

Pelco-D Protocol Specification for SX1600

March 25, 2026

Version 3.20.0

FUJIFILM

Change history

Ver.	Date	Revision
1.00	2023/04/07	First version
3.20	2026/03/25	- 5.1 Standard Command: Added command comments. - 5.3.13 Set Manual ISO 5.3.14 Query Manual ISO: Corrected typos in the arguments. - 5.10.1 Query LogData: Added a description of the receive command and corrected typos. - 5.13.1 Set Zoom Speed Ex 5.13.2 Set Focus Speed Ex: Added descriptions of the arguments.

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 Few 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	51
5.3.11	Set Manual Shutter Speed	53
5.3.12	Query Manual Shutter Speed.....	56
5.3.13	Set Manual ISO.....	59
5.3.14	Query Manual ISO	61
5.3.15	Query Manual Iris.....	63
5.3.16	<Reserved>	64
5.3.17	Query Protocol Version	65
5.3.18	<Reserved>	65
5.3.19	<Reserved>	65

5.3.20	<Reserved>	66
5.3.21	<Reserved>	66
5.3.22	<Reserved>	66
5.3.23	Query Manual Setting (Query Manual Setting Response)	66
5.4	ORIGINAL COMMAND1 (ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.1: PHOTO SETTING)	68
5.4.1	<Reserved>	69
5.4.2	Set AF Sensitivity	69
5.4.3	One-push AF	70
5.4.4	<Reserved>	70
5.4.5	<Reserved>	70
5.4.6	<Reserved>	71
5.4.7	<Reserved>	71
5.4.8	Set Infrared WaveLength	71
5.4.9	Set OIS Mode	72
5.4.10	<Reserved>	72
5.4.11	Set Photo Mode Preset	73
5.4.12	Set DayNight Control by External	74
5.4.13	<Reserved>	75
5.4.14	Query Photo Setting (Query Photo Setting Response)	76
5.5	ORIGINAL COMMAND2 ((ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.2: IMAGE QUALITY PARAMETER)	78
5.5.1	<Reserved>	79
5.5.2	Set WideDynamicRange	79
5.5.3	<Reserved>	80
5.5.4	Set DeHeatHaze Mode	80
5.5.5	Set Defogging Mode	81

5.5.6	<Reserved>	82
5.5.7	<Reserved>	82
5.5.8	<Reserved>	82
5.5.9	<Reserved>	82
5.5.10	Set ColorTemperature on WhiteBalance	82
5.5.11	Set Select WhiteBalance	84
5.5.12	Set Digital Zoom.....	85
5.5.13	Set NR Level.....	86
5.5.14	<Reserved>	87
5.5.15	Query ImageQuality Setting (Query ImageQuality Setting Response).....	87
5.6	ORIGINAL COMMAND2 (ORIGINAL COMMANDS OF THIS SPECIFICATION: NO.2: IMAGEQUALITY PARAMETER)	89
5.6.1	<Reserved>	90
5.6.2	Set DayTime Display	90
5.6.3	Set DisplayPosition of DayTime.....	91
5.6.4	Set Title Display.....	92
5.6.5	<Reserved>	92
5.6.6	Set DisplayPosition of Title	93
5.6.7	Set ID Display	94
5.6.8	Set DisplayPosition of ID.....	95
5.6.9	Set Center Position Display.....	96
5.6.10	<Reserved>	96
5.6.11	SetAntialiasing.....	97
5.6.12	<Reserved>	97
5.6.13	<Reserved>	97
5.6.14	<Reserved>	97

