

Pelco-D Protocol Specification for SX400

Dec.19.2025

Version 1.00.0

FUJIFILM

Change history

Ver.	Date			Revision
1.00.0	2025/12/19			First version

Table of contents

1	SUMMARY	11
2	OVERVIEW	11
3	OVERVIEW ABOUT PELCO-D.....	11
3.1	SEND COMMAND FORMAT	12
3.2	RECEIVE COMMAND FORMAT.....	13
3.2.1	Receive command (General Response).....	13
3.2.2	Receive command (Extended Response)	13
3.2.3	Receive command (Query Response)	14
3.2.4	Receive command (Extended Response2)	15
4	FUNCTIONAL SPECIFICATIONS	16
5	COMMAND DETAILS.....	17
5.1	STANDARD COMMAND	17
5.1.1	Send command	17
5.1.2	Receive command	18
5.2	EXTENDED COMMAND.....	19
5.2.1	Set Zoom Speed	19
5.2.2	Set Focus Speed.....	21
5.2.3	Auto focus on/off	23
5.2.4	Auto Iris on/off.....	25
5.2.5	AGC auto/on/off	27
5.2.6	Backlight compensation on/off	29

5.2.7	<Reserved>	30
5.2.8	Set Zoom Position	31
5.2.9	Set Remote Baud Rate	33
5.2.10	Time Set Opcode.....	35
5.2.11	Query Zoom Position (Standard).....	38
5.3	FF EXTENDED COMMAND (ORIGINAL COMMANDS OF THIS SPECIFICATION)	39
5.3.1	Query Focus Position	40
5.3.2	Query Zoom Position	41
5.3.3	<Reserved>	42
5.3.4	<Reserved>	42
5.3.5	Query Serial Number	42
5.3.6	Query Fw Version.....	43
5.3.7	Query Lens Status.....	44
5.3.8	Set Focus Position	47
5.3.9	Set Manual Iris.....	49
5.3.10	Set Shutter Limit on Auto.....	52
5.3.11	Set Manual Shutter Speed.....	54
5.3.12	Query Manual Shutter Speed	57
5.3.13	Set Manual ISO	60
5.3.14	Query Manual ISO	62
5.3.15	Query Manual Iris.....	64
5.3.16	<Reserved>	66
5.3.17	Query Protocol Version	67
5.3.18	<Reserved>	68
5.3.19	<Reserved>	68

5.3.20	<Reserved>	68
5.3.21	<Reserved>	68
5.3.22	<Reserved>	68
5.3.23	Query Manual Setting (Query Manual Setting Response)	68
5.4	ORIGINAL COMMAND1 (ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.1: PHOTO SETTING)	71
5.4.1	<Reserved>	72
5.4.2	Set AF Sensitivity	72
5.4.3	One-push AF.....	73
5.4.4	<Reserved>	73
5.4.5	<Reserved>	73
5.4.6	<Reserved>	74
5.4.7	<Reserved>	74
5.4.8	Set Infrared WaveLength.....	74
5.4.9	Set OIS Mode.....	75
5.4.10	<Reserved>	75
5.4.11	Set Photo Mode Preset	76
5.4.12	Set DayNight Control by External.....	77
5.4.13	<Reserved>	78
5.4.14	Query Photo Setting (Query Photo Setting Response)	79
5.5	ORIGINAL COMMAND2 ((ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.2: IMAGE QUALITY PARAMETER)	81
5.5.1	<Reserved>	82
5.5.2	Set WideDynamicRange.....	82
5.5.3	<Reserved>	83
5.5.4	Set DeHeatHaze Mode	83
5.5.5	Set Defogging Mode.....	84

5.5.6	<Reserved>	85
5.5.7	<Reserved>	85
5.5.8	<Reserved>	85
5.5.9	<Reserved>	85
5.5.10	Set ColorTemperature on WhiteBalance	85
5.5.11	Set Select WhiteBalance	86
5.5.12	Set Digital Zoom	87
5.5.13	Set NR Level.....	89
5.5.14	<Reserved>	89
5.5.15	Query ImageQuality Setting (Query ImageQuality Setting Response).....	90
5.6	ORIGINAL COMMAND2 (ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.2: IMAGEQUALITY PARAMETER)	92
5.6.1	<Reserved>	93
5.6.2	Set DayTime Display.....	93
5.6.3	Set DisplayPosition of DayTime	94
5.6.4	Set Title Display.....	95
5.6.5	<Reserved>	95
5.6.6	Set DisplayPosition of Title.....	96
5.6.7	Set ID Display	97
5.6.8	Set DisplayPosition of ID	98
5.6.9	Set Center Position Display	99
5.6.10	<Reserved>	99
5.6.11	SetAntialiasing.....	100
5.6.12	<Reserved>	100
5.6.13	<Reserved>	100
5.6.14	<Reserved>	100

5.6.15	Query Display Setting (Query Display Setting Response).....	101
5.7	ORIGINAL COMMAND 4 (ORIGINAL COMMANDS OF THIS SPECIFICATION: No...4: OPERATION SETTING)	103
5.7.1	Set Display Mode of time	104
5.7.2	Set DisplayMode of YMD	105
5.7.3	<Reserved>	106
5.7.4	Set Video Mode.....	106
5.7.5	Set HD Format	107
5.7.6	Set VideoDisplay Mode	108
5.7.7	<Reserved>	108
5.7.8	Set RS485 ID	109
5.7.9	<Reserved>	110
5.7.10	Set Termination for RS485	110
5.7.11	<Reserved>	110
5.7.12	Set RecordingMode on Scared.....	112
5.7.13	SetDisplay Scared Capacity Remaining	113
5.7.14	Format SDcard	114
5.7.15	Download Firmware.....	115
5.7.16	Recode LogData on SDcard.....	116
5.7.17	Preset parameters	117
5.7.18	Reboot	118
5.7.19	Set Language.....	119
5.7.20	<Reserved>	120
5.7.21	<Reserved>	120
5.7.22	<Reserved>	120
5.7.23	Query Operation Setting (Query Operation Setting Response).....	120

5.8	ORIGINAL COMMAND 5 (ORIGINAL COMMANDS OF THIS SPECIFICATION: No...5: SET KEY).....	123
5.8.1	SetEncodeMode	124
5.8.2	Record LiveView on SDcard.....	125
5.8.3	Set 1st file of playing Movie	126
5.8.4	Play Movie from SDcard	127
5.8.5	Delete Movie from SDcard	128
5.8.6	Select Movie mode Play mode	129
5.8.7	<Reserved>	130
5.8.8	<Reserved>	130
5.8.9	<Reserved>	130
5.8.10	<Reserved>	130
5.8.11	<Reserved>	130
5.8.12	Set SDI ON MENU OK.....	131
5.8.13	Set Direction.....	132
5.8.14	Set Back CMD	133
5.8.15	Query Key Setting (Query Key Setting Response)	134
5.9	ORIGINAL COMMAND 6 (ORIGINAL COMMANDS OF THIS SPECIFICATION : NO. 6 : QUERY SDCARD)	136
5.9.1	Query Number of Movies on SDcard (Query Number of Movies on SDcard Response).....	137
5.9.2	Query Year of Movie on SDcard (Query Year of Movie on SDcard Response).....	138
5.9.3	Query MonthDay of Movie on SDcard (Query MonthDay of Movie on SDcard Response)	139
5.9.4	Query HourMinute of Movie on SDcard (Query HourMinute of Movie on SDcard Response)	140
5.10	ORIGINAL COMMAND7 (IN-HOUSE CUSTOM PARAMETER NO. 7: QUERY LOGDATA)	141
5.10.1	Query LogData (Query LogData Response)	142
5.10.2	<Reserved>	144
5.10.3	<Reserved>	145

