

HV-C20/HV-C20M Software und Programmierung

Software

Sie haben die Möglichkeit alle Funktionen der Kamera über die REMOTE-Schnittstelle (Seite 28) fernzusteuern. Sie benötigen hierzu einen Schnittstellenadapter (JU-C10 oder JU-C20) sowie ein Verbindungskabel (C-RC15).

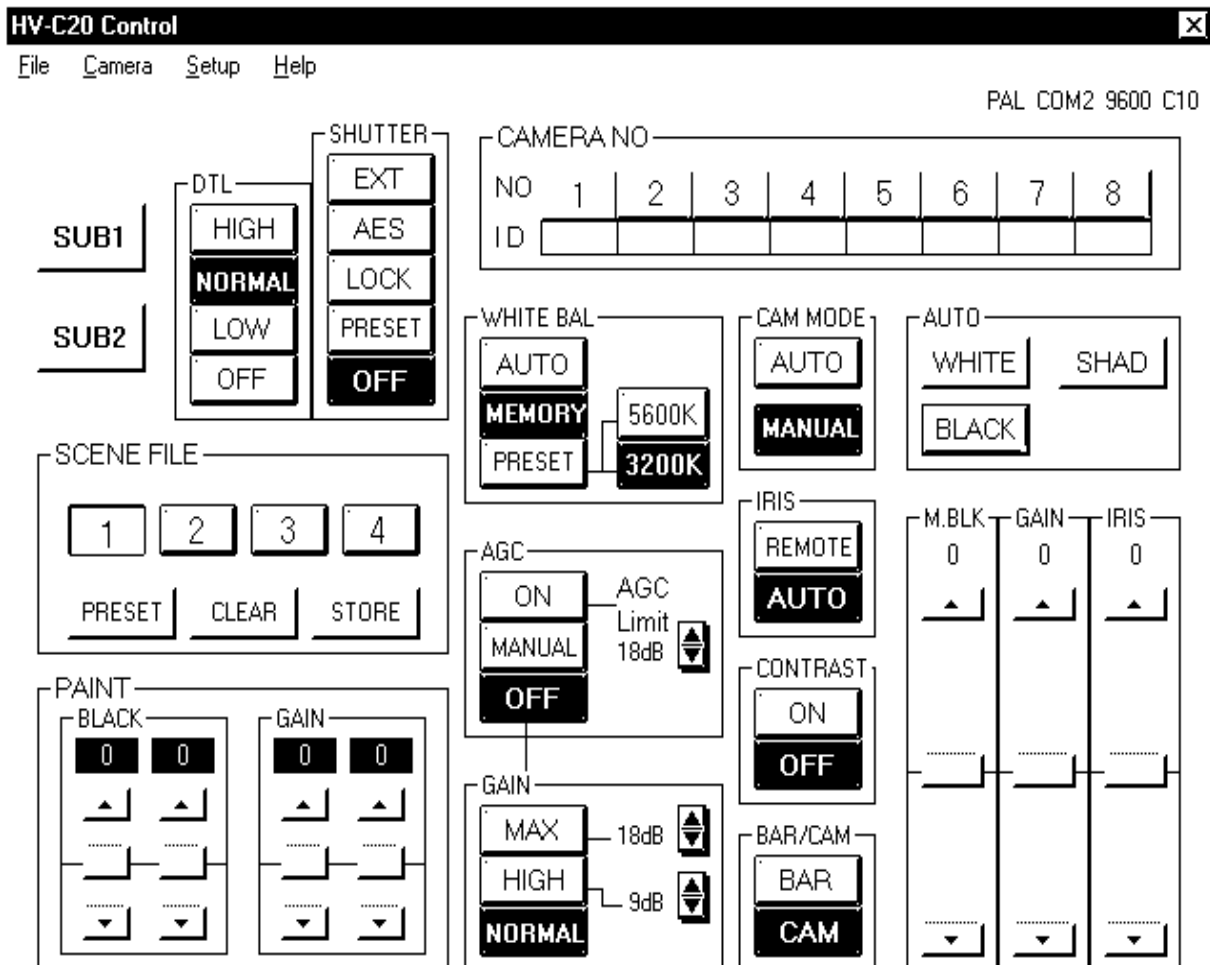
Eine WINDOWS Programm (HV-C20 Control) erhalten Sie von Ihrem Video-Händler oder direkt von :
 HITACHI DENSHI (EUROPA) GmbH
 WeiskircherStr. 88
 D-63110 Rodgau
 Tel. :06106/6992-0
 Fax :06106/6992-12

oder via Download von unserer Internet-Homepage:

[www:http://ourworld.compuserve.com/homepages/Hitachi_Denshi](http://www.ourworld.compuserve.com/homepages/Hitachi_Denshi)

Stellen Sie im Menü „ADJUST“ unter REMOTE eine Baudrate von max 9600 ein !!!

Die folgenden Menü`s zeigen Ihnen die Möglichkeiten der Software:



HV-C20 Control Sub1

| | | | |
|--|--|---|--|
| <p>IRIS GATE</p> <p><input type="radio"/> ON <input type="radio"/> ADJUST <input checked="" type="radio"/> OFF</p> <p>GATE SIZE</p> <p>2</p> | <p>POSITION</p> <p>Horizontal</p> <p>5</p> <p>Vertical</p> <p>4</p> | <p>LENS TYPE</p> <p><input checked="" type="radio"/> VIDEO <input type="radio"/> DC</p> <p>DC TYPE</p> <p>IRIS SPEED</p> <p>0</p> | <p>SHUTTER</p> <p>LOCK SCAN</p> <p>1/50.32</p> <p>EXT TRIG</p> <p><input type="radio"/> EXT <input type="radio"/> FIX TRIG <input type="radio"/> 2 TRIG <input checked="" type="radio"/> 1 TRIG</p> <p>PRESET</p> <p><input type="radio"/> 1/10000 <input type="radio"/> 1/4000 <input type="radio"/> 1/2000 <input type="radio"/> 1/1000 <input type="radio"/> 1/500 <input type="radio"/> 1/250 <input checked="" type="radio"/> 1/100</p> |
| <p>ID TITLE</p> <p>ID DSP</p> <p><input type="radio"/> TOP <input type="radio"/> BOTTOM <input checked="" type="radio"/> OFF</p> <p>TITLE DSP</p> <p><input type="radio"/> TOP <input type="radio"/> BOTTOM <input checked="" type="radio"/> OFF</p> | <p>OPEN LIMIT</p> <p><input type="checkbox"/> ADJUST</p> <p>0</p> <p>CLOSE LIMIT</p> <p><input type="checkbox"/> ADJUST</p> <p>0</p> | <p>Exit</p> | |
| <p>ID SET</p> <p>3 CHR max</p> <p>Ok</p> | <p>TITLE SET</p> <p>12 CHR max</p> <p>Ok</p> | | |

