SEC-VD-DSW Multiple Display Control
Ver. 13.7c
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Multiple Display Control Protocol

1.2. Connection Spec

1.2.1 RS232 Connection Spec.

- Interactive communications using RS232.
- Of RS232 standards, three signals RxD(No.2), TxD(No.3) and GND(No.5) are used
  → Refer to Figure 2-1
- Limit the distance between devices to less than 4m.
- Currently, out of 9 PIN RS232 terminal, PINS in use are numbers 2, 3 and 5.
- ID should show hexadecimal value of assigned ID.
- Every communication will be made in hexadecimals and Checksum is the sum of all remainings.
  If it exceeds two digits, for example, it is 11+FE+01+01=111,
  discard the number in the first digit like below.
  example) Power On & ID=FE

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x11		1	Power	

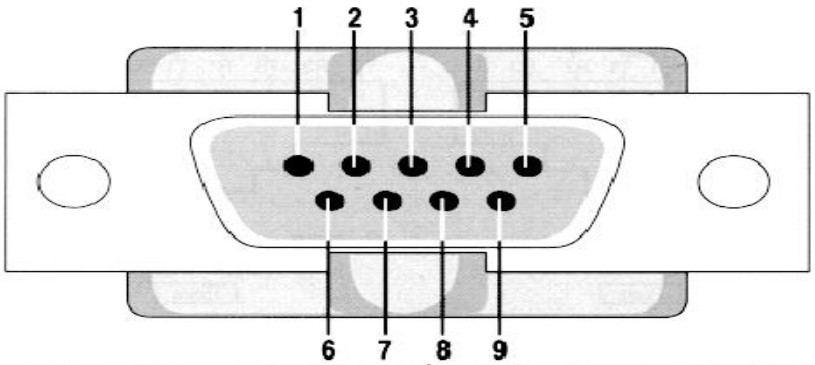
→

Header	Command	0xFE	Data Length	Data 1	11
0xAA	0x11		1	1	

- If you want to control every mechanism connected with Serial Cable regardless of its ID, set ID part to "0xFE" and send commands. At the time, each SET will follow commands but it will not respond with ACK.

Table 2-1 RS232 Network spec

Bits Rate	9600 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None



Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

Figure 2-1 RS-232 pin out DB-9 pin used for Asynchronous Data

1.2.2 RJ45 Connection Spec.

- Interactive communications using RJ45.
- Transmit the MDC protocol using TCP/IP Format. the protocol information is stored in data area.
- The protocol information format is the same as RS232's.

example) Power Off & ID=0

Header	Command	ID	Data Length	Data1	Checksum
0xAA	0x11		1	Power	

TCP		UDP	
IP	ICMP	ARP	RARP
Hardware Interface(Ethernet, PPP etc.)			

→

Header	Command	0xFE	Data Length	Data1	10
0xAA	0x11		1	0	

TCP		UDP	
IP	ICMP	ARP	RARP
Hardware Interface(Ethernet, PPP etc.)			

- default ip : 192.168.0.10 PORT : 1515
- The RJ45 plug has 8-Pins as below.

Table 2-2 RJ45 plug 8-Pins

RJ45 PIN#	Wire Color(T568A)	10Base-T Signal 100Base-TX Signal	1000Base-T Signal
1	White/Green	Transmit+	BI_DA+
2	Green	Transmit-	BI_DA-
3	White/Orange	Receive+	BI_DB+
4	Blue	Unused	BI_DC+
5	White/Blue	Unused	BI_DC-
6	Orange	Receive-	BI_DB-
7	White/Brown	Unused	BI_DD+
8	Brown	Unused	BI_DD-

2. Command

Command No	Command Type	Sub Command	Data Type
0x00	Status Control	-	Multi Param
0x04	Video Control	-	Multi Param
0x06	RGB Control	-	Multi Param
0x07	PIP Status Control	-	Multi Param
0x08	Maintenance Control	-	Multi Param
0x09	Sound Control	-	Multi Param
0x0B	Serial Number Control	-	String
0x0D	Display Status Control	-	Multi Param
0x0E	SW Version Control	-	String
0x0F	Auto Motion Plus	-	Multi Param
0x10	Model Number Control	-	Multi Param
0x11	Power Control	-	Discrete
0x12	Volume Control	-	0 ~ 100
0x13	Mute Control	-	0, 1
0x14	Input Source Control	-	Discrete
0x15	Image Size Control	-	Discrete
0x17	Direct Channel Control (DTV)	-	Multi Param
0x18	Screen Mode Control	-	Discrete
0x19	Screen Size Control	-	Discrete
0x1D	MDC Connection Type	-	Discrete
0x24	Contrast Control	-	0 ~ 100
0x25	Brightness Control	-	0 ~ 100
0x26	Sharpness Control	-	0 ~ 100
0x27	Color Control	-	0 ~ 100
0x28	Tint Control	-	0 ~ 100
0x2F	Coarse Control	-	0, 1
0x30	Fine Control	-	0, 1
0x31	H-Position Control	-	0, 1
0x32	V-Position Control	-	0, 1
0x33	Auto Power	-	0, 1
0x34	Clear Menu Control	-	0

0x36	Remote Control	-	0, 1
0x37	RGB Contrast Control	-	0 ~ 100
0x38	RGB Brightness Control	-	0 ~ 100
0x3C	PIP On/Off Control	-	0, 1
0x3D	Auto Adjustment Control	-	0
0x3E	Color Tone Control	-	Discrete
0x3F	Color Temperature Control	-	Discrete
0x40	PIP Source Control	-	Discrete
0x42	PIP Size Control	-	Discrete
0x43	PIP Locate Control	-	Discrete
0x44	Fan Speed Setting	-	0 ~ 100
0x45	User Auto Color	-	0, 1
0x47	Sound Select Control	-	0, 1
0x48	Auto Volume	-	Discrete
0x4A	Standby Control	-	Discrete
0x4B	Video Picture Position & Size	-	Multi Param
0x4C	Pixel Shift Control	-	Multi Param
0x51	EQ 100Hz Control	-	0 ~ 20
0x52	EQ 300Hz Control	-	0 ~ 20
0x53	EQ 1kHz Control	-	0 ~ 20
0x54	EQ 3kHz Control	-	0 ~ 20
0x55	EQ 10kHz Control	-	0 ~ 20
0x57	Auto Lamp Control	-	Multi Param
0x58	Manual Lamp Control	-	0 ~ 100
0x59	Safety Screen Run Control	-	Discrete
0x5A	Inverse Control	-	0, 1
0x5B	Safety Screen Control (MFM)	-	Multi Param
0x5C	Video Wall Mode Control	-	0, 1
0x5D	Safety Lock	-	0, 1
0x5F	Key Lock Control (MFM)	-	0, 1
0x61	Channel Up/Down	-	0, 1
0x62	Volume Up/Down	-	0, 1
0x63	Ticker	-	Multi Param
0x65	Sound Select Control	-	0, 1
0x66	PC Module Detect	-	Discrete
0x67	Device Name	-	String

0x68	Speaker Select	-	0, 1
0x70	OSD Off/On	-	0, 1
0x71	P. Mode Control	-	Discrete
0x72	S. Mode Control	-	Discrete
0x73	Digital NR	-	Discrete
0x75	PC Color Tone Control	-	Discrete
0x76	Auto Auto Adjustment	-	0, 1
0x77	All Keys Lock	-	0, 1
0x78	SRS TSXT Control	-	0, 1
0x79	Film Mode	-	Discrete
0x83	Panel On Time	-	Multi Param
0x84	Video Wall On	-	0, 1
0x85	Temperature Control	-	75 ~ 124
0x86	Brightness Sensor	-	0, 1
0x87	Dynamic Contrast	-	Discrete
0x89	Video Wall User Control	-	Multi Param
0x8A	Model Name	-	String
0x8B	Video Wall Direct User Control	-	Multi Param
0x8F	Fan	-	0, 1
0x92	Energy Saving	-	Discrete
0x94	HDMI Black Level	-	0, 1
0x95	Black Adjust	-	Discrete
0x96	Gamma	-	Discrete
0x9C	Edge Enhancement	-	0, 1
0x9D	Color Space	-	Discrete
0x9E	xvYCC	-	0, 1
0x9F	Reset Control	-	Discrete
0xA1	Ambient Brightness Mode	-	Multi Param
0xA3	OSD Display Type On/Off	-	Multi Param
0xA4	Timer 1 Control_MFM	-	Multi Param
0xA5	Timer 2 Control_MFM	-	Multi Param
0xA6	Timer 3 Control_MFM	-	Multi Param
0xA7	Clock Control_MFM	-	Multi Param
0xA8	Holiday Add/Delete Control	-	Multi Param
0xA9	Holiday Get Control	-	Multi Param
0xAB	Timer4 Control	-	Multi Param

0xAC	Timer5 Control	-	Multi Param
0xAD	Timer6 Control	-	Multi Param
0xAE	Timer7 Control	-	Multi Param
0xAF	Edit Name Control	-	Discrete
0xB0	Virtual Remote Control	-	Discrete
0xB1	Display Port Daisy Chain	-	0, 1
0xB3	Video Conference Sound Mode Control	-	0, 1
0xB5	Network Standby Control	-	0, 1
0xB6	DST (Daylight Saving Time) Control	-	Multi Param
0xB7	Custom PIP Control	-	Multi Param
0xB8	Auto ID Setting Status Control	-	0, 1
0xB9	Display ID Infomation	-	0, 1
0xC5	Clock Control_MFM	-	Multi Param
0xC6	Eco Solution	0x81 : Auto Power Off	Discrete
0xC7	Execute Launcher	0x81 : Launcher Mode	Discrete
		0x82 : URL Address	String
0xC8	OnScreen Display Menu Control	0x81 : Menu Orientation	Discrete
		0x82 : Source Orientation	Discrete
		0x83 : Aspect Ratio (Rotated)	Discrete
		0x84 : PIP Orientation	Discrete
0xCA	System Menu Control	0x81 : Auto Source Switch OnOff	Discrete
		0x82 : Auto Source Switch Control	Multi Param
0xE0	Net PIP Command	-	Multi Param
0xE4	Apply To Control	-	0, 1
0xF9	Panel On Off	-	0, 1
0xFD	Auto ID	-	Multi Param
0xFF	ACK/NAK	-	

Note : Depends on each model spec, a certain command will be supported or not

Depends on each model spec, an option of a certain command will be differ

2.1 Common Protocol

2.1.00 Status Control

- **Function**

  Personal Computer shows current setting condition of TV / Monitor.

- **Get Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x00		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x09	'A'	0x00	Power	Volume
Val 3	Val 4	Val 5	Val 6	Val 7	Check Sum		
Mute	Input	Aspect	N Time NF	F Time NF			

  Power : Power code to be set on TV / Monitor

  Volume : Volume value code (0 ~ 100) to be set on TV / Monitor

  Mute : Mute code to be set on TV / Monitor

  Input : Input Source code to be set on TV/Monitor

  Aspect : Image Size code to be set on TV/Monitor

  Note : If use New Timer (0xA4, 0xA5, 0xA6, 0xA7, 0xA8, 0xA9) command. Do as below.

  N Time NF : OnTime ON/OFF value of time to set TV/Monitor(old type Timer)

  F Time NF : OffTime ON/OFF value of time to set TV/Monitor(old type Timer)

  → It was supported for old type Timer. Now, It is always 0x00.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		3	'N'	0x00	ERR	

  ERR : Error code that shows what occurred error is

2.1.04 Video Control

- **Function**

  Personal Computer shows the screen condition of TV / Monitor.

- **Working Condition**

  1. ATV, DTV, AV, S-Video, Component, HDMI Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will be work with **** Video/Image of picture mode in the menu

- **Get Video Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x04		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0x04	Contrast	Brightness
Val 3	**Val 4**	**Val 5**	**Val 6**	**Val 7**	**Val 8**	**Check Sum**	
Sharpness	Color	Tint	ColorTone	ColorTemp	0		

Contrast : Contrast value to set the TV / Monitor (0 ~ 100)
Brightness : Brightness value to set the TV / Monitor (0 ~ 100)
Sharpness : Sharpness value to set the TV / Monitor (0 ~ 100)
Color : Color value to set the TV / Monitor (0 ~ 100)
Tint : Tint value to set the TV / Monitor (0 ~ 100)
Color Tone : Color Tone value to set the TV / Monitor
ColorTemp : Color Temperature value to set the TV / Monitor

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x04	ERR	

ERR : Error code that shows what occurred error is

2.1.06 RGB Control

- **Function**

  Personal Computer shows screen condition of TV / Monitor.

- **Working Condition**

  1. PC, BNC, DVI Only
     (On the DVI source Red, Green, Blue Gainwill not work)
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will be work with **** Text of picture mode in the menu

- **Get RGB Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x06		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0x06	Contrast	Brightness
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Check Sum	
ColorTone	ColorTemp	0	Red Gain	Green Gain	Blue Gain		

Val 1 ~ Val 8 : Same as above

Note : If LFD model doesn't support RGB Gain, those values should be replied with 0xFF.
If then MDC application can ignore these values.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x06	ERR	

ERR : Error code that shows what occurred error is

2.1.07 PIP Status Control

- **Function**

  The PC displays the PIP settings of a TV or monitor.

- **Get PIP Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x07		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x06	'A'	0x07	P.Size	P.Source
Val 3	Val 4	Check Sum					
0	0						

P.Size : The PIP size code set for the TV or monitor.

Note : For the detail, pls refer 0x42 PIP Size control command

P.Source : The PIP source code set for the TV or monitor.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x07	ERR	

ERR : The error code indicating which error occurred.

2.1.08 Maintenance Control

- **Function**

  Personal Computer shows maintenance state of TV / Monitor.

  Note : Depends on each model spec 0x15data length or 0x19 data length format will be supported

- **Get Maintenance Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x08		0x00	

- **Ack**

. Data Length 0x15

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x15	'A'	0x08	Power	P.Size
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
P.Source	LMax_H	LMax_M	LMax_AP	LMaxValue	LMin_H	LMin_M	LMin_AP
Val 11	Val 12	Val 13	Val 14	Val 15	Val 16	Val 17	Val 18
LMin Value	Lamp Value	Screen Interval	Screen Time	Screen Type	V.Wall	V.Wall Format	V.Wall Divid
Val 19	Check Sum						
V.Wall Set							

. Data Length 0x19

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x19	'A'	0x08	Power	P.Size
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
P.Source	LMax_H	LMax_M	LMax_AP	LMax Value	LMin_H	LMin_M	LMin_AP
Val 11	Val 12	Val 13	Val 14	Val 15	Val 16	Val 17	Val 18
LMin Value	Lamp Value	Start Time - Hour	Start Time-Min	Screen Type	Start Time-am/pm	End Time - Hour	End Time-Min.
Val 19	Val 20	Val 21	Val 22	Val 23	Check Sum		
End Time-am/pm	V.Wall	V.Wall Format	V.Wall Divid	V.Wall Set			

Power : Power code set on TV / Monitor

P.Size : PIP Size value code set on TV / Monitor

P.Source : Source value code set on TV / Monitor

LMax_H : Auto Lamp Max Time Hour (1 ~ 12) set on TV / Monitor

LMax_M : Auto Lamp Max Time Minute (0 ~ 59) set on TV / Monitor

LMax_AP : Auto Lamp Max Time AM/PM set on TV / Monitor

LMaxValue : Auto Lamp Max value (0 ~ 100) set on TV / Monitor

LMin_H : Auto Lamp Min Time Hour (1 ~ 12) set on TV / Monitor

LMin_M : Auto Lamp Min Time Minute (0 ~ 59) set on TV / Monitor

LMin_AP : Auto Lamp Min Time AM/PM set on TV / Monitor

LMinValue : Auto Lamp Min value (0 ~ 100, 0xFF) set on TV / Monitor

LampValue : Manual Lamp Control value (0 ~ 100, 0xFF) set on TV / Monitor

ScreenInterval : Safety Screen Interval (Per Hour, 0(0ff)~10) set on TV / Monitor

ScreenTime : Safety Screen Time (Per Second, 0(off) ~5) set on TV / Monitor

ScreenType : SBP Type Code set on TV / Monitor

Note : Case : Value is not 0x00 : BIT 7 is 0 → Timer set Repeat.
BIT 7 is 1 → Timer set Interval.

- The data transmission(The following combinations), NAK processing.

(1) Data Length 15 & Type's kind Timer Interval

(2) Data Length 19 & Type's kind Timer Repeat

0x00	OFF	0x00	OFF
0x01		0x81	
0x02		0x82	
0x03	Scroll (Timer : Repeat)	0x83	Scroll (Timer : Interval)
0x04	Pixel (Timer : Repeat)	0x84	Pixel (Timer : Interval)
0x05	Bar (Timer : Repeat)	0x85	Bar (Timer : Interval)
0x06	Eraser (Timer : Repeat)	0x86	Eraser (Timer : Interval)
0x09	All White (Timer : Repeat)	0x89	All White (Timer : Interval)
0x0A	Pattern (Timer : Repeat)	0x8A	Pattern (Timer : Interval)
...		...	
0x10	Rolling Bar (Timer : Repeat)	0x90	Rolling Bar (Timer : Interval)
0x11	Fading Screen (Timer : Repeat)	0x91	Fading Screen (Timer : Interval)

Start Time-Hour : Start Time Hour value (1 ~ 12)

Start Time-Min : Start Time Minute value (0 ~ 59)

Start Time-am/pm : Start Time AM/PM (0 ~ 1), 1 : AM, 0 : PM

End Time-Hour : Start Time Hour value (1 ~ 12)

End Time-Min : Start Time Minute value (0 ~ 59)

End Time-am/pm : Start Time AM/PM (0 ~ 1), 1 : AM, 0 : PM

V.Wall : code set on TV / Monitor

V.WallFormat : Video Wall Format code set on TV / Monitor

V.WallDivid : Video Wall Divider code set on TV / Monitor

V.WallSet : Video f Set Number code set on TV / Monitor

Note : If LMinValue is returned to 0xFF then Auto Lamp Control is OFF.
If LampValue is returned to 0xFF then Manual Lamp Control is OFF.
If videlwall related field returned as 0xFF then videowall is not suooprted

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x08	ERR	

ERR : Error code that shows what occurred error is

2.1.09 Sound Control

- **Function**

  Personal Computer shows Sound state of TV / Monitor

- **Get Audio Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x09		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0D	'A'	0x09	Vol	Balance
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
100Hz	300Hz	1kHz	3kHz	10kHz	0	0	0
Val 11	Check Sum						
SRS							

Vol, Balance : Vol, Balance value set on TV / Monitor

100Hz, 300Hz, 1kHz, 3kHz, 10kHz : Each the frequency of the Equalizer value set on TV / Monitor

SRS : SRS TSXT On/Off value set on TV / Monitor

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x09	ERR	

ERR : Error code that shows what occurred error is

2.1.0B Serial Number Control

- **Function**

  Personal Computer controls serial number of TV / Monitor.

