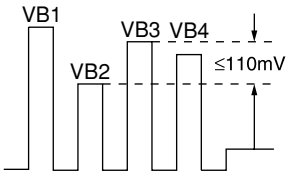


VB2 = VB3 = VB4
(Difference is within 70mV)

7. Then press [MUTING] → [0] to write the data.
8. Set "WTS" back to original data.

SUB HUE ADJUSTMENT

1. Select Video.
2. Input a NTSC 3.58 Color Bar to TV set.
3. Set the following condition:
   PICTURE 100%, COLOR 50%, BRIGHTNESS 50%
4. Connect an oscilloscope to pin ② (B output) of CN004.
5. Set to Service and adjust SADJ01 "SHUE" with [1] and [4] of commander then adjust to VB1 = VB2 = VB3 = VB4 with [3] and [6].
6. Then press [MUTING] → [0] to write the data.



The highest level of VB1, VB2, VB3, VB4 must be aligned at the same time.
The ideal difference between VB2 and VB3 is within ±110mV.

For single system with NTSC 4.43 select TV channel with NTSC 4.43 and repeat 4 → 6.

3-4. DEFLECTION ADJUSTMENT

H-TRAPEZOID ADJUSTMENT

1. Receive cross hatch/dotsignal.
2. Adjust on to make H-Trapezoid distortion best.

NORMAL MODE (50Hz)

1. Set to Service Mode.
2. Input SPCB Signal (Select Video Mode for USA).
3. Using the [1] and [4] button select GEO (Service Mode).
4. Rasie/lower data using the [3] and [6] buttons adjust the following items:-

GEOM :	000	HPOS	Horizontal Shift (HS)
	001	HPAR	Horizontal Parallelogram
	002	HBOW	Horizontal Bow
	003	VLIN	Vertical Linearity
	004	VSCR	Vertical Scroll
	005	HSIZ	EW Width (EW)
	006	EWPW	EW Parabola/Width (PW)
	007	UCOP	EW Upper Corner Parabola
	008	LCOP	EW Lower Corner Parabola
	009	EWTZ	EW Trapezium
	010	VSLP	Vertical Slope (VS)
	011	VSIZ	Vertical Amplitude
	012	SCOR	S-Correction (SC)
	013	VPOS	Vertical Shift (VSH)
	014	HBL	RGB Blanking Mode
	015	WBF	Timing of Wide Blanking (WBF)
	016	WBR	Timing of Wide Blanking (WBR)
	017	SBL	Service Blanking
	018	COPY	Copy the GEO data to all 50/60Hz NVM area

5. Write into memory by pressing [MUTING] then [0] on the remote commander.

WIDE MODE (50Hz)

(V-Compression Adjustment)

1. Input SPCB signal.
2. Adjust condition change to WIDE MODE : ON
3. Copy (Item from normal mode 50Hz) all Normal Mode adjusted data.

NORMAL MODE (60Hz)

1. Input 525/60Hz signal.
2. They can copy 50Hz first.
   ("COPY" under GEOM is set to [1], then [MUTE] + [0])
3. Using the [1] and [4] button, select category GEO (Service Mode).
4. Raise/lower data using the [3] and [6] buttons to obtain optimum image.

GEOM :	000	HPOS	Horizontal Shift (HS)
	001	HPAR	Horizontal Parallelogram
	002	HBOW	Horizontal Bow
	003	VLIN	Vertical Linearity
	004	VSCR	Vertical Scroll
	005	HSIZ	EW Width (EW)
	006	EWPW	EW Parabola/Width (PW)
	007	UCOP	EW Upper Corner Parabola
	008	LCOP	EW Lower Corner Parabola
	009	EWTZ	EW Trapezium
	010	VSLP	Vertical Slope (VS)
	011	VSIZ	Vertical Amplitude
	012	SCOR	S-Correction (SC)
	013	VPOS	Vertical Shift (VSH)
	014	HBL	RGB Blanking Mode
	015	WBF	Timing of Wide Blanking (WBF)
	016	WBR	Timing of Wide Blanking (WBR)
	017	SBL	Service Blanking
	018	COPY	Copy the GEO data to all 50/60Hz NVM area

WIDE MODE (60Hz)

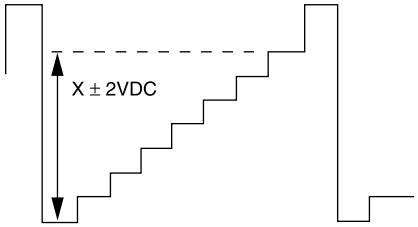
(V-Compression Adjustment)

