63V5 Camera serial communication I/F specification

1.Outline

This I/F specification is for transferring the data, while using RS-232 to control 63V5.By this communication I/F, Iris, slow scan, BLC, white balance…etc functions can be adjusted.
About the I/F description as below:

2.Serial communication I/F

The connection between the controller and camera is as indicated on "Fig-1". Based on the serial communication parameter of RS-232C to execute the control.
*Communicating speed 9600kbps
*Data length 8bit
*Non-Parity
*Stop bit 1
*Non-flow control

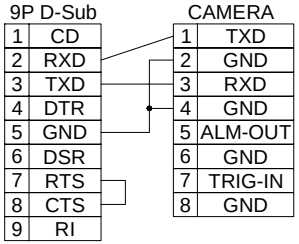


Fig-1 Computer & Camera connector

The communication is by internal synchronization way, the communication flow chart as indicated on "Fig-2".
The connecting confirmation of the communication is by control port to send out of "ENQ", after received the "ACK" signal it will start to communicate. (The connecting confirmation of the communication can be omitted.) Then from the control port to send out the command "COMMAND" signal, and after received it the camera will return "ACK" signal back, after that the camera will proceed the "command" then send response "RESPONSE" signal back to control port; and after the control port received the signal then it will sends " "ACK" signal to the camera. This kind of communication "COMMAND" & "RESPONSE" will be executed repeatedly.
"COMMAND" & "RESPONSE" signal are 19Byte fixed length. (Fig-3)
"COMMAND" included "WRITE" command and "READ" command that through controller to set up. Besides "RESPONSE" has individual response signal to each command signal.

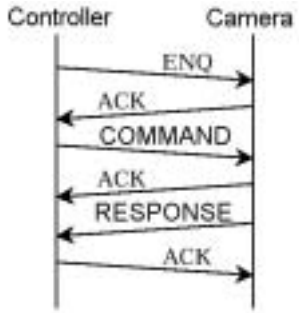


Fig-2 Communaction Flow

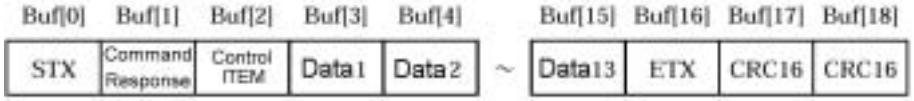


Fig-3 Command & Response

Below is the description for 1 byte & 19 byte related communication data, format of command and response.

3. Communication data format

Based on the communication data length can be divided into 2 formats

3.1 1 byte communication

To make sure the connection of "COMMAND" & "RESPONSE" communication; as well as the confirmation for "COMMAND" & "RESPONSE" of 19 byte.

Command condition
・Buf[0]=0x05 (ENQ: Make sure the connection)

Response and acknowledge condition
・Buf[0]=0x06(ACK ：OK), 0x15(NAK：error), 0x04 (EOT：Transmission end)

3.2 19byte communication data

19byte Command , Response (as indicated on Fig-3)。
・Buf[0]=0x02(STX ：Start Code)

Command condition
・Buf[1]=0x21(Write command)，0x31(Read command)

Response condition
・Buf[1]=0xA0(OK response)，0xA2(Buf[1] non-effective response)， 0xA3(Buf[2]~Buf[15]non-effective response)，0xA4 (storage setting failure response) ,0xA5 (other response)
・Buf[2]=0x00~0xFF (control items)
・Buf[3]~Buf[15]=0x00~0xFF(according to Buf[2] the items come to different)
(Buf[2]~Buf[15] effective content will be mentioned later)
・Buf[16]=0x03(ETX ：Ending code)
・Buf[17]=Buf[1]~Buf[16] CRC code (calculation：$X^{16} + X^{15} + X^2 + 1$) HIGH BYTE
・Buf[18]=Buf[1]~Buf[16] CRC code (calculation：$X^{16} + X^{15} + X^2 + 1$) LOW BYTE

4. COMMAND Type:

Regarding 19byte command of Buf[2]~Buf[15] Write, Read will be mentioned aside。

4.1 Write command

Regarding the write command (Buf[1]=0x21) setting as below。

(1)TITLE item, TITLE Display ON/OFF setting

- Buf[2]=0x10
- Buf[3]=0x00(ON/OFF setting)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(2)TITLE item, CHARACTER setting

- Buf[2]=0x10
- Buf[3]=0x01(character setting)
- Buf[4]=0x00~0xFF(1 character TEXT CODE)
- Buf[5]=0x00~0xFF(2 character TEXT CODE)
- Buf[6]=0x00~0xFF(3 character TEXT CODE)
- Buf[7]=0x00~0xFF(4 character TEXT CODE)
- Buf[8]=0x00~0xFF(5 character TEXT CODE)
- Buf[9]=0x00~0xFF(6 character TEXT CODE)
- Buf[10]=0x00~0xFF(7 character TEXT CODE)
- Buf[11]=0x00~0xFF(8 character TEXT CODE)
- Buf[12]=0x00~0xFF(9 character TEXT CODE)
- Buf[13]=0x00~0xFF(10 character TEXT CODE)
- Buf[14]=0x00~0xFF(11 character TEXT CODE)
- Buf[15]=0x00~0xFF(12 character TEXT CODE)

(3)TITLE item, TITLE DISPLAY POSITION setting

- Buf[2]=0x10
- Buf[3]=0x03(display position setting)
- Buf[4]=0x00(LEFT-UP),0x01(LEFT-DOWN)
  0x02(RIGHT-UP),0x03(RIGHT-DOWN)
- Buf[5]~Buf[15]= non-use

(4)SENSE UP item

- Buf[2]=0x11(sense up setting)
- Buf[3]=0x00(OFF), 0x01(X2), 0x02(X4), 0x03(X6), 0x04(X8), 0x05(X12), 0x06(X16), 0x07(X24), 0x08(X32), 0x09(X48)
  0x0A(X64), 0x0B(X96), 0x0C(X128).
- Buf[4]~Buf[15]= non-use

