



ESK32-A3A31 33 SEG × 8 COM Monochrome LCD User Manual

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1. Overview

The ESK32-A3A31 includes a monochrome LCD panel designed for the HT32 series expansion board, which can be used with HT32F573xx Starter Kit of HT32 LCD series to build a complete set of development tools. This user manual will describe the features, hardware architecture and usage of ESK32-A3A31 Mono-LCD.

In the user manual the Starter Kit takes the ESK32-30511 as an example. The HT32F57352 is used as a target MCU for the ESK32-30511. Users can connect the ESK32-A3A31 monochrome LCD panel to the ESK32-2x001A expansion board and use it with the ESK32-30511 Starter Kit. This will help users speed up development and verify the application.

1.1 ESK32-A3A31 Introduction

ESK32-A3A31 provides LCD demo for applications requiring low-cost displays.

Specifications:

- 33 SEG × 8 COM Mono-LCD Panel (without LCD driver)
- Display Type : FSTN / Reflective
- Polarizer Mode : Transmissive
- Viewing Direction : 12 O'clock
- Operating Voltage : 3.3 V
- Drive Method : 1/8 Duty, 1/4 Bias

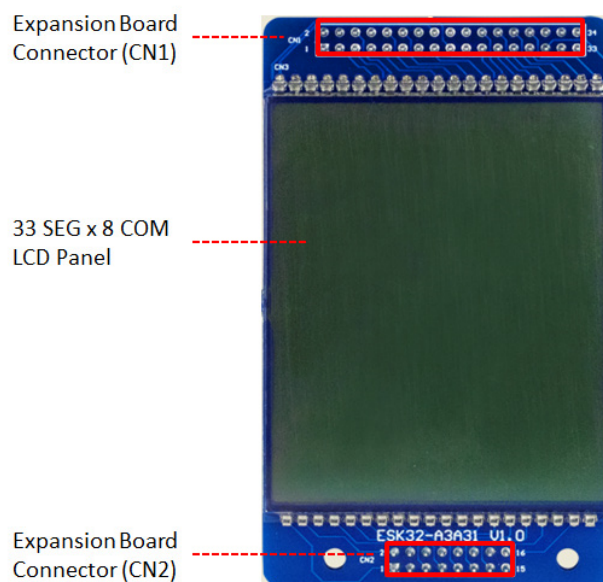


Figure 1. ESK32-A3A31

1.2 ESK32-2x001A Introduction

The HT32 provides two expansion boards, ESK32-20001A and ESK32-21001A, also equipped with rich peripheral accessories to easy for users to evaluate the functions and features of HT32 MCU. Comparing ESK32-21001A with ESK32-20001A, the ESK32-21001A adds more CMOS sensor connector, Smart Card seat and Audio input/output components.

Reference:

- Refer to ESK32-2x001A Expansion Board User Manual for more details.

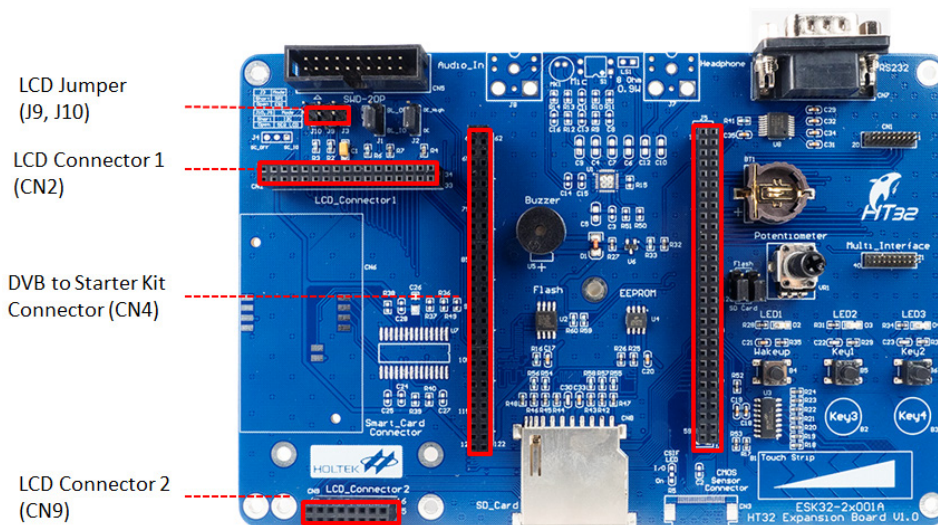


Figure 2. ESK32-2x001A

1.3 ESK32-30511 Introduction – using the HT32F57352 Starter Kit as an example

The ESK32-30511 is composed of HT32F57352 Target Board and e-Link32 Lite Debug Adaptor. The e-link32 Lite Debug Adaptor supports Serial Wire Debug. Users can download and debug programs simply by connecting to the PC IDE via USB interface. The HT32F57352 Starter Kit Extension Connector pin allocations are shown in the Table 1 and Table 2. Refer to HT32F57331_41_42_52_Datasheet for more pin information.

References:

- Refer to HT32 MCU Starter Kit User Manual for more details.
- Refer to e-Link32/e-Link32 Pro User's Guide to understand how to use e-Link32 Lite Debug Adaptor on Keil and IAR.

e-Link32 Lite
 CMSIS-DAP
 Debug Adapter

Tool Part No.

