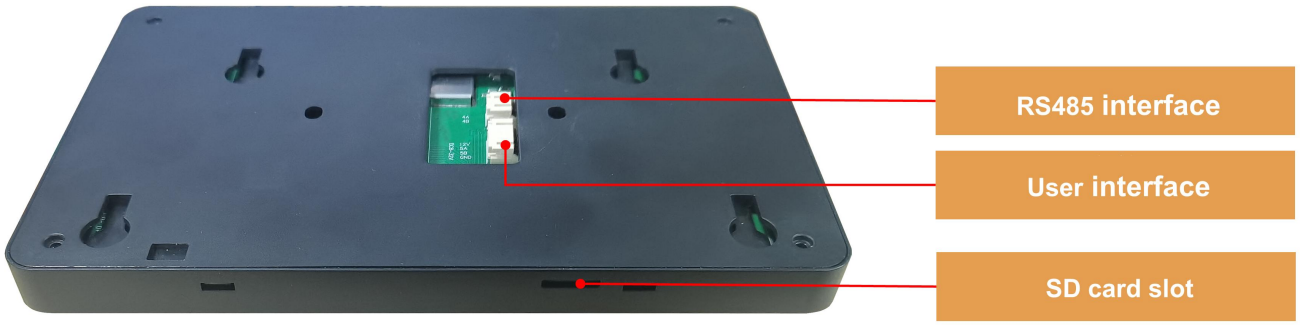
# TC070C44W00

**Features:**

- **Powered by T5L2 ASIC, running DGUS II HMI platform, wire thermostat.**
- **7.0 inch, 1024*600 resolution, IPS-TFT-LCD.**
- **Integrated black OCA bonded capacitive touch screen.**
- **With speaker, RTC and Tuya Wi-Fi module.**
- **Conformal coating.**
- **Support offline voice, NTC temperature measurement, and real-time temperature and humidity display.**

# 1 Hardware and interface

## 1.1 Hardware interface diagram




Hardware interface diagram

## 1.2 Hardware and interface description

| No. | Item | Description |
|---|---|---|
| 1 | T5L2 ASIC | DWIN independently developed, mass production in 2019. Dual 8051 cores, GUI and application run on separate 8051 cores. |
| 2 | User interface | One 4Pin_2.0mm socket and one 2PIN_2.0mm socket for power supply and serial communication. |
| 3 | Flash | 16MBytes NOR Flash and 128MB NAND Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times. |
| 4 | Expand Flash pads | Two expansion slots support NOR or NAND Flash, up to 64MB (4x16MB NOR Flash) or 48MB+512MB (3x16MB NOR Flash + 512MB NAND Flash). |
| 5 | Speaker | Two built-in Speaker, 8Ω0.8W. |
| 6 | SD card slot | For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate. |
| 7 | RTC | Super-capacitor powered, accuracy: ±20ppm @25℃. |
| 8 | Wi-Fi module | Tuya WBR3 module. |
| 9 | AI Speech Chip | The product comes with built-in command words and supports the customization of command words. |

# 2 Specification parameters

## 2.1 Display parameters

| | |
|---|---|
| **LCD Type** | IPS, TFT LCD |
| **Viewing Angle** | Wide viewing angle (85°/85°/85°/85° typical), high contrast, and good color reproduction. |
| **Resolution** | 1024x600 (support 0°/90°/180°/270°) |
| **Viewing Area (VA)** | 153.8mm (W)×85.9mm (H) |
| **Backlight** | LED |
| **Backlight Service Life** | >20000 hours |
| **Brightness** | 50nit |
| **Brightness Control** | 100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range) |
| Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display. | |

## 2.2 Touch parameters

| | |
|---|---|
| **Type** | CTP (Capacitive touch panel) |
| **Structure** | G+G structure with tempered glass surface and hardness ≥ 6H. |
| **Light Transmittance** | >15% |
| **Life** | >20,000H |