5.10.4	<Reserved>	146
5.10.5	<Reserved>	147
5.10.6	<Reserved>	148
5.10.7	Set Brightness Level Fine	149
5.10.8	Set Contrast Level Fine	150
5.10.9	Set ColorSaturation Level Fine	151
5.10.10	Set Sharpness Level Fine	152
5.10.11	<Reserved>	153
5.10.12	Set WhiteBalance Shift Red Fine	154
5.10.13	Set WhiteBalance Shift Blue Fine	155
5.10.14	<Reserved>	156
5.10.15	<Reserved>	157
5.10.16	Query ImageQuality Setting Fine (Query ImageQuality Setting Response Fine)	158
5.11	ORIGINAL COMMAND 9 (IN-HOUSE CUSTOM PARAMETER NO. 9: DAYNIGHT SETTING EX)	160
5.11.1	Set DayNight Mode	161
5.11.2	Set Day to Night Threshold	162
5.11.3	Set Night to Day Threshold	163
5.11.4	Set DayNight Auto Delay	164
5.11.5	Set Day Start Time	165
5.11.6	Set Night Start Time	166
5.11.7	Set Optical Filter Day	167
5.11.8	Set Optical Filter Night	168
5.11.9	<Reserved>	169
5.11.10	Query DayNight Setting Ex (Query DayNight Setting Ex Response)	170
5.12	ORIGINAL COMMAND 10 (IN-HOUSE CUSTOM PARAMETER NO. 10: ZOOM FOCUS SETTING EX)	172

5.12.1	Set Zoom Speed Ex	173
5.12.2	Set Focus Speed Ex	174
5.12.3	Set Digital Zoom Ex	175
5.12.4	Query Zoom Focus Speed Setting Ex (Query Zoom Focus Setting Ex Response).....	176
5.13	ORIGINAL COMMAND 11	178
5.13.1	Set Focus Area Select	179
5.13.2	Set Focus Area Position	180
5.13.3	Set Focus Area Start Position	181
5.13.4	Set Focus Area End Position	183
5.13.5	Query Focus Area Setting	185
5.13.6	Query Focus Area Position	186

Appendix 1. Table of ZOOM Position vs Focal length

Appendix 2. Table of FOCUS Position vs Subject distance

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 SX400"

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(Extended Response2)

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.

Notes on communicating with the S400

- SX400 does not have the ability to queue commands, so if you issue the next send command before receiving the receive command for the previous send command, the previous command will be discarded

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

1. Since Bit3-Bit7 of CMND1 is not used in the latest Pelco-D, this specification does not support either.
2. Bit0-Bit2 of CMND1 and Bit5-Bit7 of CMND2 can only be set one bit at a time. Setting multiple bits would not be supported.
For example, setting bits for zoom operations and focus operations at the same time will be invalid.
3. Set all bits Bit0-2 of CMND1 and also Bit5-6 of CMND2 to 0 to stop Iris/Focus/Zoom operations.
4. Commands with inconsistent combinations (Iris Close/Open, Focus Near/Far, Zoom Wide/Tele, Down/UP, and Left/Right) will be invalid.

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 (in case of fine setting, use 5.13.1, "Set Zoom Speed Ex")

■ 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	Description	New commands executed by this command (5.13.1, "Set Zoom Speed Ex")
0x00	Slowest Speed (=Low Medium Speed)	The new command 0x07 is executed internally.
0x01	Low Medium Speed	The new command 0x05 is executed internally.
0x02	High Medium Speed	The new command 0x03 is executed internally.
0x03	Highest Speed (=High Medium Speed)	The new command 0x01 is executed internally.
Others	Low Medium Speed	The new command 0x05 is executed internally.

Note: With firmware version 1.60 and earlier, 0x00 and 0x02 select the same zoom speeds as 0x01 and 0x03, respectively

■ 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 (in case of fine setting, use 5.13.2, "Set Focus Speed Ex")

■ 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	Description	New commands executed by this command (5.13.2, "Set Focus Speed Ex")
0x00	Slowest Speed (=High Medium Speed)	The new command 0x07 is executed internally.
0x01	Low Medium Speed (=High Medium Speed)	The new command 0x05 is executed internally.
0x02	High Medium Speed	The new command 0x03 is executed internally.
0x03	Highest Speed (=High Medium Speed)	The new command 0x01 is executed internally.
Others	High Medium Speed	The new command 0x03 is executed internally.

Note: With firmware version 1.60 and earlier, all arguments select the same focus speed.

■ 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

DATA2	Description
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	Description
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_CTL to DATA2
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of BLC_CTL

DATA2	Description
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	Description
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 0x00 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	Description
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	Description
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)

5.2.11 Query Zoom Position (Standard)

A command that returns the zoom position (the value returned is the same as that returned by commands 5.3.2, “Query Zoom Position” and 5.3.23, “Query Manual Setting”).

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x55	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 (0x5D:Query Zoom Position Response)

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0x5D	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x5D to 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 FF Extended Command (Original commands of this specification)

Commands specified by 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 FUJIFILM)**

(4) Receive command (Original specification by FUJIFILM)

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 (The data to be obtained by 5.2.11 Query Zoom Position command is the same)

■ 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 CMND1 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 Fw 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	—	—

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 (For Response)
5. DATA2 is shown below table.
6. Set the sum of ADDR to DATA2 in 8 bits to CKSM

■ Argument of DATA2

DATA2	Description
0x00	Request of System FW version
0x01	Request of Camera FW version
0x02	Request of Lens FW version

■ 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	Description
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
0x03	F4
0x04	F4
0x05	F4
0x06	F4
0x07	F4
0x08	F4
0x09	F4

0x0A	F2.8
0x0B	F3.2
0x0C	F3.6
0x0D	F4
0x0E	F4.5
0x0F	F5
0x10	F5.6
0x11	F6.3
0x12	F7.1
0x13	F8
0x14	F9
0x15	F10
0x16	F11
0x17	F13
0x18	F14
0x19	F16
Others	F4

■ 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 speed 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	Description
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
0x2E	1/32000
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 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	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

■ Shutter 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
0x2E	1/32000

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
0x06	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
0x06	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

DATA2	F number (at the wide end)
0x01	F4
0x02	F4
0x03	F4
0x04	F4
0x05	F4
0x06	F4
0x07	F4
0x08	F4
0x09	F4
0x0A	F2.8
0x0B	F3.2
0x0C	F3.6
0x0D	F4
0x0E	F4.5
0x0F	F5
0x10	F5.6
0x11	F6.3
0x12	F7.1
0x13	F8
0x14	F9
0x15	F10
0x16	F11

0x17	F13
0x18	F14
0x19	F16
Others	F4

5.3.16 <Reserved>

5.3.17 Query Protocol Version

Command to get the supported Pelco Protocol Version

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0x00	0xA1	0x00	0x00	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set 0x00 to DATA1 and DATA2
4. 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	0xA1	—	—	—

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the received command to RESP1 and RESP2
4. Set major version to DATA1 and minor version to DATA2 (Ex. Version 1.10 = DATA1: 0x01, DATA2: 0x10, Version2.0A = DATA1: 0x02, DATA2: 0x0A)
5. Set the sum of ADDR to DATA2 in 8 bits to CKSM

