Technical Manual

Ver 1.1

CUSTOMER	
DATE	. .

CUSTOMER'S ACCEPTANCE SPECIFICATIONS

MODEL	MAC-100

10X Auto Focus MODULE

Drafting	Examination	Decision

RAYTRON Technology

Ver 1.1

\<Modified History\>

Revision	Date of Send	Modified Contents
Ver1.0	May 20. 2012	Official Version 1.0 Release
Ver1.1	Jun 7. 2012	Protocol added

Technical Manual

Table of Contents
- Revision History

1. Product   Model
MAC-100 N/P (N:NTSC, P:PAL)

2. Features

■ DNR (Digital Noise Reduction)
By using   the DSP chip applied to the DNR technology, the amount of low illuminance noise has been significantly reduced, and the signal-to-noise ratio (S/N) as well as horizontal resolution has been improved, resulting in a clear and sharp image display even in the dark.

■ 10x Optical   Zoom
The MAC-100 built-in x10 optical zoom lens is highly reliable.
It features Auto focus, Auto iris and   Zoom Tracking function.

■ High   Resolution
The horizontal resolution of 650TV Lines at Color mode and 700TV Lines at BW mode can be achieved by using a high density CCD having 960H SONY CCD, which provides clean, noiseless and reliable pictures.

■ Day & Night   (ICR)
An infrared (IR) Cut-Filter can be disengaged from the image path for increased sensitivity in low light environments. The ICR will automatically engage depending on the ambient light, allowing the camera to be effective in day&night environment.

■ Privacy zone masking (max.32 zones/8 programmable zone per screen)
The privacy zone function makes it possible to mask specific areas of the scene from view.

■ Electrical   Flip function
The MAC-100 has function of Mirror mode

■ Motion Detection(4 programmable zone per screen)
You can transmits an alert signal when it detects motion of an object on the screen. This feature is useful when you have to monitor several screens simultaneously.

3. CAMERA SPECIFICATIONS

Specifications		SDM-100N	SDM-100P
P O W E R	Input Voltage	DC 8V～15v (Recommended :9Vor12V)	
	Input Current	350mA:Steady-state, (at 9V) 500mA:Max.(Zoom,Focus,Day&night motor operating) (at 9V)	
	Power Consumption	3.15W:Steady-state (at 9V) 4.5W:Max.(Zoom,Focus, Day&night motor operating,at9V)	
C C D	Size	1/4 SONY CCD	
	Total Pixels Effective Pixels	1020(H) x 596(V) 976(H) x 494(V)	1020(H) x 596(V) 976(H) x 582(V)
S Y N C	Scanning System	2:1Interlace	
	Synchronization	Internal	
	Frequency	H:15.734KHz/V:59.94 Hz	H: 15.625KHz/V :50.00 Hz
O P T I C AL	Optics	10x 3.8 to 38mm (F1.8)	
	M.O.D.	1,000mm	
	Angle Field of view	H:Appr.51.2°(Wide) to5.58°(Tele)/V :Appr.39.3°(Wide)to4.27°(Tele)	
E L E C T R I C A L	Resolution	650TVLines(Min.):Color(WIDE)/ 700TV Lines (Min.) :B/W (WIDE)	
	Min. Illumination	0.1 Lux/F1.8(50 IRE) ; Color / 0.01 Lux/F1.8 (50 IRE);B/W	
	S/N (Y signal)	50 Db (AGC Off)	
	Video Output	CVBS : 1.0Vp-p/75Ω	
	Focus	Auto/Manual/One push	
	Zoom Movement Speed	1.65sec: Wide toTele	1.70 sec: Wide to Tele
	IRIS Control	Auto,Manual	
	Lens Initialize	Built-In	
	Camera Title	OFF/ON(Displayed15characters)	
	Camera ID	255IDSelectable	
	Day&Night	Auto1, Auto2,COLOR,B/W(ICR)	
	Gain Control	Normal,High,OFF Selectable	

MAC-100

Specifications		SDM-100N	SDM-100P
E L E C T R I C A L	White Balance	TW/AWC/Manual(1800˚K～10,500˚K)	
	BLC	LOW/MIDDLE/HIGH/OFFSelectable	
	Electronic shutter speed	AUTO (X128~ 1/60sec~ 1/120,000sec)	AUTO (X128~ 1/50sec~ 1/120,000sec)
	O.S.D	Built-In (ENGLISH, CHINESE)	
	Motion Detection	ON/OFF(4ProgrammableZoneper Screen)	
	Communication	RS-485or RS-232C (2400bps,4800bps,9600bps,19200bps Selectable)	
	DNR	ON/OFF	
	Privacy Function	ON/OFF(32Zones, Itconsistsof8Group4ProgrammableZoneperScreen)	
	Mirror	ON/OFF	
Operating Temperature/Humidity		-10℃to+50℃/20% to 80% RH	
Stock Temperature/Humidity		-20℃to+60℃/20% to 95% RH	
Dimension		38.9(W)×43.7 (H)×61.67(D)mm(PCB3매)	
Weight		95 g	

* Design and specification are subject to change without notice.

4. Precautions

1) Do not install the unit in an area that is dusty, greasy, wet or humid to avoid a decline in performance or operational failure.

2) Do not install the unit in an area that is subject to vibration. Also, protect the unit from any sudden impact or any kind of vibration as these may cause a decline in a performance or an operation failure.

3) Avoid placing the unit in an area exposed to direct sunlight that would cause the temperature inside the unit to rise resulting in an operation failure.

4) Be sure to use the specified screws of installing the camera unit. If not, serious damage to the camera unit may occur.

5) Always turn off the power supply before unplugging the interface connector.
   Failure to do this may cause an operational failure.
   And, do not apply excessive voltage. (Use only the specified voltage)
   Otherwise, you may get an electric shock or a fire may occur.

6) Always connect the power supply to the correct positive (+) and negative (-) terminals. improper connections to the power supply will cause an operational failure.

