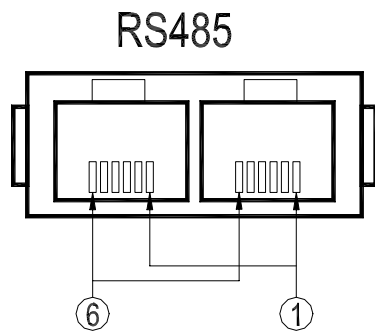


# DynaColor Surveillance Control Protocol (DSCP)

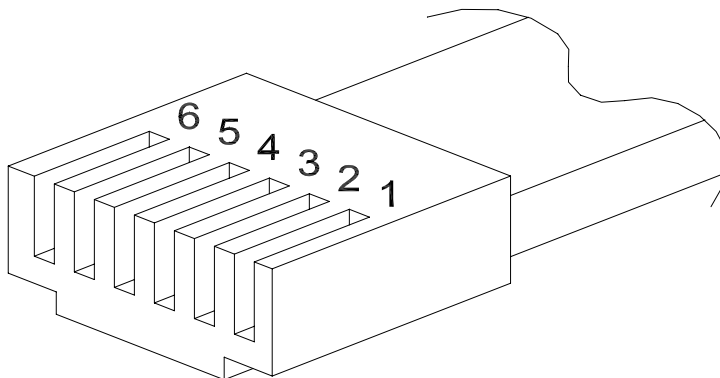
V3.1a

## 1. Connector Type

The default RS485 port connector is RJ11 6P6C connector:



RJ11 Cable 6P6C pin definition:



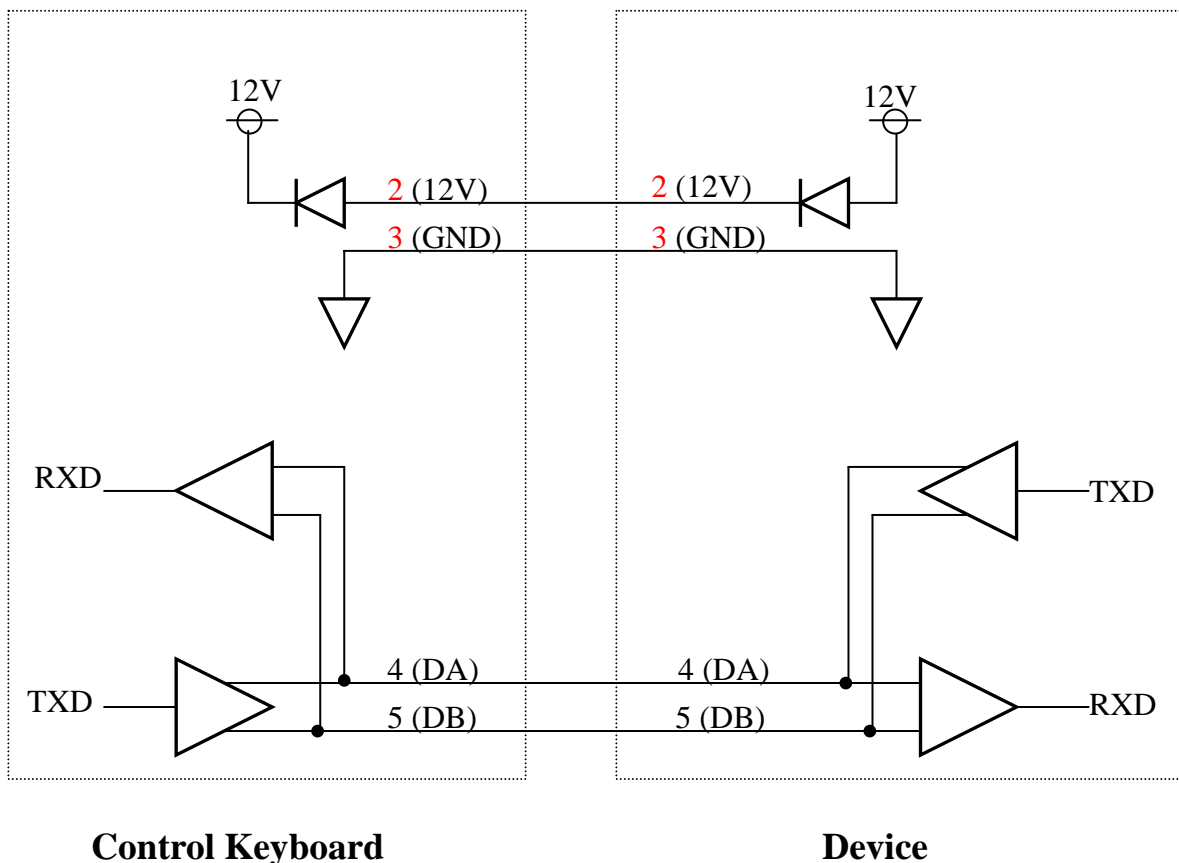
## 2. Pin Name and definition

Pin No.	Definition	Direction
1	-	-
2	+12V	Power
3	GND	Ground
4	DA ( D +)	I/O
5	DB ( D -)	I/O
6	-	-