1. Input mono scope signal.
2. Adjust condition change to WIDE MODE : ON
3. "COPY" is set to [1], then [MUTE] + [0]

3-5. DRIVE ADJUSTMENT

1. Input signal 70% Color Bar (USA)
   100% Color Bar (Other)
2. Make sure only red is active.
3. Set following condition :-
   PICTURE 100%, COLOR 0%, Other 50%
4. Select SADJ00 "PMAX" with [1] and [4] then adjust until voltage in R out X gain [recorded] = SPEC
5. Then press [MUTING] → [0] to write data.
   X±2VDC (R Cathode on C or CV board)

Model	14”	21”
GA	83.0	88.0 - Non VM Models 99.0 - VM Models

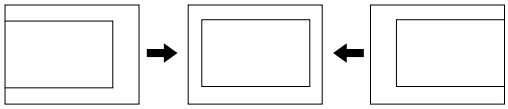


6. Set VIDP 36 BLBG back to 00.

3-6. PICTURE DISTORTION ADJUSTMENT

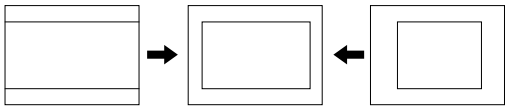
H. CENTER ADJUSTMENT (HPOS)

1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the HPOS item with [1] and [4].
4. Adjust the value of HPOS with [3] and [6] for the best vertical center.
5. Press [MUTING] then [0] to save into the memory.



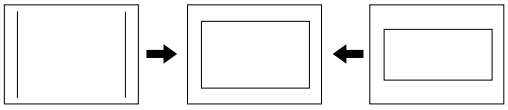
H. SIZE ADJUSTMENT (HSIZ)

1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HSIZ with [1] and [4].
4. Adjust with [3] and [6] for the best horizontal size.
5. Press [MUTING] then [0] to save into the memory.



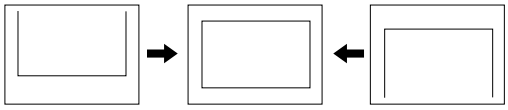
V. SIZE ADJUSTMENT (VSIZ)

1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the VSIZ item with [1] and [4].
4. Adjust value of VPOS with [3] and [6] for the best vertical center.
5. Press [MUTING] then [0] to save into the memory.



V. CENTER ADJUSTMENT (VPOS)

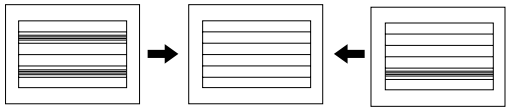
1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the VPOS item with [1] and [4].
4. Adjust value of VPOS with [3] and [6] for the best vertical center.
5. Press [MUTING] then [0] to save into the memory.



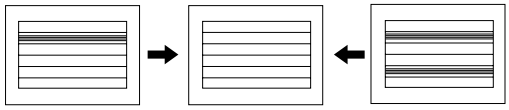
V. LINEARITY (VLIN), V. CORRECTION (SCOR), PIN AMP (EWPW), AND HORIZONTAL TRAPEZOID (EWTZ) ADJUSTMENTS

1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select VLIN, SCOR, EWPW, and EWTZ with [1] and [4].
4. Adjust with [3] and [6] for the best horizontal size.
5. Press [MUTING] then [0] to save into the memory.

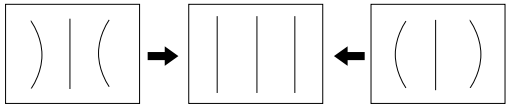
V LINEARITY (VLIN)



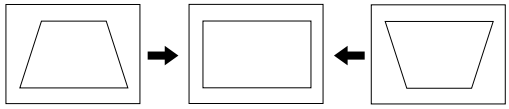
V CORRECTION (SCOR)



PIN AMP (EWPW)



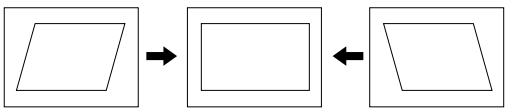
HORIZONTAL TRAPEZOID (EWTZ)



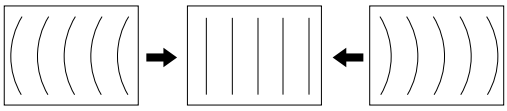
V. ANGLE (HPAR), H. BOW (HBOW), UPPER PIN (UCOP) AND LOW PIN (LCOP) ADJUSTMENTS

1. Input Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HPAR, HBOW, UCOP, and LCOP with [1] and [4].
4. Adjust with [3] and [6] for the best picture.
5. Press [MUTING] then [0] to save into the memory.

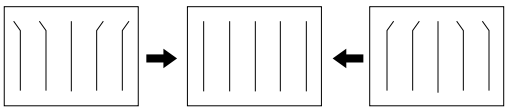
V ANGLE (HPAR)



V BOW (HBOW)



UPPER PIN (UCOP)



LOW PIN (LCOP)