HV-C20 Control Sub2

| | | | |
|---|---|---|--|
| <p>SHADING</p> <p>AUTO MODE</p> <p><input type="radio"/> COLOR <input checked="" type="radio"/> LUMI</p> <p>MANUAL</p> <p>R 0</p> <p>G 0</p> <p>B 0</p> | <p>GEN LOCK</p> <p>H PHASE</p> <p>0</p> <p>SC COARSE</p> <p>0</p> <p>SC FINE</p> <p>0</p> | <p>GAMMA</p> <p><input checked="" type="radio"/> ON <input type="radio"/> OFF</p> <p>KNEE</p> <p><input checked="" type="radio"/> ON <input type="radio"/> OFF</p> <p>WHITE CLIP</p> <p><input checked="" type="radio"/> ON <input type="radio"/> OFF</p> | <p>G ON SYNC</p> <p><input type="radio"/> ON <input checked="" type="radio"/> OFF</p> <p>GL IN IMP</p> <p><input type="radio"/> HIGH <input checked="" type="radio"/> 75ohm</p> <p>FLD/FRM</p> <p><input type="radio"/> FRM <input checked="" type="radio"/> FLD</p> |
| <p>Exit</p> | | | |

Programmierung

Im folgenden finden Sie die Liste der Steuerbefehle, falls Sie die Kamera direkt ansteuern.

| (DT1) | (DT2) | (DT3) | | (DT4) | |
|-------------------|-------|-------|------------------|-------|---|
| CTL | MODE | Bit | Item | MASK | |
| 20H 23H 22H | 00H | 0 | PRESET WHITE BAL | 0 | |
| | | 1 | | 1 | |
| | | 2 | | 1 | |
| | | 3 | | 1 | |
| | | 4 | | 1 | |
| | | 5 | | 1 | |
| | | 6 | | 1 | |
| | 7 | | 1 | | |
| | 01H | 0 | | 1 | |
| | | 1 | | 1 | |
| | | 2 | | 1 | |
| | | 3 | | 1 | |
| | | 4 | | 1 | |
| | | 5 | GAIN | 0 | 0 |
| | | 6 | | 1 | 0 |
| | 7 | | | 1 | |
| | 02H | 0 | | 1 | |
| | | 1 | GAMMA | S | |
| | | 2 | KNEE | S | |
| | | 3 | WHITE CLIP | S | |
| | | 4 | | 1 | |
| | | 5 | | 1 | |
| | | 6 | | 1 | |
| | 7 | | 1 | | |
| | 04H | 0 | IRIS | 0 S | |
| | | 1 | | 1 S | |
| | | 2 | WHITE BAL | 0 S | |
| | | 3 | | 1 S | |
| 4 | | AGC | 0 S | | |
| 5 | | | 1 S | | |
| 6 | | | 1 | | |
| 7 | | 1 | | | |

PRESET WHITE BAL

| 3200K | 5600K | (DT4) |
|-------|-------|-------|
| 0 | 1 | FEH |

GAIN

| | NORM | HIGH | MAX | - | (DT4) |
|---|------|------|-----|---|-------|
| 0 | 0 | 1 | 0 | 1 | 9FH |
| 1 | 0 | 0 | 1 | 1 | |

GAMMA

| ON | OFF | (DT4) |
|----|-----|-------|
| 0 | 1 | FDH |

KNEE

| ON | OFF | (DT4) |
|----|-----|-------|
| 0 | 1 | FBH |

WHITE CLIP

| ON | OFF | (DT4) |
|----|-----|-------|
| 0 | 1 | F7H |

IRIS

| | - | MANU | AUTO | - | (DT4) |
|---|---|------|------|---|-------|
| 0 | 0 | 1 | 0 | 1 | FCH |
| 1 | 0 | 0 | 1 | 1 | |

WHITE BAL

| | PRESET | MEM | AUTO | - | (DT4) |
|---|--------|-----|------|---|-------|
| 0 | 0 | 1 | 0 | 1 | F3H |
| 1 | 0 | 0 | 1 | 1 | |

AGC

| | OFF | VAR | ON | - | (DT4) |
|---|-----|-----|----|---|-------|
| 0 | 0 | 1 | 0 | 1 | CFH |
| 1 | 0 | 0 | 1 | 1 | |

| (DT1) | (DT2) | (DT3) | | (DT4) |
|-------------------|-----------|------------------------|------------------|-------|
| CTL | MODE | Bit | Item | MASK |
| 20H 23H 22H | 05H | 0 | SHUTTER | 0 S |
| | | 1 | | 1 S |
| | | 2 | | 2 S |
| | | 3 | | 3 S |
| | | 4 | | 4 S |
| | | 5 | | 5 S |
| | | 6 | SHUTTER EXT TRIG | 0 S |
| | 7 | (HV-C20 only) | 1 S | |
| | 07H | 0 | | 1 |
| | | 1 | | 1 |
| | | 2 | DTL | 0 0 |
| | | 3 | | 1 0 |
| | | 4 | | 1 |
| | | 5 | | 1 |
| 6 | | | 1 | |
| 7 | | 1 | | |
| 08H | 0 | BAR/CAM | S | |
| | 1 | CONTRAST | S | |
| | 2 | | 1 | |
| | 3 | | 1 | |
| | 4 | | 1 | |
| | 5 | | 1 | |
| | 6 | | 1 | |
| 11H | 0 | | 1 | |
| | 1 | | 1 | |
| | 2 | | 1 | |
| | 3 | | 1 | |
| | 4 | | 1 | |
| | 5 | G ON SYNC(HV-C20 only) | S | |
| | 6 | | 1 | |
| 7 | GL IN IMP | S | | |
| | | 0 | | |
| | | 1 | | |
| | | 2 | | |
| | | 3 | | |
| | | 4 | | |
| | | 5 | | |
| | | 6 | | |
| | | 7 | | |

SHUTTER

| | OFF | 1/100 | 1/250 | 1/500 | 1/1000 | 1/2000 | 1/4000 | 1/10000 | Var. | AES | EXT | (DT4) |
|---|-----|-------|-------|-------|--------|--------|--------|---------|------|-----|-----|-------|
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | COH |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| 3 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | |
| 4 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | |
| 5 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

SHUTTER EXT TRIG

| | 1 TRIG | 2 TRIG | FIX TRIG | EXT TRIG | (DT4) |
|---|--------|--------|----------|----------|-------|
| 0 | 0 | 1 | 0 | 1 | 3FH |
| 1 | 0 | 0 | 1 | 1 | |

DTL

| | OFF | LOW | NORM | HIGH | (DT4) |
|---|-----|-----|------|------|-------|
| 0 | 0 | 1 | 0 | 1 | F3H |
| 1 | 0 | 0 | 1 | 1 | |

