

Pan/Tilt CCD Camera

PT1111M/ PT1121M/ PT1111H/ PT1121H

USER'S MANUAL

1 Check Package Contents

● Camera



● Power Adapter (Optional)



● Ceiling Mount Kit

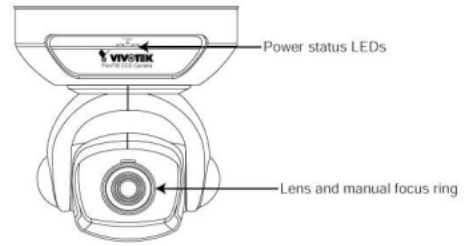


● IR Remote Control (Optional)

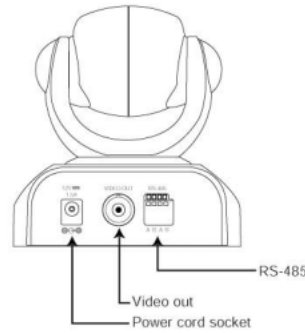


2 Physical Description

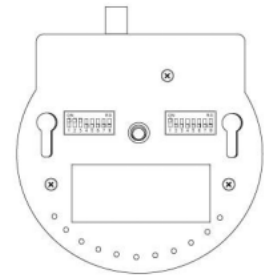
● Front



● Rear

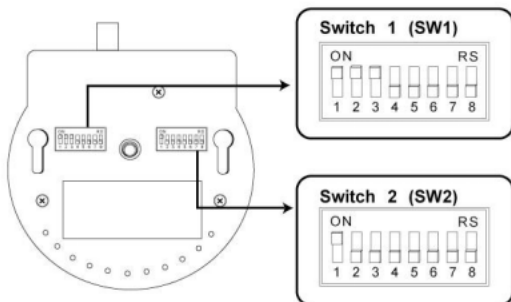


● Bottom



3 Switch Settings

● Default Settings of Switches



● Switch 1 (SW1)

DIP Switch	Setting
1-1	Power Status LEDs On/Off
1-2	BLC (Back Light Compensation) On/Off *
1-3	IR Receiver for Remote Control On/Off
1-4 & 1-5	Baud Rate Select **
1-6 & 1-7	Pan/Tilt Control Protocol Select ***
1-8	Termination Setting ****

* BLC On/Off

BLC is "disabled" under default setting. To enable the BLC, set the DIP switch (SW1-2) to "Off" position.

** Baud Rate Select

DIP Switch	SW1-4	SW1-5
2400 Baud (default)	Off	Off
4800 Baud	On	Off
9600 Baud	Off	On
19200 Baud	On	On

*** Pan/Tilt Control Protocol Select

DIP Switch	SW1-6	SW1-7
Pelco D Protocol	Off	Off
Reserved 1	On	Off
Reserved 2	Off	On
Reserved 3	On	On

**** Termination Setting

Terminate the unit farthest from the controller when connecting more than one pan/tilt camera to a single controller. Termination is only required for the last camera in the series.

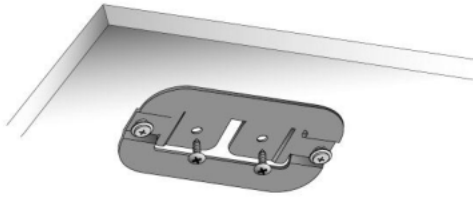
The default setting of the camera is unterminated (SW1-8 at "Off" position). To terminate the camera, set the DIP switch (SW1-8) to "On" position.

● Switch 2 (SW2)

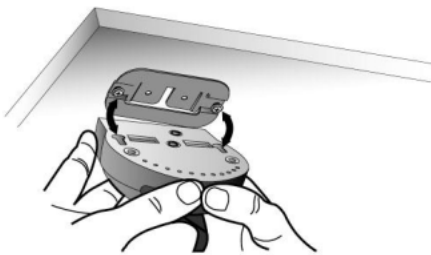
The DIP switches (SW2-1 ~ SW2-8) here configure the camera's receiver address. Maximum number of receiver is 254. Refer to Table A for address settings while using Pelco D-Type control protocol.

4 Installation

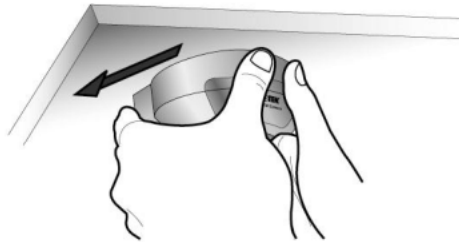
1) Attach the mounting kit to the mounting surface.



