

PROTOCOL of CONVERTIBLE CAMERA and PAN/TILT SYSTEM  
Ver2.24 (25/3/2008)

Corporate Broadcast and Multimedia Division  
Panasonic System Solutions Company  
Matsushita Electric Industrial Co., Ltd.

Specifications are subject to change without notice.

## 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



(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 Can

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500					
MODEL NUMBER	---	---	QID	OID:[Data]	00	---	AW-E300 AW-E300P AW-E300E AW-E600 AW-E800P		to Ver.187		to Ver.055	---											
					01		Returns model No. by ASCII	Ex. OID:AW-E800P	from Ver.188	from Ver.056	Ver.001											V1.00L01	Ver.1.00 -00-0.00
SOFTWARE VERSION	---	---	QSV	OSV:[Data]			Software Version		Ver.001											V1.00L01	Ver.1.00 -00-0.00		
AWC/AWB SET	OVS	OVS ER3:OVS	---	---	---	AWC/AWB Start AWC/AWB OK AWC/AWB NG	---	Response Command returns when AWC/AWB finish	Ver.001											V1.00L01	Ver.1.00 -00-0.00		
ABC/ABB SET	OAS	OAS ER3:OAS	---	---	---	ABC/ABB Start ABC/ABB OK ABC/ABB NG	---	Response Command returns when ABC/ABB finish	Ver.001											V1.00L01	Ver.1.00 -00-0.00		
AWC MODE	OAW:[Data]	---	QAW	OAW:[Data]	0	ATW	ATW	Be careful because Data of control and question is different.	Ver.001												V1.00L01	---	
					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	Convertible			Ver.001												V1.00L01	Ver.1.00 -00-0.00	
					1	OFF																	
					2	LOW																	
						HIGH																	
						HC1500_HE100																	
GAIN UP	OGU:[Data]	---	QGU	OGU:[Data]	00	AGC Low			Ver.001	above 18dB from Ver.188	above 18dB from Ver.188	above 18dB from Ver.056	Ver.001	Ver.001	AGC Low -> Max Gain=18dB AGC High -> Max Gain=30dB  if use AGC ON, Max Gain of AGC is set up by the AGC MAX command(OSD:69).							V1.00L01	---
					01	AGC High																	
					08	0dB																	
					-																		
					11	9dB																	
					-																		
					1A	18dB																	
					-																		
					26	30dB																	
					27	N/Eye Low																	
					-	N/Eye																	
					28	N/Eye High																	
					80	AGC ON																	
						AW-HE100																	
					08	0dB																	
-																							
14	12dB																						
15	ER3																						
16	ER3																						
17	15dB																						
18	ER3																						
19	ER3																						
1A	18dB																						
80	AGC ON																						
SHUTTER	OSH:[Data]	---	QSH	OSH:[Data]	0	OFF			Ver.001												V1.00L01	---	
					3	1/100(NSTC)																	
						1/120(PAL)																	
					5	1/250																	
					6	1/500																	
					7	1/1000																	
					8	1/2000																	
					9	1/4000																	
					A	1/10000																	
					B	Synchro-Scan																	
					C	FLIC(AUTO ND)																	



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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
LIGHT AREA A.IRIS AREA	ORA:[Data]		QAR	OAR:[Data]	0 1 5 6 7	ALL Center Top Cut Bottom Cut R/L Cut		Ver.001											
NEGA/POSI	ONP:[Data]		QNP	ONP:[Data]	0 1	Positive Negative		Ver.001											
R PEDESTAL	ORD:[Data]		QRD	ORD:[Data]	00h 1Eh - 3Ch	-30 0 - +30		Ver.001				Ver.001 Data x 5							Ver.1.00-00-0.00 Data x 3
B PEDESTAL	OBD:[Data]		QBD	OBD:[Data]	00h 1Eh - 3Ch	-30 0 - +30		Ver.001				Ver.001 Data x 5							Ver.1.00-00-0.00 Data x 3
R GAIN	ORG:[Data]		QGR	OGR:[Data]	00h 1Eh - 3Ch	-30 0 - +30		Ver.001				Ver.001 Data x 5			V1.00L01				Ver.1.00-00-0.00 Data x 3
B GAIN	OBG:[Data]		QGB	OGB:[Data]	00h 1Eh - 3Ch	-30 0 - +30		Ver.001				Ver.001 Data x 5			V1.00L01				Ver.1.00-00-0.00 Data x 3
T PEDESTAL	OTD:[Data]		QTD	OTD:[Data]	00h 1Eh - 3Ch	-30 0 - +30		Ver.001				Ver.001 Data x 5			V1.00L01				Ver.1.00-00-0.00 Data x 6
H PHASE	OHP:[Data]		QHP	OHP:[Data]	000h - 3FFh	-206 - +49		Ver.001							V1.00L01				
SC COARSE	OSC:[Data]		QSC	OSC:[Data]	0 1 2 3 4	2( 90deg) 3(180deg) 4(270deg) 1( 0deg) ---	--- 1( 0deg) 2( 90deg) 3(180deg) 4(270deg)	Be careful because Data of control and question is different.	Ver.001						V1.00L01				
SC FINE	OSN:[Data]		QSN	OSN:[Data]	000h 001h 002h 200h - 3FFh	-511 -511 -511 0 - +511		Ver.001							V1.00L01				
CHROMA LEVEL	OCG:[Data]		QCG	OCG:[Data]	00 - 03 - 06	-3 0 - +3		Ver.001							V1.00L01				
SCENE FILE	XSF:[Data]		QSF	OSF:[Data]	0 1 2 3 4 5 6 7  0 1 2 3 4	Convertible Halogen Fluorescent Outdoor User  HC1500 PRESET USER1 USER2 CURRENT	Convertible Halogen Fluorescent Outdoor User Halogen Fluorescent Outdoor User  HC1500 PRESET USER1 USER2 CURRENT	Be careful because Data of control and question is different.	Ver.001						V1.00L01				Ver.1.00-00-0.00
GAMMA	OSD:00:[Data]		QSD:00	OSD:00:[Data]	00h 0Ah - 14h	0.35 0.45 - 0.55		Ver.001 Only User mode											