- **Get SerialNum Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x0B		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x14	'A'	0x0B	Data1	Data2
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
Data3	Data4	Data5	Data6	Data7	Data8	Data9	Data10
Val 11	Val 12	···	Val 15	Val 16	Val 17	Val 18	Check Sum
Data11	Data12	···	Data15	Data16	Data17	Data18	

Data 1 ~ Data 15 : Serial Number set on TV / Monitor.

Data 16 ~ Data 18 : Reserved

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x0B	ERR	

ERR : Error code that shows what occurred error is

2.1.0D Display Status Control

- **Function**

  Personal Computer shows display condition of TV / Monitor.

- **Get Maintenance Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x0D		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x08	'A'	0x0D	Lamp	Temperature

Val 3	Val 4	Val 5	Val 6	Check Sum
Bright_Sensor	No_Sync	Cur_Temp	FAN	

Lamp : Lamp Error code (0 : Normal, 1 : Error) to be set on TV / Monitor
Temperature : Temperature Error code (0: Normal, 1: Error) to be set on TV / Monitor
Bright_Sensor : Brighte Sensor Error code (0: NONE, 1: Error, 2: NORMAL) to be set on TV/Monitor
No_Sync: Sync Error code(0: Normal, 1: Error, No Sync) to be set on TV / Monitor
Cur_Temp : Current temperature of TV / Monitor (0℃ ~ 125℃)
FAN : Fan Error code (0 : Normal, 1 : Error) to be set on TV / Monitor

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x0D	ERR	

ERR : Error code that shows what occurred error is

2.1.0E SW Version Control

- **Function**

  Personal Computer shows version information of TV / Monitor.

- **Get Version Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x0E		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x34(MAX)	'A'	0x0E	Version1	Version2
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
Version3	Version4	Version5	Version6	Version7	Version8	Version9	Version10
Val 11	Val 12	Val 13	Val 14	Val 15	…	…	Check Sum
Version11	Version12	Version13	Version14	Version15	…	…	

Version1 ~ **Version12 :** Project Info. of TV/Monitor

Version13 ~ Version50 : Software version of TV/Monitor

Note : Because Version information is variable, The Data Length 2-52 (0x34) is variably value
(Real Value Val(0~50) +2 (Ack/Nak, r-CMD))

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x06	ERR	

ERR : Error code that shows what occurred error is

2.1.0F Auto Motion Plus

- **Function**

  Personal Computer controls the Auto Motion Plus that TV / Monitor.

  Note : It is dependent on Product Specifications- 120Hz Panel.

- **Get Auto Motion Plus Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x0F		0x00	

- **Set Auto Motion Plus Status**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Check Sum
0xAA	0x0F		0x03	Mode	Blur Reduction	Judder Reduction	

Mode

0x00	Off
0x01	Clear
0x02	Standard
0x03	Smooth
0x04	Custom
0x05	Demo

Blur reduction : It is only for "Mode: Custom". If "Mode" is not custom, then it is "don't care". (0 ~ 10)

Judder reduction : It is only for "Mode: Custom". If "Mode" is not custom, then it is "don't care". (0~ 10)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x05	'A'	0x0F	Mode	Blur Reduction
Val 3	Check Sum						
Judder Reduction							

Mode : Same as above

Blur Reduction, Judder Reduction :

Ack For Set command Type, Data2 and Data3 is same with Set command.

Ack For Get command Type, Date2 and Data2 is LFD's Value.(even If "Mode" is not custom.)

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x0F	ERR	

ERR : Error code that shows what occurred error is

2.1.10 Model Number Control

- **Function**

  Personal Computer shows Model Number of TV / Monitor

- **Get Model Number Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x10		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x05	'A'	0x10	Species	Model

Val 3	Check Sum
TV	

Species : TV / Monitor 's Panel Type.

0x01	PDP
0x02	LCD
0x03	DLP
0x04	LED
0x05	CRT
0x06	OLED

Model : TV / Monitor's Model Number.

Value	Model Name	Remarks		
		IC Vender	IC Name	Etc IC (Color Enhancer)
0x01	PPM50H2			
0x02	PPM42S2			
0x03	PS-42P2ST			
0x04	PS-50P2HT			
0x05	SyncMaster 400T			
0x06	SyncMaster 403T			
0x07	PPM42S3, SPD-42P3SM			
0x08	PPM50H3, SPD-50P3HM			
0x09	PPM63H3, SPD-63P3HM			
0x0A	PS-42P3ST			
0x0B	SyncMaster 323T			
0x0C	SyncMaster 403T - CT40CS(N)			
0x0D	PPMxxM5x			

0x0E	SyncMaster 320P(n) SyncMaster 400P(n) SyncMaster 460P(n)			
0x0F	-			
0x10	SyncMaster 320PX SyncMaster 400PX(n) SyncMaster 460PX(n)			
0x11	-			
0x12	-			
0x13	SyncMaster 400TX(n)	MSTAR	Lola	-
0x14	SyncMaster 570DX	MSTAR	Lola	-
0x15	SyncMaster 320DX(n) SyncMaster 400DX(n) SyncMaster 460DX(n) SyncMaster 700DX(n) SyncMaster 820DX(n)	MSTAR	Lola	-
0x16	SyncMaster 460TX(n)	MSTAR	Lola	-
0x17	SyncMaster 400UX(n) SyncMaster 460UX(n) SyncMaster 460DR(n)	MSTAR	Lola	-
0x18	SyncMaster 42TS SyncMaster 42PS SyncMaster P42HP	MSTAR	Lola	-
0x19	SyncMaster P50Hn	MSTAR	Lola	-
0x1A	SyncMaster P50F(n) SyncMaster P50FP	MSTAR	Lola	-
0x1B	SyncMaster P63F(n) SyncMaster P63FP	MSTAR	Lola	-
0x1C	SyncMaster 320MX(n)	MSTAR	Lola	-
0x1D	SyncMaster 400CX(n) SyncMaster 400MX(n) SyncMaster 400MP(n)	MSTAR	Lola	-
0x1E	-	-	-	-
0x1F	-	-	-	-
0x20	SyncMaster 460CX(n) SyncMaster 460MP(n)	MSTAR	Lola	-
0x21	SyncMaster 520DX(n)	MSTAR	Lola	-
0x22	SyncMaster 400UXn-UD SyncMaster 460UXn-UD	ST	Sequoia	-
0x23	SyncMaster 400FX(n)	MSTAR	Lola	-
0x24	SyncMaster 460DRn-A	MSTAR	Lola	-
0x25	SyncMaster 460UTn-UD	MSTAR	Lola	-
0x26	SyncMaster 460UT(n)	MSTAR	Lola	-
0x27	SyncMaster 320MX(n)-2	MSTAR	Lola	-

	SyncMaster 320MP-2			
0x28	SyncMaster 400MX(n)-2 SyncMaster 400FP(n)-2	MSTAR	Lola	-
0x29	SyncMaster 460MX(n)-2 SyncMaster 460FP(n)-2	MSTAR	Lola	-
0x2A	SyncMaster P42H-2	MSTAR	Lola	-
0x2B	SyncMaster P50HP	MSTAR	Lola	-
0x2C	SyncMaster P50FP	MSTAR	Lola	-
0x2D	SyncMaster P63FP	MSTAR	Lola	-
0x2E	SyncMaster 460Rn-S	MSTAR	Lola	-
0x2F	SyncMaster 400DXn-S	MSTAR	Lola	-
0x30	SyncMaster 460DXn-S	MSTAR	Lola	-
0x31	SyncMaster 400CX(n)-2 SyncMaster 460CX(n)-2	ST	Sequoia	-
0x32	SyncMaster 400DX(n)-2 SyncMaster 460DX(n)-2 SyncMaster 700DX(n)-2 SyncMaster 820DX(n)-2 SyncMaster 650MP(n)	ST	Sequoia	
0x33	SyncMaster 400UX(n)-2 SyncMaster 460UX(n)-2	ST	Sequoia	
0x34	SyncMaster 700DRn	MSTAR	Lola	
0x35	SyncMaster 230TSn SyncMaster 230MXn	MSTAR	Lola	
0x36	SyncMaster 460DMn			
0x37	SyncMaster 400UXn-UD2 SyncMaster 460UXn-UD2	ST	Sequoia	
0x38	SyncMaster P50HP-2	MSTAR	Lola	
0x39	SyncMaster P63FP-2	MSTAR	Lola	
0x3A	SyncMaster 400EXn	ST	Mars	
0x3B	SyncMaster 460EXn	ST	Mars	
0x3C	SyncMaster 550EXn	ST	Mars	
0x3D	SyncMaster 460UT(n)-2	ST	Mars	
0x3E	SyncMaster 550DX(n)	ST	Mars	
0x3F	SyncMaster 460CX(n)-3 SyncMaster 400CX(n)-3 SyncMaster 320CX(n)-3	ST	Mars	
0x40	SyncMaster 520LD	ST	Mars	
0x41	SyncMaster 460UX(n)-3 SyncMaster 400UX(n)-3 SyncMaster 400BX	ST	Mars	
0x42	SyncMaster 460TS(n)-3 SyncMaster 400TS(n)-3	ST	Mars	
0x43	SyncMaster 460UT(n)-UD2	ST	Mars	

0x44	UE46A/UE55A ME40A/ME46A/ME55A DE40A/DE46A/DE55A MD32B/MD40B/MD46B/MD55B ME32B/ME40B/ME46B ME55B/ME65B/ME75B	Samsung	Genoa-P	
	SL46B	Samsung	Genoa-P	ACM12
0x45	SyncMaster UD55A	ST	Mars	
0x46	DE40C/DE46C/DE55C UD46C/UD55C/ UE46C/UE55C/	Samsung	Echo-E	ACM12
0x47	SyncMaster UD22A	ST	Mars	
0x48	SyncMaster NL22B	ST	Mars	
0x49	MD32C, MD40C, MD46C, MD55C, ME95C	Samsung	Echo-P	STDP7310
0x4A	ED32C/ED40C/ED46C/ ED55C/ED65C/ED75C/ ED32D/ED40D/ED46D/ ED55D/ED65D/ED75D/	Novatek	NT72569(NT13)	
0x4B	SyncMaster LE32C SyncMaster LE46C SyncMaster LE55C	ST	Mars	
0x4C	SyncMaster UD46C-B	ST	Mars	
0x4D	ME32C/ME40C/ME46C/ME55C/	Samsung	Echo-E	
0x4E	SyncMaster UD55C-B	ST	Mars	ACM12
0x4F	DB22D/DB32D/DB40D/ DB48D/DB55D/DM32D/ OH46D/OH55D	Samsung	Golf-S	
0x50	DM40D/DM48D/DM55D DM65D/DM75D	Samsung	Golf-S	
	UE46D/UE55D	Samsung	Golf-S	ACM12
	DH40D/DH48D/DH55D	Samsung	Golf-S	
	OM46D/OM55D/OM75D	Samsung	Golf-S	ACM12
0x51	EB40D/EB48D	Novatek	NT72456(NT14L)	
0x52	SyncMasterQM55D SyncMasterQM85D SyncMasterQM50D SyncMasterQM40D SyncMasterQM105D	Mstar	SE13U	
0x53	EM65E/EM75E ED65E/ED75E	Novatek	NT72456 (NT14L)	
0x54	DH40E,DH48E,DH55E	Samsung	Golf-S	

	DM32E,DM40E,DM48E, DM55E,DM65E,DM75E	Samsung	Golf-S	
	DB32E,DB40E,DB48E,DB55E	Samsung	Golf-S	
	DM65E-BR, DM75E-BR, DM82E-BR	Samsung	Golf-S	
	PE40E,PE46E,PE55E	Samsung	Golf-S	ACM
	UD46E-P, UD55E-P, UD55E-S	Samsung	Golf-S	ACM
0x55	RH48E, RH55E	Samsung	Golf-S	
0x56	SyncMaster UD46E-B SyncMaster UD55E-B SyncMaster UD46E-C	Novatek	SE15HV	ACM12
0x57	IL015E/ IL025E	Novatek	NT14F	
0x58	SBB-ES	Samsung	GOLF-S	
0x59	DC32E / DC40E / DC48E / DC55E	Novatek	NT72456 (NT14L)	
0x5A	OM24E OH24E/OH75E	Samsung	Golf-S	-
0x5B	SBB-MT	Mstar	SE13U	
0x5C	DC32E-M / DC40E-M / DC48E-M / DC55E-M DC32E-H / DC40E-H / DC48E-H / DC55E-H	Novatek	NT72456 (NT14L)	
0x5D	QM49F / QM55F /QM65F / QM75F / QM98F	Mstar	SE13U	

TV : TV / Monitor's TV support/not support.

0x00	Support TV	0x01	Do not support TV

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x10	ERR	

ERR : Error code that shows what occurred error is

2.1.11 Power Control

- **Function**

  Personal Computer turns TV / Monitor power ON/OFF.

- **Get Power ON/OFF Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x11		0x00	

- **Set Power ON/OFF**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x11		0x01	Power	

Power : Power code to be set on TV / Monitor

0x00	Power OFF	0x01	Power ON
0x02	Reboot		

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x11	Power	

Power : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x11	ERR	

ERR : Error code that shows what occurred error is

Note :

- When you execute power on function by RJ45 MDC then you must re-connect a socket connection after 10 sec.
- When Monitor is Power Off status and connect by RJ45 Then you must transmit the WOL protocol instead of MDC protocol using TCP/IP Format for Power On.
  (In "Network Standby : Off" Condition(DMD/DBD/DHD/UED/DMD-S) and always (Other Models)
- If you send a MDC Command for "PowerOn" or "PowerOff"
  It must retry for 3 times every 2 Seconds until ACK command.
  If there is no ACK within 3 times, It means failure.

Please refer below explanation

1) SET POWER OFF

0xAA,0x11,0x01,0x00,0x0x12 : MONITOR 1

0xAA,0x11,0x02,0x00,0x0x13 : MONITOR 2

0xAA,0x11,0x01,0x00,0x0x12 : MONITOR 1

0xAA,0x11,0x02,0x00,0x0x13 : MONITOR 2

0xAA,0x11,0x01,0x00,0x0x12 : MONITOR 1

0xAA,0x11,0x02,0x00,0x0x13 : MONITOR 2

2) SET POWER ON

0xAA,0x11,0x01,0x01,0x0x13 : MONITOR 1

0xAA,0x11,0x02,0x01,0x0x14 : MONITOR 2

0xAA,0x11,0x01,0x01,0x0x13 : MONITOR 1

0xAA,0x11,0x02,0x01,0x0x14 : MONITOR 2

0xAA,0x11,0x01,0x01,0x0x13 : MONITOR 1

0xAA,0x11,0x02,0x01,0x0x14 : MONITOR 2

2.1.12 Volume Control

- **Function**

  Personal Computer changes volume of TV / Monitor.

- **Get Volume Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x12		0x00	

- **Set Volume**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x12		0x01	Volume	

Volume : Volume value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x12	Volume	

Volume : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x12	ERR	

ERR : Error code that shows what occurred error is

2.1.13 Mute Control

- **Function**

  Personal Computer turns TV / Monitor mute ON/OFF.

- **Get Mute ON/OFF Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x13		0x00	

- **Set Mute ON/OFF**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x13		0x01	Mute	

Mute : Mute code to be set on TV / Monitor

0x00	Mute OFF	0x01	Mute ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x13	Mute	

Mute : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x13	ERR	

ERR : Error code that shows what occurred error is

2.1.14 Input Source Control

- **Function**

  Personal Computer changes input source of TV / Monitor.

- **Get Input Source Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x14		0x00	

- **Set Input Source**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x14		0x01	Input	

Input : Input Source code to be set on TV / Monitor

0x04	S-Video	0x08	Component
0x0C	AV1 (AV)	0x0D	AV2
0x0E	Ext. (SCART1)	0x18	DVI
0x14	PC	-	-
0x1E	BNC	0x1F	DVI_VIDEO
0x20	Magicinfo	0x21	HDMI1
0x22	HDMI1_PC	0x23	HDMI2
0x24	HDMI2_PC	0x25	DispalyPort(DispalyPort1)
0x26	DispalyPort2	0x27	DispalyPort3
~~0x30~~	~~RF(TV)~~	0x31	HDMI3
0x32	HDMI3_PC	0x33	HDMI4
0x34	HDMI4_PC	-	-
0x40	TV (DTV)	-	-
0x50	Plug In Module	0x55	HDBaseT
0x60	Media/MagicInfo S	0x61	WiDi/Screen Mirroring
0x62	Internal/USB	0x63	URL Launcher
0x64	IWB	-	-

Note : DVI_VIDEO, HDMI1_PC, HDMI2_PC, HDMI3_PC, HDMI4_PC → Get Only

In the case of Magicinfo, only possible with models include Magicinfo.

In the case of TV, only possible with models include TV.

In case of AV2, Ext, only possible with models include AT2, Ext.

On Timer function, Do not use 0x61. and use 0x62 by Internal/USB

URL Launcher can be supported on DB/DM/DH/UE Model.

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x14	Input	

Input : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x14	ERR	

ERR : Error code that shows what occurred error is

2.1.15 Picture Size Control

- **Function**

  Personal Computer changes Picture Size of TV / Monitor.

- **Working Condition**

  It will not work with Video Wall is On

- **Get Picture Size Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x15		0x00	

- **Set Picture Size**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x15		0x01	Aspect	

Aspect : Picture Size code to be set on TV / Monitor

PC Mode		Video Mode	
0x10	16 : 9	0x00	Auto Wide
0x18	4 : 3	0x01	16 : 9
0x20	Original Ratio	0x04	Zoom
0x21	21 : 9	0x05	Zoom1
		0x06	Zoom2
		0x09	Just Scan(Screen Fit)
		0x0B	4 : 3
		0x0C	Wide Fit
		0x0D	Custom
		0x0E	Smart View 1
		0x0F	Smart View 2
		0x31	Wide Zoom
		0x32	21 : 9

Note :

- Some of theimage sizes are not supported depending on input signals (720p, 1080i).
- For MFM model only possible for those include Europe TV if size is Auto Wide
- PC mode and Video mode definition

Product Type	PC Mode	Video Mode
Old Model	PC1, PC2, DVI, BNC, HDMI_PC, DP	AV, S-VIdeo, Component, DVI_Video, HDMI_Video
A product which has **** Text , **** Video/Image and Calibration as picture mode	PIC_MODE_PC	PIC_MODE_VIDEO

- Depends on each model specification, all or some of the picure size mode will be available.

