FUJIFILM

Pelco-D Protocol Specification

for SX800, SX801

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Ver.2.51

FUJIFILM

Change history

Ver.	Date			Revision
2.5	2019/7/19			First version
2.51	2010/1/31			Add SX801as the applicable model, Add 5.7.15 Download Firmware

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1 Summary

This document specifies the Pelco-D protocol in FUJIFILM CCTV lens / cameras. The CCTV lens / cameras to which this version is applied are as follows.

Applicable model: Long Range Surveillance Camera "FUJIFILM SX800", "FUJIFILM SX801"

Note: The specification for “FUJIFILM SX801C” is partially different.

2 Overview

Pelco-D is a protocol proposed by Pelco, mainly for controlling a PTZ camera. It is a commonly published protocol and is adopted from SX800 because it is being standardized worldwide.

3 Overview about Pelco-D

The Pelco-D protocol is a master-slave type protocol, and up to 255 slaves can be connected to one master. The slave side does not transmit data without receiving a request from the master. The address that can be set as this specification is 31 patterns of 1 to 31 at maximum (※ RS485_ID is 1 to 31). Communication shall be set according to the following contents.

■ Serial data format

Baudrate: 2400, 4800, 9600, 19200, 38400, 115200

StartBit: 1

DataLength: 8

StopBit: 1

Parity: None

3.1 Send command format

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	—	—	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. CMND1 is an extension command (* When adding a command, register this)
4. CMND2 is a command for basic operation
5. Set DATA1 and DATA2 according to the contents of CMND1 and CMND2
6. Set the sum of 2nd to 6th Bytes in 8 bits to CKSM

3.2 Receive command format

The receive command format differs depending on the command. The commands defined by Pelco are as follows,

3.2.1 Receive command (General Response)

Reply as 4 Bytes data.

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

3.2.2 Receive command (Extended Response)

Reply as 7 Bytes data.

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	—	—	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set specific data for each commands to DATA1 and DATA2
5. Set the sum of ADDR to DATA2 in 8 bits is set to CKSM

3. 2. 3 Receive command (Query Response)

Reply as 18 Bytes data

Byte	1	2	3	····	17	18
	SYNC	ADDR	DATA1	····	DATA15	CKSM
	0xFF	—	—	····	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set specific data for each commands to DATA1 to DATA15
4. Set the sum of ADDR to DATA15 in 8 bits to CKSM

   * As for Query Serial Number command in this specification, set the sum of ADDR to DATA 15 in 8 bits to CKSM

3.2.4 Receive command

Reply as 7 Bytes data

* The difference from Extended Response (3.2.2) is that new CMD1 and CMD2 are used instead of CMD1 and CMD2 received in RESP1 and RESP2.

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	—	—	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set RESP1、RESP2
4. Set specific data for each commands to DATA1 and DATA2
5. Set the sum of 2nd to 6th Bytes in 8 bits to CKSM

4 Functional specifications

The address used for communication and the baud rate are switched from software by setting.

Address => 1 to 31 (When shipped from factory or after reset, RS485_ID=7 (= device setting ID))

Baud rate => 0 to 5 [Value: 0: 2400, 1: 4800, 2: 9600, 3: 19200, 4: 38400, 5: 115200] (When shipped from the factory or after reset, Baud rate is "2: 9600")

Pelco has specified that all commands of Standard Command described in the next chapter are automatically stopped after driving for up to 15 seconds for runaway detection, and this specification also follows this. As for timeout, if the drive command is received again before the timeout occurs, the timer is reset.

5 Command details

The commands are classified into commands defined by Pelco and commands uniquely defined in this specification.

The commands defined by Pelco are further classified into "**Standard Command**", "**Extended Command**", and "**Original Command**".

5.1 Standard Command

Basic commands defined by Pelco-D.

5.1.1 Send command

Since Bit3-Bit7 of CMND1 is not used in the latest Pelco-D, this specification does not support either.

Bit 0 to Bit 4 of CMND2 is used as a PTZ camera control command only when this camera is in HOST mode. (※ for pan head control)

Byte 3, CMND:1							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Sense	0	0	Auto/Manual Scan	Camera On/Off	Iris Close	Iris Open	Focus Near
Byte 4, CMND:2							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Focus Far	Zoom Wide	Zoom Tele	Down	Up	Left	Right	Always 0

5.1.2 Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2 Extended Command

Extended command specified by Pelco-D.

5.2.1 Set Zoom Speed

Command to change zoom speed

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x25	0x00	ZOOM_SPEED	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set the speed (ZOOM_SPEED) according to the purpose in DATA 2
6. Set the sum of 2nd to 6th Bytes in 8 bits to CKSM

■ Argument of ZOOM_SPEED

DATA2	Purpose
0x00	Slowest Speed(=Low Medium Speed)
0x01	Low Medium Speed
0x02	High Medium Speed
0x03	Highest Speed(=High Medium Speed)
Others	Low Medium Speed

* Zoom speed can be selected from 2 levels at this specification

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5. 2. 2 Set Focus Speed

Command to change focus speed

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x27	0x00	FOCUS_SPEED	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set the speed (FOCUS_SPEED) according to the purpose in DATA 2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of FOCUS_SPEED

DATA2	Purpose
0x00	Slowest Speed(=High Medium Speed)
0x01	Low Medium Speed(=High Medium Speed)
0x02	High Medium Speed
0x03	Highest Speed(=High Medium Speed)
Others	High Medium Speed

* Focus speed can be selected only 1 level at this specification

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.3 Auto focus on/off

Command to switch auto focus on / off / quick AF

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x2B	0x00	AUTO F_CTL	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set AUTO F_CTL to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ AUTO F_CTL 引数

DATA2	Purpose
0x00	AF on
0x01	AF off (MF)
0x02	Quick AF
Others	AF on

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.4 Auto Iris on/off

Command to switch auto iris on / off

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x2D	0x00	AUTO I_CTL	—

1. Always set 0xFF to SYNC
2. Set 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set AUTO I_CTL to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of AUTO I_CTL

DATA2	Purpose
0x00	Off (Manual iris)
0x01	On (Auto iris)
Others	On (Auto iris)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.5 AGC auto/on/off

Command to switch AGC standard/off/Hyper

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x2F	0x00	AGC_CTL	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set AGC_CTL to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of AGC_CTL

DATA2	Setting
0x00	Standard
0x01	Off
0x02	Hyper
Others	Standard

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.6 Backlight compensation on/off