Target MCU

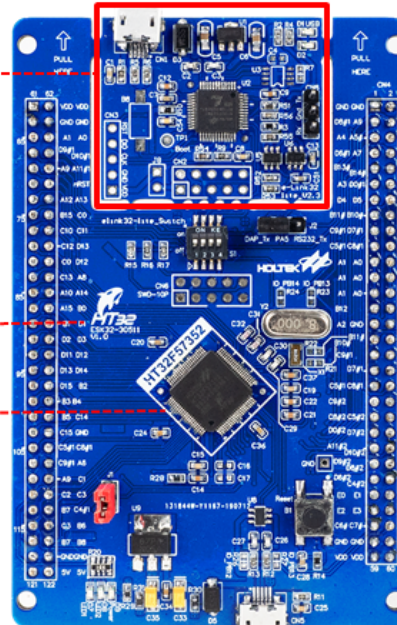


Figure 3. ESK32-30511 (Front)

Extension
 Connector
 (CN4-2)

Extension
 Connector
 (CN4-1)

LCD Options

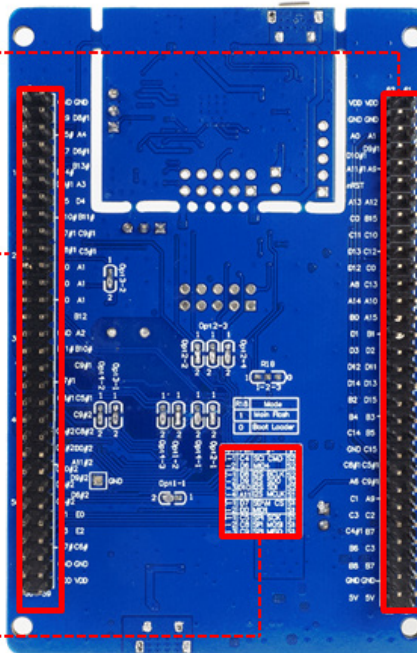


Figure 4. ESK32-30511 (Back)

Pin No.	Description	Pin No.	Description
1	GND	2	GND
3	PD8# / I ² S_BCLK (see Table 9, Opt2-1)	4	PA9 / I ² S_WS
5	PA4 / RS232_RX (connect to MCU TX)	6	PA5# / RS232_TX (connect to MCU TX) (see J2, DAP_TX)
7	PD6# / M_IO4 (see Table 9, Opt1-2)	8	PA7 / BUZZER
9	PB13# / M_IO2 (see R23, HSEi)	10	PB14# / M_IO3 (see R24, HSEo)
11	PA3 / M_IO0	12	PD0# / M_IO1 (see Table 9, Opt3-2)
13	PD4 / M_TX	14	PD5 / M_RX
15	PB11# / M_RTS (see R22, LSEo)	16	PB10# / M_CTS (see R21, LSEi)
17	PC9# / M_MISO (see Table 9, Opt4-3)	18	PD7# / M_CS (see Table 9, Opt3-1)
19	PC5# / M_SCK (see Table 9, Opt4-1)	20	PC8# / M_MOSI (see Table 9, Opt4-2)
21	PA1 / M_SDA	22	PA0 / M_SCL
23	PA1 / Touch_SDA	24	PA0 / Touch_SCL
25	PA1 / EE_SDA	26	PA0 / EE_SCL
27	PB12 / B0_WAKEUP (connect to MCU Wakeup pin)	28	NC
29	PA2 / VR	30	GND
31	PB10# / LSE_In (see R21, LSEi)	32	PB11# / LSE_Out (see R22, LSEo)
33	PC9# / SD_D0 / MISO (see Table 9, Opt4-3)	34	NC
35	NC	36	PD7# / SD_D3 / CS (see Table 9, Opt3-1)
37	PC5# / SD_CLK (see Table 9, Opt4-1)	38	PC8# / SD_CMD / MOSI (see Table 9, Opt4-2)
39	PC9# / S14 (see Table 9, Opt4-3)	40	NC
41	PC8# / S15 (see Table 9, Opt4-2)	42	PC5# / S16 (see Table 9, Opt4-1)
43	PD0# / S17 (see Table 9, Opt3-2)	44	PD7# / S18 (see Table 9, Opt3-1)
45	PA11# / S19 (see Table 9, Opt2-4)	46	PD10# / S20 (see Table 9, Opt2-3)
47	PD9# / S21 (see Table 9, Opt2-2)	48	PD8# / S22 (see Table 9, Opt2-1)
49	PD6# / S23 (see Table 9, Opt1-2)	50	PC4# / S24 (see Table 9, Opt1-1)
51	PE0 / S25	52	PE1 / S26
53	PE2 / S27	54	PE3 / S28
55	PC6# / USB_D- (see R26, USB_N)	56	PC7# / USB_D+ (see R27, USB_P)
57	GND	58	GND
59	3.3V	60	3.3V

: mean the specific Options or Jumper settings.

Table 1. Pin Assignment for Extension Connector CN4-1 (ESK32-30511)

Pin No.	Description	Pin No.	Description
61	3.3V	62	3.3V
63	GND	64	GND
65	PA1 / I ² S_SDA	66	PA0 / I ² S_SCL
67	PD9 [#] / I ² S_SDO (see Table 9, Opt2-2)	68	PD10 [#] / I ² S_SDI (see Table 9, Opt2-3)
69	PA9 / BOOT1 (connect to MCU BOOT pin) (see R18)	70	PA11 [#] / I ² S_MCLK (see Table 9, Opt2-4)
71	NC	72	F_NRST / nRST
73	PA12 / SWCLK	74	PA13 / SWDIO
75	PB15 / C0	76	PC0 / C1
77	PC10 / C2	78	PC11 / C3
79	PC12 / C4	80	PD13
81	PC0	82	PD12
83	PC13 / C5	84	PA8 / C6
85	PA10 / C7	86	PA14 / S0
87	PA15 / S1	88	PB0 / S2
89	PB1 / S3	90	PD1 / S4
91	PD2 / S5	92	PD3 / S6
93	PD11 / S7	94	PD12 / S8
95	PD13 / S9	96	PD14 / S10
97	PD15 / S11	98	PB2 / S12
99	PB3 / S13	100	PB4 / S32
101	PB5 / S31	102	PC14 / S30
103	PC15 / S29	104	GND
105	PC5 [#] / Flash_SCK (see Table 9, Opt4-1)	106	PC8 [#] / Flash_MOSI (see Table 9, Opt4-2)
107	PC9 [#] / Flash_MISO (see Table 9, Opt4-3)	108	PA6 / Flash_CS
109	PA9 / Button1	110	PC1 / Button2
111	PC2 / LED0	112	PC3 / LED1
113	PB7 / LED2	114	PC4 [#] / SCI_CMD (Table 9, see Opt1-1)
115	PC3 / SCI_RST	116	PB6 / SCI_CLK
117	PB7 / SCI_DET	118	PB8 / SCI_DIO
119	GND	120	GND
121	5V	122	5V

: mean the specific Options or Jumper settings.