(5)ALC/ELC item

- Buf[2]= 0x12(ALC/ELC setting)
- Buf[3]=0x00(ALC), 0x01(ELC)
- Buf[4]~Buf[15]= non-use

(6)ALC item, SHUTTER setting (settable at ALC mode)

- Buf[2]=0x15(SHUTTER setting)
- Buf[3]=0x00(OFF), 0x01(1/100), 0x02(1/120), 0x03(1/180), 0x04(1/250), 0x05(1/350), 0x06(1/500), 0x07(1/750),
  0x08(1/1000), 0x09(1/15000), 0x0A(1/2000), 0x0B(1/3000), 0x0C(1/4000), 0x0D(1/6000), 0x0E(1/8000),
  0x0F(1/12000).
- Buf[4]~Buf[15]= non-use

(7)ALC item, LEVEL setting

(ELC item LEVEL setting is the same)

- Buf[2]=0x16(IRIS LEVEL setting)
- Buf[3]=0x00~0x08(level), (0x00 min --- 0x08 max)
- Buf[4]~Buf[15]= non-use

(8)BLC item, ON/OFF/PEAK setting

- Buf[2]=0x18(BLC setting)
- Buf[3]=0x00(BLC ON/OFF/PEAK setting)
- Buf[4]=0x00(OFF), 0x01(ON), 0x02(PEAK)
- Buf[5]~Buf[15]= non-use

(9)BLC item, PRESET setting (settable at BLC-ON mode)

- Buf[2]=0x18(BLC setting)
- Buf[3]=0x01(PRESET ON/OFF setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(10)BLC item, Area Selection setting (Settable at BLC-ON mode)

- Buf[2]=0x19(BLC area setting)
- Buf[3]=0x00~0xFF(Area 1st line：left LSB, right MSB)
- Buf[4]=0x00~0xFF(Area 2nd line: left LSB, right MSB)
- Buf[5]=0x00~0xFF(Area 3rd line：left LSB, right MSB)
- Buf[6]=0x00~0xFF(Area 4th line：left LSB, right MSB)
- Buf[7]=0x00~0xFF(Area 5th line : left LSB, right MSB)
- Buf[8]=0x00~0xFF(Area 6th line：left LSB, right MSB)
  (Buf[3]~Buf[8] Area , selected bit=1)
- Buf[9]~Buf[15]= non-use

	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

(11)BLC item, PEAK LEVEL setting (Settable at PEAK mode)

- Buf[2]=0x22(PEAK LEVEL setting)
- Buf[3]=0x00~0x08(level), (0x00 min --- 0x08 max)
- Buf[4]~Buf[15]= non-use

(12)AGC item, ON/OFF/MANU setting

- Buf[2]=0x1A(AGC setting)
- Buf[3]=0x00(ON/OFF/MANU setting)
- Buf[4]=0x00(OFF), 0x01(ON), 0x02(MANUAL)
- Buf[5]~Buf[15]= non-use

(13)AGC item, ON LEVEL setting
- Buf[2]=0x1A(AGC setting)
- Buf[3]=0x01(ON LEVEL setting)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(14)AGC item, MANUAL LEVEL setting
- Buf[2]=0x1A(AGC setting)
- Buf[3]=0x02(MANUAL LEVEL setting)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(15)W/B item, ATW/MANU/AWC setting
- Buf[2]=0x1B(W/B setting)
- Buf[3]=0x00(ATW/MANU/AWC setting)
- Buf[4]=0x00(ATW), 0x01(AWC), 0x02(MANU)
- Buf[5]~Buf[15]= non-use

(16)W/B item, MANUAL setting (settable at W/B-MANU mode)
- Buf[2]=0x1B(W/B setting)
- Buf[3]=0x01(MANUAL setting)
- Buf[4]=0x00(3200°K), 0x01(5600°K), 0x02(OFF<USER>)
- Buf[5]~Buf[15]= non-use

(17)W/B item, USER R GAIN setting (settable at W/B-MANU item OFF<USER> mode)
- Buf[2]=0x1B(W/B setting)
- Buf[3]=0x02(USER R GAIN setting)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(18)W/B item, USER B GAIN setting (settable at W/B-MANU item OFF<USER> mode)
- Buf[2]=0x1B(W/B setting)
- Buf[3]=0x03(USER B GAIN setting)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(19)W/B item, AWC operation (settable at W/B AWC mode)
- Buf[2]=0x1B(W/B setting)
- Buf[3]=0x00(ATW/MANU/AWC setting)
- Buf[4]=0x00(ATW), 0x01(AWC), 0x02(MANU)
- Buf[5]~Buf[15]= non-use

(20)SYNC item, INT/LINE/VBS setting
- Buf[2]=0x1C(SYNC setting)
- Buf[3]=0x00(INT/LINE/VBS setting)
- Buf[4]=0x00(INT), 0x01(LINE), 0x02(VBS)
- Buf[5]~Buf[15]= non-use

※ If sync-signal not input, the setting of LINE/VBS setting is inhibit.

(21)SYNC item, V PHASE value setting (While on LINE mode, V PHASE can be adjusted within the available range)
- Buf[2]=0x1C(SYNC setting)
- Buf[3]=0x01(V PHASE setting)
- Buf[4]=0x00~ 0xFF(V PHASE value HIGH BYTE)
- Buf[5]=0x00~ 0xFF(V PHASE value LOW BYTE)
- Buf[6]~Buf[15]= non-use

(22)SYNC item, H PHAE value setting (settable at VBS mode)
- Buf[2]=0x1C(SYNC setting)
- Buf[3]=0x02(H PHASE setting)
- Buf[4]=0x00~0xFF(H PHASE value)
- Buf[5]~Buf[15]= non-use

(23)OPTION item, MASK A ON/OFF setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x00(MASK A setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(24)OPTION item, MASK B ON/OFF setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x01(MASK B setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(25)OPTION item, MASK C ON/OFF setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x02(MASK C setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(26)OPTION item, MASK D ON/OFF setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x03(MASK D setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(27)OPTION item, MASK A area setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x10(MASK A area setting)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(28)OPTION item, MASK B area setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x11(MASK B area setting)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(29)OPTION item, MASK C area setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x11(MASK C area setting)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(30)OPTION item, MASK D area setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x12(MASK D area setting)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(31)OPTION item, POSI/NEGA setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x04(POSI/NEGA setting)
- Buf[4]=0x00(POSI), 0x01(NEGA)
- Buf[5]~Buf[15]= non-use