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						Control and Response to control	Response to Confirmation	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
KNEE POINT	OSD:08:[Data]	QSD:08	OSD:08[Data]	FFh 00h - 0Ah 0Bh  FFh 00h 01-0Bh	Dynamic 88% - 98% ----  <u>HE100</u>  OFF ON	Dynamic 88% - 98% ----  <u>HE100</u>  OFF ON		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								V1.00L01 Only User mode	----
WHITE CLIP	OSD:09:[Data]	QSD:09	OSD:09:[Data]	00h - 0Fh		95% - 110%		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
H.DTL LEVEL H	OSD:0A:[Data]	QSD:0A	OSD:0A:[Data]	01h - 3Fh		1 - 63		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
V DTL LEVEL H	OSD:0E:[Data]	QSD:0E	OSD:0E:[Data]	01h - 1Fh		1 - 31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
H.DTL LEVEL L	OSD:12:[Data]	QSD:12	OSD:12:[Data]	00h - 3Eh		0 - 62		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
V DTL LEVEL L	OSD:16:[Data]	QSD:16	OSD:16:[Data]	00h - 1Eh  00h - 07h - 0Eh		0 - 30  AW-HE100 -7 0 - +7		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								V1.00L01	----
DETAIL BAND	OSD:1E:[Data]	QSD:1E	OSD:1E[Data]	01 - 05		01 - 05		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
NOISE SUPPRESS /CRISP	OSD:22:[Data]	QSD:22	OSD:22:[Data]	00h - 0Ah  00h - 1Fh		<u>Convertible</u> 0 - 10  <u>AK-HC1500</u> 0 - 31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								V1.00L01 Only User mode	----
LEVEL DEPENDENT	OSD:26:[Data]	QSD:26	OSD:26:[Data]	00h - 19h  00h - 0Fh		<u>Convertible</u> 00% - 25%  <u>AK-HC1500</u> 0% - 15%		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
CHROMA DETAIL	OSD:2A:[Data]	QSD:2A	OSD:2A:[Data]	00h - 0Fh		00 - 15		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
DARK DETAIL	OSD:2E:[Data]	QSD:2E	OSD:2E:[Data]	00 - 05		0 - 5		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									----
MATRIX(R-G)	OSD:2F:[Data]	QSD:2F	OSD:2F:[Data]	00h - 1Fh - 3Fh		-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									Ver.1.00 -00-0.00
MATRIX(R-B)	OSD:30:[Data]	QSD:30	OSD:30:[Data]	00h - 1Fh - 3Fh		-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									Ver.1.00 -00-0.00
MATRIX(G-R)	OSD:31:[Data]	QSD:31	OSD:31:[Data]	00h - 1Fh - 3Fh		-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode									Ver.1.00 -00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100
MATRIX(G-B)	OSD:32:[Data]	QSD:32	OSD:32:[Data]	00h - 1Fh - 3Fh	-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
MATRIX(B-R)	OSD:33:[Data]	QSD:33	OSD:33:[Data]	00h - 1Fh - 3Fh	-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
MATRIX(B-G)	OSD:34:[Data]	QSD:34	OSD:34:[Data]	00h - 1Fh - 3Fh	-31 - 0 - +31		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
FLARE R	OSD:35:[Data]	QSD:35	OSD:35:[Data]	00h - 64h	0 - 100		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
FLARE G	OSD:36:[Data]	QSD:36	OSD:36:[Data]	00h - 64h	0 - 100		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
FLARE B	OSD:37:[Data]	QSD:37	OSD:37:[Data]	00h - 64h	0 - 100		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
FLARE SW	OSA:11:[Data]	QSA:11	OSA:11:[Data]	0 1	OFF ON												Ver.1.00 -00-0.00
CLEAN DNR	OSD:3A:[Data]	QSD:3A	OSD:3A:[Data]	00 01 02	OFF LOW HIGH		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode					V001			
2D LPF	OSD:3F:[Data]	QSD:3F	OSD:3F:[Data]	00 01 02	OFF LOW HIGH		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode					V001			
CORNER DETAIL	OSD:43:[Data]	QSD:43	OSD:43:[Data]	00 01	OFF ON		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								
PRECISION DETAIL /SLIM DETAIL	OSD:44:[Data]	QSD:44	OSD:44:[Data]	00 01 02  00 01 02	Convertible OFF LOW HIGH  AK-HC1500 OFF ON ON		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								Ver.1.00 -00-0.00
BLACK STRETCH	OSD:46:[Data]	QSD:46	OSD:46:[Data]	00 01	OFF ON		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								
HIGH LIGHT CHROMA	OSD:49:[Data]	OSD:49	OSD:49:[Data]	00 01 02	OFF LOW HIGH		from Ver.188 Only User mode	from Ver.056 Only User mode	Ver.001 Only User mode								
FLESH NOISE SUPPRESS	OSD:4B:[Data]	QSD:4B	OSD:4B:[Data]	00 01 02	OFF LOW HIGH			from Ver.056 Only User mode	Ver.001 Only User mode					Ver.001			
FLESH DETAIL FLESH DTL LEVEL				00 01 02	LOW MID HIGH	from Ver.188 Only User mode		Ver.001									
IRIS FOLLOW	---	QSD:4F	OSD:4F:[Data]	00h - FFh	---	Close - Open	from Ver.188	from Ver.056	Ver.001							V1.00L01	Ver.1.00 -00-0.00
CONTRAST(GAMMA)	OSD:50:[Data]	QSD:50	OSD:50:[Data]	00 01 02	LOW MID HIGH		from Ver.188 Other than User mode	from Ver.056 Other than User mode	Ver.001 Other than User mode							V1.00L01 Only User mode	
FLESH TONE	OSD:52:[Data]	QSD:52	OSD:52:[Data]	00 - 03 - 06	-3 - 0 - +3		from Ver.188 Other than User mode	from Ver.056 Other than User mode	Ver.001 Other than User mode								