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x15	Aspect	

Aspect : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x15	ERR	

ERR : Error code that shows what occurred error is

2.1.17 Direct Channel Control (DTV)

- **Function**

  Personal Computer can control TV Channel.

  Note : Only works with models include TV

- **Get Channel**

Header	Command	ID	Data Length	Check Sum
0xAA	0x17		0x00	

- **Set Channel**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x17		0x08	Country	ATV_DTV	AirCable	CH_NUM (High)
Data 5	Data 6	Data 7	Data 8	Check Sum			
CH_NUM (Low)	Sel_Minor	Minor_CH (High)	Minor_CH (Low)				

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0x17	Country	ATV_DTV
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Check Sum	
AirCable	CH_NUM (Hgh)	CH_NUM (Low)	Sel_Minor	Minor_CH (Hgh)	Minor_CH (Low)		

  Country : Select the country to be set on TV / Monitor (0 : Korea, 1: USA, ...)

  ATV_DTV : Select Analog TV and DTV to be set on TV / Monitor (0 : Analog TV, 1: Digital TV)

  AirCalbe : Select if TV is cabled or general (0 : general, 1: cabled)

  CH_NUM : TV channel number to be set on TV / Monitor (Analog TV : 1 ~ 135 , Digital TV : 0 ~ 999)

  Sel_Minor : Select minor channel when DTV is to be set on TV / Monitor
  (0 : minor channel not selected. 1: minor channel selected.)

  Minor_CH : Select minor channel number when DTV is to be set on TV / Monitor(0 ~ 999.)

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x17	ERR	

  ERR : Error code that shows what occurred error is

2.1.18 Screen Mode Control

- **Function**

  Personal Computer changes screen mode of TV

- **Working Condition**

  It will work on Video Wall Off, Landscape or Picture size is Auto Wide

  Picture Size Auto Wide is only used on European Tuner Signal

- **Get Screen Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x18		0x00	

- **Set Picture Size**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x18		0x01	ScrMode	

ScrMode : Screen Mode Code to be set on TV / Monitor

0x01	16 : 9
0x04	Zoom
0x0B	4 : 3
0x31	Wide Zoom

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x18	ScrMode	

ScrMode : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x18	ERR	

ERR : Error code that shows what occurred error is

2.1.19 Screen Size Control

- **Function**

  Personal Computer recognizes the screen size of TV / Monitor.

- **Get Screen Size Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x19		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x19	Screen Size	

Screen Size : Screen size of TV / Monitor (Range : 0 ~ 255, Unit : Inch)

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x19	ERR	

ERR : Error code that shows what occurred error is

2.1.1D MDC Connection Type

- **Function**

  Personal Computer get MDC Connection Type of TV / Monitor.

  Note : It is dependent on Product Specifications- RJ45 MDC Connection

  It is Get Commnad Only.

- **Get MDC Connection Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x1D		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x1D	Connection Type	

Connection Type :

0x00	RS232C MDC	0x01	RJ45 MDC

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x1D	ERR	

ERR : Error code that shows what occurred error is

2.1.24 Contrast Control

- **Function**

  Personal Computer changes contrast of TV / Monitor.

- **Working Condition**

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will not work with Calibration of picture mode in the menu

- **Get Contrast Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x24		0x00	

- **Set Contrast**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x24		0x01	Contrast	

Contrast : Contrast value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x24	Contrast	

Contrast : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x24	ERR	

ERR : Error code that shows what occurred error is

2.1.25 Brightness Control

- **Function**

  Personal Computer changes brightness of TV / Monitor.

- **Working Condition**

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will not work with Calibration of picture mode in the menu

- **Get Brightness Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x25		0x00	

- **Set Brightness**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x25		0x01	Brightness	

Brightness : Brightness value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x25	Brightness	

Brightness : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x0	'N'	0x25	ERR	

ERR : Error code that shows what occurred error is

2.1.26 Sharpness Control

- **Function**

  Personal Computer changes sharpness of TV / Monitor.

- **Working Condition**

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will not work with Calibration of picture mode in the menu

- **Get Sharpness Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x26		0x00	

- **Set Sharpness**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x26		0x01	Sharpness	

Sharpness : Sharpness value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x26	Sharpness	

Sharpness : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x26	ERR	

ERR : Error code that shows what occurred error is

2.1.27 Color Control

- **Function**

  Personal Computer changes the color of TV / Monitor.

- **Working Condition**

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     it will not affect by the 1st condition and instead,
     It will be work with **** Video/Image of picture mode in the menu

- **Get Color Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x27		0x00	

- **Set Color**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x27		0x01	Color	

Color : Color value code to be set on TV/Monitor(0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x27	Color	

Color : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x27	ERR	

ERR : Error code that shows what occurred error is

2.1.28 Tint Control

- **Function**

  Personal Computer changes tint of TV / Monitor when visual display is NTSC.

- **Working Condition**

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode, it will not affected by the 1st condition and instead, It will be work with **** Video/Image of picture mode in the menu

- **Get Tint Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x28		0x00	

- **Set Tint**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x28		0x01	Tint	

Tint : Tint value code to be set on TV/Monitor (0 ~ 100)

R	Tint Value
G	(100 - Tint) Value

Note : Tint could only be set in 50 Steps (0, 2, 4, 6... 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x28	Tint	

Tint : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x28	ERR	

ERR : Error code that shows what occurred error is

2.1.2F Coarse Control

- **Function**

  Personal Computer adjusts Coarse of TV / Monitor.

- **Working Condition**

  - PC(D-Sub), BNC Only
  - It will not work in case of Videowall is On

- **Get Coarse Status**

  None

- **Set Coarse**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x2F		0x01	Coarse	

Coarse : Coarse Increase/Decrease code to be set on TV/Monitor

0x00	Decrease	0x01	Increase

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x2F	Coarse	

Coarse : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x2F	ERR	

ERR : Error code that shows what occurred error is

2.1.30 Fine Control

- **Function**

  Personal Computer adjusts Fine of TV / Monitor.

- **Working Condition**

  - PC(D-Sub), BNC Only
  - It will not work in case of Videowall is On

- **Get Fine Status**

  None

- **Set Fine**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x30		0x01	Fine	

Fine : Phase Increase/Decrease code

0x00	Decrease	0x01	Increase

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x30	Fine	

Fine : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x30	ERR	

ERR : Error code that shows what occurred error is

2.1.31 H-Position Control

- **Function**

  Personal Computer adjusts Horizontal Position of TV / Monitor.

- **Working Condition**

  - PC(D-Sub), BNC Only
  - When Video Wall is on or Zoom (0x39) is set, you can not control

- **Get H-Position Status**

  None

- **Set H-Position**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x31		0x01	H-Pos	

H-Pos : H-Position Increase/Decrease code to be set on TV/Monitor

0x00	Move to Left	0x01	Move to Right

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x31	H-Pos	

H-Pos : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x31	ERR	

ERR : Error code that shows what occurred error is

2.1.32 V-Position Control

- **Function**

  Personal Computer adjusts Vertical Position of TV/Monitor.

- **Working Condition**

  - PC(D-Sub), BNC Only
  - When Video Wall is on or Zoom (0x39) is set, you can not control

- **Get V-Position Status**

  None

- **Set V-Position**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x32		0x01	V-Pos	

V-Pos : V-Position Increase/Decrease code to be set on TV/Monitor

0x00	Move Up	0x01	Move Down

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x32	V-Pos	

V-Pos : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x32	ERR	

ERR : Error code that shows what occurred error is

2.1.33 Auto Power

- **Function**

  Personal Computer adjusts Auto Power Control of TV/Monitor.

- **Get Auto Power**

Header	Command	ID	Data Length	Check Sum
0xAA	0x33		0x00	

- **Set Auto Power**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x33		0x01	Auto Power	

Auto Power : The Auto Power Control code to set for the TV or monitor

0x00	Auto Power Off	0x01	Auto Power On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x33	Auto Power	

Auto Power : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x33	ERR	

ERR : Error code that shows what occurred error is

2.1.34 Clear Menu Control

- **Function**

  Personal Computer removes Menu OSD left in TV / Monitor.

- **Get Clear Menu Status**

  None

- **Set Clear Menu**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x34		0x01	Clear	

  Clear : 0x00 (Always)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x34	Clear	

  Clear : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x34	ERR	

  ERR : Error code that shows what occurred error is

2.1.36 Remote Control

- **Function**

  Personal Computer enables/disables IR receiving function of TV/Monitor/

- **Working Condition**

  – Can operate regardless of whether power is ON/OFF

  (If DPMS Situation in LFD, it operate Remocon regardless of set value.)

- **Get IR Lock Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x36		0x00	

- **Set IR Lock**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x36		0x01	RMC	

RMC : Power code to be set on TV/Remocon

0x00	Remocon Disable	0x01	Remocon Enable

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x36	RMC	

RMC : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x36	ERR	

ERR : Error code that shows what occurred error is

2.1.37 RGB Contrast Control

- **Function**

  Personal Computer changes contrast of TV / Monitor

- **Working Condition**

  1. PC, BNC, DVI Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will not work with Calibration of picture mode in the menu

- **Get Contrast Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x37		0	

- **Set Contrast**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x37		0x01	Contrast	

Contrast : RGB Contrast value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x37	Contrast	

Contrast : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x37	ERR	

ERR : Error code that shows what occurred error is

2.1.38 RGB Brightness Control

- **Function**

  Personal Computer changes Brightness of TV / Monitor

- **Working Condition**

  1. PC, BNC, DVI Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will not affected by the 1st condition and instead,
     It will not work with Calibration of picture mode in the menu

- **Get Brightness Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x38		0x00	

- **Set Brightness**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x38		0x01	Brightness	

Brightness : RGB Brightness value code to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x38	Brightness	

Brightness : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x38	ERR	

ERR : Error code that shows what occurred error is

2.1.3C PIP On/Off Control

- **Function**

  The PC turns the PIP function of a TV or monitor on/off.

- **Working Condition**

  - This does not operate in MagicNet mode.
  - When Video Wall is On, you can not control.

- **Get PIP ON/OFF Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x3C		0x00	

- **Set PIP ON/OFF**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x3C		0x01	PIP	

PIP: The PIP On/Off code to set for the TV or monitor.

0x00	PIP OFF	0x01	PIP ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x3C	PIP	

PIP: Same as above.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x3C	ERR	

ERR: The error code indicating which error occurred.

2.1.3D Auto Adjustment Control

- **Function**

  Personal Computer controls PC system screen automatically.

- **Working Condition**

  - PC(D-Sub), BNC Only
  - In case of videlwall is on or picture size is Zoom, it will not work

- **Get Auto Adjustment Status**

  None

- **Set Auto Adjustment**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x3D		0x01	Auto	

Auto : 0x00 (Always)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x3D	Auto	

Auto : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x3D	ERR	

ERR : Error code that shows what occurred error is

2.1.3E Color Tone Control

- **Function**

  Personal Computer changes Color Tone of TV / Monitor.

- **Working Condition**

  1. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     It will work with **** Video/Image of picture mode in the menu

- **Get Color Tone Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x3E		0x00	

- **Set Color Tone**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x3E		0x01	Color Tone	

Color Tone : Color Tone value code to be set on TV/Monitor (0 ~ 4)

0x00	Cool 2
0x01	Cool 1(Cool)
0x02	Normal(Standard)
0x03	Warm 1
0x04	Warm 2
0x50	Off

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x3E	Color Tone	

Color Tone : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x3E	ERR	

ERR : Error code that shows what occurred error is

2.1.3F Color Temperature Control

- **Function**

  Personal Computer changes Color Temperature value of TV / Monitor.

- **Working Condition**

  1. Only operates when Color Tone is set to Off.
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     - It will not work in case of PIC_MODE is PIC_MODE_CALIB

     * For the PIC_MODE definition pls refer AnnexB

- **Get Color Temperature**

Header	Command	ID	Data Length	Check Sum
0xAA	0x3F		0x00	

- **Set Color Temperature**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x3F		0x01	C_Temp (or Extended)	

C_Temp : Color Temperature value code to be set on TV/Monitor

0x00 ~ 0x10	5000K ~ 15000K
0xFD	2800K
0xFE	3000K
0xFF	4000K

C_Temp (Extended) : Color Temperature value code to be set on TV/Monitor

28(0x1c)	2800K	95(0x5f)	9500K
30(0x1e)	3000K	100(0x64)	10000K
35(0x23)	3500K	105(0x69)	10500K
40(0x28)	4000K	110(0x6e)	11000K
45(0x2d)	4500K	115(0x73)	11500K
50(0x32)	5000K	120(0x78)	12000K
55(0x37)	5500K	125(0x7d)	12500K
60(0x3c)	6000K	130(0x82)	13000K
65(0x41)	6500K	135(0x87)	13500K
70(0x46)	7000K	140(0x8c)	14000K
75(0x4b)	7500K	145(0x91)	14500K
80(0x50)	8000K	150(0x96)	15000K
85(0x55)	8500K	155(0x9b)	15500K
90(0x5a)	9000K	160(0xa0)	16000K

Note : Depends on each model spec, it will work for the both of C_Temp and C_Temp (Extended) but in case of get it will returns as C_Temp (Extended)

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x3F	C_Temp	

C_Temp : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x3F	ERR	

ERR : Error code that shows what occurred error is

2.1.40 PIP Source Control

- **Function**

  The PC changes the PIP source of a TV or monitor.

- Working Condition

  - This only operates for a TV or monitor where PIP is set to On.
  - This does not operate in MagicNet mode.

- Get PIP Source Status

Header	Command	ID	Data Length	Check Sum
0xAA	0x40		0x00	

- Set PIP Source

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x40		0x01	P.Source	

P.Source: The input source code to set for the TV or monitor.

Note : The PIP source swap may not function according to the main source.

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x40	P.Source	

P.Source: Same as above.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x40	ERR	

ERR: The error code indicating which error occurred.

2.1.42 PIP Size Control

- **Function**

  The PC changes the PIP size of a TV or monitor.

- **Working Condition**

  – This does not operate in MagicNet mode.

- **Get PIP Size Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x42		0x00	

- **Set PIP Size**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x42		0x01	P.Size	

P.Size : The PIP size code set for the TV or monitor.

0x00	PIP Off
0x04	Double 1(Doble Window)
0x05	Double 2(Double Wide)
0x06	Medium
0x07	Large
0x08	Small
0x09	Double 3(POP)
0x10	Custom

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x42	P.Size	

P.Size : Same as above.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x42	ERR	

ERR: The error code indicating which error occurred.

2.1.43 PIP Locate Control

- **Function**

  The PC adjusts the PIP position of a TV or monitor.

- Working Condition

  - This does not operate in MagicInfo mode.
  - Only TV / Monitor that PIP is On Can use this command.

- Get PIP Locate Status

Header	Command	ID	Data Length	Check Sum
0xAA	0x43		0x00	

- Set PIP Locate

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x43		0x01	P.Locate	

P.Locate : The PIP Locate Increase/Decrease code to set for the TV or monitor.

0x00	PIP Off(Get Only)
0x01	Upper Left
0x02	Upper Right
0x03	Lower Right
0x04	Lower Left

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x43	P.Locate	

P.Locate : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x43	ERR	

ERR: The error code indicating which error occurred.

2.1.44 Fan Speed Setting

- **Function**

  The PC adjusts the Fan Speed of a TV or monitor.

- **Get Fan Speed**

Header	Command	ID	Data Length	Check Sum
0xAA	0x44		0x00	

- **Set Fan Speed**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x44		0x01	FAN Speed	

FAN Speed : The Fan Speed to set for the TV or monitor.(0 ~ 100)

Note : If you send "Set Fan speed", then "Fan Control" changed "Manual".
(refer "Fan Control" command (0x8F))

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x44	FAN Speed	

FAN Speed : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x44	ERR	

ERR: The error code indicating which error occurred.

2.1.45 User Auto Color

- **Function**

  The PC adjusts the User Auto Color Control of a TV or monitor.

  Note : It is dependent on Product Specifications.

- **Working Condition**

  - PC(D-Sub) Only
  - It will support only Scaler model

- **Get User Auto Color**

  It will return NAK always

- **Set User Auto Color**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x45		0x01	Auto Color Cmd	

Auto Color Cmd : The Auto Color Cmd to set for the TV or monitor.

0x00	Reset	0x01	Auto Color

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x45	Auto Color Cmd	

Auto Color Cmd : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x45	ERR	

ERR: The error code indicating which error occurred.

2.1.47 Sound Select Control

- **Function**

  The PC changes the sound when the PIP of a TV or monitor is set to On.

  Note : Same function is also exist on 0x65

- **Get the Sound Select**

Header	Command	ID	Data Length	Check Sum
0xAA	0x47		0x00	

- **Set the Sound Select**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x47		0x01	S.Selct	

S.Select: The Sound Select code to set for the TV or monitor

0x00	Sub	0x01	Main

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x47	S.Select	

S.Select: Same as above.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x47	ERR	

ERR: The error code indicating which error occurred.

2.1.48 Auto Volume Control

- **Function**

  The PC changes the Auto Volume.

- **Get Auto Volume**

Header	Command	ID	Data Length	Check Sum
0xAA	0x48		0x00	

- **Set Auto Volume**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x48		0x01	A_VOL	

A_VOL : The Auto Volume code to set for the TV or monitor.

0x00	OFF
0x01	Normal(On)
0x02	Night

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x48	A_VOL	

A_VOL : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x48	ERR	

ERR: The error code indicating which error occurred.

2.1.4A Standby Control

- **Function**

  The PC adjusts the Standby Control of a TV or monitor.

- **Working Condition**

  It is work for PC/DVI/HDMI/DisplayPort.

- **Get Standby Setting**

Header	Command	ID	Data Length	Check Sum
0xAA	0x4A		0x00	

- **Set Standby Setting**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x4A		0x01	Standby Setting	

Standby Setting : The Standyby Setting code to set for the TV or monitor

0x00	Off
0x01	On
0x02	Auto

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x4A	Standby Setting	

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x4A	ERR	

ERR: The error code indicating which error occurred.

2.1.4B Video Picture Position & Size

- **Function**

The PC adjusts the Picture Position & Size of a TV or monitor.

- **Working Condition**

1. Video Source Only
2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
   it will not affect by the 1st condition and instead,
   - It will work in case of PIC_MODE is PIC_MODE_VIDEO
   * For the PIC_MODE definition pls refer AnnexB
3. And "Picture Size" is must be zoom1,zoom2, Screen Fit, Custom.
   Other Picture sizes doesn't support this function.
   (For detail, plase refer below table.)