(32)OPTION item, H-REV ON/OFF setting (settable at FREEZE OFF mode)
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x05(H-REV setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(33)OPTION item, V-REV ON/OFF setting (settable at FREEZE OFF mode)
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x07(V-REV setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(34)OPTION item, FREEZE FIELD/FRAME setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x09(FREEZE FIELD/FRAME setting)
- Buf[4]=0x00(FIELD), 0x01(FRAME)
- Buf[5]~Buf[15]= non-use

(35)OPTION item, FREEZE ON/OFF setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x08(FREEZE ON/OFF setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(36)OPTION item, PRIORITY AGC/SENSE setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x06(PRIORITY setting)
- Buf[4]=0x00(AGC PRIORITY), 0x01(SENSE UP PRIORITY)
- Buf[5]~Buf[15]= non-use

(37)OPTION item, GAMMA 0.45/1.0 setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x14(GAMMA setting)
- Buf[4]=0x00(0.45 gamma), 0x01(1.0 gamma)
- Buf[5]~Buf[15]= non-use

(38)OPTION item, APC PRESET setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x15(APC setting)
- Buf[4]=0x00(APC PRESET setting)
- Buf[5]=0x01(ON)
- Buf[6]~Buf[15]= non-use

(39)OPTION item, APC H-GAIN LEVEL setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x15(APC setting)
- Buf[4]=0x01(H-GAIN setting)
- Buf[5]=0x01~0x12 (level)
- Buf[6]~Buf[15]= non-use

(40)OPTION item, APC V-GAIN LEVEL setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x15(APC setting)
- Buf[4]=0x02(V-GAIN setting)
- Buf[5]=0x01~0x12 (level)
- Buf[6]~Buf[15]= non-use

(41)OPTION item, High light LEVEL setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x16(High light setting)
- Buf[4]=0x01~0x12 (level)
- Buf[5]~Buf[15]= non-use

(42)OPTION item, COLOR BAR setting
- Buf[2]=0x1D(OPTION setting)
- Buf[3]=0x17(COLOR BAR setting)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(43)Motion Detect item, ON/OFF setting
- Buf[2]=0x47(Motion Detect setting)
- Buf[3]=0x00(Motion Detect ON/OFF setting)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(44)Motion Detect item, PRESET setting (settable at Motion Detect ON mode)
- Buf[2]=0x47(Motion Detect setting)
- Buf[3]=0x01(PRESET ON/OFF setting)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(45)Motion Detect item, LEVEL setting (settable at Motion Detect ON mode)
- Buf[2]=0x47(Motion Detect setting)
- Buf[3]=0x02(LEVEL setting)
- Buf[4]=0x00~0x08(level)
- Buf[5]~Buf[15]= non-use

(46)Motion Detect item, TIMER setting (settable at Motion Detect ON mode)
- Buf[2]=0x47(Motion Detect setting)
- Buf[3]=0x03(TIMER setting)
- Buf[4]=0x00(10secl), 0x01(30secl), 0x02(60secl)
- Buf[5]~Buf[15]= non-use

(47)Motion Detect item, Area selection setting (settable at Motion Detect ON mode)
- Buf[2]=0x48(Motion Detect Area setting)
- Buf[3]=0x00~0xFF(Area 1st line：left LSB, right MSB)
- Buf[4]=0x00~0xFF(Area 2nd line: left LSB, right MSB)
- Buf[5]=0x00~0xFF(Area 3rd line：left LSB, right MSB)
- Buf[6]=0x00~0xFF(Area 4th line：left LSB, right MSB)
- Buf[7]=0x00~0xFF(Area 5th line : left LSB, right MSB)
- Buf[8]=0x00~0xFF(Area 6th line：left LSB, right MSB)
  (Buf[3]~Buf[8] Area , selected bit=1)
- Buf[9]~Buf[15]= non-use

	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

(48)ZOOM item, ON/OFF setting (settable at FREEZE OFF mode)
- Buf[2]=0x1F(ZOOM setting)
- Buf[3]=0x00(ON/OFF setting)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(49)ZOOM item, LEVEL setting
- Buf[2]=0x1F(ZOOM setting)
- Buf[3]=0x01(LEVEL setting)
- Buf[4]= non-use
- Buf[5]=0x00~0x08(LEVEL)
- Buf[6]~Buf[15]= non-use

(50)EXIT item, SAVE setting
- Buf[2]=0x1E(SAVE setting)
- Buf[3]~Buf[15]= non-use

(51)EXIT item, PRESET setting
- Buf[2]=0x20(PRESET setting)
- Buf[3]=0x00(PRESET operating)
- Buf[4]~Buf[15]= non-use

4.2 Read Command

Regarding Read Command (Buf[1]=0x31) setting as below。

(1)TITLE item, TITLE Display ON/OFF reading

※Buf[4] by non-setting condition to get the data from camera

- Buf[2]=0x10
- Buf[3]=0x00(ON/OFF reading)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(2)TITLE item, CHARACTER reading

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x10
- Buf[3]=0x01(character reading)
- Buf[4]=0x00~0xFF(1 character TEXT CODE)
- Buf[5]=0x00~0xFF(2 character TEXT CODE)
- Buf[6]=0x00~0xFF(3 character TEXT CODE)
- Buf[7]=0x00~0xFF(4 character TEXT CODE)
- Buf[8]=0x00~0xFF(5 character TEXT CODE)
- Buf[9]=0x00~0xFF(6 character TEXT CODE)
- Buf[10]=0x00~0xFF(7 character TEXT CODE)
- Buf[11]=0x00~0xFF(8 character TEXT CODE)
- Buf[12]=0x00~0xFF(9 character TEXT CODE)
- Buf[13]=0x00~0xFF(10 character TEXT CODE)
- Buf[14]=0x00~0xFF(11 character TEXT CODE)
- Buf[15]=0x00~0xFF(12 character TEXT CODE)

