

■ Electrical Adjustment

■ SERVICE ADJUSTMENT MENU OPERATION

■ To enter service mode

To enter service mode press the "MENU" and "INPUT" buttons on the projector simultaneously and hold for 2 seconds. As shown in a figure, a service mode display appears on a screen.

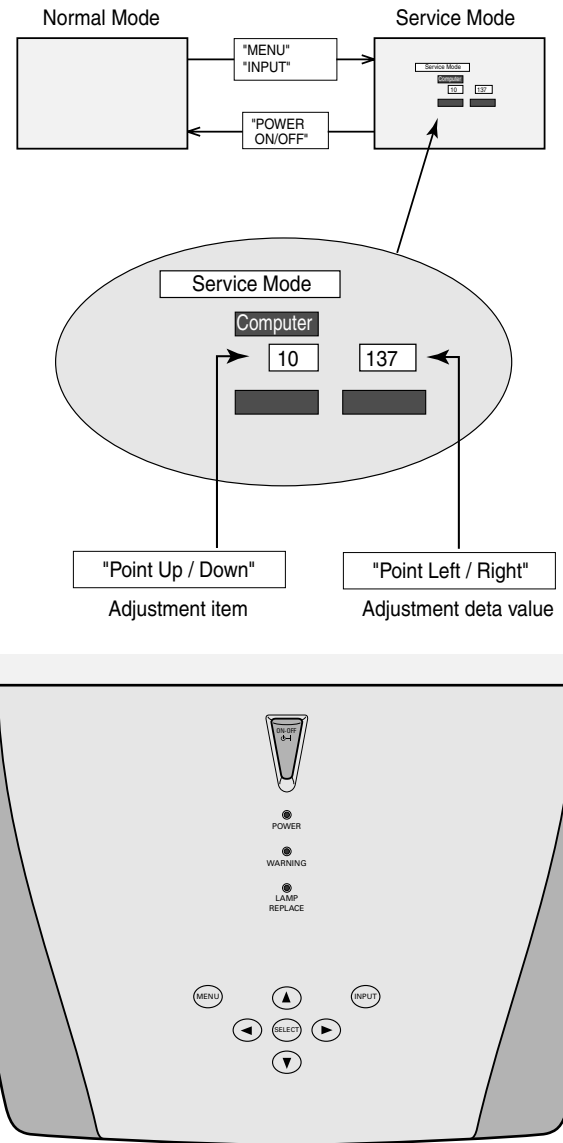
■ Adjustment

Adjust service data using the following control buttons.

1. "POINT UP" ----- An item number increases.
2. "POINT DOWN" -- An item number decreases.
3. "POINT RIGHT" -- An adjustment value increases.
4. "POINT LEFT" ---- An adjustment value decreases.

■ To exit service mode

Press the "POWER on/off" button only once on the projector or remote control unit to quit the service mode.



■ MEMORY IC REPLACEMENT

IC1841 on the main board stores the data for the service adjustments, and should not be replaced except for the case of defective device.

If replaced, it should be performed the re-adjustments following to the "Electrical Adjustments".

The data of lamp replacement monitor timer is stored in the IC1841.

Please note that the lamp replace counter is reset when the memory IC (IC1841) is replaced.

(Lamp replace counter can not be set to the previous value.)

● Caution to memory IC replacement

When IC1841 is replaced with new one, the CPU writes down the default data of the service adjustments to the replaced IC, refer to the service adjustment table. As these data are not the same data as factory shipped data, it should be required to perform

the re-adjustments following to the "Electrical Adjustments".

Please note that in this case the lamp replace counter will be reset.

● Caution of Main Board replacement (in the case IC1841 is not defective)

When the main board is replaced, IC1841 should be replaced with the one on previous main board. After replacement, it should be required to perform the re-adjustments following to the "Electrical Adjustments".

In this case, the lamp replace counter can be kept the value as before.