Table 2. Pin Assignment for Extension Connector CN4-2 (ESK32-30511)

2. Hardware Description

The ESK32-A3A31 is a 33 SEG × 8 COM monochrome LCD panel for the HT32 series expansion board. The front view of ESK32-A3A31 Layout is shown in the Figure 5. The back view of ESK32-A3A31 Layout is shown in the Figure 6.

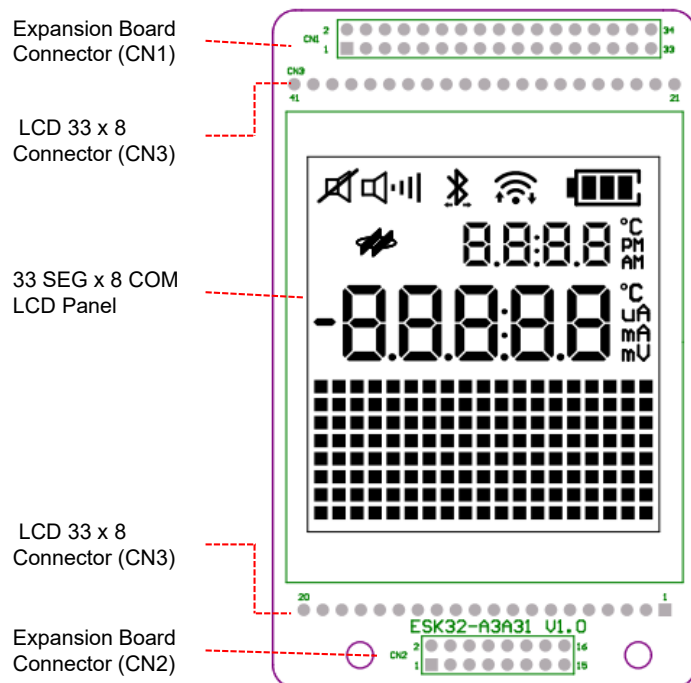


Figure 5. ESK32-A3A31 Hardware Layout (Front)

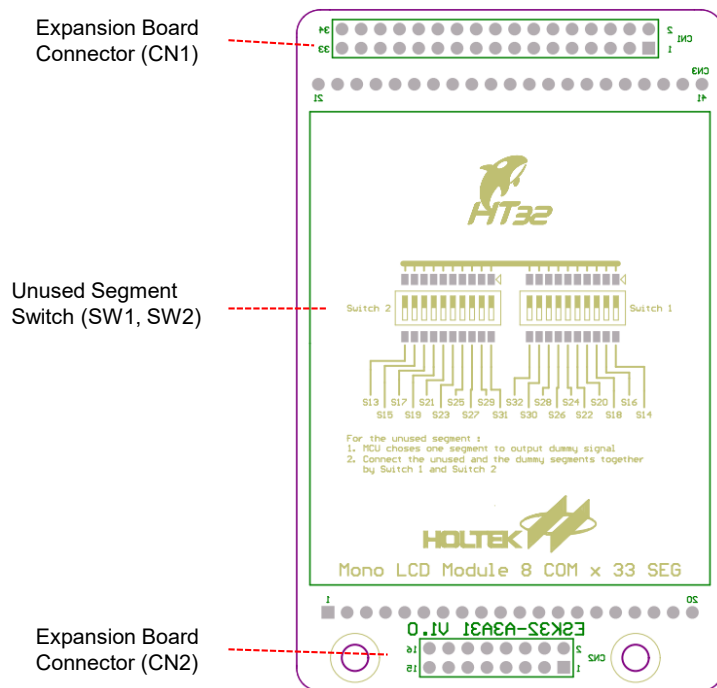


Figure 6. ESK32-A3A31 Hardware Layout (Back)

2.1 ESK32-A3A31 Expansion Board Connector – CN1

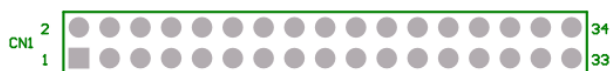


Figure 7. Expansion Board Connector CN1 (ESK32-A3A31)

Pin No.	Description	Pin No.	Description
1	NC	2	NC
3	C0	4	C2
5	C3	6	C1
7	NC	8	NC
9	C4	10	C5
11	NC	12	C6
13	NC	14	NC
15	C7	16	S0
17	S1	18	S2
19	S3	20	S4
21	S5	22	S6
23	S7	24	S8
25	S9	26	S10
27	S11	28	S12
29	S13	30	S32
31	NC	32	S29
33	S31	34	S30

Table 3. Pin Assignment for Expansion Board Connector CN1 (ESK32-A3A31)

2.2 ESK32-A3A31 Expansion Board Connector – CN2



Figure 8. Expansion Board Connector CN2 (ESK32-A3A31)

Pin No.	Description	Pin No.	Description
1	S14	2	S16
3	S18	4	S20
5	S22	6	S24
7	S26	8	S28
9	S27	10	S25
11	S23	12	S21
13	S19	14	S17
15	NC	16	S15

Table 4. Pin Assignment for Expansion Board Connector CN2 (ESK32-A3A31)