	Reset	Position				Size			
		0x00	0x01	0x02	0x03	0x00	0x01	0x02	0x03
Zoom1	O	O	O	X	X	X	X	X	X
Zoom2	O	O	O	X	X	X	X	X	X
Screen Fit	O	O	O	O	O	X	X	X	X
Custom	O	O	O	O	O	O	O	O	O
Zoom	O	O	O	X	X	X	X	X	X

- **Get Video Picture Position & Size**

It will return NAK always

- **Set Video Picture Position & Size**

Header	Command	ID	Data Length	Data 1	Data 2	Header	Check Sum
0xAA	0x4B		0x02	Type CMD	Direction CMD	0xAA	

Type CMD: The Standyby Setting code to set for the TV or monitor

0x00	Reset	0x01	Position
0x02	Size	0x03	RESERVED

Direction CMD: It is work for Type CMD Size or Position.

If "Type CMD" is Reset, then "Direction CMD" is not work.

Direction CMD(Position)		Direction CMD(Size)	
0x00	Down	0x00	Vertical Scale Down
0x01	Up	0x01	Vertical Scale Up
0x02	Left	0x02	Horizontal Scale Down
0x03	Right	0x03	Horizontal Scale Up

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2

0xAA	0xFF		0x04	'A'	0x4B	Type CMD	Direction CMD
Check Sum							

Type CMD, Direction CMD : Same as Above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x4B	ERR	

ERR: The error code indicating which error occurred.

2.1.4C Pixel Shift Control

- **Function**

  Personal Computer controls Pixel Shift function of TV / Monitor.

- **Working Condition**

  – When Video Wall is on or Zoom (0x39) is set or
  DVI's Input Signal set VESA Mode, you can not control

- **Get Pixel Shift Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x4C		0x00	

- **Set Pixel Shift**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x4C		0x04	Shift	H.Dot	V.Line	S.Time

Check Sum

Shift : Pixel Shift On/Off Code to be set on TV/Monitor

Note : If Shift value is off, H.Dot, V.Line, S.Time values are ignored in TV / Monitor.

0x00	OFF	0x01	ON

H.Dot : Horizontal Dot value code set on TV/Monitor (0 ~ 4)

V.Line : Vertical Line value code set on TV/Monitor (0 ~ 4)

S.Time : Shift Time value code set on TV/Monitor (1 ~ 4)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x06	'A'	0x4C	Shift	H.Dot

Val 3	Val 4	Check Sum
V.Line	S.Time	

Shift, H.Dot, V.Line, S.Time : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x4C	ERR	

ERR : Error code that shows what occurred error is

2.1.51 EQ 100Hz Control

- **Function**

  Personal Computer controls 100Hz field of Equalizer in TV / Monitor.

- **Get EQ 100Hz Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x51		0	

- **Set EQ 100Hz**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x51		0x01	100Hz	

100Hz : 100Hz feild data among Equalizer set up in TV/Monitor (0~20)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x51	100Hz	

100Hz : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x51	ERR	

ERR : Error code that shows what occurred error is

2.1.52 EQ 300Hz Control

- **Function**

  Personal Computer controls 300Hz field of Equalizer in TV / Monitor.

- **Get EQ 300Hz Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x52		0x00	

- **Set EQ 300Hz**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x52		0x01	300Hz	

300Hz : 300Hz feild data among Equalizer set up in TV/Monitor (0~20)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x52	300Hz	

300Hz : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x52	ERR	

ERR : Error code that shows what occurred error is

2.1.53 EQ 1kHz Control

- **Function**

  Personal Computer controls 1KHz field of Equalizer in TV / Monitor.

- **Get EQ 1kHz Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x53		0x00	

- **Set EQ 1kHz**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x53		0x01	1kHz	

1kHz : 1KHz feild data among Equalizer set up in TV/Monitor (0~20)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x53	1kHz	

1kHz : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x53	ERR	

ERR : Error code that shows what occurred error is

2.1.54 EQ 3kHz Control

- **Fuction**

  Personal Computer controls 3KHz field of Equalizer in TV / Monitor.

- **Get EQ 3kHz Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x54		0x00	

- **Set EQ 3kHz**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x54		0x01	3kHz	

3kHz : 3KHz feild data among Equalizer set up in TV/Monitor (0~20)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x54	3kHz	

3kHz : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x54	ERR	

ERR : Error code that shows what occurred error is

2.1.55 EQ 10kHz Control

- **Function**

  Personal Computer controls 10KHz field of Equalizer in TV / Monitor.

- **Get EQ 10kHz Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x55		0x00	

- **Set EQ 10kHz**

Header	Command	ID	Data Length	Data 1	Header	Command	Check Sum
0xAA	0x55		0x01	10kHz	0xAA	0x55	

10kHz : 10KHz feild data among Equalizer set up in TV/Monitor (0~20)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x55	10kHz	

10kHz : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x55	ERR	

ERR : Error code that shows what occurred error is

2.1.57 Auto Lamp Control

- **Function**

  Personal Computer sets Auto Lamp Function of TV / Monitor.

  Note :When Manual Lamp Control is on, Auto Lamp Control will automatically turn off.

- **Get Auto Lamp**

Header	Command	ID	Data Length	Check Sum
0xAA	0x57		0x00	

- Set Auto Lamp

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x57		0x08	LMax_H	LMax_M	LMax_AP	LMaxValue
Data 5	Data 6	Data 7	Data 8	Check Sum			
LMin_H	LMin_M	LMin_AP	LMinValue				

  LMax_H : Auto Lamp Max Time Hour set on TV/Monitor (1 ~ 12)

  LMax_M : Auto Lamp Max Time Minute set on TV/Monitor (0 ~ 59)

  LMax_AP : Auto Lamp Max Time set on TV/Monitor AM/PM (AM :1 / PM:0)

  LMaxValue : Auto Lamp Max Value set on TV/Monitor (0 ~ 100)

  LMin_H : Auto Lamp Min Time Hour set on TV/Monitor (1 ~ 12)

  LMin_M : Auto Lamp Min Time Minute set on TV/Monitor (0 ~ 59)

  LMin_AP : Auto Lamp Min Time set on TV/Monitor AM/PM (AM :1 / PM:0)

  LMinValue : Auto Lamp Min Value set on TV/Monitor (0 ~ 100)

  Note : When LMinValue is returned to 0xFF, Auto Lamp Control is off.

  When Dynamic contrast is On, Auto Lamp Control does not operate.

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0x57	LMax_H	LMax_M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Check Sum	
LMax_AP	LMaxValue	LMin_H	LMin_M	LMin_AP	LMinValue		

  Val 1 ~ Val 8 : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		3	'N'	0x57	ERR	

  ERR : Error code that shows what occurred error is

2.1.58 Manual Lamp Control

- **Function**

  Personal Computer sets Manual Lamp Function of TV / Monitor.

  Note : When Auto Lamp Control is on, Manual Lamp Control will automatically turn off.

- **Get Manual Lamp Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x58		0x00	

- **Set Manual Lamp**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x58		0x01	LampValue	

  LampValue : Manual Lamp value to be set on TV/Monitor (0 ~ 100)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x58	LampValue	

  LampValue : Same as above

  Note : When LampValue is returned to 0xFF, Manual Lamp Control is off.

  When Dynamic contrast is on, Manual Lamp Control does not operate.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x58	ERR	

  ERR : Error code that shows what occurred error is

2.1.59 Safety Screen Run Control

- **Function**

  Personal Computer will make Safety Screen function to operate immediately, not by Timer operation.

- **Get Safety Screen Run Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x59		0x00	

- **Set Safety Screen Run**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x59		0x01	Safety Screen Type	

Safety Screen Type : Safety Screen Type to be set on TV/Monitor (1~6)

0x00	Off
0x01	Signal Pattern
0x02	All White
0x03	Scroll
0x04	Bar
0x06	Eraser
0x07	Pixel
...	
0x10	Rolling Bar
0x11	Fading Screen

Note : 1(0x01), 2(0x02) only works with PDP models

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x59	Safety Screen Type	

Safety Screen Type : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x59	ERR	

ERR : Error code that shows what occurred error is

2.1.5A Inverse Control

- **Function**

  Personal Computer Set Inverse On/Off.

- **Get Inverse Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x5A		0x00	

- **Set Inverse**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x5A		0x01	Inverse	

Inverse : Inverse On/Off Code to be set on TV/Monitor

0x00	OFF	0x01	ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x5A	Inverse	

Inverse : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x5A	ERR	

ERR : Error code that shows what occurred error is

2.1.5B Safety Screen Control

- **Function**

  Personal Computer sets Screen Burn Protection Timer of TV/Monitor.

- **Get Safety Screen Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x5B		0x00	

- **Set Safety Screen**

When the Timer is Repeat

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Check Sum
0xAA	0x5B		0x03	Type	T.Period	T.Time	

When the Timeris Interval

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x5B		0x07	Type	StartTime-Hour	StartTime-Min.	StartTime-am/pm

Data 5	Data 6	Data 7	Check Sum
EndTime-Hour	EndTime-Min.	EndTime-am/pm	

Type :Timer type to set TV / Monitor

Note :

- If the valueix 0x00, means timer is off.(It dosen't matter the length 3/7)
- If the value is not 0x00 and the MSB is 00 means timer type is Repeat and the MSB is 1 means timer type is interval
- If the command has make like below condition, it will be get ACK
  (1) Data Length is 3 and timer typeis Interval
  (2) Data Length is 7and timer type is Repeat

0x00	OFF	0x00	OFF
…		…	
0x03	Scroll (Timer : Repeat)	0x83	Scroll (Timer : Interval)
0x04	Pixel (Timer : Repeat)	0x84	Pixel (Timer : Interval)
0x05	Bar (Timer : Repeat)	0x85	Bar (Timer : Interval)
0x06	Eraser (Timer : Repeat)	0x86	Eraser (Timer : Interval)
0x09	All White (Timer : Repeat)	0x89	All White (Timer : Interval)
0x0A	Pattern (Timer : Repeat)	0x8A	Pattern (Timer : Interval)
…		…	

0x10	Rolling Bar (Timer : Repeat)	0x90	Rolling Bar (Timer : Interval)
0x11	Fading Screen (Timer : Repeat)	0x91	Fading Screen (Timer : Interval)

Note : 9(0x09), 10(0x0A)는 PDP 모델에서만 동작한다.

T.Period : Timer periode hour data to set TV / Monitor (1 ~ 10 Hr.)

T.Time :Timer periode code to set TV / Monitor (10 ~ 50 sec.)

0x01	10 sec
0x02	20 sec
0x03	30 sec
0x04	40 sec
0x05	50 sec

Note : If the timer type is Rolling Bar or Fading Scree, timer will work only 1 cycleregardless it's type
If the timer periode is 0 or timer time is 0, timer will turn off
(IF the timer type is Rolling Bar or Fading Scree it will not turns off)

Start Time-Hour : The value of Start Time Hour (1 ~ 12)

Start Time-Min : The value of Start Time Minute (0 ~ 59)

Start Time-am/pm : The value of Start Time AM/PM (1 : AM, 0 : PM)

End Time-Hour : The value of End Time Hour (1 ~ 12)

End Time-Min : The value of End Time Minute 값 (0 ~ 59)

End Time-am/pm : The value of End Time AM/PM (1 : AM, 0 : PM)

- Ack

When the Timer is Repeat

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x05	'A'	0x5B	Type	T.Period
Val 3	Check Sum						
T.Time							

Type, T.Period, T.Time : Same as above

When the Timeris Interval

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x09	'A'	0x5B	Type	StartTime-Hour
Val 3	Val 4	Val 5	Val 6	Val 7	Check Sum		
StartTime-Min	StartTime-am/pm	End Time-Hour	End Time-Min	End Time-am/pm			

Val 1 ~ Val 7 : 상동

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x5B	ERR	

ERR : The error code indicating which error occurred.

2.1.5C Video Wall Mode Control

- **Function**

  Personal Computer converts Video Wall Mode of TV / Monitor when Video Wall is ON.

- **Working Condition**

  - Only works with TV/Monitor where Video Wall is on.
  - Does not operate in MagicNet.

- **Get Video Wall Mode**

Header	Command	ID	Data Length	Check Sum
0xAA	0x5C		0x00	

- **Set Video Wall Mode**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x5C		0x01	WallMode	

WallMode : Video Wall Mode code to be set on TV/Monitor

0x00	Full	0x01	Natural

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x5C	WallMode	

WallMode : same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x5C	ERR	

ERR : Error code that shows what occurred error is

2.1.5D Safety Lock

- **Function**

  Personal Computer turns Safety Lock function of TV/Monitor On/Off.

  Note :Can operate regardless of whether power is on/off.

- **Get Safety Lock Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x5D		0x00	

- **Set Safety Lock Enable/Disable**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x5D		0x01	Lock	

Lock : Lock code to be set on TV/Monitor

0x00	Off	0x01	On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x5D	Lock	

Lock : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x5D	ERR	

ERR : Error code that shows what occurred error is

2.1.5F Panel Lock

- **Function**

  Personal Computer turns Panel function Key Lock of TV/Monitor On/OFF.

  Note : Can operate regardless of whether power is on/off.

- **Get Button Lock Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x5F		0x00	

- **Set Button Lock**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x5F		0x01	ButtonLock	

Button Lock : Panel Key Lock On/Off code to be set on TV/Monitor

0x00	Unlock	0x01	Lock

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x5F	ButtonLock	

Button Lock : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x5F	ERR	

ERR : Error code that shows what occurred error is

2.1.61 Channel Up/Down

- **Function**

  Personal Computer can control TV Channel.

  Note : If PIP is on and pip source is TV, it also should work.

  Only works with models include TV.

- **Set TV Channel Up/Down**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x61		0x01	Channel Up/Down	

Channel Up/Down: Channel UP or Down to be set on TV / Monitor (0~1)

0x00	Up	0x01	Down

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x61	Channel Up/Down	

Channel Up/Down : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x61	ERR	

ERR : Error code that shows what occurred error is

2.1.62 Volume Up/Down

- **Function**

  Personal Computer changes volume of TV / Monitor.

- **Get Volume Up/Down Status**

  Nothing

- **Set Volume Up/Down**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x62		0x01	Volume Up/Down	

Volume Up/Down : Volume UP or Down to be set on TV / Monitor (0 ~ 100)

0x00	Up	0x01	Down

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x62	Volume Up/Down	

Volume Up/Down : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x62	ERR	

ERR : Error Code showing what occurred error is.

2.1.63 Ticker

- **Function**

  Personal Computer control the ticker of LFD

- **Get Ticker Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x63		0x00	

- **Set Ticker**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x63		Length	Ticker On/Off	Start Hour	Start Minute	Start AM/PM
Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11	Data 12
End Hour	End Minute	End AM/PM	Position Horizontal	Position Vertical	Motion On/Off	Motion Direction	Motion Speed
Data 13	Data 14	Data 15	Data 16	Data 17	Data 18	Data 19	Data 20
Font Size	Foreground Color	Background Color	Foreground Opacity	Background Opacity	Message Date 1	Message Date 2	Message Date 3
Data 21	Data 22	Data N	Check Sum				
Message Date 4	…	Message Date N					

Length : It means the variable length of data that is going to be sent.
You can set it differently depending on the length of message data and you need to input messages according to length that already set. (0 ~ 128)

Ticker On/Off :Ticker's On/Off Code that is going to be set in TV / Monitor(0 ~ 1)

0x00	Ticker Off	0x01	Ticker On

Start Hour : The value of Start Time Hour that operate Ticker in TV / Monitor (1 ~ 12)

Strat Minute : The value of Start Time Minute that operate Ticker in TV / Monitor (0 ~ 59)

Start AM/PM : Start Time AM/PM that operate Ticker in TV / Monitor(0 ~ 1)

0x00	PM	0x01	AM

End Hour : The value of End Time Hour that operate Ticker in TV / Monitor(1 ~ 12)

End Minute : The value of End Time Minute that operate Ticker in TV / Monitor (0 ~ 59)

End AM/PM : End Time AM/PM that operate Ticker in TV / Monitor(0 ~ 1)

0x00	PM	0x01	AM

Position Horizontal : Value of horizontal position of message that is presented in TV / Monitor (0 ~ 2)

Position Vertical : The value of vertical position of message that is presented in TV / Monitor (0 ~ 2)

Position Horizontal		Position Vertical	
0x00	Center	0x00	Center
0x01	Left	0x01	Left
0x02	Right	0x02	Right

Motion On/Off : On/Off Code of Motion that is set in TV / Monitor (0 ~ 1)

0x00	Motion Off	0x01	Motion On

Motion Direction : The direction which motion that is set in TV / Monitor moves (0 ~ 3)

0x00	Left
0x01	Right
0x02	Up
0x03	Down

Motion Speed : The speed which motion that is set in TV / Monitor moves (0 ~ 2)

Font Size : The font size of message that is set in TV / Monitor (0 ~ 2)

Motion Speed		Font Size	
Normal	0x00	Normal	0x00
Slow	0x01	Slow	0x01
Fast	0x02	Fast	0x02

Foreground Color : Foreground Color of message that is set in TV / Monitor (0 ~ 7)

Background Color : Background Color of message that is set in TV / Monitor (0 ~ 7)

Foreground Color		Background Color	
0x00	Black	0x00	Black
0x01	White	0x01	White
0x02	Red	0x02	Red
0x03	Green	0x03	Green
0x04	Blue	0x04	Blue
0x05	Yellow	0x05	Yellow
0x06	Magenta	0x06	Magenta
0x07	Cyan	0x07	Cyan

Foreground Opacity : Foreground Opacity of message that is set in TV / Monitor (0 ~ 3)

Background Opacity : Background Opacity of message that is set in TV / Monitor (0 ~ 3)

Foreground Opacity		Background Opacity	
0x00	Solid	0x00	Black
0x01	Transparent	0x01	White
0x02	Translucent	0x02	Red
0x03	Flashing	0x03	Green
0x04	Flash All	0x04	Blue
0x05	Off	0x05	Yellow

Message Date : Enter Ticker Message that is displayed in TV / Monitor.
It is sent as hexadecimal value of unicode and it can be entered up to 111 words.
ex) Hello => 0x48 0x65 0x6C 0x6C 0x6F

Font Style Reset : If font size reset is chosen in MDC Application, all values from Data 13 to Data 17 will be 0x00 and Set command is sent to get Default value.

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2

0xAA	0xFF		Length	'A'	0x63	Ticker On/Off	Start Hour
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
Start Minute	Start AM/PM	End Hour	End Minute	End AM/PM	Position Horizontal	Position Vertical	Motion On/Off
Val 11	Val 12	Val 13	Val 14	Val 15	Val 16	Val 17	Val 18
Motion Direction	Motion Speed	Font Size	Foreground Color	Background Color	Foreground Opacity	Background Opacity	Message Date 1
Val 19	Val 20	Val 21	Val 22	Val N	Check Sum		
Message Date 2	Message Date 3	…	…	Message Date N			

Val1 ~ ValN : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x63	ERR	

ERR : Error Code showing what occurred error is.

