

PROTOCOL of CONVERTIBLE CAMERA and PAN/TILT SYSTEM
Ver2.34a (03/15,2010)

Broadcast & Multimedia Bussiness Unit
Panasonic System Networks Co., Ltd.

Specifications are subject to change without notice.

Camera & P/T Control Protocol over CGI

[Camera Control]

http://[*IP Address or Host Name*]/cgi-bin/**aw_cam**?cmd=[*AW Camera Command*]&res=[*Response Type*]

※ If you set [*Host Name*], DNS (Domain Name System) server is required

※ [STX] (= ASCII 0x02) and [ETX] (= ASCII 0x03) are NOT required

※ Response Type

Value	Response Type	HTTP Status Code (Normal)
0	No Response Body (Default)	204 No Content
1	Text-based Response (for ROP)	200 OK
Others	Not Defined	400 Bad Request

Ex1.) http://192.168.0.10/cgi-bin/aw_cam?cmd=0AW:0&res=0

Ex2.) http://cam01-he50.room123.net/cgi-bin/aw_cam?cmd=Q1D&res=1

[P/T Control]

http://[*IP Address or Host Name*]/cgi-bin/**aw_ptz**?cmd=[*AW ptz(#) Command*]&res=[*Response Type*]

※ If you set [*Host Name*], DNS (Domain Name System) server is required

※ [CR] (= ASCII 0x0D) is NOT required

※ Response Type

Value	Response Type	HTTP Status Code (Normal)
0	No Response Body (Default)	204 No Content
1	Text-based Response (for ROP)	200 OK
Others	Not Defined	400 Bad Request

Ex1.) http://192.168.0.10/cgi-bin/aw_ptz?cmd=#P99&res=0

Ex2.) http://cam01-he50.room123.net/cgi-bin/aw_ptz?cmd=#G1&res=1

Camera Control Protocol

This is a program to control Panasonic Convertible Camera system from PC by serial communication.

Method	Half Duplex
Communication Speed	9600bps
Data bit	8bit
Stop bit	1bit
Prity	None
Flow contorol	None

(Electrical Specification)

Connector : Made by Sumitomo3M

Compatible with RS232C

2line system(TXD/send, RXD/Recieve)

(Process)

- (1) PC — Command —> CAMERA
- (2) CAMERA — ACK(H'06) —> PC
- (3) CAMERA Processes "Command"
- (4) CAMERA — Command —> PC

Normally it is processed as mentioned above,but in case of error,it ends by repeating error code in (4).

Command and Command' are not always the same.

Camera does not accept a command unless command process finishes and returns the return code

<Basic pattern of Command>

Header is [STX] (H'02) and Delimiter for [ETX] (H'03), and Command of ASCII and / or Data can be inserted in between. Division of Command and Data is ": (H'3A)".

There are 2 kinds of Commands , one is for letters and the other for numbers.

In total , there are 37 kinds of ASCII code code 0(H'30) to 9(H'39), A(H'41) to Z(H'5A),/(H'2F).

For Command of (1) to (6) and (10) PC \rightarrow Camera(To), Camera \rightarrow PC(From) are the same in both ways, but for (7),(8) and (11) it is different between (To) and (From).

(1)Pattern 1 (For the Camera Operation) There is no Data , only Command.

[STX]	O	?	S	[ETX]
H'02	H'4F	H'**	H'53	H'03

(2)Pattern 2 (Camera mode setting)

In order of Command, ":", Data. Data length id different by each Command and maximum 3 letters.

[STX] O ? ? : ? (? ?) [ETX]
H'02 H'4F H'** H'** H'3A H'** (H** H**) H'03

Command Data

Caution : Data length is fixed for each Command and not able to decrease.

(3)Pattern 3 (Selection of Scene) In order of Command, ":", Data. Data length=1 Byte

[STX]	X	S	F	:	?	[ETX]
H'02	H'58	H'53	H'46	H'3A	H'**	H'03

(4)Pattern 4 (Monitoring) In order of Command, ":", Data. Data length=1 Byte

[STX]	D	?	?	:	?	[ETX]
H'02	H'44	H'**	H'**	H'3A	H'**	H'03

(5)Pattern 5 (Other Menus)

In order of Command, ":", Number Command(2 Bytes), ":", Data. Data length=2 Bytes.

[STX] O S D : ? ? : ? ? [ETX]
H'02 H'4F H'53 H'44 H'3A H'** H'** H'3A H'** H'** H'03

In this pattern, numbers at rear part of command (6th and 7th letters) are the command and Data follows by 2bytes (9th and 10th letters)

(6)Pattern 6 (Questions to Camera)

There is only Command, not Data

[STX] Q ? ? [ETX]
H'02 H'51 H'** H'** H'03

This Command requires the programmed number of the Camera and Camera returns adding Data.

Data is 2 Bytes but there are same exceptions. It is specified as Q(H'51) -> O(H'4F).

(7)Pattern 7 (Questions to Camera 2)

In order of Command, ":", number of Command. No Data. Command from Camera is with Data.

[STX] Q S D : ? ? [ETX]
H'02 H'51 H'53 H'44 H'3A H'** H'** H'03

This Command also requires the programmed number of the Camera and the Command is converted into numbers. It can be programmed only by Camera

a) PC -> CAMERA

[STX] Q S D : 1 4 [ETX]
H'02 H'51 H'53 H'44 H'3A H'31 H'34 H'03

b) CAMERA -> PC

[STX] O S D : 1 4 : 1 4 [ETX]
H'02 H'4F H'53 H'44 H'3A H'31 H'34 H'3A H'31 H'34 H'03

(8)Pattern 8 (Related to Contact Closer P/T)

There is only Command, not Data

[STX] H ? ? [ETX]
H'02 H'48 H'** H'** H'03

Command for Lens I/F Card (AW-PB308) and control of lens for AW-E655. Camera repeats the same Command.

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	
						Control and Response to control	Response to Confirmation		HE50
MODEL NUMBER	---	QID	OID:[Data]	00	---	AW-E300 AW-E300P AW-E300E AW-E600 AW-E600P AW-E600E AW-E800 AW-E800P AW-E800E			
				01					
				02					
				03					
						Returns model No. by ASCII			Ex. OID:AW-E800P
SOFTWARE VERSION	---	QSV	OSV:[Data]			Software Version		V1.00	
AWC/AWB SET	OWS	OWS ER3:OWS	---		---	AWC/AWB Start AWC/AWC OK AWC/AWB NG	---	Response Command returns when AWC/AWB finish	V1.00
ABC/ABB SET	OAS	OAS ER3:OAS	---		---	ABC/ABB Start ABC/ABB OK ABC/ABB NG	---	Response Command returns when ABC/ABB finish	V1.00
AWC MODE	OAW:[Data]	QAW	OAW:[Data]	0	ATW	ATW	Be careful because Data of control and question is different.	V1.00 Supports only ATW,AWC A,AWC B	
				1	AWC A	---			
				2	AWC B	AWC A			
				3	ATW	AWC B			
				4	PRESET 3200K	PRESET 3200K			
				5	PRESET 5600K	PRESET 5600K			
DETAIL	ODT:[Data]	QDT	ODT:[Data]	0	<u>Convertible</u>			V1.00 Supports only OFF,LOW,HIG	
				1	OFF				
				2	LOW				
					HIGH				
				0	<u>HC1500, HC1800, HE100</u>				
				1	OFF				
HD DETAIL	OHD:[Data]	QHD	OHD:[Data]	0	<u>AW-HE870</u>			---	
				1	OFF				
				2	LOW HIGH				

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
GAIN UP	OGU:[Data]		QGU	OGU:[Data]	00	AGC Low			V1.00 Supports only 0dB- 18dB,AGC ON
					01	AGC High			
					08	0dB			
					-	-			
					11	9dB			
					-	-			
					1A	18dB			
					-	-			
					26	30dB			
					27	N/Eye Low			
						N/Eye			
					28	N/Eye High			
					80	AGC ON			
						<u>AW-HE100</u>			
					08	0dB			
					-	-			
					14	12dB			
					15	ER3			
					16	ER3			
					17	15dB			
					18	ER3			
					19	ER3			
					1A	18dB			
					80	AGC ON			
						<u>AW-HE870</u>			
					02	-6dB			
					-	-			
					1A	18dB			
					80	AGC ON			
					SHUTTER	OSH:[Data]			
3	1/100(NSTC) 1/120(PAL)								
5	1/250								