## 2.3 Serial interface parameters

| | | | | | |
|---|---|---|---|---|---|
| **Mode** | UART4: RS485 (Only available after OS configuration)<br>UART5: RS485 (Only available after OS configuration) | | | | |
| **Voltage Level** | Test Condition | Min | Typ. | Max | Unit |
| | Output 1 | 2.5 | 5.0 | - | V |
| | Output 0 | - | -5.0 | -2.5 | V |
| | Input 1 | 0 | 2.5 | - | V |
| | Input 0 | - | -2.5 | -0.2 | V |
| **Baud Rate** | 3150~3225600bps, typical value of 115200bps. | | | | |
| **Data Format** | UART4: N81/E81/O81/N82 4 modes (OS configuration)<br>UART5: N81/E81/O81/N824 modes (OS configuration) | | | | |
| **Interface Cable** | 2Pin_2.0mm (UART4)<br>4Pin_2.0mm (UART5) | | | | |

## 2.4 Electrical specifications

| | | |
|---|---|---|
| **Rated Power** | <6W | |
| **Operating Voltage** | 9~36V, typical value of 12V. | |
| **Operating Current** | 350mA | VCC=12V, max backlight. |
| | 150mA | VCC=12V, backlight off. |
| **Recommended power supply: 12V 1A DC.** | | |

## 2.5 Operating environment

| | |
|---|---|
| **Operating Temperature** | -20℃~70℃ (12V @ 60% RH) |
| **Storage Temperature** | -30℃~80℃ |
| **Operating Humidity** | 10%~90%RH, typical value of 60% RH. |
| **Conformal coating** | Y |

# 3 Reliability test

## 3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: Place the product on the test bench fixture (approximately 15cm in height), and perform contact and air discharge tests on the smart LCM. Observe if any freezing, black or white screen, flickering, or rebooting occurs during the test.

Test conclusion: The product's ESD performance meets GB/T 17626.2 Class A/B standards.

| Discharge Type | Discharge Value | Result |
|---|---|---|
| Air discharge | ±6KV | Normal operation |
| Contact discharge | ±6KV | Normal operation |

## 3.2 EFT test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: Place the product flat on the test bench, power the smart LCM through the power supply coupled with an impulse generator. Observe if any reboot, abnormal display, or touch malfunction occurs during the test.

Test conclusion: The product's EFT performance meets GB/T 17626.4 Class B standards.

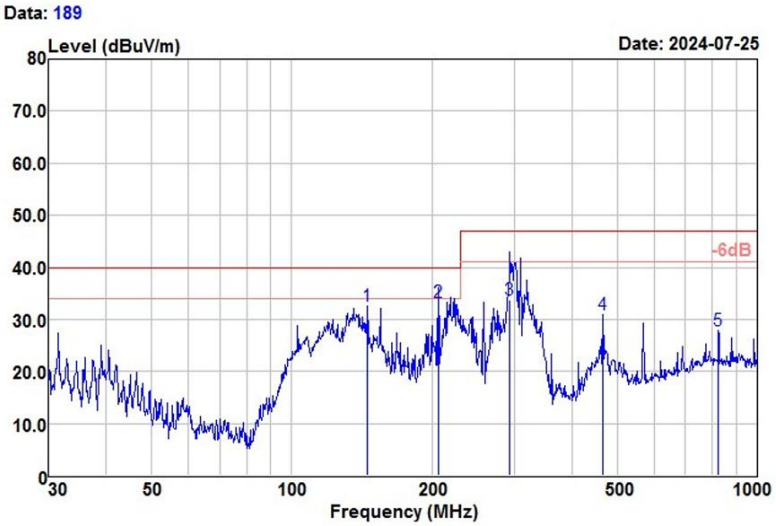
■ Test standard : ☐EN 61000-4-4:2012 ☑IEC 61000-4-4:2012 ☐GB/T 17626.4-2018
☐Other:

| Test Points | | Test Levels(kV) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | -0.5 | +0.5 | -1.0 | +1.0 | -2.0 | +2.0 | -4.0 | +4.0 |
| Power ports | L | | | | | 12 | 12 | | |
| | N | | | | | 12 | 12 | | |
| | Earth | / | / | / | / | / | / | / | / |
| | L+N | | | | | 12 | 12 | | |
| | L + Earth | / | / | / | / | / | / | / | / |
| | N + Earth | / | / | / | / | / | / | / | / |
| | L+N+Earth | / | / | / | / | / | / | / | / |
| Signal ports | ____/__ | / | / | / | / | / | / | / | / |