7) Should you wish to use the camera unit for anything other than its intended use, please contact the manufacturer in advance.

8) It is recommended that auto-focus not be used on following subjects and scene.
   - subjects with very dark surface (such a s the black cloths or black curtain).
   - subjects with very glossy or shiny surface (such as the exterior of automobiles).
   - subjects with very little brightness contrast (such as the wall)
   - subjects with very little o r very strong back-lighting.
   - scenes having a strong contrast between the right and left halves of the screen

5. Pin Specification for Interface
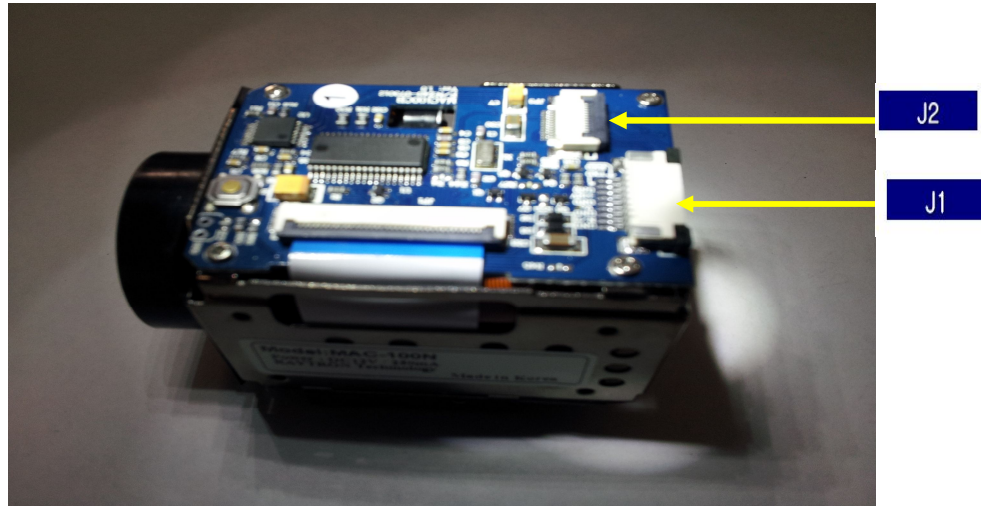
J1

PIN_NO.	NAME	I/O	COMMENT.
1	GND	-	
2	TRIGGER_IN	Input	External Line-Lock Pulse (Negative, 3 or 5Vp-p)
3	GND	-	
4	VIDEO_OUT	Output	CVBS : 1.0Vp-p/75Ω
5	GND	-	
6	DC-IN	Input	DC 9~15V(Recommended : 9V or 12V)
7	GND	-	
8	TxD(for RS-232C)	Output	CMOS Level(Low : Max.0.8V, High : Min. 2.7V)
9	RxD(for RS-232C)	Input	CMOS Level(Low : Max.0.8V, High : Min. 2.7V)

Trigger IN : Sync. to falling edge

Min:500ns

60Hz ± 0.5Hz(NTSC)
50Hz ± 0.5Hz(PAL)

3V or 5V
0V
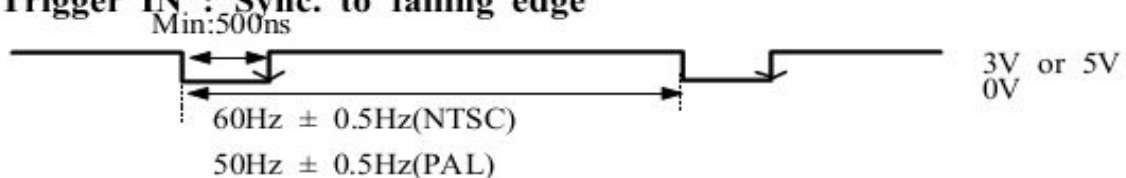
J2   **N/A = TO KEY(INTERFACE) BOARD**

6. Command List

■ Command List of Transmitting

No.	Command Name	Reset					
1	Function	Reset All Data To Factory Default Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	01h	00h	00h	00h	AFh
	Return Packet	A0h	01h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Reboot					
2	Function	Camera rebooting.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	02h	00h	00h	00h	AFh
	Return Packet	A0h	02h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Save					
3	Function	Save current camera status.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	04h	00h	00h	00h	AFh
	Return Packet	A0h	04h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Zoom Motor Stop					
3	Function	Stop Zoom Lens Movement					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	10h	00h	00h	00h	AFh
	Return Packet	A0h	10h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Zoom Start					
4	Function	Move Zoom Lens To Tele / Wide Direction And Set Zoom Motor Speed.					
	Remark	During processing to the specific direction, if you wish to change direction, you have to stop zoom motor before changing direction. P3 data is used for only zoom tracking speed.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	11h	P1	P2	P3	AFh
	Return Packet	A0h	11h	P1	P2	P3	AFh

	Parameter	P1: 00h = Tele End
		  01h = Wide End
		P2: 01h = Zoom Speed 1 (Min)
		  02h = Zoom Speed 2
		  03h = Zoom Speed 3
		  04h = Zoom Speed 4
		  05h = Zoom Speed 5
		  06h = Zoom Speed 6
		  07h = Zoom Speed 7
		  08h = Zoom Speed 8 (Factory default Max)
		P3: 00h = No skip
		  01h = 12 VD skip
		  02h = 10 VD skip
		  03h = 8 VD skip
		  04h = 6 VD skip
		  05h = 4 VD skip
		  06h = 2 VD skip
		  07h = 1 VD skip					

No.	Command Name	Zoom Direct					
5	Function	Move Zoom Lens To Target Position Directly.					
	Remark	If P1P2 is not 06EAh(Tele-end), P3 is digital zoom position.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	12h	P1	P2	P3	AFh
	Return Packet	A0h	12h	P1	P2	P3	AFh