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
SYNCHRO SCAN	OMS:[Data]	QMS	OMS:[Data]	001h	<u>Convertible(NTSC)</u> 60.34Hz			V1.00 (N Model) 001h(60.24Hz) - 255h(646.21Hz)) (E,MC Model) 001h(50.20Hz) - 255h(538.51Hz))	
				-	-				
				105h	15.75kHz				
				-	-				
				001h	<u>Convertible(PAL)</u> 50.24Hz				
				-	-				
				137h	15.63kHz				
				-	-				
				721h	<u>AK-HC1500/HC1800(60Hz)</u> 60.32Hz/60.32Hz				
				-	-				
				8DFh	150.0Hz/149.2Hz				
				-	-				
				721h	<u>AK-HC1500/HC1800(50Hz)</u> 50.27Hz/50.27Hz				
				-	-				
				8DFh	125.0Hz/124.3Hz				
				-	-				
721h	<u>AK-HC1500, HC1800(FILM MENU)</u> 358.1deg								
-	-								
8DFh	144.0deg								
-	-								
001h	<u>HE-100N</u> 60Hz								
-	-								
1ABh	248.8Hz								
-	-								
001h	<u>HE-100E,MC</u> 50.0Hz								
-	-								
1C2h	250.0Hz								
-	-								
FIELD/FRAME	OFR:[Data]	QFF	OFF:[Data]	0	Field		Only User Mode	---	
1				Frame1					
2				Frame2					
V.RESOLUTION				0	Normal (Fine) Fine	Normal --- FIne	Only Halogen,Fluorescent,Outdoor mode	---	
			1						
			2						
IRIS AUTO/MANUAL	ORS:[Data]	QRS	ORS:[Data]	0	Manual			V1.00	
				1	AUTO				
MANUAL IRIS VOLUME	ORV:[Data]	QRV	ORV:[Data]	000h	close			V1.00	
				-	-				
				3FFh	open				
				00h	<u>Convertible</u> -50			V1.00 Supports Only Convertible mode Data/10	
				-	-				
				31h	-1				
				32h	0				
				33h	+1				

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
PICTURE LEVEL A.IRIS LEVEL	OSD:48:[Data]		QSD:48	OSD:48:[Data]	- 64h 00h - 64h 00-2Eh - 31h 32h 33h - 36-64h	- +50 <u>AK-HC1500, HC1800</u> 0 - 100 <u>AW-HE100</u> -4 - -1 0 +1 - +4			
LIGHT PEAK/AVG A.IRIS PEAK/AVG	OPV:[Data]		QPA	OPA:[Data]	00h - 31h 32h 33h - 64h 00h - 64h	<u>Convertible</u> P50 - P1 0 A1 - A50 <u>AK-HC1500, HC1800</u> 0 - 100			---
LIGHT AREA A.IRIS AREA	ORA:[Data]		QAR	OAR:[Data]	0 1 5 6 7	ALL Center Top Cut Bottom Cut R/L Cut			---
NEGA/POS	ONP:[Data]		QNP	ONP:[Data]	0 1	Positive Negative			---
R PEDESTAL	ORD:[Data]		QRD	ORD:[Data]	00h - 1Eh - 3Ch	-30 0 - +30			---
B PEDESTAL	OBD:[Data]		QBD	OBD:[Data]	00h - 1Eh - 3Ch	-30 0 - +30			---
R GAIN	ORG:[Data]		QGR	OGR:[Data]	00h - 1Eh - 3Ch	-30 0 - +30			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
B GAIN	OBG:[Data]		QGB	OGB:[Data]	00h - 1Eh - 3Ch	-30 - 0 - +30			---
T PEDESTAL	OTD:[Data]		QTD	OTD:[Data]	00h - 1Eh - 3Ch	-30 - 0 - +30			V1.00 Data/3
H PHASE	OHP:[Data]		QHP	OHP:[Data]	000h - 3FFh	-206 - +49			V1.00
SC COARSE	OSC:[Data]		QSC	OSC:[Data]	0 1 2 3 4 <u>AW-HE870</u> 5 6 7 8	2(90deg) 3(180deg) 4(270deg) 1(0deg) --- <u>AW-HE870</u> 45deg(HE870) 135deg(HE870) 225deg(HE870) 315deg(HE870)	--- 1(0deg) 2(90deg) 3(180deg) 4(270deg) <u>AW-HE870</u> 45deg 135deg 225deg 315deg	Be careful because Data of control and question is different.	V1.00
SC FINE	OSN:[Data]		QSN	OSN:[Data]	000h 001h 002h - 200h - 3FFh <u>AW-HE100.HE870</u> 000h - 007h 008h - 200h - 3FBh 3FCh - 3FFh	-511 -511 -511 - 0 - +511 <u>AW-HE100.HE870</u> -127 - -127 -126 - 0 - +126 +127 - +127		(AW-HE100,AW-HE870) One value of "Data Contents" is added by four "Data" counts.	V1.00
CHROMA LEVEL	OCG:[Data]		QCG	OCG:[Data]	00 - 03 - 06	-3 - 0 - +3			V1.00

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	
						Control and Response to contol	Response to Confirmation		HE50
SCENE FILE	XSF:[Data]	QSF	OSF:[Data]		0	<u>Convertible</u>	<u>Convertible</u>	Be careful because Data of control and question is different.	V1.00 Supports Only Halogen=MAN UAL1, Fluorescent=M ANUAL2 Outdoor=MAN UAL3 User=FULLAU TO
					1	Halogen	Halogen		
					2	Fluorescent	Fluorescent		
					3	Outdoor	Outdoor		
					4	User	User		
					5		Halogen		
					6		Fluorescent		
					7		Outdoor		
							User		
						<u>HC1500, HC1800</u>	<u>HC1500, HC1800</u>		
					0		PRESET		
					1	PRESET	USER1		
					2	USER1	USER2		
					3	USER2	CURRENT		
					4	CURRENT			
GAMMA	OSD:00:[Data]	QSD:00	OSD:00:[Data]		00h		0.35		V1.00 Debug用
					-		-		
					0Ah		0.45		
					-		-		
					14h		0.55		
KNEE POINT	OSD:08:[Data]	QSD:08	OSD:08:[Data]		FFh	---	Dynamic	Be careful because Data of control and question is different.	---
					00h	Dynamic	88%		
					-	88%	-		
					0Ah	-	98%		
					0Bh	98%	----		
WHITE CLIP	OSD:09:[Data]	QSD:09	OSD:09:[Data]		00h		95%		---
					-		-		
					0Fh		110%		
H.DTL LEVEL H	OSD:0A:[Data]	QSD:0A	OSD:0A:[Data]		01h		1		---
					-		-		
					3Fh		63		
HD H.DTL LEVEL H	OSD:0B:[Data]	QSD:0B	OSD:0B:[Data]		01h		1		---
					-		-		
					3Fh		63		
V DTL LEVEL H	OSD:0E:[Data]	QSD:0E	OSD:0E:[Data]		01h		1		---
					-		-		
					1Fh		31		
HD V DTL LEVEL H	OSD:0F:[Data]	QSD:0F	OSD:0F:[Data]		01h		1		---
					-		-		
					1Fh		31		
H.DTL LEVEL L	OSD:12:[Data]	QSD:12	OSD:12:[Data]		00h		0		---
					-		-		
					3Eh		62		