## 3.3 RE test

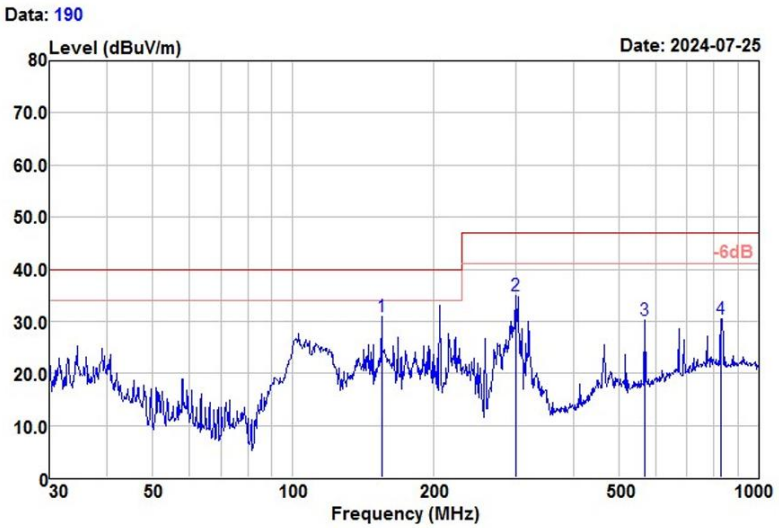
| Test Item | Test Standard | Result |
|---|---|---|
| RE | ClassB-6dB | Pass |

**HORIZONTAL**




| Freq MHz | Reading level dBuV | Antenna factor dB/m | Cable loss dB | Preamp factor dB | level dBuV/m | Limit level dBuV/m | Over limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 145.351 | 49.55 | 13.19 | 2.25 | 32.50 | 32.49 | 40.00 | -7.51 | Peak |
| 206.398 | 53.61 | 9.47 | 2.74 | 32.50 | 33.32 | 40.00 | -6.68 | QP |
| 294.114 | 49.81 | 13.24 | 3.31 | 32.50 | 33.86 | 47.00 | -13.14 | QP |
| 465.599 | 42.19 | 17.05 | 4.26 | 32.67 | 30.83 | 47.00 | -16.17 | Peak |
| 824.597 | 32.50 | 22.38 | 5.78 | 32.84 | 27.82 | 47.00 | -19.18 | Peak |

**VERTICAL**




| Freq MHz | Reading level dBuV | Antenna factor dB/m | Cable loss dB | Preamp factor dB | level dBuV/m | Limit level dBuV/m | Over limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 154.821 | 47.67 | 13.45 | 2.33 | 32.50 | 30.95 | 40.00 | -9.05 | Peak |
| 300.367 | 50.62 | 13.37 | 3.35 | 32.50 | 34.84 | 47.00 | -12.16 | Peak |
| 568.613 | 39.24 | 18.97 | 4.75 | 32.70 | 30.26 | 47.00 | -16.74 | Peak |
| 830.400 | 35.12 | 22.38 | 5.79 | 32.87 | 30.42 | 47.00 | -16.58 | Peak |

**Performance Criterion:**

A. Normal performance within limits specified by the manufacturer, requestor or purchaser;

B. Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;

C. Temporary loss of function or degradation of performance, the correction of which requires operator intervention;

D. Loss of function or degradation of performance which is not recoverable, due to damage to hardware or software, or loss of data.