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
DETAIL SELECT	OSD:54:[Data]		QSD:54	OSD:54:[Data]	00 01	Normal Super DTL		from Ver.188 Other than User mode	from Ver.056 Other than User mode	Ver.001 Other than User mode									
NOISE SUPPRESS	OSD:55:[Data]		QSD:55	OSD:55:[Data]	00 01 02	OFF LOW HIGH		from Ver.188 Other than User mode	from Ver.056 Other than User mode	Ver.001 Other than User mode									
FLESH NOSE SUPPRESS	OSD:56:[Data]		QSD:56	OSD:56:[Data]	00 01 02	OFF LOW HIGH			from Ver.056 Other than User mode	Ver.001 Other than User mode							OSD:4B		
DTL FLESH SUPPRESS					00 01 02	LOW MID HIGH		from Ver.188 Other than User mode											
ZEBRA INDICATER	OSD:60:[Data]		QSD:60	OSD:60:[Data]	00 01	OFF ON	with studio card	from Ver.188	from Ver.056	Ver.001									
ZEBRA1 LEVEL	OSD:61:[Data]		QSD:61	OSD:61:[Data]	00h - 27h	70% - 109%	with studio card	from Ver.188	from Ver.056	Ver.001									
ZEBRA2 LEVEL	OSD:62:[Data]		QSD:62	OSD:62:[Data]	01h - 28h	71% - 110%	with studio card	from Ver.188	from Ver.056										
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	from Ver.188	from Ver.056	Ver.001									
EVF OUTPUT	OSD:64:[Data]		QSD:64	OSD:64:[Data]	00 01	Y VBS	with studio card	from Ver.188	from Ver.056	Ver.001									
OUTPUT SELECT	OSD:65:[Data]		QSD:65	OSD:65:[Data]	00 01 02	RGB YPbPr Y/C		from Ver.188 with component Card	from Ver.056 with component Card	Ver.001 with component Card	Ver.001							V1.00L01	
CHARGE TIME	OSD:68:[Data]		QSD:68	OSD:68:[Data]	00 01 02 03 04 05 06 07 08  00 01 02 03 04 05 06 07 08	NTSC 2s 1s 1/2s 1/4s 1/8s 1/15s 1/30s OFF AUTO  PAL 2s 1s 1/2s 1/3s 1/6s 1/12s 1/25s OFF AUTO		from Ver.188 with High Sensitivity Card	from Ver.056	Ver.001	Ver.001								
AGC MAX	OSD:69:[Data]		QSD:69	OSD:69:[Data]	00 01 02 03 04 05 06 07	(OFF) 6dB 12dB 18dB 24dB 30dB N/Eye(E300/A) N/Eye L(E600, E750, E655, E860) N/Eye H(E600, E750, E655, E860)		from Ver.188 with High Sensitivity Card	from Ver.056	Ver.001	Ver.001							V1.00L01	
ASPECT RATIO	OSD:70:[Data]		QSD:70	OSD:70:[Data]	00 01	16:9 4:3				from Ver.056	Ver.001						Ver.001	V1.00L01	

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
FAN	OSD:71:[Data]		QSD:71	OSD:71:[Data]	00 01  00 01 02	Convertible OFF ON(E800) AUTO(E750,E655,E860,HE100)  AK-HC1500 OFF AUTO ON				from Ver.056	Ver.001				Ver.001				
ATW SPEED	OSD:72:[Data]		QSD:72	OSD:72:[Data]	00 01 02 03 04	Slow2 Slow1 Middle Fast1 Fast2					Ver.001								
COLOR BAR/CAMERA	DCB:[Data]		QBR	OBR:[Data]	0 1 2	Camera Color Bar Test			without "Test"								V1.00L01	Ver.1.00-00-0.00	
MENU	DUS:[Data]		QUS	OUS:[Data]	0 1	OFF ON			Ver.001								V1.00L01	Ver.1.00-00-0.00	
BAR SETUP	DCS:[Data]		QCS	OCS:[Data]	0 1	0.0% 7.5%						Ver.001							
MENU SW	DPG:[Data]		---	---	1				Ver.001								V1.00L01	Ver.1.00-00-0.00	
ITEM SW	DTI:[data]		---	---	1				Ver.001								V1.00L01	Ver.1.00-00-0.00	
YES SW	DUP:[Data]		---	---	1				Ver.001								V1.00L01	Ver.1.00-00-0.00	
NO SW	DDW:[Data]		---	---	1				Ver.001								V1.00L01	Ver.1.00-00-0.00	
PAN(LEFT)	HPL		---	---	---	move to left			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
PAN(RIGHT)	HPR		---	---	---	move to right			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
PAN(STOP)	HPS		---	---	---	stop pan			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
TILT(UP)	HTU		---	---	---	move to up			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
TILT(DOWN)	HTD		---	---	---	move to down			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
TILT(STOP)	HTS		---	---	---	stop tilt			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001								
ZOOM(TELE)	HZT		---	---	---	move to tele			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
ZOOM(WIDE)	HZW		---	---	---	move to wide			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
ZOOM(STOP)	HZS		---	---	---	stop zoom			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
ZOOM SPEED	LZS:[Data]		---	---	0 - 9	Slow - Fast											from Ver.077	V1.00L01	Ver.1.10-00-0.00
FOCUS(FAR)	HFF		---	---	---	move to far			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
FOCUS(NEAR)	HFN		---	---	---	move to near			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
FOCUS(STOP)	HFS		---	---	---	stop focus			from Ver.177 with Lens I/F Card	from Ver.046	Ver.001						with Lens I/F Card	V1.00L01	Ver.1.00
FOCUS SPEED	LFS:[Data]		---	---	0 - 9	Slow - Fast											from Ver.077	V1.00L01	Ver.1.10-00-0.00
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													Ver.1.10-00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
Recall LENS PRESET	LPS:[Data]				00 01 02 03 04 05	Recall Current Recall Preset1 Recall Preset2 Recall Preset3 Recall Preset4 Recall Preset5													Ver.1.10-00-0.00
COLOR MATRIX R GAIN /COLOR CORRECTION R SATURATION	OSD:86:[Data]		QSD:86	OSD:86:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX R PHASE /COLORCORRECTION R PHASE	OSD:87:[Data]		QSD:87	OSD:87:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX R,YI GAIN /COLOR CORRECTION R,YI SATURATION	OSD:88:[Data]		QSD:88	OSD:88:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX R,YI PHASE /COLOR CORRECTION R,YI PHASE	OSD:89:[Data]		QSD:89	OSD:89:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX YI GAIN /COLOR CORRECTION YI SATURATION	OSD:8A:[Data]		QSD:8A	OSD:8A:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX YI PHASE /COLOR CORRECTION YI PHASE	OSD:8B:[Data]		QSD:8B	OSD:8B:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX YL,G GAIN /COLOR CORRECTION YL,G SATURATION	OSD:8C:[Data]		QSD:8C	OSD:8C:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX YL,G PHASE /COLOR CORRECTION YL,G PHASE	OSD:8D:[Data]		QSD:8D	OSD:8D:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX G GAIN /COLOR CORRECTION G SATURATION	OSD:8E:[Data]		QSD:8E	OSD:8E:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX G PHASE /COLOR CORRECTION G PHASE	OSD:8F:[Data]		QSD:8F	OSD:8F:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX G,Cy GAIN /COLOR CORRECTION G,Cy SATURATION	OSD:90:[Data]		QSD:90	OSD:90:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX G,Cy PHASE /COLOR CORRECTION G,Cy PHASE	OSD:91:[Data]		QSD:91	OSD:91:[Data]	00h 80h FFh	-127 - 0 - +127													Ver1.10-00-0.00 -63 <-> +63

