FUJIFILM

Pelco-P Protocol Specification

For SX800, SX801

Jan.31.2019

Ver.2.51

FUJIFILM

Change history

Ver.	Date			Revision
2.5	2019/7/19			First version
2.51	2020/1/31			Add SX801 as the applicable model

Table of contents

1 Summary

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

Applicable model: Long Range Surveillance Camera "FUJIFILM SX800" and “FUJIFILM SX801”

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

2 Overview

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

3 Overview about Pelco-P

The Pelco-P protocol is a master-slave type protocol, and up to 32 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 0 to 30 at maximum (※ RS485_ID is 1 to 31). Communication shall be set according to the following contents.

■ Serial data format

Baud rate：2400, 4800, 9600, 19200, 38400, 115200

Start Bit：1

Data Length：8

Stop Bit：1

Parity：None

3.1 Send command format

Byte	1	2	3	4	5	6	7	8
	STX	ADDR	CMND1	CMND2	DATA1	DATA2	**ETX**	CKSM
	0xA0	—	—	—	—	—	**0xAF**	

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
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. Always set 0xAF to ETX
7. Set the XOR 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	5
	SYNC	ADDR	ALARMS	ETX	CKSM
	0xA0	－	0x00	0xAF	－

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
3. Set 0x00 to ALARMS
4. Always set 0xAF to ETX
5. Set the XOR 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	8
	STX	ADDR	RESP1	RESP2	DATA1	DATA2	ETX	CKSM
	0xA0	—	—	—	—	—	0xAF	—

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
3. Set received RESP1 and RESP2 to CMND1 and CMND2
4. Set specific data for each commands to DATA1 and DATA2
5. Always set 0xAF to ETX
6. Set the XOR of 2nd to 8th in 8 bits to CKSM

3.2.3 Receive command (Query Response)

Reply as 19 Bytes data

Byte	1	2	3	····	17	18	19
	STX	ADDR	DATA1	····	DATA15	ETX	CKSM
	0xA0	—	—	····	—	0xAF	-

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
3. Set specific data for each commands to DATA1 to DATA15
4. Always set 0xAF to ETX
5. Set the XOR of received CKSM and 1st to 18th data in 8 bits to CKSM

   * As for Query Serial Number command in this specification, set the XOR of 1st to 18th in 8 bits to CKSM

3.2.4 Received command

Reply as 8 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	8
	STX	ADDR	RESP1	RESP2	DATA1	DATA2	ETX	CKSM
	0xA0	—	—	—	—	—	0xAF	—

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
3. Set RESP1、RESP2
4. Set specific data for each commands to DATA1、DATA2
5. Always set 0xAF to ETX
6. Set the XOR of 1st to 7th in 8 bits to CKSM

4 Functional specification

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

Address => 0 to 30 (When shipped from factory or after reset, RS485_ID=7 (= device setting ID) so that set six (one minus) to address for the communication).

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

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

5 Command details

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

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

Note:

"Extended Command" and "Original Command" are used by replacing the format described in Pelco-D specifications with the format of the send command and receive command shown in the outline of Pelco-P in Chapter 3.

5.1 Standard Command

Basic commands defined by Pelco-D.

5.1.1 Send command

Since Bit4-Bit7 of CMND1 is not used in the latest Pelco-P, this specification does not support either.

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

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

5.1.2 Receive command

Byte	1	2	3	4	5
	STX	ADDR	ALARMS	ETX	CKSM
	0xFF	－	0x00	0xAF	－

1. Always set 0xA0 to STX
2. SET ADDRESS 0 TO 30 TO ADDR (* ONE MINUS THE ADDRESS SET BY THE DEVICE)
3. Set 0xAF to ETX
4. Set the XOR of received CKSM and ALARMS in 8 bits to CKSM

EOD