## 4 Packaging & dimensions

| | |
|---|---|
| **Form Factor** | 180.0mm(W)×110.0mm (H)×15.7(T)mm |
| **Net Weight** | 370g |

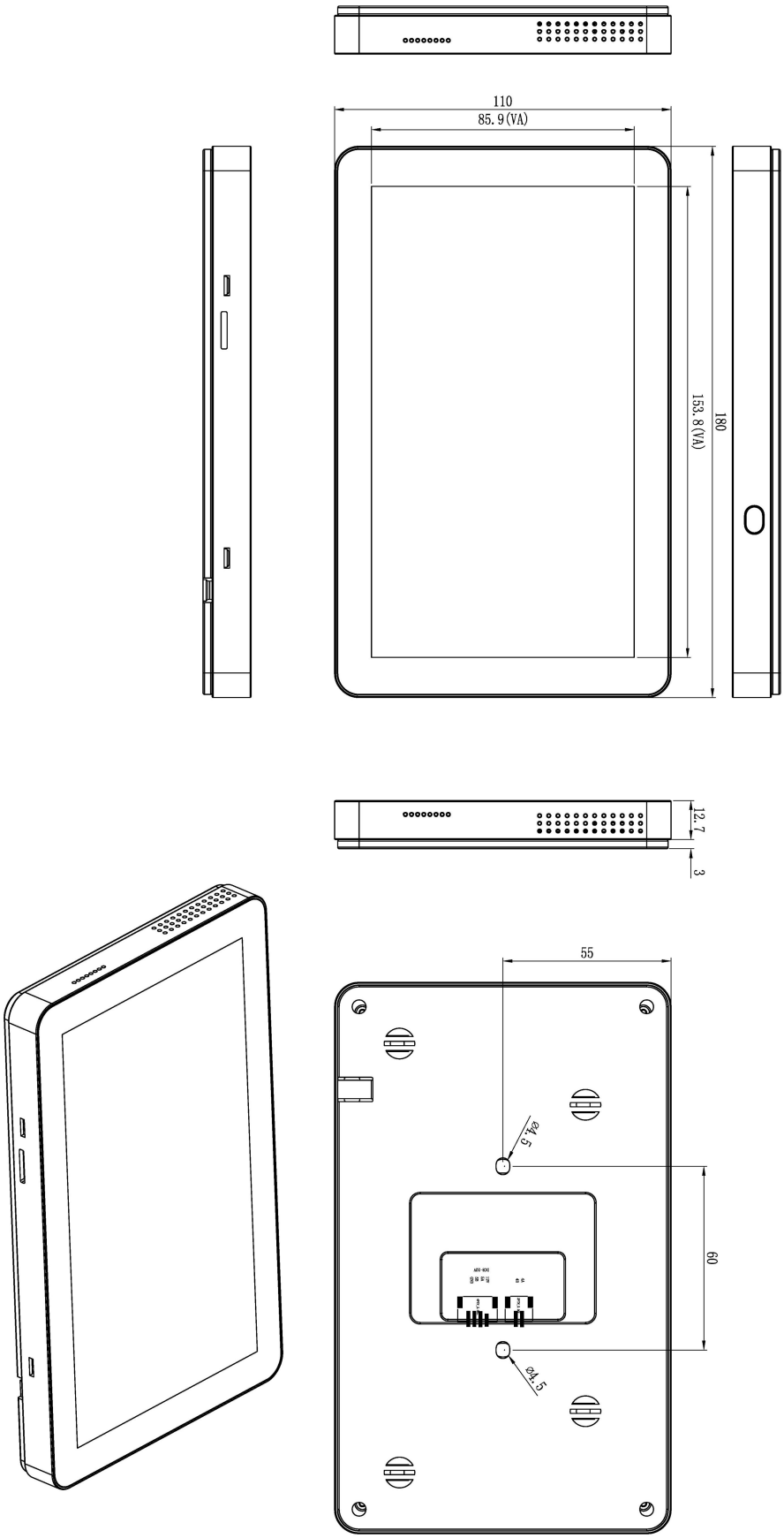
**Packaging Standard**

| Model | Dimensions | Layer | Quantity/Layer | Quantity(Pcs) |
|---|---|---|---|---|
| Carton1 | 220mm(L)×160mm(W)×47mm (H) | 1 | 1 | 1 |
| Carton2 | 250mm(L)×200mm(W)×80mm (H) | 2 | 2 | 2 |
| Carton3 | 320mm(L)×270mm(W)×80mm (H) | 2 | 2 | 4 |
| Carton4 | 435mm(L)×335mm(W)×290mm(H) | None | None | None |
| Carton5 | 600mm(L)×430mm(W)×290mm(H) | 1 | 40 | 40 |

**Product List**

| Item | Specification | Quantity |
|---|---|---|
| Wire Thermostat | TC070C44W00 | 1 |
| SUS304 cross round head flat tail self-tapping screw | M2*4mm | 4 |

| Pin# | IO | Description | Definition |
|---|---|---|---|
| 1 | IO | 485+(UART4) | 4A |
| 2 | IO | 485-(UART4) | 4B |
| 1 | P | Power Input | 12V |
| 2 | IO | 485+(UART5) | 5A |
| 3 | IO | 485-(UART5) | 5B |
| 4 | P | GND | GND |




Location hole is used as position reference.