The system is operated in half duplex mode, at least three wires are necessary for RS485 communication: GND (pin3, ground), DA (pin4) and DB (pin5).

Pin 2(+12V) is auxiliary pin to provide DC power from Device (Multiplexer and Dome Camera) to the Control Keyboard. If the device is located far away from the keyboard, it's better to use a DC adapter to provide power to the keyboard.

Pin 1 and Pin 6 are reserved for future applications.



### 3. UART Protocol

Baud rate: 9600  
Start bit: 1  
Data bit: 8  
Parity: None  
Stop bit: 1

### 4. Command Packet:

Every command is composed of six bytes; the packet format is described as below. The time delay between each byte must be smaller than 2 ms. **Device response time must be less than 100ms, and Host commands' gap time must be more than 100ms.**

Byte 1	Byte 2	Byte 3	Byte 4	Byte5	Byte 6
Receiver ID	Transmitter ID	OP Code	Data 0	Data 1	Check Sum

The first byte is the Receiver or 'Destination' device ID.

The second byte is the Transmitter or 'Source' device ID.

The third byte is the OP code or 'command' byte.

The fourth and fifth bytes are the data byte.

The sixth byte is the check sum of this command packet.

Checksum = Byte1 XOR Byte2 XOR Byte3 XOR Byte4 XOR Byte5 (XOR= exclusive or)

**Note:**

### 5. ID Address Allocation

Item	ID (hex)	ID (decimal)	Device name	Remark
1	00H	0	Host controller	Keyboard or computer
2	01H-DFH	1~223	Speed dome	Maximum 223 Dome
3	E0H-EFH	224~239	Multiplexer	224~239 = Mpx1~Mpx16
4	F0H-FEH	240~254	Control keyboard	Keyboard or computer
5	FFH	255	Matrix	

In our security system, the Dome Cameras are mapping to each channel of the multiplexer (MPX). For example, Dome 1 is mapped to channel 1 of MPX 1, Dome 2 is mapped to channel 2 of MPX 2... and so on. If you are using D731X as a system controller, please set up each device's ID according to the following table:

MPX NO	MPX ID	Camera ID	Remark
1	E0H, 224	01H – 10H, 1~16	Channel 1~16 of MPX #1
2	E1H, 225	11H – 20H, 17~32	
3	E2H, 226	21H – 30H, 33~48	
4	E3H, 227	31H – 40H, 49~64	
5	E4H, 228	41H – 50H, 65~80	
6	E5H, 229	51H – 60H, 81~96	
7	E6H, 230	61H – 70H, 97~112	
8	E7H, 231	71H – 80H, 113~128	
9	E8H, 232	81H – 90H, 129~144	
10	E9H, 233	91H – A0H, 145~160	
11	EAH, 234	A1H – B0H, 161~176	
12	EBH, 235	B1H – C0H, 177~192	
13	ECH, 236	C1H – D0H, 193~208	
14	EDH, 237	D0H – DFH, 209~223	Only 15 Dome can be connect
15	EEH, 238	None	Can connect to normal camera
16	EFH, 239	None	Can connect to normal camera

## 6. Command sets

### 6.1. Command Packets for SpeedDome

The digits in the following table are hexadecimal format.

#### ■ Camera Related Command Packets

##### IRIS Command Packet

OP_code	Data 0	Data 1
23h	Data0	00h

Data0 = 02h : IRIS Open.  
03h : IRIS Close.  
04h : Auto IRIS.  
05h : IRIS Stop.

##### Response Packet

OP_code	Data 0	Data 1
23h	Data0	00h

##### Zoom Wide/Tele/Stop Command Packet

OP_code	Data 0	Data 1
24h	Data0	00h

Data0 = 00h : Wide.  
01h : Tele.  
04h : Stop.

