Broadcast Monitor Ethernet Control Protocol Basic Functions

Revision	Date	History
1.0	23 Jan 2017	Initial.
1.1	14 Mar 2019	Format update
1.15	9 Jan 2025	Basic Functions Title Block; Contents Typo

Documented By: _____ Date: _____

Compiled By: _____ Date: _____

Approved By: _____ Date: _____

Note: ***Specifications described in this document may be changed without prior notice to improve equipment performance.***

TABLE OF CONTENTS

1. Overview

This document describes the communication with a monitor via Ethernet.

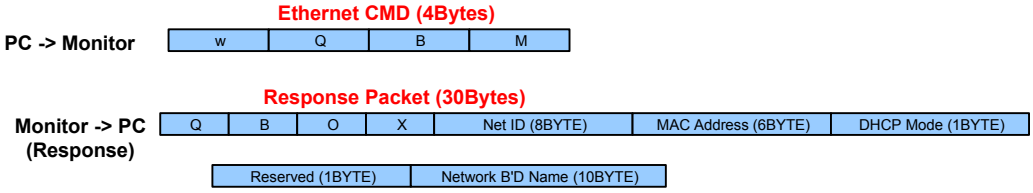
The data packets of the Ethernet protocol are composed of a combination of Ethernet commands and of read, write commands.

2. Protocols

2.1. Searching for a Monitor

To find the monitor on the network, transfer the following instructions.

Transport layer : UDP
Port : 3009
Command : wQBM

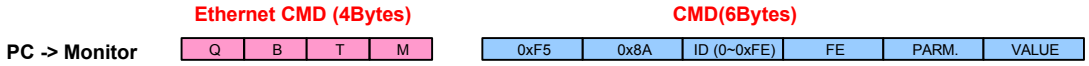


*Net ID: The value shown on the monitor OSD
(Setup -> IP Config -> ID)
*DHCP: The value show on the monitor OSD
(Setup -> IP Config -> DHCP)

2.2. Setting Parameters to Monitor

To set up the parameters to monitor, transfer the following instruction.

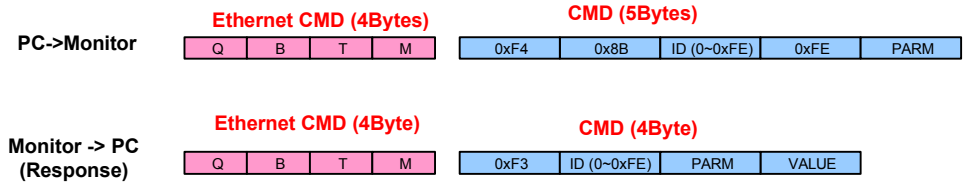
Transport layer: TCP
Port: 5009
Command: QBTM (Ethernet CMD) + write CMD



2.3. Read Parameters from Monitor

To read the settings on the monitor, transfer the command as follows.

Transport layer: TCP
Port: 5009
Command: QBTM (Ethernet CMD) + read CMD



3. Control Command Packet

3.1. Virtual Keypad Control

CMD	Data1	Data2	Data3	Description	Data4
Command	Target	ID	CMD		Key Code
0xF4 (Start Sending)	0x8A	0xXX (0x00~0xFE)	0xFD (Keypad)	KEY_POWER	0x17
				KEY_SDI1	0x61
				KEY_SDI2	0x62
				KEY_DVI	0x63
				KEY_HDMI	0x64
				KEY_ANALOG	0x39
				KEY_FUNCTION1	0x35
				KEY_FUNCTION2	0x36
				KEY_FUNCTION3	0x3A
				KEY_FUNCTION4	0x3F
				KEY_FUNCTION5	0x40
				KEY_MENU	0x59
				KEY_MENUUP	0x19
				KEY_MENUDN	0x08
				KEY_ENTER	0x22
				KEY_INPUT	0x13
				KEY_WHEELUP	0x7A
				KEY_WHEELDN	0x7B