2.3 ESK32-A3A31 LCD 33 × 8 Connector – CN3

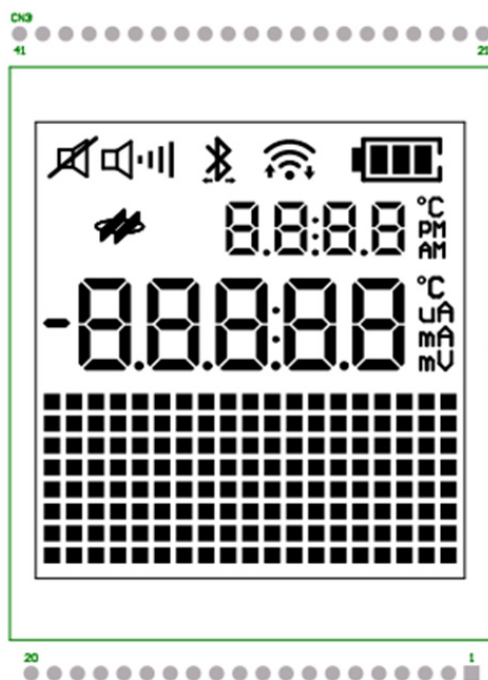


Figure 9. LCD 33 × 8 Connector CN3 (ESK32-A3A31)

Pin No.	Description	Pin No.	Description
1	S13 [#] / SEG33 (see SW2.11)	2	S15 [#] / SEG32 (see SW2.12)
3	S17 [#] / SEG31 (see SW2.13)	4	S19 [#] / SEG30 (see SW2.14)
5	S21 [#] / SEG29 (see SW2.15)	6	S23 [#] / SEG28 (see SW2.16)
7	S25 [#] / SEG27 (see SW2.17)	8	S27 [#] / SEG26 (see SW2.18)
9	S29 [#] / SEG25 (see SW2.19)	10	S31 [#] / SEG24 (see SW2.20)
11	S32 [#] / SEG23 (see SW1.11)	12	S30 [#] / SEG22 (see SW1.12)
13	S28 [#] / SEG21 (see SW1.13)	14	S26 [#] / SEG20 (see SW1.14)
15	S24 [#] / SEG19 (see SW1.15)	16	S22 [#] / SEG18 (see SW1.16)
17	S20 [#] / SEG17 (see SW1.17)	18	S18 [#] / SEG16 (see SW1.18)
19	S16 [#] / SEG15 (see SW1.19)	20	S14 [#] / SEG14 (see SW1.20)
21	S12 / SEG13	22	S11 / SEG12
23	S10 / SEG11	24	S9 / SEG10
25	S8 / SEG9	26	S7 / SEG8
27	S6 / SEG7	28	C7 / COM8
29	C6 / COM7	30	C5 / COM6
31	C4 / COM5	32	C3 / COM4
33	C2 / COM3	34	C1 / COM2
35	C0 / COM1	36	S5 / SEG6
37	S4 / SEG5	38	S3 / SEG4
39	S2 / SEG3	40	S1 / SEG2
41	S0 / SEG1		

: mean the specific Switch settings.

Table 5. Pin Assignment for LCD 8 × 33 Connector CN3 (ESK32-A3A31)

2.4 ESK32-A3A31 Segment Switch – SW1, SW2

MCU can select an unused LCD Segment to output dummy signal and connect the rest of the unused LCD Segment through SW1 and SW2 to avoid ghost phenomenon and affect the display effect.

Switch No.	Description	Switch No.	Description
1	S14	2	S16
3	S18	4	S20
5	S22	6	S24
7	S26	8	S28
9	S30	10	S32

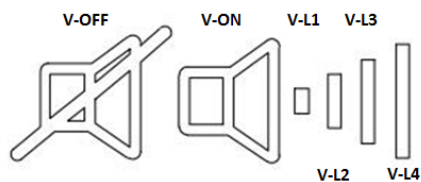
Table 6. Unused Segment Switch SW1 (ESK32-A3A31)

Switch No.	Description	Switch No.	Description
1	S31	2	S29
3	S27	4	S25
5	S23	6	S21
7	S19	8	S17
9	S15	10	S13

Table 7. Unused Segment Switch SW2 (ESK32-A3A31)

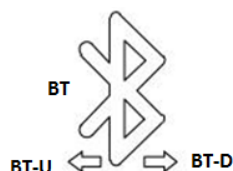
2.5 ESK32-A3A31 LCD Map

The mapping of pins to LCD segment is provided in the following figures.

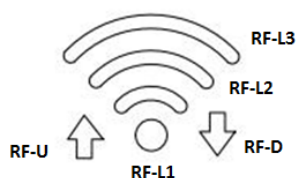


57352 SK	--	--	--	--	--	M_S16	M_S17
--	I/O Pin	--	--	--	--	PD1	PD2
--	--	2x001A Board	--	--	--	S4	S5
--	--	--	CN4 No.	--	--	90	91
--	--	--	--	LCD	--	SEG5	SEG6
--	--	--	--	--	CN3 No.	37	36
M_C5	PC11	C3	78	COM4	32	V-OFF	V-L4
M_C6	PC12	C4	79	COM5	31	--	V-ON
M_C7	PC13	C5	83	COM6	30	V-L1	V-L3
M_C2	PA8	C6	84	COM7	29	--	V-L2

Figure 10. Voice Display (ESK32-A3A31)

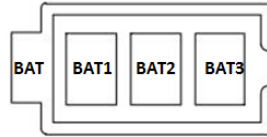


57352 SK	--	--	--	--	--	M_S4	M_S16
--	I/O Pin	--	--	--	--	PB1	PD1
--	--	2x001A Board	--	--	--	S3	S4
--	--	--	CN4 No.	--	--	89	90
--	--	--	--	LCD	--	SEG4	SEG5
--	--	--	--	--	CN3 No.	38	37
M_C1	PC0	C1	76	COM2	34	BT	BT-D
M_C4	PC10	C2	77	COM3	33	BT-U	--

Figure 11. Bluetooth Display (ESK32-A3A31)


57352 SK	--	--	--	--	--	M_S3	M_S4	M_S16	M_S17
--	I/O Pin	--	--	--	--	PB0	PB1	PD1	PD2
--	--	2x001A Board	--	--	--	S2	S3	S4	S5
--	--	--	CN4 No.	--	--	88	89	90	91
--	--	--	--	LCD	--	SEG3	SEG4	SEG5	SEG6
--	--	--	--	--	CN3 No.	39	38	37	36
M_C0	PB15	C0	75	COM1	35	RF-D	RF-L1	RF-L2	RF-L3
M_C1	PC0	C1	76	COM2	34	--	--	--	RF-U