##### Response Packet

OP_code	Data 0	Data 1
24h	Data0	00h

##### Zoom Speed Command Packet

OP_code	Data 0	Data 1
24h	03h	Data1

Data1 = Zoom speed (00h ~ 03h, 00h is slow and 03h is fast).

##### Response Packet

OP_code	Data 0	Data 1
24h	03h	Data1

##### Read Zoom Speed Command Packet

OP_code	Data 0	Data 1
24h	05h	00h

Set Zoom adjust Speed (00h ~ 03h, 00h is slow and 03h is fast).

##### Response Packet

OP_code	Data 0	Data 1
24h	05h	Spd

##### Focus Near/Far/Stop Command Packet

OP_code	Data 0	Data 1
25h	Data0	Data1

Data0 = 00h : Near (Data1 = 00h : low speed , 01h : high speed ).  
01h : Far (Data1 = 00h : low speed , 01h : high speed ).  
04h : Stop (Data1 = 00h).

##### Response Packet

OP_code	Data 0	Data 1
25h	Data0	Data1

##### Focus Speed Command Packet

OP_code	Data 0	Data 1
25h	03h	Data1

Data1 = 00h ~03h ( 00h is slow, 03h is fast )

##### Response Packet

OP_code	Data 0	Data 1
25h	03h	Data1

##### Auto Focus Key Command Packet

OP_code	Data 0	Data 1
26h	Data0	00h

Data0 = 00h : Key On  
01h : Key Off  
02h : Focus from table

##### Response Packet

OP_code	Data 0	Data 1
26h	00h	00h

00h : Flip between Auto Focus and Manual Focus  
06h : Auto Focus mode  
07h : Manual Focus mode

2005/12/1

### Camera Display Control Packet

OP_code	Data 0	Data 1
4Ch	00h=ID 01h=title	00h=off 01h=on

### Camera Display Status Packet

OP_code	Data 0	Data 1
4Dh	00h	00h

Status1.b0=ID:     =0 OFF     /=1 ON.

Status1.b1=Title:   =0 OFF     /=1 ON.

Status1.b2~b7 and Status2 are reserved.

### Request Zoom lens camera status Packet

OP_code	Data 0	Data 1
20h	00h	00h
20h	01h	00h
20h	02h	00h
20h	03h	00h

Status1:

Bit 7 (MSB)=     1: Focus Manual; 0: Auto

Bit 6=            1: ID display on; 0: off

Bit 5=            1: White Balance Push-Auto on; 0: off

Bit 4=            1: BLC on; 0: off

Bit 3=            1; Flickerless on, 0: off

Bit 2=            1: Focus Push-auto; 0: Auto/Manual

Bit 1=            1: DigiZoom on; 0: off

Bit 0 (LSB)=     1: Menu Initial on, 0: off

Status2:

Bit 7 (MSB)=     TBD

Bit 6=            TBD

Bit 5=            TBD

Bit 4=            TBD

Bit 3=            TBD

Bit 2=            1: Focus Push-auto; 0: Auto/Manual

Bit 1=            1: DigiZoom on; 0: off

Bit 0 (LSB)=     1: Auto BLC on; 0: off

### Set Digital Zoom Max Power Packet

OP_code	Data 0	Data 1
2Eh	00h	00h
2Eh	01h	Data1

Data0 : 01=Digital Zoom On (initial) , 00=Digital Zoom Off

Data1 : 2~8, Digital Zoom max power (2X-8X)

### Read Digital Zoom Max Power Packet

OP_code	Data 0	Data 1
2Eh	03h	00h

Data1.     b0           : Digital Zoom off

### Response Packet

OP_code	Data 0	Data 1
4Ch	00h=ID 01h=title	00h=off 01h=on

### Response Packet

OP_code	Data 0	Data 1
4Dh	Status1	Status2

### Response Packet

OP_code	Data 0	Data 1
20h	Status1	Status2
20h	Zoom AddrL	Zoom AddrH
20h	Focus AddrL	Focus AddrH
20h	Digital Zoom Value	Status2

### Response Packet

OP_code	Data 0	Data 1
2Eh	00h	00h
2Eh	01h	Data1

### Response Packet

OP_code	Data 0	Data 1
2Eh	03h	Data1

b2~8 : Digital Zoom max power (2X-12X)

#### Line-lock Timing Inc(delay)/Dec & Read Packet

OP_code	Data 0	Data 1
2Fh	00h	00h
2Fh	01h	00h
2Fh	02h	00h

Data0 : 00= Timing Increase  
01= Timing Decrease  
02= Read  
CT is Current Timing Counter.