BAR/CAM

| CAM | BAR | (DT4) |
|-----|-----|-------|
| 0 | 1 | FEH |

CONTRAST

| OFF | ON | (DT4) |
|-----|----|-------|
| 0 | 1 | FDH |

G ON SYSNC

| OFF | ON | (DT4) |
|-----|----|-------|
| 0 | 1 | DFH |

GL IN IMP

| 75ohm | HIGH | (DT4) |
|-------|------|-------|
| 0 | 1 | 7FH |

| (DT1) | (DT2) | (DT3) | | (DT4) |
|-------------------|-------|-------------|-------------------|-------|
| CTL | MODE | Bit | Item | MASK |
| 28H 2BH 2AH | 00H | 0 | ID | 0 S |
| | | 1 | | 1 S |
| | | 2 | TITLE | 0 S |
| | | 3 | | 1 S |
| | | 4 | OPEN LIMIT | S |
| | | 5 | CLOSE LIMIT | S |
| | | 6 | IRIS GATE DSP | S |
| | | 7 | IRIS GATE CONT | S |
| | 01H | 0 | LENS TYPE | S |
| | | 1 | | 1 |
| | | 2 | SHAD MODE | S |
| | | 3 | | 1 |
| | | 4 | FLD/FRM | S |
| | | 5 | IRIS GATE PATTERN | 0 S |
| | | 6 | | 1 S |
| | | 7 | CAM MODE | S |
| | 04H | 0 | IRIS GATE H POSI. | 0 0 |
| | | 1 | 00H(LEFT)_` | 1 0 |
| | | 2 | 0BH(RIGHT) | 2 0 |
| | | 3 | | 3 0 |
| | | 4 | | 1 |
| | | 5 | | 1 |
| | | 6 | | 1 |
| | | 7 | | 1 |
| | 05H | 0 | IRIS GATE V POSI. | 0 0 |
| | | 1 | 00H(UP)_` | 1 0 |
| | | 2 | 06H(DOWN:NTSC) | 2 0 |
| | | 3 | 08H(DOWN:PAL) | 3 0 |
| 4 | | | 1 | |
| 5 | | | 1 | |
| 6 | | | 1 | |
| 7 | | | 1 | |
| 06H | 0 | GAIN HIGH | 0 0 | |
| | 1 | 01H(+1dB)_` | 1 0 | |
| | 2 | 11H(+17dB) | 2 0 | |
| | 3 | | 3 0 | |
| | 4 | | 4 0 | |
| | 5 | | 1 | |
| | 6 | | 1 | |
| | 7 | | 1 | |

| ID | OFF | TOP | BOTTOM | - | (DT4) |
|----|-----|-----|--------|---|-------|
| 0 | 0 | 1 | 0 | 1 | FCH |
| 1 | 0 | 0 | 1 | 1 | |

| TITLE | OFF | TOP | BOTTOM | - | (DT4) |
|-------|-----|-----|--------|---|-------|
| 0 | 0 | 1 | 0 | 1 | F3H |
| 1 | 0 | 0 | 1 | 1 | |

| OPEN LIMIT | OFF | ON | (DT4) |
|------------|-----|----|-------|
| | 0 | 1 | EFH |

| CLOSE LIMIT | OFF | ON | (DT4) |
|-------------|-----|----|-------|
| | 0 | 1 | DFH |

| IRIS GATE DSP | OFF | ON | (DT4) |
|---------------|-----|----|-------|
| | 0 | 1 | BFH |

| IRIS GATE CONT | OFF | ON | (DT4) |
|----------------|-----|----|-------|
| | 0 | 1 | 7FH |

| LENS TYPE | VIDEO | DC | (DT4) |
|-----------|-------|----|-------|
| | 0 | 1 | FEH |

| SHAD MODE | LUMI | COLOR | (DT4) |
|-----------|------|-------|-------|
| | 0 | 1 | FBH |

| FLD/FRM(*) | FLD | FRM | (DT4) |
|------------|-----|-----|-------|
| | 0 | 1 | EFH |

| IRIS GATE PATTERN | 1 | 2 | 3 | 4(PAL only) | (DT4) |
|-------------------|---|---|---|-------------|-------|
| 0 | 0 | 1 | 0 | 1 | 9FH |
| 1 | 0 | 0 | 1 | 1 | |

| CAM MODE | MANU | AUTO | (DT4) |
|----------|------|------|-------|
| | 0 | 1 | 7FH |

| (DT1) | (DT2) | (DT3) | | (DT4) | |
|-------------------|-------|-------|-------------|-------|---|
| CTL | MODE | Bit | Item | MASK | |
| 28H 2BH 2AH | 07H | 0 | GAIN MAX | 0 | 0 |
| | | 1 | 02H(+2dB)_` | 1 | 0 |
| | | 2 | 12H(+18dB) | 2 | 0 |
| | | 3 | | 3 | 0 |
| | | 4 | | 4 | 0 |
| | | 5 | | | 1 |
| | | 6 | | | 1 |
| | | 7 | | | 1 |
| | 08H | 0 | AGC LIMIT | 0 | 0 |
| | | 1 | 06H(+6dB)_` | 1 | 0 |
| | | 2 | 12H(+18dB) | 2 | 0 |
| | | 3 | | 3 | 0 |
| | | 4 | | 4 | 0 |
| | | 5 | | | 1 |
| | | 6 | | | 1 |
| | | 7 | | | 1 |
| | | 0 | | | 1 |
| | | 1 | | | |
| | | 2 | | | 1 |
| | | 3 | | | 1 |
| | | 4 | | | 1 |
| 5 | | | | 1 | |
| 6 | | | | 1 | |
| 7 | | | | 1 | |

2. Analog control commands (Setting commands, response request commands, response commands)

Note 1. X in the DATA column is undefined.

2. Setting data can be backed up to the EEPROM by the command MEMORY BACK UP.

| Item | (DT1) | (DT2) | (DT3) _U , (DT4) _D |
|--------------|------------|----------------------------|---|
| | CTL | MODE | DATA |
| R GAIN | 30H 33H | 18H | 80XXH_00XXH_7FXXH (signed) -128 0 +127 |
| B GAIN | 32H | 1AH | 80XXH_00XXH_7FXXH (signed) |
| R BLACK | | 21H | 80XXH_00XXH_7FXXH (signed) |
| B BLACK | | 23H | 80XXH_00XXH_7FXXH (signed) |
| AGC VAR | | | +18dB +9dB 0dB |
| | | 2AH | 80XXH_00XXH_7FXXH (signed) |
| MASTER BLACK | | 2BH | 80XXH_00XXH_7FXXH (signed) |
| LENS REMOTE | | 2EH | 80XXH_00XXH_7FXXH (signed) CLOSEOPEN |
| SC PHASE | | 33H | (See below) |
| H.PHASE | | 34H | 80XXH_00XXH_7FXXH (signed) -1280+127 |
| SHUTTER Ver. | | 38H | NTSC_FFFE2H(1/1)_FFFFH(1/30) LONG EXPOSURE 0002H(1/60.38)_0105H(1/10168) LOCK SCAN PAL _FFE7H(1/1)_FFFFH(1/25) LONG EXPOSURE 0002H(1/50.31)_0137H(1/10040) LOCK SCAN |
| OVER RIDE | | 39H | 80XXH~C0XXH~00XXH~40XXH~7FXXH (signed) -1.0-0.50+0.5+1.0 |
| IRIS SPEED | | 3AH | 9XXXH_0XXXH_7XXXH (signed) SLOWFAST |
| CLOSE LIMIT | | 3BH | 80XXH_00XXH_7FXXH (signed) CLOSEOPEN |
| OPEN LIMIT | | 3CH | 3FXXH_7FXXH CLOSEOPEN |
| R SHADING | 8FH | 80XXH_00XXH_7FXXH (signed) | |
| G SHADING | 90H | 80XXH_00XXH_7FXXH (signed) | |
| B SHADING | 91H | 80XXH_00XXH_7FXXH (signed) | |