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

Function	CMND2 set by send command	DATA1 returned to receiving command	DATA2 returned to receiving command	Description
Query Zoom Speed	0x25	0x00	ZOOM_SPEED	Returns the zoom speed.
Query Focus Speed	0x27	0x00	FOCUS SPEED	Returns the focus speed.
Query Auto Focus	0x2B	0x00	AUTO F_CTL	AF On / Off / Quick AF
Query Auto Iris	0x2D	0x00	AUTO I_CTL	Auto iris On / Off
Query AGC	0x2F	0x00	AGC_CTL	AGC standard/off/Hyper
Query Backlight	0x31	0x00	BLC_CTL	Backlight compensation On / Off
Query Zoom Position	0x4F	ZOOM MSB	ZOOM LSB	Returns the zoom position.
Query Baud Rate	0x67	0x00	SET B_RARE	Set Remote baud rate.
Query Focus Position	0x8F	FOCUS MSB	FOCUS LSB	Returns the focus position.
Query Manual Iris	0x91	0x00	MANU_FNO	F value of iris

Query Shutter Limit on Auto	0x93	0x00	A_SHUT_LIM	Returns the minimum shutter speed for autoexposure.
Query Manual Shutter Speed	0x95	0x00	MANU_SHUT	Returns the shutter speed.
Query Manual ISO	0x99	0x00	MANU_ISO	Returns the ISO sensitivity.
	Others			Invalid

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

Original commands extended by 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 FUJIFILM)**

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

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

5.4.1 <Reserved>

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 <Reserved>**5.4.7 <Reserved>****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	Description
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	Description
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	Description
0x01	On (DayNight trigger: valid) VLC filter
0x02	On (DayNight trigger : valid) CLEAR filter (Raw glass)
0x03	Off (DayNight trigger : invalid)
0x04	On (DayNight trigger : valid) 4 th filter
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)

Function	CMND2 set by Send command	DATA1 returned to receiving command	DATA2 returned to receiving command	Description
Query AF Sensitivity	0x05	0x00	1–3	Returns the ISO sensitivity for autofocus.
Query One-push AF	0x07	0x00	AF_STATUS	AF status when One-Push AF 0x00: Finished 0x01 In process 0xFF: Abnormally
Query Infrared WaveLength	0x11	0x00	0–6	Returns the IR filter.
Query OIS Mode	0x13	0x00	0–3	Returns OIS status (on/off).
Query Photo Mode Preset	0x17	0x00	1–2	Returns the shooting mode preset.
Query DayNight Controll by External	0x19	0x00	1–3	Day / Night swatch by DayNight trigger
	Others			Invalid

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

An extended command unique to this specification.

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 FUJIFILM)**

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

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

5.5.1 <Reserved>

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	Description
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	Description
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	Description
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 <Reserved>

5.5.7 <Reserved>

5.5.8 <Reserved>

5.5.9 <Reserved>

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_TEMP to DATA2

■ Argument of C_WB_TEMP

DATA	Description
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	Description
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)
0x07	Auto (white priority)
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: Conventional Digital Zoom (Crop optical tele end)
0x02	Crop: Cropped at any position from wide end to tele end. Set magnification with Set Digital Zoom Ex.
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)

Function	CMND2 set by send command	DATA1 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query Wide DynamicRange	0x23	0x00	1–3	<i>Returns</i> the dynamic range.
Query DeHeatHaze Mode	0x27	0x00	0–5	<i>Returns</i> the heat-haze reduction setting.
Query Defogging Mode	0x29	0x00	0–5	<i>Returns</i> the fog reduction setting.
Query ColorTemperature on whiteBalance	0x33	0x00	C_WB_TEMP	<i>Returns</i> the color temperature.
Query Select WhiteBalance	0x35	0x00	1–6	<i>Returns</i> white balance.
Query Digital Zoom	0x37	0x00	0–2	<i>Returns</i> digital zoom.
Query NR Level	0x39	0x00	1–3	<i>Returns</i> noise reduction.
	Others			Invalid

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

Original commands extended by 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 FUJIFILM)**

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

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

■ 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 SetAntialiasing

Command to control the anti-aliasing process of OSD on/off

■Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0x55	0x00	ANTIALIASING SW	—

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

■Argument of ANTIALIASING SW

DATA2	SW
0x00	Off
0x01	On (Default)
Other	On

■Receive command

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

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)

Function	CMND2 set by send command	DATA1 returned to receiving command	DATA2 returned to receiving command	Description
Query DayTime Display	0x43	0x00	0–1	Returns the date and time.
Query DisplayPosition of DayTime	0x45	0x00	1–4	Returns the date and time display position.
Query Title Display	0x47	0x00	0–1	Returns title display status.
Query Display Position of Title	0x4B	0x00	1–4	Returns the title display position.
Query ID Display	0x4D	0x00	0–1	Returns ID display status.
Query DisplayPosition of ID	0x4F	0x00	1–6	Returns the ID display position.
Query Center Position Display	0x51	0x00	0–1	Returns the display status of the center reticle.
Query Display Zoom bar & AF Frame	0x53	0x00	0–1	Display of the zoom bar and AF fram ON (Display): 1 OFF (No display): 0 (Display ON/OFF setting is doen be SetBack MCD 0xF0)
Query Antialiasing	0x55	0x00	0–1	Anti-alias status for the OSD ON: 1 OFF: 0
	Others			Invalid

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

Original commands extended by 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 FUJIFILM)

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

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

■ VIDEO 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 (30p)

■ 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. SX400 cannot update FW via RS485. Therefore, even if SX400 is 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. 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 to 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)

Function	CMND2 set by send command	DATA1 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query DisplayMode of time	0x61	0x00	1–2	Data/ Time display mode(24h⇔12h)
Query DisplayMode of YMD	0x63	0x00	1–6	YMD mode
Query Video Mode	0x67	0x00	1–2	Video Mode (NTSC⇔PAL)
Query HD Format	0x69	0x00	1–4	HD image size and its frame rate
Query VideoDisplay Mode	0x6B	0x00	1–3	<i>Returns</i> the video display mode.
Query RS485 ID	0x6F	0x00	0–255	<i>Returns</i> the RS485 ID.
Query Termination for RS485	0x73	0x00	0–1	Termination of RS485
Query RecordingMode on SDcard	0x77	0x00	1–2	Overwrite when SD card is full
Query Display SDcard Capacity Remaining	0x79	0x00	1–2	Display the remaining of SD card capacity
Query Format SDcard	0x7B	0x00	FOMAT_STATUS	Status of formatting SD card 0x00: Completed 0x01: In process 0xFF: Error
Query Record LogData on SDcard	0x7F	0x00	0–1	Copy the log data to SD card
Query Preset parameters	0x81	0x00	0	Reset parameters to factory default
Query Language	0x85	0x00	0–3	<i>Returns</i> the language setting.
Query SDcard Status	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 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 FUJIFILM)

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

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 SX400 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
0x03	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).