#### Response Packet

OP_code	Data 0	Data 1
2Fh	00h	00h
2Fh	01h	00h
2Fh	02h	CT

### ■ Pan/Tilt Related Command Packets

#### Manual Control Command Packet

OP_code	Data 0	Data 1
18h	Data0	Data1

Data0 = 00h : Pan right (Data1 : Pan speed is 00h ~ 07h)  
01h : Pan Left (Data1 : Pan speed is 00h ~ 07h)  
02h : Tilt Up (Data1 : Tilt speed is 00h ~ 07h)  
03h : Tilt Down (Data1 : Tilt speed id 00h ~ 07h)

#### Response Packet

OP_code	Data 0	Data 1
18h	Data0	Data1

#### Pan/Tilt Degree Adjustment Packet

OP_code	Data 0	Data 1
4Eh	Data0	Data1

Data0 = 00h : Pan right (Data1 : Pan right degree is 00h ~ 0Fh, 0~15°)  
01h : Pan Left (Data1 : Pan left degree is 00h ~ 0Fh, 0~15°)  
02h : Tilt Up (Data1 : Tilt up degree is 00h~ 0F h, 0~15°)  
03h : Tilt Down (Data1 : Tilt down degree 00h ~ 0Fh, 0~15°)

#### Response Packet

OP_code	Data 0	Data 1
4Eh	Data0	Data1

#### Pan Stop Command Packet

OP_code	Data 0	Data 1
13h	00h	00h

#### Response Packet

OP_code	Data 0	Data 1
13h	00h	00h

#### Tilt Stop Command Packet

OP_code	Data 0	Data 1
14h	00h	00h

#### Response Packet

OP_code	Data 0	Data 1
14h	00h	00h

#### Go to Pan Position Command Packet

OP_code	Data 0	Data 1
07h	Low	High

Absolute Address for Pan  
(HiResolution=01h~640h ,1600 steps , LowResolution = 01h~300h , 768 steps )

#### Response Packet

OP_code	Data 0	Data 1
07h	Low	High

#### Go to Tilt Position Command Packet

OP_code	Data 0	Data 1
08h	Low	High

Absolute Address for Tilt  
(HiResolution=01h~1F4h ,500 steps , LowResolution = 01h~F0h , 240 steps )

#### Response Packet

OP_code	Data 0	Data 1
08h	Low	High

#### Request Pan Position Command Packet

OP_code	Data 0	Data 1
09h	00h	00h

#### Response Packet

OP_code	Data 0	Data 1
09h	Low	High

Absolute Address for Pan

( HiResolution=01h~640h ,1600 steps , LowResolution = 01h~300h , 768 steps )

#### Request Tilt Position Command Packet

OP_code	Data 0	Data 1
0Ah	00h	00h

Absolute Address for Tilt

( HiResolution=01h~1F4h ,500 steps , LowResolution = 01h~F0h , 240 steps )

#### Set Joystick Control Mode

OP_code	Data 0	Data 1
41h	Data0	00h

Data0=0 : Turn off joystick control speed with zoom ratio

Data0=1 : Turn on joystick control speed with zoom ratio

#### Read Joystick Control Mode

	Data 0	Data 1
44h	00h	00h

Data0=0 : Turn off joystick control speed with zoom ratio

Data0=1 : Turn on joystick control speed with zoom ratio

#### Response Packet

OP_code	Data 0	Data 1
0Ah	Low	High

#### Response Packet

OP_code	Data 0	Data 1
41h	Data0	00

#### Response Packet

OP_code	Data 0	Data 1
44h	Data0	00

### ■ Main Function Related Command Packets

#### Tour Function Command Packet

OP_code	Data 0	Data 1
11h	Data0	N

Data0 = 00h : Go to Preset N

01h : Run Sequence N

02h : Run Cruise

03h : Go to Preset N with Max. Speed.