Figure 12. RF Display (ESK32-A3A31)



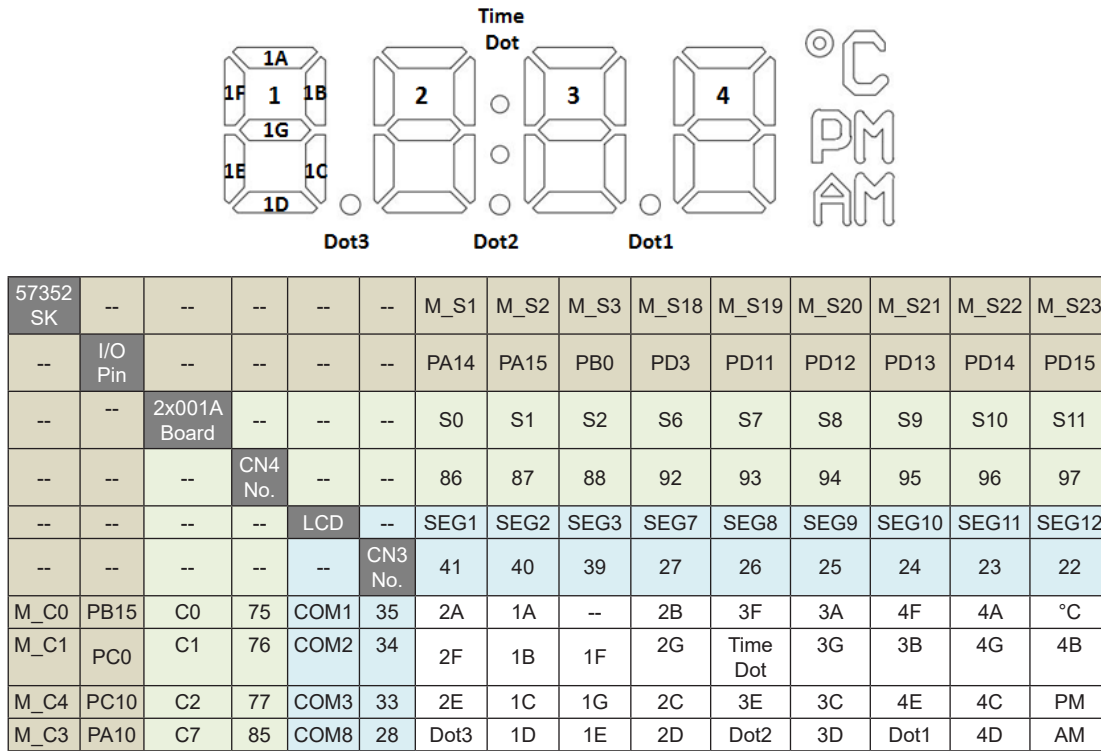
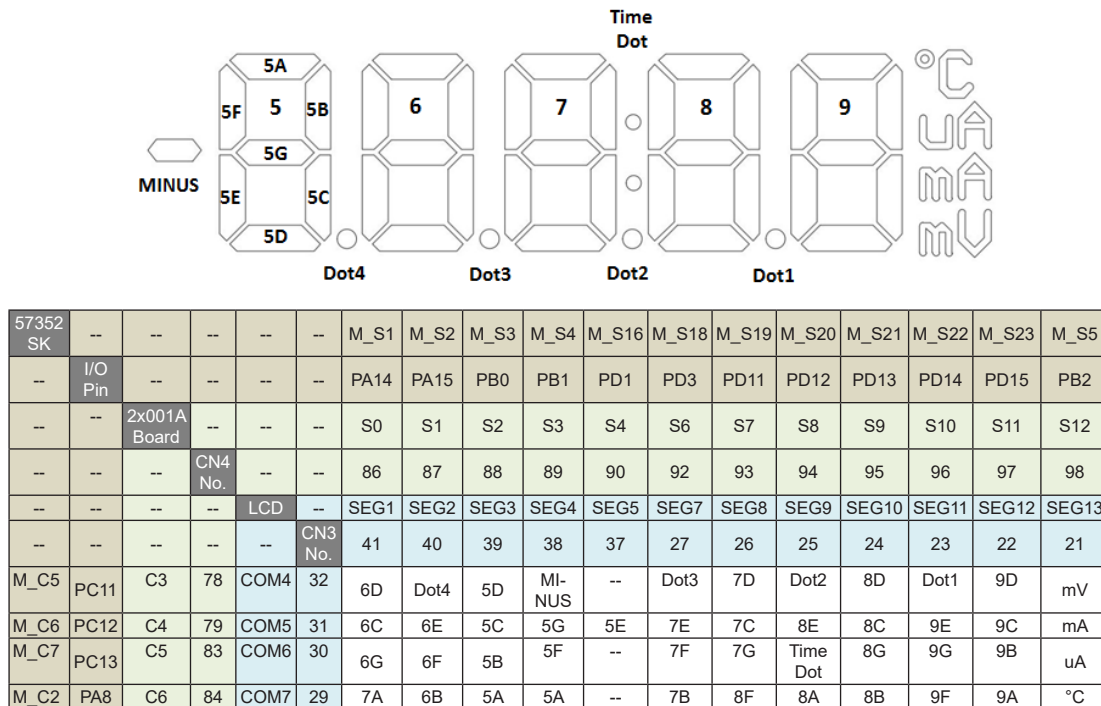
57352 SK	--	--	--	--	--	M_S5
--	I/O Pin	--	--	--	--	PB2
--	--	2x001A Board	--	--	--	S12
--	--	--	CN4 No.	--	--	98
--	--	--	--	LCD	--	SEG13
--	--	--	--	--	CN3 No.	21
M_C0	PB15	C0	75	COM1	35	BAT
M_C1	PC0	C1	76	COM2	34	BAT1
M_C4	PC10	C2	77	COM3	33	BAT2
M_C3	PA10	C7	85	COM8	28	BAT3