Command to switch backlight compensation on / off

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x31	0x00	BLC_CTL	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set BLC_CT to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of BLC_CT

DATA2	Purpose
0x00	OFF
0x01	1: Soft
0x02	2: Hard
Others	OFF

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.7 <Reserved>

5. 2. 8 Set Zoom Position

Command to set zoom position

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x4F	ZOOM_P MSB	ZOOM_P LSB	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set the zoom position (MSB) according to the purpose to DATA1
5. Set the zoom position (LSB) according to the purpose to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of ZOOM_P

DATA1,DATA2	Purpose
0～65535	Zoom Position

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5.2.9 Set Remote Baud Rate

Command to set Remote baud rate

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x67	0x00	SET B_RARE	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the baud rate according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. Set the baud rate accordance with the oppose to DATA2
6. Set the sum of ADDT to DATA2 in 8 bits to CKSM

■ Argument of SET B_RARE

DATA	Baud rate
0x00	2400
0x01	4800
0x02	9600(Default)
0x03	19200
0x04	38400
0x05	115200
Others	9600

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0xoo to ALARMS
4. Set the sum of the received CKSM and ALARMS in 8 bits to CKSM

5. 2. 10 Time Set Opcode

Command to set the clock and get the report of clock setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	SUB OP CODE	0x77	Various	Various	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set SUB OP CODE to CMND1
4. Set the command accordance with the purpose to CMND2
5. Set the value which are selected by SUB OP CODE to DATA1 and DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of SUB OP CODE

Set binary numbers to Second, Minute, Hour, Month, Day, and Year.
In addition, for example, when 24 or more numbers is put into Hour, it is ignored.

CMND1	DATA1	DATA2	Purpose
0x00	Second		Set second (0x00-0x3B) and synchronize time
0x01	0x00	0x00	Report second
0x02	Hour	Minute	Set hour(0x00-0x17) and minute
0x03	0x00	0x00	Report hour and minute
0x04	Month	Day	Set month(0x01-0x0C) and date(0x01-0x1F)
0x05	0x00	0x00	Report month and date
0x06	Year		Set year (2019 => 0x07E3)
0x07	0x00	0x00	Report year
Other	0x00	0x00	Invalid (no reaction)

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	—	—	Various	Various	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. As for RESP1, set 0x01(ACK) or 0x00(NAK) when setting and set received CMND1 when getting the report.
4. As for RESP2, set 0x01 when setting, and set received CMND2 when getting the report.
5. Set the value selected by SUB OP CODE to DATA1 and DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of SUB OP CODE

CMND1 of Send command	RESP1	RESP2	DATA1	DATA2	Purpose
0x00	0x01 or 0x00	0x01	0x00	0x00	Receive second (0x00-0x3B) and synchronize time
0x01	0x01	0x77	Second		Report second
0x02	0x01 or 0x00	0x01	0x00	0x00	Set hour(0x00-0x17) and minute
0x03	0x03	0x77	Hour	Minute	Report hour and minute
0x04	0x01 or 0x00	0x01	0x00	0x00	Set month(0x01-0x0C) and date(0x01-0x1F)
0x05	0x05	0x77	Month	Day	Report month and date
0x06	0x01 or 0x00	0x00	0x00	0x00	Set year (2019 => 0x07E3)
0x07	0x07	0x77	Year		Report year
Other	0x00	0x00	0x00	0x00	Invalid (no reaction)

5.3 FF Extended Command (Original commands of this specification)

Commands specified by FF (FUJIFILM) in Extended Command

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.3.1 Query Focus Position

Command to get the focus position

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x81	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2(for Response)
5. Set the sum of ADDR to DATA2 in 8bit to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x81	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2.
4. Set requested value to DATA1 and DATA2 (Ex. 0xFF00 -> DATA1:0xFF、DATA2、0x00)
5. CKSM is the sum of ADDR to DATA2 in 8bit

5.3.2 Query Zoom Position

Command to get the zoom position

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x83	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (for Response)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x83	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND2 and CMND2 to RESP1 and RESP2
4. Set requested value to DATA1 and DATA2 (Ex. 0xFF00 →DATA1:0xFF、DATA2、0x00)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

5.3.3 <Reserved>

5.3.4 <Reserved>

5.3.5 **Query Serial Number**

Command to get Serial number

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x89	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7	8	9	10	11 - 17	18
	SYNC	ADDR	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7	DATA8	DATA9-DATA15	CKSM
	0xFF	—	—	—	—	—	—	—	—	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set Serial number as ASCII codes to DATA1 to DATA8
4. Set 0x00 to DATA9 to DATA15
5. Set the sum of ADDR to DATA15 in 8 bits to CKSM (* Note that it is different from Query Response)

5.3.6 Query Few Version

Command to get FW (Firmware) Version

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x8B	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (For Response)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x8B	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set major version to DATA and minor version to DATA2 (Ex. Ver1.10=DATA1:0x01,DATA2:0x10, Ver2.0A=DATA1:0x02,DATA2:0x0A)
5. Set the sum of ADDT to DATA2 in 8 bits to CKSM

5.3.7 Query Lens Status

Command to get the lens status

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x8D	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (For Response)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x8D	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set the lens status to DATA (See below)
5. Set 0x00 to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ DATA1 format

DATA1	Lens status	
0x00	No error	the lens work normally
0x01	Lens error	the zoom and/or the focus was stopped forcibly

5.3.8 Set Focus Position

Command to get the focus position

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x8F	FOCUS MSB	FOCUS LSB	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. As for DATA1 and DATA2, see below
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

DATA1	Value
0x00～0xFF	FOCUS MSB

DATA2	内容
0x00～0xFF	FOCUS LSB

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of received CKSM and ALARMS to CKSM

5.3.9 Set Manual Iris

Command to set F number

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x91	0x00	MANU_FNO	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. As for DATA2, see below
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

DATA2	F number (at the wide end)
0x01	F4
0x02	F4.5
0x03	F5.0
0x04	F5.6
0x05	F6.3
0x05	F7.1
0x07	F8
0x08	F9
0x09	F10

0x0A	F12
0x0B	F13
0x0C	F14
0x0D	F16
Others	F5.6

■ Received command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of received CKSM and ALARMS to CKSM

5. 3. 10 Set Shutter Limit on Auto

Command to set the lowest limit of the shutter sped at AE

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0x00	0x93	0x00	A_SHUT_LIM	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. As for DATA2, see below
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