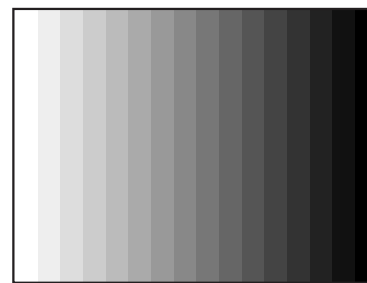
Caution :

Other adjustment items are not related to service and a maintenance. Don't press the POINT (L) and (R) button at the time of those adjustment items. Otherwise it may cause loss of product safety.

[Adjustment Condition]

- Input signal
 - Video signal 1.0Vp-p/75Ω terminated, 16 steps gray scale, white 100% and white 50% pattern (Composite video signal)
 - Computer signal 0.7Vp-p/75Ω terminated, 16 steps gray scale pattern (SVGA)
 - Component Video signal 0.7Vp-p/75Ω terminated, 16 steps gray scale, white 100% and black 0% pattern (480i format and 480p format)
- Picture control mode "STANDARD" mode unless otherwise noted.

16 steps gray scale pattern



White 100%

Black 100%

Note: Please refer to "Service Adjustment Menu Operation" for entering to the service mode and adjusting the service data.

■ ELECTRICAL ADJUSTMENTS

1. Fan Minimum Voltage Adjustment

Equipment Digital voltmeter
Adjustment Value 3.5 ± 0.05 V-DC

Enter the Service mode.

Adjust values of below items by the POINT L or R button.

Item no.	Fan Location	Test Point
100	FN901	TPFAN1
101	FN902	TPFAN2
102	FN903	TPFAN3
103	FN904/5	TPFAN4

2. Signal Center Adjustment

Equipment Digital voltmeter.
Input mode Input 2 [RGB Analog]
Input Signal 16 step gray scale signal

Enter the Service mode.

Adjust below values of each test points by the POINT L or R button.

Item no.	Test Point	Adjustment value
1	TPV1R	6.5 ± 0.05 V-DC.
2	TPV1G	6.5 ± 0.05 V-DC.
3	TPV1B	6.5 ± 0.05 V-DC.

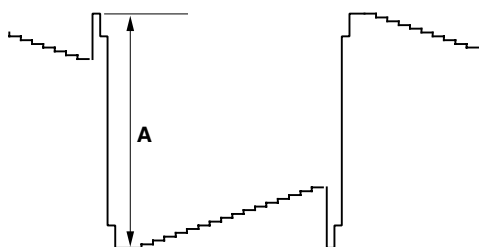
3. Reference Adjustment

Equipment Oscilloscope
Input mode Input 2 [RGB Analog]
Input Signal 16 step gray scale signal

Enter the Service mode.

Adjust the amplitude of part A to be below value for each test point by the POINT L or R button.

Item no.	Test Point	Adjustment value
10	TP35R	10.0 ± 0.1 Vp-p
11	TP35G	10.0 ± 0.1 Vp-p
12	TP35B	10.0 ± 0.1 Vp-p



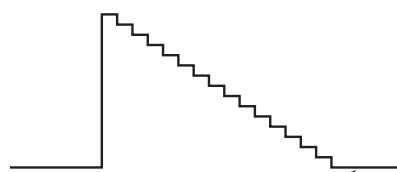
4. Pedestal Adjustment (PC & Component)

Equipment Oscilloscope
Input Signal 16 step gray scale signal
4-1 Input mode Input 2 [RGB Analog]
4-2 Input mode Input 2 [Component: 480p]

Enter the Service mode.

Adjust the level of Black and pedestal to be same for each test point by the POINT L or R button **in each mode**.

Item no.	Test Point
203	TP35R
204	TP35G
205	TP35B



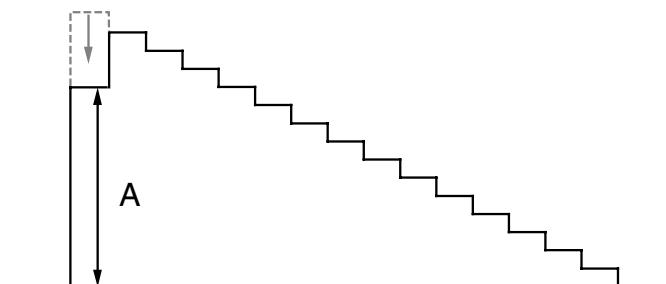
Pedestal Level = Black Level

5. Gain Adjustment

Equipment	Oscilloscope
Input Signal	16 step gray scale signal
5-1 Input mode	Input 2 [RGB Analog]
5-2 Input mode	Input 2 [Component: 480p]
5-3 Input mode	Input 2 [Component: 480i]
5-4 Input mode	Input 1 [Video: NTSC]

Enter the Service mode.
Adjust below level "A" in each test point to be minimum amplitude by the POINT L or R button **in each mode**.