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500
COLOR MATRIX Cy GAIN /COLOR CORRECTION Cy SATURATION	OSD:92:[Data]	QSD:92	OSD:92:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Cy PHASE /COLOR CORRECTION Cy PHASE	OSD:93:[Data]	QSD:93	OSD:93:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Cy_B GAIN /COLOR CORRECTION Cy_G SATURATION	OSD:94:[Data]	QSD:94	OSD:94:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Cy_B PHASE /COLOR CORRECTION Cy_B PHASE	OSD:95:[Data]	QSD:95	OSD:95:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX B GAIN /COLOR CORRECTION B SATURATION	OSD:96:[Data]	QSD:96	OSD:96:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX B PHASE /COLOR CORRECTION B PHASE	OSD:97:[Data]	QSD:97	OSD:97:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX B_Mg GAIN /COLOR CORRECTION B_Mg SATURATION	OSD:80:[Data]	QSD:80	OSD:80:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX B_Mg PHASE /COLOR CORRECTION B_Mg PHASE	OSD:81:[Data]	QSD:81	OSD:81:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Mg GAIN /COLOR CORRECTION Mg SATURATION	OSD:82:[Data]	QSD:82	OSD:82:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Mg PHASE /COLOR CORRECTION Mg PHASE	OSD:83:[Data]	QSD:83	OSD:83:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Mg_R GAIN /COLOR CORRECTION Mg_R SATURATION	OSD:84:[Data]	QSD:84	OSD:84:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
COLOR MATRIX Mg_R PHASE /COLOR CORRECTION Mg_R PHASE	OSD:85:[Data]	QSD:85	OSD:85:[Data]	00h - 80h - FFh	-127 - 0 - +127												Ver001 Only User mode	Ver1.10-00-0.00 -63 <-> +63
T PEDESTAL	OTP:[Data]	QTP	OTP:[Data]	000h - 096h - 12Ch	-150 - 0 - +150												Ver001	Ver1.00-00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500		
R GAIN	ORI:[Data]		QRI	ORI:[Data]	000h - 096h - 12Ch	-150 - 0 - +150												V1.00L01	Ver1.00-00-0.00	
B GAIN	OBI:[Data]		QBI	OBI:[Data]	000h - 096h - 12Ch	-150 - 0 - +150												V1.00L01	Ver1.00-00-0.00	
R PEDESTAL	ORP:[Data]		QRP	ORP:[Data]	000h - 096h - 12Ch	-150 - 0 - +150													Ver1.00-00-0.00 -100 to +100	
B PEDESTAL	OBP:[Data]		QBP	OBP:[Data]	000h - 096h - 12Ch	-150 - 0 - +150													Ver1.00-00-0.00 -100 to +100	
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												Ver.001 with AF LENS	V1.00L01	
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														Ver1.10-00-0.00
FILTER	OFT:[Data]		QFT	OFT:[Data]	0 1 2 3  0 1 2 3	Convertible IR Through Normal 1/16 ND 1/64 ND  HC1500 Clear 1/4 ND 1/16 ND 1/64 ND												Ver.001		Ver1.00-00-0.00
RED TALLY	TLR:[Data]				0 1	OFF ON														Ver1.00-00-0.00
GREEN TALLY	TLR:[Data]				0 1	OFF ON														Ver1.00-00-0.00
BLACK SHADING CORRECT(DIG)	OSA:C0:[Data]		QSA:C0	OSA:C0:[Data]	0 1	OFF ON														Ver1.10-00-0.00
M GAMMA@DRS OFF	OSA:01:[Data]		QSA:01	OSA:01:[Data]	6Ah - 79h - 97h	0.30 - 0.45 - 0.75														Ver1.10-00-0.00
M GAMMA@DRS ON	OSA:02:[Data]		QSA:02	OSA:02:[Data]	76h 80h - 8Ah	-10 - 0 - +10														Ver1.10-00-0.00
R GAMMA@DRS OFF	OSA:03:[Data]		QSA:03	OSA:03:[Data]	71h - 80h - 8Fh	-15 - 0 - +15														Ver1.10-00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500
R GAMMA@DRS ON	OSA:04:[Data]	QSA:04	OSA:04:[Data]	76h 80h 8Ah	-10 - 0 - +10													Ver1.10-00-0.00
B GAMMA@DRS OFF	OSA:05:[Data]	QSA:05	OSA:05:[Data]	71h 80h 8Fh	-15 - 0 - +15													Ver1.10-00-0.00
B GAMMA@DRS ON	OSA:06:[Data]	QSA:06	OSA:06:[Data]	76h 80h 8Ah	-10 - 0 - +10													Ver1.10-00-0.00
M BLACK GAMMA	OSA:07:[Data]	QSA:07	OSA:07:[Data]	60h 80h A0h	-32 - 0 - +32													Ver1.10-00-0.00
R BLACK GAMMA	OSA:08:[Data]	QSA:08	OSA:08:[Data]	71h 80h 8Fh	-15 - 0 - +15													Ver1.10-00-0.00
B BLACK GAMMA	OSA:09:[Data]	QSA:09	OSA:09:[Data]	71h 80h 8Fh	-15 - 0 - +15													Ver1.10-00-0.00
GAMMA SW	OSA:0A:[Data]	QSA:0A	OSA:0A:[Data]	0 1	OFF ON													Ver1.10-00-0.00
BLACK GAMMA SW	OSA:0B:[Data]	QSA:0B	OSA:0B:[Data]	0 1	OFF ON													Ver1.10-00-0.00
EFFECT DEPTH	OSA:0C:[Data]	QSA:0C	OSA:0C:[Data]	1 - 5	1 - 5													Ver1.10-00-0.00
DRS SW	OSA:0D:[Data]	QSA:0D	OSA:0D:[Data]	0 1	OFF ON													Ver1.10-00-0.00
CINE GAMMA SELECT	OSA:0E:[Data]	QSA:0E	OSA:0E:[Data]	0 1	FILM REC VIDEO REC													Ver1.10-00-0.00
BLACK STRETCH LEVEL(@FILM MENU & FILM REC)	OSA:0F:[Data]	QSA:0F	OSA:0F:[Data]	00h - 1Eh	0 - 30													Ver1.10-00-0.00
DYNAMIC LEVEL (@FILM MENU & FILM REC)	OSA:10:[Data]	QSA:10	OSA:10:[Data]	0 1 2 3	200% 300% 400% 500%													Ver1.10-00-0.00
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%)													Ver1.10-00-0.00
M KNEE POINT (@FILM MENU & VIDEO REC)	OSA:21:[Data]	QSA:21	OSA:21:[Data]	62h 80h - 9Eh	30% - 60% - 90%													Ver1.10-00-0.00
R KNEE POINT	OSA:22:[Data]	QSA:22	OSA:22:[Data]	1Ch 80h - E4h	-25.00% - 0.00% - +25.00% (1step=0.25%)													Ver1.10-00-0.00