DATA2	Value
0x00	Manual shutter : The value set by SetManualShutterSpeed command (0x00,0x95)
0x01	Auto shutter : Lowest limit 1/8 sec
0x02	Auto shutter : Lowest limit 1/15 sec
0x03	Auto shutter : Lowest limit 1/30 sec
0x04	Auto shutter : Lowest limit 1/60 sec
0x05	Auto shutter : Lowest limit 1/125 sec
Others	Auto shutter : Lowest limit 1/30 sec

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of received CKSM and ALARMS to CKSM

5. 3. 11 Set Manual Shutter Speed

Command to set the shutter speed

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x95	0x00	MANU_SHUT	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. As for DATA2, see below
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

DATA2	Shutter sped (MANU_SHUT) [sec]
0x01	1
0x02	1/1.3
0x03	1/1.6
0x04	1/2
0x05	1/2.5
0x06	1/3
0x07	1/4
0x08	1/5
0x09	1/6
0x0A	1/8
0x0B	1/10
0x0C	1/13
0x0D	1/15
0x0E	1/20
0x0F	1/25
0x10	1/30
0x11	1/40
0x12	1/50
0x13	1/60
0x14	1/80
0x15	1/100
0x16	1/120

0x17	1/125
0x18	1/160
0x19	1/200
0x1A	1/250
0x1B	1/320
0x1C	1/400
0x1D	1/500
0x1E	1/640
0x1F	1/800
0x20	1/1000
0x21	1/1250
0x22	1/1600
0x23	1/2000
0x24	1/2500
0x25	1/3200
0x26	1/4000
0x27	1/5000
0x28	1/6400
0x29	1/8000
0x2A	1/10000
0x2B	1/12800
0x2C	1/16000
0x2D	1/20000
Others	1/30

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of received CKSM and ALARMS to CKSM

5.3.12 Query Manual Shutter Speed

Command to get the shutter speed setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x97	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (For Response)
5. Set the sum of ADDT to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x97	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set the shutter speed value to DATA1 (See below)
5. Set 0x00 to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Shute speed value for DATA1

DATA1	Shutter speed value [sec]
0x01	1
0x02	1/1.3
0x03	1/1.6
0x04	1/2
0x05	1/2.5
0x06	1/3
0x07	1/4
0x08	1/5
0x09	1/6
0x0A	1/8
0x0B	1/10
0x0C	1/13
0x0D	1/15
0x0E	1/20
0x0F	1/25
0x10	1/30
0x11	1/40
0x12	1/50
0x13	1/60
0x14	1/80
0x15	1/100
0x16	1/120

0x17	1/125
0x18	1/160
0x19	1/200
0x1A	1/250
0x1B	1/320
0x1C	1/400
0x1D	1/500
0x1E	1/640
0x1F	1/800
0x20	1/1000
0x21	1/1250
0x22	1/1600
0x23	1/2000
0x24	1/2500
0x25	1/3200
0x26	1/4000
0x27	1/5000
0x28	1/6400
0x29	1/8000
0x2A	1/10000
0x2B	1/12800
0x2C	1/16000
0x2D	1/20000

5. 3. 13 Set Manual ISO

Command to set the ISO speed (sensitivity)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x99	0x00	MANU_ISO	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1
5. As for DATA2, see below
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ ISO speed value (MANU_ISO for DATA2

DATA2	ISO speed (MANU_ISO)
0x01	ISO 400
0x02	ISO 500
0x03	ISO 640
0x04	ISO 800
0x05	ISO 1000
0x05	ISO 1250
0x07	ISO 1600
0x08	ISO 2000
0x09	ISO 2500

0x0A	ISO 3200
0x0B	ISO 4000
0x0C	ISO 5000
0x0D	ISO 6400
0x0E	ISO 8000
0x0F	ISO 10000
0x10	ISO 12800
0x11	ISO 25600
0x12	ISO 51200
0x13	ISO 102400
0x14	ISO 204800
0x15	ISO 409600
0x16	ISO 819200
Others	ISO 400

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to ALARMS
4. Set the sum of received CKSM and ALARMS to CKSM

5.3.14 Query Manual ISO

Command to get the ISO speed value

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x9B	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (for Response)
5. Set the sum of ADDT to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x9B	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set Manual ISO speed value to DATA1 (see below)
5. Set 0x00 to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ ISO speed value for DATA1

DATA1	ISO speed
0x01	ISO 400
0x02	ISO 500
0x03	ISO 640
0x04	ISO 800
0x05	ISO 1000
0x05	ISO 1250
0x07	ISO 1600
0x08	ISO 2000
0x09	ISO 2500
0x0A	ISO 3200
0x0B	ISO 4000
0x0C	ISO 5000
0x0D	ISO 6400
0x0E	ISO 8000
0x0F	ISO 10000
0x10	ISO 12800
0x11	ISO 25600
0x12	ISO 51200
0x13	ISO 102400
0x14	ISO 204800
0x15	ISO 409600
0x16	ISO 819200

5.3.15 Query Manual Iris

Command to get the F value of the iris

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x9D	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 and DATA2 (for Response)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x9D	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set received CMND1 and CMND2 to RESP1 and RESP2
4. Set F value of the iris to DATA1 (See below)
5. Set 0x00 to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ F value of iris for DATA1

DATA1	F value at the wide end
0x01	F4
0x02	F4.5
0x03	F5.0
0x04	F5.6
0x05	F6.3
0x05	F7.1
0x07	F8
0x08	F9
0x09	F10
0x0A	F12
0x0B	F13
0x0C	F14
0x0D	F16

5.3.16 <Reserved>

5.3.17 <Reserved>

5.3.18 <Reserved>

5.3.19 <Reserved>

5.3.20 <Reserved>

5.3.21 <Reserved>

5.3.22 <Reserved>

5. 3. 23 Query Manual Setting (Query Manual Setting Response)

Command to get various setting status

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0xAD	—	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the query target CMND2 to DATA1 (the CMND2 values, see below)
4. Set 0x00 to DATA2
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0xAF	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to RESP1
4. Set 0xAF to RESP2
5. Set requested value to DATA1 and DATA2 (See below for the value).
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

CMND2 set by send command	DATA1 set by receive command	DATA2 set by receive command	Setting
0x25	0x00	ZOOM_SPEED	Zoom speed
0x27	0x00	FOCUS SPEED	Focus speed
0x2B	0x00	AUTO F_CTL	AF On / Off / Quick AF
0x2D	0x00	AUTO I_CTL	Auto iris On / Off
0x2F	0x00	AGC_CTL	AGC Standard / Off / Hyper
0x31	0x00	BLC_CTL	Backlight compensation On / Off
0x4F	ZOOM MSB	ZOOM LSB	Zoom position
0x8F	FOCUS MSB	FOCUS LSB	Focus position
0x91	0x00	MANU_FNO	F value of iris
0x93	0x00	A_SHUT_LIM	Slowest limit shutter speed at AE
0x95	0x00	MANU_SHUT	Shutter sped
0x99	0x00	MANU_ISO	ISO speed
Others			Invalid