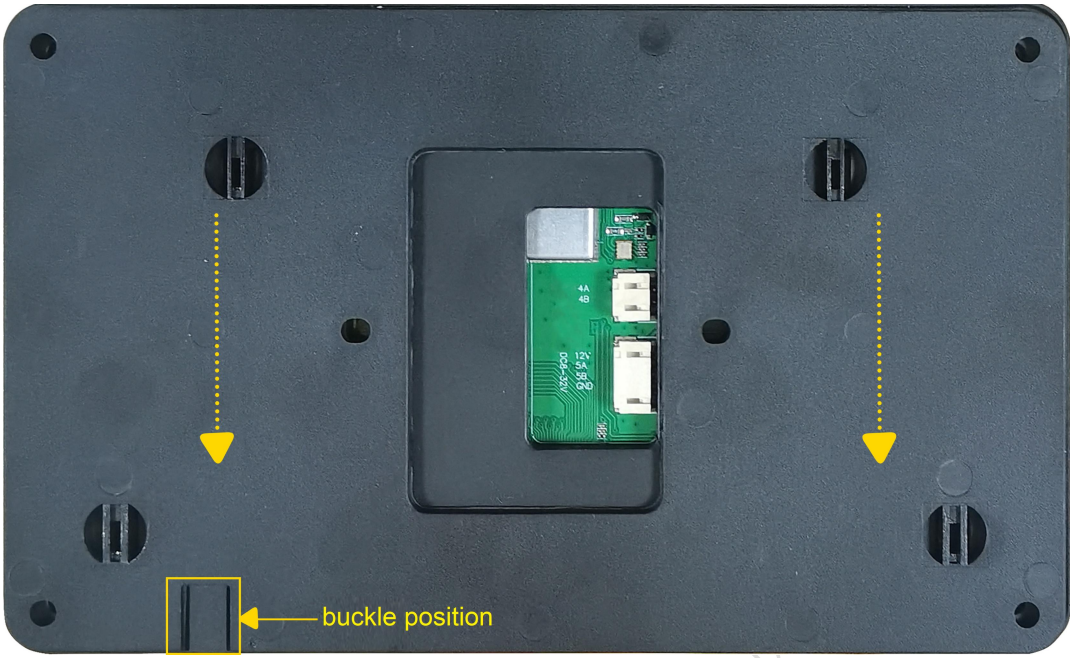
Unmarked Tolerance is +/-0.3mm

Active area is marked in Dash lines

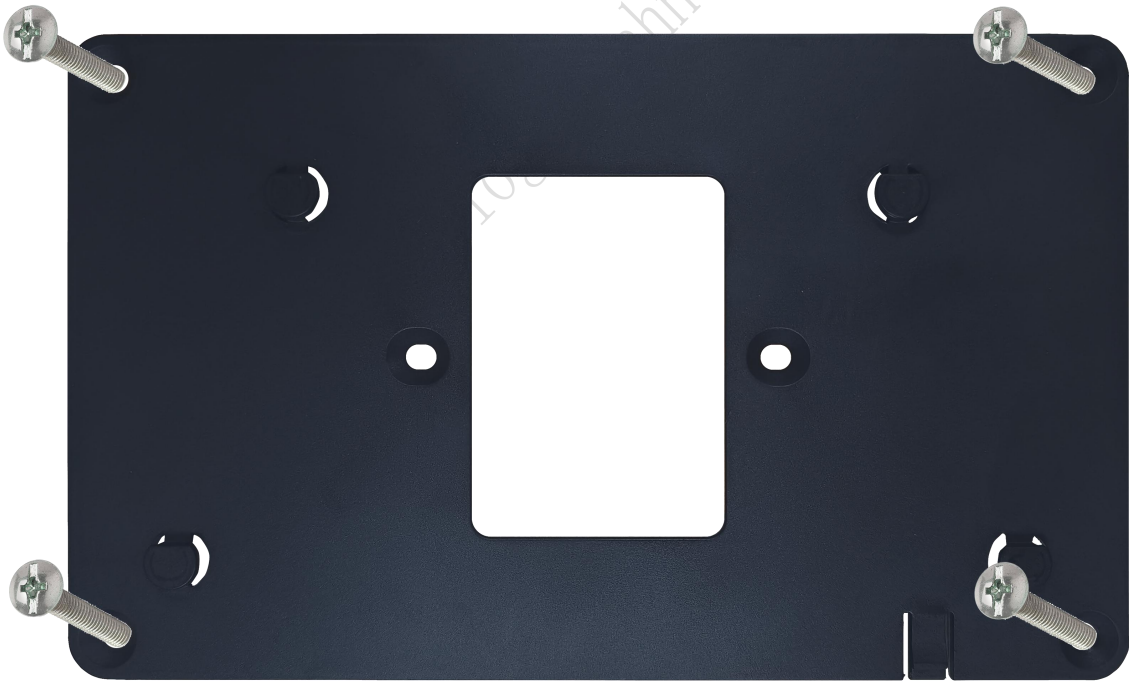
| | | | | | |
|---|---|---|---|---|---|
| Model | TC070C44W00 | | | | |
| Drawing | A 4 | Drawn | | Date | 24.09.26 |