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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500					
A.IRIS WINDOW	OSA:53:[Data]		QSA:53	OSA:53:[Data]	0 1 2		NORM1 NORM2 CENTER																Ver1.10-00-0.00
IRIS MODE	OSA:54:[Data]		QSA:54	OSA:54:[Data]	0 1		LENS GAM																Ver1.10-00-0.00
IRIS GAIN @IRIS MODE = CAM	OSA:55:[Data]		QSA:55	OSA:55:[Data]	01h -- 0Ah		1(A.IRIS SLOW) -- 10(A.IRIS FAST)																Ver1.10-00-0.00
MODE @S.GAIN	OSA:60:[Data]		QSA:60	OSA:60:[Data]	0 1 2		S.GAIN1 S.GAIN2 S.GAIN3																Ver1.10-00-0.00
TOTAL GAIN@S.GAIN	---		QSA:61	OSA:61:[Data]	00h -- 48h		0dB -- 72dB																Ver1.10-00-0.00
GAIN@S.GAIN	OSA:62:[Data]		OSA:62	OSA:62:[Data]	00h 03h 06h -- 1Eh 21h 24h		0dB 3dB 6dB -- 30dB 33dB 36dB																Ver1.10-00-0.00
PIX MIX@S.GAIN	OSA:63:[Data]		QSA:63	OSA:63:[Data]	0 1		OFF +6dB																Ver1.10-00-0.00
V MIX@S.GAIN	OSA:64:[Data]		QSA:64	OSA:64:[Data]	0 1		OFF +6dB																Ver1.10-00-0.00
FRAME MIX@S.GAIN	OSA:65:[Data]		QSA:65	OSA:65:[Data]	00h 06h 0Ch 12h 18h		OFF +6dB +12dB +18dB +24dB																Ver1.10-00-0.00
H DETAIL LEVEL @S.GAIN	OSA:66:[Data]		QSA:66	OSA:66:[Data]	00h -- 3Fh		0 -- 63																Ver1.10-00-0.00
CRISP @S.GAIN	OSA:67:[Data]		QSA:67	OSA:67:[Data]	00h -- 1Fh		0 -- 31																Ver1.10-00-0.00
LEVEL DEPENDENT @S.GAIN	OSA:68:[Data]		QSA:68	OSA:68:[Data]	00h -- 0Fh		0 -- 15																Ver1.10-00-0.00
PEAK FREQUENCY @S.GAIN	OSA:69:[Data]		QSA:69	OSA:69:[Data]	00h -- 1Fh		0 -- 31																Ver1.10-00-0.00
M GAMMA @S.GAIN & DRS OFF	OSA:6A:[Data]		QSA:6A	OSA:6A:[Data]	6Ch -- 80h -- 94h 76h --		0.35 -- 0.55 -- 0.75 -10 --																Ver1.10-00-0.00
M GAMMA @S.GAIN & DRS ON	OSA:6B:[Data]		QSA:6B	OSA:6B:[Data]	80h -- 8Ah 738h --		0 -- +10 -200 --																Ver1.10-00-0.00
M PED OFFSET @S.GAIN	OSA:6C:[Data]		QSA:6C	OSA:6C:[Data]	800h -- 8C8h 738h --		0 -- +200 -200 --																Ver1.10-00-0.00
R PED OFFSET @S.GAIN	OSA:6D:[Data]		QSA:6D	OSA:6D:[Data]	800h -- 8C8h 738h --		0 -- +200 -200 --																Ver1.10-00-0.00
B PED OFFSET @S.GAIN	OSA:6E:[Data]		QSA:6E	OSA:6E:[Data]	800h -- 8C8h 738h --		0 -- +200 -200 --																Ver1.10-00-0.00
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)																Ver1.10-00-0.00
FRAME RATE RANGE	OSA:71:[Data]		QSA:71	OSA:71:[Data]	0 1 04h		60-4 60-6 4fps																Ver1.10-00-0.00
FRAME RATE @VARIABLE FRAME	OSA:72:[Data]		QSA:72	OSA:72:[Data]	3Ch		80fps																Ver1.10-00-0.00
MATRIX TABLE	OSA:00:[Data]		QSA:00	OSA:00:[Data]	0 1		TABLE A TABLE B																Ver1.10-00-0.00
D5600 @VIDEO MENU	OSA:80:[Data]		QSA:80	OSA:80:[Data]	0 1		OFF ON																Ver1.10-00-0.00
LIGHTING @FILM MENU	OSA:81:[Data]		QSA:81	OSA:81:[Data]	0 1		DAYLIGHT TUNGSTEN																Ver1.10-00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500	
GAIN SELECT	OGS:[Data]	OGS	OGS:[Data]	OGS:[Data]	01h 04h 08h 06h 0Ch 0Eh	LOW HID HIGH S.GAIN1 S.GAIN2 S.GAIN3													Ver1.10-00-0.00
CAM ID	OSA:82:[Data]	QSA:82	OSA:82:[Data]	OSA:82:[Data]	0 1 2	OFF BAR ON													Ver1.10-00-0.00
CAM ID POSI	OSA:83:[Data]	QSA:83	OSA:83:[Data]	OSA:83:[Data]	0 1 2 3	0(Upper left) 1(Upper right) 2(Lower left) 3(Lower right)													Ver1.10-00-0.00
MATRIX TABLE	OSA:84:[Data]	QSA:84	OSA:84:[Data]	OSA:84:[Data]	0 1 2	OFF A B													Ver1.10-00-0.00
COLOR CORRECTION	OSA:85:[Data]	QSA:85	OSA:85:[Data]	OSA:85:[Data]	0 1	OFF ON													Ver1.10-00-0.00
BAR SELECT	OSA:86:[Data]	QSA:86	OSA:86:[Data]	OSA:86:[Data]	0 1 2 3 4	FULL(16:9) FULL(4:3) SMPTE(16:9) SMPTE(4:3) ARIB													Ver1.10-00-0.00
FORMAT	OSA:87:[Data]	QSA:87	OSA:87:[Data]	OSA:87:[Data]	0 1 2 3 4 5 6 7 8 9 A B C D E	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(HE100) 480/29.97psF(HE100) 576/50i(HE100) 576/25psF(HE100)										V1.00L01	Ver1.10-00-0.00		
STATUS	OSA:88:[Data]	QSA:88	OSA:88:[Data]	OSA:88:[Data]	0 1	OFF ON												V1.00L01	Ver1.10-00-0.00
MENU ON BAR	OSA:89:[Data]	QSA:89	OSA:89:[Data]	OSA:89:[Data]	0 1	OFF ON													Ver1.10-00-0.00
MENU SEL	---	QSA:8A	OSA:8A:[Data]	OSA:8A:[Data]	0 1	VIDEO MENU FILM MENU													Ver1.10-00-0.00
SHUTTER MODE	OSA:90:[Data]	QSA:90	OSA:90:[Data]	OSA:90:[Data]	1 2 3	OFF ON SYNCHRO SCAN													Ver1.10-00-0.00
SHUTTER SPEED	OSA:91:[Data]	QSA:91	OSA:91:[Data]	OSA:91:[Data]	0 1 2 3 4 5	VIDEO MENU 1/100s 1/120s 1/250s 1/500s 1/1000s 1/2000s													Ver1.10-00-0.00
					0 1 2 3 4 5	FILM MENU 180.0deg 172.8deg 144.0deg 120.0deg 90.0deg 45.0deg													Ver1.10-00-0.00
GEN-LOCK INPUT	OSA:A0:[Data]	QSA:A0	OSA:A0:[Data]	OSA:A0:[Data]	0 1	OFF ON													Ver1.10-00-0.00
H PHASE-COARSE @HD SYNC & 720	OSA:A1:[Data]	QSA:A1	OSA:A1:[Data]	OSA:A1:[Data]	58h - 80h - A8h	-40 - 0 - +40													Ver1.10-00-0.00
H PHASE-COARSE @HD SYNC & 1080	OSA:A2:[Data]	QSA:A2	OSA:A2:[Data]	OSA:A2:[Data]	44h - 80h - BCh	-60 - 0 - +60													Ver1.10-00-0.00
H PHASE-COARSE @SD SYNC	OSA:A3:[Data]	QSA:A3	OSA:A3:[Data]	OSA:A3:[Data]	08h - 80h - F8h	-120 - 0 - +120													Ver1.10-00-0.00