3.2. System Parameter Direct Settings/Read Packet

CMD	Data1	Data2	Data3	Data4	Data5	Description	Range	
Command	Target	ID	CMD	Param	Value		Min	Max
0xF5 (Start Set) 0xF4 (Start Get)	0x8A(Set) 0x8B(Get)	0xXX (0x00~0xFE)	0xFE	0x00	0x00~0xFF (By Min-Max) Not Send in Get Mode	MUTE	0	1
				0x01		CURRENTSOURCE	0	16
				0x04		FACTORY_RESET	0	255
				0x06		COLORTEMP	0	6
				0x07		COLORTEMPVAR	0	78
				0x08		CONTRAST	0	100
				0x09		BRIGHTNESS	0	100
				0x0A		COLOR	0	100
				0x0B		NTSC_TINT	0	100
				0x0C		RF_SHARPNESS	0	100
				0x0D		SHARPNESS	0	100
				0x0E		USERRED	0	255
				0x0F		USERGREEN	0	255
				0x10		USERBLUE	0	255
				0x11		OSDPOSITION	0	4
				0x14		TIMEOUT	0	7
				0x15		HPOSITION	255	255
				0x16		VPOSITION	255	255
				0x17		HTOTAL	255	255
				0x18		FINE	0	248
				0x19		SETX	0	4
				0x1A		SETY	0	4
				0x20		ZOOM	0	4
				0x21		SCALEMODE	1	3
				0x23		AFD	0	1
				0x24		SCAN	0	1
				0x25		NOISEREDUCTION	0	1
				0x26		AUDIOOUTPUT1	0	4
				0x28		VOLUME	0	30
				0x29		AUDIOGROUP1	0	3
				0x2A		AUDIOGROUP2	0	3
				0x2B		AUDIOOUTPUTCH1	0	6
				0x2C		AUDIOOUTPUTCH2	0	6
				0x2D		AUDIOLEVEL	0	1
				0x2E		AUDIO_LV_TYPE	0	1
				0x2F		AUDIO_LV_POS	0	3
				0x30		AUDIO_LV_SCALE	0	8
				0x34		PIPEN	0	1
				0x35		PIPSOURCE	0	16
				0x36		PIPSIZE	0	2
				0x38		PIPLOCATE	0	3

				0x3C	PIPBLEND	0	15
				0x3D	SOUNDSRC	0	1
				0x3E	MARKER_16_9	0	10
				0x3F	MARKER_4_3	0	5
				0x41	MARKERCENTER	0	1
				0x40	MARKEREN	0	1
				0x47	MARKERBKCOLOR	0	4
				0x4F	GPIEN	0	1
				0x50	GPI1	0	28
				0x51	GPI2	0	28
				0x52	GPI3	0	28
				0x53	GPI4	0	28
				0x54	GPI5	0	28
				0x55	GPI6	0	28
				0x57	USERLOAD	0	3
				0x58	USERSAVE	0	2
				0x59	USERLOAD	1	1
				0x5A	USERSAVE	1	1
				0x5B	F1	0	17
				0x5C	F2	0	17
				0x5D	F3	0	17
				0x5E	F4	0	17
				0x5F	F5	0	17
				0x61	NTSCSETUP	0	1
				0x62	DUALLINKMODE	0	4
				0x63	CAPTIONSEL	0	4
				0x64	CAPTIONMODE	1	8
				0x65	CAPTION708MODE	0	1
				0x66	COLORONLY	0	2
				0x67	GAMMA	0	23
				0X68	VSIG_X768MODE	0	4
				0x69	DIM_LEVEL	0	100
				0x6A	FRONTLED	0	2
				0x6B	KEYLOCK	0	1
				0x6C	REMOTELOCK	0	1
				0x6D	AUTOKEYLOCK	0	1
				0x6E	SETID	0	254
				0x7B	HALFTONE	0	1
				0x7D	INFOMESSAGE	0	1
				0x7E	TIMECODE	0	2
				0x7F	TC_SIZE	0	2
				0x80	TC_TONE	0	4
				0x81	TC_POS	0	5
				0x82	VITC_LINE	0	31
				0x84	HVDELAY	0	3
				0x86	INPUTNAMEEN	0	1
				0x98	TESTPATTERN	0	10
				0x99	UMD	0	1
				0XA1	UMD_POS	0	5
				0XA2	UMD_FG	0	16
				0XA3	UMD_BG	0	16
				0XA4	WFM_FORMAT	0	4
				0XA5	WFMLINE_SEL	0	1
				0XA6	WFMLINE_DIS	0	2
				0XA8	IPMODE	0	2
				0XB0	PEAKING_FILTER	0	1