	Parameter	P1P2(Zoom): 0000h~0496h = Target Position
		P3(D-Zoom): $((256 * 10) / Ratio\_X) - 1$
		  ex) If Ratio_X is 11, P3 is E7h. (Ratio_X = 11 : 1.1x)
		    If Ratio_X is 20, P3 is 7Fh. (Ratio_X = 20 : 2x)					

No.	Command Name	Focus Motor Stop					
6	Function	Stop Focus Lens Movement					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	19h	00h	00h	00h	AFh
	Return Packet	A0h	19h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Focus Start					
7	Function	Move Focus Lens To Near / Far Direction.					
	Remark	Focus mode: Manual / Zoom Trigger					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	1Ah	P1	00h	00h	AFh
	Return Packet	A0h	1Ah	P1	00h	00h	AFh
	Parameter	P1: 00h = Near direction 01h = Far direction					

No.	Command Name	Focus Direct					
8	Function	Move Focus Lens To Target Position Directly.					
	Remark	Focus mode: Manual / One-Push Min/Max limit of target position varies from zoom position. Min/Max limit can get from command AAh. Before sending this command, you should get the information of Min/Max Limit from command AAh to avoid sending wrong data.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	1Bh	P1	P2	00h	AFh
	Return Packet	A0h	1Bh	P1	P2	00h	AFh
	Parameter	P1P2: Target Position					

MAC-100

No.	Command Name	Focus Setup					
	Function	Set Focus Mode, Zoom Tracking, Zoom Speed, And Zoom Magnification Display Mode On The Screen. And Set Digital Zoom Mode and Limitation.					
	Remark	**Please make sure if it has a return packet after mode is changed.**					
			Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	1Ch	P1	P2	P3	AFh
	Return Packet	A0h	1Ch	P1	P2	P3	AFh

9	Parameter	P1: BIT1~BIT0 = 00 = Manual Mode
		      BIT1~BIT0 = 01 = Auto Mode
		      BIT1~BIT0 = 10 = Zoom Trigger Mode(Factory default)
		P2: BIT7 = 0 = Zoom Tracking Mode Off
		      BIT7 = 1 = Zoom Tracking Mode On(Factory default)
		      BIT6 = 0 = Zoom Tracking Speed Fast(Factory default)
		      BIT6 = 1 = Zoom Tracking Speed Slow
		      BIT5 = 0 = Zoom magnification Display Off(Factory default)
		      BIT5 = 1 = Zoom magnification Display On					

No.	Command Name	One Shot AF					
	Function	Execute One-shot Auto Focus Function					
	Remark	This command will find focus point immediately at any time.					
			Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
10	Command Packet	A0h	1Dh	00h	00h	00h	AFh
	Return Packet	A0h	1Dh	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Brightness Setup					
	Function	Adjust Brightness Value.					
	Remark						
			Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
11	Command Packet	A0h	1Eh	P1	P2	P3	AFh
	Return Packet	A0h	1Eh	P1	P2	P3	AFh

	Parameter	P2: 0h - Direct Mode (P1(00h~64h) : Target Brightness, 19h = Factory default)
		      1h - Inc Mode (P3 : inc step), 2h - dec Mode(P3 : dec step),
		      3h - Inc Key, 4h - Dec Key, 5h - Stop Key Command					

MAC-100

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
12	Command Name	AWB Setup					
	Function	Set AWB Mode, Color Temperature And Manual Offset.					
	Remark						
	Command Packet	A0h	1Fh	P1	P2	P3	AFh
	Return Packet	A0h	1Fh	P1	P2	P3	AFh
	Parameter	P1: BIT7~BIT6 = 00 = ATW(Factory default) mode BIT7~BIT6 = 01 = Manual mode BIT7~BIT6 = 10 = AWC mode BIT0 = 0 = ATW OUTDOOR = 1 = ATW INDOOR P2(Manual Red offset): 00h~64h 1Dh = Factory default P3(Manual Blue offset): 00h~64h Blue offset 29h = Factory default					

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
13	Command Name	BackLight Setup					
	Function	Set BackLight Mode.					
	Remark						
	Command Packet	A0h	20h	P1	00h	00h	AFh
	Return Packet	A0h	20h	P1	00h	00h	AFh
	Parameter	P1 : 00h = OFF(Factory default) 01h = Low 02h = Middle 03h = High					

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
14	Command Name	Sync Setup					
	Function	Set Sync Mode And Adjust Line-Lock Phase Value.					
	Remark						
	Command Packet	A0h	21h	P1	P2	P3	AFh
	Return Packet	A0h	21h	P1	P2	P3	AFh
	Parameter	P1(Mode): 00h = Internal(Factory default) 01h = Line Lock P2P3(Phase Value)					

MAC-100

No.	Command Name	Iris Setup					
	Function	Set Iris Mode And Manual Iris Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
15	Command Packet	A0h	23h	P1	P2	00h	AFh
	Return Packet	A0h	23h	P1	P2	00h	AFh
	Parameter	P1(Mode): 00h = Auto(Factory default) 　　　　01h = Manual P2(Manual Value): 00h~64h					

No.	Command Name	Shutter Setup					
	Function	Set Shutter Mode And Manual Shutter Speed Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
16	Command Packet	A0h	24h	P1	P2	00h	AFh
	Return Packet	A0h	24h	P1	P2	00h	AFh
	Parameter	P1: 00h = ESC(Factory default) 　　01h = Manual 　　02h = Anti-Flicker P2: 19h(NTSC:1/120000, PAL:1/120000) 　　18h(NTSC:1/60000, PAL:1/60000) 　　17h(NTSC:1/30000, PAL:1/30000) 　　16h(NTSC:1/10000, PAL:1/10000) 　　15h(NTSC:1/7000, PAL:1/7000) 　　14h(NTSC:1/5000, PAL:1/5000) 　　13h(NTSC:1/2500, PAL:1/2500) 　　12h(NTSC:1/1600, PAL:1/1600) 　　11h(NTSC:1/1000. PAL:1/1000) 　　10h(NTSC:1/700, PAL:1/700) 　　0Fh(NTSC:1/500, PAL:1/500) 　　0Eh(NTSC:1/250, PAL:1/250) 　　0Dh(NTSC:1/120, PAL:1/100) 　　0Ch(NTSC:1/60, PAL:1/50) = Factory default 　　0Bh(NTSC:x2, PAL:x2) 　　0Ah(NTSC:x4, PAL:x4) 　　09h(NTSC:x6, PAL:x6) 　　08h(NTSC:x8, PAL:x8) 　　07h(NTSC:x10, PAL:x10) 　　06h(NTSC:x12, PAL:x12) 　　05h(NTSC:x14, PAL:x14) 　　04h(NTSC:x16, PAL:x16) 　　03h(NTSC:x24, PAL:x24) 　　02h(NTSC:x32, PAL:x32) 　　01h(NTSC:x64, PAL:x64) 　　00h(NTSC:x128, PAL:x128)					