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500
H PHASE-FINE @HD SYNC & 720	OSA:A4:[Data]	QSA:A4	OSA:A4:[Data]	53h 80h ADh	-45 0 +45													Ver1.10-00-0.00
H PHASE-FINE @HD SYNC & 1080	OSA:A5:[Data]	QSA:A5	OSA:A5:[Data]	53h 80h ADh	-45 0 +45													Ver1.10-00-0.00
H PHASE-FINE @SD SYNC	OSA:A6:[Data]	QSA:A3	OSA:A6:[Data]	53h 80h ADh	-45 0 +45													Ver1.10-00-0.00
HD-SD PHASE CRS @HD SYNC	OSA:A7:[Data]	QSA:A7	OSA:A7:[Data]	79h 80h 88h 1Dh	-7 0 +7 -99													Ver1.10-00-0.00
HD-SD PHASE FINE @HD SYNC	OSA:A8:[Data]	QSA:A8	OSA:A8:[Data]	80h E3h	0 +99													Ver1.10-00-0.00
SD-HD PHASE CRS @SD SYNC	OSA:A9:[Data]	QSA:A9	OSA:A9:[Data]	7Ch 80h 84h 1Dh	-4 0 +4 -99													Ver1.30-00-0.00 with D/C BOARD
SD-HD PHASE FINE @SD SYNC (D/C BOARD)	OSA:AA:[Data]	QSA:AA	OSA:AA:[Data]	80h E3h	0 +99													Ver1.30-00-0.00 with D/C BOARD
HD/SD V PHASE @SD SYNC (D/C BOARD)	OSA:AB:[Data]	QSA:AB	OSA:AB:[Data]	0 1	HD SD													Ver1.30-00-0.00 with D/C BOARD
SC COARSE @SD SYNC (D/C BOARD)	OSA:AC:[Data]	QSA:AC	OSA:AC:[Data]	1 8	1 8													Ver1.30-00-0.00 with D/C BOARD
SC FINE @SD SYNC (D/C BOARD)	OSA:AD:[Data]	QSA:AD	OSA:AD:[Data]	19Ch 200h 264h	-100 0 +100													Ver1.30-00-0.00 with D/C BOARD
SC-H COARSE @HD SYNC or NO SYNC (D/C BOARD)	OSA:AE:[Data]	QSA:AE	OSA:AE:[Data]	1 8	1 8													Ver1.30-00-0.00 with D/C BOARD
SC-H FINE @HD SYNC or NO SYNC	OSA:AF:[Data]	QSA:AF	OSA:AF:[Data]	19Ch 200h 264h	-100 0 +100													Ver1.10-00-0.00
TOTAL DTL LEVEL (D/C BOARD)	OSE:00:[Data]	QSE:00	OSE:00:[Data]	00h 3Fh	0 63													Ver1.30-00-0.00 with D/C BOARD
H DTL LEVEL (D/C BOARD)	OSE:01:[Data]	QSE:01	OSE:01:[Data]	00h 3Fh	0 63													Ver1.30-00-0.00 with D/C BOARD
CRISP (D/C BOARD)	OSE:02:[Data]	QSE:02	OSE:02:[Data]	00h 3Fh	0 63													Ver1.30-00-0.00 with D/C BOARD
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													Ver1.30-00-0.00 with D/C BOARD
LEVEL DEPENDENT (D/C BOARD)	OSE:04:[Data]	QSE:04	OSE:04:[Data]	00h 1Eh	0% 30%													Ver1.30-00-0.00 with D/C BOARD