( N : 0 ~ 255 as Preset #1 ~ #256 )

( N : 00h ~ 07h as Sequence #1 ~ #8 )

( AutoPan : N=00h )

( Cruise : N=01h )

( AutoPan #1 ~ #4 : N = 04h ~ 07h )

#### Response Packet

OP_code	Data 0	Data 1
11h	Data0	N

#### Tour Stop Command Packet

OP_code	Data 0	Data 1
12h	00h	00h

Stop Pan/Tilt/Zoom/IRIS

#### Response Packet

OP_code	Data 0	Data 1
12h	00h	00h

#### Set PAN Speed Packet

OP_code	Data 0	Data 1
0Bh	Speed	00h

PAN speed = 0~15

#### Response Packet

OP_code	Data 0	Data 1
0Bh	Speed	00h

#### Set TILT Speed Packet

OP_code	Data 0	Data 1
0Ch	Speed	00h

TILT speed = 0~15

#### Response Packet

OP_code	Data 0	Data 1
0Ch	Speed	00h

### ■ Preset Related Command Packets

#### Preset Set Command Packet

OP_code	Data 0	Data 1
1Dh	Data0	N

#### Response Packet

OP_code	Data 0	Data 1
1D	Data0	N



Data0 = 00h : Set Preset N ( N : 0 ~ 255 )

01h : Clear Preset N ( N : 0 ~ 255 )

## ■ Sequence Related Command Packets

### Fill Preset into Sequence Command Packet

OP_code	Data 0	Data 1
19h	Data0	N

Data0 = MSB 3bits = sequence no. 0~7 total 8 sequence available.

LSB 5bits = sequence point 0~31 total 32 points.

Data1 = N : Preset Position N ( N : 0 ~ 254 as Preset, 255 as Sequence End )

### Response Packet

OP_code	Data 0	Data 1
19h	Data0	N

### Set Sequence Dwell Command Packet

OP_code	Data 0	Data 1
1Ah	Data0	N

Data0 = MSB 3bits = sequence no. 0~7 total 8 sequence available.

LSB 5bits = sequence point 0~31 total 32 points.

Data1 = Dwell Time. N=0~255 . Maximum time is 128 seconds. ( unit = 0.5 sec. )

### Response Packet

OP_code	Data 0	Data 1
1Ah	Data0	N

### Set Sequence Speed Command Packet

OP_code	Data 0	Data 1
1Bh	Data0	N

Data0 = MSB 3bits = sequence no. 0~7 total 8 sequence available.

LSB 5bits = sequence point 0~31 total 32 points.

Data1 = Speed. N=0~14 . Maximum speed is 15.

### Response Packet

OP_code	Data 0	Data 1
1Bh	Data0	N

\*\*The speed range is 00h – 0Eh(14). But the old speed range is 00~08h for old speeddome (shipped before 1999 NOV).

### Set Cruise Data Packet

OP_code	Data 0	Data 1
40h	Data0	00h

Data0=0 : Set Cruise start memorize

Data0=1 : Set Cruise stop memorize

### Response Packet

OP_code	Data 0	Data 1
40h	Data0	00h

## ■ Auto-Pan Related Command Packets

### Set Auto-Pan Parameter Command Packet

OP_code	Data 0	Data 1
1Ch	Data0	N

Data0 = 00h : Set Start Point for AutoPan.

01h : Set End Point for AutoPan.

02h : Set rotational direction for AutoPan.

03h : Set Speed for AutoPan.

12h : Read rotational direction for AutoPan.

13h : Read Speed for AutoPan.

20h ~ 23h : Set AutoPan #01 ~ #04 rotation direction and speed.

30h ~ 33h : Read AutoPan #01 ~ #04 rotation direction and speed.

Data 1 = MSB 1bits = Rotation Direction. 0 : right / 1 : turn left.

LSB 7bits = 00 ~ 03 speed

### Response Packet

OP_code	Data 0	Data 1
1Ch	Data0	N

( N = 00h ~ 03h )

( N = 00h ~ 03h )

( N = 00 turn right, N = 01 turn left.)

( N = 00~03 speed )

( N = 00h )

( N = 00h )

## ■ Setup Related Command Packets

### AutoFlip On/Off Command Packet

OP_code	Data 0	Data 1
18h	04h	Data1

Data1 = 00h : Off  
01h : On

### Remote Reset Command Packet

OP_code	Data 0	Data 1
15h	AAh	55h

### Go to Home Position Command Packet

OP_code	Data 0	Data 1
49h	02h	00h

### Set Preset to Home Position Command Packet

OP_code	Data 0	Data 1
49h	03h	N

Data1 = N : Preset Position for Home position

### Read Home Position Setting Command Packet

OP_code	Data 0	Data 1
49h	00h	Status

N : Preset Point

Status : MSB=1 : Home function is on. MSB=0 : Home function is off

Bit0~Bit6 : Delay Time 1 ~ 127 ( Unit is Minutes)