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
18	Command Name	AGC / SSNR Setup					
	Function	Set Auto Gain Control Mode And SSNR(Digital Noise Reduction) Mode.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	26h	P1	P2	00h	AFh
	Return Packet	A0h	26h	P1	P2	00h	AFh
	Parameter	P1: (AGC) 00h = OFF 01h = NORMAL(Factory default) 02h = HIGH P2:(SSNR) 00h = OFF 01h = LOW(Factory default)					

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
19	Command Name	Day Night Setup					
	Function	Set Day Night mode.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	27h	P1	P2	00h	AFh
	Return Packet	A0h	27h	P1	P2	00h	AFh
	Parameter	P1: 00h : Color 01h : BW 02h : AUTO1 03h : AUTO2					

		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
20	Command Name	Sharpness Setup					
	Function	Set Sharpness Mode and Adjust Sharpness Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	29h	P1	P2	00h	AFh
	Return Packet	A0h	29h	P1	P2	00h	AFh
	Parameter	P1: 00h = OFF 01h = ON(Factory default) P2: 00h~1Fh 8h(Factory default)					

No.	Command Name	Color Setup					
21	Function	Adjust Color Saturation Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**2Ah**	**P1**	00h	00h	AFh
	Return Packet	A0h	**2Ah**	**P1**	00h	00h	AFh
	Parameter	P1: 00h~64h 32h = Factory default					

No.	Command Name	Motion Detection Setup					
22	Function	Set Motion Detection And Alarm Display Mode.					
	Remark	If the motion is detected, camera returns the packet indicating the motion detected, then after 5 seconds, camera returns the no motion detected packet. Motion detection function operates under the condition that OSD is Off.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**2Bh**	**P1**	**P2**	00h	AFh
	Return Packet	A0h	**2Bh**	**P1**	**P2**	00h	AFh
	Parameter	P1(Mode): 00h = Off(Factory default) 01h = On P2(ALARM): 00h = Off((Factory default) 01h = On					

No.	Command Name	Lens Initialization Setup					
23	Function	Execute Lens Initialization.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**31h**	00h	00h	00h	AFh
	Return Packet	A0h	**31h**	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Privacy Mask Guidance Axis Display For Interacting With Pan And Tilt					
26	Function	Display The Guidance Axis For Privacy Mask Area Position Setup					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**34h**	**P1**	**P2**	00h	AFh
	Return Packet	A0h	**34h**	**P1**	**P2**	00h	AFh
	Parameter	P1: 00h = Left/Up axis selection 01h = Right/Down axis selection P2: 00h = Display Off 01h = Display On					

MAC-100

No.	Command Name	Privacy Setup					
	Function	Set Privacy Mode, Group, Group Color, And Group Area					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	37h	P1	P2	P3	AFh
	Return Packet	A0h	37h	P1	P2	P3	AFh
24	Parameter	P1 : BIT7 = 0 = Privacy Mode Off (Factory default) BIT7 = 1 = Privacy Mode On BIT6~BIT3 = 0000 = Group1(Factory default) BIT6~BIT3 = 0001 = Group2 BIT6~BIT3 = 0010 = Group3 BIT6~BIT3 = 0011 = Group4 BIT6~BIT3 = 0100 = Group5 BIT6~BIT3 = 0101 = Group6 BIT6~BIT3 = 0110 = Group7 BIT6~BIT3 = 0111 = Group8 BIT2~BIT1 = 00 = Area1(Factory default) BIT2~BIT1 = 01 = Area2 BIT2~BIT1 = 10 = Area3 BIT2~BIT1 = 11 = Area4 P2 : 00h ~ 64h = Mask Color (32h : Factory default) P3: BIT3 = 0 = Area 4 Mode Off(Factory default) BIT3 = 1 = Area 4 Mode On BIT2 = 0 = Area 3 Mode Off(Factory default) BIT2 = 1 = Area 3 Mode On BIT1 = 0 = Area 2 Mode Off(Factory default) BIT1 = 1 = Area 2 Mode On BIT0 = 0 = Area 1 Mode Off(Factory default) BIT0 = 1 = Area 1 Mode On					

No.	Command Name	Privacy Area Top and Bottom Position Setup					
	Function						
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	38h	P1	P2	P3	AFh
	Return Packet	A0h	38h	P1	P2	P3	AFh
25	Parameter	P1 : BIT7~BIT4 = 0000 = Privacy Group 1, BIT7~BIT4 = 0001 = Privacy Group 2 BIT7~BIT4 = 0010 = Privacy Group 3, BIT7~BIT4 = 0011 = Privacy Group 4 BIT7~BIT4 = 0100 = Privacy Group 5, BIT7~BIT4 = 0101 = Privacy Group 6 BIT7~BIT4 = 0110 = Privacy Group 7, BIT7~BIT4 = 0111 = Privacy Group 8 BIT3~BIT2 = 00 = Privacy Area 1, BIT3~BIT2 = 01 = Privacy Area 2, BIT3~BIT2 = 10 = Privacy Area 3, BIT3~BIT2 = 11 = Privacy Area 4, BIT1 = 0 = Area OFF, BIT1 = 1 = Area ON P2 : Top Setup (0~255) P3 : Bottom Setup(0~255)					