5.4 Original Command1 (Original commands of this specification: No.1: Photo Setting)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.4.1 Set AF Area

Command to set AF area

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x03	0x00	FOCUS AREA	—

1. Set 0x00 to DATA1
2. Set 0 to 9 as FUCUS AREA to DATA2

■ Argument of FOCUS AREA

DATA2	Area
0x00	Center (Fixed)
0x01	Upper left
0x02	Upper center
0x03	Upper right
0x04	Middle left
0x05	Middle of middle
0x06	Middle right
0x07	Lower left
0x08	Lower center
0x09	Lower right
Others	Center (Fixed)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

5.4.2 Set AF Sensitivity

Command to set sensitivity at AF

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x05	0x00	SENS GAIN	—

1. Set 0x00 to DATA1
2. Set 1 to 3 as SENS GAIN to DATA2

■ Argument of SENS GAIN

DATA2	Sensitivity
0x01	Low
0x02	Middle
0x03	High
Others	Low

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.3 One-push AF

Command to execute One-push AF (Valid when Auto focus is Off)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x07	0x00	ONE_AF	—

1. Set 0x00 to DATA1
2. Set ONE_AF to DATA2

■ Argument of ONE_AF

DATA2	Operation
0x00	Execute One-push AF
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.4 <Reserved>

5.4.5 <Reserved>

5.4.6 Set Auto Day/Night Control Mode

Set threshold of Day/Night

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x0D	0x00	DN MODE	—

1. Set 0x00 to DATA1
2. Set 0 t0 3 as DN MODE to DATA2

■ Argument of DN MODE

DATA2	Threshold
0x01	Dark
0x02	Middle
0x03	Bright
Others	Middle

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.7 Set Manual Day/Night

Command to set Day / night manually

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x0F	0x00	DN SET	—

1. Set 0x00 to DATA1
2. Set 1 to 4 as DN SET to DATA2
3. Set the sum of 2nd to 6th Bytes in 8 bit to CKSM

■ Argument of DN SET

DATA2	Day /Night Setting
0x00	Auto
0x01	Day
0x02	Night
Others	Day

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.8 Set Infrared WaveLength

Command to set Infrared wavelength

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x11	0x00	IWL SET	—

1. Set 0x00 to DATA1
2. Set 1 to 4 as IWL SET to DATA2

■ Argument of IWL SET

DATA2	目的
0x00	Visible light
0x01	950 nm
0x02	940 nm
0x03	850 nm
0x04	808 nm
Others	Visible light

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.9 Set OIS Mode

Command to set ON / OFF of OIS and EIS

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x13	0x00	OIS MODE	—

1. Set 0x00 to DATA1
2. Set 0 to 3 as OIS MODE to DATA2

■ Argument of OIS MODE

DATA2	Setting
0x01	AUTO(default)
0x02	Only OIS ON
0x03	Only EIS ON
0x04	Off
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.10 <Reserved>

5.4.11 Set Photo Mode Preset

Command to set Photo mode preset

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x17	0x00	PHOTO_PRST	—

1. Set 0x00 to DATA1
2. Set 1 or 2 as PHOT_PRST to DATA2

■ Argument of PHOTO_PRST

DATA2	Purpose
0x01	Surveillance (Focus on resolution)
0x02	Movie (General image quality)
Others	Surveillance

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.12 Set DayNight Control by External

Command to switch Day / Night by DayNight trigger signal forcibly

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x19	0x00	EX_TGER	—

1. Set 0x00 to DATA1
2. Set 1 or 2 as EX_TGER to DATA2

■ Argument of EX_TGER

DATA2	Setting
0x01	On (DayNight trigger: valid) VLC filter
0x02	On (DayNight trigger : valid) CLEAR filter (Raw glass)
0x03	Off (DayNight trigger : invalid)
Others	Off (DayNight trigger : invalid)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.4.13 <Reserved>

5.4.14 Query Photo Setting (Query Photo Setting Response)

Command to get the camera setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x1D	—	0x00	—

1. Set CMND2 of question target to DATA1 (See below for the contents of CMND2)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x1F	—	—	—

1. Set 0xF0 to RESP1
2. Set 0x1F to RESP2
3. Set the value according to the request to DATA1 and DATA2 (See below for the response)

CMND2 set by Send command	DATA1 set by Receive command	DATA2 set by Receive command	Setting
0x03	0x00	0~9	AF area setting
0x05	0x00	1~3	Sensitivity setting at AF
0x07	0x00	AF_STATUS	AF status when One-Push AF 0x00: Finished 0x01 In process 0xFF: Abnormally
0x0D	0x00	0~3	Threshold of Day/Night
0x0F	0x00	1~4	Day / Night setting manually
0x11	0x00	0~6	IR filter setting
0x13	0x00	0~3	On / Off setting of OIS
0x17	0x00	1~2	Preset of capture mode
0x19	0x00	1~2	Day / Night swatch by DayNight trigger
Others			Invalid

5.5 Original Command2 ((Original commands of this specification: No.2: Image Quality Parameter)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.5.1 Set VLC Filter

Command to set the VLC (Visible Light Cut) filter

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x21	0x00	VLC FL	—

1. Set 0x00 to DATA1
2. Set VLC FL to DATA2

■ Argument of VLC FL

DATA2	Setting
0x00	Off
0x01	On
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.2 Set WideDynamicRange

Command to set the dynamic range

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x23	0x00	D_RANGE	—

1. Set 0x00 to DATA1
2. Set D_RANGE to DATA2

■ Argument of D_RANGE

DATA2	Setting
0x01	Off
0x02	1
0x03	2
Other	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.3 <Reserved>

5.5.4 Set DeHeatHaze Mode

Command to change De-heat haze mode

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x27	0x00	DE_HEAT_MODE	—

1. Set 0x00 to DATA1
2. Set DE_HEAT_MOD to DATA2

■ Argument of DE_HEAT_MODE

DATA2	Mode
0x00	Off
0x01	1
0x02	2
0x03	3
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.5 Set Defogging Mode