### Set Home Position Parameter Command Packet

OP_code	Data 0	Data 1
49h	01h	Status

Status : MSB=1 : Home function is on. MSB=0 : Home function is off

Bit0~Bit6 : Delay Time 1 ~ 127 ( Unit is Minutes)

### Line-Lock Timing Adjustment Packet

OP_code	Data 0	Data 1
2Fh	Data0	00h

Data0 = 00h : Timing Increase

01h : Timing Decrease

02h : Read CT ( Data1 : Current Timing Counter)

### Response Packet

OP_code	Data 0	Data 1
18h	04h	Data1

### Response Packet

OP_code	Data 0	Data 1
15h	AAh	55h

### Response Packet

OP_code	Data 0	Data 1
49h	02h	00h

### Response Packet

OP_code	Data 0	Data 1
49h	03h	N

### Response Packet

OP_code	Data 0	Data 1
49h	N	Status

### Response Packet

OP_code	Data 0	Data 1
49h	01h	Status

### Response Packet

OP_code	Data 0	Data 1
2Fh	Data0	Data1

## ■ Alarm Related Command Packets

### Set Alarm Point Packet

OP_code	Data 0	Data 1
0Fh	Alarm status	Preset no.

Alarm status: Bit 7: 0:off/ 1:on

Bit 6: 0:NO/ 1: NC (NO: normal open; NC: normal close)

Bit 0~5: Alarm No.

### Response Packet

OP_code	Data 0	Data 1
0Fh	Alarm status	Preset no.

### Goto Alarm Point Packet

OP_code	Data 0	Data 1
10h	00h	Alarm no.

### Response Packet

OP_code	Data 0	Data 1
10h	00h	Alarm no.

#### Read Alarm Preset no./status Packet

OP_code	Data 0	Data 1
10h	02h	Alarm no.
10h	03h	Alarm no.

#### Set Alarm Preset remain-time Packet

OP_code	Data 0	Data 1
10h	04h	Remain time

#### Read Alarm Preset remain-time Packet

OP_code	Data 0	Data 1
10h	06h	00h

Remain-time is 1~255 seconds.

#### Set Alarm Preset release-time Packet

OP_code	Data 0	Data 1
10h	05h	Release time

#### Read Alarm Preset release-time Packet

OP_code	Data 0	Data 1
10h	07h	00h

Release-time is 1~255 seconds.

PS. Description of Alarm Remain and Release time

#### Response Packet

OP_code	Data 0	Data 1
10h	02h	Preset no.
10h	03h	Status

#### Response Packet

OP_code	Data 0	Data 1
10h	04h	Remain time

#### Response Packet

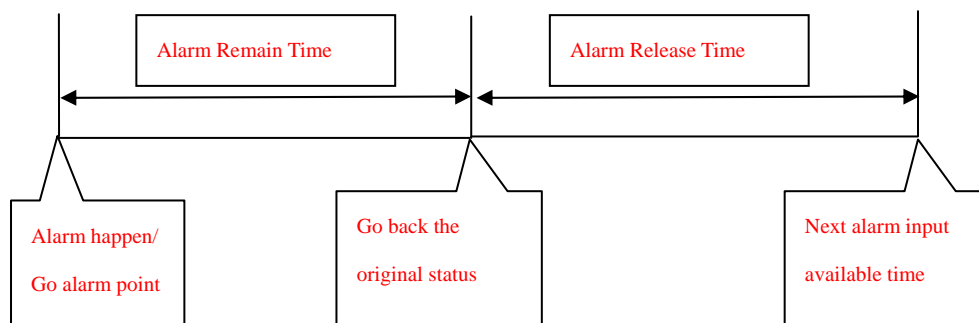
OP_code	Data 0	Data 1
10h	06h	Remain time

#### Response Packet

OP_code	Data 0	Data 1
10h	05h	Release time

#### Response Packet

OP_code	Data 0	Data 1
10h	07h	Release time



## System Related Command Packets

### Establish Linkage Packet

OP_code	Data 0	Data 1
00h	00h	00h

### Response Packet

OP_code	Data 0	Data 1
00h	Device type	Model type

Device type	00h	Dome/Camera	01h	Multiplexer	02h	DVR
Model type	01h	D771X	00h	D7260	00	D7963B
	02h	D772X-LG	01h	D7290	01	D7993B
	03h	D772X-Hitachi	02h	D7210	02	D7913
	20h	All-in-one LG			10	D7966
	21h	All-in-one Hitachi	10h	D7261		
			11h	D7291		
			12h	D7241		
	30h	OSD				
	50h	Receiver				