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
HD H.DTL LEVEL L	OSD:13:[Data]		QSD:13	OSD:13:[Data]	00h - 3Eh	0 - 62			---
V DTL LEVEL L	OSD:16:[Data]		QSD:16	OSD:16:[Data]	00h - 1Eh 00h - 07h - 0Eh	0 - 30 <u>AW-HE100</u> -7 - 0 - +7			---
HD V DTL LEVEL L	OSD:17:[Data]		QSD:17	OSD:17:[Data]	00h - 1Eh	0 - 30			---
DETAIL BAND	OSD:1E:[Data]		QSD:1E	OSD:1E:[Data]	01 - 05	01 - 05			---
HD DETAIL BAND	OSD:1F:[Data]		QSD:1F	OSD:1F:[Data]	01 - 05	01 - 05			---
NOISE SUPPRESS /CRISP	OSD:22:[Data]		QSD:22	OSD:22:[Data]	00h - 0Ah 00h - 1Fh	<u>Convertible</u> 0 - 10 <u>AK-HC1500_HC1800</u> 0 - 31			---
HD NOISE SUPPRESS /CRISP	OSD:23:[Data]		QSD:23	OSD:23:[Data]	00h - 0Ah	<u>AW-HE870</u> 0 - 10			---
LEVEL DEPENDENT	OSD:26:[Data]		QSD:26	OSD:26:[Data]	00h - 19h 00h - 0Fh	<u>Convertible</u> 00% - 25% <u>AK-HC1500_HC1800</u> 0% - 15%			---
HD LEVEL DEPENDENT	OSD:27:[Data]		QSD:27	OSD:27:[Data]	00h - 19h	<u>AW-HE870</u> 00% - 25%			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
CHROMA DETAIL	OSD:2A:[Data]		QSD:2A	OSD:2A:[Data]	00h - 0Fh	00 - 15			---
HD CHROMA DETAIL	OSD:2B:[Data]		QSD:2B	OSD:2B:[Data]	00h - 0Fh	00 - 15			---
HD DARK DETAIL	OSD:2D:[Data]		QSD:2D	OSD:2D:[Data]	00 - 05	0 - 5			---
DARK DETAIL	OSD:2E:[Data]		QSD:2E	OSD:2E:[Data]	00 - 05	0 - 5			---
MATRIX(R-G)	OSD:2F:[Data]		QSD:2F	OSD:2F:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
MATRIX(R-B)	OSD:30:[Data]		QSD:30	OSD:30:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
MATRIX(G-R)	OSD:31:[Data]		QSD:31	OSD:31:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
MATRIX(G-B)	OSD:32:[Data]		QSD:32	OSD:32:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
MATRIX(B-R)	OSD:33:[Data]		QSD:33	OSD:33:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
MATRIX(B-G)	OSD:34:[Data]		QSD:34	OSD:34:[Data]	00h - 1Fh - 3Eh	-31 - 0 - +31			---
FLARE R	OSD:35:[Data]		QSD:35	OSD:35:[Data]	00h - 64h	0 - 100			---
FLARE G	OSD:36:[Data]		QSD:36	OSD:36:[Data]	00h - 64h	0 - 100			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
FLARE B	OSD:37:[Data]		QSD:37	OSD:37:[Data]	00h - 64h	0 - 100			---
FLARE SW	OSA:11:[Data]		QSA:11	OSA:11:[Data]	0 1	OFF ON			---
CLEAN DNR	OSD:3A:[Data]		QSD:3A	OSD:3A:[Data]	00 01 02	OFF LOW HIGH			V1.00
HD CLEAN DNR	OSD:3B:[Data]		QSD:3B	OSD:3B:[Data]	00 01 02	OFF LOW HIGH			---
2D LPF	OSD:3F:[Data]		QSD:3F	OSD:3F:[Data]	00 01 02	OFF LOW HIGH			---
CORNER DETAIL	OSD:43:[Data]		QSD:43	OSD:43:[Data]	00 01	OFF ON			---
PRECISION DETAIL /SLIM DETAIL	OSD:44:[Data]		QSD:44	OSD:44:[Data]	00 01 02 00 01 02	<u>Convertible</u> OFF LOW HIGH <u>AK-HC1500, HC1800</u> OFF ON ON			---
HD PRECISION DETAIL /HD SLIM DETAIL	OSD:45:[Data]		QSD:45	OSD:45:[Data]	00 01 02	<u>AW-HE870</u> OFF LOW HIGH			---
BLACK STRETCH	OSD:46:[Data]		QSD:46	OSD:46:[Data]	00 01	OFF ON			---
HIGH LIGHT CHROMA	OSD:49:[Data]		OSD:49	OSD:49:[Data]	00 01 02	OFF LOW HIGH			---
FLESH NOISE SUPPRESS	OSD:4B:[Data]		QSD:4B	OSD:4B:[Data]	00 01 02	OFF LOW HIGH			---
FLESH DETAIL FLESH DTL LEVEL					00 01 02	LOW MID HIGH			---
HD FLESH NOISE SUPPRESS	OSD:4C:[Data]		QSD:4C	OSD:4C:[Data]	00 01 02	OFF LOW HIGH			---
IRIS FOLLOW	---		QSD:4F	OSD:4F:[Data]	00h - FFh	---	Close - Open	This Command can't be used through AW-RP400.	V1.00

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
CONTRAST(GAMMA)	OSD:50:[Data]		QSD:50	OSD:50:[Data]	00 01 02	LOW MID HIGH			V1.00
FLESH TONE	OSD:52:[Data]		QSD:52	OSD:52:[Data]	00 - 03 - 06	-3 - 0 - +3			---
DETAIL SELECT	OSD:54:[Data]		QSD:54	OSD:54:[Data]	00 01	Normal Super DTL			---
NOISE SUPPRESS	OSD:55:[Data]		QSD:55	OSD:55:[Data]	00 01 02	OFF LOW HIGH			---
FLESH NOSE SUPPRESS	OSD:56:[Data]		QSD:56	OSD:56:[Data]	00 01 02	OFF LOW HIGH			---
DTL FLESH SUPPRESS					00 01 02	LOW MID HIGH			---
ZEBRA INDICATER	OSD:60:[Data]		QSD:60	OSD:60:[Data]	00 01	OFF ON		with studio card	---
ZEBRA1 LEVEL	OSD:61:[Data]		QSD:61	OSD:61:[Data]	00h - 27h	70% - 109%		with studio card	---
ZEBRA2 LEVEL	OSD:62:[Data]		QSD:62	OSD:62:[Data]	01h - 28h	71% - 110%		with studio card	---
SAFETY ZONE	OSD:63:[Data]		QSD:63	OSD:63:[Data]	01 02 03 04 05 06	1 2 3 4 5 OFF		with studio card	---
EVF OUTPUT	OSD:64:[Data]		QSD:64	OSD:64:[Data]	00 01	Y VBS		with studio card	---
OUTPUT SELECT	OSD:65:[Data]		QSD:65	OSD:65:[Data]	00 01 02	RGB YPbPr Y/C		Y/C is Valid With SD(480i/576i)format	---
CHARGE TIME	OSD:68:[Data]		QSD:68	OSD:68:[Data]	00 01 02 03 04 05 06 07 08	NTSC 2s 1s 1/2s 1/4s 1/8s 1/15s 1/30s OFF AUTO			---

AGC MAX	OSD:69:[Data]		QSD:69	OSD:69:[Data]	00 01 02 03 04 05	(OFF) 6dB 12dB 18dB 24dB 30dB			V1.00 supports only 01(6dB) - 03(18dB) ---
ASPECT RATIO	OSD:70:[Data]		QSD:70	OSD:70:[Data]	00 01	16:9 4:3			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
FAN	OSD:71:[Data]		QSD:71	OSD:71:[Data]	00 01 00 01 02	<u>Convertible</u> OFF ON(E800) AUTO(E750,E655,E860,HE100) <u>AK-HC1500, HC1800</u> OFF AUTO ON			---
ATW SPEED	OSD:72:[Data]		QSD:72	OSD:72:[Data]	00 01 02 03 04	Slow2 Slow1 Middle Fast1 Fast2			---
COLOR BAR/CAMERA	DCB:[Data]		QBR	OBR:[Data]	0 1 2	Camera Color Bar Test			V1.00 supports only 0(Camera),1(C olor Bar)
MENU	DUS:[Data]		QUS	OUS:[Data]	0 1	OFF ON			V1.00
BAR SETUP	DCS:[Data]		QCS	OCS:[Data]	0 1	0.0% 7.5%			---
MENU SW	DPG:[Data]		---	---	1			"DPG" is equal to "DPG:1".	V1.00
ITEM SW	DIT:[data]		---	---	1			"DIT" is equal to "DIT:1".	V1.00
YES SW	DUP:[Data]		---	---	1 A	1Step 10Step		"DUP" is equal to "DUP:1".	V1.00
NO SW	DDW:[Data]		---	---	1 A	1Step 10Step		"DDW" is equal to "DDW:1".	V1.00
PAN(LEFT)	HPL		---	---	---	move to left			--- ---
PAN(RIGHT)	HPR		---	---	---	move to right			--- ---
PAN(STOP)	HPS		---	---	---	stop pan			--- ---
TILT(UP)	HTU		---	---	---	move to up			--- ---
TILT(DOWN)	HTD		---	---	---	move to down			--- ---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
TILT(STOP)	HTS		---		---	stop tilt			---