5.6.15	Query Display Setting (Query Display Setting Response)	98
5.7	ORIGINAL COMMAND 4 (ORIGINAL COMMANDS OF THIS SPECIFICATION: No...4: OPERATION SETTING)	100
5.7.1	Set Display Mode of time.....	101
5.7.2	Set DisplayMode of YMD.....	102
5.7.3	<Reserved>	103
5.7.4	Set Video Mode.....	103
5.7.5	Set HD Format.....	104
5.7.6	Set VideoDisplay Mode.....	105
5.7.7	<Reserved>	105
5.7.8	Set RS485 ID	106
5.7.9	<Reserved>	106
5.7.10	Set Termination for RS485.....	107
5.7.11	<Reserved>	107
5.7.12	Set RecordingMode on Scared	108
5.7.13	SetDisplay Scared Capacity Remaining	109
5.7.14	Format SDcard.....	110
5.7.15	Download Firmware	111
5.7.16	Recode LogData on SDcard	111
5.7.17	Preset parameters.....	113
5.7.18	Reboot	114
5.7.19	Set Language.....	115
5.7.20	<Reserved>	116
5.7.21	<Reserved>	116
5.7.22	<Reserved>	116
5.7.23	Query Operation Setting (Query Operation Setting Response)	116

5.8	ORIGINAL COMMAND 5 (ORIGINAL COMMANDS OF THIS SPECIFICATION: NO...5: SET KEY)	119
5.8.1	SetEncodeMode	120
5.8.2	Record LiveView on SDcard	121
5.8.3	Set 1st file of playing Movie	122
5.8.4	Play Movie from SDcard	123
5.8.5	Delete Movie from SDcard	124
5.8.6	Select Movie mode Play mode	125
5.8.7	<Reserved>	126
5.8.8	<Reserved>	126
5.8.9	<Reserved>	126
5.8.10	<Reserved>	126
5.8.11	<Reserved>	126
5.8.12	Set SDI ON MENU OK	127
5.8.13	Set Direction	128
5.8.14	Set Back CMD	129
5.8.15	Query Key Setting (Query Key Setting Response)	130
5.9	ORIGINAL COMMAND 6 (ORIGINAL COMMANDS OF THIS SPECIFICATION : NO. 6 : QUERY SDCARD)	132
5.9.1	Query Number of Movies on SDcard (Query Number of Movies on SDcard Response)	133
5.9.2	Query Year of Movie on SDcard (Query Year of Movie on SDcard Response)	134
5.9.3	Query MonthDay of Movie on SDcard (Query MonthDay of Movie on SDcard Response)	135
5.9.4	Query HourMinute of Movie on SDcard (Query HourMinute of Movie on SDcard Response)	136
5.10	ORIGINAL COMMAND7 (IN-HOUSE CUSTOM PARAMETER NO. 7: QUERY LOGDATA)	137
5.10.1	Query LogData (Query LogData Response)	138
5.11	ORIGINAL COMMAND 8 (IN-HOUSE CUSTOM PARAMETER NO. 8: IMAGEQUALITY PARAMETER FINE)	139
5.11.1	<Reserved>	140

5.11.2	<Reserved>	141
5.11.3	<Reserved>	142
5.11.4	<Reserved>	143
5.11.5	<Reserved>	144
5.11.6	Set Brightness Level Fine	145
5.11.7	Set Contrast Level Fine	146
5.11.8	Set ColorSaturation Level Fine	147
5.11.9	Set Sharpness Level Fine	148
5.11.10	<Reserved>	149
5.11.11	Set WhiteBalance Shift Red Fine	150
5.11.12	Set WhiteBalance Shift Blue Fine	151
5.11.13	<Reserved>	152
5.11.14	<Reserved>	153
5.11.15	Query ImageQuality Setting Fine (Query ImageQuality Setting Response Fine)	154
5.12	ORIGINAL COMMAND 9 (IN-HOUSE CUSTOM PARAMETER NO. 9: DAYNIGHT SETTING EX)	156
5.12.1	Set DayNight Mode	157
5.12.2	Set Day to Night Threshold	158
5.12.3	Set Night to Day Threshold	159
5.12.4	Set DayNight Auto Delay	160
5.12.5	Set Day Start Time	161
5.12.6	Set Night Start Time	162
5.12.7	Set Optical Filter Day	163
5.12.8	Set Optical Filter Night	164
5.12.9	<Reserved>	165
5.12.10	Query DayNight Setting Ex (Query DayNight Setting Ex Response)	166