(3)TITLE item, TITLE DISPLAY POSITION reading

※Buf[4] by non-setting condition to get the data from camera

- Buf[2]=0x10
- Buf[3]=0x03(display position reading)
- Buf[4]=0x00(LEFT-UP), 0x01(LEFT-DOWN)
  0x00(RIGHT-UP), 0x01(RIGHT-DOWN)
- Buf[5]~Buf[15]= non-use

(4)SENSE UP item

※Buf[3] by non-setting condition to get the data from camera

- Buf[2]=0x11(sense up reading)
- Buf[3]=0x00(OFF), 0x01(X2), 0x02(X4), 0x03(X6), 0x04(X8), 0x05(X12), 0x06(X16), 0x07(X24), 0x08(X32), 0x09(X48)
  0x0A(X64), 0x0B(X96), 0x0C(X128).
- Buf[4]~Buf[15]= non-use

(5)ALC/ELC item

※Buf[3] by non-setting condition to get the data from camera

- Buf[2]= 0x12(ALC/ELC reading)
- Buf[3]=0x00(ALC), 0x01(ELC)
- Buf[4]~Buf[15]= non-use

(6)ALC item, SHUTTER reading

※Buf[3] by non-setting condition to get the data from camera

- Buf[2]=0x15(SHUTTER reading)
- Buf[3]=0x00(OFF), 0x01(1/100), 0x02(1/120), 0x03(1/180), 0x04(1/250), 0x05(1/350), 0x06(1/500), 0x07(1/750),
  0x08(1/1000), 0x09(1/15000), 0x0A(1/2000), 0x0B(1/3000), 0x0C(1/4000), 0x0D(1/6000), 0x0E(1/8000),
  0x0F(1/12000).
- Buf[4]~Buf[15]= non-use

(7)ALC item, LEVEL reading

(ELC item LEVEL reading is the same)

※Buf[3] by non-setting condition to get the data from camera

- Buf[2]=0x16(IRIS LEVEL reading)
- Buf[3]=0x00~0x08(level), (0x00 min --- 0x08 max)
- Buf[4]~Buf[15]= non-use

(8)BLC item, ON/OFF/PEAK reading

※Buf[4] by non-setting condition to get the data from camera

- Buf[2]=0x18(BLC reading)
- Buf[3]=0x00(BLC ON/OFF/PEAK reading)
- Buf[4]=0x00(OFF), 0x01(ON), 0x02(PEAK)
- Buf[5]~Buf[15]= non-use

(9)BLC item, PRESET reading

※Buf[4] by non-setting condition to get the data from camera

- Buf[2]=0x18(BLC reading)
- Buf[3]=0x01(PRESET ON/OFF reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(10)BLC item, Area Selection reading

※Buf[3]~Buf[8] by non-setting condition to get the data from camera

- Buf[2]=0x19(BLC area reading)
- Buf[3]=0x00~0xFF(Area 1st line：left LSB, right MSB)
- Buf[4]=0x00~0xFF(Area 2nd line: left LSB, right MSB)
- Buf[5]=0x00~0xFF(Area 3rd line：left LSB, right MSB)
- Buf[6]=0x00~0xFF(Area 4th line：left LSB, right MSB)
- Buf[7]=0x00~0xFF(Area 5th line : left LSB, right MSB)
- Buf[8]=0x00~0xFF(Area 6th line：left LSB, right MSB)
  (Buf[3]~Buf[8] Area , selected bit=1)
- Buf[9]~Buf[15]= non-use

	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

(11)BLC item, PEAK LEVEL reading

※Buf[3] by non-setting condition to get the data from camera

- Buf[2]=0x22(PEAK LEVEL reading)
- Buf[3]=0x00~0x08(level), (0x00 min --- 0x08 max)
- Buf[4]~Buf[15]= non-use

(12)AGC item, ON/OFF/MANU reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1A(AGC reading)
- Buf[3]=0x00(ON/OFF/MANU reading)
- Buf[4]=0x00(OFF), 0x01(ON), 0x02(MANUAL)
- Buf[5]~Buf[15]= non-use

(13)AGC item, ON LEVEL reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1A(AGC reading)
- Buf[3]=0x01(ON LEVEL reading)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(14)AGC item, MANUAL LEVEL reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1A(AGC reading)
- Buf[3]=0x02(MANUAL LEVEL reading)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(15)W/B item, ATW/MANU/AWC reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1B(W/B reading)
- Buf[3]=0x00(ATW/MANU/AWC reading)
- Buf[4]=0x00(ATW), 0x01(AWC), 0x02(MANU)
- Buf[5]~Buf[15]= non-use

(16)W/B item, MANUAL reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1B(W/B reading)
- Buf[3]=0x01(MANUAL reading)
- Buf[4]=0x00(3200°K), 0x01(5600°K), 0x02(OFF<USER>)
- Buf[5]~Buf[15]= non-use

(17)W/B item, USER R GAIN reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1B(W/B reading)
- Buf[3]=0x02(USER R GAIN reading)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(18)W/B item, USER B GAIN reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1B(W/B reading)
- Buf[3]=0x03(USER B GAIN reading)
- Buf[4]=0x00~0x08(level)，(0x00 min，0x08 max)
- Buf[5]~Buf[15]= non-use

(19)W/B item, AWC operation reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1B(W/B reading)
- Buf[3]=0x04(AWC operation)
- Buf[4]=0x00(ATW operation ending), 0x01(AWC operation active)
- Buf[5]~Buf[15]= non-use

(20)SYNC item, INT/LINE/VBS reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1C(SYNC reading)
- Buf[3]=0x00(INT/LINE/VBS reading)
- Buf[4]=0x00(INT), 0x01(LINE), 0x02(VBS)
- Buf[5]~Buf[15]= non-use