Item no.	Test Point
7	TP35R
8	TP35G
9	TP35B



6. Common Voltage Adjustment

Input mode	Input 2 [RGB Analog]
Input Signal	1 dot computer signal

Enter the Service mode.
Adjust to be minimum flicker for each color by the POINT L or R button.

Item no.	Screen
13	Only red color picture
14	Only green color picture
15	Only blue color picture

7. 50% Luminance Adjustment

Input Signal	16 step gray scale signal
7-1 Input mode	Input 2 [RGB Analog]
7-2 Input mode	Input 2 [Component: 480p]
7-3 Input mode	Input 2 [Component: 480i]

Enter the Service mode.
If the black or white saturated picture can be seen, adjust the item "No.16" to be reduced it by the POINT L or R button.

8. White Balance Adjustment

Input Signal	16 step gray scale signal
8-1 Input mode	Input 2 [RGB Analog]
8-2 Input mode	Input 2 [Component: 480p]
8-3 Input mode	Input 2 [Component: 480i]

Enter the Service mode.
Adjust the item "No.17 (Red)" and "No.18 (Blue)" to be good white balance by the POINT L or R button.

Note: The white balance of each mode must be same.

(9. Color Shading Correction)

For the color shading correction, the proper computer and "Color Shading Correction" software are needed.
The software can be ordered as follows.

COLOR SHADING CORRECTION

Service Parts No.

645 056 6288 or 645 066 7428

■ SERVICE ADJUSTMENT DATA TABLE

These initial values are the reference data written from the CPU ROM to memory IC when replaced new memory IC. The adjustment items indicated with “*” are required to readjust following to the “Electrical adjustments”. Other items should be used with the initial data value.