| Scale | 1:1 | Review | | Date | |
| Unit | MM | Approval | | Date | |
| DWIN Technology | | | | | |

## 5 Installation

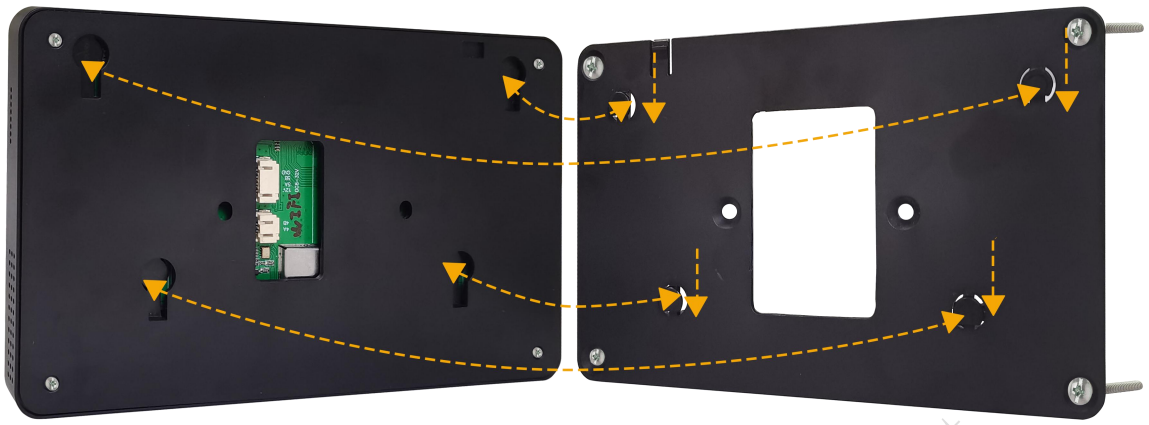
Step 1: Gently lift the lower left latch, then slide the entire bracket downward to remove it.