5.13	ORIGINAL COMMAND 10 (IN-HOUSE CUSTOM PARAMETER NO. 10: ZOOM FOCUS SETTING EX)	168
5.13.1	Set Zoom Speed Ex.....	169
5.13.2	Set Focus Speed Ex.....	170
5.13.3	Set Digital Zoom Ex	172
5.13.4	Query Zoom Focus Speed Setting Ex (Query Zoom Focus Setting Ex Response)	173
5.14	ORIGINAL COMMAND11	175
5.14.1	Set Focus Area Select.....	176
5.14.2	Set Focus Area Position	176
5.14.3	Set Focus Area Start Position	178
5.14.4	Set Focus Area End Position	180
5.14.5	Query Focus Area Setting.....	182
5.14.6	Query Focus Area Position	183

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 SX1600.

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 SX1600

- SX1600 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

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 (from version 2.00, 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 (from version 2.00, 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 Few Version

Command to get FW (Firmware) Version

■ Send command

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

1. Always set 0xFF to SYNC
2. Set address 1 to 31 to ADDR
3. Set the command according to the purpose to CMND1 and CMND2
4. Set 0x00 to DATA1 (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	F11
0x02	F11
0x03	F11
0x04	F11
0x05	F11
0x06	F11
0x07	F8
0x08	F9

0x09	F10
0x0A	F11
0x0B	F13
0x0C	F14
0x0D	F16
0x0E	F18
0x0F	F20
0x10	F22
0x11	F25
0x12	F29
0x13	F32
Others	F11

■ 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

■ Shute speed value for DATA1

DATA1	Shutter speed value [sec]
0x01	1
0x02	1/1.3
0x03	1/1.6
0x04	1/2
0x05	1/2.5
0x06	1/3
0x07	1/4
0x08	1/5
0x09	1/6
0x0A	1/8
0x0B	1/10
0x0C	1/13
0x0D	1/15
0x0E	1/20
0x0F	1/25
0x10	1/30
0x11	1/40
0x12	1/50
0x13	1/60
0x14	1/80
0x15	1/100
0x16	1/120
0x17	1/125

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

DATA1	説明 (※FNo は、Wide 端の F 値)
0x01	Reserved
0x02	Reserved
0x03	Reserved
0x04	Reserved
0x05	Reserved
0x06	Reserved
0x07	F8
0x08	F9
0x09	F10
0x0A	F11
0x0B	F13
0x0C	F14
0x0D	F16
0x0E	F18
0x0F	F20
0x10	F22
0x11	F25
0x12	F29
0x13	F32

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 <i>returned to</i> receiving command	DATA2 <i>returned to</i> receiving command	Description
Query Zoom Speed	0x25	0x00	ZOOM_SPEED	<i>Returns</i> the zoom speed.
Query Focus Speed	0x27	0x00	FOCUS_SPEED	<i>Returns</i> 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	<i>Returns</i> the zoom position.
Query Baud Rate	0x67	0x00	SET_B_RARE	Set Remote baud rate.
Query Focus Position	0x8F	FOCUS_MSB	FOCUS_LSB	<i>Returns</i> the focus position.
Query Manual Iris	0x91	0x00	MANU_FNO	F value of iris
Query Shutter Limit on Auto	0x93	0x00	A_SHUT_LIM	<i>Returns</i> the minimum shutter speed for autoexposure.
Query Manual Shutter Speed	0x95	0x00	MANU_SHUT	<i>Returns</i> the shutter speed.
Query Manual ISO	0x99	0x00	MANU_ISO	<i>Returns</i> 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) 4th 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 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query AF Sensitivity	0x05	0x00	1–3	<i>Returns</i> 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	<i>Returns</i> the IR filter.
Query OIS Mode	0x13	0x00	0–3	<i>Returns</i> OIS status (on/off).
Query Photo Mode Preset	0x17	0x00	1–2	<i>Returns</i> the shooting mode preset.
Query DayNight Control 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_TMP to DATA2