No.	Name	Initial								Range	Detail Note: 480i(+) = 480i + 575i 480p(+) = 480p + HDTV	
		AD9882				Micronas		Video				
		PC	DVI	HDCP	YPbPr	YCbCr	SCART	NTSC	PAL			
1	R-VIDEOCNT	*	53								0-255	Video Center Adjustment (= RGB - V1)
2	G-VIDEOCNT	*	53								0-255	
3	B-VIDEOCNT	*	53								0-255	
4	R-SubBright		0	0	0	0	0	0		0-1023		
5	G-SubBright		0	0	0	0	0	0		0-1023		
6	B-SubBright		0	0	0	0	0	0		0-1023		
7	R-SubGain	*	520	490	490	530	530	530		0-1023	Gain Adjustment [R]	
8	G-SubGain	*	520	490	490	530	530	530		0-1023	Gain Adjustment [G]	
9	B-SubGain	*	520	490	490	530	530	530		0-1023	Gain Adjustment [B]	
10	REF-R		140								0-255	
11	REF-G		140								0-255	
12	REF-B		140								0-255	
13	BVCOM	*	95								0-255	Common Center Adjustment
14	GVCOM	*	95								0-255	
15	RVCOM	*	95								0-255	
16	G-GammaShift	*	512	500	500	512	512	512		0-1023	Gamma Adjustment	
17	R-GammaShift	*	512	500	500	512	512	512		0-1023	White Balance Adjustment [R]	
18	B-GammaShift	*	512	500	500	512	512	512		0-1023	White Balance Adjustment [B]	
21	R-V2		(86)								0-255	Link to No.1
22	G-V2		(86)								0-255	Link to No.2
23	B-V2		(86)								0-255	Link to No.3
24	SubBright		128	128	128	128	128	128	128	-		
25	SubColor					96	95	95	95	95	-	
26	SubTint					0	0	0	0	0	-	
28	SubBright(Video)						128	128	128	0-255		
29	SubCont(Video)						55	55	56	0-63		
30	SubColor(Video)						2070	2070	2070	0-4095		
31	SubTint(Video)							512	512	0-1023		
32	SubBright(480i,575i)					196	196			0-255		
33	SubCont(480i,575i)					21	23			0-63		
34	SubColor-Cb(480i,575i)					35	23	35	35	0-63	575i is linked to PAL	
35	SubColor-Cr(480i,575i)					35	29	35	35	0-63	480i is linked to NTSC	
36	SubTint(480i,575i)					32		32	32	0-63		
37	YC Delay					62	62	62	62	0-63		
38	SubSharpness								0	0	-	
39	V-Line Color Shading Correction <R1>		2								0-255	
40	V-Line Color Shading Correction <R2>		1								0-255	
41	V-Line Color Shading Correction <R3>		254								0-255	
42	V-Line Color Shading Correction <G1>		2								0-255	
43	V-Line Color Shading Correction <G2>		1								0-255	
44	V-Line Color Shading Correction <G3>		254								0-255	
45	V-Line Color Shading Correction <B1>		2								0-255	
46	V-Line Color Shading Correction <B2>		1								0-255	
47	V-Line Color Shading Correction <B3>		254								0-255	
48	<R>Reference Voltage (H)		1016								0-1023	
49	<R>Reference Voltage (L)		420								0-1023	
50	<G>Reference Voltage (H)		1016								0-1023	
51	<G>Reference Voltage (L)		420								0-1023	
52	Reference Voltage (H)		1016								0-1023	
53	Reference Voltage (L)		420								0-1023	
54											-	
55	Color Shading Correction ON/OFF		1								-	V-Line Correction
56	LampLifeTime										-	Display Only
57	BauRate		1								-	0;9600/ 1;19200/ 2;38400
58	ShootOutMode		0								-	0;Normal/ 1;Shoot out1/ 2;Shoot out2
59	PC Frame Lock		0								-	0: Unlocked, 1: 45MHz-60.1MHz Locked
60	Forced NoBrand		0								-	0: Normal, 1: No Brand
	AutoGrayScaleTune											
70	White Controlled Starting Point		30								0-255	
71	White Controlled Limit Point		61								0-255	
72	White Controlled Starting Point		9								0-255	
73	White Controlled Limit Point		1								0-255	
	FAN CONTROL											
100	Fan1 Min Adjust	*	28								0-255	Fan Voltage: 3.5V Adjustment
101	Fan2 Min Adjust	*	28								0-255	
102	Fan3 Min Adjust	*	28								0-255	
103	Fan4 Min Adjust	*	28								0-255	