Command to change De-fogging mode

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x29	0x00	DE_FOG_MODE	—

1. Set 0x00 to DATA1
2. Set DE_FOG_MODE to DATA2

■ Argument of DE_FOG

DATA2	Mode
0x00	Off
0x01	1
0x02	2
0x03	3
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.6 Set Brightness Level

Command to set the brightness

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0xF0	0x2B	0x00	BRIGHT_LV	－

1. Set 0x00 to DATA1
2. Set BRIGHT_LV to DATA2

■ Agreement of BRIGHT_LV

DATA2	Setting
0x01	1: Darkest
0x02	2
0x03	3
0x04	4
0x05	5
0x06	6
0x07	7
0x08	8
0x09	9
0x0A	10
0x0B	11 (Center : default)

0x0C	12
0x0D	13
0x0E	14
0x0F	15
0x10	16
0x11	17
0x12	18
0x13	19
0x14	20
0x15	21 : Brightest
Others	11

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.7 Set Contrast Level

Command to set the contrast

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x2D	0x00	CONT_LV	—

1. Set 0x00 to DATA1
2. Set CONT_LV to DATA2

■ Argument of CONT_LV

DATA2	Setting
0x01	1 : Lowest
0x02	2
0x03	3
0x04	4
0x05	5 : Highest
Others	3

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.8 Set ColorSaturation Level

Command to set the color saturation level

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x2F	0x00	COLOR_ST_LV	—

1. Set 0x00 to DATA1
2. Set COLOR_ST_LV to DATA2

■ Argument of COLOR_ST_LV

DATA2	Setting
0x01	1 : Lowest
0x02	2
0x03	3
0x04	4
0x05	5 : Highest
Others	3

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.9 Set Sharpness Level

Command to set the sharpness

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x31	0x00	SHARP_LV	—

1. Set 0x00 to DATA1
2. Set SHARP_LV to DATA2

■ Argument of SHARP_LV

DATA2	Setting
0x01	1 : Softest
0x02	2
0x03	3
0x04	4
0x05	5 : Hardest
Others	4

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.10 Set ColorTemperature on WhiteBalance

Command to set the color temperature on the white balance

This command becomes effective when ColorTemperature (0x06) is set to DATA2 by Set Select WhiteBalance.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x33	0x00	C_WB_TEMP	—

1. Set 0x00 to DATA1
2. Set C_WB_TMP to DATA2

■ Argument of C_WB_TMP

DATA	Setting
0x01	3000K
0x02	5000K
0x03	9000K
Others	5000K

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5. 5. 11 Set Select WhiteBalance

Command to set the white balance

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x35	0x00	WB_SEL	—

1. Set 0x00 to DATA1
2. Set WB_SEL to DATA2

■ Argument of WB_SEL

DATA2	Setting
0x01	Auto
0x02	Custom1 (Read preset, which can be set only by SDI menu)
0x03	Custom2 (Read preset, which can be set only by SDI menu)
0x04	Day
0x05	Cloud
0x06	ColorTemperature (Set the color temperature by Set ColorTemperature on WhiteBalance)
Others	Auto

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.12 Set Digital Zoom

Command to switch the digital zoom

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x37	0x00	D_ZOOM	—

1. Set 0x00 to DATA1
2. Set D_ZOOM to DATA2

■ Argument of D_ZOOM

DATA2	Digital zoom
0x00	Off
0x01	On
Others	Off

■ Receive mode

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.13 Set NR Level

Command to set the noise reduction level

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x39	0x00	NR_LEV	—

1. Set 0x00 to DATA1
2. Set NR_LEV to DATA2

■ Argument of NR_LEV

DATA2	Level
0x01	1: Weak
0x02	2: Middle
0x03	3: Strong
Others	2: Middle

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.5.14 <Reserved>

5.5.15 Query ImageQuality Setting (Query ImageQuality Setting Response)

Command to get the image quality setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x3D	—	0x00	—

1. Set CMND2 of question target to DATA1 (See below for the content of CMND2)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x3F	—	—	—

1. Set 0xF0 to RESP1
2. Set 0x3f to RESP2
3. Set values according to the requested content in DATA1 and DATA2 (see below for the response content)

CMND2 set by send command	DATA1 set by receive command	DATA2 set by receive command	Setting
0x21	0x00	0～2	VLC
0x23	0x00	1～3	Dynamic range
0x27	0x00	0~5	Heat haze level
0x29	0x00	0~5	De-fog level
0x2B	0x00	1~5	Brightness
0x2D	0x00	1~5	Contrast
0x2F	0x00	1~5	Color saturation
0x31	0x00	1~5	Sharpness
0x33	0x00	C_WB_TEMP	Color temperature
0x35	0x00	1~6	White balance
0x37	0x00	0~2	Digital zoom
0x39	0x00	1~3	Noise reduction
Others			Invalid

5.6 Original Command2 (Original commands of this specification: No.2: ImageQuality Parameter)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.6.1 <Reserved>

5.6.2 Set DayTime Display

Command to set data and time 日時を表示するコマンド

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0xF0	0x43	0x00	TIME_DISP SW	－

1. Set 0x00 to DATA1
2. Set TIME_DISP SW to DATA2

■ Argument of TIME_DISP SW

DATA2	SW
0x00	Off
0x01	On
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

5.6.3 Set DisplayPosition of DayTime

Command to set the display position of DateTime

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x45	0x00	TIME_DISP POS	—

1. Set 0x00 to DATA1
2. Set TIME_DISP POS to DATA2

■ Argument of TIME_DISP POS

DATA2	Position
0x01	Upper right
0x02	Lower right
0x03	Upper left
0x04	Lower left
Others	Upper right

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.4 Set Title Display

Command to display the title

* The title can be set by SDI menu. See the operation manual.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x47	0x00	TITLE_DISP SW	—

1. Set 0x00 to DATA1
2. Set TITLE_DISP SW to DATA2

■ Argument of TITLE_DISP SW

DATA2	Display
0x00	Off
0x01	On
Other	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.5 <Reserved>

5.6.6 Set DisplayPosition of Title

Command to set the position of the title display

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x4B	0x00	TITLE_DISP POS	—

1. Set 0x00 to DATA1
2. Set TITLE_DISP POS to DATA2

■ Argument of TITLE_DISP POS

DATA2	Position
0x01	Upper right
0x02	Lower right
0x03	Upper left
0x04	Lower left
Others	Upper right

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.7 Set ID Display

Command to display ID

* The ID can be set by SDI menu. See the operation manual.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x4D	0x00	DISP_ID SW	—