■ Argument of C_WB_TMP

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 <i>returned</i> to receiving command	DATA2 <i>returned</i> to receiving command	Description
Query DayTime Display	0x43	0x00	0–1	<i>Returns</i> the date and time.
Query DisplayPosition of DayTime	0x45	0x00	1–4	<i>Returns</i> the date and time display position.
Query Title Display	0x47	0x00	0–1	<i>Returns</i> title display status.
Query Display Position of Title	0x4B	0x00	1–4	<i>Returns</i> the title display position.
Query ID Display	0x4D	0x00	0–1	<i>Returns</i> ID display status.
Query DisplayPosition of ID	0x4F	0x00	1–6	<i>Returns</i> the ID display position.
Query Center Position Display	0x51	0x00	0–1	<i>Returns</i> 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. SX1600 cannot update FW via RS485. Therefore, even if SX1600 are installed at a remote distance and controlled by RS485, FW update needs to use Ethernet I / F.

When this command is sent, the camera automatically reboots and starts up in the simple WebUI mode, and only the FW download operation via the Ethernet I / F is enabled. 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 SX1600 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 <i>returned to</i> receiving command	DATA2 <i>returned to</i> receiving command	Description
Query EncodeMode	0x91	0x00	1–2	<i>Returns</i> the video encoding.
Query Record LiveView on SDcard	0x93	0x00	0–1	<i>Returns</i> 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	<i>Returns</i> 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	<i>Returns</i> the number of the frame to be deleted from the memory card.
Query Select Movie mode Play mode	0x9B	0x00	1–2	<i>Returns</i> the video/playback mode toggle status.
Query SDI ON MENU OK	0xA7	0x00	0–1	<i>Returns</i> SDI display status (on/off).
Query Direction	0xA9	0x00	1–4	<i>Returns</i> cursor movement (0x00 when no cursor history).
Query Back CMD	0xAB	0x00	0–1	<i>Returns</i> 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 (≠ 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

■ Receive command

Byte	1	2	3	4	5	6	7
	SYNC	ADDR	RESP1	RESP2	DATA1	DATA2	CKSM
	0xFF	—	0xF0	0xD3	LOG_DAT	LOG_DAT	—

1. Set 0xF0 to RESP1
2. Set 0xD3 to RESP2
3. Set DATA1 and DATA2 to values according to the requested content.

5. 11 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.

5.11.1 <Reserved>

5.11.2 <Reserved>

5.11.3 <Reserved>

5.11.4 <Reserved>

5.11.5 <Reserved>

5.11.6 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	—

5.11.7 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	—

5.11.8 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	—

5.11.9 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	—

5.11.10 <Reserved>

5.11.11 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	—

5.11.12 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	—

5.11.13 <Reserved>

5.11.14 <Reserved>

5.11.15 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 to</i> receiving command	DATA2 <i>returned to</i> 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. 12 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.

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	—

5.12.2 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	—

5.12.3 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	—

5.12.4 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	—

5.12.5 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	—

5.12.6 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	—

5.12.7 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	—

5.12.8 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	—

5.12.9 <Reserved>

5.12.10 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 <i>returned to</i> receiving command	DATA2 <i>returned to</i> receiving command	Description
Query Night Mode	0x01	0x00	0x00-0x04	<i>Returns</i> 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	<i>Returns</i> the optical filter for day mode.
Query Optical Filter Night	0x0F	0x00	0x00-0x01	<i>Returns</i> the optical filter for night mode.
	Others	0x00	0x00	Invalid

5. 13 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.