No.	Name	Initial								Range	Detail Note: 480i(+) = 480i + 575i 480p(+) = 480p + HDTV
		AD9882				Micronas		Video			
		PC	DVI	HDCP	YPbPr	YCbCr	SCART	NTSC	PAL		
104	Fan1 Max Adjust	185								0-255	Fan Voltage: 14.5V Adjustment
105	Fan2 Max Adjust	185								0-255	
106	Fan3 Max Adjust	185								0-255	
107	Fan4 Max Adjust	185								0-255	
108	Fan Control Mode	0								0-4	0:Normal,1:Cell, 2:Wall, 3:H-Pressure, 4:Manual
109	Fan Max Min SW	0								0-2	0:Auto Fan Control, 1:Min,2:Max
		Normal	Cell	Wall	H-Pre						
110	Fan1 Min	80	80	80	85				30-145	Fan Minimum Voltage (Normal)	
111	Fan2 Min	50	50	50	60				30-145		
112	Fan3 Min	90	90	90	110				30-145		
113	Fan4 Min	45	45	45	70				30-145		
114	Fan1 Max	110	110	110	120				30-145	Fan Maximum Voltage (Normal)	
115	Fan2 Max	95	95	95	95				30-145		
116	Fan3 Max	132	132	132	132				30-145		
117	Fan4 Max	135	135	135	135				30-145		
118	TempA Low	30	30	30	29				10-100		
119	TempA High	38	38	38	38				10-100		
120	Eco Fan1 Min	55	55	55	85				30-145	Fan Minimum Voltage (Eco)	
121	Eco Fan2 Min	35	35	35	55				30-145		
122	Eco Fan3 Min	58	58	58	90				30-145		
123	Eco Fan4 Min	35	35	35	60				30-145		
124	Eco Fan1 Max	75	75	75	105				30-145	Fan Maximum Voltage (Eco)	
125	Eco Fan2 Max	50	50	50	60				30-145		
126	Eco Fan3 Max	90	90	90	100				30-145		
127	Eco Fan4 Max	90	90	90	110				30-145		
128	Eco TempA Low	30	30	30	29				10-100		
129	Eco TempA High	38	38	38	38				10-100		
130	TempA Error	43	44	44	40				10-100		
131	TempB Error	80	80	80	80				10-100		
132	TempC Error	54	54	55	45				10-100		
133	TempB-A Error	50	50	50	33				10-100		
134	TempC-A Error	32	32	32	20				10-100		
135	TempB Low UP	63								10-100	
136	TempB High Up	64								10-100	
137	TempB Low Down	41								10-100	
138	TempB High Down	42								10-100	
139	Manual Fan1 Voltage	100								30-145	Fan Operating Voltage (Manual)
140	Manual Fan2 Voltage	100								30-145	
141	Manual Fan3 Voltage	100								30-145	
142	Manual Fan4 Voltage	100								30-145	
143	Temp Error Cooling Time	3								0-15	0:Always,1:30s, 2:60s, /... /, 15:450s
144	Cooling Time	3								0-15	1:30s, 2:60s, 3:90s, /... /, 15:450s
145	average time	2								1-5	
146	ECO LAMP TIME									-	
147	NORMAL LAMP TIME									-	
148	PROJECTOR TIME									-	
	VPC3230										
150	Notch Filter Select							3	0	-	
151	diagonal dot reduction							1	0	-	
152	horizontal differential gain							2	1	-	
153	vertical differential gain							3	3	-	
154	vertical peaking gain							7	7	-	
155	AFC Other 1							540	540	-	
156	AFC Other 2							536	536	-	
157	Horizontal Peaking Filter					2	2	1	1	-	
158	Peaking Gain					1	1	2	2	-	
159	peaking filter coring enable					0	0	0	0	-	
160	AGC On/OFF							0	0	-	0:165, 1:AGC ON
161	Horizontal Lowpass Filter					1	1	1	1	-	
162	Horizontal Lowpass Filter Chroma					0	0	0	0	-	
163	DOR					0	0	0	0	-	
164	COR					0	0	0	0	-	
165	SGAIN							22	22	-	
	ADC										
200	REDGAIN	70				70				0-255	
201	GRNGAIN	70				70				0-255	
202	BLUGAIN	70				70				0-255	
203	REDOFST	* 60				70				0-127	