1. Set 0x00 to DATA1
2. Set DISP_ID SW to DATA2

■ Argument of DISP_ID SW

DATA2	Display
0x00	Off
0x01	On
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.8 Set DisplayPosition of ID

Command to set the display position of ID

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x4F	0x00	ID_DISP POS	—

1. Set 0x00 to DATA1
2. Set ID_DISP POS to DATA2

■ Argument of ID_DISP POS

DATA2	Position
0x01	Upper right
0x02	Lower right
0x03	Upper center
0x04	Lower center
0x05	Upper left
0x06	Lower left
Others	Upper right

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.9 Set Center Position Display

Command to display the mark in the middle

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x51	0x00	DISP_C_POS SW	—

1. Set 0x00 to DATA1
2. Set DISP_C_POS SW to DATA2

■ Argument of DISP_C_POS SW

DATA2	Display
0x00	Off (Default)
0x01	On
Others	Off

* Display is OFF after turn on (does not hold the previous setting)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.6.10 <Reserved>

5.6.11 <Reserved>

5.6.12 <Reserved>

5.6.13 <Reserved>

5.6.14 <Reserved>

5.6.15 Query Display Setting (Query Display Setting Response)

Command to get the display setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x5D	—	0x00	—

1. Set the query target CMND2 to DATA1 (the CMND2 values, see below)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x5F	—	—	—

1. Set 0xF0 to RESP1
2. Set 0x5F to RESP2
3. Set requested value to DATA1 and DATA2 (the requested values, see below)

CMND2 set by send command	DATA1 set by receive command	DATA2 set by receive command	Setting
0x43	0x00	0~1	Display of Date and Time
0x45	0x00	1~4	Display position of Date and Time
0x47	0x00	0~1	Display of Title
0x4B	0x00	1~4	Display position of Title
0x4D	0x00	0~1	Display of ID
0x4F	0x00	1~6	Display position of ID
0x51	0x00	0~1	Display of the center mark
Others			Invalid

5.7 Original Command 4 (Original commands of this specification: No...4: Operation Setting)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.7.1 Set Display Mode of time

Command to switch the time display mode (24h ⇔ 12h)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x61	0x00	HOUR12_24 SEL	—

1. Set 0x00 to DATA1
2. Set HOUR12_24 SEL to DATA2

■ Argument of HOUR12_24 SEL

DATA2	Display mode
0x01	24h
0x02	12h
Others	24h

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.2 Set DisplayMode of YMD

Command to switch the YMD display mode

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0xF0	0x63	0x00	YMD SEL	－

1. Set 0x00 to DATA1
2. Set YMD SEL to DATA2

■ Argument of YMD SEL

DATA2	Display mode
0x01	Y-M-D
0x02	M-D-Y
0x03	D-M-Y
0x04	Y/M/D
0x05	M/D/Y
0x06	D/M/Y
Others	Y-M-D

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

5.7.3 <Reserved>

5.7.4 Set Video Mode

Command to switch the video mode (NTSC⇔PAL)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x67	0x00	VIDEO MODE	—

1. Set 0x00 to DATA1
2. Set VIDEO MODE to DATA2

■ VUDEO MODE 引数

DATA2	Video mode
0x01	NTSC
0x02	PAL
Others	NTSC

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.5 Set HD Format

Command to switch the image size of HD and the frame rate

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x69	0x00	HD_FORMAT SW	—

1. Set 0x00 to DATA1
2. Set HD_FORMAT SW to DATA2

■ Argument of HD_FORMAT SW

DATA2	Image size (Frame rate)
0x01	1080p (30p)
0x02	720p (60p)
0x03	480p (60p)
Others	1080p (60p)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.6 Set VideoDisplay Mode

Command to set the display mode of the video

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x6B	0x00	VIDEO_D_MODE	—

1. Set 0x00 to DATA1
2. Set VIDEO_D_MODE to DATA2

■ Argument of VIDEO_D_MODE

DATA2	Display mode
0x01	side cut
0x02	letter box
0x03	squeeze
Others	side cut

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.7 <Reserved>

5.7.8 Set RS485 ID

Command to set ID for RS485

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x6F	0x00	RS485_ID	—

1. Set 0x00 to DATA1
2. Set RS485_ID to DATA2 in 16bit binary

■ Argument of RS485_ID

DATA2	Setting
1～31	RS485 ID(Default : 7)
Others	7

* Power OFF→ON sequence is required to reflect the settings

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.9 <Reserved>

5.7.10 Set Termination for RS485

Command to switch the termination of RS485

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x73	0x00	TEMINAT SW	—

1. Set 0x00 to DATA1
2. Set TEMINAT SW to DATA2

■ Argument of TEMINAT SW

DATA2	Switch
0x00	Off
0x01	On
Others	Off

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.11 <Reserved>

5.7.12 Set RecordingMode on Scared

Command to set SD overwrite recording when card Full

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	－	0xF0	0x77	0x00	SD_RECORD SW	－

1. Set 0x00 to DATA1
2. Set SD_RECORD SW to DATA2

■ Argument of SD_RECORD SW

DATA2	Setting
0x01	Overwrite
0x02	Stop recording (There is on/off setting to display the remaining amount)
Others	Overwrite

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	－	0x00	－

5.7.13 SetDisplay Scared Capacity Remaining

Command to set the display of remaining of SD card capacity

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x79	0x00	DISP_CARD_SW	—

1. Set 0x00 to DATA1
2. Set DISP_CARD_SW to DATA2

■ Argument of DISP_CARD_SW

DATA2	Setting
0x01	Display remaining of SD Card capacity : ON
0x02	Display remaining of SD Card capacity : OFF (Even if it is OFF, the remaining time will be displayed when it reaches 30 minutes.)
Others	Display remaining of SD Card capacity : ON

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.14 Format SDcard

Command to format SD card

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x7B	0x00	SD_FORMAT	—

1. Set 0x00 to DATA1
2. Set SD_FORMAT to DATA2

■ Argument of SD_FORMAT

DATA2	Format
0x00	Format SD card
Others	Do nothing

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.15 Download Firmware

Command used to update FW. SX800 and SX801 cannot update FW via RS485. Therefore, even if SX800 and SX801 are installed at a remote distance and controlled by RS485, FW update needs to use Ethernet I / F.

When this command is sent, the camera automatically reboots and starts up in the simple WebUI mode, and only the FW download operation via the Ethernet I / F is enabled (IP connection settings are default values). After the FW download is completed, reboot automatically again and restart in Pelco mode.