Function	CMND2 set by send command	DATA1 returned to receiving command	DATA2 returned to receiving command	Description
Query EncodeMode	0x91	0x00	1-2	Returns the video encoding.
Query Record LiveView on SDCard	0x93	0x00	0-1	Returns live-feed-to-memory-card recording status. 0x00 On 0x01 Off
Query 1st file of playing Movie	0x95	number1	number2	Play the first file
Query Play Movie from SDcard	0x97	0x00	0-4	Returns the status of video playback from the memory card. 0x00 Stop 0x01 One frame playback 0x02 Continuous playback 0x03 Pause (Display freeze) 0x04 Playback again
Query Delete Movie from SDCard	0x99	number1	number2	Returns the number of the frame to be deleted from the memory card.
Query Select Movie mode Play mode	0x9B	0x00	1-2	Returns the video/playback mode toggle status.
Query SDI ON MENU OK	0xA7	0x00	0-1	Returns SDI display status (on/off).
Query Direction	0xA9	0x00	1-4	Returns cursor movement (0x00 when no cursor history).
Query Back CMD	0xAB	0x00	0-1	Returns MENU BACK status.
	Others			Invalid

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

Original commands extended by 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 FUJIFILM)

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

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)

5.10 Original Command7(In-House Custom Parameter No. 7: Query LogData)

An extended command unique to this specification.

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 FUJIFILM)**

(4) Receive command : (Extended Response2) (Original specification by FUJIFILM)

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

5.10.1 Query LogData (Query LogData Response)

Command to get the LogData of the camera.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xD1	0xD3	LOG_TYPE	—

1. Set the query target CMND2 to DATA1 (0xD3)

2. Set LOG_TYPE to DATA2

■ LOG_TYPE arguments

DATA2 set by send command	Purpose	DATA1,DATA2 (LOG_DAT) set by the receiving command
0x01	Zoom	Cumulative number of moving pulses
0x02	Focus	Cumulative number of moving pulses
0x03	PowerOnTime	Cumulative energization time

Original Command 8 (In-House Custom Parameter No. 8: ImageQuality Parameter Fine)

An extended command unique to this specification. The checksum (CKSM) calculation is omitted from this chapter, as we have adopted the method outlined for Pelco-D in Chapter 3. New commands have been added for fine control of image quality parameters.

(0) Command sent:

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(1) Response (General Response):

Set the CKSM to the 8-bit sum of ALARMS and the value returned for CKSM.

(2) Response (Extended Response):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(3) Response (Query Response):

Set the CKSM to the 8-bit sum of ADDR through DATA15 (*in-house custom parameter*).

(4) Response (Extended Response 2, an in-house custom parameter):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

5.10.2 <Reserved>

5.10.3 <Reserved>

5.10.4 <Reserved>

5.10.5 <Reserved>

5.10.6 <Reserved>

5.10.7 Set Brightness Level Fine

A command used to set brightness.

■ Send command

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

1. DATA1 is fixed at 0x00.
2. DATA2 sets BRIGHT_LV.

■ BRIGHT_LV arguments

DATA2	Description
0x01–0x64	1 – 100
Other	50

■ Receive command

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

5.10.8 Set Contrast Level Fine

A command used to set contrast.

■ Send command

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

1. DATA1 is fixed at 0x0.
2. DATA2 sets CONT_LV.

■ CONT_LV arguments

DATA2	Description
0x01-0x64	1 – 100
Other	50

■ Receive command

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

5.10.9 Set ColorSaturation Level Fine

A command used to set color saturation.

■ Send command

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

1. DATA1 is fixed at 0x00.

2. DATA2 sets COLOR_ST_LV.

■ COLOR_ST_LV arguments

DATA2	Description
0x01-0x64	1 – 100
Other	50

■ Receive command

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

5.10.10 Set Sharpness Level Fine

A command used to set sharpness.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xF1	0x00	SHARP_LV	—

1. DATA1 is fixed at 0x00.
2. DATA2 sets SHARP_LV.

■ SHARP_LV arguments

DATA2	Description
0x01–0x64	1 – 100
Other	20 / 80 *

* Varies with the setting for 5.4.11, “Set Photo Mode Preset” (video/surveillance).

■ Receive command

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

5.10.11 <Reserved>

5.10.12 Set WhiteBalance Shift Red Fine

A command used to set the white-balance shift R component for the current white balance mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xF5	0x00	WB_SHIFT_R	—

- 1 . DATA1 is fixed at 0x00.
- 2 . DATA2 sets C_WB_TMP.

■ WB_SHIFT_R arguments

DATA2	Description
0x77-0x89	0x77(-9) – 0x80(0) – 0x89(+9)
Other	0x80

■ Receive command

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

5.10.13 Set WhiteBalance Shift Blue Fine

A command used to set the white-balance shift B component for the current white balance mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xF7	0x00	WB_SHIFT_B	—

1 . DATA1 is the CMND2 query target (0xD3).

2 . DATA2 sets WB_SEL.

■ WB_SHIFT_B arguments

DATA2	Description
0x77–0x89	0x77 (–9) – 0x80 (0) – 0x89 (+9)
Other	0x80

■ Receive command

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

5. 10. 14

<Reserved>

5.10.15 <Reserved>

5.10.16 Query ImageQuality Setting Fine (Query ImageQuality Setting Response Fine)

A command that returns image quality parameters.

■ Send command

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

1 . DATA1 is the CMND2 query target (see the table below).

2 . DATA2 is fixed at 0x00.

■ Receive command (Extended Response 2)

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

1. RESP1 sets 0xF0.
2. RESP2 sets 0xFF.
3. DATA1 and DATA2 are set to values corresponding to the requested content (see table below).

Function	CMND2 set by send command	DATA1 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query Brightness Level Fine	0xEB	0x00	1-100	<i>Returns</i> brightness.
Query Contrast Level Fine	0xED	0x00	1-100	<i>Returns</i> contrast.
Query ColorSaturation Level Fine	0xEF	0x00	1-100	<i>Returns</i> saturation.
Query Sharpness Level Fine	0xF1	0x00	1-100	<i>Returns</i> sharpness.
Query WhiteBalance Shift Red Fine	0xF5	0x00	1-100	<i>Returns</i> the white balance shift RED component.
Query WhiteBalance Shift Blue Fine	0xF7	0x00	1-100	<i>Returns</i> the white balance shift BLUE component.
	Other	0x00	0x00	Invalid

5.11 Original Command 9 (In-House Custom Parameter No. 9: DayNight Setting Ex)

An extended command unique to this specification. The checksum (CKSM) calculation is omitted from this chapter, as we have adopted the method outlined for Pelco-D in Chapter 3. New commands have been added for fine control of day/night parameters.

(0) Command sent:

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(1) Response (General Response):

Set the CKSM to the 8-bit sum of ALARMS and the value returned for CKSM.

(2) Response (Extended Response):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(3) Response (Query Response):

Set the CKSM to the 8-bit sum of ADDR through DATA15 (*in-house custom parameter*).

(4) Response (Extended Response 2, an in-house custom parameter):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

5.11.1 Set DayNight Mode

A command used to set the extended day/night mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x01	0x00	DN_MODE	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets DN_MODE.

■ DN_MODE arguments

DATA2	Description
0x00	AUTO
0x01	AUTO&SCHEDULED
0x02	SCHEDULED
0x03	DAY
0x04	NIGHT
Other	AUTO

■ Receive command

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

5.11.2 Set Day to Night Threshold

A command used to set the threshold brightness for switching from day to night mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x03	0x00	D2N_TH	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets D2N_TH.

■ D2N_TH arguments

DATA2	Description
0x00-0xFF	0 – 255

■ Receive command

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

5.11.3 Set Night to Day Threshold

A command used to set the threshold brightness for switching from night to day mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x05	0x00	N2D_TH	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets N2D_TH.