No.	Name		Initial							Range	Detail Note: 480i(+) = 480i + 575i 480p(+) = 480p + HDTV	
			AD9882				Micronas		Video			
			PC	DVI	HDCP	YPbPr	YCbCr	SCART	NTSC			PAL
204	GRNOFST	*	60			55					0-127	
205	BLUOFST	*	60			70					0-127	
208											-	
209	RACLP		0			0					0-255	B Clamp Voltage Setting
210	GACLP		0			0					0-255	G Clamp Voltage Setting
211	BACLP		0			0					0-255	R Clamp Voltage Setting
219	DLY3.3V_ON							100			-	Timing from Power On to 3.3V
220	DLY5V_ON							100			-	Timing from 3.3V to 5V
221											-	
230	NTSC(480i)Clamp Placement	2									-	
231	NTSC(480i)Clamp Duration	36									-	
232	PAL(575i)Clamp Placement	4									-	
233	PAL(575i)Clamp Duration	45									-	
234	SVGA Clamp Placement	3									-	
235	SVGA Clamp Duration	20									-	
236	XGA Clamp Placement	4									-	
237	XGA Clamp Duration	30									-	
238	VGA Clamp Placement	3									-	
239	VGA Clamp Duration	23									-	
240	SXGA Clamp Placement	7									-	
241	SXGA Clamp Duration	32									-	
242	MAC Clamp Placement	5									-	
243	MAC Clamp Duration	44									-	
244	480p Clamp Placement	10									-	RGB
245	480p Clamp Duration	20									-	RGB
246	575p Clamp Placement	3									-	RGB
247	575p Clamp Duration	20									-	RGB
248	1080i Clamp Placement	55									-	RGB
249	1080i Clamp Duration	20									-	RGB
250	1080i_50 Clamp Placement	45									-	RGB
251	1080i_50 Clamp Duration	36									-	RGB
252	1035i Clamp Placement	48									-	RGB
253	1035i Clamp Duration	36									-	RGB
254	720p Clamp Placement	48									-	RGB
255	720p Clamp Duration	36									-	RGB
256	480p Clamp Placement					16					-	Component
257	480p Clamp Duration					80					-	Component
258	575p Clamp Placement					24					-	Component
259	575p Clamp Duration					80					-	Component
260	1080i Clamp Placement					10					-	Component
261	1080i Clamp Duration					10					-	Component
262	1080i_50 Clamp Placement					7					-	Component
263	1080i_50 Clamp Duration					70					-	Component
264	1035i Clamp Placement					7					-	Component
265	1035i Clamp Duration					60					-	Component
266	720p Clamp Placement					7					-	Component
267	720p Clamp Duration					80					-	Component
	Over Scan											
300	Expand Ratio (Vertical) 60Hz								1		-	Video and S-Video mode only. Progressive OFF
301	Expand Ratio (Horizontal) 60Hz								4		-	
302	Position (Horizontal) 60Hz								512		-	
303	Position (Vertical) 60Hz								384		-	
304	Expand Ratio (Vertical) 50Hz									5	-	
305	Expand Ratio (Horizontal) 50Hz									4	-	
306	Position (Horizontal) 50Hz									512	-	
307	Position (Vertical) 50Hz									383	-	
308	Expand Ratio (Vertical) 480i						1				-	For Component 480i mode Progressive OFF
309	Expand Ratio (Horizontal) 480i						3				-	
310	Position (Horizontal) 480i						515				-	
311	Position (Vertical) 480i						384				-	For Component 575i mode Progressive OFF
312	Expand Ratio (Vertical) 575i						5				-	
313	Expand Ratio (Horizontal) 575i						4				-	
314	Position (Horizontal) 575i						511				-	
315	Position (Vertical) 575i						383				-	For Component 480p mode
316	Expand Ratio (Vertical) 480p						10				-	
317	Expand Ratio (Horizontal) 480p						34				-	
318	Position (Horizontal) 480p						512				-	
319	Position (Vertical) 480p						383				-	