ZOOM(TELE)	HZT		---		---	move to tele			V1.00

ZOOM(WIDE)	HZW		---		---	move to wide			V1.00

ZOOM(STOP)	HZS		---		---	stop zoom			V1.00

ZOOM SPEED	LZS:[Data]		---		0 - 9	Slow - Fast			V1.00
FOCUS(FAR)	HFF		---		---	move to far			V1.00

FOCUS(NEAR)	HFN		---		---	move to near			V1.00

FOCUS(STOP)	HFS		---		---	stop focus			V1.00

FOCUS SPEED	LFS:[Data]		---		0 - 9	Slow - Fast			V1.00
SAVE LENS PSITION to PRESET	LPS:[Data]		---		01 02 03 04 05	Save to Preset1 Save to Preset2 Save to Preset3 Save to Preset4 Save to Preset5			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
Recall LENS PRESET	LPM:[Data]		---		00 01 02 03 04 05	Recall Current Recall Preset1 Recall Preset2 Recall Preset3 Recall Preset4 Recall Preset5			---
COLOR MATRIX R GAIN /COLOR CORRECTION R SATURATION	OSD:86:[Data]		QSD:86	OSD:86:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX R PHASE /COLOR CORRECTION R PHASE	OSD:87:[Data]		QSD:87	OSD:87:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX R_YI GAIN /COLOR CORRECTION R_YI SATURATION	OSD:88:[Data]		QSD:88	OSD:88:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX R_YI PHASE /COLOR CORRECTION R_YI PHASE	OSD:89:[Data]		QSD:89	OSD:89:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX YI GAIN /COLOR CORRECTION YI SATURATION	OSD:8A:[Data]		QSD:8A	OSD:8A:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX YI PHASE /COLOR CORRECTION YI PHASE	OSD:8B:[Data]		QSD:8B	OSD:8B:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX YI_G GAIN /COLOR CORRECTION YI_G SATURATION	OSD:8C:[Data]		QSD:8C	OSD:8C:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX YI_G PHASE /COLOR CORRECTION YI_G PHASE	OSD:8D:[Data]		QSD:8D	OSD:8D:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX G GAIN /COLOR CORRECTION G SATURATION	OSD:8E:[Data]		QSD:8E	OSD:8E:[Data]	00h - 80h - FFh	-127 - 0 - +127			---
COLOR MATRIX G PHASE /COLOR CORRECTION G PHASE	OSD:8F:[Data]		QSD:8F	OSD:8F:[Data]	00h - 80h - FFh	-127 - 0 - +127			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
COLOR MATRIX G_Cy GAIN /COLOR CORRECTION G_Cy SATURATION	OSD:90:[Data]		QSD:90	OSD:90:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX G_Cy PHASE /COLOR CORRECTION G_Cy PHASE	OSD:91:[Data]		QSD:91	OSD:91:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX Cy GAIN /COLOR CORRECTION Cy SATURATION	OSD:92:[Data]		QSD:92	OSD:92:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX Cy PHASE /COLOR CORRECTION Cy PHASE	OSD:93:[Data]		QSD:93	OSD:93:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX Cy_B GAIN /COLOR CORRECTION Cy_G SATURATION	OSD:94:[Data]		QSD:94	OSD:94:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX Cy_B PHASE /COLOR CORRECTION Cy_B PHASE	OSD:95:[Data]		QSD:95	OSD:95:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX B GAIN /COLOR CORRECTION B SATURATION	OSD:96:[Data]		QSD:96	OSD:96:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX B PHASE /COLOR CORRECTION B PHASE	OSD:97:[Data]		QSD97	OSD:97:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX B_Mg GAIN /COLOR CORRECTION B_Mg SATURATION	OSD:80:[Data]		QSD:80	OSD:80:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX B_Mg PHASE /COLOR CORRECTION B_Mg PHASE	OSD:81:[Data]		QSD:81	OSD:81:[Data]	00h - 80h - FFh	-127 - 0 - +127			----
COLOR MATRIX Mg GAIN /COLOR CORRECTION Mg SATURATION	OSD:82:[Data]		QSD:82	OSD:82:[Data]	00h - 80h - FFh	-127 - 0 - +127			----

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
COLOR MATRIX Mg PHASE /COLOR CORRECTION Mg PHASE	OSD:83:[Data]	QSD:83	OSD:83:[Data]	00h - 80h - FFh	-127 - 0 - +127				----
COLOR MATRIX Mg_R GAIN /COLOR CORRECTION Mg_R SATURATION	OSD:84:[Data]	QSD:84	OSD:84:[Data]	00h - 80h - FFh	-127 - 0 - +127				----
COLOR MATRIX Mg_R PHASE /COLOR CORRECTION Mg_R PHASE	OSD:85:[Data]	QSD:85	OSD:85:[Data]	00h - 80h - FFh	-127 - 0 - +127				----
T PEDESTAL	OTP:[Data]	QTP	OTP:[Data]	000h - 096h	-150 - 0				V1.00 Data/15
R GAIN	ORI:[Data]	QRI	ORI:[Data]	000h - 096h - 12Ch	-150 - 0 - +150				----
B GAIN	OBI:[Data]	QBI	OBI:[Data]	000h - 096h - 12Ch	-150 - 0 - +150				----
R PEDESTAL	ORP:[Data]	QRP	ORP:[Data]	000h - 096h - 12Ch	-150 - 0 - +150				----
B PEDESTAL	OBP:[Data]	QBP	OBP:[Data]	000h - 096h - 12Ch	-150 - 0 - +150				----
3D-DNR	ODD:[Data]	QDD	ODD:[Data]	00 01 02	OFF LOW HIGH				
AUTO FOCUS	OAF:[Data]	QAF	OAF:[Data]	0 1	Manual FOCUS AUTO FOCUS				V1.00
DIGITAL GAIN UP	ODG:[Data]	QDG	ODG:[Data]	0 1 2 3 4 5	0dB 6dB 12dB 18dB 24dB 30dB				----
DIGITAL EXTENDER	ODE:[Data]	QDE	ODE:[Data]	0 1	OFF ON				----

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
FILTER	OFT:[Data]	QFT	OFT:[Data]	0	<u>Convertible</u> IR Through Normal 1/16 ND 1/64 ND			----	
				1					
				2					
				3					
				0	<u>AK-HC1500, HC1800</u> Clear 1/4 ND 1/16 ND 1/64 ND				
				1					
				2					
				3					
RED TALLY	TLR:[Data]	----	----	0 1	OFF ON	----		----	
GREEN TALLY	TLG:[Data]	----	----	0 1	OFF ON	----		----	
BLACK SHADING CORRECT(DIG)	OSA:C0:[Data]	QSA:C0	OSA:C0:[Data]	0 1	OFF ON			----	
M GAMMA@DRS OFF	OSA:01:[Data]	QSA:01	OSA:01:[Data]	6Ah	0.30			----	
				-	-				
				79h	0.45				
				-	-				
				97h	0.75				
M GAMMA@DRS ON	OSA:02:[Data]	QSA:02	OSA:02:[Data]	76h	-10			----	
				-	-				
				80h	0				
				-	-				
				8Ah	+10				
R GAMMA@DRS OFF	OSA:03:[Data]	QSA:03	OSA:03:[Data]	71h	-15			----	
				-	-				
				80h	0				
				-	-				
				8Fh	+15				
R GAMMA@DRS ON	OSA:04:[Data]	QSA:04	OSA:04:[Data]	76h	-10			----	
				-	-				
				80h	0				
				-	-				
				8Ah	+10				
B GAMMA@DRS OFF	OSA:05:[Data]	QSA:05	OSA:05:[Data]	71h	-15			----	
				-	-				
				80h	0				
				-	-				
				8Fh	+15				
B GAMMA@DRS ON	OSA:06:[Data]	QSA:06	OSA:06:[Data]	76h	-10			----	
				-	-				
				80h	0				
				-	-				
				8Ah	+10				
M BLACK GAMMA	OSA:07:[Data]	QSA:07	OSA:07:[Data]	60h	-32			----	
				-	-				
				80h	0				
				-	-				
				A0h	+32				