### Request Dome Status Packet

OP_code	Data 0	Data 1
01h	00h	00h

### Response Packet

OP_code	Data 0	Data 1
01h	Device status1	Device status2

DEVICE\_STATUS ; Speed Dome Device Status  
 Bit 0 :DEV\_PBUSY\_F ; PAN busy; 0 = free / 1 = busy  
 Bit 1 :DEV\_TBUSY\_F ; TILT busy; 0 = free / 1 = busy  
 Bit 2~4 : N/A  
 Bit 5 : Pan\_Direction\_F ; Pan Direction 0=clockwise / 1=Reverse  
 Bit 6 : Tilt\_Direction\_F ; Tilt Direction 0=0°→90° / 1=90°→0°  
 DEVICE\_STATUS2 ; Speed Dome Device Status2  
 Bit 0 :OSD\_Menu ; OSD menu, 0=OFF / 1=ON  
 Bit 1 :Auto\_Focus ; Auto focus, 0=Manual / 1=Auto  
 Bit 2~7 : N/A

**Request Device Capability Packet**

OP_code	Data 0	Data 1
4Ah	00h	00h

**Response Packet**

OP_code	Data 0	Data 1
4Ah	Device CAP1	Device CAP2

Device CAP1	Bit0	Cruise Function	0: non-supported; 1: supported
	Bit1	Pan/Tilt	0: supported; 1: non-supported
	Bit2	Zoom	0: supported; 1: non-supported
	Bit3	OSD Menu	0: supported; 1: non-supported
	Bit4	Device Lock	0: non-supported; 1: supported
	Bit5	Home Function	0: non-supported; 1: supported
	Bit6	(reserved)	
	Bit7	(reserved)	

Device CAP2 (reserved)

If response op\_code is not 4Ah, it means that device doesn't support this command.

**Receiver Related Command Packets****AUX Setting/Status Read Packet**

OP_code	Data 0	Data 1
48h	Data0	Data1

**Response Packet**

OP_code	Data 0	Data 1
48h	Data0	Data1

Data0=00h Set AUX terminal ON, Data1=0-7 AUX number

Data0=01h Set AUX terminal OFF, Data1=0-7 AUX number

Data0=02h Read AUX terminal status, Data1=0-7 AUX number

Reply Data0=AUX number, Data1=Status; =0 OFF; =1 ON

**IR Function Sent Packet**

OP_code	Data 0	Data 1
48H	00H	00H
	01H	00H
	02H	00H
	03H	00H
	10H	00H

Data0 :

00H = IR Color Mode.

01H= IR Mono Mode.

02H= IR Switch Auto.

03H= IR Switch On.

10H= Read IR Switch Status

**Response Packet**

OP_code	Data 0	Data 1
48H	00H	00H
	01H	00H
	02H	00H
	03H	00H
	ACK	00H
	FFH	FFH

ACK

00H = IR Mono Mode and IR Switch Auto.

01H = IR Color Mode and IR Switch Auto

02H = IR Mono Mode and IR Switch On.

03H = IR Color Mode and IR Switch On

Data0 = Data1 = FFH Camera doesn't support.

#### ■PAN location ( Step of Degree )

Op_code	Data0	Data1		Op_code	Data0	Data1
09h	00h	00h	Response	09h	low	high
	01h	00h			0xh	Yyh

Data0 = 00 : PAN absolute address 0 - ??? ( 0 - 360 degree )

Data0 = 01 : Pan absolute degree

0xyyh = 0000~0E10h ( 0~3600 step, 1 step = 0.1 degree )

#### ■Request TILT location ( Step or Degree )

Op_code	Data0	Data1		Op_code	Data0	Data1
0Ah	00h	00h	Response	0Ah	low	High
	01h	00h			0xh	Yyh

Data0 = 00: TILT absolute address 0 - ??? ( 0 - 90 degree )

Data0 = 01: Tilt absolute degree

0xyyh = 0000~0384h ( 0~900 step, 1 step = 0.1 degree )

#### ■Go to Pan Absolute Position ( Degree )

Op_code	Data0	Data1		Op_code	Data0	Data1
29h	0Xh	YYh	Response	29h	0Xh	YYh

0XYY=0000H ~ 0E10H ( 0~3600 step, 1 step= 0.1 degree )

#### ■Go to Tilt Absolute Position (Degree)

Op_code	Data0	Data1		Op_code	Data0	Data1
2Ah	0Xh	YYh	Response	2Ah	0Xh	YYh

0XYY=0000H ~ 0384H ( 0~900 step, 1 step= 0.1 degree )