| SC PHASE | | HV-C20 Ver.1.0 | | HV-C20 Ver1.1~ | |
|-----------|---------|----------------|-------------|----------------|-------------|
| SC COARSE | SC FINE | (DT3) | (DT4) | (DT3) | (DT4) |
| 0 | -128 | 00 10 00 00 | 00 XX XX XX | 00 00 00 00 | 00 XX XX XX |
| | 0 | 00 00 00 00 | 00 XX XX XX | 00 10 00 00 | 00 XX XX XX |
| | +127 | 00 01 11 11 | 11 XX XX XX | 00 11 11 11 | 11 XX XX XX |
| 90 | -128 | 01 10 00 00 | 00 XX XX XX | 01 00 00 00 | 00 XX XX XX |
| | 0 | 01 00 00 00 | 00 XX XX XX | 01 10 00 00 | 00 XX XX XX |
| | +127 | 01 01 11 11 | 11 XX XX XX | 01 11 11 11 | 11 XX XX XX |
| 180 | -128 | 10 10 00 00 | 00 XX XX XX | 10 00 00 00 | 00 XX XX XX |
| | 0 | 10 00 00 00 | 00 XX XX XX | 10 10 00 00 | 00 XX XX XX |
| | +127 | 10 01 11 11 | 11 XX XX XX | 10 11 11 11 | 11 XX XX XX |
| 270 | -128 | 11 10 00 00 | 00 XX XX XX | 11 00 00 00 | 00 XX XX XX |
| | 0 | 11 00 00 00 | 00 XX XX XX | 11 10 00 00 | 00 XX XX XX |
| | +127 | 11 01 11 11 | 11 XX XX XX | 11 11 11 11 | 11 XX XX XX |

3. Auto function control commands (Setting commands, response commands)

Note 1. The results of execution are backed up to the EEPROM.

2. The response commands to AUTO SHADING is invalid for Ver. 1.0 of the HV-C20.

| Item | (DT1) | (DT2) | (DT3) |
|------------------------------|-------|-------|---|
| | CTL | MODE | RESULT |
| AUTO WHITE | 40H | 10H | 01H:"OK" COLOR TEMPERATURE 3200K 02H:"OK" COLOR TEMPERATURE 5600K 11H:"NG", "CHANGE TO CAM" 12H:"NG", "CHANGE TO MEM" 13H:"NG", "LOW LIGHT" 15H:"NG", "C.TEMP.HI" 16H:"NG", "C.TEMP.LOW" 18H:"NG", "???" |
| AUTO BLACK | | 20H | 00H:"OK" 11H:"NG", "CHANGE TO CAM" 17H:"NG", "IRIS NOT CLOSE" 18H:"NG", "???" |
| AUTO SHADING | | 30H | 00H:"OK" 11H:"NG", "CHANGE TO CAM" 13H:"NG", "LOW LIGHT" 15H:"NG", "C.TEMP.HI" 16H:"NG", "C.TEMP.LOW" 18H:"NG", "???" 19H:"NG", "CONTROL LIMIT" |
| AUTO SHADING (LUMI MODE) | | 31H | 00H:"OK" 11H:"NG", "CHANGE TO CAM" 13H:"NG", "LOW LIGHT" 15H:"NG", "C.TEMP.HI" 16H:"NG", "C.TEMP.LOW" 18H:"NG", "???" 19H:"NG", "CONTROL LIMIT" |
| AUTO SHADING (COLOR MODE) | | 32H | 00H:"OK" 11H:"NG", "CHANGE TO CAM" 13H:"NG", "LOW LIGHT" 15H:"NG", "C.TEMP.HI" 16H:"NG", "C.TEMP.LOW" 18H:"NG", "???" 19H:"NG", "CONTROL LIMIT" |

4. Character-string display control commands (Setting commands)

Note: Setting data are backed up to the EEPROM by the command MEMORY BACK UP.

| Item | (DT1) | (DT2) | (DT3),(DT4) | (DTn) |
|----------------|-------|-------|---|-------|
| | CTL | MODE | DATA | |
| TITLE DATA SET | 48H | 00H | CHR\$(code)+CHR\$(code)+ +00H Max. 12 characters (See below) | |

⌋TITLE character code list⌋

| CHR. | ASCII code | CHR. | ASCII code | CHR. | ASCII code | CHR. | ASCII code |
|-------|------------|------|------------|------|------------|------|------------|
| SPACE | 20H | < | 3CH | Q | 51H | j | 6AH |
| * | 2AH | > | 3EH | R | 52H | k | 6BH |
| + | 2BH | ? | 3FH | S | 53H | l | 6CH |
| , | 2CH | A | 41H | T | 54H | m | 6DH |
| - | 2DH | B | 42H | U | 55H | n | 6EH |
| . | 2EH | C | 43H | V | 56H | o | 6FH |
| / | 2FH | D | 44H | W | 57H | p | 70H |
| 0 | 30H | E | 45H | X | 58H | q | 71H |
| 1 | 31H | F | 46H | Y | 59H | r | 72H |
| 2 | 32H | G | 47H | Z | 5AH | s | 73H |
| 3 | 33H | H | 48H | a | 61H | t | 74H |
| 4 | 34H | I | 49H | b | 62H | u | 75H |
| 5 | 35H | J | 4AH | c | 63H | v | 76H |
| 6 | 36H | K | 4BH | d | 64H | w | 77H |
| 7 | 37H | L | 4CH | e | 65H | x | 78H |
| 8 | 38H | M | 4DH | f | 66H | y | 79H |
| 9 | 39H | N | 4EH | g | 67H | z | 7AH |
| : | 3AH | O | 4FH | h | 68H | | |
| ; | 3BH | P | 50H | i | 69H | | |

5. File control commands (Setting commands)

The change data of each setting is backed up to the EEPROM.