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
R BLACK GAMMA	OSA:08:[Data]	QSA:08	OSA:08:[Data]	71h - 80h - 8Fh	-15 - 0 - +15				
B BLACK GAMMA	OSA:09:[Data]	QSA:09	OSA:09:[Data]	71h - 80h - 8Fh	-15 - 0 - +15				
GAMMA SW	OSA:0A:[Data]	QSA:0A	OSA:0A:[Data]	0 1	OFF ON				
BLACK GAMMA SW	OSA:0B:[Data]	QSA:0B	OSA:0B:[Data]	0 1	OFF ON				
EFFECT DEPTH	OSA:0C:[Data]	QSA:0C	OSA:0C:[Data]	1 - 5	1 - 5				
DRS SW	OSA:0D:[Data]	QSA:0D	OSA:0D:[Data]	0 1	OFF ON				
CINE GAMMA SELECT	OSA:0E:[Data]	QSA:0E	OSA:0E:[Data]	0 1 2	FILM REC VIDEO REC LCD REC				
BLACK STRETCH LEVEL(@FILM MENU & FILM REC)	OSA0F:[Data]	QSA:0F	OSA0F:[Data]	00h - 1Eh	0 - 30				
DYNAMIC LEVEL (@FILM MENU & FILM REC)	OSA:10:[Data]	QSA:10	OSA:10:[Data]	0 1 2 3	200% 300% 400% 500%				
M KNEE POINT (@VIDEO MENU)	OSA:20:[Data]	QSA:20	OSA:20:[Data]	4Ah - 80h - B6h	80.00% - 93.50% - 107.00% (1step=0.25%)				
M KNEE POINT (@FILM MENU & VIDEO REC)	OSA:21:[Data]	QSA:21	OSA:21:[Data]	62h - 80h - 9Eh	30% - 60% - 90%				
R KNEE POINT	OSA:22:[Data]	QSA:22	OSA:22:[Data]	1Ch - 80h - E4h	-25.00% - 0.00% - +25.00% (1step=0.25%)				
B KNEE POINT	OSA:23:[Data]	QSA:23	OSA:23:[Data]	1Ch - 80h - E4h	-25.00% - 0.00% - +25.00% (1step=0.25%)				
M KNEE SLOPE (@VIDEO MENU)	OSA:24:[Data]	QSA:24	OSA:24:[Data]	00h - 63h	0 - 99				

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
M KNEE SLOPE (@FILM MENU & VIDEO REC)	OSA:25:[Data]		QSA:25	OSA:25:[Data]	7Ch - 80h - 85h	150% - 350% - 600% (1step=50%)			---
R KNEE SLOPE (@VIDEO MENU)	OSA:26:[Data]		QSA:26	OSA:26:[Data]	1Dh - 80h - E3h	-99 - 0 - +99			---
B KNEE SLOPE (@VIDEO MENU)	OSA:27:[Data]		QSA:27	OSA:27:[Data]	1Dh - 80h - E3h	-99 - 0 - +99			---
A.KNEE POINT (@VIDEO MENU)	OSA:28:[Data]		QSA:28	OSA:28:[Data]	4Ah - 80h - B6h	80.00% - 93.50% - 107.00% (1step=0.25%)			---
A.KNEE LEVEL (@VIDEO MENU)	OSA:29:[Data]		QSA:29	OSA:29:[Data]	7Ch - 85h	100% - 109% (1step=0.25%)			---
M WHITE CLIP LEVEL	OSA:2A:[Data]		QSA:2A	OSA:2A:[Data]	00h - 13h	90% - 109%			---
R WHITE CLIP LEVEL	OSA:2B:[Data]		QSA:2B	OSA:2B:[Data]	71h - 80h - 8Fh	-15% - 0% - +15%			---
B WHITE CLIP LEVEL	OSA:2C:[Data]		QSA:2C	OSA:2C:[Data]	71h - 80h - 8Fh	-15% - 0% - +15%			---
KNEE SW	OSA:2D:[Data]		QSA:2D	OSA:2D:[Data]	0 1 2	OFF MANUAL AUTO			---
WHITE CLIP	OSA:2E:[Data]		QSA:2E	OSA:2E:[Data]	0 1	OFF ON			---
HIGH COLOR	OSA:2F:[Data]		QSA:2F	OSA:2F:[Data]	0 1	OFF ON			---
TOTAL DTL LEVEL	OSA:30:[Data]		QSA:30	OSA:30:[Data]	61h - 80h - 9Fh 80h - 8Eh	-31 - 0 - +31 <u>AW-HE100</u> 0 - 14			---
H DTL LEVEL	OSA:31:[Data]		QSA:31	OSA:31:[Data]	00h - 3Fh	0 - 63			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to contol	Response to Confirmation		
PEAK FREQUENCY	OSA:34:[Data]		QSA:34	OSA:34:[Data]	00h - 1Fh	0 - 31			---
KNEE APERTURE	OSA:35:[Data]		QSA:35	OSA:35:[Data]	0 1	OFF ON			---
KNEE APE LEVEL	OSA:36:[Data]		QSA:36	OSA:36:[Data]	0 - 5	0 - 5			---
DETAIL(+)	OSA:38:[Data]		QSA:38	OSA:38:[Data]	61h - 80h - 9Fh	-31 - 0 - +31			---
DETAIL(-)	OSA:39:[Data]		QSA:39	OSA:39:[Data]	61h - 80h - 9Fh	-31 - 0 - +31			---
DETAIL CLIP	OSA:3A:[Data]		QSA:3A	OSA:3A:[Data]	00h - 3Fh	0 - 63			---
DETAIL SOURCE	OSA:3B:[Data]		QSA:3B	OSA:3B:[Data]	0 1 2 3 4 5	(G+R)/2 (G+B)/2 (2G+B+R)/4 (3G+B)/4 R G			---
SKIN TONE DETAIL (HD)	OSA:40:[Data]		QSA:40	OSA:40:[Data]	0 1	OFF ON			---
SKIN GET	OSA:41:[Data]		QSA:41	OSA:41:[Data]	0 1 2	OFF ON GET		OFF:Wipe out the rectangle. ON:Display the rectangle. GET:Get Flesh Noise Suppress(SKIN) Color standard.	---
SKIN DTL CORING (HD)	OSA:42:[Data]		QSA:42	OSA:42:[Data]	0 - 7	0 - 7			---
SKIN TONE DTL Y MAX (HD)	OSA:43:[Data]		QSA:43	OSA:43:[Data]	00h - FFh	0 - 255			---
SKIN TONE DTL Y MIN (HD)	OSA:44:[Data]		QSA:44	OSA:44:[Data]	00h - FFh	0 - 255			---
SKIN TONE DTL I CENTER (HD)	OSA:45:[Data]		QSA:45	OSA:45:[Data]	00h - FFh	0 - 255			---
SKIN TONE DTL I WIDTH (HD)	OSA:46:[Data]		QSA:46	OSA:46:[Data]	00h - FFh	0 - 255			---
SKIN TONE DTL Q WIDTH (HD)	OSA:47:[Data]		QSA:47	OSA:47:[Data]	00h - FFh	0 - 255			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
SKIN TONE DTL Q PHASE (HD)	OSA:48:[Data]		QSA:48	OSA:48:[Data]	00h - 80h - FFh	-127 - 0 - 128			---
SKIN TONE ZEBRA	OSA:49:[Data]		QSA:49	OSA:49:[Data]	0 1	OFF ON			---
LOW GAIN	OSA:50:[Data]		QSA:50	OSA:50:[Data]	7Ah - 7Ch - 80h - 86h	-6dB - 0dB - 12dB - 30dB			---
MID GAIN	OSA:51:[Data]		QSA:51	OSA:51:[Data]	7Ah - 7Ch - 80h - 86h	-6dB - 0dB - 12dB - 30dB			---
HIGH GAIN	OSA:52:[Data]		QSA:52	OSA:52:[Data]	7Ah - 7Ch - 80h - 86h	-6dB - 0dB - 12dB - 30dB			---
A.IRIIS WINDOW	OSA:53:[Data]		QSA:53	OSA:53:[Data]	0 1 2	NORM1 NORM2 CENTER			---
IRIS MODE	OSA:54:[Data]		QSA:54	OSA:54:[Data]	0 1	LENS CAM			---
IRIS GAIN @IRIS MODE = CAM	OSA:55:[Data]		QSA:55	OSA:55:[Data]	01h - 0Ah	1(A.IRIS SLOW) - 10(A. IRIS FAST)			---
MODE @S.GAIN	OSA:60:[Data]		QSA:60	OSA:60:[Data]	0 1 2	S.GAIN1 S.GAIN2 S.GAIN3			---
TOTAL GAIN@S.GAIN	----		QSA:61	OSA:61:[Data]	00h - 48h	0dB - 72dB			---
GAIN@S.GAIN	OSA:62:[Data]		OSA:62	OSA:62:[Data]	00h 03h 06h - 1Eh 21h 24h	0dB 3dB 6dB - 30dB 33dB 36dB			---
PIX MIX@S.GAIN	OSA:63:[Data]		QSA:63	OSA:63:[Data]	0 1	OFF +6dB			---
V MIX@S.GAIN	OSA:64:[Data]		QSA:64	OSA:64:[Data]	0 1	OFF +6dB			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
FRAME MIX@S.GAIN	OSA:65:[Data]	QSA:65	OSA:65:[Data]	00h 06h 0Ch 12h 18h 80h	OFF +6dB +12dB +18dB +24dB AUTO			V1.00 if use AUTO ,Max Gain of AUTO is set up by the FRAME MIX MAX command (OSE:74:[Data])	
H DETAIL LEVEL @S.GAIN	OSA:66:[Data]	QSA:66	OSA:66:[Data]	00h - 3Fh	0 - 63			---	
CRISP @S.GAIN	OSA:67:[Data]	QSA:67	OSA:67:[Data]	00h - 1Fh	0 - 31			---	
LEVEL DEPENDENT @S.GAIN	OSA:68:[Data]	QSA:68	OSA:68:[Data]	00h - 0Fh	0 - 15			---	
PEAK FREQUENCY @S.GAIN	OSA:69:[Data]	QSA:69	OSA:69:[Data]	00h - 1Fh	0 - 31			---	
M GAMMA @S.GAIN & DRS OFF	OSA:6A:[Data]	QSA:6A	OSA:6A:[Data]	6Ch - 80h - 94h	0.35 - 0.55 - 0.75			---	
M GAMMA @S.GAIN & DRS ON	OSA:6B:[Data]	QSA:6B	OSA:6B:[Data]	76h - 80h - 8Ah	-10 - 0 - +10			---	
M PED OFFSET @S.GAIN	OSA:6C:[Data]	QSA:6C	OSA:6C:[Data]	738h - 800h - 8C8h	-200 - 0 - +200			---	
R PED OFFSET @S.GAIN	OSA:6D:[Data]	QSA:6D	OSA:6D:[Data]	738h - 800h - 8C8h	-200 - 0 - +200			---	
B PED OFFSET @S.GAIN	OSA:6E:[Data]	QSA:6E	OSA:6E:[Data]	738h - 800h - 8C8h	-200 - 0 - +200			---	
SCAN REVERSE	OSA:70:[Data]	QSA:70	OSA:70:[Data]	0 1 2 3	OFF REVERSE1(L/R REVERSE) REVERSE2(U/D REVERSE) REVERSE3(L/R & U/D REVERSE)			---	
FRAME RATE RANGE @VARIABLE FRAME	OSA:71:[Data]	QSA:71	OSA:71:[Data]	0 1	60-4 60-6			---	
FRAME RATE @VARIABLE FRAME	OSA:72:[Data]	QSA:72	OSA:72:[Data]	04h - 3Ch	4fps - 60fps			---	
MATRIX TABLE	OSA:00:[Data]	QSA:00	OSA:00:[Data]	0 1	TABLE A TABLE B			---	
D5600 @VIDEO MENU	OSA:80:[Data]	QSA:80	OSA:80:[Data]	0 1	OFF ON			---	
LIGHTING @FILM MENU	OSA:81:[Data]	QSA:81	OSA:81:[Data]	0 1	DAYLIGHT TUNGSTEN			---	