No.	Command Name	Privacy Area Left and Right Position Setup					
26	Function						
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	39h	P1	P2	P3	AFh
	Return Packet	A0h	39h	P1	P2	P3	AFh
	Parameter	P1 : BIT7~BIT4 = 0000 = Privacy Group 1, BIT7~BIT4 = 0001 = Privacy Group 2 BIT7~BIT4 = 0010 = Privacy Group 3, BIT7~BIT4 = 0011 = Privacy Group 4 BIT7~BIT4 = 0100 = Privacy Group 5, BIT7~BIT4 = 0101 = Privacy Group 6 BIT7~BIT4 = 0110 = Privacy Group 7, BIT7~BIT4 = 0111 = Privacy Group 8 BIT3~BIT2 = 00 = Privacy Area 1, BIT3~BIT2 = 01 = Privacy Area 2, BIT3~BIT2 = 10 = Privacy Area 3, BIT3~BIT2 = 11 = Privacy Area 4, BIT1 = 0 = Area OFF, BIT1 = 1 = Area ON P2 : Left Setup(0~255) P3 : Right Setup(0~255)					

No.	Command Name	Exec AWC					
27	Function	Set AWC Mode.					
	Remark	If current white balance mode is AWC=>SET, execute AWC.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	40h	00h	00h	00h	AFh
	Return Packet	A0h	40h	00h	00h	00h	AFh
	Parameter						

No.	Command Name	Communication Setup					
31	Function	Set Serial Communication Setup. (Baud Rate & Parity Bit)					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	41h	P1	P2	00h	AFh
	Return Packet	A0h	41h	P1	P2	00h	AFh
	Parameter	P1: 00h = 2400 bps 03h = 19200 bps 01h = 4800 bps 04h = 38400 bps(Default) 02h = 9600 bps 05h = 57600 bps P2: 00h = 8-E-1(8Bits, Even Parity, 1 Stop Bit) 01h = 8-O-1(8Bits, Odd Parity, 1 Stop Bit) 02h = 8-N-1(8Bits, None Parity, 1 Stop Bit)					

Technical Manual

No.	Command Name	Key Function					
	Function	Control Key Function To Operate OSD Menu or Zoom And Focus Lens.					
	Remark	When OSD is ON, key function works to change OSD menu setup. When OSD is OFF, key function works to move zoom and focus lens. This command is mainly used to control Box Type Zoom Camera or change communication setup by OSD					
23		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	A0h	P1	00h	00h	AFh
	Return Packet	A0h	A0h	P1	00h	00h	AFh
	Parameter	P1: 01h = Set Key 02h = Up Key / Tele Key 03h = Down Key / Wide Key 04h = Left Key / Near Key 05h = Right Key / Far Key					

MAC-100

■ Command List of Receiving

No.	Command Name	Call Camera Information					
1	Function	Read TV Type, S/W Version And System Error.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**80h**	00h	00h	00h	AFh
	Return Packet	A0h	**80h**	**P1**	**P2**	**P3**	AFh
	Parameter	P1: 00h = NTSC 01h = PAL P2: S/W Version Number ex) P2: 1Bh, it means V2.7 P3: 00h = "No System Error" 01h = "Zoom Motor Error" 02h = "Focus Motor Error" 04h = "Day&Night Motor Error" 08h = "EEPROM Error"					

No.	Command Name	Call Zoom Position					
2	Function	Read Current Zoom Lens Position.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**82h**	00h	00h	00h	AFh
	Return Packet	A0h	**82h**	**P1**	**P2**	**P3**	AFh
	Parameter	P1P2: 0000h(Wide) ~ 0496h(Tele) P3(D-Zoom Value): FFh(x1) ~ 18h(x10)					

No.	Command Name	Call Focus Position					
3	Function	Read Current Focus Lens Position.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**83h**	00h	00h	00h	AFh
	Return Packet	A0h	**83h**	**P1**	**P2**	00h	AFh
	Parameter	P1P2: Min Position (Near) ~ Max Position (Far)					

No.	Command Name	Call AF Setup					
4	Function	Read Current Focus Mode, Zoom Tracking Mode, Zoom Speed, Zoom Magnification Display Mode, Digital Zoom Mode, Limit And Digital Zoom Limitation Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	84h	00h	00h	00h	AFh
	Return Packet	A0h	84h	P1	P2	P3	AFh

	Parameter	P1: BIT1~BIT0 = 00 = Manual Mode
		     BIT1~BIT0 = 01 = Auto Mode
		     BIT1~BIT0 = 10 = Zoom Trigger Mode
		P2: BIT7 = 0 = Zoom Tracking Mode Off
		     BIT7 = 1 = Zoom Tracking Mode On
		     BIT6 = 0 = Zoom Speed Fast
		     BIT6 = 1 = Zoom Speed Slow
		     BIT5 = 0 = Zoom magnification Display Off
		     BIT5 = 1 = Zoom magnification Display On
		P3: BIT7 = 0 = D-Zoom OFF
		     BIT7 = 1 = D-Zoom ON
		     BIT3~0 = 0000 = D-Zoom limit 2x BIT3~0 = 0001 = D-Zoom limit 3x
		     BIT3~0 = 0010 = D-Zoom limit 4x BIT3~0 = 0011 = D-Zoom limit 5x
		     BIT3~0 = 0100 = D-Zoom limit 6x BIT3~0 = 0101 = D-Zoom limit 7x
		     BIT3~0 = 0110 = D-Zoom limit 8x BIT3~0 = 0111 = D-Zoom limit 9x
		     BIT3~0 = 1000 = D-Zoom limit 10x					

No.	Command Name	Call Brightness Setup					
5	Function	Read Current Brightness Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	86h	00h	00h	00h	AFh
	Return Packet	A0h	86h	P1	00h	00h	AFh
	Parameter	P1: 00h ~ 64h					