■ N2D_TH arguments

DATA2	Description
0x00-0xFF	0 – 255

■ Receive command

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

5.11.4 Set DayNight Auto Delay

A command used to set the delay (in seconds) for switching between day and night modes.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x07	0x00	AUTO_DELAY	—

1. DATA1 is fixed at 0x00.
2. DATA2 sets AUTO_DELAY.

■ AUTO_DELAY arguments

DATA2	Description
0x00–0x3C	0 –60
Other	7

■ Receive command

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

5.11.5 Set Day Start Time

A command used to set the start time (SCHEDULED and AUTO&SCHEDULED) for day mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x09	DAYTIME_HH	DAYTIME_MM	—

1 . DATA1 sets DAYTIME_HH.

2 . DATA2 sets DAYTIME_MM.

■ DAYTIME_HH arguments

DATA2	Description
0x00–0x17	00–23
Other	07:00

■ DAYTIME_MM arguments

DATA2	Description
0x00–0x3B	00–59
Other	07:00

■ Receive command

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

5.11.6 Set Night Start Time

A command used to set the start time (SCHEDULED and AUTO&SCHEDULED) for night mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x0B	NIGHTTIME_HH	NIGHTTIME_MM	—

1. DATA1 sets NIGHTTIME_HH.

2. DATA2 sets NIGHTTIME_MM.

■ NIGHTTIME_HH arguments

DATA2	Description
0x00–0x17	00–23
Other	17:00

■ NIGHTTIME_MM arguments

DATA2	Description
0x00–0x3B	00–59
Other	17:00

■ Receive command

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

5.11.7 Set Optical Filter Day

A command used to set the optical filter for day mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x0D	0x00	OPT_DAY	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets OPT_DAY.

■ OPT_DAY arguments

DATA2	Description
0x00	IRC
0x01	VLC
Other	IRC

■ Receive command

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

5.11.8 Set Optical Filter Night

A command used to set the optical filter for night mode.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x0F	0x00	OPT_NIGHT	—

1. DATA1 is fixed at 0x00.
2. DATA2 sets OPT_NIGHT.

■ OPT_NIGHT arguments

DATA2	Description
0x00	CLEAR
0x01	VLC
Other	CLEAR

■ Receive command

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

5.11.9 <Reserved>

5.11.10 Query DayNight Setting Ex (Query DayNight Setting Ex Response)

A command that returns extended day/night mode parameters.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x1D	—	0x00	—

- 1 . DATA1 is the CMND2 query target (see the table below).
- 2 . DATA2 is fixed at 0x00.

■ Receive command (Extended Response 2)

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x1F	—	—	—

1. RESP1 sets 0xF1.
2. RESP2 sets 0x1F.
3. DATA1 and DATA2 are set to values corresponding to the requested content (see table below).

Function	CMND2 set by send command	DATA1 returned to receiving command	DATA2 returned to receiving command	Description
Query Night Mode	0x01	0x00	0x00-0x04	Returns the extended day/night mode.
Query Day to Night Threshold	0x03	0x00	0x00-0xFF	The threshold brightness for switching from day to night mode.
Query Night to Day Threshold	0x05	0x00	0x00-0xFF	The threshold brightness for switching from night to day mode.
Query DayNight Auto Delay	0x07	0x00	0x00-0x3C	The delay (in seconds) for switching between day and night modes.
Query Day Start Time	0x09	0x00-0x17	0x00-0x3B	The start time (SCHEDULED and AUTO&SCHEDULED) for day mode.
Query Night Start Time	0x0B	0x00-0x17	0x00-0x3B	The start time (SCHEDULED and AUTO&SCHEDULED) for night mode.
Query Optical Filter Day	0x0D	0x00	0x00-0x01	Returns the optical filter for day mode.
Query Optical Filter Night	0x0F	0x00	0x00-0x01	Returns the optical filter for night mode.
	Others	0x00	0x00	Invalid

5.12 Original Command 10 (In-House Custom Parameter No. 10: Zoom Focus Setting Ex)

An extended command unique to this specification. The checksum (CKSM) calculation is omitted from this chapter, as we have adopted the method outlined for Pelco-D in Chapter 3. New commands have been added for fine control of zoom and focus speed parameters.

(0) Command sent:

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(1) Response (General Response):

Set the CKSM to the 8-bit sum of ALARMS and the value returned for CKSM.

(2) Response (Extended Response):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(3) Response (Query Response):

Set the CKSM to the 8-bit sum of ADDR through DATA15 (*in-house custom parameter*).

(4) Response (Extended Response 2, an in-house custom parameter):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

5.12.1 Set Zoom Speed Ex

A command used to set the lens zoom speed.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x25	0x00	Z_SPEED	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets Z_SPEED.

■ Z_SPEED arguments (time in seconds to go from widest angle to maximum zoom)

DATA2	Description	Values for existing command (5.2.1, "Set Zoom Speed") are now as follows
0x00	Invalid	
0x01	About 4 seconds	0x03
0x02	About 6 seconds	0x03
0x03	About 8 seconds	0x02
0x04	About 10 seconds	0x02
0x05	About 12 seconds	0x01
0x06	About 14 seconds	0x01
0x07	About 16 seconds	0x00
0x08	About 18 seconds	0x00
0x09	About 20 seconds	0x00
0x0A	About 22 seconds	0x00
Other	Handled as 0x01	0x03

■ Receive command

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

5.12.2 Set Focus Speed Ex

A command used to set the lens focus speed.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x27	0x00	F_SPEED	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets F_SPEED.

■ F_SPEED arguments (time in seconds to go from minimum to maximum focus distance)

DATA2	Description	Values for existing command (5.2.2, "Set Focus Speed") are now as follows
0x01	Maximum Speed	0x03
0x02	Lower speed than Maximum Speed	0x03
0x03	Lower speed than 0x02	0x02
0x04	Lower speed than 0x03	0x02
0x05	Lower speed than 0x04	0x01
0x06	Lower speed than 0x05	0x01
0x07	Lower speed than 0x06	0x00
0x08	Lower speed than 0x07	0x00
0x09	Lower speed than 0x08	0x00
0x0A	Minimum Speed	0x00
Other	Handled as 0x01	0x03

■ Receive command

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

5.12.3 Set Digital Zoom Ex

A command used to set the zoom ratio for digital zoom.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x21	0x00	DZ_MAG	—

1. DATA1 is fixed at 0x00.

2. DATA2 sets DZ_MAG.

■ DZ_MAG arguments

DATA2	Description	Notes
0x00	1.25×	Digital zoom is enabled and disabled via the existing command (F0 37).
0x01	1.50×	Ditto
0x02	1.75×	Ditto
0x03	2.00×	Ditto
Other	Handled as 0x00	Ditto

■ Receive command

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

5.12.4 Query Zoom Focus Speed Setting Ex (Query Zoom Focus Setting Ex Response)

A command that returns the 10-step parameters for zoom/focus.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x2D	—	0x00	—

1. DATA1 queries the setting for CMND2 (see table below).
2. DATA2 is fixed at 0x00.

■ Receive command (Extended Response 2)

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF1	0x2F	—	—	—

- RESP1 sets 0xF1.
- RESP2 sets 0x2F.
- DATA1 and DATA2 are set to values corresponding to the requested content (see table below).

Function	CMND2 set by send command	DATA1 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query Digital Zoom Ex	0x21	0x00	0x00-0x03	Zoom ratio for digital zoom
Query Zoom Speed Ex	0x25	0x00	0x01-0x0A	Lens zoom speed
Query Focus Speed Ex	0x27	0x00	0x01-0x0A	Lens focus speed
	Other			Invalid

5.13 Original Command 11

(0) Command sent:

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(1) Response (General Response):

Set the CKSM to the 8-bit sum of ALARMS and the value returned for CKSM.