2.1.65 Sound Select Control

- **Function**

  The PC changes the sound when the PIP of a TV or monitor is set to On.

  Note : Same function is also exist on 0x47

- **Get the Sound Select**

Header	Command	ID	Data Length	Check Sum
0xAA	0x65		0x00	

- **Set the Sound Select**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x65		0x01	S.Selct	

S.Select: The Sound Select code to set for the TV or monitor

0x00	Sub	0x01	Main

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x65	S.Select	

S.Select: Same as above.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x65	ERR	

ERR: The error code indicating which error occurred.

2.1.66 PC Module Detect

- **Function**

  Check ths connection status of PC Modules

- **Get Only**

Header	Command	ID	Data Length	Check Sum
0xAA	0x66		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x66	Detection Source	

Detection Source : Information of detected Source

0x00	Not Detected
0x01	MagicInfo
0x02	Plug In Module

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x66	ERR	

ERR : Error Code showing what occurred error is.

2.1.67 Device Name

- **Function**

  It reads the device name which user set up in network.

- Get Only

Header	Command	ID	Data Length	Check Sum
0xAA	0x67		0x00	

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		Length	'A'	0x67	Device Name Data1	Device Name Data 2

Val 3	Val 4	Val 5	Val N	Check Sum
Device Name Data 3	…	…	Device Name Data N	

Length : It means the variable length of data transmitted.
It can be answered differently depending on the length of message data and the maximum length of device name is 15.

Device Name : It shows the information about entered device name.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x67	ERR	

ERR : Error Code showing what occurred error is.

2.1.68 Speaker Select

- **Function**

  Personal Computer chooses a Speaker in TV / Monitor

- Get Speaker Select

Header	Command	ID	Data Length	Check Sum
0xAA	0x68		0x00	

- Set Speaker Select

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x68		0x01	S.Selct	

S.Select : Speaker Select Code that is going to be set in TV / Monitor

0x00	Internal	0x01	External

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0x68		0x03	'A'	0x68	S.Select	

S.Select : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x68	ERR	

ERR : Error Code showing what occurred error is.

2.1.70 OSD On/Off

- **Function**

  Personal Computercontrol OSD on/off of TV / Monitor

  Note : In case OSD on Set display ODS on it's screen and in the case off there will be no ODS

- **Get OSD Enable Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x70		0x00	

- **Set OSD Enable/Disable**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x70		0x01	OSD	

OSD : OSD code to set TV / Monitor

0x00	OSD Off	0x01	OSD On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x70	OSD	

OSD : Same as above

Note : Depends on HongKong airport protocol option, ACK/NAK will returned in opposite way

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x70	ERR	

ERR : Error Code showing what occurred error is.

2.1.71 P.Mode Control

- **Function**

  Personal Computercontrol picture mode of the TV / Monitor

- **Get Picture Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x71		0x00	

- **Set Picture Mode**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x71		0x01	PMode	

PMode : Picture mode to set MFM/LFD

Source	Data	Mode
AV S-Video Component HDCP (TV)	0x00	Dynamic
	0x01	Standard
	0x02	Movie
	0x03	Custom
	0x04	Natural
	0x05	Calibration
	0x50	Off
PC BNC DVI DisplayPort (MagicNet)	0x10	Entertain
	0x11	Internet
	0x12	Text
	0x13	Custom
	0x14	Advertisement
All	0x15	Information
	0x16	Calibration
	0x50	Off
	0x20	Shop & Mall - Video
	0x21	Shop & Mall - Text
	0x22	Office & School - Video
	0x23	Office & School - Text
	0x24	Terminal & Station - Video
	0x25	Terminal & Station - Text

	0x26	Videowall - Video
	0x27	Videowall - Text

Note :

- Dynamic contrast will work only the picture mode is off
- Depends on each model spec it will support the picture mode : 0x16 and 0x20~0x27 only

● Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x71	PMode	

PMode : 상동

● Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x71	ERR	

ERR : The error code indicating which error occurred.

2.1.72 S.Mode Control

- **Function**

  Personal Computer Set sound mode on TV / Monitor

- **Get Sound Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x72		0x00	

- **Set Sound Mode**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x72		0x01	SMode	

SMode : Sound Mode Code

0x00	Standard
0x01	Music
0x02	Movie
0x03	Speech
0x04	Custom
0x05	Amplify

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x72	SMode	

SMode : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x72	ERR	

ERR : Error Code showing what occurred error is.

2.1.73 Digital NR Control

- **Function**

  Personal Computer changes Digital NR mode.

- Working Condition

  1. AV, S-Video, Component, DVI(HDCP) Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     it will not affect by the 1st condition and instead,
     - It will work in case of PIC_MODE is PIC_MODE_VIDEO
     * For the PIC_MODE definition pls refer AnnexB

  Note : It will work as Digital Clean View in the menu depends on each model spec

- Get NR Mode Status

Header	Command	ID	Data Length	Check Sum
0xAA	0x73		0x00	

- Set NR Mode

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x73		0x01	NR Mode	

NR Mode : NR Mode On/Off code to set in TV / Monitor

0x00	NR Mode Off
0x01	NR Mode Low(On)
0x02	NR Mode Medium
0x03	NR Mode High
0x04	NR Mode Auto
0x05	NR Mode Auto Visualization

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x73	NR Mode	

NR Mode : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x73	ERR	

ERR : Error Code showing what occurred error is.

2.1.75 PC Color Tone Control

- **Function**

  Personal Computer can change color tone of Monitor.

- **Working Condition**

  1. PC, BNC, DVI Only
  2. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     it will not affected by the 1st condition and instead,
     It will work with **** Text of picture mode in the menu

- **Get Color Tone Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x75		0x00	

- **Set Color Tone**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x75		0x01	Color Tone	

Color Tone : Color Tone value code to set on TV/Monitor (0 ~ 3)

0x00	Custom
0x01	Cool
0x02	Normal
0x03	Warm
0x50	Off

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x75	Color Tone	

Color Tone : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x75	ERR	

ERR : Error code that shows what occurred error is

2.1.76 Auto AutoAdjustment

- **Function**

  Personal Computer can Enable/Disable Auto Adjustment function.

  Note : If this value is Disable. then Auto Adjustment is not work.

- **Get A.Adjustment Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x76		0x00	

- **Set A.Adjustment**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x76		0x01	A.Adjustment	

A. Adjustment : Auto Auto Adjustment Enable/Disable Value Code to be set on TV/Monitor

0x00	Disable	0x01	Enable

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x76	A.Adjustment	

A.Adjustment : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x76	ERR	

ERR : Error code that shows what occurred error is

2.1.77 All Keys Lock

- **Function**

  rsonal Computer turns both REMOCON and Panel Key Lock function on/off.

  Note : Can operate regardless of whether power is on/off.

- **Get All Key Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x77		0x00	

- **Set All Key Lock/Unlock**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x77		0x01	AKL	

All Key : Lock On/Off code of every Key to be set on TV/Monitor

0x00	OFF	0x01	ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x77	AKL	

All Key : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x77	ERR	

ERR : Error code that shows what occurred error is

2.1.78 SRS TSXT Control

- **Function**

  Personal Computer turns SRS TS XT of TV / Monitor on/off.

- **Get SRS TS XT Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x78		0x00	

- **Set SRS TSXT**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x78		0x01	SRS	

SRS : SRS TS XT code to be set on TV/Monitor

0x00	SRS OFF	0x01	SRS ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x78	SRS	

SRS : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x78	ERR	

ERR : Error code that shows what occurred error is

2.1.79 Film Mode Control

- **Function**

  Personal Computer turns Film Mode of TV / Monitor on/off.

- **Get Film Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x79		0x00	

- **Set Film Mode**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x79		0x01	FMode	

FMode : Film Mode code to be set on TV/Monitor

0x00	Film Mode OFF
0x01	Film Mode Auto1
0x02	Film Mode Auto2
0x03	Film Cinema Smooth

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x79	FMode	

FMode : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x79	ERR	

ERR : Error code that shows what occurred error is

2.1.83 Panel On Time

- **Function**

  Personal Computer shows Panel On Time of TV / Monitor.

- **Get Panel On Time Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x83		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2	Check Sum
0xAA	0xFF		0x04	'A'	0x83	PTime_ H	PTime_L	

  PTime_H : Panel On Time High.

  PTime_L : Panel On Time Low.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x83	ERR	

  ERR : Error code that shows what occurred error is

2.1.84 Video Wall On

- **Function**

  Personal Computer turns Video Wall of TV / Monitor ON/OFF.

- **Working Condition**

  - Does not operate in MagicNet source.

- **Get Video Wall On/Off Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x84		0x00	

- Set Video Wall On/Off

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x84		0x01	V.Wall_On	

V.Wall_On : Video Wall Code to set on TV / Monitor

0x00	Video Wall OFF	0x01	Video Wall ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x84	V.Wall_On	

V.Wall_On : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x84	ERR	

ERR : Error code that shows what occurred error is

2.1.85 Temperature Control

- **Function**

  Personal Computer sets the maximum value of TV / Monitor temperature.

- **Working Condition**

  - Only supports models with Temperature notification function.

- **Get Temperature Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x85		0x00	

- **Set Temperature Status**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x85		0x01	Temperature	

  Temperature : Temperature code to be set on TV/Monitor(75 ~ 124 ℃)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x85	Temperature	

  Temperature : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x85	ERR	

  ERR : Error code that shows what occurred error is

2.1.86 Brightness Sensor

- **Function**

  Personal Computer turns Brightness Sensor of TV / Monitor on/off.

- **Get Brightness Sensor ON/OFF Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x86		0x00	

- **Set Brightness Sensor ON/OFF**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x86		0x01	BR_Sensor	

BR_Sensor : Brightness Sensor Code to be set on TV/Monitor

0x00	Brightness Sensor OFF	0x01	Brightness Sensor ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x86	BR_Sensor	

BR_Sensor : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x86	ERR	

ERR : Error code that shows what occurred error is

2.1.87 Dynamic Contrast

- **Function**

  Personal Computer changes Dynamic Contrast of TV/Monitor.

  Note : It will be work or not depends on the Picture mode

- **Get Dynamic Contrast Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x87		0x00	

- **Set Dynamic Contrast**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x87		0x01	DY_Cont	

DY_Cont : Dynamic Contrast code to be set on TV/Monitor

0x00	Dynamic Contrast OFF
0x01	Dynamic Contrast Low(ON)
0x02	Dynamic Contrast Medium
0x03	Dynamic Contrast High

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x87	DY_Cont	

_Cont : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x87	ERR	

ERR : Error code that shows what occurred error is

2.1.89 Video Wall User Control

- **Function**

  Personal Computer turns Video Wall function of TV / Monitor on/off.

- **Working Condition**

  Does not operate in MagicNet mode.

- **Get Video Wall Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x89		0x00	

- **Set Video Wall**

Header	Command	ID	Data Length	Data 1	Data 2	Check Sum
0xAA	0x89		0x02	Wall_Div	Wall_SNo	

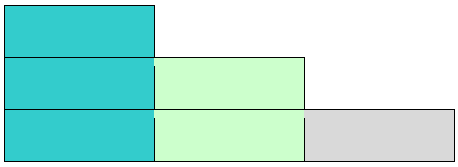
Wall_Div : Video Wall Divider code set on TV/Monitor

Note : It is dependent on Product Specifications.

5x5 Video Wall

10x10 Video Wall

15x15 Video Wall



V / H	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OFF	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
1	0x11	0x12	0x13	0x14	0x15	0x16	0x17	0x18	0x19	0x1A	0x1B	0x1C	0x1D	0x1E	0x1F
2	0x21	0x22	0x23	0x24	0x25	0x26	0x27	0x28	0x29	0x2A	0x2B	0x2C	0x2D	0x2E	0x2F
3	0x31	0x32	0x33	0x34	0x35	0x36	0x37	0x38	0x39	0x3A	0x3B	0x3C	0x3D	0x3E	0x3F
4	0x41	0x42	0x43	0x44	0x45	0x46	0x47	0x48	0x49	0x4A	0x4B	0x4C	0x4D	0x4E	0x4F
5	0x51	0x52	0x53	0x54	0x55	0x56	0x57	0x58	0x59	0x5A	0x5B	0x5C	0x5D	0x5E	0x5F
6	0x61	0x62	0x63	0x64	0x65	0x66	0x67	0x68	0x69	0x6A	0x6B	0x6C	0x6D	0x6E	0x6F
7	0x71	0x72	0x73	0x74	0x75	0x76	0x77	0x78	0x79	0x7A	0x7B	0x7C	0x7D	0x7E	0x7F
8	0x81	0x82	0x83	0x84	0x85	0x86	0x87	0x88	0x89	0x8A	0x8B	0x8C	0x8D	0x8E	0x8F
9	0x91	0x92	0x93	0x94	0x95	0x96	0x97	0x98	0x99	0x9A	0x9B	0x9C	0x9D	0x9E	0x9F
10	0xA1	0xA2	0xA3	0xA4	0xA5	0xA6	0xA7	0xA8	0xA9	0xAA	0xAB	0xAC	0xAD	0xAE	0xAF
11	0xB1	0xB2	0xB3	0xB4	0xB5	0xB6	0xB7	0xB8	0xB9	0xBA	0xBB	0xBC	0xBD	0xBE	0xBF
12	0xC1	0xC2	0xC3	0xC4	0xC5	0xC6	0xC7	0xC8	0xC9	0xCA	0xCB	0xCC	0xCD	0xCE	0xCF
13	0xD1	0xD2	0xD3	0xD4	0xD5	0xD6	0xD7	0xD8	0xD9	0xDA	0xDB	0xDC	0xDD	0xDE	0xDF
14	0xE1	0xE2	0xE3	0xE4	0xE5	0xE6	0xE7	0xE8	0xE9	0xEA	0xEB	0xEC	0xED	0xEE	0xEF
15	0xF1	0xF2	0xF3	0xF4	0xF5	0xF6	0xF7	0xF8	0xF9	0xFA	0xFB	0xFC	0xFD	0xFE	0xFF

Wall_SNo : TV / Monitor 에 설정된 TV/Monitor 의 Number code.

- 5x5 Video Wall Model : (1 ~ 25)
- 10x10 Video Wall Model : (1 ~ 100)
- 15x15 Video Wall Model : (1 ~ 225)

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x04	'A'	0x89	Wall_Div	Wall_SNo
Check Sum							

Wall_Div, Wall_SNo : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x89	ERR	

ERR : Error code that shows what occurred error is

2.1.8A Model Name Control

- **Function**

  Personal Computer grasps TV / Monitor Model Name and display.

- **Get Model Number Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x8A		0x00	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		Length	'A'	0x8A	M_Name1	M_Name2
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
M_Name3	M_Name4	M_Name5	M_Name6	M_Name7	M_Name8	M_Name9	M_Name10
Val 11	Val 12	Val 13	Val 14	Val 15	Val 16	Val 17	Val ...
M_Name11	M_Name12	M_Name13	M_Name14	M_Name15	M_Name16	M_Name17	M_Name...
Check Sum							

M_Name1 ~ M_Name... : TV / Monitor's Model Name.

Length : Length means number of M_Name elements & Ack/Nak & r-CMD.

Ex) SyncMaster400DXn

M_Name1	'S'
M_Name2	'y'
M_Name3	'n'
M_Name4	'c'
M_Name5	'M'
M_Name6	'a'
M_Name7	's'
M_Name8	't'
M_Name9	'e'
M_Name10	'r'
M_Name11	'4'
M_Name12	'0'
M_Name13	'0'
M_Name14	'D'
M_Name15	'X'
M_Name16	'n'

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check

0xAA	0xFF		0x03	'N'	0x8A	ERR	Sum

ERR : Error Code showing what occurred error is.

2.1.8B Video Wall Direct User Control

- **Function**

  The PC turns the Video Wall of a TV or monitor on/off.

- **Working Condition**

  This does not operate while PIP is operating.

- **Get the Video Wall Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x8B		0x00	

- **Set the Video Wall**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0x8B		0x05	V.Wall_On	WallMode	Wall_Div	Wall_SNo
Data 5	*Check Sum*						
Input							

V.Wall_On: The Video Wall code to set for the TV or monitor.

0x00	Video Wall OFF	0x01	Video Wall ON

WallMode: The Video Wall mode code to set for the TV or monitor.

0x00	Natural	0x01	Full

Wall_Div: The Video Wall Divider code set for the TV or monitor.

- Please refer Wall_Div table of Command 0x89, Video Wall User Control

Wall_SNo: The TV/Monitor serial number code set for the TV or monitor.

- Please refer Wall_SNo table of Command 0x89, Video Wall User Control

Input : The input source code to set for the TV or monitor.

- Please refer Input table of Command 0x14, Input Source Control (MFM).

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x07	'A'	0x8B	V.Wall_On	WallMode
Val 3	Val 4	Val 5	*Check Sum*				
Wall_Div	Wall_SNo	Input					

Val 1 ~ Val 5 : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x8B	ERR	

ERR : Error Code showing what occurred error is.

2.1.8F Fan Control

- **Function**

  The PC adjusts the Fan Control of a TV or monitor.

- **Get Fan Control Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x8F		0x00	

- **Set Fan Control**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x8F		0x01	FAN	

FAN : Fan Control code to be set on TV/Monitor

0x00	Fan Control Manual	0x01	Fan Control Auto

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x8F	FAN	

FAN : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x8F	ERR	

ERR : Error code that shows what occurred error is

2.1.92 Energy Saving Control

- **Function**

  The PC adjusts the Energy Saving of a TV or monitor.

- **Get Energy Saving Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x92		0x00	

- **Set Energy Saving**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x92		0x01	E_SAV	

Energy Saving : Energy Saving code to be set on TV/Monitor

0x00	Energy Saving Control OFF
0x01	Energy Saving Control Low(ON)
0x02	Energy Saving Control Medium
0x03	Energy Saving Control High
0x04	Energy Saving Picture Off

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x92	E_SAV	

E_SAV : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x92	ERR	

ERR : Error code that shows what occurred error is

2.1.94 HDMI Black Level Control

- **Function**

  Personal Computer turns HDMI Black Level function of TV / Monitor.

- Get HDMI Black Level Status

Header	Command	ID	Data Length	Check Sum
0xAA	0x94		0x00	

- Set HDMI Black Level

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x94		0x01	HDMI_b	

HDMI_b : HDMI Black Level Control code set on TV/Monitor

0x00	Normal
0x01	Low
0x02	Auto

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x94	HDMI_b	

HTPC : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x94	ERR	

ERR : Error code that shows what occurred error is

2.1.95 Black Adjust Control

- **Function**

  Personal Computer changes Black Adjust of TV / Monitor.