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
GAIN SELECT	OGS:[Data]	QGS	OGS:[Data]	01h 04h 08h 06h 0Ch 0Eh	LOW MID HIGH S.GAIN1 S.GAIN2 S.GAIN3		V1.00 Supports only LOW MID HIGH S.GAIN1		
CAM ID	OSA:82:[Data]	QSA:82	OSA:82:[Data]	0 1 2	OFF BAR ON		---		
CAM ID POSI	OSA:83:[Data]	QSA:83	OSA:83:[Data]	0 1 2 3	0(Upper left) 1(Upper right) 2(Lower left) 3(Lower right)		---		
MATRIX TABLE	OSA:84:[Data]	QSA:84	OSA:84:[Data]	0 1 2	OFF A B		---		
COLOR CORRECTION	OSA:85:[Data]	QSA:85	OSA:85:[Data]	0 1	OFF ON		---		
BAR SELECT	OSA:86:[Data]	QSA:86	OSA:86:[Data]	0 1 2 3 4	FULL(16:9) FULL(4:3) SMPTE(16:9) SMPTE(4:3) ARIB		---		
FORMAT	OSA:87:[Data]	QSA:87	OSA:87:[Data]	0h 1h 2h 3h 4h 5h 6h 7h 8h 9h Ah Bh Ch Dh Eh 10h 11h 12h 13h	720/60p 720/59.94p 720/50p 1080/60i 1080/59.94i 1080/50i 1080/30p 1080/29.97p 1080/25p 1080/24p 1080/23.98p 480/59.94i 480/29.97psF 576/50i 576/25psF 1080/59.94p 1080/50p 480/59.94p 576/50p	V1.00L01 (N Model) supports only 1(720/59.94p), 4(1080/59.94i), B(480/59.94i) (E,MC Model) supports only 2(720/50p),5(1080/50i),D(576/50i)			
STATUS	OSA:88:[Data]	QSA:88	OSA:88:[Data]	0 1	OFF ON		V1.00		
MENU ON BAR	OSA:89:[Data]	QSA:89	OSA:89:[Data]	0 1	OFF ON		---		
MENU SEL	---	QSA:8A	OSA:8A:[Data]	0 1	VIDEO MENU FILM MENU		---		
SHUTTER MODE	OSA:90:[Data]	QSA:90	OSA:90:[Data]	1 2 3	OFF ON SYNCHRO SCAN		---		

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
SHUTTER SPEED	OSA:91:[Data]	QSA:91	OSA:91:[Data]	0	VIDEO MENU				----
				1	1/100s				
				2	1/120s				
				3	1/250s				
				4	1/500s				
				5	1/1000s				
					1/2000s				
				0	FILM MENU				
				1	180.0deg				
				2	172.8deg				
GEN-LOCK INPUT	OSA:A0:[Data]	QSA:A0	OSA:A0:[Data]	3	144.0deg				----
				4	120.0deg				
				5	90.0deg				
H PHASE-COARSE @HD SYNC & 720	OSA:A1:[Data]	QSA:A1	OSA:A1:[Data]	0	45.0deg				----
				1	OFF				
				2	ON				
H PHASE-COARSE @HD SYNC & 1080	OSA:A2:[Data]	QSA:A2	OSA:A2:[Data]	3	-40				----
				4	-				
				5	0				
H PHASE-COARSE @SD SYNC	OSA:A3:[Data]	QSA:A3	OSA:A3:[Data]	6	-				----
				7	+40				
				8	-60				
H PHASE-FINE @HD SYNC & 720	OSA:A4:[Data]	QSA:A4	OSA:A4:[Data]	9	-				----
				10	0				
				11	-				
H PHASE-FINE @HD SYNC & 1080	OSA:A5:[Data]	QSA:A5	OSA:A5:[Data]	12	BC				----
				13	+60				
				14	-120				
H PHASE-FINE @SD SYNC	OSA:A6:[Data]	QSA:A6	OSA:A6:[Data]	15	-				----
				16	0				
				17	-				
HD-SD PHASE CRS @HD SYNC	OSA:A7:[Data]	QSA:A7	OSA:A7:[Data]	18	F8				----
				19	+120				
				20	-45				
HD-SD PHASE FINE @HD SYNC	OSA:A8:[Data]	QSA:A8	OSA:A8:[Data]	21	-				----
				22	0				
				23	-				
SD-HD PHASE CRS @SD SYNC	OSA:A9:[Data]	QSA:A9	OSA:A9:[Data]	24	AD				----
				25	+45				
				26	-45				
SD-HD PHASE FINE @SD SYNC (D/C BOARD)	OSA:AA:[Data]	QSA:AA	OSA:AA:[Data]	27	-				----
				28	0				
				29	-				
				30	+7				----
				31	-99				
				32	-				
				33	0				----
				34	-				
				35	+				
				36	-4				----
				37	-				
				38	0				
				39	-				----
				40	+				
				41	-99				
				42	-				----
				43	0				
				44	-				
				45	+4				----
				46	-				
				47	-99				
				48	-				----
				49	0				
				50	-				
				51	+99				----
				52	-				
				53	-				