				0xB1		FALSE COLOR	0	1
				0XB2		PEAKING_COLOR	0	3
				0XB3		PEAKING_LEVEL	0x23	0x3F
				0xFE		POWER	0	1

4. Value Meaning and Range for Parameters

1. MUTE (0x00)
0 : Mute off 1 : Mute On

2. CURRENTSOURCE (0x01)
0x01: CVBS1 0x02 : CVBS2 0x03 : CVBS3 0x04 : S-Video 0x07 : R.G.B 0x08 :Y.Pb.Pr 0x0A : PC
0x0B: HDMI 0x0C : DVI 0x0F : SDI1 0x10 : SDI2

3. COLORTEMP (0x06)
0: User, 1: VAR, 2: 11000K, 3: 9300K, 4: 6500K, 5: 5400K, 6: 3200K

4. COLORTEMPVAR (0x07)
0x00: 3200K ~ 0x4E: 11000K

5. CONTRAST (0x08)
0~100

6. BIGHTNESS (0x09)
0~100

7. COLOR (0x0A)
0~100

8. NTSC_TINT (0x0B)
0~100

9. RF_SHARPNESS (0x0C)
0~100

10. SHARPNESS (0x0D)
0~100

11. USERRED (0x0E)
0~255

12. USERGREEN (0x0F)
0~255

13. USERBLUE (0x10)
0~255

14. OSD Position (0x11)
0: LT, 1: RT, 2: C, 3: LB, 4: RB

15. TIMEOUT (0x14)
0: On, 1: 5 Sec, 2: 10 Sec, 3: 20 Sec, 4: 30 Sec, 5: 40 Sec, 6: 50 Sec, 7: 60 Sec

16. SETX (0x19)
0~4 (0: 1~4: 5)

17.SETY(0x1A)
0~4 (0: 1 ~ 4: 5)

18. ZOOM (0x20)
0: Off, 1: 2x, 2: 3x, 3: 4x, 4: 5x

19. Scale Mode (0x21: Aspect Ratio)
1: Full, 2: 16:9, 3: 4:3

20. AFD (0x23)
0: Off, 1: On

21. SCAN (0x24)
0: ZeroScan, 1: Pixel to Pixel

22. NOISEREDUCTION (0x25)
0: Off, 1: On

23. AUDIOOUTPUT1 (0x26)
0: Auto, 1: SDI1, 2: SDI2, 3: HDMI, 4: Line in

24. VOLUME (0x28)
0~30

25. AUDIOGROUP1 (0x29)
0: Group1, 1: Group2, 2: Group3, 3: Group4

26. AUDIOGROUP2 (0x2A)
0: Group1, 1: Group2, 2: Group3, 3: Group4

27. AUDIOOUTPUTCH1 (0x2B)
0: Off, 1: Channel1, 2: Channel2, 3: Channel3, 4: Channel4, 5: Channel1/2, 6: Channel3/4

28. AUDIOOUTPUTCH2 (0x2C)
0: Off, 1: Channel1, 2: Channel2, 3: Channel3, 4: Channel4, 5: Channel1/2, 6: Channel3/4

29. AUDIOLEVEL (0x2D)
0 Off, 1: On

30. AUDIO_LV_TYPE (0x2E)
0: Pair, 1: Group

31. AUDIO_LV_POS (0x2F)
0: Right Top, 1: Left+Right Top, 2: Right Bottom, 3: Left+Right Bottom

32. AUDIO_LV_SCALE (0x30)
0: Digital, 1: Nordic, 2: BBC, 3: EBU, 4: DIN, 5: Expanded Din, 6: SMPTE VU, 7: EBU VU, 8: France VU