MAC-100

	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
No.	Command Name	Call AWB Setup				
	Function	Read Current Auto White Balance Mode State.				
	Remark					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
6	Command Packet	A0h	87h	00h	00h	00h	AFh
	Return Packet	A0h	87h	P1	P2	P3	AFh
	Parameter	P1: BIT7~BIT6 = 00 = ATW Mode BIT7~BIT6 = 01 = Manual Mode BIT7~BIT6 = 10 = AWC Mode BIT0 = 0 = ATW OUTDOOR 1 = ATW INDOOR P2: 00h~64h = Manual Red offset P3: 00h~64h = Manual Blue offset					

No.	Command Name	Call BackLight Setup					
	Function	Read Current Backlight Mode Limit.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
7	Command Packet	A0h	88h	00h	00h	00h	AFh
	Return Packet	A0h	88h	P1	00h	00h	AFh
	Parameter	P1 : 00h = Off 01h = Low 02h = Middle 03h = High					

No.	Command Name	Call IRIS Setup					
	Function	Read Current Iris Mode And Iris Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
10	Command Packet	A0h	8Bh	00h	00h	00h	AFh
	Return Packet	A0h	8Bh	P1	P2	00h	AFh
	Parameter	P1(Mode): 00h = Auto 01h = Manual P2(Value): 00h~64h					

MAC-100

No.	Command Name	Call Shutter Setup					
	Function	Read Current Shutter Mode And Shutter Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	**8Ch**	00h	00h	00h	AFh
	Return Packet	A0h	**8Ch**	**P1**	**P2**	00h	AFh
11	Parameter	P1: 00h = ESC 01h = Manual 02h = Anti-Flicker P2: 19h(NTSC:1/120000, PAL:1/120000) 18h(NTSC:1/60000, PAL:1/60000) 17h(NTSC:1/30000, PAL:1/30000) 16h(NTSC:1/10000, PAL:1/10000) 15h(NTSC:1/7000, PAL:1/7000) 14h(NTSC:1/5000, PAL:1/5000) 13h(NTSC:1/2500, PAL:1/2500) 12h(NTSC:1/1600, PAL:1/1600) 11h(NTSC:1/1000, PAL:1/1000) 10h(NTSC:1/700, PAL:1/700) 0Fh(NTSC:1/500, PAL:1/500) 0Eh(NTSC:1/250, PAL:1/250) 0Dh(NTSC:1/120, PAL:1/100) 0Ch(NTSC:1/60, PAL:1/50) 0Bh(NTSC:x2, PAL:x2) 0Ah(NTSC:x4, PAL:x4) 09h(NTSC:x6, PAL:x6) 08h(NTSC:x8, PAL:x8) 07h(NTSC:x10, PAL:x10) 06h(NTSC:x12, PAL:x12) 05h(NTSC:x14, PAL:x14) 04h(NTSC:x16, PAL:x16) 03h(NTSC:x24, PAL:x24) 02h(NTSC:x32, PAL:x32) 01h(NTSC:x64, PAL:x64) 00h(NTSC:x128, PAL:x128)					

No.	Command Name	Call AGC / SSNR Setup					
13	Function	Read Current AGC And SSNR Mode.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	8Eh	00h	00h	00h	AFh
	Return Packet	A0h	8Eh	P1	P2	00h	AFh
	Parameter	P1(AGC): 00h = OFF 01h = NORMAL 02h = HIGH P2(SSNR): 00h = OFF 01h = LOW 02h = MIDDLE 03h = HIGH					

No.	Command Name	Call Day Night Setup					
14	Function	Read Current Day And Night Setup.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	8Fh	00h	00h	00h	AFh
	Return Packet	A0h	8Fh	P1	P2	00h	AFh
	Parameter	P1: 00h : Color 01h : BW 02h : AUTO1 03h : AUTO2					

No.	Command Name	Call Sharpness Setup					
15	Function	Read Current Sharpness Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	91h	00h	00h	00h	AFh
	Return Packet	A0h	91h	P1	P2	00h	AFh
	Parameter	P1(Mode): 00h = Off 01h = On P2(Sharpness Value): 00h~1Fh					

MAC-100

No.	Command Name	Call Color Setup					
16	Function	Read Current Color Saturation Value.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	92h	00h	00h	00h	AFh
	Return Packet	A0h	92h	P1	00h	00h	AFh
	Parameter	P1: 00h~64h					

No.	Command Name	Call Motion Detection Setup					
17	Function	Read Current Motion Detection Mode And Sensitivity.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	96h	00h	00h	00h	AFh
	Return Packet	A0h	96h	P1	P2	00h	AFh
	Parameter	P1(Mode): 00h = Off 01h = On P2(ALARM): 00h = Off 01h = On					

No.	Command Name	Call Motion Detection State					
18	Function	Read Current Motion Detection State					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	97h	00h	00h	00h	AFh
	Return Packet	A0h	97h	P1	00h	00h	AFh
	Parameter	P1: 00h = No Motion Detected 01h = Motion Detected					

No.	Command Name	Call Privacy Setup					
	Function	Read Current Privacy Setup Status.					
	Remark						
19		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	98h	00h	00h	00h	AFh
	Return Packet	A0h	98h	P1	P2	P3	AFh
	Parameter	P1: BIT7 = 0 = Privacy Mode Off BIT7 = 1 = Privacy Mode On BIT6~BIT3 = 0000 = Group1 BIT6~BIT3 = 0001 = Group2 BIT6~BIT3 = 0010 = Group3 BIT6~BIT3 = 0011 = Group4 BIT6~BIT3 = 0100 = Group5 BIT6~BIT3 = 0101 = Group6 BIT6~BIT3 = 0110 = Group7 BIT6~BIT3 = 0111 = Group8 BIT2~BIT1 = 00 = Area1 BIT2~BIT1 = 01 = Area2 BIT2~BIT1 = 10 = Area3 BIT2~BIT1 = 11 = Area4 P2 : 00h ~ 09h = Mask Color P3: BIT3 = 0 = Area 4 Mode Off BIT3 = 1 = Area 4 Mode On BIT2 = 0 = Area 3 Mode Off BIT2 = 1 = Area 3 Mode On BIT1 = 0 = Area 2 Mode Off BIT1 = 1 = Area 2 Mode On BIT0 = 0 = Area 1 Mode Off BIT0 = 1 = Area 1 Mode On					