5.13.1 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	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	Minumum Speed	0x00
Other	Handled as 0x01	0x03

■ Receive command

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

5.13.2 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
0x00	Invalid	
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	Minumum Speed	0x00
Other	Handled as 0x01	0x03

■ Receive command

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

5.13.3 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	—

5.13.4 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. 14 Original Command11

(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.

5.14.1 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	—

5.14.2 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	

5.14.3 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	—

5.14.4 Set Focus Area End Position

A command used to set the Fcus 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 Aera End Position
- 4 Fixed Focus Area Position setting

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

■ 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	—

5.14.5 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	

5.14.6 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

Appendix 1. Table of ZOOM Position vs Focal length for SX1600 Digital ZOOM (Continuous)

[illegible][illegible][illegible][illegible]

Appendix 1. Table of ZOOM Position vs Focal length for SX1600 Digital ZOOM (Extended)

Appendix 2. Table of FOCUS Position vs Subject Distance for SX1600 Digital ZOOM (Continuous)

				Digital Zoom:OFF																Digital Zoom (Continuous): x1.25																Digital ZOOM (Continuous): x1.5																Digital ZOOM (Continuous): x1.75																Digital ZOOM (Continuous): x2.0															
Focal Length	mm	20	35.1	61.5	107.9	189.3	331.9	582.1	1081.3	1600	20	40.4	81.5	164.4	331.9	669.8896	1405.522	1794.86	2000	20	46.45219	107.93	250.6175	582.11	1405.522	1846.165	2153.829	2400	20	53.45281	142.9285	381.9411	1081.43	1794.91	2153.877	2512.806	2800	20	61.5	189.3	582.1779	1641.314	2051.306	2461.59	2871.75	3200																																					
Zoom Position	HEX	0000	20D2	41A4	6276	8348	A41A	C4EC	E5BD	FFFF	0000	20D2	41A4	6276	8348	A41A	C4EC	E5BD	FFFF	0000	20D2	41A4	6276	8348	A41A	C4EC	E5BD	FFFF	0000	20D2	41A4	6276	8348	A41A	C4EC	E5BD	FFFF	0000	20D2	41A4	6276	8348	A41A	C4EC	E5BD	FFFF																																					
Control Resolution	Pulse	14	35	108	330	1004	3061	6852	9585	9585	14	57	189	913	3036	8647	9585	9585	9585	9585	14	62	330	2107	6852	9585	9585	9585	9585	14	98	575	4857	9585	9585	9585	9585	9585	14	108	1003	6851	9348	9585	9585	9585	9585																																				