| Item | (DT1) |
|----------------|-------|
| | CTL |
| MEMORY BACK UP | 61H |

6. Status read commands (Response request commands, response commands)

Note: Status read commands are valid for Ver. 1.1 and after of the HV-C20.

| Item | (DT1) | (DT2) | (DT3),(DT4),(DT5) |
|----------------|------------|-------|-----------------------------------|
| | CTL | MODE | RESULT |
| CAMERA TYPE | 13H 12H | 00H | (DT3) 21H:HV-C20 22H:HV-C21 |
| CAMERA VERSION | | 01H | Ver.(DT3).(DT4) ASCII code |
| CAMERA ID | | 02H | (DT3),(DT4),(DT5) ASCII code |

7. ID code list

| CHR. | ASCII code | CHR. | ASCII code | CHR. | ASCII code |
|-------|------------|------|------------|------|------------|
| SPACE | 20H | A | 41H | N | 4EH |
| 0 | 30H | B | 42H | O | 4FH |
| 1 | 31H | C | 43H | P | 50H |
| 2 | 32H | D | 44H | Q | 51H |
| 3 | 33H | E | 45H | R | 52H |
| 4 | 34H | F | 46H | S | 53H |
| 5 | 35H | G | 47H | T | 54H |
| 6 | 36H | H | 48H | U | 55H |
| 7 | 37H | I | 49H | V | 56H |
| 8 | 38H | J | 4AH | W | 57H |
| 9 | 39H | K | 4BH | X | 58H |
| | | L | 4CH | Y | 59H |
| | | M | 4DH | Z | 5AH |

Technical information: Protocol for remote control

Apr. 28 1995

The Z-2000, and the HV-C20 series cameras can be remotely controlled from a PC, etc. The control method is described below.

The Z-ONE-B, the Z-ONE-C and the HV-C10 series cameras are also controllable from a PC, but applicable protocol is different from that for the Z-2000, and the HV-C20 series cameras.

1. Control specifications

- | | |
|--------------------------|--|
| (1) Bit rate | 19200bps, 9600bps, 4800bps, 2400bps or 1200bps Notes: See the operation manual for setting 19200bps, and 1200bps are not applicable to the HV-C20 series cameras. |
| (2) Communication system | Full duplex |
| (3) Sync system | Start-stop system |
| (4) Transmission system | Bit serial |
| (5) Used code | 8-bit binary |
| (6) Bit composition | start bit : 1-bit Data bit : 8-bit Parity bit: None Stop bit : 1-bit |
| (7) Error detection | 1. SUM check (16-bit) 2. Time check (Time between, the respond command and ACK, NAK receiving should be less than 0.5 second.) |
| (8) Error correction | Request repeat system |

Note: When the HV-C20 is controlled from a PC, the capacity of the buffer for the transmitted serial data is 128 bytes. When the camera ends the processing of a received command, it releases the buffer area for the command.

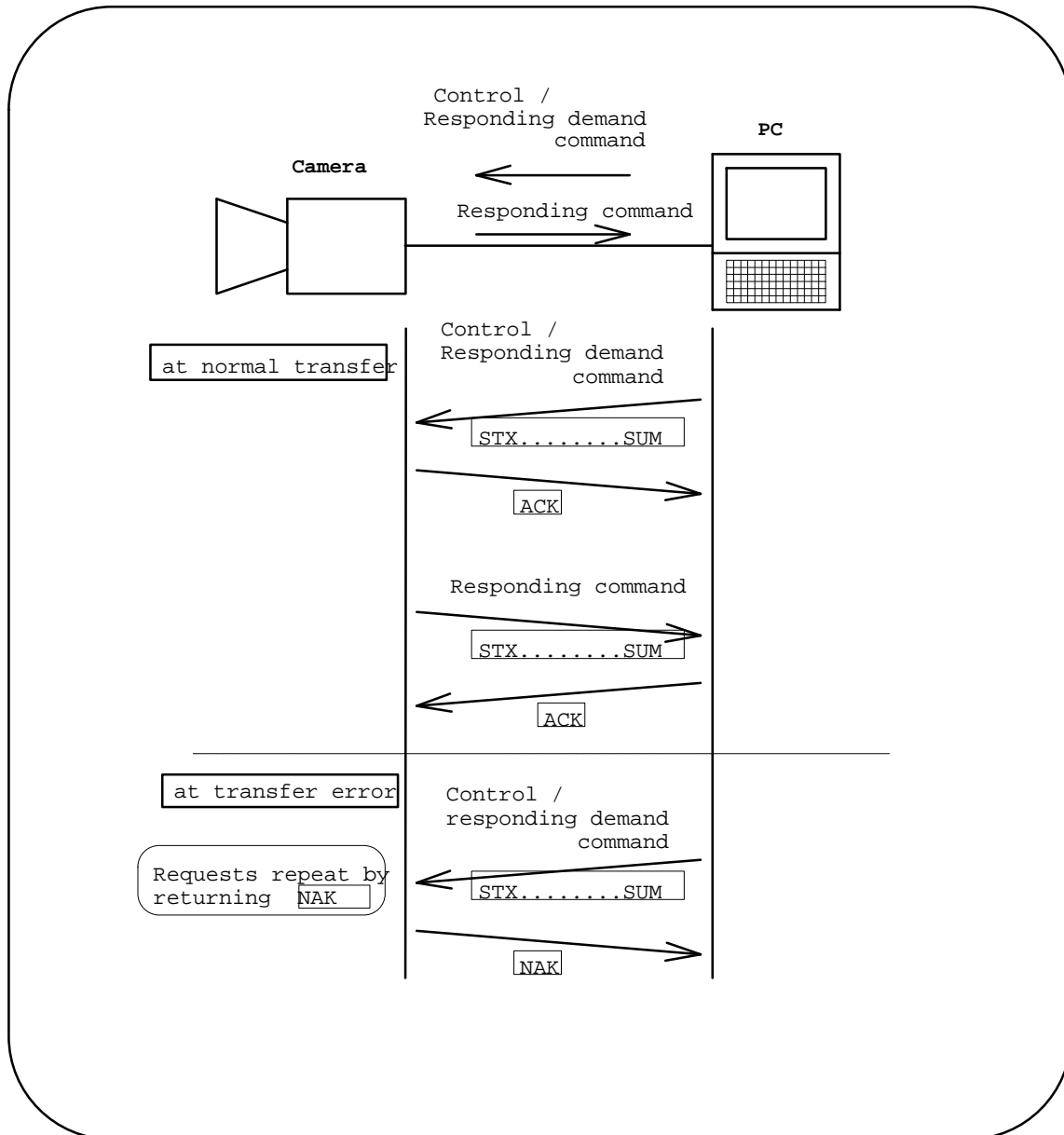
Though the processing time for a command is normally approx. 20ms, the processing time for a response request command, the auto white balance (AWB) command, the auto shading control (ASC) command, the auto black balance (A. BLACK) command, etc. is in units of second. When setting commands are being transmitted to the camera during the processing time, the receive buffer overflows, resulting in causing malfunction.