Figure 13. Battery Display (ESK32-A3A31)



57352 SK	--	--	--	--	--	M_S17
--	I/O Pin	--	--	--	--	PD2
--	--	2x001A Board	--	--	--	S5
--	--	--	CN4 No.	--	--	91
--	--	--	--	LCD	--	SEG6
--	--	--	--	--	CN3 No.	36
M_C2	PA8	C6	84	COM7	29	HOLTEK

Figure 14. Holtek Display (ESK32-A3A31)


Figure 15. 7-Segment Group 1 Display (ESK32-A3A31)

Figure 16. 7-Segment Group 2 Display (ESK32-A3A31)

M8-1	M8-2	M8-3	M8-4	M8-5	M8-6	M8-7	M8-8	M8-9	M8-10	M8-11	M8-12	M8-13	M8-14	M8-15	M8-16	M8-17	M8-18	M8-19	M8-20
M7-1	M7-2	M7-3	M7-4	M7-5	M7-6	M7-7	M7-8	M7-9	M7-10	M7-11	M7-12	M7-13	M7-14	M7-15	M7-16	M7-17	M7-18	M7-19	M7-20
M6-1	M6-2	M6-3	M6-4	M6-5	M6-6	M6-7	M6-8	M6-9	M6-10	M6-11	M6-12	M6-13	M6-14	M6-15	M6-16	M6-17	M6-18	M6-19	M6-20
M5-1	M5-2	M5-3	M5-4	M5-5	M5-6	M5-7	M5-8	M5-9	M5-10	M5-11	M5-12	M5-13	M5-14	M5-15	M5-16	M5-17	M5-18	M5-19	M5-20
M4-1	M4-2	M4-3	M4-4	M4-5	M4-6	M4-7	M4-8	M4-9	M4-10	M4-11	M4-12	M4-13	M4-14	M4-15	M4-16	M4-17	M4-18	M4-19	M4-20
M3-1	M3-2	M3-3	M3-4	M3-5	M3-6	M3-7	M3-8	M3-9	M3-10	M3-11	M3-12	M3-13	M3-14	M3-15	M3-16	M3-17	M3-18	M3-19	M3-20
M2-1	M2-2	M2-3	M2-4	M2-5	M2-6	M2-7	M2-8	M2-9	M2-10	M2-11	M2-12	M2-13	M2-14	M2-15	M2-16	M2-17	M2-18	M2-19	M2-20
M1-1	M1-2	M1-3	M1-4	M1-5	M1-6	M1-7	M1-8	M1-9	M1-10	M1-11	M1-12	M1-13	M1-14	M1-15	M1-16	M1-17	M1-18	M1-19	M1-20

57352 SK	--	--	--	--	--	M_S14	M_S12	M_S29	M_S32	M_S30	M_S11	M_S25	M_S27	M_S9	M_S7
--	I/O Pin	--	--	--	--	PC9	PC5	PD7	PD10	PD8	PC4	PE1	PE3	PC14	PB4
--	--	2x001A Board	--	--	--	S14	S16	S18	S20	S22	S24	S26	S28	S30	S32
--	--	--	CN4 No.	--	--	39	42	44	46	48	50	52	54	102	100
--	--	--	--	LCD	--	SEG14	SEG15	SEG16	SEG17	SEG18	SEG19	SEG20	SEG21	SEG22	SEG23
--	--	--	--	--	CN3 No.	20	19	18	17	16	15	14	13	12	11
M_C0	PB15	C0	75	COM1	35	M1-1	M1-2	M1-3	M1-4	M1-5	M1-6	M1-7	M1-8	M1-9	M1-10
M_C1	PC0	C1	76	COM2	34	M2-1	M2-2	M2-3	M2-4	M2-5	M2-6	M2-7	M2-8	M2-9	M2-10
M_C4	PC10	C2	77	COM3	33	M3-1	M3-2	M3-3	M3-4	M3-5	M3-6	M3-7	M3-8	M3-9	M3-10
M_C5	PC11	C3	78	COM4	32	M8-1	M8-2	M8-3	M8-4	M8-5	M8-6	M8-7	M8-8	M8-9	M8-10
M_C6	PC12	C4	79	COM5	31	M7-1	M7-2	M7-3	M7-4	M7-5	M7-6	M7-7	M7-8	M7-9	M7-10
M_C7	PC13	C5	83	COM6	30	M6-1	M6-2	M6-3	M6-4	M6-5	M6-6	M6-7	M6-8	M6-9	M6-10
M_C2	PA8	C6	84	COM7	29	M5-1	M5-2	M5-3	M5-4	M5-5	M5-6	M5-7	M5-8	M5-9	M5-10
M_C3	PA10	C7	85	COM8	28	M4-1	M4-2	M4-3	M4-4	M4-5	M4-6	M4-7	M4-8	M4-9	M4-10