* Note: If this command is sent, it will not be possible to return via RS485, so be careful when sending the command.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x7D	0x00	FW_DL	—

1. Set 0x00 t0 DATA1
2. Set FW_DL to DATA2

■ Argument of FW_DL

DATA2	Action
0x01	Update FW
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.16 Recode LogData on SDcard

Command to copy the log data on the memory to SD card

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x7F	0x00	LOG_COPY_SD	—

1. Set 0x00 to DATA1
2. Set LOG_COPY_SD to DATA2

■ Argument of LOG_COPY_SD

DATA2	Action
0x00	Does not copy
0x01	Copy the log to SD card
Others	Does not copy

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.17 Preset parameters

Command to reset parameters to factory default

* After initializing parameters other than IP settings, the camera sends a receive command and restarts automatically.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x81	0x00	PRESET	—

1. Set 0x00 to DATA1
2. Set PRESET to DATA2

■ Argument of PRESET

DATA2	Action
0x00	Reset parameters other than IP setting
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.18 Reboot

Command to reboot

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x83	0x00	REBOOT	—

1. Set 0x00 to DATA1
2. Set REBOOT to DATA2

■ Argument of REBOOT

DATA2	Action
0x01	Reboot
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.19 Set Language

Command to set the language

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x85	0x00	LANGUAGE	—

1. Set 0x00 to DATA1
2. Set LANGUAGE to DATA2

■ Argument of LANGUAGE

DATA2	Language
0x00	English
0x01	French
0x02	Invalid
0x03	Japanese
Others	English

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.7.20 <Reserved>

5.7.21 <Reserved>

5.7.22 <Reserved>

5.7.23 Query Operation Setting (Query Operation Setting Response)

Command to get the camera setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x8D	—	0x00	—

1. Set the query target CMND2 to DATA1 (the CMND2 values, see below)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x8F	—	—	—

1. Set 0xF to RESP1
2. Set 0x8F to RESP2
3. Set requested value to DATA1 and DATA2 (the requested values, see below)

CMND2 set by send command	DATA1 set by receive command	DATA2 set by receive command	Setting
0x61	0x00	1~2	Data/ Time display mode(24h⇔12h)
0x63	0x00	1~6	YMD mode
0x67	0x00	1~2	Video Mode (NTSC⇔PAL)
0x69	0x00	1~4	HD image size and its frame rate
0x6B	0x00	1~3	Display mod of VIDEO
0x6F	0x00	0~255	RS485 ID
0x73	0x00	0~1	Termination of RS485
0x77	0x00	1~2	Overwrite when SD card is full
0x79	0x00	1~2	Display the remaining of SD card capacity
0x7B	0x00	FOMAT_STATUS	Status of formatting SD card 0x00: Completed 0x01: In process 0xFF: Error
0x7F	0x00	0~1	Copy the log data to SD card
0x81	0x00	0	Reset parameters to factory default
0x85	0x00	0~3	Language setting
0x8B	0x00	SD_CARD_STATUS	Status of the SD card (Status of SD_CARD_STATUS is below)
Others			Invalid

※ Status of SD_CARD_STATUS

SD_CARD_STATUS	Status
0x00	Normal
0x01	SD card error
0x02	Unformatted
0x03	Protected
0x04	File system error
0x05	Full
0x06	No card

◆ Status of formatable card
0x00:Normal
0x01:SD card error
0x02:Unformatted
0x04: File system error
0x05: Full
※ However, formatting may fail when status were 0x01 or 0x04

◆ Video recordable status
0x00:Normal

◆ Video playable status
0x00:Normal
0x03:Protected
0x05: Full

5.8 Original Command 5 (Original commands of this specification: No...5: SET KEY)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.8.1 SetEncodeMode

Command to set the video encode format

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x91	0x00	ENCODING	—

1. Set 0x00 to DATA1
2. Set ENCODING to DATA2

■ Argument of ENCODING

DATA2	Encode format
0x01	H.264,
0x02	MJPEG
0x03	MPEG4
Others	H.264

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.2 Record LiveView on SDcard

Command to record the live view into SD card

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x93	0x00	LV_RECORD	—

1. Set 0x00 to DATA1
2. Set LV_RECORD to DATA2

■ Argument of LV_RECORD

DATA2	Record
0x00	On
0x01	Off
Others	On

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.3 Set 1st file of playing Movie

Command to play the first file

How to use:

First, read out the total number of movie in the SD card by Query Number of Movies on SDcard command (0xF0, 0xB1), and then set the target frame.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x95	F_NO MSB	F_NO LSB	—

1. Set F_NO MSB to DATA1
2. Set F_NO LSB to DATA2

* Set the file index number to playback to F_NO

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

What is File index number:

The camera generates a table of file index numbers (F_NO) on the memory so that the latest file is 0x0001, only for the files recorded by the SX 800 and SX801 at startup. When the file is deleted, F_NO of the deleted file becomes an empty number until the file number table is updated next time the power is turned on.

5.8.4 Play Movie from SDcard

Command to set Play/Stop mode of the video file in the SD card

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x97	0x00	PLAY_SET	—

1. Set 0x00 to DATA1
2. Set PLAY_SET to DATA2

■ Argument of PLAY_SET

DATA2	Mode
0x00	Stop (Playback standby state: Thumbnail or inclusion JPEG displayed)
0x01	One frame playback
0x02	Continuous playback (Play from the current position in order of recording time. After the last frame, play the oldest frame in the card.)
0x03	Pause (Display freeze)
0x04	Playback again
Others	Stop (Playback standby state: Thumbnail or inclusion JPEG displayed)

* Default is 0x00。When transitioning from the movie mode to the playback mode, it is always 0x00, and the thumbnail or included JPEG display of the latest time stamp is displayed for the frame.