- **Working Condition**

  - Depends on each model spec it will be supported or not

- **Get Black Adjust Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x95		0x00	

- **Set Black Adjust**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x95		0x01	B_ADJ	

B_ADJ : Black Adjust Control Value

0x00	Black Adjust Control OFF or Off
0x01	Black Adjust Control Low(ON) or Dark
0x02	Black Adjust Control Medium or Darker
0x03	Black Adjust Control High or Darkest

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x95	B_ADJ	

B_ADJ : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x95	ERR	

ERR : Error code that shows what occurred error is

2.1.96 Gamma Control

- **Function**

  The PC adjusts the Gamma Control of a TV or monitor.

- **Get Gamma Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x96		0x00	

- **Set Gamma**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x96		0x01	GAMMA	

GAMMA : Gamma code to be set on TV/Monitor

0x00	Natural (0)
0x01	Mode1 (1)
0x02	Mode2 (2)
0x03	Mode3 (3)
0x04	Mode4 (4)
0x05	Mode5 (5)
0x11	-1
0x12	-2
0x13	-3
0x14	-4
0x15	-5
0x20	Custom

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x96	GAMMA	

GAMMA : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x96	ERR	

ERR : Error code that shows what occurred error is

2.1.9C Edge Enhancement Control

- **Function**

  Personal Computer changes Edge Enhancement of TV/Monitor.

- **Working Condition**

  - Depends on each model spec it will be supported or not

- **Get Edge Enhancement Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x9C		0x00	

- **Set Edge Enhancement**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x9C		0x01	EDGE	

EDGE : Edge Enhancement Control value set on TV/Monitor

0x00	Edge Enhancement Control OFF	0x01	Edge Enhancement Control ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x9C	EDGE	

EDGE : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x9C	ERR	

ERR : Error code that shows what occurred error is

2.1.9D Color Space Control

- **Function**

  Personal Computer changes Color Space of TV/Monitor.

- **Working Condition**

  1. A product which has **** Text , **** Video/Image and Calibration as picture mode,
     - It will work in case of PIC_MODE is PIC_MODE_VIDEO
     * For the PIC_MODE definition pls refer AnnexB

- **Get Color Space Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x9D		0x00	

- **Set Color Space**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x9D		0x01	COS	

COS : Color Space Control value set on TV/Monitor

0x00	Color Space Control Auto
0x01	Color Space Control Native
0x02	Color Space Control Custom

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x9D	COS	

COS : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x9D	ERR	

ERR : Error code that shows what occurred error is

2.1.9E xvYCC Control

- **Function**

  Personal Computer changes xvYCC of TV/Monitor.

- **Working Condition**

  - Depends on each model spec it will be supported or not

- **Get xvYCC Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0x9E		0x00	

- **Set xvYCC**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x9E		0x01	XVYCC	

XVYCC : xvYCC Control code set on TV/Monitor

0x00	xvYCC Control OFF	0x01	xvYCC Control ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x9E	XVYCC	

xvYCC : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x9E	ERR	

ERR : Error code that shows what occurred error is

2.1.9F Reset Control

- **Function**

  The PC adjusts the Reset Control of a TV or monitor.

- **Get Reset**

  It will always returns as NAK

- **Set Reset**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0x9F		0x01	RST	

RST : Reset code to be set on TV/Monitor

0x00	Picture Reset
0x01	Sound Reset
0x02	Setup Reset(System Reset)
0x03	Reset All
0x04	Screen Display Reset

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0x9F	RST	

RST : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0x9F	ERR	

ERR : Error code that shows what occurred error is

2.1.A1 Ambient Brightness Mode

- **Function**

  The PC adjusts Ambient Brightness Mode On/Off of a TV or monitor.

  And, Setting Lamp value for Ambient Brightness On.

- **Get Ambient Brightness Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA1		0x00	

- **Set Ambient Brightness Mode, Set Lamp Value**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Check Sum
0xAA	0xA1		0x03	AB_Mode	Valid_ LampValue	Lamp Value	

AB_Mode: Ambient Mode On/Off code to be set on TV/Monitor

0x00	Ambient Brightness Mode Off	0x01	Ambient Brightness Mode On

Valid_LampValue : Lamp Value Apply/Not apply to be set on TV/Monitor

0x00	Invalid Lamp Value(Don't apply)	0x01	Valid Lamp Value (Apply)

Lamp Value : Lamp Value to be set on TV/Monitor (0 ~ 100),

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x04	'A'	0xA1	AB_Mode	Lamp Value

Check Sum

AB_Mode, Valid_LampValue,Lamp Value : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA1	ERR	

ERR : Error code that shows what occurred error is

2.1.A3 OSD Display Type On/Off

- **Function**

The PC adjusts the OSD Display Control of a TV or monitor.
"OSD On" means, Display OSD which is set on OSD Type.
"OSD Off" means, Does not display which is set on OSD Type.

- **Get OSD Enable Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA3		0x00	

- **Set OSD Enable/Disable**

Header	Command	ID	Data Length	Data 1	Data 2	Check Sum
0xAA	0xA3		0x02	OSD Type	OSD On/Off	

OSD Type: Select OSD Type code to be set on TV/Monitor

0x00	Source OSD	0x01	Not Optimum Mode OSD
0x02	No Signal OSD	0x03	MDC OSD
0x04	Schedule Channel Info	-	-

OSD ON/OFF: Adjust OSD On/Off code to be set on TV/Monitor

0x00	OSD Off	0x01	OSD On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	
						BIT7	BIT6
0xAA	0xFF		0x03	'A'	0xA3	Reserved	Reserved

Val 1						Check Sum
BIT5	BIT4	BIT3	BIT2	BIT1	BIT0	
Reserved	Reserved	Type 3 On/Off	Type 2 On/Off	Type 1 On/Off	Type 0 On/Off	

Type(OSD Type) : Same as Above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA3	ERR	

ERR : Error code that shows what occurred error is

2.1.A4 Timer1 Control_MFM

- **Function:**

  Personal Computer controls the Timer1 that TV / Monitor.

  Note : It is dependent on Product Specifications.

- **Get Timer1 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA4		0x00	

- **Set Timer1**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA4		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA4		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer1 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer1 only Apply	0x03	Off Timer1 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xA4	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xA4	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA4	ERR	

ERR : Error code that shows what occurred error is

2.1.A5 Timer2 Control_MFM

- **Function:**

  Personal Computer controls the Timer2 that TV / Monitor.

  Note : It is dependent on Product Specifications.

- **Get Timer2 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA5		0x00	

- **Set Timer2**

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA5		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA5		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer2 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer2 only Apply	0x03	Off Timer2 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xA5	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xA5	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA5	ERR	

ERR : Error code that shows what occurred error is

2.1.A6 Timer3 Control_MFM

- **Function:**

Personal Computer controls the Timer3 that TV / Monitor.

Note : It is dependent on Product Specifications.

- **Get Timer3 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA6		0x00	

- **Set Timer3**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA6		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA6		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer3 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer3 only Apply	0x03	Off Timer3 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xA6	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xA6	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA6	ERR	

ERR : Error code that shows what occurred error is

2.1.A7 Clock Control_MFM

- **Function**

  Personal Computer controls current time of TV / Monitor

  Note : It is dependent on Product Specifications.

- **Working Condition**

  - model is developed until 2013, For after 2014 refer to 0xC5

- **Get Time Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xA7		0x00	

- **Set Time**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA7		0x07	Day	H Time	M Time	Month

Data 5	Data 6	Data 7	Check Sum
Year1	Year2	AP Time	

Day : Day value to be set on TV/Monitor (1 ~ 31)

Month : Month value to be set on TV/Monitor (1 ~ 12)

Year1 : Year value to be set on TV/Monitor (High Byte)

Year2 : Year value to be set on TV/Monitor (Low Byte)

ex) Current year is 2010.

2010(Dec) → 0x07DA(Hex) => Year1: 0x07, Year2: 0xDA

Hour : Hour value to be set on TV/Monitor (1 ~ 12)

Minute : Minute value to be set on TV/Monitor (0 ~ 59)

AmPm : AM/PM value to be set on TV/Monitor (0 ~ 1)

0x00	PM	0x01	AM

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x09	'A'	0xA7	Day	H Time

Val 3	Val 4	Val 5	Val 6	Val 7	Check Sum
M Time	Month	Year1	Year2	AP Time	

Val 1 ~ Val 7 : Same as above

Note : Hour, Minute if current time was not set on Monitor, 0xFF

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA7	ERR	

ERR : Error code that shows what occurred error is

2.1.A8 Holiday Add/Delete Control

- **Function**

  Personal Computer controls Holiday List of TV / Monitor.

- **Set Holiday Status**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xA8		0x05	Management command	Month1	Day1	Month2
Data 5	Check Sum						
Day2							

Management Command: Adjust Command Holiday List of TV / Monitor.

0x00	Add Holiday
0x01	Delete Holiday
0x02	Delete All

Note :

- If param is Delete All, Data 2 ~ Data 5 must be set 0.
- Add Holiday : Add New Holiday Information "Month1/Day1 ~ Month2/Day2".
- Delete Holiday : Delete one Holiday Information "Month1/Day1 ~ Month2/Day2".
- Delete All : Delete All Holiday Information.("Data2 ~ Data5" must be 0x00.)

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x07	'A'	0xA8	Management command	Month1
Val 3	Val 4	Val 5	Check Sum				
Day1	Month2	Day2					

Val 1 ~ Val 5 : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA8	ERR	

ERR : Error code that shows what occurred error is

2.1.A9 Holiday Get Control

- **Function**

Personal Computer get Holiday List of TV / Monitor.

Note : It is dependent on Product Specifications.

- Get Total Number of Holiday

Request Total number of Holiday information of TV/Monitor.

Header	Command	ID	Data Length	Check Sum
0xAA	0xA9		0x00	

- Get Holiday Date

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xA9		0x01	Index	

Index : Index value on Holiday List.

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x07	'A'	0xA9	Index	Month1
Val 3	Val 4	Val 5	Check Sum				
Day1	Month2	Day2					

When the value of Val 2 ~ Val 5 is 0, "Get Holiday" is an ACK, Val 1 is number of Holiday information set on TV/Monitor

When the value of Val 2 ~ Val 5 is 0xFF, requested information of index that doesn't set holiday.

Rule of Ack Command.

Input Type	Index	Month 1	Day 1	Month 2	Day 2
Get Number of Holiday	Total number	0	0	0	0
Index which is set Holiday	Set Index	Month1 (Index's data)	Day1 (Index's data)	Month2 (Index's data)	Day2 (Index's data)
Index which is not set Holiday	Set Index	0xFF	0xFF	0xFF	0xFF

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xA9	ERR	

ERR : Error code that shows what occurred error is

2.1.AB Timer4 Control

- **Function:**

Personal Computer controls the Timer4 that TV / Monitor.

Note : It is dependent on Product Specifications.

- **Get Timer4 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xAB		0x00	

- **Set Timer4**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAB		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAB		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer4 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer4 only Apply	0x03	Off Timer4 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xAB	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xAB	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xAB	ERR	

ERR : Error code that shows what occurred error is

2.1.AC Timer5 Control

- **Function:**

  Personal Computer controls the Timer1 that TV / Monitor.

  Note : It is dependent on Product Specifications.

- **Get Timer5 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xAC		0x00	

- **Set Timer5**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAC		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAC		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer5 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer5 only Apply	0x03	Off Timer5 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xAC	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xAC	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xAC	ERR	

ERR : Error code that shows what occurred error is

2.1.AD Timer6 Control

- **Function:**

Personal Computer controls the Timer1 that TV / Monitor.

Note : It is dependent on Product Specifications.

- **Get Timer6 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xAD		0x00	

- **Set Timer6**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAD		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAD		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer6 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer1 only Apply	0x03	Off Timer1 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xAD	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xAD	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xAD	ERR	

ERR : Error code that shows what occurred error is

2.1.AE Timer7 Control

- **Function:**

Personal Computer controls the Timer1 that TV / Monitor.

Note : It is dependent on Product Specifications.

- **Get Timer7 Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xAE		0x00	

- **Set Timer7**

On Timer/Off Timer Integrated.

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAE		0x0D	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat	Manual Weekday	Volume	Source
Data 13	Check Sum						
Holiday Apply							

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xAE		0x0F	On H	On M	On AM/PM	On_Act
Data 5	Data 6	Date 7	Data 8	Data 9	Data 10	Data 11	Data 12
Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn	Repeat_Off	Manual WeekdayOff
Data 13	Data 14	Data 15	Check Sum				
Volume	Source	Holiday Apply					

On H : On Time Hour value to be set on TV/Monitor (1 ~ 12)

On M : On Time Minute value to be set on TV/Monitor (0 ~ 59)

On AM/PM :On Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

On_Act : On Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Off H : Off Time Hour value to be set on TV/Monitor (1 ~ 12)

Off M : Off Time Minute value to be set on TV/Monitor (0 ~ 59)

Off AM/PM : Off Time AM/PM value to be set on TV/Monitor (0~1)

0x00	PM	0x01	AM

Off_Act : Off Time Inactivated /Activated to be set on TV/Monitor (0(off)~1(on))

Repeat_On/Repeat Off : Repeat value to be set on TV/Monitor (0~5)

0x00	Once	0x01	Everyday
0x02	Mon~Fri	0x03	Mon~Sat

0x04	Sat~Sun	0x05	Manual Weekday

ManualWeekday/ManualWeekdayOn/ManualWeekdayOff : Weekday value to be set on TV/Monitor.

BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
X	Sat	Fri	Thu	Wed	Tue	Mon	Sun

Note : Don't care for BIT7

Volume : Volume to be set on TV/Monitor.

Source : Source to be set on TV/Monitor.

Note : 0x61, WiDi is not available, 0x62 : Internal/USB, USB

Holiday Apply : Apply or not the Holiday to On/Off Timer7 (0 ~ 3)

0x00	Dont't Apply(Both)	0x01	Apply(Both)
0x02	On Timer1 only Apply	0x03	Off Timer1 only Apply

- Ack

On Timer/Off Timer Integrated

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xAE	On H	On M
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat	Manula Weekday
Val 11	Val 12	Val 13	Check Sum				
Volume	Source	Holiday Apply					

On Timer/Off Timer Seperated (Added two Items, Data Length is different)

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x11	'A'	0xAE	On H	On M
Va 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
On AM/PM	On_Act	Off H	Off M	Off AM/PM	Off_Act	Repeat_On	Manual WeekdayOn
Val 11	Val 12	Val 13	Val 14	Val 15	Check Sum		
Repeat_Off	Manual Week dayOff	Volume	Source	Holiday Apply			

Val1 ~ Val15 : Same as above

Note : If H/M Time values are 0xFF, Time didn't set in LFD.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xAE	ERR	

ERR : Error code that shows what occurred error is

2.1.AF Edit Name Control

- **Function**

  Personal Computer sets Edit Name for the present input of TV/Monitor.

- Get Edit Name Status

Header	Command	ID	Data Length	Check Sum
0xAA	0xAF		0x00	

- Set Edit Name

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xAF		0x01	EName	

EName : TV 가 설정할 Edit Name Code

0x00	NONE	0x10	DMA
0x01	VCR	0x11	DVD Receiver
0x02	DVD	0x12	HD STB
0x03	Cable STB	0x13	DVD Combo
0x04	Satelite STB	0x14	DHR
0x05	PVR STB		
0x06	AV Receiver		
0x07	Game		
0x08	Camcorder		
0x09	PC		
0x0A	DVI PC		
0x0B	DVI Devices		
0x0C	TV		
0x0D	IPTV		
0x0E	Blu-ray		
0x0F	HD DVD		

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xAF	EName	

EName : Same as Above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xAF	ERR	

ERR : Error code that shows what occurred error is

2.1.B0 Virtual Remote Control

- **Function**

  This function support that MDC command can work same as remote control.

- **Set Virtual Remote Control**

Header	Command	ID	Data Length	Val 1	Check Sum
0xAA	0xB0		0x01	KeyCode	

KeyCode

0X01	KEY_SOURCE	0x02	KEY_POWER
0x04	KEY_1	0x05	KEY_2
0x06	KEY_3	0x07	KEY_VOLUME_UP
0x08	KEY_4	0x09	KEY_5
0x0A	KEY_6	0x0B	KEY_VOLUME_DOWN
0x0C	KEY_7	0x0D	KEY_8
0x0E	KEY_9	0x0F	KEY_MUTE
0x10	KEY_CHANNEL_DOWN	0x11	KEY_0
0x12	KEY_CHANNEL_UP	0x14	KEY_GREEN
0x15	KEY_YELLOW	0x16	KEY_CYAN
0x1A	KEY_MENU	0x1F	KEY_DISPLAY
0x23	KEY_DIGIT	0x24	KEY_PIP_TV_VIDEO
0x2D	KEY_EXIT	0x45	KEY_REW
0x46	KEY_STOP	0x47	KEY_PLAY
0x48	KEY_FF	0x4A	KEY_PAUSE
0x4B	KEY_TOOLS	0x58	KEY_RETURN
0x5B	KEY_MAGICINFO_LITE	0x60	KEY_CURSOR_UP
0x61	KEY_CURSOR_DOWN	0x62	KEY_CURSOR_RIGHT
0x65	KEY_CURSOR_LEFT	0x68	KEY_ENTER
0x6C	KEY_RED	0x77	KEY_LOCK
0x79	KEY_CONTENT	0x98	DISCRET_POWER_OFF
0x9F	KEY_3D		

Note : In a certain model, 0x79 content key works as Home and 0x1f Display key works as Info

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check

0xAA	0xFF		0x03	'A'	0xB0	KeyCode	Sum

KeyCode : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB0	ERR	

ERR : Error code that shows what occurred error is

2.1.B1 Display Port Daisy Chain

- **Function**

  Value of Display Port Daisy Chain sets Clone or Expand.

- Get Display Port Daisy Chain Clone/Expand

Header	Command	ID	Data Length	Check Sum
0xAA	0xB1		0x00	

- Set Display Port Daisy Chain Clone/Expand

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xB1		0x01	Value	

Value : The Value of set for Display Port Daisy Chain.

0x00	Clone	0x01	Expand

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xB1	Value	

Value : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB1	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B3 Video Conference Sound Mode Control

- **Function**

  Personal Computer set Video Conference sound mode of TV/Monitor.

- **Working Condition**

  In case of PIP is on and the C.Sound is on PIP sound select will not work

  When S.Sound mode set off, PIP sound will change as it's last memory value

  C.Sound will support last memory

- **Get Conference Sound Mode Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xB3		0x00	

- **Set Conference Sound Mode Status**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xB3		0x01	C.Sound On/Off	

C.Sound On/Off : Video Conference Sound On/Off set Value.