(2) Response (Extended Response):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

(3) Response (Query Response):

Set the CKSM to the 8-bit sum of ADDR through DATA15 (*in-house custom parameter*).

(4) Response (Extended Response 2, an in-house custom parameter):

Set the CKSM to the 8-bit sum of ADDR through DATA2.

5.13.1 Set Focus Area Select

A command used to set the Fcus Area Select

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x01	0x00	Parm1	—

1 . DATA1 is fixed at 0x00.

2 . DATA2 sets Parm1

■ Parm1 arguments

DATA2	Description	Notes
0x00	Fixed center	
0x01	Handled as 0x00	Reserved
0x02	Aera Select (5X9)	
Other	Handled as 0x00	

■ Receive command

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

5.13.2 Set Focus Area Position

A command used to set the Fcus Area Position

Caution: “Set Focus Area Position”, “Set Focus Area Start Position”, and “Set Focus Area End Position” are set the following steps.

- 1 Start the Focus Area Position setting
- 2 Set the Focus Area Start Position
- 3 Set the Focus Aera End Position
- 4 Fixed Focus Area Position setting

If other commands are used during the position setting, this process is invalidated.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x03	0x00	Parm1	—

- 1 . DATA1 is fixed at 0x00.
- 2 . DATA2 sets Parm1

■ Parm1 arguments

DATA2	Description	Notes
0x00	Start the Area Position setting	
0x01	Fixed Area Position setting	

■ Receive command (Extended Response)

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x03	0x00	Parm2	—

- 1 . DATA1 is fixed at 0x00.
- 2 . DATA2 as follows,

■ Parm2 arguments

DATA2(bit)	Description	Notes
0	Completed succesfull	
1	Position Setting Error	
Other	Handled as 0x00	

5.13.3 Set Focus Area Start Position

A command used to set the Fcus Area Start Position

Caution: “Set Focus Area Position”, “Set Focus Area Start Position”, and “Set Focus Area End Position” are set the following steps.

- 1 Start the Focus Area Position setting
- 2 Set the Focus Area Start Position
- 3 Set the Focus Aera End Position
- 4 Fixed Focus Area Position setting

If other commands are used during the position setting, this process is invalidated.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x05	X coordinate	Y coordinate	—

- DATA1 and DATA2 are as follows

■ DATA1 and DATA2 arguments

DATA1	Description	Notes
0x00 To 0x12	Set the position of Left Upper Side of rectangle shape	Horizontal axis (0 to 5) In case of using more than 5, setting number is 5 as maximum divide number.
Other	Handled as 0x00	

DATA2	Description	Notes
0x00 To 0x12	Set the position of Left Upper Side of rectangle shape	Vertical axis (0 to 9) In case of using more than 9, setting number is 9 as maximum divide number.
Other	Handled as 0x00	

■ Receive command

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

5.13.4 Set Focus Area End Position

A command used to set the Focus Area End Position

Caution: “Set Focus Area Position”, “Set Focus Area Start Position”, and “Set Focus Area End Position” are set the following steps.

- 1 Start the Focus Area Position setting
- 2 Set the Focus Area Start Position
- 3 Set the Focus Area End Position
- 4 Fixed Focus Area Position setting

If other commands are used during the position setting, this process is invalidated.

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x05	X coordinate	Y coordinate	—

- DATA1 and DATA2 are as follows

■ DATA1 and DATA2 arguments

DATA1	Description	Notes
0x00 To 0x12	Set the position of Right Lower Side of rectangle shape	Horizontal axis (0 to 5) In case of using more than 5, setting number is 5 as maximum divide number.
Other	Handled as 0x00	

DATA2	Description	Notes
0x00 To 0x12	Set the position of Right Lower Side of rectangle shape	Vertical axis (0 to 9) In case of using more than 9, setting number is 9 as maximum divide number.
Other	Handled as 0x00	

■ Receive command

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

5.13.5 Query Focus Area Setting

A command that returns Focus Area Setting

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x09	0x00	0x00	—

•DATA1 and DATA2 are fixed at 0x00.

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x09	0x00	Parm1	—

•DATA2 as following table

■ DATA2 arguments

DATA2	Description	Notes
0x00	Center	
1	Area Select (5X9)	
Other	Handled as 0x00	

5.13.6 Query Focus Area Position

A command that returns Focus Area Position

■ Send command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	CMND1	CMND2	DATA1	DATA2	CKSM
	0xFF	—	0xF2	0x08	0x00	0x00	—

- DATA1 and DATA2 are fixed at 0x00.

■ Receive command (Query Response)

Byte	1	2	3	~	17	18
	SYNC	ADDR	DATA1		DATA15	CKSM
	0xFF	—	Parm1		Parm15	—

- DATA1 to Data17 as following table

■ DATA2 arguments

DATA1 to DATA17	Description	Notes
Parm1	Left Upper Side	Horizontal
Parm2	Left Upper Side	Vertical
Parm3	Right Lower Side	Horizontal
Parm4	Right Lower Side	Vertical
Parm5 to 15	Reserved	Fixed at 0x00