## ■ Read ZOOM LENS CAMERA RAM

Op_code	Data0	Data1		Op_code	Data0	Data1
21h	00	00h	Response	21h	xxh	yyh
	01	xxh	No Response			
	02	00h	Response	21h	00h	xxh
	03	xxh	No Response			
<p>Data0 = 00 : Request maximum capability of optical and digital zoom of camera  xxh : optical zoom                      yyh: digitl zoom</p> <p>Data0 = 01 : Go to zoom ratio ( x1 ~ x26 )  xxh : 01h~08h.  This command will not response any packet.</p> <p>Data0 = 02 : Request zoom ratio of camera  xxh : It is zoom ratio which is product of optical and digital zoom.</p> <p>Data0 = 03 : Go to zoom ratio. (optical*digital)  xxh : It is the zoom ratio what you want to go to.  This command will not response any packet.</p> <p><b>The S, K, R model dome camera currently doesn't support this function.</b></p>						

## 6.2. Multiplexer Commands

The texts of Data 0, 1 is in **ASCII** code format

Command	OP_code	Data 0,1	Note
Channel select	A0	"01"~"0G"	Channel 1~16
Screen mode select		"MR"	Detail setting must reference User's manual
		"ML"	
Sequence		"S1"~"S3"	Sequence 1~3
Up key		"DU"	
Down key		"DD"	
Left key		"DL"	
Right key		"DR"	
Zoom/Enter		"DZ"	
Live/VCR		"KV"	
Freeze		"KA"	
Set		"KS"	
ESC		"KE"	
List		"KL"	
Buzzer		"SB"	
Date/Time		"SD"	
Title		"ST"	
PROG (Menu)		"SP"	
Key Lock		"SK"	
Universal End		"UE"	

Example:

If the Keyboard ID is 00H, the Multiplexer ID is E0H.

If you want to select camera 1 on the main monitor, you can use '01' command.

(The ASCII Code of '01' is 30 & 31H.)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
Receiver ID	Transmitter ID	OP Code	Data0	Data1	Checksum
E0H	00H	A0H	30H	31H	41H



### 6.3. ROBOT CLONE MUX : SEND KEYCODE FROM HOST/KEYBOARD

Op_code	Data0	Data1
A9h	BYTE1	BYTE2
Aah	BYTE3	BYTE4

#### 6.3.1 ROBOT CLONE MUX : REPLY LED STATUS BY MUX ITSELF

	Op_code	Data0	Data1
Response	ABh	BYTE1	BYTE2
	ACh	BYTE3	BYTE4

#### KEYCODE:

	DATA0								DATA1							
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
A9h	Call	up	8	16	Freeze	Zoom	7	15	Seq.	Verify	6	14	Tape	----	5	13
AAh	Live	----	4	12	right	----	3	11	left	----	2	10	down	----	1	9

#### LED STATUS:

	DATA0								DATA1							
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
ABh	Call	up	8	16	Freeze	Zoom	7	15	Seq.	Verify	6	14	Tape	----	5	13
ACh	Live	----	4	12	right	----	3	11	left	----	2	10	down	----	1	9

#### 6.3.2. LINKAGE:

6.3.2.1. Host PC or Keyboard have to send two-packet commands ,A9h/AAh, to MUX to keep their linkage; otherwise, MUX would be off-line, that means that no Host PC or Keyboard could control it anymore. For example, Host PC sends "E0 00 A9 00 00 49" and "E0 00 AA 00 00 A9" two commands every 10 seconds.

6.3.2.2. When MUX received A9h/AAh command or LED status has been changed, MUX would send two-packet reply by itself, ABh/ACH, to everyone( ID=00h ); for example, MUX send the following two packets, "00 E0 AB 01 00 4A" and "00 E0 AC 00 00 4C", that means only "15" LED will be turned on.

#### 6.4. OSD Camera Commands

Command	OP_code	Data 0	Data 1	Note
Up key	28	00	00	
Down key	28	01	00	
Left key	28	02	00	
Right key	28	03	00	
Enter key	28	04	00	Menu
Escape key	28	05	00	2005/12/2

#### 6.5. System Commands

##### Command Acknowledge Enable/Disable Packet

OP_code	Data 0	Data 1
84h	Data0	00

Data0 = 00h : Enable (Default)  
01h : Disable

##### Response Packet

OP_code	Data 0	Data 1
84h	Data0	00