										Focus Position [HEX]										Focus Position [HEX]										Focus Position [HEX]										Focus Position [HEX]																																											
Subject Distance[m]	10	966B	988C	9112	7A60	5558	32BA				966B	96E3	87D1	58A8	32BA					966B	9664	7A5F	42AE						966B	9220	68C2	27D5							966B	9112	555A																																										
	12	97A4	9ABE	9657	85C9	692C	4DD4				97A4	9A0A	8FF0	6BCA	4DD4					97A4	99B1	85C9	5ABC						97A4	97D0	785E	4514							97A4	9657	692D																																										
	14	980C	9C32	9A2D	8E07	7775	617E	1D89				980C	9C7E	958E	798F	617E					980C	9CA4	8E07	6BBA	1D65				980C	9AA1	8388	5AA4							980C	9A2D	7776	1D78																																									
	17	98DD	9DFD	9E4D	96B6	86BD	76B8	46B4				98DD	9ED4	98A0	8842	76B8	05C2				98DD	9EE3	96B6	7E2C	46B3				98DD	9E62	8F7E	71D0							98DD	9E4D	86BE	46B9																																									
	20	9945	9F18	A0F4	90CF	9179	856A	5C6D	2A53	2A53	9945	9F45	A075	9FF0	9298	856A	3BF6	2A53	2A53	2A53	9945	A08E	90CF	9829	5C6C	2A53	2A53	2A53	2A53	9945	A0E7	97D0	8137	2A53	2A53	2A53	2A53	2A53	9945	A0F4	9179	5071	2A53	2A53	2A53	2A53																																					
	24	9A16	A02E	A39E	A2B3	9BAE	9398	712A	4616	4616	9A16	A224	A3FF	9C86	9398	54D0	4616	4616	4616	4616	9A16	A270	A2B3	9788	7129	4616	4616	4616	4616	9A16	A36C	9FCF	9099	4616	4616	4616	4616	4616	9A16	A39E	9BAF	712D	4616	4616	4616	4616																																					
	28	9A7E	A0E6	AS47	AB2C	A512	9D1D	8020	8A21	9A7E	9A7E	A31F	ABD3	A384	9A21	5A21	5A21	5A21	5A21	9A7E	A372	AB2C	A083	9021	5A21	5A21	5A21	5A21	9A7E	AS3E	AS78	9BA9	5A71	5A21	5A21	5A21	5A21	9A7E	AS57	AS13	9823	5A21	5A21	5A21	5A21																																						
	30	A1A3	A25A	A760	AA2A	AB2A	9D93	888D	9C83	A449	A449	ACB3	AB2C	9A9C	9A9C	7D10	7E7C	6C83	6C83	A1A3	ACB3	AB2C	A0E2	9A82	6C83	6C83	6C83	6C83	A1A3	ACB3	AB2C	9A9C	6C83	6C83	6C83	6C83	6C83	9A7E	AB2B	9A9B	6C83	6C83	6C83	6C83																																							
	33	9AE6	A25A	AS69	AB5A	B045	B053	9B60	7EAE	7EAE	9AE6	AS45	ABEA	B034	B053	9A85	7EAE	7EAE	7EAE	9AE6	AS59	AE5A	B07E	9B60	7EAE	7EAE	7EAE	7EAE	9AE6	AS65	AFCA	AFD2	7EAE	7EAE	7EAE	7EAE	7EAE	9AE6	AS18	AB64	9B63	7EAE	7EAE	7EAE	7EAE																																						
	47	9B4F	A2B6	AA18	B0DF	B4FE	BACF	AA72	8B89	8B89	9B4F	AS5C	AD86	B4FE	BACF	8335	8B89	8B89	8B89	9B4F	AE75	B0DF	BE21	AA4F	8B89	8B89	8B89	8B89	9B4F	AE67	B349	B6DF	8B89	8B89	8B89	8B89	8B89	9B4F	AA18	B4FE	AA44	8B89	8B89	8B89	8B89																																						