No.	Command Name	Call Privacy Group Status					
	Function	Read Current Privacy Group Status					
	Remark						
20		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	93h	B1	00h	00h	AFh
	Return Packet	A0h	93h	P1	P2	P3	AFh
	Parameter	B1: 00h = Group1 01h = Group2 02h = Group3 03h = Group4 04h = Group5 05h = Group6 06h = Group7 07h = Group8 P1 : BIT7~BIT4 = 0000 = Group1 BIT7~BIT4 = 0001 = Group2 BIT7~BIT4 = 0010 = Group3 BIT7~BIT4 = 0011 = Group4 BIT7~BIT4 = 0100 = Group5 BIT7~BIT4 = 0101 = Group6 BIT7~BIT4 = 0110 = Group7 BIT7~BIT4 = 0111 = Group8 BIT3~BIT2 = 00 = Area1 BIT3~BIT2 = 01 = Area2 BIT3~BIT2 = 10 = Area3 BIT3~BIT2 = 11 = Area4 P2: 00h ~ 09h = Mask Color P3: BIT3 = 0 = Area 4 Mode Off BIT3 = 1 = Area 4 Mode On BIT2 = 0 = Area 3 Mode Off BIT2 = 1 = Area 3 Mode On BIT1 = 0 = Area 2 Mode Off BIT1 = 1 = Area 2 Mode On BIT0 = 0 = Area 1 Mode Off BIT0 = 1 = Area 1 Mode On					

No.	Command Name	Call Current Focus Range					
21	Function	Read Current Focus Min / Max Range According To Zoom Position					
	Remark	Before sending Focus Direct Command, you should send this command to get Min/Max focus range according to zoom position.					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	AAh	B1	B2	B3	AFh
	Return Packet	A0h	AAh	P1	P2	P3	AFh
	Parameter	B1B2: Zoom Position = 0000h ~ 0496h B3: 00h = Focus Limit Min 01h = Focus Limit Max P1P2: Focus Limit Value P3: 00h = Focus Limit Min 01h = Focus Limit Max					

No.	Command Name	Call AWC Status					
22	Function	Read Current AWC Status					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	B9h	00h	00h	00h	AFh
	Return Packet	A0h	B9h	P1	00h	00h	AFh
	Parameter	P1: 00h = Off 01h = On					

No.	Command Name	Call OSD status					
25	Function	Read Current OSD Status.					
	Remark						
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	A4h	00h	00h	00h	AFh
	Return Packet	A0h	A4h	P1	00h	00h	AFh
	Parameter	P1: 00h = OSD Off 01h = OSD On					

No.	Command Name	Call AF Status					
20	Function	Read Auto Focus Algorithm Status.					
	Remark	Focus Mode: Auto / Zoom Trigger					
		Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
	Command Packet	A0h	A9h	00h	00h	00h	AFh
	Return Packet	A0h	A9h	P1	00h	00h	AFh
	Parameter	P1: 00h = AF Algorithm is Busy. 01h = AF Algorithm is Complete Work.					

MAC-100

■ Special Command List of Transmitting

No.	Command Name	Reset									
	Function	Reset all data to factory default value.									
	Remark										
1		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	**000Fh**	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	**000Fh**	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	Focus Far									
	Function	Move focus lens to far direction.									
	Remark										
2		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	**0100h**	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	**0100h**	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	Focus Near									
	Function	Move focus lens to near direction.									
	Remark										
3		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	**0200h**	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	**0200h**	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	Zoom Wide									
4	Function	Move zoom lens to wide direction.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0040h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0040h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	Zoom Tele
5	Function	Move zoom lens to tele direction.
	Remark	

No.	Command Name	AF Stop									
6	Function	Stop zoom & focus lens moving.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0000h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0000h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	One push AF									
7	Function	Unconditionally execute auto focus.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0045h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0045h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	USER PRESET Save									
	Function	Save current user preset configuration information.									
	Remark										
8		Byte1	Byte2	Byte3	Byte4 ‖ Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Return Packet	A0h	CAM ID	HOST ADDR	0003h	P1	00h	00h	00h	AFh	CHECK SUM
	Parameter	P1: 00h = USER PRESET 1 01h = USER PRESET 2 02h = USER PRESET 3 03h = USER PRESET 4 04h = USER PRESET 5 05h = USER PRESET 6 06h = USER PRESET 7 07h = USER PRESET 8									

No.	Command Name	USER PRESET EXEC.									
	Function	Execute selected user preset.									
	Remark										
9		Byte1	Byte2	Byte3	Byte4 ‖ Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0007h	P1	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0007h	P1	00h	00h	00h	AFh	CHECK SUM
	Parameter	P1: 00h = USER PRESET 1 01h = USER PRESET 2 02h = USER PRESET 3 03h = USER PRESET 4 04h = USER PRESET 5 05h = USER PRESET 6 06h = USER PRESET 7 07h = USER PRESET 8									

No.	Command Name	OSD Menu Set									
	Function	Display OSD menu on the screen. Clear OSD menu and save current menu setup.									
	Remark										
10		Byte1	Byte2	Byte3	Byte4 ‖ Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	00B1h	P1	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	00B1h	P1	00h	00h	00h	AFh	CHECK SUM
	Parameter	P1: 00h = ON 01h = OFF									

MAC-100

No.	Command Name	OSD Menu Up									
11	Function	Move OSD arrow to up.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0008h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0008h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	OSD Menu Down									
12	Function	Move OSD arrow to down.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0010h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0010h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	OSD Menu Left									
13	Function	Move OSD arrow to left.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0004h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0004h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