57352 SK	--	--	--	--	--	M_S8	M_S10	M_S26	M_S24	M_S28	M_S31	M_S0	M_S15	M_S13	M_S6
--	I/O Pin	--	--	--	--	PB5	PC15	PE2	PE0	PD6	PD9	PA11	PD0	PC8	PB3
--	--	2x001A Board	--	--	--	S31	S29	S27	S25	S23	S21	S19	S17	S15	S13
--	--	--	CN4 No.	--	--	101	103	53	51	49	47	45	43	41	99
--	--	--	--	LCD	--	SEG24	SEG25	SEG26	SEG27	SEG28	SEG29	SEG30	SEG31	SEG32	SEG33
--	--	--	--	--	CN3 No.	10	9	8	7	6	5	4	3	2	1
M_C0	PB15	C0	75	COM1	35	M1-11	M1-12	M1-13	M1-14	M1-15	M1-16	M1-17	M1-18	M1-19	M1-20
M_C1	PC0	C1	76	COM2	34	M2-11	M2-12	M2-13	M2-14	M2-15	M2-16	M2-17	M2-18	M2-19	M2-20
M_C4	PC10	C2	77	COM3	33	M3-11	M3-12	M3-13	M3-14	M3-15	M3-16	M3-17	M3-18	M3-19	M3-20
M_C5	PC11	C3	78	COM4	32	M8-11	M8-12	M8-13	M8-14	M8-15	M8-16	M8-17	M8-18	M8-19	M8-20
M_C6	PC12	C4	79	COM5	31	M7-11	M7-12	M7-13	M7-14	M7-15	M7-16	M7-17	M7-18	M7-19	M7-20
M_C7	PC13	C5	83	COM6	30	M6-11	M6-12	M6-13	M6-14	M6-15	M6-16	M6-17	M6-18	M6-19	M6-20
M_C2	PA8	C6	84	COM7	29	M5-11	M5-12	M5-13	M5-14	M5-15	M5-16	M5-17	M5-18	M5-19	M5-20
M_C3	PA10	C7	85	COM8	28	M4-11	M4-12	M4-13	M4-14	M4-15	M4-16	M4-17	M4-18	M4-19	M4-20

Figure 17. 20 × 8 Martix Display (ESK32-A3A31)

3. Using the LCD Panel

3.1 Tool Preparation

Users need to prepare the HT32 Series Expansion Board (ESK32-20001A / ESK32-21001A) and the HT32F573xx Starter Kit (ESK32-30511 / ESK32-30512).

3.2 LCD Panel Setting

Before using the LCD Panel, please refer to Table 5 for the LCD settings details. Figure 18 is the ESK32-A3A31 Switch SW1 and SW2.

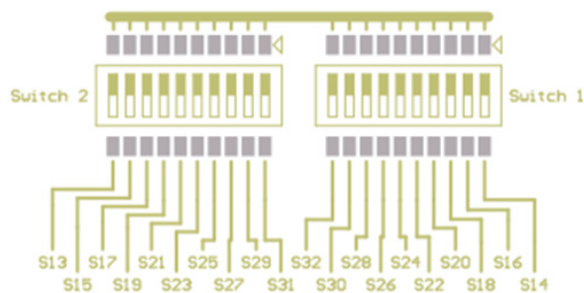


Figure 18. Unused Segment Switch SW1, SW2 (ESK32-A3A31)

3.3 Expansion Board Setting

The expansion board settings, J9 and J10 are associated with the LCD panel, refer to Table 8 for more details. Refer to the “ESK32-2x001A Expansion Board User Manual” for details on using this expansion board.

Jumpers	Descriptions
J9	Short: I ² C mode (SCL) 
	Open: SEG LCD mode (C3) 
J10	Short: I ² C mode (SDA) 
	Open: SEG LCD mode (C2) 

Table 8. Expansion Board LCD Settings (ESK32-2x001A)

3.4 Starter Kit Setting – using the HT32F57352 Starter Kit as an example

Users can refer to Table 9 for the starter kit settings associated with the LCD panel. Refer to the “HT32 MCU Starter Kit User Manual” for details on using this starter kit.

Options	Descriptions
Opt1-1	1 – Smart Card Interface CMD pin (SCI_CMD) – default setting 2  1
	2 – LCD segment line (S24) 2  1
Opt1-2	1 – Multi-Interface control pin (M_IO4) – default setting 1  2
	2 – LCD segment line (S23) 1  2
Opt2-1	1 – I ² S bit clock (I ² S_BCLK) – default setting 1  2
	2 – LCD segment line (S22) 1  2
Opt2-2	1 – I ² S data output (I ² S_SDO) – default setting 1  2
	2 – LCD segment line (S21) 1  2
Opt2-3	1 – I ² S data input (I ² S_SDI) – default setting 1  2
	2 – LCD segment line (S20) 1  2
Opt2-4	1 – I ² S main clock (I ² S_MCLK) – default setting 1  2
	2 – LCD segment line (S19) 1  2
Opt3-1	1 – SD Card or Multi-Interface chip select pin (SD_CS / M_CS) – default setting 1  2
	2 – LCD segment line (S18) 1  2
Opt3-2	1 – Multi-Interface control pin (M_IO1) – default setting 1  2
	2 – LCD segment line (S17) 1  2
Opt4-1	1 – SPI clock line (SPI_SCK) – default setting 1  2
	2 – LCD segment line (S16) 1  2
Opt4-2	1 – SPI data line (SPI_MOSI) – default setting 1  2
	2 – LCD segment line (S15) 1  2
Opt4-3	1 – SPI data line (SPI_MISO) – default setting 1  2
	2 – LCD segment line (S14) 1  2

Table 9. Starter Kit LCD Settings (ESK32-30511)

3.5 Board Assembly

The HT32 series expansion board (ESK32-2x001A) is connected to the Starter Kit and the 33 SEG × 8 COM LCD panel (ESK32-A3A31), as shown in Figure 19.