Therefore, be sure to transmit a response request command or a command related to the auto control functions after a response command has been returned from the camera.

2. Control sequence

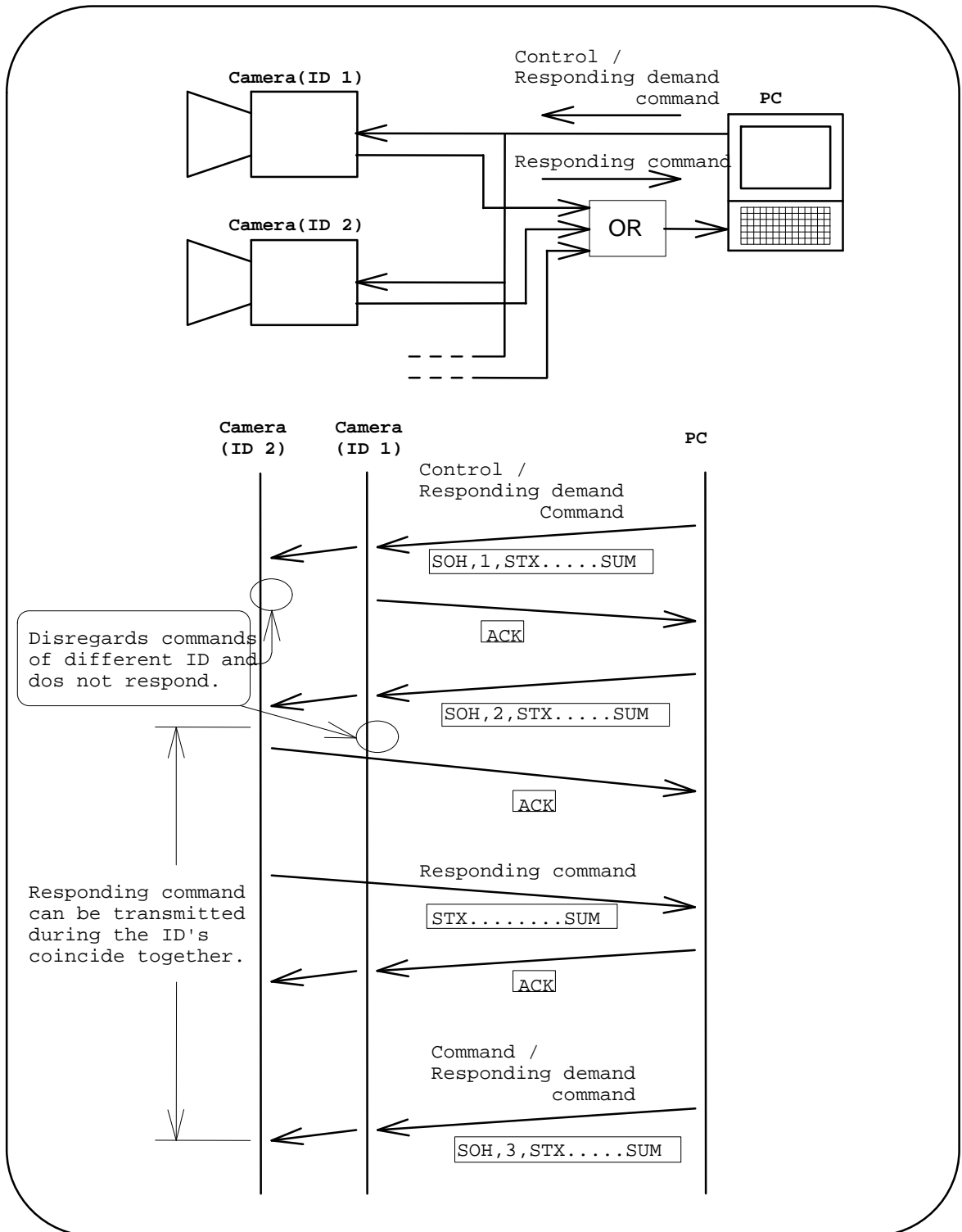
2.1 Basic system

The control command and the response command can be transmitted independently.
The cameras cannot transmit the control command during receiving responding command.

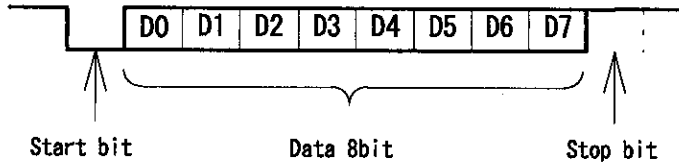


2.2 Multiple camera control system

The plural cameras (base stations) are controlled by a single PC.
 Extended type message with heading is employed.
 Camera ID's should be previously set.



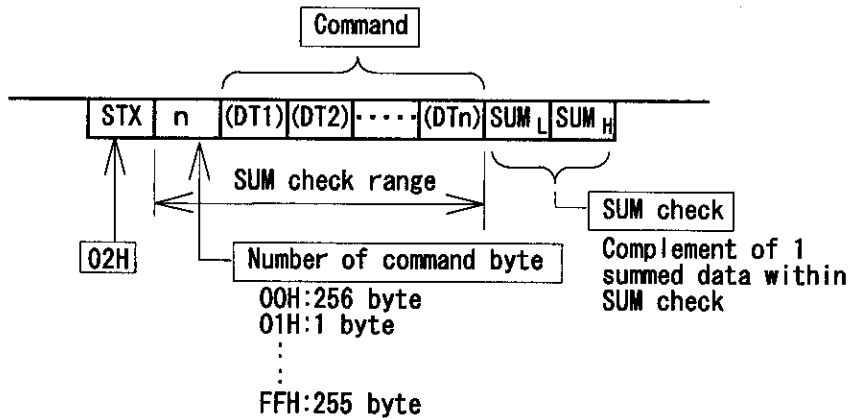
3. Character (1 byte) bit composition



4. Message composition

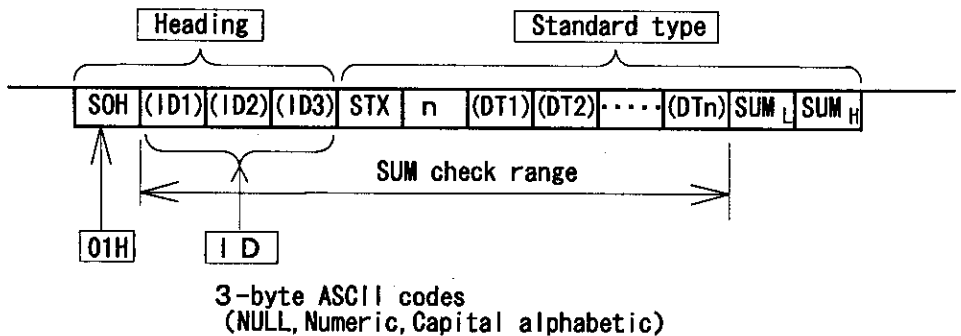
4.1 Standard type

Transmits one command per a message.