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
HD/SD V PHASE @SD SYNC (D/C BOARD)	OSA:AB:[Data]		QSA:AB	OSA:AB:[Data]	0 1	HD SD			---
SC COARSE @SD SYNC (D/C BOARD)	OSA:AC:[Data]		QSA:AC	OSA:AC:[Data]	1 - 8	1 - 8			---
SC FINE @SD SYNC (D/C BOARD)	OSA:AD:[Data]		QSA:AD	OSA:AD:[Data]	19Ch - 200h - 264h	-100 - 0 - +100			---
SC-H COARSE @HD SYNC or NO SYNC	OSA:AE:[Data]		QSA:AE	OSA:AE:[Data]	1 - 8	1 - 8			---
SC-H FINE @HD SYNC or NO SYNC	OSA:AF:[Data]		QSA:AF	OSA:AF:[Data]	19Ch - 200h - 264h	-100 - 0 - +100			---
TOTAL DTL LEVEL (D/C BOARD)	OSE:00:[Data]		QSE:00	OSE:00:[Data]	00h - 3Fh	0 - 63			---
H DTL LEVEL (D/C BOARD)	OSE:01:[Data]		QSE:01	OSE:01:[Data]	00h - 3Fh	0 - 63			---
CRISP (D/C BOARD)	OSE:02:[Data]		QSE:02	OSE:02:[Data]	00h - 3Fh	0 - 63			---
PEAK FREQUENCY (D/C BOARD)	OSE:03:[Data]		QSE:03	OSE:03:[Data]	1 2 3 4 5 6 7	1.89MHz 2.18MHz 2.56MHz 3.17MHz 4.00MHz 5.28MHz 6.75MHz			---
LEVEL DEPENDENT (D/C BOARD)	OSE:04:[Data]		QSE:04	OSE:04:[Data]	00h - 1Eh	0% - 30%			---
DARK DETAIL (D/C BOARD)	OSE:05:[Data]		QSE:05	OSE:05:[Data]	0 - 7	0(OFF) - 7			---
KNEE APERTURE (D/C BOARD)	OSE:06:[Data]		QSE:06	OSE:06:[Data]	00h - 3Fh	0 - 63			---
+CLIP (D/C BOARD)	OSE:07:[Data]		QSE:07	OSE:07:[Data]	00h - 3Fh	0 - 63			---
-CLIP (D/C BOARD)	OSE:08:[Data]		QSE:08	OSE:08:[Data]	00h - 3Fh	0 - 63			---
CORNER DETAIL (D/C BOARD)	OSE:09:[Data]		QSE:09	OSE:09:[Data]	00h - 1Fh	0 - 31			---
CHROMA DETAIL (D/C BOARD)	OSE:0A:[Data]		QSE:0A	OSE:0A:[Data]	00h - 3Fh	0 - 63			---
CHROMA DTL CRISP (D/C BOARD)	OSE:0B:[Data]		QSE:0B	OSE:0B:[Data]	00h - 3Fh	0 - 63			---
DETAIL SOURCE (D/C BOARD)	OSE:0C:[Data]		QSE:0C	OSE:0C:[Data]	0 1 2 3 4	(G+R)/2 (G+B)/2 (2G+B+R)/4 (3G+B)/4 R			---
SKIN TONE DETAIL (D/C BOARD)	OSE:10:[Data]		QSE:10	OSE:10:[Data]	0 1	OFF ON			---

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
SKIN TONE LEVEL (D/C BOARD)	OSE:11:[Data]		QSE:11	OSE:11:[Data]	0 1 2	LOW MID HIGH			---
SKIN TONE ZEBRA (D/C BOARD)	OSE:12:[Data]		QSE:12	OSE:12:[Data]	0 1	OFF ON			---
SKIN TONE PHASE (D/C BOARD)	OSE:13:[Data]		QSE:13	OSE:13:[Data]	5Dh - 7Bh - 99h	93 - 123 - 153			---
SKIN TONE WIDTH (D/C BOARD)	OSE:14:[Data]		QSE:14	OSE:14:[Data]	01h - 14h	1 - 20			---
SKIN TONE CRISP (D/C BOARD)	OSE:15:[Data]		QSE:15	OSE:15:[Data]	0 - 7	0 - 7			---
D/C MODE (D/C BOARD)	OSE:20:[Data]		QSE:20	OSE:20:[Data]	0 1	SIDE CUT SQUEEZE			V1.00
VBS SETUP (D/C BOARD)	OSE:21:[Data]		QSE:21	OSE:21:[Data]	0 1	0.0% 7.5%			---
CHARACTER MIX (D/C BOARD)	OSE:22:[Data]		QSE:22	OSE:22:[Data]	0 1 2 3	ALL SD(VBS + SD-SDI) VBS SD-SDI			---
2D LPF (D/C BOARD)	OSE:23:[Data]		QSE:23	OSE:23:[Data]	0 1 2 3	OFF LOW MID HIGH			---
CHARACTER MIX (HD SDI BOARD)	OSE:30:[Data]		QSE:30	OSE:30:[Data]	0 1	ALL OPTION			---
CHARACTER MIX SELECT	OSD:98:[Data1]:[Data2]		QSD:98:[Data1]	OSD:98: [Data1]:[Data2]	<u>Data1</u> 0 1 2 <u>Data2</u> 0 1	<u>Output</u> VBS Component OPTION <u>Character Mix Select</u> off on			---
ERROR NOTICE	---		QER	OER:[Data]	Data 0 1	<u>AW-HE870</u> Normal Fan Error		If the Camera made trouble, Camera sent "OER:[Data]" periodically.	V1.00
PRESET MATRIX SELECT	OSE:31:[Data]		QSE:31	OSE:31:[Data]	0 1 2	NORMAL EBU MATRIX NTSC MATRIX			V1.00
SOFT SKIN	OSE:32:[Data]		QSE:32	OSE:32:[Data]	0 1 2 3	OFF LOW MID HIGH			V1.00 supports only 0,1,3
DRS SELECT	OSE:33:[Data]		QSE:33	OSE:33:[Data]	0 1 2 3	OFF LOW MID HIGH			V1.00 supports only 0(OFF),1(LOW) ,3(HIGH)
HDMI COLOR	OSE:68:[Data]		QSE:68	OSE:68:[Data]	0 1 2 3	RGB(NOR) RGB(ENH) YPbPr(422) YPbPr(444)			V1.00
PUSH AUTO FOCUS	OSE:69:[Data]		---	---	1	PUSH AUTO			V1.00
DIGITAL ZOOM ENABLE	OSE:70:[Data]		QSE:70	OSE:70:[Data]	0 1	DISABLE ENABLE			V1.00
PRESET SCOPE	OSE:71:[Data]		QSE:71	OSE:71:[Data]	0 1	MODE A MODE B			V1.00

ITEM	Control Command	Reply for Control Command	Confirmation Command	Reply for Confirmation Command	Data	Data Contents		Remarks	HE50
						Control and Response to control	Response to Confirmation		
GAMMA TYPE	OSE:72:[Data]		QSE:72	OSE:72:[Data]	0 1 2 3	OFF NORMAL CINEMA PC-LCD			V1.00 supports only 0,1,2
BACK LIGHT COMPENSATION	OSE:73:[Data]		QSE:73	OSE:73:[Data]	0 1	OFF ON			V1.00
AUTO F.MIX MAX GAIN	OSE:74:[Data]		QSE:74	OSE:74:[Data]	00 01 02 03 04 05	(OFF) 6dB 12dB 18dB 24dB 30dB			V1.00 supports only 00(OFF) - 03(18dB)
OSD Off With TALLY	OSE:75:[Data]		QSE:75	OSE:75:[Data]	0 1	OFF ON			V1.00
DIGITAL ZOOM MAGNIFICATION	OSE:76:[Data]		QSE:76	OSE:76:[Data]	0100 - 9999	*1.00 - *99.99			V1.00 supports only 0100(*1.00) - 1000(*10.00)

P/T Control Protocol

This is a program to control Panasonic PAN/TILT system from PC by serial communication.