0x00	Video Conference Sound Off	0x01	Video Conference Sound On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xB3	C.Sound On/Off Status	

C.Sound On/Off Status : Video Conference Sound On/Off set Value.

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB3	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B5 Network Standby Control

- **Function**

  In Network supported Model, Control Network Standby function.

- **Get Network Standby Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xB5		0x00	

- **Set Network Standby Status**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xB5		0x01	Network Standby On/Off	

Network Standby On/Off : Network Standby Value

0x00	Network Standby Off	0x01	Network Standby On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xB5	Network Standby On/Off	

Value : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB5	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B6 DST (Daylight Saving Time) Control

- **Function**

  Control function of DST (Daylight Saving Time)

- **Get DST Value**

Header	Command	ID	Data Length	Check Sum
0xAA	0xB6		0x00	

- **Set DST Value**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xB6		0x0C	DST On/Off	Month of Start Date	Value1 of Day on Start Date	Value2 of Day on Start Date
Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11	Date 12
Time H of Start date	Time M of Start date	Month of End Date	Value1 of Day on End Date	Value2 of Day on End Date	Time H of End date	Time M of End date	Time Off Set
Check Sum							

DST On/Off : DST Value

Tunerless Model		Tuner supported Model	
0x00	DST Off	0x00	DST Off
0x01	--	0x01	Auto
0x02	DST On	0x02	Manual

Note : Data2 ~12 are valid in case of DST On or Manual

Month of Start Date : Month in which DST starts(0x00 : Jan ~ 0x0b : Dec)

Month of End Date : Month in which DST ends (0x00 : Jan ~ 0x0b : Dec)

Value1 of Day on Start Date : Order of the day of the week in which DST start.

Value1 of Day on End Date : Order of the day of the week in which DST ends.

0x00	1st
0x01	2nd
0x02	3rd
0x03	4th
0x04	Last

Value2 of Day on Start Date : Day of week in which DST starts(0x00 : Jan ~ 0x0b : Dec)

Value2 of Day on End Date : Day of week in which DST ends(0x00 : Jan ~ 0x0b : Dec)

Time H of Start date : Hours of the time that DST starts (0 ~ 23)

Time M of Start date : Minutes of the time that DST starts (0 ~ 59)

Time H of End date : Hours of the time that DST ends (0 ~ 23)

Time M of End date : Minutes of the time that DST ends (0 ~ 59)

Time Off Set : Value of Time offset

0x00	+1:00	0x01	+2:00

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0F	'A'	0xB6	DST On/Off	Month of Start Date
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9	Val 10
Value1 of Day on Start Date	Value2 of Day on Start Date	Time H of Start date	Time M of Start date	Month of End Date	Value1 of Day on End Date	Value2 of Day on End Date	Time H of End date
Val 11	Val 12	Val 13	Check Sum				
Time M of End date	Time Off Set	Tuner/Tunerless Model					

Tuner/Tunerless Model : Tuner - 1, Tunerless - 0

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB6	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B7 Custom PIP Control

- **Function**

  When PIP Size is set to "Custom", control the value of custom PIP.

- **Get Custom PIP status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xB7		0x00	

- **Set Custom PIP**

Header	Command	ID	Data Length	Data 1	Data 2	Data 3	Data 4
0xAA	0xB7		0x08	H Position High-Byte	H Position Low-Byte	V Position High-Byte	V Position Low-Byte
Data 5	Data 6	Data 7	Data 8	Check Sum			
H Size High-Byte	H Size Low-Byte	V Size High-Byte	V Size Low-Byte				

H Position High-Byte : The Position value code for PIP H-Start High-Byte.

H Position Low-Byte : The Position value code for PIP H-Start Low-Byte.

V Position High-Byte : The Position value code for PIP V-Start High-Byte.

V Position Low-Byte : The Position value code for PIP V-Start Low-Byte.

H Size High-Byte : The Size value code for PIP H-width High-Byte.

H Size Low-Byte : The Size value code for PIP H-width Low-Byte.

V Size High-Byte : The Size value code for PIP V-width High-Byte.

V Size Low-Byte : The Size value code for PIP V-width Low-Byte.

Note :

- The PIP Start Position and Size can not over panel H, V size
- H/V Size : 512 * 288 ~ 1632 * 918 (H Interval : 160 pixel, V Interval : 90 pixel)

  512*288, 672*378, 832*468, 992*558, 1152*648, 1312*738, 1472*828, 1632*918
- H/V Position : Interval 10 Pixel

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0xB7	H Position High-Byte	H Position Low-Byte
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Check Sum	
V Position High-Byte	V Position Low-Byte	H Size High-Byte	H Size Low-Byte	V Size High-Byte	V Size Low-Byte		

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		3	'N'	0xB7	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B8 Auto ID Setting Status Control

- **Function**

  Control Start/End of Auto ID Setting.

- **Get Auto ID Setting Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xB8		0x00	

- **Set Auto ID Setting Status**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xB8		0x01	Status	

Status : value of Auto ID settings status.

0x00	Auto ID Setting START	0x01	Auto ID Setting END

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xB8	Status	

Value : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB8	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.B9 Display ID Information

- **Function**

  Displaying function ID of Monitor.

- **Set Monitor ID**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xB9		0x01	ID Display On/Off	

ID Display On/Off : Monitor ID

0x00	Monitor ID Display Off	0x01	Monitor ID Display On

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xB9	ID Display On/Off	

Value : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xB9	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.C5 Clock Control_MFM (Second field can be set)

- **Function**

  Personal Computer controls clock of TV / Monitor

- **Working Condition**

  It will work on the signage device which is product after 13year

- **Get Time Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xC5		0x00	

- **Set Time**

Header	Command	ID	Data Length	Val 1	Val 2	Val 3	Val 4
0xAA	0xC5		0x08	Day	H Time	M Time	S Time
Val 5	Val 6	Val 7	Val 8	Check Sum			
Month	Year1	Year2	AP Time				

Day : Day value to be set on TV/Monitor (1 ~ 31)

Month : Month value to be set on TV/Monitor (1 ~ 12)

Year1 : Year value to be set on TV/Monitor (High Byte)

Year2 : Year value to be set on TV/Monitor (Low Byte)

ex) Current year is 2010.

2010(Dec) → 0x07DA(Hex) => Year1: 0x07, Year2: 0xDA

H Time : Hour value to be set on TV/Monitor (1 ~ 12)

M Time : Minute value to be set on TV/Monitor (0 ~ 59)

S Time : Second value to be set on TV/Monitor (0 ~ 59)

AP Time : AM/PM value to be set on TV/Monitor (0 ~ 1)

0x00	PM	0x01	AM

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x0A	'A'	0xC5	Day	H Time
Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Check Sum	
M Time	S Time	Month	Year1	Year2	AP Time		

Hour, Minute : Same as above

Note : Hour, Minute if current time was not set on Monitor, 0xFF

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xC5	ERR	

ERR : Error code that shows what occurred error is

2.1.C6 EcoSolution control in MDC Protocol

- **Function**

  Control Eco Solution by MDC Protocol.

- **Get Eco Solution info**

Header	Command	ID	Data Length	Sub CMD	Check Sum
0xAA	0xc6		0x01	Function	

Sub CMD : Function

No	Sub CMD	Function
1	0x81	Auto Power Off

- **Set Eco Solution - Overall**

Header	Command	ID	Data Length	Sub CMD	Data1	...	DataN
0xAA	0xc6		xx	Function	xx	...	xx

Check Sum

. Set Eco Solution - Sub CMD : Auto Power Off

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc6		0x02	Function	AutoPower Off Mode	

AutoPowerOff Mode

0x00	Off
0x01	4 Hour(On)
0x02	6 Hour
0x03	8 Hour

Note : If the model has On/Off value only, Data 0 is Off and Data 1 is On. ,

- **Ack**

. Sub CMD : Get/Set Auto Power Off

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc6	0x81	AutoPower Off Mode

Check Sum

AutoPowerOff Mode : Same as above

- **Nak**

Header	Command	ID	Data Length	Nak	r-CMD	Val1	Check Sum
0xAA	0xFF		0x03	'N'	0xc6	ERR	

ERR : Error code that shows what occurred error is

2.1.C7 Control Launcher by MDC Protocol

- **Function**

  Control Launcher by MDC Protocol.

- **Working Condition**

  - Depends on each model spec it will be supported or not

- **Get Launcher Info**

Header	Command	ID	Data Length	Sub CMD	Check Sum
0xAA	0xc7		0x01	Function	

Sub CMD : Function

Sub CMD	Function
0x81	Play Via Mode
0x82	URL Address

- **Set Launcher - Overall**

Header	Command	ID	Data Length	Sub CMD	Data1	...	DataN
0xAA	0xc7		xx	Function	xx	...	xx

Check Sum

. Set Launcher - Sub CMD : Set Play Via Mode

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc7		0x02	0x81	Play Via Mode	

Play Via Mode

0x00	MagicInfo
0x01	URL Launcher
0x02	MagicIWB

Note : When the Magicinfo S or MagicIWB or URL Launcher is running, "Set Play via command" will return NAK.

. Set Launcher - Sub CMD : Set URL

Header	Command	ID	Data Length	Sub CMD	Data1	...	DataN
0xAA	0xc7		Variable	0x82	URL Address		

Check Sum

URL Address : ASCII code data, support 200 characters.

- **Ack**

. Sub CMD : Get/Set Play Via

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc7	0x81	Play Via Mode
Check Sum							

. Sub CMD : Get/Set URL

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		Variable	'A'	0xc7	0x82	URL Address
Val2	...	ValN	Check Sum				
URL Address							

- Nak

Header	Command	ID	Data Length	Nak	r-CMD	Val1	Check Sum
0xAA	0xFF		0x03	'N'	0xc7	ERR	

ERR : Error code that shows what occurred error is

2.1.C8 OnScreen Display Menu Control

- **Function**

  Control the features of OnScreen Display Menu.

- **Working Condition**

  – Depends on each model spec it will be supported or not

- **Get OnScreen Display info**

Header	Command	ID	Data Length	Sub CMD	Check Sum
0xAA	0xc8		0x01	Function	

Sub CMD : Function

Sub CMD	Function	Sub CMD	Function
0x81	Menu Orientation	0x82	Source Content Orientation
0x83	Aspect Ratio	0x84	PIP Rotation

- **Set OnScreen Display – Overall**

Header	Command	ID	Data Length	Sub CMD	Data1	...	DataN
0xAA	0xc8		xx	Function	xx	…	xx

Check Sum

. Set OnScreen Display – Sub CMD : Menu Orientation

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc8		0x02	0x81	Menu Orientation Mode	

Menu Orientation Mode

0x00	Landscape(0)	0x01	Portrait(270)
0x02	180	0x03	90

. Set OnScreen Display – Sub CMD : Source Content Orientation

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc8		0x02	0x82	Source Orientation Mode	

Source Orientation Mode

0x00	Landscape(0)	0x01	Portrait(270)
0x02	180	0x03	90

. Set OnScreen Display – Sub CMD : Aspect Ratio

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc8		0x02	0x83	Aspect Ratio Mode	

Aspect Ratio Mode

0	Full Screen	1	Original

. Set OnScreen Display – Sub CMD : PIP Rotation

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xc8		0x02	0x84	PIP Rotation Mode	

PIP Rotation Mode

0x00	Landscape(0)	0x01	Portrait(270)
0x02	180	0x03	90

Note : PIP rotation will work properly when PIP is set as off.

If anyone wants to make a PIP rotation with PIP on status, below sequence is need

1. PIP Off 2. PIP Rotation set 3. PIP on

- Ack

. Sub CMD : Get/Set Menu Orientation

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc8	0x81	Menu Orientation Mode
Check Sum							

. Sub CMD : Get/Set Source Content Orientation

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc8	0x82	Source Orientation Mode
Check Sum							

. Sub CMD : Get/Set Aspect Ratio

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc8	0x83	Aspect Ratio Mode
Check Sum							

. Sub CMD : Get/Set NetPIP Rotation

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xc8	0x84	PIP Rotation Mode
Check Sum							

- Nak

Header	Command	ID	Data Length	Nak	r-CMD	Val1	Check Sum
0xAA	0xFF		0x03	'N'	0xc8	ERR	

ERR : Error code that shows what occurred error is

2.1.CA System Menu Control

- **Function**

  Control the features of Sound Menu.

- **Get System Menu Control**

Header	Command	ID	Data Length	Sub CMD	Check Sum
0xAA	0xCA		0x01	Function	

Sub CMD : Function

Sub CMD	Function
0x81	Auto Source Switch On/Off
0x82	Auto Source Switch Control
0x91	Power Button
0xa1	No Signal Power Off

- **Set System Menu Control – Overall**

Header	Command	ID	Data Length	Sub CMD	Data1	...	DataN
0xAA	0xCA		xx	Function	xx	…	xx

Check Sum

. Set System Menu Control – Sub CMD : Auto Source Switch OnOff

Header	Command	ID	Data Length	Sub CMD	Data1	Check Sum
0xAA	0xCA		0x02	0x81	Auto Source Switch OnOff	

Auto Source Switch On/Off

0x00	Off	0x01	On

. Set System Menu Control – Sub CMD : Auto Source Control

Header	Command	ID	Data Length	Sub CMD	Data 1	Data 2	Data 3
0xAA	0xCA		0x04	0x82	Primary Source Recovery	Primary Source	Secondary Source

Check Sum

Primary Source recovery

0x00	Off	0x01	On

Primary Source : Source code to set as primary, code value is same with the code of 0x14 Input Source Control command

* Note : When try to set as “All” for primary source, it needs to set as 0x00.

Secondary Source : Source code to set as secondary, code value is same with the code of 0x14 Input Source Control command

. Set System Menu Control – Sub CMD : Power Button

Header	Command	ID	Data Length	Sub CMD	Data 1	Check Sum
0xAA	0xCA		0x02	0x91	Power Button	

Power Button

0x00	Power On Only	0x01	Power On/Off

. Set System Menu Control – Sub CMD : No Signal Power Off

Header	Command	ID	Data Length	Sub CMD	Data 1	Check Sum
0xAA	0xCA		0x02	0xa1	No Signal Power Off	

Power Button

0x00	Off	0x01	15 min
0x02	30 min	0x03	60 min

- Ack

. Sub CMD : Get/Set Auto Source Switch OnOff

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xCA	0x81	Auto Source Switch OnOff
Check Sum							

Auto Source Switch On/Off : Same as above

. Sub CMD : Get/Set Auto Source Switch Control

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x06	'A'	0xCA	0x82	Primary Source Recovery
Val 3	Val 4	Check Sum					
Primary Source	Secondary Source						

Primary Source recovery : Same as above

Primary Source : Same as above

Secondary Source : Same as above

. Sub CMD : Get/Set Power Button

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xCA	0x91	Power Button
Check Sum							

Power Button : Same as above

Sub CMD : Get/Set No Signal Power Off

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'A'	0xCA	0xa1	No Signal Power Off
Check Sum							

No Signal Power Off : Same as above

- Nak

Header	Command	ID	Data Length	Ack	r-CMD	Sub CMD	Val1
0xAA	0xFF		0x04	'N'	0xCA	Function	Err
Check Sum							

ERR : Error code that shows what occurred error is

2.1.E0 Net PIP (MagicInfo Only)

- Function

  The Computer turns the PIP function ON/OFF at MagicInfo.

  ※ 1. The possible PIP composition and PIP size depends on H/W spec.

  2. After Net PIP turns on, if user changes other sources and come back to Magicinfo, Net PIP also should be shown.

- Get MagicInfo PIP status

  Not Support

- Set MagicInfo PIP On -

Header	Command	ID	Data Length	PIP ON	Data 1	Data 2	Data 3
0xAA	0xE0		0x14	0x01	H Position High-Byte	H Position Low-Byte	V Position High-Byte
Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11
V Position	H Size	H Size	V Size	V Size	P.Source	TV Channel	S.Select

Low-Byte	High-Byte	Low-Byte	High-Byte	Low-Byte			
Data 12	Data 13	Data 14	Data 15	Data 16	Data 17	Data 18	Data 19
Country	ATV/ DTV	AirCable	CH_NUM High_Byte	CH_NUM Low_Byte	Sel_Minor	Minor_CH High_Byte	Minor_CH Low_Byte
Check Sum							

H Position High-Byte : The Position value code for PIP H-Start High-Byte.

H Position Low-Byte : The Position value code for PIP H-Start Low-Byte.

V Position High-Byte : The Position value code for PIP V-Start High-Byte.

V Position Low-Byte : The Position value code for PIP V-Start Low-Byte.

H Size High-Byte : The Size value code for PIP H-width High-Byte.

H Size Low-Byte : The Size value code for PIP H-width Low-Byte.

V Size High-Byte : The Size value code for PIP V-width High-Byte.

V Size Low-Byte : The Size value code for PIP V-width Low-Byte.

Note : The PIP Start Position and Size do not over panel H, V size

P.Source : The input source code to set for the TV or monitor.

- Please refer Input table of Command 0x14, Input Source Control (MFM).

TV Channel : Channel Number (0 ~ 99)

Note : 460Txn Only (Platform LFD don't use this byte)

S.Select : The Sound select Code

0x00	MagicInfo Sound	0x01	PIP Sound

Country : The value code for the country of the TV / Monitor(0 : Korea, 1 : U.S.A, ...)

ATV_DTV : The value code for the ATV/DTV of the TV / Monitor(0 : Analog TV, 1 : Digital TV)

AirCable : The value code for the Air/Cable of the TV / Monitor(0 : Air, 1 : Cable)

CH_NUM High_Byte : The value code for the Major Channel High-Byte of the TV / DTV
(Analog TV : 1 ~ 135, Digital TV : 0 ~ 999)

CH_NUM Low_Byte : The value code for the Major Channel Low-Byte of the TV / DTV
(Analog TV : 1 ~ 135, Digital TV : 0 ~ 999)

Sel_Minor : The value code for the Minor Channel Enable/Disable of the TV / Monitor
(0 : Enable, 1 : Disable)(DTV Only)

Minor_CH High_Byte : The value code for the Minor Channel High-Byte of the TV / Monitor(0 ~ 999)(DTV Only)

Minor_CH Low_Byte : The value code for the Minor Channel Low-Byte of the TV / Monitor(0 ~ 999)(DTV Only)

Note : CH_NUM High_Byte = 0xFF, CH_NUM Low_Byte = 0xFF, Sel_Minor = 0x01, Minor_CH High_Byte = 0xFF, Minor_CH Low_Byte = 0xFF
=> Net PIP tune as last Memory channel of TV source

- Set MagicInfo PIP Off

Header	Command	ID	Data Length	PIP Off	Check Sum
0xAA	0xE0		0x01	0x00	

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	PIP ON	Val 1
0xAA	0xFF		0x16	'A'	0xE0	0x01	H Position Low-Byte
Val 2	Val 3	Val 4	Val 5	Val 6	Val 7	Val 8	Val 9
H Position High-Byte	V Position Low-Byte	V Position High-Byte	H Size Low-Byte	H Size High-Byte	V Size Low-Byte	V Size High-Byte	P.Source
Val 10	Val 11	Val 12	Val 13	Val 14	Val 15	Val 16	Val 17
TV Channel	S.Select	Country	ATV_DTV	AirCable	CH_NUM High_Byte	CH_NUM Low_Byte	Sel_Minor
Val 18	Val 19	Check Sum					
Minor_CH High_Byte	Minor_CH Low_Byte						

Val 1 ~ Val 19 : Same as above

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		3	'N'	0xE0	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.E4 Apply To Status Control On Video Wall

- **Function**

  Control source for displaying on video wall.