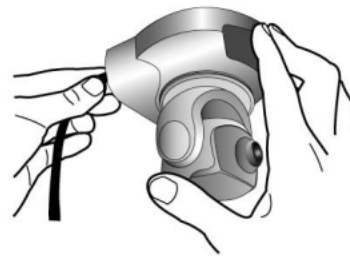
2) Align the slots located on the bottom of the camera with the screws on the sides of the ceiling mount kit.



3) Install the camera and push it into place.



4) Firmly hold the camera while plugging in the power cord and video cable.



5 Pelco D Protocol Command

● The format for a message is:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Synch Byte	Address	Command 1	Command 2	Data 1	Data 2	Check Sum

All values below are shown in hexadecimal (base 16).
The synchronization byte is always \$FF.

The address is the logical address of the receiver/driver being controlled (Address=00 is broadcast to every device).

The check sum is the 8 bit (modulo 256) sum of the payload bytes (bytes 2 through 6) in the message.

● Command 1 and 2 are as follows:

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Command 1	Reserved(0)	Reserved(0)	Reserved(0)	Reserved(0)	Reserved(0)	Reserved(0)	Reserved(0)	Reserved(0)
Command 2	Reserved(0)	Reserved(0)	Reserved(0)	Down	Up	Left	Right	Always 0

The reserved bits (Command 1: Bit7–Bit0; Command 2: Bit7–Bit5) should be set to 0.

Byte 5 contains the pan speed(2°/sec–65°/sec). Pan speed is in the range \$00 (stop) to \$3F (high speed) and \$FF for "turbo" speed. Turbo speed is the maximum speed the device can obtain and is considered separately because it is not generally a smooth step from high speed to turbo. That is, going from one speed to the next usually looks smooth and will provide for smooth motion with the exception of going into and out of turbo speed.

Byte 6 contains the tilt speed(6°/sec–30°/sec). Tilt speed is in the range \$00 (stop) to \$3F (high speed) and \$FF for "turbo" speed.

Byte 7 is the check sum. The check sum is the sum of bytes (excluding the synchronization byte) modulo 256.

● Extended Commands:

Home: Command 2(Bit4~Bit1 are set to 1).

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Command 2	Reserved(0)	Reserved(0)	Reserved(0)	Down 1	Up 1	Left 1	Right 1	Always 0

Auto Pan: Command 2(Bit2~Bit1 are set to 1)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Command 2	Reserved(0)	Reserved(0)	Reserved(0)	Down 0	Up 0	Left 1	Right 1	Always 0

Auto Pan speed is controlled by byte5(Data 1), byte5=1(2°/sec),2(4°/sec),3(6°/sec)

● Example Messages :(all message values are in hexadecimal)

Message to send	Message
Receiver 1, Down turbo speed	FF, 01, 00, 10, 00, FF, 10
Receiver 1, Up high speed	FF, 01, 00, 08, 00, 3F, 48
Broadcast, Left turbo speed	FF, 00, 00, 04, FF, 00, 03
Receiver 2, Left slowest speed(2°/sec)	FF, 02, 00, 04, 01, 00, 07
Receiver 10, Home	FF, 0A, 00, 1E, 00, 00, 28
Receiver 254, Auto Pan (6°/sec)	FF, FE, 00, 06, 03, 00, 07
Receiver 254, Stop	FF, FE, 00, 00, 00, 00, FE
Broadcast, Stop	FF, 00, 00, 00, 00, 00, 00
Receiver 10, Right turbo speed	FF, 0A, 00, 02, FF, 00, 0B

Note: the check sum calculation for the last message looks like this:

```

0A      00001010
00      00000000
Subtotal 00001010 0A
02      00000010
Subtotal 00001100 0C
FF      11111111
Subtotal 00001011 0B
00      00000000
00001011 0B Final check sum value
    
```

6 Technical Specifications

Model	PT1111M/PT1121M	PT1111H/PT1121H
Image sensor	1/3" Color CCD	1/3" High resolution Color CCD
Picture Elements	NTSC: 512*492/ PAL: 512*582	NTSC: 771*492/ PAL: 753*582
Horizontal Resolution	380 TV Lines	480 TV Lines
H. Sync Frequency	NTSC: 15.734 KHz, PAL: 15.625 KHz	
V. Sync Frequency	NTSC: 59.94 KHz, PAL: 50 KHz	
Synchronization	Internal	
Minimum Illumination	1.0 Lux at F2.0	0.5 Lux at F2.0
Back Light Compensation	ON/OFF switch	
Electronic Shutter	AUTO, Range: 1/50(1/60) ~ 1/100,000 sec.	
Auto Gain Control	AUTO	
Flickerless	ON/OFF switch (Optional)	
Video Output	1 Vp-p, 75 Ohms	
Lens	Standard: 6mm/F1.8 Option: 3.6, 8, 12 mm/F2.0	
Pan Angle	-135° ~ +135°	
Pan Speed	2°- 65°/sec.	
Tilt Angle	-90° ~ +45°	
Tilt Speed	6°- 30°/sec.	
Control Interface	RS-485	
Address Setting	1-254	
Dimensions	115mm(L)*105mm(W)*110mm(H)	
Weight	Net. 390g.	
Power	12V DC	
EMI & Safety	CE, FCC	