EOD

Line		Part of the		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6		Panel 7		Panel 8		Panel 9		Panel 10		Panel 11		Panel 12		Panel 13		Panel 14		Panel 15		Panel 16		Panel 17		Panel 18		Panel 19		Panel 20		Panel 21		Panel 22		Panel 23		Panel 24		Panel 25		Panel 26		Panel 27		Panel 28		Panel 29		Panel 30		Panel 31		Panel 32		Panel 33		Panel 34		Panel 35		Panel 36		Panel 37		Panel 38		Panel 39		Panel 40		Panel 41		Panel 42		Panel 43		Panel 44		Panel 45		Panel 46		Panel 47		Panel 48		Panel 49		Panel 50		Panel 51		Panel 52		Panel 53		Panel 54		Panel 55		Panel 56		Panel 57		Panel 58		Panel 59		Panel 60		Panel 61		Panel 62		Panel 63		Panel 64		Panel 65		Panel 66		Panel 67		Panel 68		Panel 69		Panel 70		Panel 71		Panel 72		Panel 73		Panel 74		Panel 75		Panel 76		Panel 77		Panel 78		Panel 79		Panel 80		Panel 81		Panel 82		Panel 83		Panel 84		Panel 85		Panel 86		Panel 87		Panel 88		Panel 89		Panel 90		Panel 91		Panel 92		Panel 93		Panel 94		Panel 95		Panel 96		Panel 97		Panel 98		Panel 99		Panel 100		Panel 101		Panel 102		Panel 103		Panel 104		Panel 105		Panel 106		Panel 107		Panel 108		Panel 109		Panel 110		Panel 111		Panel 112		Panel 113		Panel 114		Panel 115		Panel 116		Panel 117		Panel 118		Panel 119		Panel 120		Panel 121		Panel 122		Panel 123		Panel 124		Panel 125		Panel 126		Panel 127		Panel 128		Panel 129		Panel 130		Panel 131		Panel 132		Panel 133		Panel 134		Panel 135		Panel 136		Panel 137		Panel 138		Panel 139		Panel 140		Panel 141		Panel 142		Panel 143		Panel 144		Panel 145		Panel 146		Panel 147		Panel 148		Panel 149		Panel 150		Panel 151		Panel 152		Panel 153		Panel 154		Panel 155		Panel 156		Panel 157		Panel 158		Panel 159		Panel 160		Panel 161		Panel 162		Panel 163		Panel 164		Panel 165		Panel 166		Panel 167		Panel 168		Panel 169		Panel 170		Panel 171		Panel 172		Panel 173		Panel 174		Panel 175		Panel 176		Panel 177		Panel 178		Panel 179		Panel 180		Panel 181		Panel 182		Panel 183		Panel 184		Panel 185		Panel 186		Panel 187		Panel 188		Panel 189		Panel 190		Panel 191		Panel 192		Panel 193		Panel 194		Panel 195		Panel 196		Panel 197		Panel 198		Panel 199		Panel 200		Panel 201		Panel 202		Panel 203		Panel 204		Panel 205		Panel 206		Panel 207		Panel 208		Panel 209		Panel 210		Panel 211		Panel 212		Panel 213		Panel 214		Panel 215		Panel 216		Panel 217		Panel 218		Panel 219		Panel 220		Panel 221		Panel 222		Panel 223		Panel 224		Panel 225		Panel 226		Panel 227		Panel 228		Panel 229		Panel 230		Panel 231		Panel 232		Panel 233		Panel 234		Panel 235		Panel 236		Panel 237		Panel 238		Panel 239		Panel 240		Panel 241		Panel 242		Panel 243		Panel 244		Panel 245		Panel 246		Panel 247		Panel 248		Panel 249		Panel 250		Panel 251		Panel 252		Panel 253		Panel 254		Panel 255		Panel 256		Panel 257		Panel 258		Panel 259		Panel 260		Panel 261		Panel 262		Panel 263		Panel 264		Panel 265		Panel 266		Panel 267		Panel 268		Panel 269		Panel 270		Panel 271		Panel 272		Panel 273		Panel 274		Panel 275		Panel 276		Panel 277		Panel 278		Panel 279		Panel 280		Panel 281		Panel 282		Panel 283		Panel 284		Panel 285		Panel 286		Panel 287		Panel 288		Panel 289		Panel 290		Panel 291		Panel 292		Panel 293		Panel 294		Panel 295		Panel 296		Panel 297		Panel 298		Panel 299		Panel 300		Panel 301		Panel 302		Panel 303		Panel 304		Panel 305		Panel 306		Panel 307		Panel 308		Panel 309		Panel 310		Panel 311		Panel 312		Panel 313		Panel 314		Panel 315		Panel 316		Panel 317		Panel 318		Panel 319		Panel 320		Panel 321		Panel 322		Panel 323		Panel 324		Panel 325		Panel 326		Panel 327		Panel 328		Panel 329		Panel 330		Panel 331		Panel 332		Panel 333		Panel 334		Panel 335		Panel 336		Panel 337		Panel 338		Panel 339		Panel 340		Panel 341		Panel 342		Panel 343		Panel 344		Panel 345		Panel 346		Panel 347		Panel 348		Panel 349		Panel 350		Panel 351		Panel 352		Panel 353		Panel 354		Panel 355		Panel 356		Panel 357		Panel 358		Panel 359		Panel 360		Panel 361		Panel 362		Panel 363		Panel 364		Panel 365		Panel 366		Panel 367		Panel 368		Panel 369		Panel 370		Panel 371		Panel 372		Panel 373		Panel 374		Panel 375		Panel 376		Panel 377		Panel 378		Panel 379		Panel 380		Panel 381		Panel 382		Panel 383		Panel 384		Panel 385		Panel 386		Panel 387		Panel 388		Panel 389		Panel 390		Panel 391		Panel 392		Panel 393		Panel 394		Panel 395		Panel 396		Panel 397		Panel 398		Panel 399		Panel 400		Panel 401		Panel 402		Panel 403		Panel 404		Panel 405		Panel 406		Panel 407		Panel 408		Panel 409		Panel 410		Panel 411		Panel 412		Panel 413		Panel 414		Panel 415		Panel 416		Panel 417		Panel 418		Panel 419		Panel 420		Panel 421		Panel 422		Panel 423		Panel 424		Panel 425		Panel 426		Panel 427		Panel 428		Panel 429		Panel 430		Panel 431		Panel 432		Panel 433		Panel 434		Panel 435		Panel 436		Panel 437		Panel 438		Panel 439		Panel 440		Panel 441		Panel 442		Panel 443		Panel 444		Panel 445		Panel 446		Panel 447		Panel 448		Panel 449		Panel 450		Panel 451		Panel 452		Panel 453		Panel 454		Panel 455		Panel 456		Panel 457		Panel 458		Panel 459		Panel 460		Panel 461		Panel 462		Panel 463		Panel 464		Panel 465		Panel 466		Panel 467		Panel 468		Panel 469		Panel 470		Panel 471		Panel 472		Panel 473		Panel 474		Panel 475		Panel 476		Panel 477		Panel 478		Panel 479		Panel 480		Panel 481		Panel 482		Panel 483		Panel 484		Panel 485		Panel 486		Panel 487		Panel 488		Panel 489		Panel 490		Panel 491		Panel 492		Panel 493		Panel 494		Panel 495		Panel 496		Panel 497		Panel 498		Panel 499		Panel 500		Panel 501		Panel 502		Panel 503		Panel 504		Panel 505		Panel 506		Panel 507		Panel 508		Panel 509		Panel 510		Panel 511		Panel 512		Panel 513		Panel 514		Panel 515		Panel 516		Panel 517		Panel 518		Panel 519		Panel 520		Panel 521		Panel 522		Panel 523		Panel 524		Panel 525		Panel 526		Panel 527		Panel 528		Panel 529		Panel 530		Panel 531		Panel 532		Panel 533		Panel 534		Panel 535		Panel 536		Panel 537		Panel 538		Panel 539		Panel 540		Panel 541		Panel 542		Panel 543		Panel 544		Panel 545		Panel 546		Panel 547		Panel 548		Panel 549		Panel 550		Panel 551		Panel 552		Panel 553		Panel 554		Panel 555		Panel 556		Panel 557		Panel 558		Panel 559		Panel 560		Panel 561		Panel 562		Panel 563		Panel 564		Panel 565		Panel 566		Panel 567		Panel 568		Panel 569		Panel 570		Panel 571		Panel 572		Panel 573		Panel 574		Panel 575		Panel 576		Panel 577		Panel 578		Panel 579		Panel 580		Panel 581		Panel 582		Panel 583		Panel 584		Panel 585		Panel 586		Panel 587		Panel 588		Panel 589		Panel 590		Panel 591		Panel 592		Panel 593		Panel 594		Panel 595		Panel 596		Panel 597		Panel 598		Panel 599		Panel 600		Panel 601		Panel 602		Panel 603		Panel 604		Panel 605		Panel 606		Panel 607		Panel 608		Panel 609		Panel 610		Panel 611		Panel 612		Panel 613		Panel 614		Panel 615		Panel 616		Panel 617		Panel 618		Panel 619		Panel 620		Panel 621		Panel 622		Panel 623		Panel 624		Panel 625		Panel 626		Panel 627		Panel 628		Panel 629		Panel 630		Panel 631		Panel 632		Panel 633		Panel 634		Panel 635		Panel 636		Panel 637		Panel 638		Panel 639		Panel 640		Panel 641		Panel 642		Panel 643		Panel 644		Panel 645		Panel 646		Panel 647		Panel 648		Panel 649		Panel 650		Panel 651		Panel 652		Panel 653		Panel 654		Panel 655		Panel 656		Panel 657		Panel 658		Panel 659		Panel 660		Panel 661		Panel 662		Panel 663		Panel 664		Panel 665		Panel 666		Panel 667		Panel 668		Panel 669		Panel 670		Panel 671		Panel 672		Panel 673		Panel 674		Panel 675		Panel 676		Panel 677		Panel 678		Panel 679		Panel 680		Panel 681		Panel 682		Panel 683		Panel 684		Panel 685		Panel 686		Panel 687		Panel 688		Panel 689		Panel 690		Panel 691		Panel 692		Panel 693		Panel 694		Panel 695		Panel 696		Panel 697		Panel 698		Panel 699		Panel 700		Panel 701		Panel 702		Panel 703		Panel 704		Panel 705		Panel 706		Panel 707		Panel 708		Panel 709		Panel 710		Panel 711		Panel 712		Panel 713		Panel 714		Panel 715		Panel 716		Panel 717		Panel 718		Panel 719		Panel 720		Panel 721		Panel 722		Panel 723		Panel 724		Panel 725		Panel 726		Panel 727		Panel 728		Panel 729		Panel 730		Panel 731		Panel 732		Panel 733		Panel 734		Panel 735		Panel 736		Panel 737		Panel 738		Panel 739		Panel 740		Panel 741		Panel 742		Panel 743		Panel 744		Panel 745		Panel 746		Panel 747		Panel 748		Panel 749		Panel 750		Panel 751		Panel 752		Panel 753		Panel 754		Panel 755		Panel 756		Panel 757		Panel 758		Panel 759		Panel 760		Panel 761		Panel 762		Panel 763		Panel 764		Panel 765		Panel 766		Panel 767		Panel 768		Panel 769		Panel 770		Panel 771		Panel 772		Panel 773		Panel 774		Panel 775		Panel 776		Panel 777		Panel 778		Panel 779		Panel 780		Panel 781		Panel 782		Panel 783		Panel 784		Panel 785		Panel 786		Panel 787		Panel 788		Panel 789		Panel 790		Panel 791		Panel 792		Panel 793		Panel 794		Panel 795		Panel 796		Panel 797		Panel 798		Panel 799		Panel 800		Panel 801		Panel 802		Panel 803		Panel 804		Panel 805		Panel 806		Panel 807		Panel 808		Panel 809		Panel 810		Panel 811		Panel 812		Panel 813		Panel 814		Panel 815		Panel 816		Panel 817		Panel 818		Panel 819		Panel 820		Panel 821		Panel 822		Panel 823		Panel 824		Panel 825		Panel 826		Panel 827		Panel 828		Panel 829		Panel 830		Panel 831		Panel 832		Panel 833		Panel 834		Panel 835		Panel 836		Panel 837		Panel 838		Panel 839		Panel 840		Panel 841		Panel 842		Panel 843		Panel 844		Panel 845		Panel 846		Panel 847		Panel 848		Panel 849		Panel 850		Panel 851		Panel 852		Panel 853		Panel 854		Panel 855		Panel 856		Panel 857		Panel 858		Panel 859		Panel 860		Panel 861		Panel 862		Panel 863		Panel 864		Panel 865		Panel 866		Panel 867		Panel 868		Panel 869		Panel 870		Panel 871		Panel 872		Panel 873		Panel 874		Panel 875		Panel 876		Panel 877		Panel 878		Panel 879		Panel 880		Panel 881		Panel 882		Panel 883		Panel 884		Panel 885		Panel 886		Panel 887		Panel 888		Panel 889		Panel 890		Panel 891		Panel 892		Panel 893		Panel 894		Panel 895		Panel 896		Panel 897		Panel 898		Panel 899		Panel 900		Panel 901		Panel 902		Panel 903		Panel 904		Panel 905		Panel 906		Panel 907		Panel 908		Panel 909		Panel 910		Panel 911		Panel 912		Panel 913		Panel 914		Panel 915		Panel 916		Panel 917		Panel 918		Panel 919		Panel 920		Panel 921		Panel 922		Panel 923		Panel 924		Panel 925		Panel 926		Panel 927		Panel 928		Panel 929		Panel 930		Panel 931		Panel 932		Panel 933		Panel 934		Panel 935		Panel 936		Panel 937		Panel 938		Panel 939		Panel 940		Panel 941		Panel 942		Panel 943		Panel 944		Panel 945		Panel 946		Panel 947		Panel 948		Panel 949		Panel 950		Panel 951		Panel 952		Panel 953		Panel 954		Panel 955		Panel 956		Panel 957		Panel 958		Panel 959	
------	--	-------------	--	---------	--	---------	--	---------	--	---------	--	---------	--	---------	--	---------	--	---------	--	---------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--	-----------	--