4.2 Extended type with heading

Adds the heading to the standard message when the plural cameras are controlled. Only the cameras respond whose 3-byte ID's of the head coincide together.

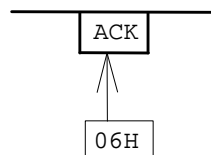


(ID code list)

| Character | ASCII code | Character | ASCII code | Character | ASCII code |
|-----------|------------|-----------|------------|-----------|------------|
| NULL | 20 | ,` | 41 | ,m | 4E |
| ,O | 30 | ,a | 42 | ,n | 4F |
| ,P | 31 | ,b | 43 | ,o | 50 |
| ,Q | 32 | ,c | 44 | ,p | 51 |
| ,R | 33 | ,d | 45 | ,q | 52 |
| ,S | 34 | ,e | 46 | ,r | 53 |
| ,T | 35 | ,f | 47 | ,s | 54 |
| ,U | 36 | ,g | 48 | ,t | 55 |
| ,V | 37 | ,h | 49 | ,u | 56 |
| ,W | 38 | ,i | 4A | ,v | 57 |
| ,X | 39 | ,j | 4B | ,w | 58 |
| | | ,k | 4C | ,x | 59 |
| | | ,l | 4D | ,y | 5A |

4.3 Normal response

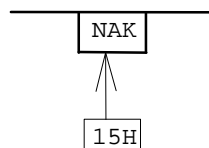
Returns ACK when the received message has no transfer errors.



4.4 Abnormal response

Returns NAK when the received message has transfer errors.

Repeat the message when received NAK.



4.5 Example of standard type message (Case of the HV-C20 color camera "BAR/CAM:BAR" command)

STX : 02H

n : 04H (4 byte commands)

DT1_`DT4 : 20H 08H 01H FEH

SUM : 04H+20H+08H+01H+FEH=01H 2BH

Complement of 1 summed data : FEH D4H(SUM_H:FEH,SUM_L:D4H)

Therefore, the message composition of "BAR/CAM:BAR" is shown below.

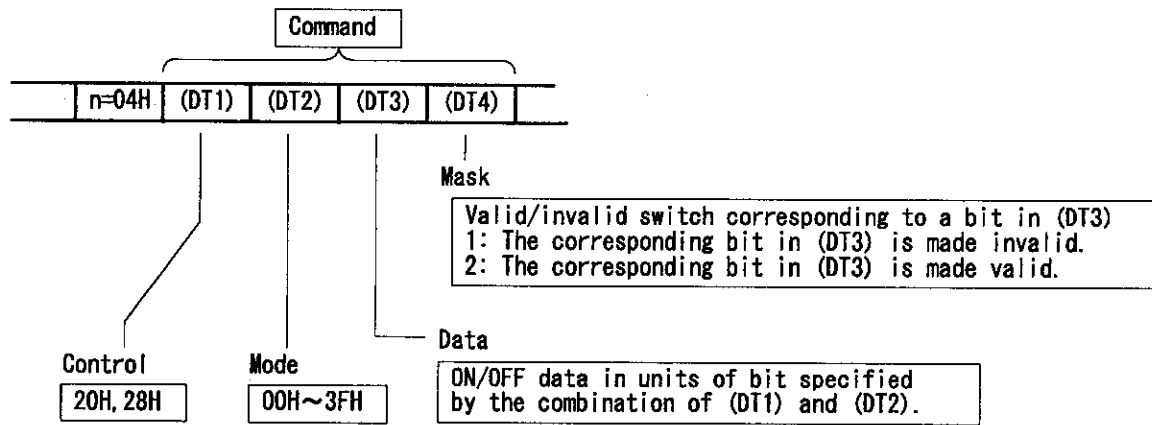
02H 04H 20H 08H 01H FEH D4H FEH

5. Configuration of command

Note: For details, see the command list for each camera.

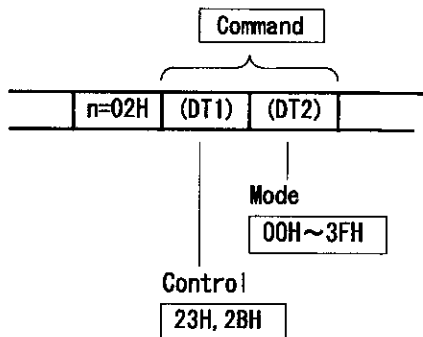
5.1 ON/OFF control commands (Setting command of each function, response request commands, response commands)

(1) Setting commands



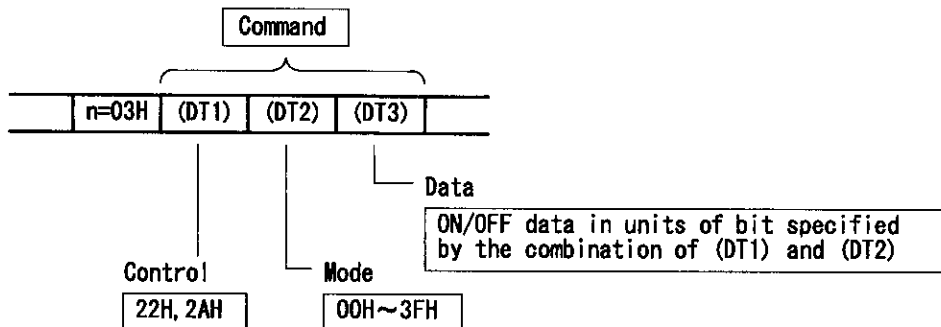
(2) Response request commands

Request the data specified by the mode of setting commands.



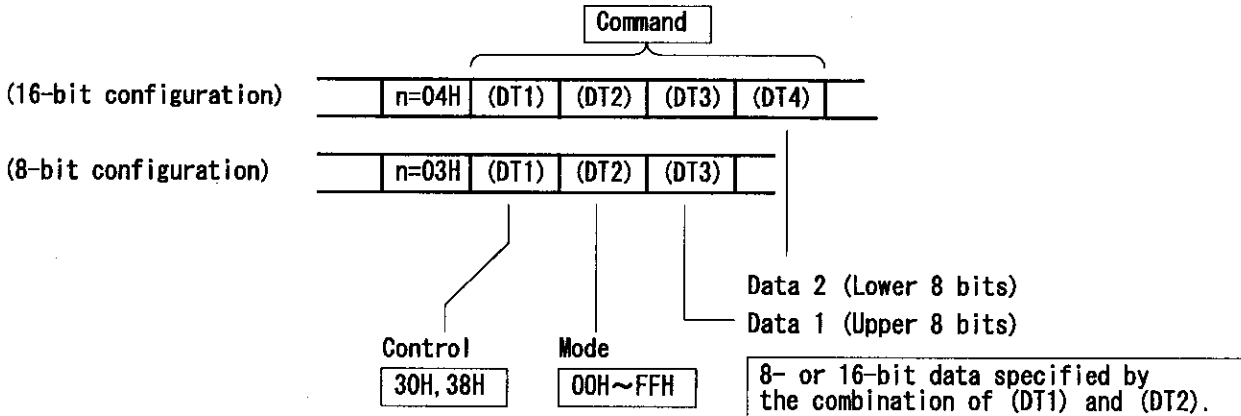
(3) Response commands

Response the data specified by the mode of setting commands.