Table A. Pelco D Protocol Receiver Address

CAMERA ADDRESS	SWITCH SETTING							
	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	ON	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
19	ON	ON	ON	OFF	ON	OFF	OFF	OFF
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
23	ON	ON	ON	ON	OFF	ON	OFF	OFF
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
26	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
27	ON	ON	ON	ON	ON	OFF	OFF	OFF
28	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
29	ON	OFF	ON	ON	ON	OFF	OFF	OFF
30	OFF	ON	ON	ON	ON	OFF	OFF	OFF
31	ON	ON	ON	ON	ON	OFF	OFF	OFF
32	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
33	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
34	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
35	ON	ON	ON	OFF	OFF	ON	OFF	OFF
36	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
37	ON	OFF	ON	OFF	OFF	ON	OFF	OFF
38	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
39	ON	ON	ON	OFF	OFF	ON	OFF	OFF
40	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
41	ON	OFF	OFF	ON	OFF	ON	OFF	OFF
42	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
43	ON	ON	ON	ON	OFF	ON	OFF	OFF
44	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
45	ON	OFF	ON	ON	OFF	ON	OFF	OFF
46	OFF	ON	ON	ON	OFF	ON	OFF	OFF
47	ON	ON	ON	ON	OFF	ON	OFF	OFF
48	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
49	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
50	OFF	ON	OFF	OFF	ON	ON	OFF	OFF
51	ON	ON	ON	OFF	ON	ON	OFF	OFF
52	OFF	OFF	ON	OFF	ON	ON	OFF	OFF
53	ON	OFF	ON	OFF	ON	ON	OFF	OFF
54	OFF	ON	ON	OFF	ON	ON	OFF	OFF
55	ON	ON	ON	OFF	ON	ON	OFF	OFF
56	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
57	ON	OFF	OFF	ON	ON	ON	OFF	OFF
58	OFF	ON	OFF	ON	ON	ON	OFF	OFF
59	ON	ON	OFF	ON	ON	ON	OFF	OFF
60	OFF	OFF	ON	ON	ON	ON	OFF	OFF
61	ON	OFF	ON	ON	ON	ON	OFF	OFF
62	OFF	ON	ON	ON	ON	ON	OFF	OFF
63	ON	ON	ON	ON	ON	ON	OFF	OFF
64	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
65	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
66	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
67	ON	ON	ON	OFF	OFF	ON	OFF	OFF
68	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
69	ON	OFF	ON	OFF	OFF	ON	OFF	OFF
70	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
71	ON	ON	ON	OFF	OFF	ON	OFF	OFF
72	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
73	ON	OFF	OFF	ON	OFF	ON	OFF	OFF
74	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
75	ON	ON	OFF	ON	OFF	ON	OFF	OFF
76	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
77	ON	OFF	ON	ON	OFF	ON	OFF	OFF
78	OFF	ON	ON	ON	OFF	ON	OFF	OFF
79	ON	ON	ON	ON	OFF	ON	OFF	OFF
80	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
81	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
82	OFF	ON	OFF	OFF	ON	ON	OFF	OFF
83	ON	ON	OFF	OFF	ON	ON	OFF	OFF
84	OFF	OFF	ON	OFF	ON	ON	OFF	OFF

