Pan Tilt Control Commands with Pelco D Protocol

Pelco D commands format： **0xFF add cmd1 cmd2 data1 data2 sum**

0xFF is synchronization character,add is address,cmd1、cmd2 are command characters, data1、data2 are data characters, sum are characters besides 0xFF and lower eight bits.

1. Basic control commands：

1.1 Up： FF add 00 08 00 data2 sum

data2 is speed level of up rotation, range： 0x00-0x3F

1.2 Down： FF add 00 10 00 data2 sum

data2 is speed level of down rotation, range：0x00-0x3F

1.3 Left： FF add 00 04 data1 00 sum

data1 is speed level of left rotation, range： 0x00-0x3F

1.4 Right： FF add 00 02 data1 00 sum

data1 is speed level of right rotation, range：0x00-0x3F

1.5 Stop： FF add 00 00 00 00 sum

2. Extended Commands：

2.1 Set Preset： FF add 00 03 00 data2 sum

2.2 Call Preset： FF add 00 07 00 data2 sum

2.3 Delete Preset： FF add 00 05 00 data2 sum

2.4 Open Auxiliary Switch： FF add 00 09 00 data2 sum

2.5 Shut Auxiliary Switch： FF add 00 0B 00 data2 sum

3. Remote Reset

Reset Pan Tilt： FF add 00 0F 00 00 sum

4. Angle Position Query Commands with PelcoD：

Note： Below commands are based on address 1

4.1 Pan Position Query Command

Note： Send this command to pan tilt, and pan tilt will respond with current pan position after receiving the correct pan position query command.

Command Format： FF 01 00 51 00 00 52

4.2 Pan Position Response Command

Note： Pan tilt will respond with this command after receiving correct pan position query command, and this response command includes pan position.

Command format： FF 01 00 59 PMSB PLSB SUM

PMSB PLSB is hexadecimal number,SUM are other 5 bytes and lower bytes besides FF.

How to calculate position：

1、Convert PMSB、PLSB hexadecimal numberto decimal number；

2、Calculate Pdata=PMSB*256+PLSB；

3、Calculate actual position/angle： Pangle = Pdata÷100.

Pangle is absolute angle of current pan tilt position.

e.g.1

Send this command to pan tilt ：FF 01 00 51 00 00 52, pan tilt will responde with command： FF 01 00 59 00 64 BE

1、Convert PMSB = 0x00 PLSB = 0x64 to decimal number： PMSB = 0 PLSB = 100；

2、Pdata = PMSB *256 + PLSB = 0*256+100 = 100；

3、Pangle = Pdata÷100 = 1 ；

It means that absolute angle of current pan tilt position is 1°.

e.g.2

Send this command to pan tilt： FF 01 00 51 00 00 52, pan tilt will responde with command： FF 01 00 59 75 30 FF

1、Convert PMSB = 0x75 PLSB = 0x30 to decimal number： PMSB = 117 PLSB = 48；

2、Pdata = PMSB *256 + PLSB = 117*256+48 = 30000；

3、Pangle = Pdata÷100 = 300 ；

Then absolute angle of current pan tilt position is 300°.

4.3 Tilt Position Query Command

Note： Send this command to pan tilt, and pan tilt will respond with current pan position after receiving the correct pan position query command.

Command Format：FF 01 00 53 00 00 54

4.4 Tilt Position Response Command

Note： Pan tilt will respond with this command after receiving correct tilt position query command, and this response command includes tilt position.

Command Format：FF 01 00 5B TMSB TLSB SUM

TMSB TLSB is hexadecimal number,SUM are other 5 bytes and lower bytes besides FF.

How to calculate position：

1、Convert TMSB、TLSB hexadecimal numberto decimal number；；

2、Calculate Tdata1=TMSB*256+TLSB；

3、Compare Tdata2 and 18000.

If Tdata1 is bigger than 18000, then Tdata2 = 36000-Tdata1,

If Tdata1 is smaller than 18000, then Tdata2 = -Tdata1；

4、Calculate actual angle/position： Tangle = Tdata÷100.

Tangle will be absolute angle of current pan tilt tilt position.

e.g.1

Send this command FF 01 00 53 00 00 54 to pan tilt, pan tilt will respond with FF 01 00 5B 8A 63 49

1、Convert TMSB = 0x8A TLSB = 0x63 to decimal number： TMSB = 138 TLSB = 99；

2、Tdata1 = TMSB *256 + TLSB = 138*256+99 = 35427；

3、Because Tdata1>18000,then Tdata2 = 36000-Tdata1 = 36000-35427 = 573；

3、Tangle = Tdata2÷100 = 5.73°.

Then current absolute tilt angle of pan tilt will be 5.73°.

e.g.2

Send this command FF 01 00 53 00 00 54 to pan tilt, pan tilt will respond with FF 01 00 5B 00 64

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1、Convert TMSB = 0x00　TLSB = 0x64 to decimal number：　TMSB = 0　TLSB = 100；

2、Tdata1 = TMSB *256 + TLSB = 0*256+100 = 100

3、Because Tdata1<18000,then Tdata2 = -Tdata1 = -100；

3、Tangle = Tdata2÷100 = -1.00°.

Then current absolute tilt angle of pan tilt will be -1.00°.

5. Pelco D Absolute Position/Angle Control Commands

PelcoD absolute position control commands format：

Pan absolute control commands format：　FF ADD 00 4B DATA1 DATA2 SUM, it is to control pan tilt to go to a certain absolute pan position with a default speed.

Tilt absolute control commands format：FF ADD 00 4D DATA1 DATA2 SUM,作 it is to control pan tilt to go to a certain absolute tilt position with a default speed.

5.1 Absolute Pan Position Control

Command Format：FF ADD 00 4B DATA1 DATA2 SUM

In this command, (DATA1<<8) + DATA2=angle*100

e.g., Pan tilt address is 1, pan angle is 100°,control pan tilt to 10° position. Then send this command：　FF 01 00 4B 03 E8 37 to pan tilt, in which angle is 10°　Calculation is 10*100=1000=(0x03<<8)+0xE8[0x03, then DATA1,0xE8, then DATA2].

5.2Absolute Tilt Position Control

Command Format：FF ADD 00 4D DATA1 DATA2 SUM

In which, if it is - minus angle, (DATA1<<8) + DATA2=angle*100；

If it is + positive angle, (DATA1<<8) + DATA2=36000- angle*100.

e.g.,　pan tilt address is 1, tilt angle is 10°, and control pan tilt to -10° position. Then send this command：　FF 01 00 4D 03 E8 39 to pan tilt, because the angle is - minus angle as -10° calculation will be 为 10*100=1000=(0x03<<8)+0xE8[0x03, then DATA1,0xE8, then DATA2].

5.3 Absolute Pan and Tilt Control at the same time

Left-Up: FF add 00 0C data1 data2 sum

Left-Down: FF add 00 14 data1 data2 sum

Right-Up: FF add 00 0A data1 data2 sum

Right-Down: FF add 00 12 data1 data2 sum