	56		A317	AB3E	B338	B928	BC3C	ADC2	976C	976C		A6F6	AF7A	B8BF	BCD3	9F19	976C	976C	976C		A71A	B338	BB4D	ADC2	976C	976C	976C	976C		AA76	B69D	BD65	976C	976C	976C	976C	976C		AB3E	B928	ADC4	976C	976C	976C	976C																																						
	67		A373	AC23	B555	BCD9	C1EC	B561	A1AA	A1AA		A717	B0BF	CBCC	81C3	A871	A1AA	A1AA	A1AA		A7BE	B555	BF3C	B561	A1AA	A1AA	A1AA	A1AA		AB57	B96E	C2FE	A1AA	A1AA	A1AA	A1AA	A1AA		AC23	BCD9	B563	A1AA	A1AA	A1AA	A1AA																																						
	79	9BB7	A3CE	AD00	B6D5	FB4F	C5E8	BB46	AA9A	AA9A	9BB7	A79A	B1CF	BF06	C5E8	AFB0	AA9A	AA9A	AA9A		9BB7	A863	B6D5	C337	BB45	AA9A	AA9A	AA9A	AA9A	9BB7	AC1A	BB9A	C759	AA9A	AA9A	AA9A	AA9A	AA9A		AD00	FB4F	BB47	AA9A	AA9A	AA9A	AA9A																																					
	94		A42A	AD9C	B84C	C229	C96E	C08E	B0BE	B0BE		A7EE	B2CC	B169	C5E8	B62F	B0BE	B0BE	B0BE			A8BD	B84C	C64E	C08E	B0BE	B0BE	B0BE	B0BE		ACB0	BD96	CB37	B0BE	B0BE	B0BE	B0BE	B0BE		AD9C	C228	C08F	B0BE	B0BE	B0BE	B0BE																																					
	110		A430	AE2F	B95B	C420	CC32	C499	B633	B633		A841	B392	C34C	CC32	BB2A	B633	B633	B633			A90F	B95B	CA83	C499	B633	B633	B633	B633		AD28	BF17	CE32	B633	B633	B633	B633	B633		AE2F	C420	C49B	B633	B633	B633	B633																																					
	130		A486	AE79	B469	C5DA	CEA8	C84B	BB29	BB29		A895	B451	C44E	CEA8	BF4F	BB29	BB29	BB29			A961	BA69	CAC9	C842	BB29	BB29	BB29	BB29		AD91	C06F	DOE3	BB29	BB29	BB29	BB29	BB29		AE78	C5DA	C844	BB29	BB29	BB29	BB29																																					
	160		A48B	AF0C	B6BD	C7B3	D135	CC0F	C048	C048		A8C5	B50E	C68A	D135	C45A	C048	C048	C048			A9B3	BB6E	C0C3	CC0F	C048	C048	C048	C048		AE09	C1C8	D3AE	C048	C048	C048	C048	C048		AF0C	C7B3	CC10	C048	C048	C048	C048																																					
	190		AAE2	AF5E	BC13	C8E7	D2F7	CEA7	C3CC	C3CC		A8E9	B5BD	C7E7	D2F7	C78D	C3CC	C3CC	C3CC			A9BB	BC13	CE7C	CEA7	C3CC	C3CC	C3CC	C3CC		AE55	C2C4	D598	C3CC	C3CC	C3CC	C3CC	C3CC		AF5E	CB7C	CEA8	C3CC	C3CC	C3CC	C3CC																																					
	220		AAE7	AF4A	BC85	C9D0	D438	D0BD	C65B	C65B		A918	BD56	C8BD	D438	C9E1	C65B	C65B	C65B			AA06	BC85	C9C9	D0B8	C65B	C65B	C65B	C65B		AE81	C370	D6FB	C65B	C65B	C65B	C65B	C65B		AF47	C9CF	D0BD	C65B	C65B	C65B	C65B																																					
	270		AFB0	BD2B	CAE6	D5B5	D2C2	C95C	C95C			A93D	B61E	C9CA	D5B5	CCAO	C95C	C95C	C95C			AA0D	BD2B	D0E6	D2C2	C95C	C95C	C95C	C95C		AEA0	C445	D8BD	C95C	C95C	C95C	C95C	C95C		AFB0	CAE6	D2C3	C95C	C95C	C95C	C95C																																					
	320		AFF1	BD93	CB42	D6C2	D44B	CB71	CB71			A96C	B693	CA80	D6C2	CE82	CB71	CB71	CB71			AA58	BD93	D1D1	D44B	CB71	CB71	CB71	CB71		AEEB	C4C8	D9BE	CB71	CB71	CB71	CB71	CB71		AFF1	CB42	D44C	CB71	CB71	CB71	CB71																																					