(21)SYNC item, V PHASE value reading
※Buf[4]~Buf[5] by non-setting condition to get the data from camera
- Buf[2]=0x1C(SYNC reading)
- Buf[3]=0x01(V PHASE reading)
- Buf[4]=0x00~ 0xFF(V PHASE value HIGH BYTE)
- Buf[5]=0x00~ 0xFF(V PHASE value LOW BYTE)
- Buf[6]~Buf[15]= non-use

(22)SYNC item, H PHAE value reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1C(SYNC reading)
- Buf[3]=0x02(H PHASE reading)
- Buf[4]=0x00~0xFF(H PHASE value)
- Buf[5]~Buf[15]= non-use

(23)OPTION item, MASK A ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x00(MASK A reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(24)OPTION item, MASK B ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x01(MASK B reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(25)OPTION item, MASK C ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x02(MASK C reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(26)OPTION item, MASK D ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x03(MASK D reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(27)OPTION item, MASK A area reading
※Buf[4]~ Buf[7] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x10(MASK A area reading)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(28)OPTION item, MASK B area reading
※Buf[4]~ Buf[7] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x11(MASK B area reading)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(29)OPTION item, MASK C area reading
※Buf[4]~ Buf[7] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x11(MASK C area reading)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(30)OPTION item, MASK D area reading
※Buf[4]~ Buf[7] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x12(MASK D area reading)
- Buf[4]=start position X value
- Buf[5]=start position Y value
- Buf[6]=end position X value
- Buf[7]=end position Y value
- Buf[8]~Buf[15]= non-use

(31)OPTION item, POSI/NEGA reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x04(POSI/NEGA reading)
- Buf[4]=0x00(POSI), 0x01(NEGA)
- Buf[5]~Buf[15]= non-use

(32)OPTION item, H-REV ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x05(H-REV reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(33)OPTION item, V-REV ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x07(V-REV reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(34)OPTION item, FREEZE FIELD/FRAME reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x09(FREEZE FIELD/FRAME reading)
- Buf[4]=0x00(FIELD), 0x01(FRAME)
- Buf[5]~Buf[15]= non-use

(35)OPTION item, FREEZE ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x08(FREEZE ON/OFF reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]~Buf[15]= non-use

(36)OPTION item, PRIORITY AGC/SENSE reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x06(PRIORITY reading)
- Buf[4]=0x00(AGC PRIORITY), 0x01(SENSE UP PRIORITY)
- Buf[5]~Buf[15]= non-use

(37)OPTION item, GAMMA reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x14(GAMMA reading)
- Buf[4]=0x00(0.45 GAMMA), 0x01(1.0 GAMMA)
- Buf[5]~Buf[15]= non-use

(38)OPTION item, APC PRESET reading
※This item no reading command.

(39)OPTION item, APC H-GAIN LEVEL reading
※Buf[5] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x15(APC reading)
- Buf[4]=0x01(H-GAIN reading)
- Buf[5]=0x00~0x12(level)
- Buf[6]~Buf[15]= non-use

(40)OPTION item, APC V-GAIN LEVEL reading
※Buf[5] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x15(APC reading)
- Buf[4]=0x02(V-GAIN reading)
- Buf[5]=0x00~0x12(level)
- Buf[6]~Buf[15]= non-use

(41)OPTION item, High light LEVEL reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x16(High light reading)
- Buf[4]=0x00~0x12(level)
- Buf[5]~Buf[15]= non-use

(42)OPTION item, COLOR BAR reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x1D(OPTION reading)
- Buf[3]=0x17(COLOR BAR reading)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(43)Motion Detect item, ON/OFF reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x47(Motion Detect reading)
- Buf[3]=0x00(Motion Detect ON/OFF reading)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(44)Motion Detect item, PRESET reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x47(Motion Detect reading)
- Buf[3]=0x01(PRESET ON/OFF reading)
- Buf[4]=0x00(OFF),0x01(ON)
- Buf[5]~Buf[15]= non-use

(45)Motion Detect item, LEVEL reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x47(Motion Detect reading)
- Buf[3]=0x02(LEVEL reading)
- Buf[4]=0x00~0x08(level)
- Buf[5]~Buf[15]= non-use

(46)Motion Detect item, TIMER reading
※Buf[4] by non-setting condition to get the data from camera
- Buf[2]=0x47(Motion Detect reading)
- Buf[3]=0x03(TIMER reading)
- Buf[4]=0x00(10sec), 0x01(30sec), 0x02(60sec)
- Buf[5]~Buf[15]= non-use

(47)Motion Detect item, Area selection reading
※Buf[3]~Buf[8] by non-setting condition to get the data from camera
- Buf[3]=0x00~0xFF(Area 1st line：left LSB, right MSB)
- Buf[4]=0x00~0xFF(Area 2nd line：left LSB, right MSB)
- Buf[5]=0x00~0xFF(Area 3rd line：left LSB, right MSB)
- Buf[6]=0x00~0xFF(Area 4th line：left LSB, right MSB)
- Buf[7]=0x00~0xFF(Area 5th line：left LSB, right MSB)
- Buf[8]=0x00~0xFF(Area 6th line：left LSB, right MSB)
  (Buf[3]~Buf[8] Area , selected bit=1)
- Buf[9]~Buf[15]= non-use

	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

(48)ZOOM item, ON/OFF and LEVER reading
※Buf[4]~Buf[5] by non-setting condition to get the data from camera
- Buf[2]=0x1F(ZOOM reading)
- Buf[3]=0x00(ON/OFF and LEVEL reading)
- Buf[4]=0x00(OFF), 0x01(ON)
- Buf[5]=0x00, 0x10, 0x20, 0x30, 0x40, 0x50, 0x60, 0x70, 0x80(level)
- Buf[6]~Buf[15]= non-use

63V5 Camera Summary reading of shortened command

1. Purpose:

The shortened command is for that while capturing the setting data from63V5 camera, the shortened command could simplify the process of multiple commands, and to read out the data summarily. While to start the camera-adjusting tool, by this shortened summary reading command could relieve the setting data process, but also would not disturb user's operation.

2. Command detail:

The format of this command is the same as 63V5 / 19byte serial command format", please refer to the Fig-3 Command & Response. (Regarding command protocol, please refer to serial command communication I/F.)