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.5 Delete Movie from SDcard

Command to set the target movie number to delete from SD card

How to use:
First, read out the total number of movie in the SD card by Query Number of Movies on SDcard command (0xF0, 0xB1), and then set the target frame.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x99	F_NO MSB	F_NO LSB	—

1. Set F_NO MSB to DATA1
2. Set F_NO LSB to DATA2

■ Argument of DISP_C_POS SW

DATA1 + DATA2	
File index number	Delete the movie of the file index number
0x0000	All delete

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.6 Select Movie mode Play mode

Command to switch Movie mode/Playback mode

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x9B	0x00	MODE_SW	—

1. Set 0x00 to DATA1
2. Set MODE_SW to DATA2

■ Argument of MODE_SW

DATA2	Mode
0x01	Movie mode (When playing back the movie, playback is interrupted and transit to Movie mode)
0x02	Play back mode (When recording a movie, issue this command after stopping movie by 5.8.2 Record LiveView on SDcard (0xF0, 0x93))
Others	Movie mode

* Default is 0x01

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.7 <Reserved>

5.8.8 <Reserved>

5.8.9 <Reserved>

5.8.10 <Reserved>

5.8.11 <Reserved>

5.8.12 Set SDI ON MENU OK

Command to switch ON/OFF of SDI display and execute MENU OK command (* this command is available at Pelco Slave mode)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xA7	0x00	SDI_ON	—

1. Set 0x00 to DATA1
2. Set SDI_ON to DATA2

■ Argument of SDI_ON

DATA2	Mode
0x00	Off (SDI OFF and MENU OFF)
0x01	On (Execute instead of MENU OK key)
Others	Off (SDI OFF and MENU OFF)

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.13 Set Direction

Command to move cursor (* this command is available at Pelco Slave mode)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xA9	0x00	CURSOR	—

1. Set 0x00 to DATA1
2. Set CURSOR to DATA2

■ CURSOR 引数

DATA2	Direction
0x01	Up
0x02	Down
0.03	Left
0x04	Right
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.14 Set Back CMD

Command to execute MENU BACK (* this command is available at Pelco Slave mode)

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xAB	0x00	M_BACK	—

1. Set 0x00 to DATA1
2. Set M_BACK to DATA2

■ Argument of M_BACK

DATA2	Action
0x00	Invalid
0x01	MENU BACK
Others	Invalid

■ Receive command

Byte	1	2	3	4
	SYNC	ADDR	ALARMS	CKSM
	0xFF	—	0x00	—

5.8.15 Query Key Setting (Query Key Setting Response)

Command to get the previous key setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xAD	—	0x00	—

1. Set the query target CMND2 to DATA1 (the CMND2 values, see below)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xAF	—	—	—

1. Set 0xF0 to RESP1
2. Set 0xAF to RESP2
3. Set requested value to DATA1 and DATA2 (See below for the value).

CMND2 set by send command	DATA1 set by receive command	DATA2 set by receive command	Setting
0x91	0x00	1~2	Video encode format
0x93	0x00	0~1	Record Live view into SD card 0x00 On 0x01 Off
0x95	number1	number2	Play the first file
0x97	0x00	0~4	Play/Stop mode of the video file in the SD card 0x00 Stop 0x01 One frame playback 0x02 Continuous playback 0x03 Pause (Display freeze) 0x04 Playback again
0x99	number1	number2	Target movie number to delete from SD card
0x9B	0x00	1~2	Movie mode/Playback mode
0xA7	0x00	0~1	ON/OFF of SDI display
0xA9	0x00	1~4	Move cursor (0x00 when no cursor history)
0xAB	0x00	0~1	MENU BACK
Others			Invalid

5.9 Original Command 6 (Original commands of this specification : No. 6 : Query SDcard)

Original commands extended by FF (FUJIFILM)

The calculation method of CKSM is omitted in this chapter. That of [Chapter 3 Pelco-D outline] is adopted.

(0) Send command :

Set the sum of ADDR to DATA2 in 8bit to CKSM

(1) Receive command (General Response):

Set the sum of the received CKSM and ALARMS in 8bit in CKSM

(2) Receive command (Extended Response):

Set the sum of ADDR to DATA2 in 8bit to CKSM

(3) Receive command (Query Response):

Set the sum of ADDR to DATA15 in 8bit to CKSM **(Original specification by FF)**

(4) Receive command : (Original specification by FF)

Set the sum of ADDR to DATA2 in 8bit to CKSM

5.9.1 Query Number of Movies on SDcard (Query Number of Movies on SDcard Response)

Command to get the number of movie files in the SD card

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xB1	0xB3	0x00	—

1. Set the query target CMND2 to DATA1 (0xB3)
2. Set 0x00 to DATA2

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xB3	NUMBER MSB	NUMBER LSB	—

1. Set 0xF0 to RESP1
2. Set 0xB3 to RESP2
3. Set NUMBER MSB to DATA1
4. Set NUMBER LSB to DATA2

5.9.2 Query Year of Movie on SDcard (Query Year of Movie on SDcard Response)

Command to get the recorded year of the movie file in the SD card

How to use:

First, read out the total number of movie in the SD card by Query Number of Movies on SDcard command (0xF0, 0xB1), and then set the target frame.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xB5	F_NO MSB	F_NO LSB	—

1. Set F_NO MSB to DATA1
2. Set F_NO LSB to DATA2

   * F_NO is the File Index number of the movie to playback

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xB7	F_YY MSB	F_YY LSB	—

1. Set 0xF0 to RESP1
2. Set 0xB7 to RESP2
3. Set F_YY MSB to DATA1
4. Set F_YY LSB to DATA2

   * F_YY is the recorded year represented by a 4-digit hexadecimal number (2 Bytes)

5.9.3 Query MonthDay of Movie on SDcard (Query MonthDay of Movie on SDcard Response)

Command to get the recorded date and month of the movie file in the SD card

How to use:

First, get the total number of the files by Query Number of Movies on SDcard(0xF0、0xB1) command, then set the target file

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xB9	F_NO MSB	F_NO LSB	—

1. Set F_NO MSB to DATA1
2. Set F_NO LSB to DATA2

* F_NO is the File Index number of the movie to playback

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xBB	F_MM	F_DD	—

1. Set 0xF0 to RESP1
2. Set 0xB7 to RESP2
3. Set F_MM to DATA1
4. Set F_DD to DATA2

* F_MM and F_DD are the recorded month and date

5.9.4 Query HourMinute of Movie on SDcard (Query HourMinute of Movie on SDcard Response)

Command to get the recorded time of day (24h notation) of the movie file in the SD card

How to use:

First, read out the total number of movie in the SD card by Query Number of Movies on SDcard command (0xF0, 0xB1), and then set the target frame.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xBD	F_NO MSB	F_NO LSB	—

1. Set F_NO MSB to DATA1
2. Set F_NO LSB to DATA2

   * Fanons File Index number of the requested movie

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xBF	F_HH	F_MM	—

1. Set 0xF0 to RESP1
2. Set 0xB7 to RESP2 は 0xB7
3. Set F_HH(Hexadecimal) to DATA1
4. Set F_MM(Hexadecimal)to DATA2

   * F_HH and F_MM are the recorded time of day (hour and minutes in 24h notation)

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