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	E300/A	E600	E800	E800A	E350	E650	E655	E750	E860	HE100	HC1500
DARK DETAIL (D/C BOARD)	OSE:05:[Data]	QSE:05	OSE:05:[Data]	0 - 7	0(OFF) - 7													Ver1.30-00-0.00 with D/C BOARD
KNEE APERTURE (D/C BOARD)	OSE:06:[Data]	QSE:06	OSE:06:[Data]	00h - 3Fh	0 - 63													Ver1.30-00-0.00 with D/C BOARD
+CLIP (D/C BOARD)	OSE:07:[Data]	QSE:07	OSE:07:[Data]	00h - 3Fh	0 - 63													Ver1.30-00-0.00 with D/C BOARD
-CLIP (D/C BOARD)	OSE:08:[Data]	QSE:08	OSE:08:[Data]	00h - 3Fh	0 - 63													Ver1.30-00-0.00 with D/C BOARD
CORNER DETAIL (D/C BOARD)	OSE:09:[Data]	QSE:09	OSE:09:[Data]	00h - 1Fh	0 - 31													Ver1.30-00-0.00 with D/C BOARD
CHROMA DETAIL (D/C BOARD)	OSE:0A:[Data]	QSE:0A	OSE:0A:[Data]	00h - 3Fh	0 - 63													Ver1.30-00-0.00 with D/C BOARD
CHROMA DTL CRISP (D/C BOARD)	OSE:0B:[Data]	QSE:0B	OSE:0B:[Data]	00h - 3Fh	0 - 63													Ver1.30-00-0.00 with D/C BOARD
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													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE DETAIL (D/C BOARD)	OSE:10:[Data]	QSE:10	OSE:10:[Data]	0 1	OFF ON													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE LEVEL (D/C BOARD)	OSE:11:[Data]	QSE:11	OSE:11:[Data]	0 1 2	LOW MID HIGH													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE ZEBRA (D/C BOARD)	OSE:12:[Data]	QSE:12	OSE:12:[Data]	0 1	OFF ON													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE PHASE (D/C BOARD)	OSE:13:[Data]	QSE:13	OSE:13:[Data]	5Dh - 7Bh - 99h 01h - 14h	93 - 123 - 153 1 - 20													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE WIDTH (D/C BOARD)	OSE:14:[Data]	QSE:14	OSE:14:[Data]	0 - 7	0 - 7													Ver1.30-00-0.00 with D/C BOARD
SKIN TONE CRISP (D/C BOARD)	OSE:15:[Data]	QSE:15	OSE:15:[Data]	0 - 7	0 - 7													Ver1.30-00-0.00 with D/C BOARD
D/C MODE (D/C BOARD)	OSE:20:[Data]	QSE:20	OSE:20:[Data]	0 1	SIDE CUT SQUEEZE													Ver1.30-00-0.00 with D/C BOARD
VBS SETUP (D/C BOARD)	OSE:21:[Data]	QSE:21	OSE:21:[Data]	0 1	0.0% 7.5%												V1.00L01	Ver1.30-00-0.00 with D/C BOARD
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													Ver1.30-00-0.00 with D/C BOARD
2D LPF (D/C BOARD)	OSE:23:[Data]	QSE:23	OSE:23:[Data]	0 1 2 3	OFF LOW MID HIGH													Ver1.30-00-0.00 with D/C BOARD
CHARACTER MIX (HD SDI BOARD)	OSE:30:[Data]	QSE:30	OSE:30:[Data]	0 1	ALL OPTION													Ver1.40-00-0.00 with HD SDI BOARD

ITEM	Control Command	Confirmation Command	Response Command	Data	Data Contents		Remarks				
					Control and Response to control	Response to Confirmation	AW-RP605	AW-DU600	AW-RP400	AW-RP655	AW-RP555
Control Select	XPT:[Data]	---	XPT:[Data]	0 1 2 3 4	Port1 Port2 Port3 Port4 Port5	Select P/T	Ver.001				
Control Select2	XCM:[Data]	---	XCM:[Data]	0 1 2 3 4	Port1 Port2 Port3 Port4 Port5	Select Camera Control Port for CB400	---	Ver.001	---		