(1)Summary reading of shortened command 1

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x00(shortened command 1)
- Buf[4]=0x00~0xFF(TITLE item ID character -1 TEXT CODE)
- Buf[5]=0x00~0xFF(TITLE item ID character -2 TEXT CODE)
- Buf[6]=0x00~0xFF(TITLE item ID character -3 TEXT CODE)
- Buf[7]=0x00~0xFF(TITLE item ID character -4 TEXT CODE)
- Buf[8]=0x00~0xFF(TITLE item ID character -5 TEXT CODE)
- Buf[9]=0x00~0xFF(TITLE item ID character -6 TEXT CODE)
- Buf[10]=0x00~0xFF(TITLE item ID character -7 TEXT CODE)
- Buf[11]=0x00~0xFF(TITLE item ID character -8 TEXT CODE)
- Buf[12]=0x00~0xFF(TITLE item ID character -9 TEXT CODE)
- Buf[13]=0x00~0xFF(TITLE item ID character -10 TEXT CODE)
- Buf[14]=0x00~0xFF(TITLE item ID character -11 TEXT CODE)
- Buf[15]=0x00~0xFF(TITLE item ID character -12 TEXT CODE)

(2)Summary reading of shortened command 2

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x01(shortened command 2)
- Buf[4]=0x00~0x08(BLC item PEAK LEVEL)
- Buf[5]=0x00(LEFT-UP),0x01(LEFT-DOWN) ,0x02(RIGHT-UP) ,0x03(RIGHT-DOWN)(TITLE item TITLE display position)
- Buf[6]=0x00(ATW),0x01(AWC) ,0x02(MANU) (W/B item ATW/MANU/AWC)
- Buf[7]=0x00~0x0C(SENSE UP item SENSE UP OFF ~ X128)
- Buf[8]=0x00~0x08(ZOOM item ZOOM LEVEL)
- Buf[9]=0x00~0x0F(ALC item SHUTTER OFF～12000)
- Buf[10]=0x00~0x08(AGC item MANUAL LEVEL)
- Buf[11]=0x00~0x08(AGC item ON LEVEL)
- Buf[12]=0x00~0xFF(SYNC item V PHASE available max. Value HIGH BYTE)
- Buf[13]=0x00~0xFF(SYNC item V PHASE available max. Value LOW BYTE)
- Buf[14]=0x00~0xFF(SYNC item V PHASE current value HIGH BYTE)
- Buf[15]=0x00~0xFF(SYNC item V PHASE current value LOW BYTE)

(3)Summary reading of shortened command 3

(3)Summary reading of shortened command 3

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x02(shortened command 3)
- Buf[4]=0x00~0xFF(BLC item area select 1st line：left LSB, right MSB)
- Buf[5]=0x00~0xFF(BLC item area select 2nd line : left LSB, right MSB)
- Buf[6]=0x00~0xFF(BLC item area select 3rd line：left LSB, right MSB)
- Buf[7]=0x00~0xFF(BLC item area select 4th line：left LSB, right MSB)
- Buf[8]=0x00~0xFF(BLC item area select 5th line : left LSB, right MSB)
- Buf[9]=0x00~0xFF(BLC item area select 6th line：left LSB, right MSB)
  (Buf[4]~Buf[9] Area , selected bit=1)

	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

- Buf[10]= non-use
- Buf[11]=0x00(3200K),0x01(5600K) ,0x02(OFF<USER>) (W/B item MANUAL)
- Buf[12]=0x00~0x08 (W/B item USER B GAIN)
- Buf[13]=0x00~0x08 (W/B item USER R GAIN)
- Buf[14]=0x00(OFF),0x01(ON) (ZOOM item ZOOM ON/OFF)
- Buf[15]=0x00(OFF),0x01(ON) (TITLE item TITLE display ON/OFF)

(4)Summary reading of shortened command 4

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x03(shortened command 4)
- Buf[4]=0x00(ALC),0x01(ELC) (ALC/ELC item ALC/ELC)
- Buf[5]=0x00(OFF),0x01(ON), 0x02(PEAK) (BLC item BLC ON/OFF/PEAK)
- Buf[6]=0x00(OFF),0x01(ON) (BLC item BLC PRESET)
- Buf[7]=0x00(OFF),0x01(ON), 0x02(MANUAL) (AGC item AGC ON/OFF/MANU)
- Buf[8]=0x00(INT),0x01(LINE), 0x02(VBS) (SYNC item INT/LINE/VBS)
- Buf[9]=0x00(POSI),0x01(NEGA) (OPTION item POSI/NEGA)
- Buf[10]=0x00(OFF),0x01(ON) (OPTION item H-REV ON/OFF)
- Buf[11]=0x00(AGC priority),0x01(SENSE UP priority) (OPTION item PRIORITY AGC/SENS)
- Buf[12]=0x00(OFF),0x01(ON) (OPTION item MASK A ON/OFF)
- Buf[13]=0x00(OFF),0x01(ON) (OPTION item MASK B ON/OFF)
- Buf[14]=0x00(OFF),0x01(ON) (OPTION item MASK C ON/OFF)
- Buf[15]=0x00(OFF),0x01(ON) (OPTION item MASK D ON/OFF)

(5)Summary reading of shortened command 5

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x04(shortened command 5)
- Buf[4]=0x00~0x08 (ALC item LEVEL)
- Buf[5]=0x00(OFF),0x01(ON) (OPTION item V-REV ON/OFF)
- Buf[6]=0x00(FIELD),0x01(FRAME) (OPTION item FREEZE FIELD/FRAME)
- Buf[7]=0x00(OFF),0x01(ON) (OPTION item FREEZE ON/OFF)
- Buf[8]=0x00~0xFF (SYNC item H PHASE available max. Value)
- Buf[9]=0x00~0xFF (SYNC item H PHASE current value)
- Buf[10]~Buf[15]= non-use