Appendix 2. Table of FOCUS Position vs Subject distance for SX400

Focal Length	mm	12.5	19.5	30.4	47.4	73.9	115.3	179.8	280.4	400
		Focus Position [HEX]								
Subject Distance[m]	10	91E8	91A3	8E97	86C7	78EC	689F	5D54	5281	4E77
	12	923C	92EE	9106	8C34	8300	7804	7072	68F4	663E
	14	9291	9394	92D9	8FFF	8A13	8322	7E54	7958	77A0
	17	92E6	948D	94AC	9411	9194	8EF7	8D35	8B0C	8A64
	20	933B	9532	9631	96C7	96F0	9760	97C2	97A9	97C1
	24		95D8	9769	997D	9C16	9F5B	A1C4	A3B2	A492
	28	9390	962B	9852	9B63	9F84	A50F	A8FB	AC6A	ADD8
	33		967E	98EE	9D04	A2F2	AA30	AFA7	B46F	B657
	40	93E5	96D0	99D7	9EEA	A629	AF52	B625	BC58	BEC1
	47		9723	9A73	9FFF	A84E	B307	BABF	C1EF	C4B4
	56			980F	A115	AA73	B64E	BEFC	C71B	CA35
	67		9776	9B5C	A22B	AC61	B928	C297	CB8A	CEF4
	79	943A		9BAA	A2B6	ADAA	BB70	C57A	CF03	D2A4
	94		97C9	9BF8	A386	AEF4	BD6E	C800	D219	D5F1
	110			9C46	A411	AFCF	BF00	C9E5	D473	D87D
	130				A456	B0AB	C048	CBB2	D69C	DAC5
	160			9C94	A4E1	B1BD	C1B5	CD80	D8D9	DD27
	190		981C		A526	B22B	C2B5	CEC3	DA5A	DEC9
	220			9CE2	A56C	B299	C36B	CFAA	DB78	DFF7
	270				A5B1	B33D	C446	D0BF	DCC8	E15A
	320					B3AB	C4D8	D178	DDAB	E24F
	380				A5F7	B3E2	C545	D219	DE70	E325
	450			9D2F		B419	C5B3	D28D	DF18	E3D1
	530				A63C	B450	C5FC	D300	DF99	E45E
	630					B487	C645	D35D	E00F	E4E0
	750						C68E	D3B9	E07C	E549
	890					B4BE	C6D7	D3FE	E0CB	E5A7
	1100				A682		C6FB	D443	E124	E5FF
	1300					B4F5	C720	D472	E155	E63E
	1500						C744	D489	E186	E668
	1800							D4B7	E1AE	E697
	2100						C769	D4CE	E1CC	E6BB
	2500					B52B		D4E5	E1E9	E6DA
	3000						C78D		E207	E6F4
	3500							D4FC	E21B	E709
	4200							D513	E22E	E71E
	5000								E238	E72E
	6000						C7B2	D52A	E24C	E73D
	7100								E256	E748
	8400								E260	E752
	Inf	948F	986F	9D7D	A6C7	B562	C7D6	D541	E287	E781