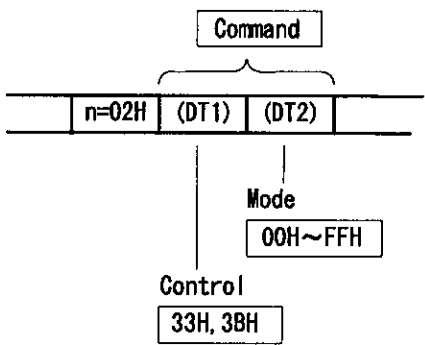
5.2 Analog control commands (Setting commands of each analog data, response request command, response commands)

(1) Setting commands



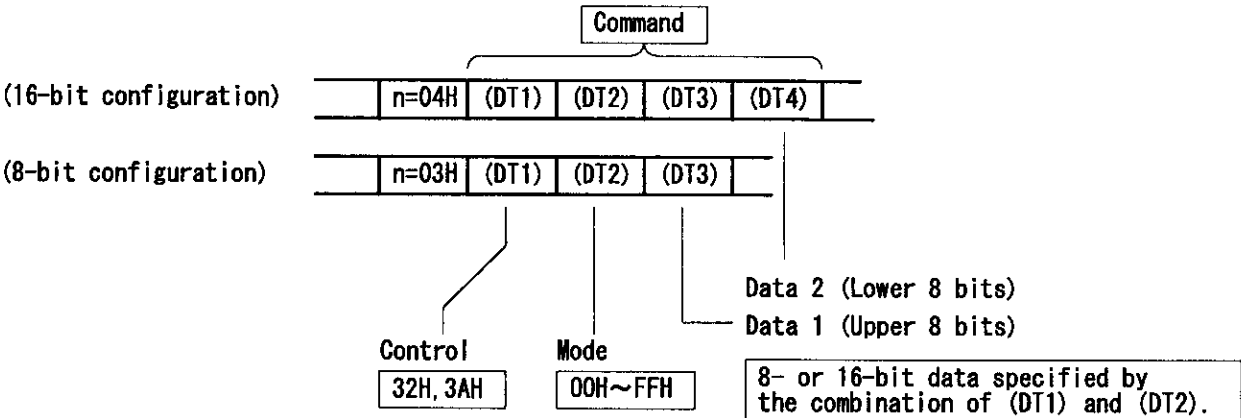
(2) Response request commands

Request the data specified in the mode of setting commands.



(3) Response commands

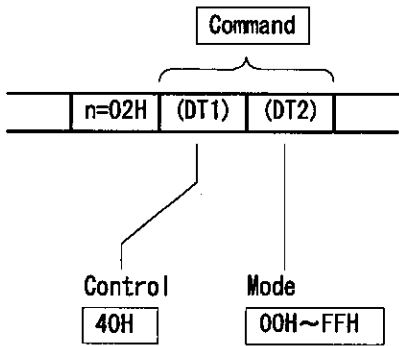
Response the data specified in the mode of setting commands.



5.3 Auto function control commands (Setting (execution) commands of each auto function, response (result of execution) commands)

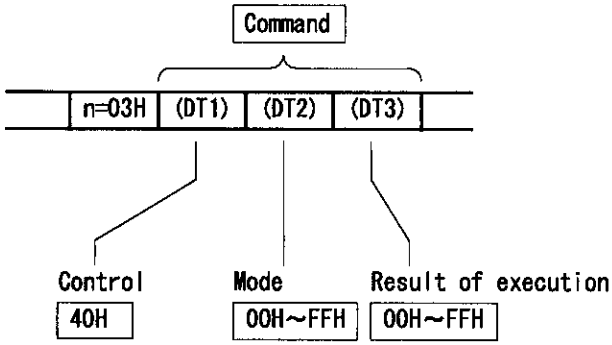
(1) Setting commands

Execute the auto functions including auto white balance and auto black balance.



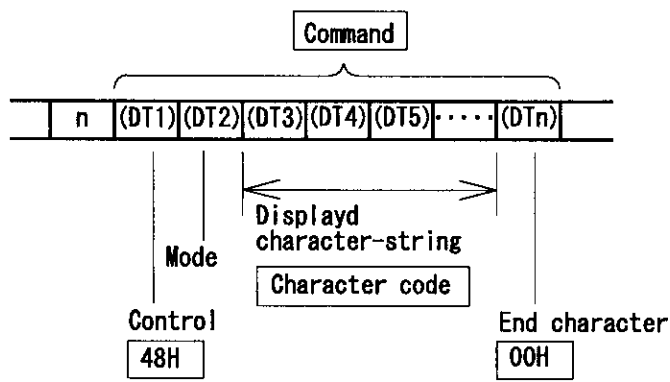
(2) Response commands

Return the result after executing the auto functions including auto white balance and auto black balance.



5.4 Character-string display control commands

(1) Setting commands



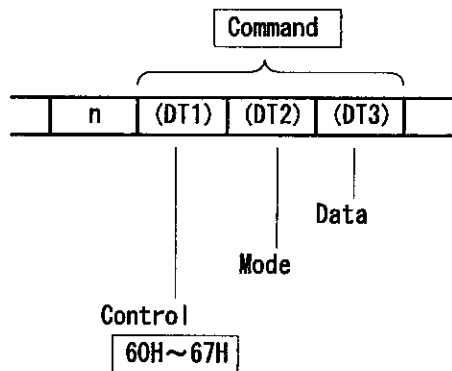
Note: Response request commands and response commands are not included in the character-string display control commands.

5.5 File control commands

(1) Setting commands

Load, save and clear the specified files in a batch.

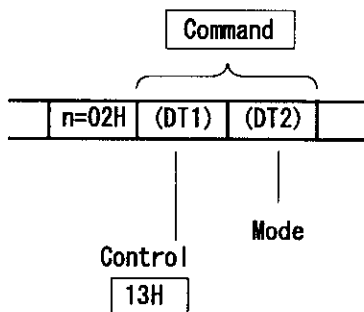
The number of bytes and function of a command differ from camera to camera. For details, see the command list for each camera.



5.6 Status read commands (Read the model designation, version, etc. of a camera.)

(1) Response request commands

Request the data specified by mode.



(2) Response commands

Response the data corresponding to mode.