CAMERA ADDRESS	SWITCH SETTING							
	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
85	ON	OFF	ON	OFF	ON	OFF	ON	OFF
86	OFF	ON	ON	OFF	ON	OFF	ON	OFF
87	ON	ON	ON	OFF	ON	OFF	ON	OFF
88	OFF	OFF	OFF	ON	ON	OFF	ON	OFF
89	ON	OFF	OFF	ON	ON	OFF	ON	OFF
90	OFF	ON	OFF	ON	ON	OFF	ON	OFF
91	ON	ON	OFF	ON	ON	OFF	ON	OFF
92	OFF	OFF	ON	ON	ON	OFF	ON	OFF
93	ON	OFF	ON	ON	ON	OFF	ON	OFF
94	OFF	ON	ON	ON	ON	OFF	ON	OFF
95	ON	ON	ON	ON	ON	OFF	ON	OFF
96	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
97	ON	OFF	OFF	OFF	OFF	ON	ON	OFF
98	OFF	ON	OFF	OFF	OFF	ON	ON	OFF
99	ON	ON	OFF	OFF	OFF	ON	ON	OFF
100	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
101	ON	OFF	ON	OFF	OFF	ON	ON	OFF
102	OFF	ON	ON	OFF	OFF	ON	ON	OFF
103	ON	ON	ON	OFF	OFF	ON	ON	OFF
104	OFF	OFF	OFF	ON	OFF	ON	ON	OFF
105	ON	OFF	OFF	ON	OFF	ON	ON	OFF
106	OFF	ON	OFF	ON	OFF	ON	ON	OFF
107	ON	ON	ON	ON	OFF	ON	ON	OFF
108	OFF	OFF	ON	ON	OFF	ON	ON	OFF
109	ON	OFF	ON	ON	OFF	ON	ON	OFF
110	OFF	ON	ON	ON	OFF	ON	ON	OFF
111	ON	ON	ON	ON	OFF	ON	ON	OFF
112	OFF	OFF	OFF	OFF	ON	ON	ON	OFF
113	ON	OFF	OFF	OFF	ON	ON	ON	OFF
114	OFF	ON	OFF	OFF	ON	ON	ON	OFF
115	ON	ON	OFF	OFF	ON	ON	ON	OFF
116	OFF	OFF	ON	OFF	ON	ON	ON	OFF
117	ON	OFF	ON	OFF	ON	ON	ON	OFF
118	OFF	ON	ON	OFF	ON	ON	ON	OFF
119	ON	ON	ON	OFF	ON	ON	ON	OFF
120	OFF	OFF	OFF	ON	ON	ON	ON	OFF
121	ON	OFF	OFF	ON	ON	ON	ON	OFF
122	OFF	ON	OFF	ON	ON	ON	ON	OFF
123	ON	ON	OFF	ON	ON	ON	ON	OFF
124	OFF	OFF	ON	ON	ON	ON	ON	OFF
125	ON	OFF	ON	ON	ON	ON	ON	OFF
126	OFF	ON	ON	ON	ON	ON	ON	OFF
127	ON	ON	ON	ON	ON	ON	ON	OFF
128	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
129	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON
130	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON
131	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
132	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON
133	ON	OFF	ON	OFF	OFF	OFF	OFF	ON
134	OFF	ON	ON	OFF	OFF	OFF	OFF	ON
135	ON	ON	ON	OFF	OFF	OFF	OFF	ON
136	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
137	ON	OFF	OFF	ON	OFF	OFF	OFF	ON
138	OFF	ON	OFF	ON	OFF	OFF	OFF	ON
139	ON	ON	OFF	ON	OFF	OFF	OFF	ON
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141	ON	OFF	ON	ON	OFF	OFF	OFF	ON
142	OFF	ON	ON	ON	OFF	OFF	OFF	ON
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155	ON	ON	OFF	ON	ON	OFF	OFF	ON
156	OFF	OFF	ON	ON	ON	OFF	OFF	ON
157	ON	OFF	ON	ON	ON	OFF	OFF	ON
158	OFF	ON	ON	ON	ON	OFF	OFF	ON
159	ON	ON	ON	ON	ON	OFF	OFF	ON
160	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
161	ON	OFF	OFF	OFF	OFF	ON	OFF	ON
162	OFF	ON	OFF	OFF	OFF	ON	OFF	ON
163	ON	ON	OFF	OFF	OFF	ON	OFF	ON
164	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
165	ON	OFF	ON	OFF	OFF	ON	OFF	ON
166	OFF	ON	ON	OFF	OFF	ON	OFF	ON
167	ON	ON	ON	OFF	OFF	ON	OFF	ON
168	OFF	OFF	OFF	ON	OFF	ON	OFF	ON

CAMERA ADDRESS	SWITCH SETTING							
	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
169	ON	OFF	OFF	ON	OFF	ON	OFF	ON
170	OFF	ON	OFF	ON	OFF	ON	OFF	ON
171	ON	ON	ON	OFF	ON	OFF	ON	OFF
172	OFF	OFF	ON	ON	OFF	ON	OFF	ON
173	ON	OFF	ON	ON	OFF	ON	OFF	ON
174	OFF	ON	ON	ON	OFF	ON	OFF	ON
175	ON	ON	ON	ON	OFF	ON	OFF	ON
176	OFF	OFF	OFF	OFF	ON	ON	OFF	ON
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178	OFF	ON	OFF	OFF	ON	ON	OFF	ON
179	ON	ON	OFF	OFF	ON	ON	OFF	ON
180	OFF	OFF	ON	OFF	ON	ON	OFF	ON
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192	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
193	ON	OFF	OFF	OFF	OFF	OFF	ON	ON
194	OFF	ON	OFF	OFF	OFF	OFF	ON	ON
195	ON	ON	OFF	OFF	OFF	OFF	ON	ON
196	OFF	OFF	ON	OFF	OFF			

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