(6)Summary reading of shortened command 6

※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x05(shortened command 6)
- Buf[4]=0x00(OFF),0x01(ON) (Motion Detect item ON/OFF)
- Buf[5]=0x00(OFF),0x01(ON) (Motion Detect item PRESET)
- Buf[6]=0x00~0x08(level) (Motion Detect item LEVEL)
- Buf[7]=0x00~0xFF(Area 1st line：left LSB, right MSB)
- Buf[8]=0x00~0xFF(Area 2nd line：left LSB, right MSB)
- Buf[9]=0x00~0xFF(Area 3rd line：left LSB, right MSB)
- Buf[10]=0x00~0xFF(Area 4th line：left LSB, right MSB)
- Buf[11]=0x00~0xFF(Area 5th line：left LSB, right MSB)
- Buf[12]=0x00~0xFF(Area 6th line：left LSB, right MSB)
- Buf[13]=0x00(10sec),0x01(30sec), 0x02(60sec) (Motion Detect item TIMER)
- Buf[14]=0x00(0.45 GAMMA),0x01(1.0 GAMMA) (OPTION item GAMMA)
- Buf[15]= non-use

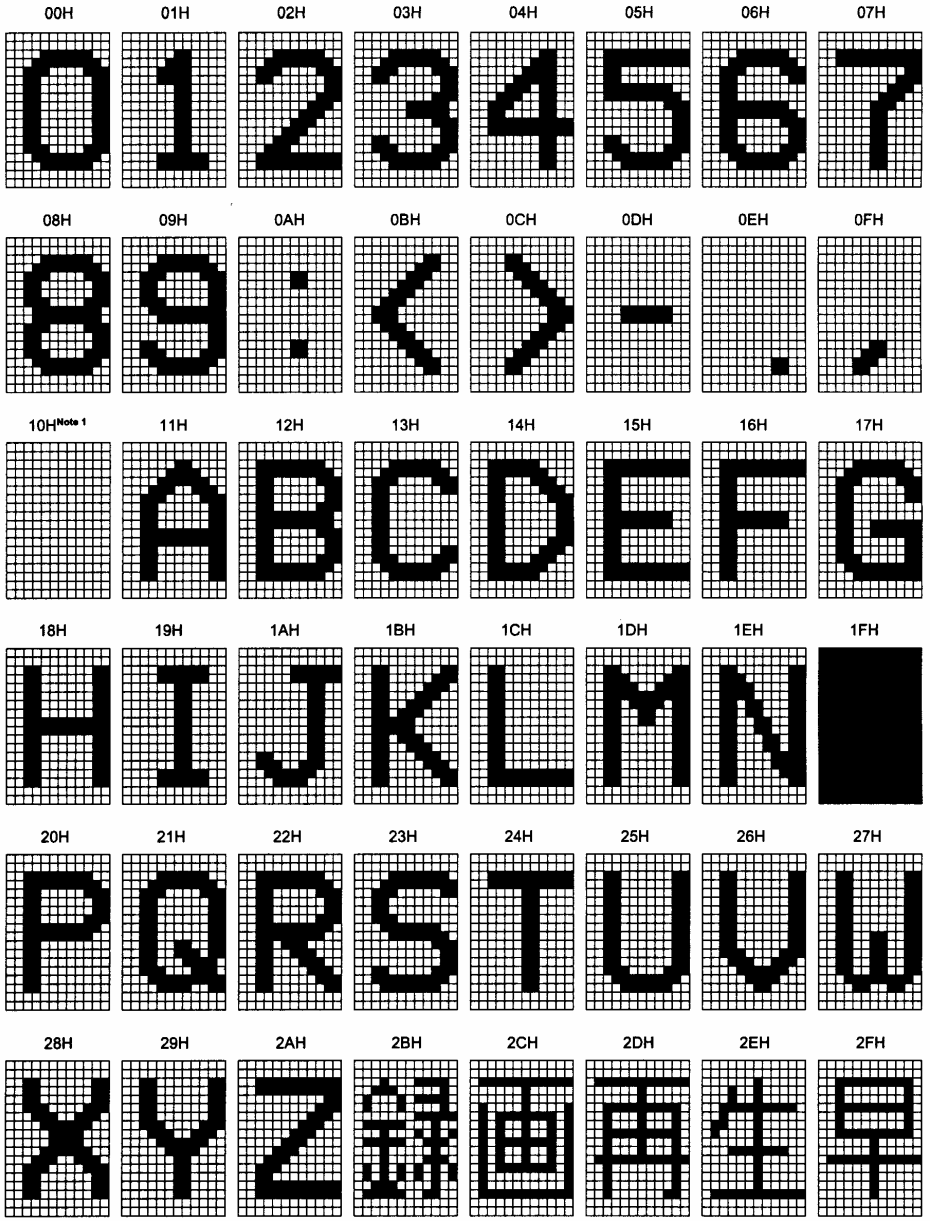
	MSB							LSB
Buf[3]	0	0	0	0	0	0	0	0
Buf[4]	0	0	0	0	0	0	0	0
Buf[5]	0	0	1	1	1	1	0	0
Buf[6]	0	0	1	1	1	1	0	0
Buf[7]	0	0	1	1	1	1	0	0
Buf[8]	0	0	0	0	0	0	0	0