	380		BO3B	BDFC	CC40	D7A0	D597	CD35	CD35			B6D3	CB17	D7A0	D01D	CD35	CD35	CD35	CD35			AA5F	BDFC	D289	D597	CD35	CD35	CD35	CD35		AF17	C543	DAB3	CD35	CD35	CD35	CD35	CD35		BO3B	CC40	D598	CD35	CD35	CD35	CD35																																					
	450		B043	BE39	CC0C	D85E	D6B1	CEAC	CEAC			B6DC	CB96	D85E	D174	CEAC	CEAC	CEAC	CEAC			BE39	D335	D6B1	CEAC	CEAC	CEAC	CEAC	CEAC		AF36	C5BE	DB7B	CEAC	CEAC	CEAC	CEAC	CEAC		B043	CCBF	D6B1	CEAC	CEAC	CEAC	CEAC																																					
	530			BE6D	CD21	D8EF	D791	CFE0	CFE0			B71B	CBF6	D8EF	D289	CFE0	CFE0	CFE0	CFE0			BE6D	D3B8	D791	CFE0	CFE0	CFE0	CFE0	CFE0			C810	DC27	CFE0	CFE0	CFE0	CFE0	CFE0	CFE0			CD20	D792	CFE0	CFE0	CFE0	CFE0																																				
	630		B084	BEA2	CD81	D9D7	D85E	DOF4	DOF4			B724	CCAC	D9D7	D387	DOF4	DOF4	DOF4	DOF4			BEA2	D426	D85E	DOF4	DOF4	DOF4	DOF4	DOF4			AF63	C841	DCB8	DOF4	DOF4	DOF4	DOF4	DOF4		B084	CD81	D85F	DOF4	DOF4	DOF4	DOF4																																				
	750		B08D	BED6	CDCC	DD93	D90A	D1DA	D1DA			B75B	CC42	DD93	D458	D1DA	D1DA	D1DA	D1DA			BEAD6	D494	D909	D1DA	D1DA	D1DA	D1DA	D1DA				C683	DD38	D1DA	D1DA	D1DA	D1DA	D1DA	D1DA		B08D	CDDB	D90A	D1DA	D1DA	D1DA	D1DA																																			
	890			BF0A	CE1F	DA4D	D996	D29D	D29D			B764	CCE2	DA4C	D50A	D29D	D29D	D29D	D29D			BF0A	D4D8	D996	D29D	D29D	D29D	D29D	D29D				C6C4	DDA3	D29D	D29D	D29D	D29D	D29D	D29D			CE1F	D996	D29D	D29D	D29D	D29D																																			
	1100			BF13	CE9E	DA80	DA2A	D3F5	D3F5			B799	CD22	DA80	D5B8	D3F5	D3F5	D3F5	D3F5			BF13	D532	DA29	D3F5	D3F5	D3F5	D3F5	D3F5				C6D0	DE10	D3F5	D3F5	D3F5	D3F5	D3F5	D3F5			CE9E	DA2A	D3F5	D3F5	D3F5	D3F5																																			
	1300			BF3E	CE98	DAE6	DA86	D3E2	D3E2			B7A2	CD58	DAE6	D633	D3E2	D3E2	D3E2	D3E2			BF3E	D570	DA86	D3E2	D3E2	D3E2	D3E2	D3E2				C710	DE50	D3E2	D3E2	D3E2	D3E2	D3E2	D3E2			CE98	DAE7	D3E2	D3E2	D3E2	D3E2																																			
	1600			BF47	CE9C	D59C	D441	D441	D441				CD58	D59C	D441	D441	D441	D441	D441			BF47	D59C	D441	D441	D441	D441	D441	D441				C73F	D6D0	D441	D441	D441	D441	D441	D441			D59C	D441	D441	D441	D441																																				
	1900			BF73	CEDB	DB19	DA49	DA44	DA44				CD98	D59D	DA44	DA44	DA44	DA44	DA44			BF73	D5C4	DB19	DA44	DA44	DA44	DA44	DA44				C747	DEB0	DA44	DA44	DA44	DA44	DA44	DA44			CEDB	DB1A	DA44	DA44	DA44	DA44																																			
	2100			BF70	CE99	DB79	DB51	DAF1	DAF1				CD9F	DB79	D727	DAF1	DAF1	DAF1	DAF1			BF70	D5D0	DB50	DAF1	DAF1	DAF1	DAF1	DAF1				C768	DEE2	DAF																																																

Appendix 2. Table of FOCUS Position vs Subject Distance for SX1600 Digital ZOOM (Extended)

[illegible]