- **Get Apply to status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xE4		0x00	

- **Set Apply to Status**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xE4		0x01	Status	

Status : value of Apply to settings status.

0x00	Current Source	0x01	MagicInfo Player S

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xE4	Status	

Status : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xE4	ERR	

ERR : Error Code which is displayed when error is occured.

2.1.F9 Panel On/Off

- **Function**

  Personal Computer turns Panel of TV / Monitor on/off.

- **Get Panel ON/OFF Status**

Header	Command	ID	Data Length	Check Sum
0xAA	0xF9		0x00	

- **Set Panel ON/OFF**

Header	Command	ID	Data Length	Data 1	Check Sum
0xAA	0xF9		0x01	PN_State	

PN_State : Panel ON/OFF code to be set on TV/Monitor

0x01	PANEL OFF	0x00	PANEL ON

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'A'	0xF9	PN_State	

PN_State : Same as above

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xF9	ERR	

ERR : Error code that shows what occurred error is

2.1.FD Auto ID Setting MDC Control Command

- Function

- Get Auto ID

Header	Command	ID	Data Length	Check Sum
0xAA	0xFD		0x00	

- Set Auto ID

Header	Command	ID	Data Length	Data 1	Data 2	Check Sum
0xAA	0xFD		0x02	RS_Status	M_ID	

Note : If M_ID is 0, can't chage ID. (previous value.)

RS_Status : RS232 Output , ID information

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	0	0	1 or 0	0	0	0	1 or 0
1 : Initialize Monitor ID (Initiailize Monitor ID to 0) 0 : -				1 : RS232 Loop Out Disable 0 : RS232 Loop Out Enable			

Note : In Get Auto ID,can't know Monitor ID's reset status.

M_ID : ID

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Change ID(1~99)							

Note : If Monitor ID reset bit of RS_Status is set, ignore M_ID

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Val 2
0xAA	0xFF		0x04	'A'	0xFD	RS_Status	M_ID
Check Sum							

RS_Status : Same as above

M_ID : Same as above

Note : Get cmd - In Ack, M_ID is current ID which is set.

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	Val 1	Check Sum
0xAA	0xFF		0x03	'N'	0xFD	ERR	

ERR : Error Code which is displayed when error is occured.

ex) 1. All ID Reset : aa fd fe 02 10 00
2. All Loopout disable : aa fd fe 02 01 00
3. Set ID #1 : aa fd 00 02 01 01
4. Enable ID #1 : aa fd 01 02 00 01

2.1.FF ACK/NAK

- **Function**

  Acknowledge or Negative acknowledge packet for other command

  Note : Daetail format is defined on ezch command

Annex A. Reference TV MDC Command

- Function

  Describe function about This RTV Command

- Set Status

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0(RTV)		2	0x00	Sub Cmd Data 1	

- Get Status

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0(RTV)		1	0x00	

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x00	Sub Cmd Val 1

Check Sum

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0x0C	0x00	ERR

Check Sum

ERR: The error code indicating which error occurred.

balanceA.C0.01 3D Mode Control

- Function

The PC displays the 3D Mode settings of a TV or monitor.

- Set the 3D Mode Status

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0(RTV)		2	0x01	3D Mode	

3D Mode: 3D Mode value code (0 ~ 7) to be set on TV / Monitor

0x00	3D
0x01	2D->3D
0x02	SBS
0x03	TNB
0x04	LBL
0x05	VS
0x06	CheckerBD
0x07	Frame Seq.

- Get the 3D Mode Status

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0(RTV)		1	0x01	

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x01	3D Mode

Check Sum

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x01	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.02 3D Effect Control

- **Function**

  The PC Sets the 3D Effect settings of a TV or monitor.

- **Set the 3D Effect Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0(RTV)		2	0x02	3D Effect	

3D Effect 3D Effect value code (0 ~ 1) to be set on TV / Monitor

0x00	Auto	0x01	Manual

- **Get the 3D Effect Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0(RTV)		1	0x02	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x02	3D Effect

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x02	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.03 3D Perspective Control

- **Function**

  The PC Sets the 3D Perspective settings of a TV or monitor.

- **Set the 3D Perspective Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x03	3D Perspective	

3D Perspective: 3D Perspective value code (0 ~ 10) to be set on TV / Monitor

- **Get the 3D Perspective Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x03	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x03	3D Perspective

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x03	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.04 3D Effect Depth Control

- **Function**

  The PC Sets the 3D Perspective settings of a TV or monitor.

- **Set the 3D Effect Depth Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0(RTV)		2	0x04	3D Effect Depth	

3D Effect Depth: 3D Effect Depth value code (1 ~ 10) to be set on TV / Monitor

- **Get the 3D Effect Depth Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x04	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x04	3D Effect Depth

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x04	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.05 3D L/R Change Control

- **Function**

  The PC Sets the 3D L/R Change settings of a TV or monitor.

- **Set the 3D L/R Change Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0(RTV)		2	0x05	3D L/R Change	

3D L/R Chnage: 3D L/R Change value code (0 ~ 1) to be set on TV / Monitor

0x00	L/R Image	0x01	R/L Image

- **Get the 3D L/R Change Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x05	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x05	3D L/R Change
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x05	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.06 3D->2D Control

- **Function**

  The PC Sets the 3D->2D settings of a TV or monitor.

- **Set the 3D->2D Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x06	3D->2D	

3D->2D: 3D->2D value code (0 ~ 1) to be set on TV / Monitor

0x00	Off	0x01	On

- **Get the 3D->2D Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x06	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x06	3D->2D

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x06	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.07 3D Auto View Control

- **Function**

  The PC Sets the 3D Auto View settings of a TV or monitor.

- **Set the 3D Auto View Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x07	3D Auto View	

3D Auto View: 3D Auto View value code (0 ~ 2) to be set on TV / Monitor

0x00	Off
0x01	Message Notice
0x02	On

- **Get the 3D Auto View Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x07	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x07	3D Auto View
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x07	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.08 3D Optimization Control

- **Function**

  The PC Sets the 3D Optimization settings of a TV or monitor.

- **Set the 3D Optimization Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x08	3D Optimization	

  3D Optimization: 3D Optimization value code (0 ~ 2) to be set on TV / Monitor

- **Get the 3D Optimization Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x08	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x08	3D Optimization

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x08	ERR

Check Sum

  ERR: The error code indicating which error occurred.

A.C0.09 Expert Pattern Control

- **Function**

  The PC Sets the Expert Pattern View settings of a TV or monitor.

- **Set the Expert Pattern Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x09	3D Expert Pattern	

3D Expert Pattern: Expert Pattern value code (0 ~ 9) to be set on TV / Monitor

0x00	Off
0x01	Pattern1
0x02	Pattern2
0x03	Pattern3(Color Bar)
0x04	Pattern4(HRamp)
0x05	Pattern5(VRamp)
0x06	Pattern6(White)
0x07	Pattern7(RED)
0x08	Pattern8(BLUE)
0x09	Pattern9(Green)

- **Get the Expert Pattern Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x09	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x09	3D Expert Pattern
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x09	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.0A RGB Mode Only Control

- **Function**

  The PC Sets the RGB Mode Only View settings of a TV or monitor.

- **Set the RGB Mode Only Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		0x02	0x0A	RGB Mode Only	

RGB Mode Only: RGB only mode value code (0 ~ 9) to be set on TV / Monitor

0x00	Off
0x01	Red
0x02	Green
0x03	Blue

- **Get the RGB Mode Only Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		0x01	0x0A	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		0x04	'A'	0xC0	0x0A	RGB Mode Only

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		0x04	'N'	0xC0	0x0A	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.0B Color Space Control

- **Function**

  The PC Sets the Color Space settings of a TV or monitor.

- **Set the Color Space Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x0B	Color Space	

Color Space: Color Space value code (0 ~ 2) to be set on TV / Monitor

0x00	Auto
0x01	Native
0x02	Custom

- **Get the Color Space Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x0B	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x0B	Color Space
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x0B	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.0C Color Space Color Control

- **Function**

  The PC Sets the Color Space Color settings of a TV or monitor.

- **Set the Color Space Color Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x0C	Color Space Color	

Color Space Color: Color Space Color value code (0 ~ 5) to be set on TV / Monitor

0x00	Red
0x01	Green
0x02	Blue
0x03	Yellow
0x04	Cyan
0x05	Magenta

- **Get the Color Space Color Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x0C	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x0C	Color Space Color
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x0C	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.0D Color Space Red Control

- **Function**

  The PC Sets the Color Space Red settings of a TV or monitor.

- **Set the Color Space Red Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x0D	Color Space Red	

Color Space Red: Color Space Red value code (0 ~ 100) to be set on TV / Monitor

- **Get the Color Space Red Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x0D	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1	Check Sum
0xAA	0xFF		4	'A'	0xC0	0x0D	Color Space Red	

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1	Check Sum
0xAA	0xFF		4	'N'	0xC0	0x0D	ERR	

ERR: The error code indicating which error occurred.

A.C0.0E Color Space Green Control

- **Function**

  The PC Sets the Color Space Green settings of a TV or monitor.

- **Set the Color Space Green Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x0E	Color Space Green	

  Color Space Green: Color Space Green value code (0 ~ 100) to be set on TV / Monitor

- **Get the Color Space Green Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x0E	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x0E	Color Space Green

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x0E	ERR

Check Sum

  ERR: The error code indicating which error occurred.

A.C0.0F Color Space Blue Control

- **Function**

  The PC Sets the Color Space Blue settings of a TV or monitor.

- **Set the Color Space Blue Status**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x0F	Color Space Blue	

Color Space Blue: Color Space Blue value code (0 ~ 100) to be set on TV / Monitor

- **Get the Color Space Blue Status**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x0F	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x0F	Color Space Blue

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x0F	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.10 Color Space Reset

- **Function**

  This command will reset the color space for TV or monitor.

- **Set the Color Reset**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x10	TBD	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x10	TBD

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x10	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.11 White Balance RGB Offset

- **Function**

  The PC displays the White Balance RGB Offset of a TV or monitor.

- **Set the White Balance RGB Offset**

Header	Command	ID	Data Length	Sub Cmd	Data1	Data2	Data3
0xAA	0xC0		2	0x11	R Offset	G Offset	B Offset
Check Sum							

R Offset : R Offset value code (0 ~ 50) to be set on TV / Monitor
G Offset : G Offset value code (0 ~ 50) to be set on TV / Monitor
B Offset : B Offset value code (0 ~ 50) to be set on TV / Monitor

- **Get the White Balance RGB Offset**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x11	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Data1
0xAA	0xFF		6	'A'	0xC0	0x11	R Offset
Data2	Data3	Check Sum					
G Offset	B Offsett						

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x11	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.12 White Balance RGB Gain

- **Function**

  The PC displays the White Balance RGB Gain of a TV or monitor

- **Set the White Balance RGB Gain**

Header	Command	ID	Data Length	Sub Cmd	Data1	Data2	Data3
0xAA	0xC0		0x04	0x12	R Gain	G Gain	B Gain
Check Sum							

R Gain : R Gain value code (0 ~ 50) to be set on TV / Monitor
G Gain : G Gain value code (0 ~ 50) to be set on TV / Monitor
B Gain : B Gain value code (0 ~ 50) to be set on TV / Monitor

- **Get the White Balance RGB Gain**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		0x01	0x12	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Data1
0xAA	0xFF		0x06	'A'	0xC0	0x12	R Gain
Data2	Data3	Check Sum					
G Gain	B Gain						

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		0x04	'N'	0xC0	0x12	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.13 White Balance Reset

- **Function**

  This command will reset the White Balance for a TV or monitor.

- **Set the White Balance Reset**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x13	TBD	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x13	TBD

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x13	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.14 Set Flesh Tone

- **Function**

  This command will set the Flesh Tone for a TV or monitor.

- **Set the Flesh Tone**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x14	Flesh Tone	

Flesh Tone: Flesh Tone value code (0 ~ 30) to be set on TV / Monitor

- **Get the Flesh Tone**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x14	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x14	Flesh Tone

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x14	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.15 Set motion Lighting

- **Function**

  This command will set the Motion Lighting for a TV or monitor.

- Set the Motion Lighting

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x15	Motion Lighting	

Motion Lighting: Motion Lighting value code (0 ~ 1) to be set on TV / Monitor

0x00	Off	0x01	On

- Get the Motion Lighting

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x15	

- Ack

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x15	Motion Lighting

Check Sum

- Nak

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x15	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.16 Set LED Motion Plus

- **Function**

  This command will set the LED Motion Plus for a TV or monitor.

- **Set the LED Motion Plus**

5	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x16	LED Motion Plus	

LED Motion Plus: LED Motion Plus value code (0 ~ 3) to be set on TV / Monitor

0x00	Off
0x01	Normal
0x02	Cinema
0x03	Ticker

- **Get the LED Motion Plus**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x16	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x16	LED Motion Plus
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x16	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.17 Set MPEG Noise Filter

- **Function**

  This command will set the MPEG Noise Filter for a TV or monitor.

- **Set the MPEG Noise Filter**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x17	MPEG Noise Filter	

MPEG Noise Filter: MPEG Noise Filter value code (0 ~ 4) to be set on TV / Monitor

0x00	Off
0x01	Low
0x02	Medium
0x03	High
0x04	Auto

- **Get the MPEG Noise Filter**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x17	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x17	MPEG Noise Filter

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x17	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.18 Set Smart LED

- **Function**

  This command will set the Smart LED for a TV or monitor.

- **Set the Smart LED**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x18	SMART LED	

SMART LED: Smart LED value code (0 ~ 4) to be set on TV / Monitor

0x00	Off
0x01	Low
0x02	Standard
0x03	High
0x04	Demo

- **Get the Smart LED**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x18	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x18	SMART LED

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x18	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.19 Set Cinema Black

- **Function**

  This command will set the Cinema Black for a TV or monitor.

- **Set the Cinema Black**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x19	CINEMA BLACK	

CINEMA BLACK: Cinema Black value code (0 ~ 1) to be set on TV / Monitor

0x00	Off	0x01	On

- **Get the Cinema Black**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x19	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x19	CINEMA BLACK

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x19	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.1A Marker On/Off

- **Function**

  This command will On/Off the Marker for a TV or monitor.

- **Set the Marker**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1A	MARKER ON/OFF	

MARKER ON/OFF: Marker On Off value code (0 ~ 1) to be set on TV / Monitor

0x00	Off	0x01	On

- **Get the Marker**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1A	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1A	MARKER ON/OFF

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1A	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.1B Set Overlay Aspect Ratio

- **Function**

  This command will set the Overlay aspect ratio for a TV or monitor.

- **Set the Overlay Aspect Ratio**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1B	Overlay Aspect Ratio	

Overlay Aspect Ratio: Overlay Aspect ratio value code (0 ~ 9) to be set on TV / Monitor

0x00	OFF
0x01	16:9
0x02	4:3
0x03	15:9
0x04	14:9
0x05	13:9
0x06	1.85:1
0x07	2.35:1
0x08	1.85:1 & 4:3

- **Get the Overlay Aspect Ratio**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1B	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1B	Overlay Aspect Ratio
Check Sum							

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1B	ERR
Check Sum							

ERR: The error code indicating which error occurred.

A.C0.1C Set Cross Marker

- **Function**

  This command will set the cross marker for a TV or monitor.

- **Set the Cross Marker**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1C	Cross Marker	

Cross Marker: Cross Marker value code (0 ~ 1) to be set on TV / Monitor

0x00	Off	0x01	On

- **Get the Cross Marker**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1C	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1C	Cross Marker

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1C	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.1D Set Safety Area

- **Function**

  This command will set the Safety Area for a TV or monitor.

- **Set the Safety Area**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1D	Safety Area	

Safety Area : Cross Marker value code (0 ~ 5) to be set on TV / Monitor

- **Get the Safety Area**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1D	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1D	Safety Area

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1D	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.1E Set Black Matte

- **Function**

  This command will set the Safety Area for a TV or monitor.

- **Set the Black Matte**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1E	Black Matte	

Black Matte : Black Matte value code (0 ~ 2) to be set on TV / Monitor

- **Get the Black Matte**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1E	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1E	Black Matte

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1E	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.1F Set Marker Color

- **Function**

  This command will set the Marker Color for a TV or monitor.

- **Set the Marker Color**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x1F		

- **Get the Marker Color**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x1F	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x1F	TBD

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x1F	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.20 Set Marker Thickness

- **Function**

  This command will set the Marker Thickness for a TV or monitor.

- **Set the Marker Thickness**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0x20	Marker Thickness	

Marker Thickness : Marker Thickness value code (0 ~ 7) to be set on TV / Monitor

- **Get the Marker Thickness**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0x20	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0x20	Marker Thickness

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0x20	ERR

Check Sum

ERR: The error code indicating which error occurred.

A.C0.A0 Send Calibration Command

- **Function**

  This command will send the start command for a TV or monitor.

- **Set the Calibration Command**

Header	Command	ID	Data Length	Sub Cmd	Data1	Check Sum
0xAA	0xC0		2	0xA0	Start Command	

Start Command : Start Command value code (0 ~ 2) to be set on TV / Monitor

0x00	Start
0x01	Stop
0x02	Finish

- **Get the Calibration Command**

Header	Command	ID	Data Length	Sub Cmd	Check Sum
0xAA	0xC0		1	0xA0	

- **Ack**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'A'	0xC0	0xA0	Start Command

Check Sum

- **Nak**

Header	Command	ID	Data Length	Ack/Nak	r-CMD	r-SUBCMD	Val 1
0xAA	0xFF		4	'N'	0xC0	0xA0	ERR

Check Sum

ERR: The error code indicating which error occurred.