Step 2: Secure the bracket to the wall using four M2*4 round-head self-tapping screws.

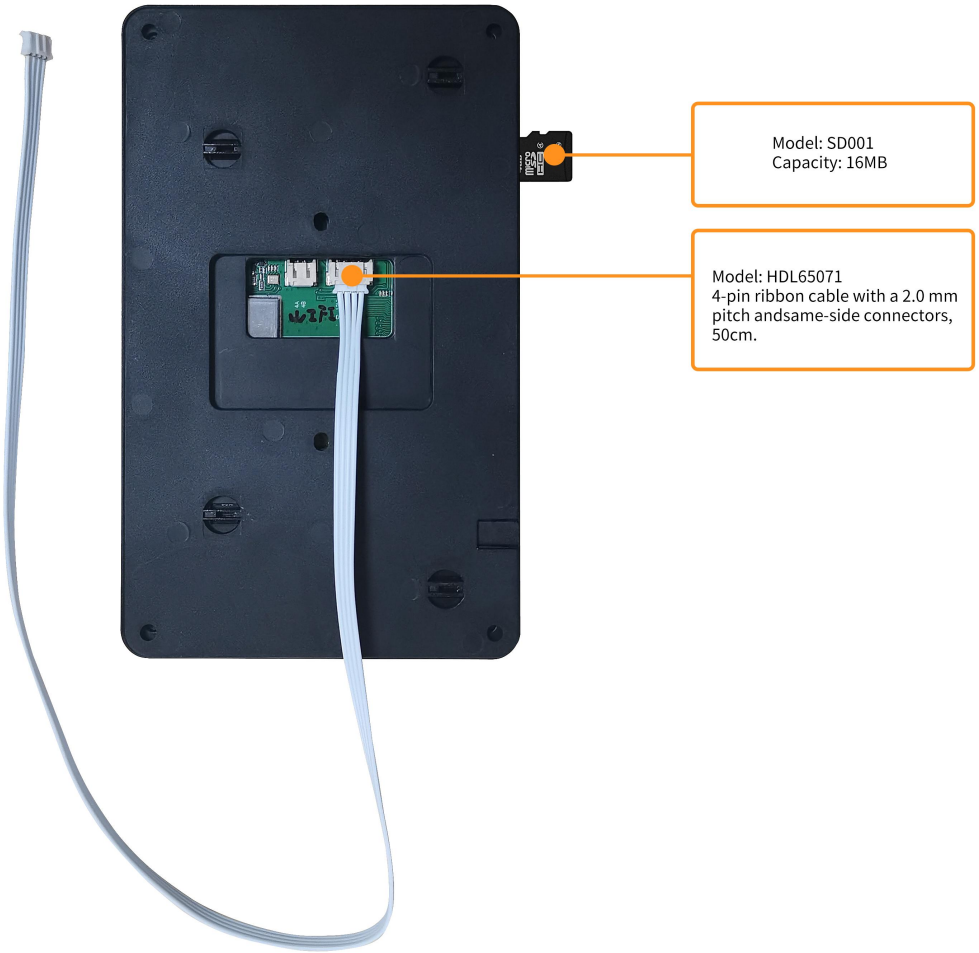


Step 3: Align the groove on the rear shell with the bump on the bracket, then slide the screen in to complete the installation.



# 6 Debug tools

It is recommended for new users of DWIN smart LCMs to purchase official accessories. For more details, please refer to customer service center.