33. PIPEN (0x34)
0: Off, 1: On

34. PIPSOURCE (0x35)
0x01: CVBS1, 0x02: CVBS2, 0x03: CVBS3, 0x04: S-Video, 0x07: R.G.B, 0x08: Y.Pb.Pr, 0x0A: PC,
0x0B: HDMI, 0x0C: DVI, 0x0F: SDI1, 0x10: SDI2.

35. PIPSIZE (0x36: PIP Aspect Ratio)
0: PIP, 1: PBP, 2: PBP2

36. PIPLOCATE (0x38)
0: RB, 1: RT, 2: LT, 3: LB

37. PIPBLEND (0x3C)
0~0x0F

38. SOUNDSRC (0x3D)
0: Main, 1: Sub

39. MARKER_16_9 (0x3E)
0: Off, 1: 95%, 2: 93%, 3: 90%, 4: 88%, 5: 80%, 6: 1.85:1, 7: 2.35:1, 8: 4:3, 9: 14:9, 10,: 13:9

40. MARKER_4_3 (0x3F)
0: Off, 1: 95%, 2: 93%, 3: 90%, 4: 88%, 5: 80%

41. MARKEREN (0x40)
0: Off, 1: On

42. MARKERCENTER (0x41)
0: Off, 1: On

43. MARKERBKCOLOR (0x47)
0: None, 1: Gray, 2: White, 3: Blue, 4: Black

44. GPIEN (0x4F)
0: Off, 1: On

45. GPI1~6 (0x50~0x55)
0: Undefined, 1: Tally R, 2: Tally G, 3: Marker On/Off, 4: F1
5: F2, 6: F3, 7: F4, 8: F5, 9: Scan, 10: Aspect Ratio, 11: Waveform
12: Marker_16_9, 13: Marker_4_3, 14: Center Marker, 15: Input CVBS1
16: Input CVBS2, 17: Input CVBS3, 18: Input RG.B, 19: Input SDI1
20: Input SDI2, 21: Input YPbPr, 22: Input PC, 23: Input DVI, 24: Input HDMI
25: Menu Key, 26: Enter Key, 27: Up Key, 28 : Down Key

46. USERLOAD (0x57)
0: Factory Reset, 1: User1, 2: User2, 3: User3

47. USERSAVE (0x58)
0: User1, 1: User2, 2: User3

48. USERLOAD (0x59)

49. USERSAVE (0x5A)

50. F1, 2, 3, 4, 5 (0x5B~0x5F)
0: Undefined, 1: Aspect Ratio, 2: Color Only, 3: Audio Group, 4: Audio Ch
5: Audio Mute, 6: Time Code, 7: Still Image, 8: Caption, 9: False Color
10: Marker On/Off, 11: Marker 16:9, 12: Marker 4:3, 13: PIP Function & Input
14 : Zoom, 15: Gamma Sel, 16: WFM Line, 17: Waveform