No.	Command Name	OSD Menu Right									
14	Function	Move OSD arrow to right.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
	Command Packet	A0h	CAM ID	HOST ADDR	0002h	00h	00h	00h	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	0002h	00h	00h	00h	00h	AFh	CHECK SUM
	Parameter										

MAC-100

No.	Command Name	Zoom Direct									
	Function	Move zoom lens to specific position directly.									
	Remark										
		Byte1	Byte2	Byte3	Byte4 || Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11
15	Command Packet	A0h	CAM ID	HOST ADDR	**00FFh**	**P1**	**P2**	**P3**	00h	AFh	CHECK SUM
	Return Packet	A0h	CAM ID	HOST ADDR	**00FFh**	**P1**	**P2**	**P3**	00h	AFh	CHECK SUM
	Parameter	P1P2(Zoom): 0000h~06EAh = Target Position P3(D-Zoom): ((256 * 10) / Ratio_X) - 1 ex) If Ratio_X is 11, P3 is E7h. (Ratio_X = 11 : 1.1x) If Ratio_X is 20, P3 is 7Fh. (Ratio_X = 20 : 2x)									

7. DC Power Supply

- Voltage Source : DC 8V ~ 15V
- Power Consumption : 2.8W(steady-state)
4.0 W(Max. : 500mA)

8. Reliability Condition

- IRIS : 500,000 times(Room Temperature)

The change of Iris's speed or the failure of the iris's operation should not happen when the Iris's operation is tested for the 500,000 times from CLOSE to OPEN. A time's cycle is 5sec~6sec.
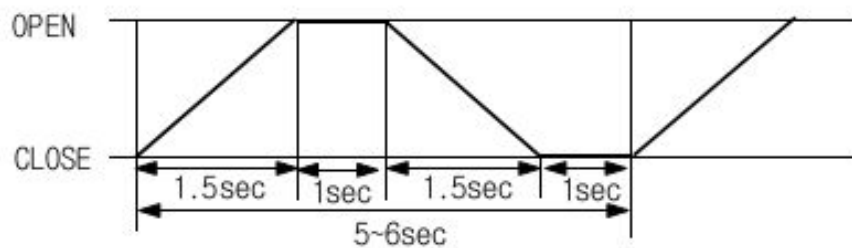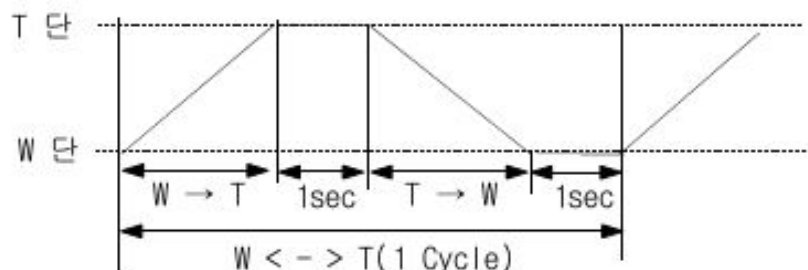

- ZOOM : 500,000 times

The failure of Zooming operation should not happen when Zooming is tested for the 500,000 times from TELE to WIDE.
The step between TELE and WIDE is 1,743.
The test should be done by the following speed condition.

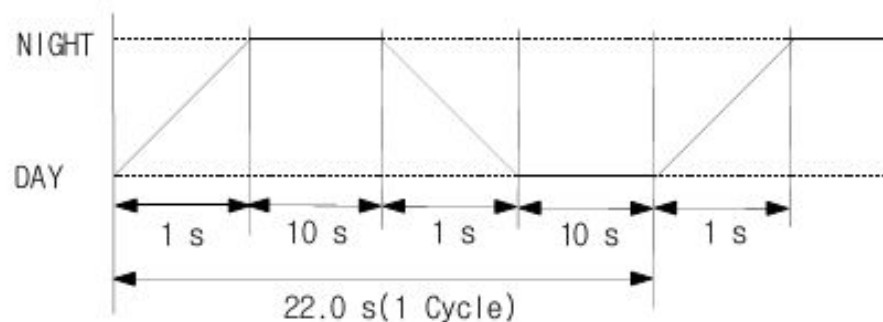

MAC-100

- Focus : 500,000 times

The failure of Focusing operation should not happen when Focusing is tested by the following cycle for the 500,000 times.
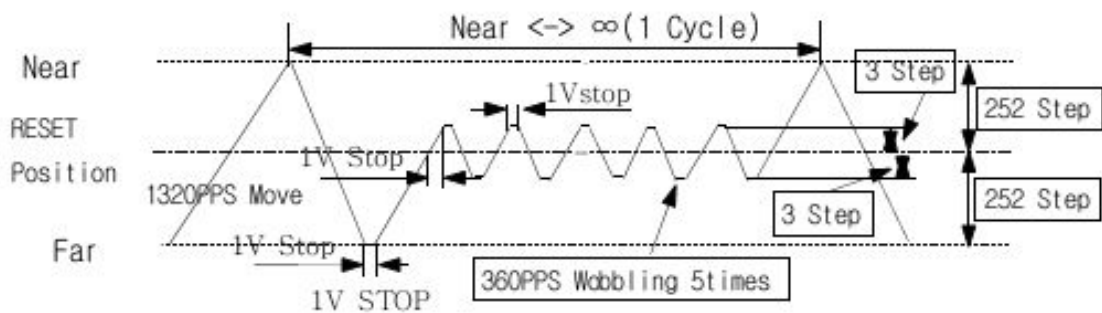
- Day & Night : 50,000 times

The failure of DAY/NIGHT operation should not happen when the function of the DAY/NIGHT is tested by the following cycle for the 50,000 times. Motor Voltage = 5V, Frequency = 480pps

MAC-100

9. Mechanical Dimension

MAC-100