(7)Summary reading of shortened command 7

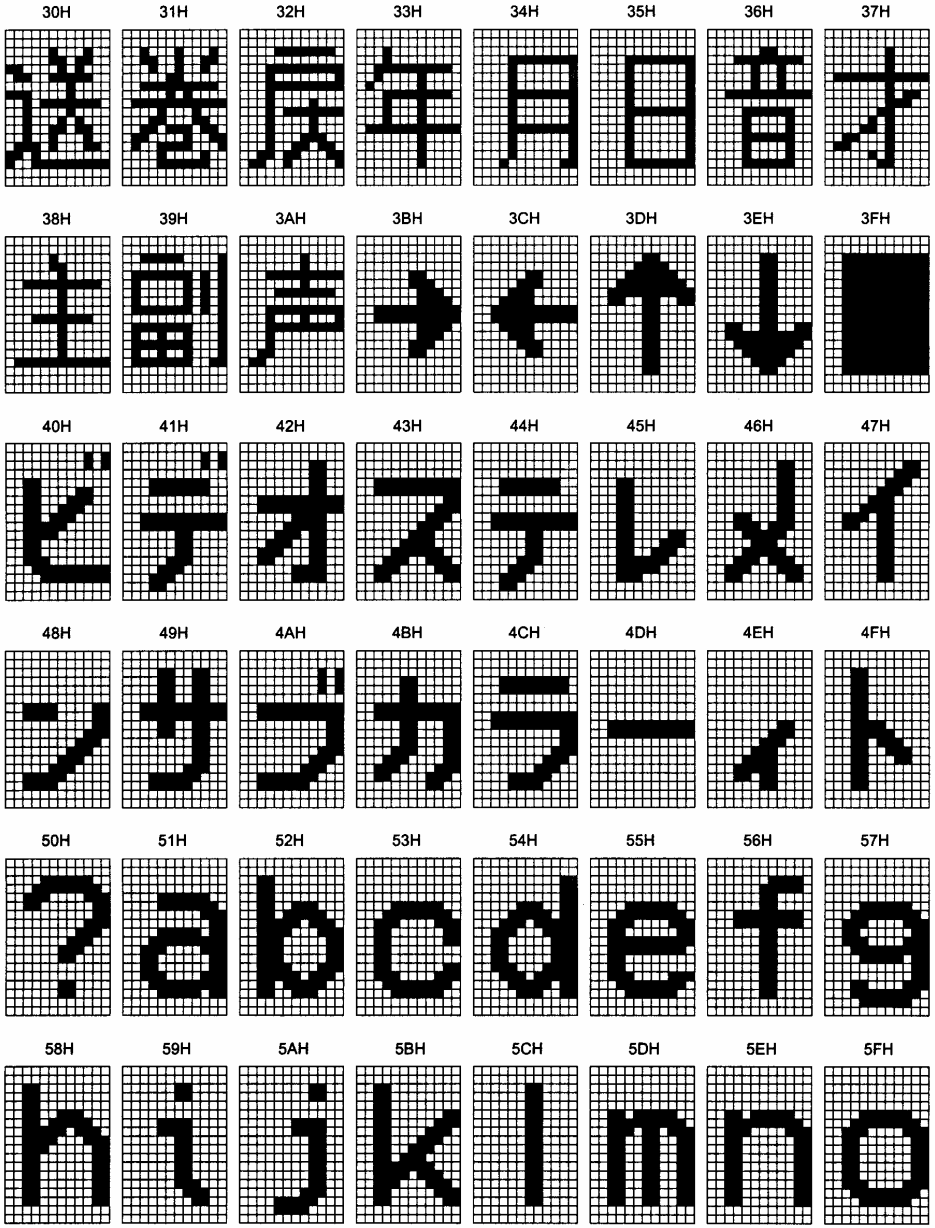
※Buf[4]~Buf[15] by non-setting condition to get the data from camera

- Buf[2]=0x45(summary reading)
- Buf[3]=0x06(shortened command 7)
- Buf[4]=0x00~0x12(level) (OPTION item APC H-GAIN LEVEL)
- Buf[5]=0x00~0x12(level) (OPTION item APC V-GAIN LEVEL)
- Buf[6]=0x00~0x12(level) (OPTION item APC High light LEVEL)
- Buf[7]=0x00(OFF),0x01(ON) (OPTION item COLOR BAR)
- Buf[8]~Buf[15]= non-use

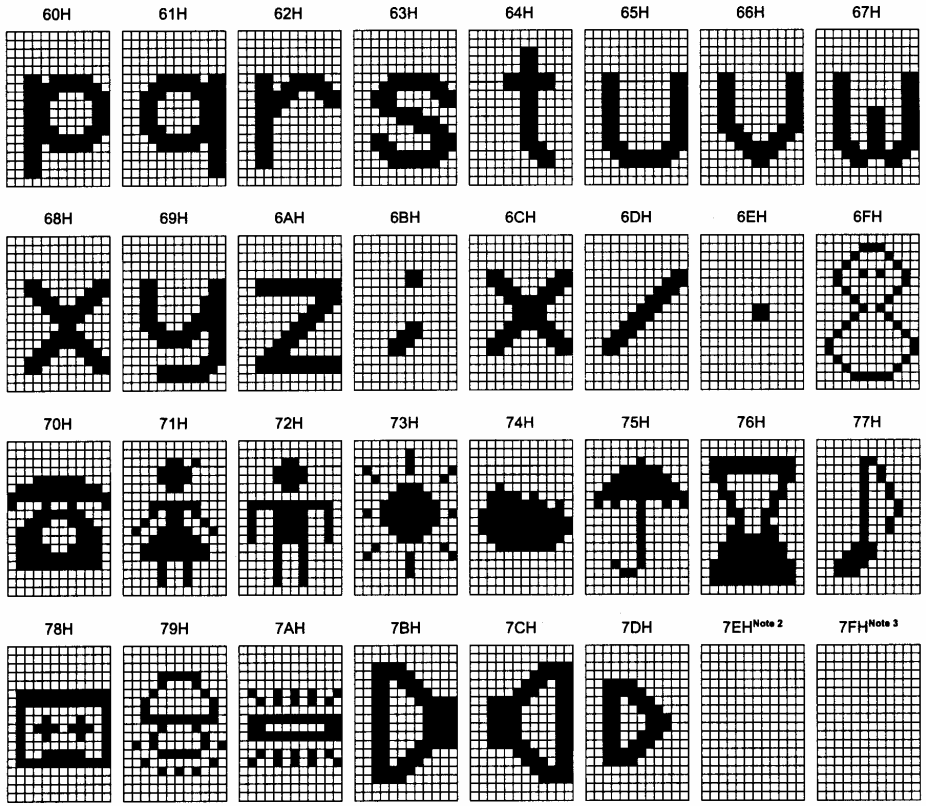
TEXT CODE & PATTERNS 1/3



TEXT CODE & PATTERNS 2/3



TEXT CODE & PATTERNS 3/3



Notes 1. Blank data

2. Display-off data (fixed at this address)

3. End code for second-byte continuous input (fixed at this address)