51. NTSCSEUP (0x61)
0: 0 IRE, 1: 7.5IRE

52. DUAL-LINKMODE (0x62)
0: Auto, 1: Off, 2: RGB444, 3: YCbCr444, 4: YCbCr422

53. CAPTIONSEL (0x63)
0: Off, 1: 608 line21, 2: 608 ANC, 3: 608 Transcoded, 4: 708

54. CAPTIONMODE (0x64: 608 Caption)
1: C/C1, 2: C/C2, 3: C/C3, 4: C/C4, 5: TEXT1, 6: TEXT2, 7: TEXT3, 8: TEXT4

55. CAPTION708MODE (0x65)
0: Service1, 1: Service2

56. COLORONLY (0x66)
0: Off, 1: Mono, 2: Blue

57. GAMMA (0x67)
0 ~15: 0.8~2.3 (Step 0.1)
16: 2.35
17~23: 2.4~3.0 (Step 0.1)

58. VSIG_X768MODE (0x68)
0: Auto, 1: 1024x768, 2: 1280x768, 3: 1360x768, 4: 1366x768

59. DIM_LEVEL (0x69)
0~100

60. FRONTLED (0x6A)
0: Off, 1: On, 2: Off after 15 sec

61. KEYLOCK (0x6B : Local Enable)
0: Off (Key Lock), 1: On (Key Unlock)

62. REMOTELOCK (0x6C)
0: Off, 1: On

63. AUTOKEYLOCK (90x6D)
0: Off, 1: On

64. SETID (0x6E)
0~254

65. HALFTONE (0x7B: OSD Transparency)
0: Off, 1: On

66. INFOMESSAGE (0x7D: Input ID)
0: Off, 1: On

67. TIMECODE (0x7E)
0: Off, 1: LTC, 2: DVITC

68. TC_SIZE (0x7F)
0: Small, 1: Middle, 2: Large

69. TC_TONE (0x80: Timecode Transparency)
0: 0%, 1: 25%, 2: 50%, 3: 75%, 4: 100%

70. TC_POS (0x81)
0: LT, 1: CT, 2: RT, 3: LB, 4: CB, 5: RB

71. VITC_LINE (0x82)
0: Auto, 1~31: Lines 1~31

72. HVDELAY (0x84)
0: Off, 1: H, 2: V, 3: H+V

73. INPUTNAMEEN (0x86: ID Style)
0: Input Format, 1: Custom Label

74. TESTPATTERN (0x98)
0: Off, 1: Auto Run, 2: 100% Color, 3: 75% Color, 4: Luma Ramp,
5: RGB Ramp, 6: White, 7: Black, 8: Red, 9: Blue, 10: Green

75. UMD (0x99)
0: Off, 1: On

76. UMD_POS (0xA1)
0: LT, 1: CT, 2: RT, 3: LB, 4: CB, 5: RB

77. UMD_FG (0xA2)
0: Transparent, 1: (0,0,0), 2: (255,0,0), 3: (0,255,0), 4: (255,255,0), 5: (0,0,255), 6: (255,0,255),
7: (0,255,255), 8: (255,255,255), 9: (128,128,128), 10: (128,0,0), 11: (0,128,0), 12: (128,128,0),
13: (0,0,128), 14: (128,0,128), 15: (0,128,128), 16: (192,192,192)

78. UMD_BG (0xA3)
0: Transparent, 1: (0,0,0), 2: (255,0,0), 3: (0,255,0), 4: (255,255,0), 5: (0,0,255), 6: (255,0,255),
7: (0,255,255), 8: (255,255,255), 9: (128,128,128), 10: (128,0,0), 11: (0,128,0), 12: (128,128,0),
13: (0,0,128), 14: (128,0,128), 15: (0,128,128), 16: (192,192,192)

79. WFM_FORMAT (0xA4: F-key Format)
0: Rotation, 1: Y+VT/Off, 2: YCbCr/Off, 3: GBR/Off, 4: Double/Off

80. WFMLINE_SEL (0xA5)
0: All, 1: Select

81. WFMLINE_DIS (0xA6)
0: Off, 1: On, 2: 5 Sec

82. IPMODE (0xA8)
0: L.Double, 1: Inter-Field, 2: Field Merge

83. PEAKING_FILTER (0xB0)
0: Off, 1: On

84. FALSE COLOR (0xB1)
0: Off, 1: On

85. PEAKING_COLOR (0xB2)
0: Red, 1: Blue, 2: White, 3: Violet

86. PEAKING_FILTER (0xB3)
0~100: 0x23~0x3F

87. POWER (0xFE)
0: Off, 1: On