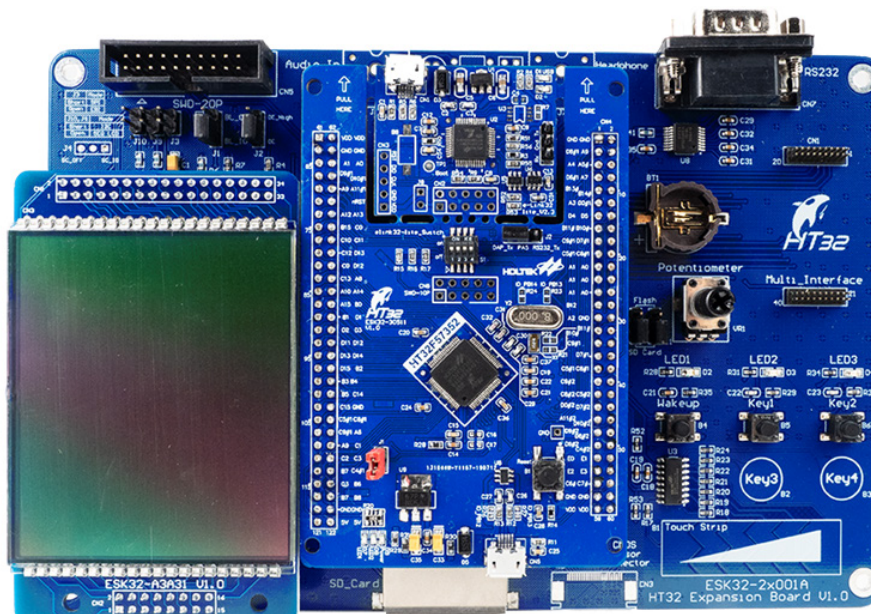


Figure 19. HT32 Mono-LCD Development Kit

3.6 Obtain the Example Program

Download the latest Holtek HT32 Firmware Library. The download web link is <https://www.holtek.com/Development-Kit-software>. Unzip the HT32 Firmware Library after downloading.

3.7 Compile and Execute the Program

To execute the Mono_LCD example, the Keil® MDK-ARM or IAR EWARM need to setup.

The Keil® MDK-ARM evaluation software can be downloaded from the Keil® company website (<http://www.keil.com>). Additionally, the full HT32 M0+ MCU series has been licensed to use the Keil® MDK-ARM. Refer to “Keil® MDK Holtek Edition (Free) Installation Guide” for details.

The KickStart version of the IAR EWARM can be downloaded from the IAP company website (<http://www.iar.com>).

Open the Mono_LCD example project:

Keil: \example\Mono_LCD\Demo\MDK_ARMv5\Project_XXXXX.uvprojx

IAR: \example\Mono_LCD\Demo\EWARMv8\Project_XXXXX.eww

Compile and execute the Mono_LCD example program after which, the specific messages will appear on the LCD, as shown in Figure 9.

4. Schematics

This section shows the HT32 Mono-LCD circuitry.

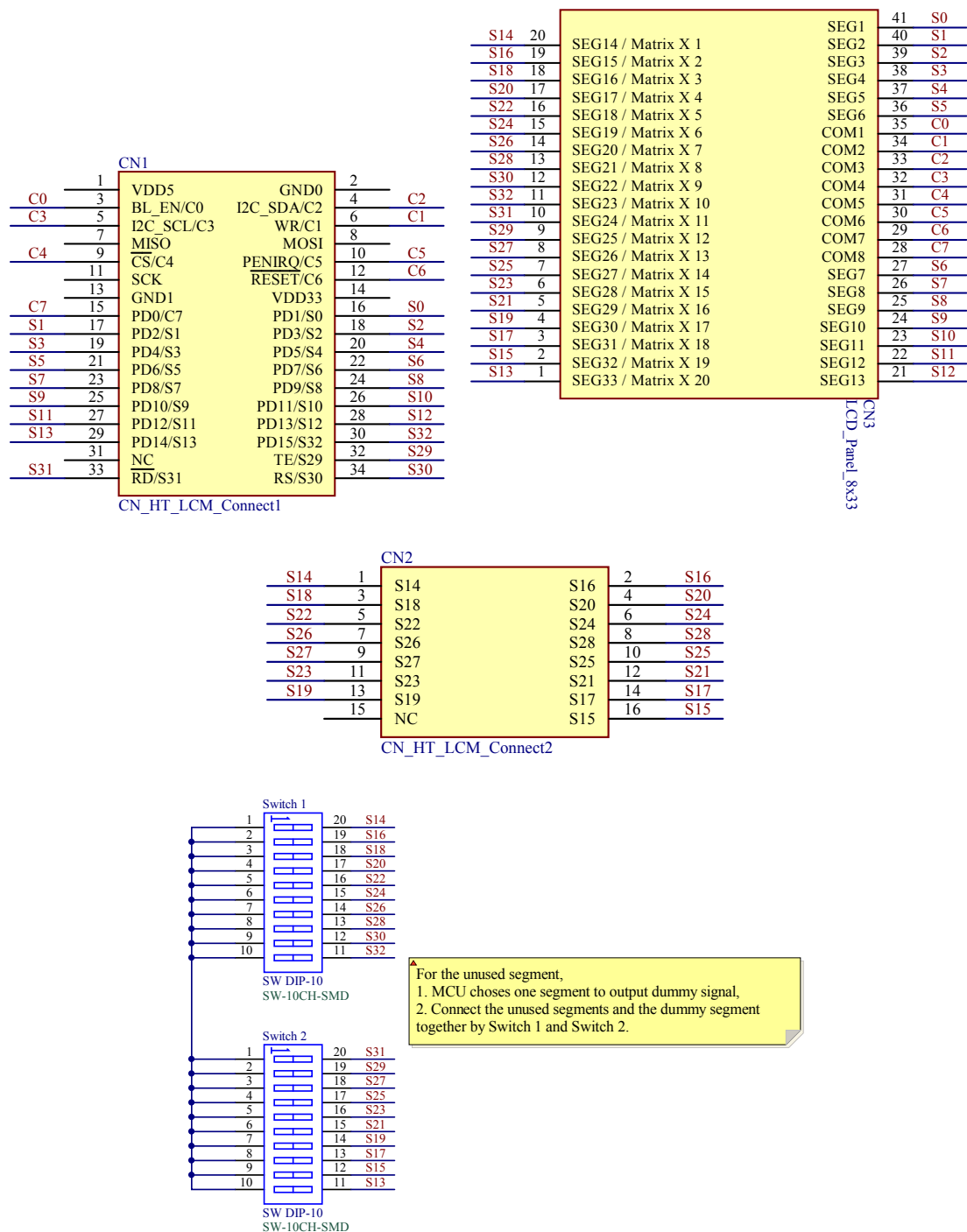


Figure 20. HT32 Mono-LCD Schematic (ESK32-A3A31)

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