No.	Name	Initial								Range	Detail Note: 480i(+) = 480i + 575i 480p(+) = 480p + HDTV	
		AD9882				Micronas		Video				
		PC	DVI	HDCP	YPbPr	YCbCr	SCART	NTSC	PAL			
320	Expand Ratio (Vertical) 575p				14				-	For Component 575p mode		
321	Expand Ratio (Horizontal) 575p				27				-			
322	Position (Horizontal) 575p				485				-			
323	Position (Vertical) 575p				394				-			
324	Expand Ratio (Vertical) 720p				10				-	For Component 720p mode		
325	Expand Ratio (Horizontal) 720p				16				-			
326	Position (Horizontal) 720p				524				-			
327	Position (Vertical) 720p				384				-			
328	Expand Ratio (Vertical) 1035i				7				-	For Component mode and RGB HDTV 1035i		
329	Expand Ratio (Horizontal) 1035i				24				-			
330	Position (Horizontal) 1035i				529				-			
331	Position (Vertical) 1035i				384				-			
332	Expand Ratio (Vertical) 1080i				7				-	For Component mode and RGB HDTV 1080i		
333	Expand Ratio (Horizontal) 1080i				24				-			
334	Position (Horizontal) 1080i				522				-			
335	Position (Vertical) 1080i				377				-			
336	Expand Ratio (Vertical) 60Hz	14								-	RGB NTSC	
337	Expand Ratio (Horizontal) 60Hz	31								-		
338	Position (Horizontal) 60Hz	506								-		
339	Position (Vertical) 60Hz	383								-		
340	Expand Ratio (Vertical) 50Hz	10								-	RGB PAL	
341	Expand Ratio (Horizontal) 50Hz	22								-		
342	Position (Horizontal) 50Hz	498								-		
343	Position (Vertical) 50Hz	385								-		
344	Expand Ratio (Vertical) 50Hz				8				-	1080i_50Hz and RGB HDTV 1080i@50		
345	Expand Ratio (Horizontal) 50Hz				16				-			
346	Position (Horizontal) 50Hz				512				-			
347	Position (Vertical) 50Hz				384				-			
348	Expand Ratio (Vertical) SCART						5			-	SCART Progressive OFF	
349	Expand Ratio (Horizontal) SCART						4			-		
350	Position (Horizontal) SCART						513			-		
351	Position (Vertical) SCART						383			-		
352	Expand Ratio (Vertical) 60Hz							2		-	Video and S-Video mode only. Progressive ON	
353	Expand Ratio (Horizontal) 60Hz							4		-		
354	Position (Horizontal) 60Hz							512		-		
355	Position (Vertical) 60Hz							383		-		
356	Expand Ratio (Vertical) 50Hz								5	-		
357	Expand Ratio (Horizontal) 50Hz								4	-		
358	Position (Horizontal) 50Hz								512	-		
359	Position (Vertical) 50Hz								383	-		
360	Expand Ratio (Vertical) 480i						1			-	For Component 480i mode Progressive ON	
361	Expand Ratio (Horizontal) 480i						3			-		
362	Position (Horizontal) 480i						512			-		
363	Position (Vertical) 480i						383			-		
364	Expand Ratio (Vertical) 575i						5			-	For Component 575i mode Progressive ON	
365	Expand Ratio (Horizontal) 575i						4			-		
366	Position (Horizontal) 575i						511			-		
367	Position (Vertical) 575i						383			-		
368	Expand Ratio (Vertical) SCART							5			-	SCART Progressive ON
369	Expand Ratio (Horizontal) SCART							4			-	
370	Position (Horizontal) SCART							513			-	
371	Position (Vertical) SCART							383			-	
372	Expand Ratio (Vertical) 60Hz				10				-	480p and RGB 480p		
373	Expand Ratio (Horizontal) 60Hz				34				-			
374	Position (Horizontal) 60Hz				506				-			
375	Position (Vertical) 60Hz				376				-			
376	Expand Ratio (Vertical) 50Hz				14				-	575p and RGB 575p		
377	Expand Ratio (Horizontal) 50Hz				27				-			
378	Position (Horizontal) 50Hz				485				-			
379	Position (Vertical) 50Hz				394				-			
380	Expand Ratio (Vertical)				10	10		10	10	-	CAPTION IN	
381										-		
382										-		
383	Position (Vertical)				384	384		384	384	-		
384	Expand Ratio (Vertical) 1035i	7								-	For RGB HDTV 1035i	
385	Expand Ratio (Horizontal) 1035i	24								-		
386	Position (Horizontal) 1035i	526								-		
387	Position (Vertical) 1035i	384								-		

■ Adjustment

No.	Name	Initial								Range	Detail Note: 480i(+) = 480i + 575i 480p(+) = 480p + HDTV
		AD9882				Micronas		Video			
		PC	DVI	HDCP	YPbPr	YCbCr	SCART	NTSC	PAL		
388	Expand Ratio (Vertical) 1080i	8								-	For RGB HDTV 1080i
389	Expand Ratio (Horizontal) 1080i	24								-	
390	Position (Horizontal) 1080i	519								-	
391	Position (Vertical) 1080i	377								-	
392	Expand Ratio (Vertical) 50Hz	7								-	For RGB HDTV 1080i@50
393	Expand Ratio (Horizontal) 50Hz	16								-	
394	Position (Horizontal) 50Hz	504								-	
395	Position (Vertical) 50Hz	384								-	
396	HDCP			0						-	
500	Service, 16,17,18 Link Flag	0							-	0: Non Link, 1: Link	

■ Test Points and Locations

■ MAIN BOARD