## 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)

Connecter : Mojular 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

ex2) PAN/TILT Absolute Position command

# U 8 0 0 0 8 0 0 0 [CS] [CR]  
H'23 H'55 H'38 H'30 H'30 H'30 H'38 H'30 H'30 H'30 H'08 H'0D

[CS] = H'23 + H'55 + H'38 + H'30 + H'30 + H'30 + H'38 + H'30 + H'30 + H'30 = H'08

If [CS] = H'00 (= [NUL]) then [CS] = H'01

If [CS] = H'0D (= [CR]) then [CS] = H'0E

ITEM	Control Command	Reply for Confirmation Command	Response Command	Data	Data Contents		Remarks	PH300	PH300A	PH500	PH600	PH350	PH400 w/RP400 or w/IF400	PH360	PH650	PH405	HE100	
					Control and Response to control	Response to Confirmation												
Power	#O[Data]		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(w/ Camera TX)	Camera Power & P/T Control	without Camera TX -> Controller RX line					with Camera TX -> Controller RX line					
Pan Speed Control	#P[Data]	---	---	01 - 50 -	Max. Speed - Stop													V1.00L01
Tilt Speed Control	#T[Data]	---	---	99 01 -	Max. Speed Max. Speed - Stop													V1.00L01
Pan/Tilt Position Control	#U[Data1] [Data2][Data3]	---	u[Data1][Data2]	[Data1] 0000h - FFFFh [Data2] 0000h - FFFFh [Data3] 01h - FFh	[Data1] Pan Position Center=8000h - [Data2] Tilt Position Center=8000h - [Data3] Checksum	[Data1] Pan Position Center=8000h - [Data2] Tilt Position Center=8000h												V1.00L01
Zoom Speed Control	#Z[Data]	---	---	01 - 49 50 51 -	Wide Max. Speed - Wide Min. Speed Stop Tele Min. Speed -													V1.00L01
Zoom Position Control	#AXZ[Data]	---	axz[Data]	555h - FFFh		Wide - Tele												V1.00L01
Zoom Position Control	#AYZ[Data]	---	axz[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Wide - Tele	Wide - Tele												V1.00L01
Focus Speed Control	#F[Data]	---	---	01 - 49 50 51 -	Near Max. Speed - Near Min. Speed Stop Far Min. Speed -													V1.00L01
Focus Position Control	#AXF[Data]	---	axf[Data]	555h - FFFh		Near - Far												V1.00L01
Focus Position Control	#AYF[Data]	---	axf[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Near - Far	Near - Far												V1.00L01
Roll Speed Control	#RO[Data]	---	---	01 - 49 50 51 -	CCW Max. Speed - CCW Min. Speed Stop CW Min. Speed -								with RL400					
Iris Control	#I[Data]	---	---	99 01 -	CW Max. Speed Iris Close - Iris Open													V1.00L01
Iris Control	#AXI[Data]	---	axi[Data]	555h - FFFh		Iris Close - Iris Open												V1.00L01

ITEM	Control Command	Reply for Confirmation Command	Response Command	Data	Data Contents		Remarks											
					Control and Response to control	Response to Confirmation	PH300	PH300A	PH500	PH600	PH350	PH400 w/RP400 or w/IF400	PH360	PH650	PH405	HE100		
Iris Control	#AY[Data]	---	axi[Data]	[Response to control] 001 - 999 [Response to Confirmation] 555h - FFFh	Iris Close - Iris Open	Iris Close - Iris Open												V1.00L01
Extender/AF Control	#D1[Data]	---	---	0 1	OFF ON													V1.00L01
ND Control	#D2[Data]	---	---	0 1	OFF ON													V1.00L01 This function doesn't work
Iris Auto/Manual	#D3[Data]	---	---	0 1	Manual Iris Auto Iris													V1.00L01
Lamp Control	#D4[Data]	---	---	0 1	OFF ON													V1.00L01 This function doesn't work
Lamp Alarm	#D5	---	d5[Data]	0 1		Alarm OFF Alarm ON		with PS300 or PS300A				with PS300 or PS300A	---	with PS300 or PS300A	---	---	---	V1.00L01 This function doesn't work
OPTION SW Control	#D6[Data]	#D6	d6[Data]	0 1	OFF ON	OFF ON		with PS300 or PS300A Control Command Only				with PS300 or PS300A Control Command Only	---	with PS300 or PS300A Control Command Only	---	---	---	V1.00L01
Defroster Control	#D7[Data]	---	---	0 1	OFF ON							with CH600	---	---	---	---	---	V1.00L01 This function doesn't work
Wiper Control	#D8[Data]	---	---	0 1	OFF ON							with CH600	---	---	---	---	---	V1.00L01 This function doesn't work
Heater/Fan Control	#D9[Data]	---	---	0 1	OFF ON							with CH600	---	---	---	---	---	V1.00L01 This function doesn't work
Tally Control	#DA[Data]	---	---	0 1	OFF ON								---					V1.00L01
Request Latest Recall Preset No.	---	#S	s[Data]	00 - 49		Preset 01 - Preset 50												V1.00L01
Save Preset Memory	#M[Data]	---	s[Data]	AW-HE100 00 - 99 AW-PH300 0 - 9 other P/T 00 - 49	AW-HE100 Preset001 - Preset100 AW-PH300 Preset 1 - Preset 10 other P/T Preset 01 - Preset 50	AW-HE100 Preset001 - Preset 100 AW-PH300 - - other P/T Preset 01 - Preset 50												V1.00L01
Recall Preset Memory	#R[Data]	---	s[Data]	AW-HE100 00 - 99 AW-PH300 0 - 9 other P/T 00 - 49	AW-HE100 Preset001 - Preset100 AW-PH300 Preset 1 - Preset 10 other P/T Preset 01 - Preset 50	AW-HE100 Preset001 - Preset100 AW-PH300 - - other P/T Preset 01 - Preset 50												V1.00L01
Preset completion notification	---	---	q[Data]	AW-HE100 00 - 99 Other P/T 00 - 49	AW-HE100 Preset001 - Preset100 other P/T Preset 01 - Preset 50	AW-HE100 Preset001 - Preset100 other P/T Preset 01 - Preset 50												V1.00L01
Preset Mode Setting	#RT[Data]	---	rt[Data]	0 1		Normal Diagonal												V1.00L01 @DIAGONAL SW is ON

ITEM	Control Command	Reply for Confirmation Command	Response Command	Data	Data Contents		Remarks											
					Control and Response to control	Response to Confirmation	PH300	PH300A	PH500	PH600	PH350	PH400 w/ RP400 or w/IF400	PH360	PH650	PH405	HE100		
Limitation Setting	#L[Data]	---	[Data]	Controller -> P/T 1 2 3 4  P/T -> Controller 0 1	Tilt Up Tilt Down Pan Left Pan Right													V1.00L01
Landing Setting	#N[Data]	---	---	0 1	Just Landing Soft Landing													V1.00L01
Request Zoom Position (Output D/A Data)	---	#GZ	gz[Data]	555h - FFFh "---"		Wide - Tele  @Power OFF												V1.00L01
Request Focus Position (Output D/A Data)	---	#GF	gf[Data]	555h - FFFh "---"		Near - Far  @Power OFF												V1.00L01
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											V1.00L01
Tilt Range	#AGL[Data]	---	aGL[Data]	0 1	Narrow(190deg) Wide(300deg)													V1.00L01 @TILT RANGE SW is ON
Request Software Version	---	#V?	[Version Data]															V1.00L01