Method	Half Duplex
Communication Speed	9600bps
Data bit	8bit
Stop bit	1bit
Prity	None
Flow control	None

(Electrical Specification)

Connector : Modular 8pin

Compatible with RS422

4line system(TX+,TX-/send, RX+,RX-/Recieve)

(Process)

(1) PC — Command —> CAMERA

(2) CAMERA — Command —> PC (In most P/T commands, there is no reply.)

ex)1 PAN Stop command

P 5 0 [CR]
H'23 H'50 H'35 H'30 H'0D

ITEM	Control Command	Confirmation Command	Responce Command	Data	Data Contents		Remarks	HE50
					Control and Response to control	Response to Confirmation		
Power	#O[Data]	#O	p[Data]	0 f 1 n 2	Power OFF Power OFF Power ON Power ON ---	Power OFF Power OFF Power ON(w/ Camera TX) Power ON(wo/ Camera TX)	Camera Power & P/T Control	with Camera TX -> Controller RX line
Pan Speed Control	#P[Data]	---	pS[Data]	01 - 50 - 99	Left Max. Speed - Stop - Right Max. Speed			V1.00
Tilt Speed Control	#T[Data]	---	tS[Data]	01 - 50 - 99	Down Max. Speed - Stop - UP Max. Speed			V1.00
Zoom Speed Control	#Z[Data]	---	zS[Data]	01 - 49 50 51 - 99	Wide Max. Speed - Wide Min. Speed Stop Tele Min. Speed - Tele Max. Speed			V1.00
Zoom Position Control	#AXZ[Data]	#AXZ	axz[Data]	555h - FFFh	Wide - Tele			V1.00
Zoom Position Control	#AYZ[Data]	#AYZ	axz[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Wide - Tele	Wide - Tele		V1.00
Focus Speed Control	#F[Data]	---	fS[Data]	01 - 49 50 51 - 99	Near Max. Speed - Near Min. Speed Stop Far Min. Speed - Far Max. Speed			V1.00
Focus Position Control	#AXF[Data]	#AXF	axf[Data]	555h - FFFh	Near - Far			V1.00
Focus Position Control	#AYF[Data]	#AYF	axf[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Near - Far	Near - Far		V1.00

ITEM	Control Command	Confirmation Command	Responce Command	Data	Data Contents		Remarks	HE50
					Control and Response to control	Response to Confirmation		
Roll Speed Control	#RO[Data]	---	rO[Data]	01 - 49 50 51 - 99	CCW Max. Speed - CCW Min. Speed Stop CW Min. Speed - CW Max. Speed			---
Iris Control	#I[Data]	#I	iC[Data]	01 - 99	Iris Close - Iris Open			V1.00
Iris Control	#AXI[Data]	#AXI	axi[Data]	555h - FFFh	Iris Close - Iris Open			V1.00
Iris Control	#AYI[Data]	#AYI	axi[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Iris Close - Iris Open	Iris Close - Iris Open		V1.00
Extender/AF Control	#D1[Data]	#D1	d1[Data]	0 1	OFF ON			V1.00
ND Control	#D2[Data]	#D2	d2[Data]	0 1	OFF ON			---
Iris Auto/Manual	#D3[Data]	#D3	d3[Data]	0 1	Manual Iris Auto Iris			V1.00
Lamp Control	#D4[Data]	#D4	d4[Data]	0 1	OFF ON			---
Lamp Alarm	#D5	---	d5[Data]	0 1		Alarm OFF Alarm ON		---
OPTION SW Control	#D6[Data]	#D6	d6[Data]	0 1	OFF ON			V1.00
Defroster Control	#D7[Data]	---	d7[Data]	0 1	OFF ON			---
Wiper Control	#D8[Data]	---	d8[Data]	0 1	OFF ON			---
Heater/Fan Control	#D9[Data]	---	d9[Data]	0 1	OFF ON			---
Tally Control	#DA[Data]	#DA	dA[Data]	0 1	OFF ON			V1.00
Request Latest Recall Preset No.	---	#S	s[Data]	00 - 49		Preset 01 - Preset 50		V1.00

ITEM	Control Command	Confirmation Command	Responce Command	Data	Data Contents		Remarks	HE50
					Control and Response to control	Response to Confirmation		
Save Preset Memory	#M[Data]	---	s[Data]	<u>AW-HE100</u> 00 - 99 <u>AW-PH300</u> 0 - 9 <u>other P/T</u> 00 - 49	<u>AW-HE100</u> Preset001 - Preset100 <u>AW-PH300</u> Preset 1 - Preset 10 <u>other P/T</u> Preset 01 - Preset 50	<u>AW-HE100</u> Preset001 - Preset100 <u>AW-PH300</u> <u>other P/T</u> Preset 01 - Preset 50		V1.00
Recall Preset Memory	#R[Data]	---	s[Data]	<u>AW-HE100</u> 00 - 99 <u>AW-PH300</u> 0 - 9 <u>other P/T</u> 00 - 49	<u>AW-HE100</u> Preset001 - Preset100 <u>AW-PH300</u> Preset 1 - Preset 10 <u>other P/T</u> Preset 01 - Preset 50	<u>AW-HE100</u> Preset001 - Preset100 <u>AW-PH300</u> <u>other P/T</u> Preset 01 - Preset 50		V1.00
Preset completion notification	---	---	q[Data]	<u>AW-HE100</u> 00 - 99 <u>Other P/T</u> 00 - 49	<u>AW-HE100</u> Preset001 - Preset100 <u>other P/T</u> Preset 01 - Preset 50			V1.00
Preset Mode Setting	#RT[Data]	#RT	rt[Data]	0 1	Normal Diagonal			---
Limitation Setting	#L[Data]	---	l[Data]	<u>Controller -> P/T</u> 1 2 3 4 <u>P/T -> Controller</u> 0 1	Tilt Up Tilt Down Pan Left Pan Right	Release Set		V1.00

ITEM	Control Command	Confirmation Command	Responce Command	Data	Data Contents		Remarks	HE50
					Control and Response to control	Response to Confirmation		
Landing Setting	#N[Data]	---	n[Data]	0 1	Just Landing Soft Landing			----
Request Zoom Position (Output D/A Data)	---	#GZ	gz[Data]	555h - FFFh "----"		Wide - Tele @Power OFF		V1.00
Request Focus Position (Output D/A Data)	---	#GF	gf[Data]	555h - FFFh "----"		Near - Far @Power OFF		V1.00
Request Iris Position (Output D/A Data)	---	#GI	gi[Data1][Data2]	[Data1] 555h - FFFh "----" [Data2] 0 1		[Data1] Close - Open @Power OFF [Data2] Manual Iris Auto Iris	@Iris Manual	V1.00
Tilt Range	#AGL[Data]	#AGL	aGL[Data]	0 1	Narrow(190deg) Wide(300deg)			----
Request Software Verion	---	#V?	[Version Data]					----
TALLY Enable	#TAE[Data]	#TAE	tAE[Data]	0 1	Disable Enable			V1.00
Install Positon	#INS[Data]	#INS	iNS[Data]	0 1	Desktop Hanging			V1.00
Speed With Zoom POS	#SWZ[Data]	#SWZ	sWZ[Data]	0 1	OFF ON			V1.00
Pan/Tilt Absolute Position Control	#APC[Data1][Data2]	#APC	aPC[Data1][Data2]	[Data1] 0000h - 8000h - FFFFh [Data2] 0000h - 8000h - FFFFh	[Data1]Pan Position CCW Limit - Center - CW Limit [Data2]Tilt Position UP Limit - Center - DOWN Limit	[Data1]Pan Position CCW Limit - Center - CW Limit [Data2]Tilt Position UP Limit - Center - DOWN Limit		V1.00
Limitation Control	#LC[Data1][Data2]	#LC[Data1]	IC[Data1][Data2]	[Data1] 1 2 3 4 [Data2] 0 1	[Data1] Tilt Up Tilt Down Pan Left Pan Right [Data2] Release Set	[Data1] Tilt Up Tilt Down Pan Left Pan Right [Data2] Release Set		V1.00

ITEM	Control Command	Confirmation Command	Responce Command	Data	Data Contents		Remarks	
					Control and Response to control	Response to Confirmation		HE50
Pan Tilt Speed Control	#PTS[Data1][Data2]	---	pTS[Data1][Data2]	[Data1]	[Data1]			V1.00
				01	Left Max. Speed			
				-	-			
				50	Stop			
				-	-			
				99	Right Max. Speed			
				[Data2]	[Data2]			
				01	Down Max. Speed			
				-	-			
				50	Stop			
				-	-			
				99	UP Max. Speed			
Wireless Control	#WLC[Data1]	#WLC	wLC[Data1]	0 1	Disable Enable			V1.00