# 7 Command words

Support custom command words through the ChipIntelli development platform:

https://aiplatform.chipintelli.com/home/index.html

| ID | Command Word | Type | ID | Command Word | Type |
|---|---|---|---|---|---|
| 1 | HI | Wake word | 31 | CURTAINS-ON | Command word |
| 2 | MINIMUM-BRIGHTNESS | Command word | 32 | CURTAINS-OFF | Command word |
| 3 | HIGHEST-BRIGHTNESS | Command word | 33 | TEMPERATURE-DOWN | Command word |
| 4 | MEDIUM-BRIGHTNESS | Command word | 34 | TEMPERATURE-UP | Command word |
| 5 | BRIGHTEN-UP | Command word | 35 | SIXTEEN-DEGREES | Command word |
| 6 | BRIGHTEN-DOWN | Command word | 36 | SEVENTEEN-DEGREES | Command word |
| 7 | BRIGHTNESS-LEVEL-ONE | Command word | 37 | EIGHTEEN-DEGREES | Command word |
| 8 | BRIGHTNESS-LEVEL-TWO | Command word | 38 | NINETEEN-DEGREES | Command word |
| 9 | BRIGHTNESS-LEVEL-THREE | Command word | 39 | TWENTY-DEGREES | Command word |
| 10 | BRIGHTNESS-LEVEL-FOUR | Command word | 40 | TWENTY-ONE-DEGREES | Command word |
| 11 | BRIGHTNESS-LEVEL-FIVE | Command word | 41 | TWENTY-TWO-DEGREES | Command word |
| 12 | RED-LIGHT | Command word | 42 | TWENTY-THREE-DEGREES | Command word |
| 13 | ORANGE-LIGHT | Command word | 43 | TWENTY-FOUR-DEGREES | Command word |
| 14 | GREEN-LIGHT | Command word | 44 | TWENTY-FIVE-DEGREES | Command word |
| 15 | LIGHT-BLUE-LIGHT | Command word | 45 | TWENTY-SIX-DEGREES | Command word |
| 16 | DEEP-BLUE-LIGHT | Command word | 46 | TWENTY-SEVEN-DEGREES | Command word |
| 17 | PURPLE-LIGHT | Command word | 47 | TWENTY-EIGHT-DEGREES | Command word |
| 18 | HEATING-MODE | Command word | 48 | TWENTY-NINE-DEGREES | Command word |
| 19 | REFRIGERATION-MODE | Command word | 49 | THIRTY-DEGREES | Command word |
| 20 | DEHUMIDIFICATION-MODE | Command word | 50 | THIRTY-ONE-DEGREES | Command word |
| 21 | UNDERFLOOR-HEATING-MODE | Command word | 51 | THIRTY-TWO-DEGREES | Command word |
| 22 | AIR-SUPPLY-MODE | Command word | 52 | AIR-CONDITIONER-OFF | Command word |
| 23 | HEATING-UNDERFLOOR-HEATING-MODE | Command word | 53 | AIR-CONDITIONER-ON | Command word |
| 24 | LOW-SPEED-WIND | Command word | 54 | ENERGY-SAVING-MODE | Command word |
| 25 | MID-SPEED-WIND | Command word | 55 | TIMED-FOR-HALF-AN-HOUR | Command word |
| 26 | HIGH-SPEED-WIND | Command word | 56 | TIMED-FOR-ONE-HOUR | Command word |
| 27 | WIND-LEVEL-ONE | Command word | 57 | TIMED-FOR-TWO-HOURS | Command word |
| 28 | WIND-LEVEL-TWO | Command word | 58 | TIMED-FOR-FOUR-HOURS | Command word |
| 29 | WIND-LEVEL-THREE | Command word | 59 | TIMED-FOR-EIGHT-HOURS | Command word |
| 30 | AUTOMATIC-SPEED-WIND | Command word | | | |

## 8 T5L series IC features

Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T(single instruction cycle)high speed operation.

Separate GUI CPU Core running DGUS II System:

High-speed display memory, 2.4GB/S bandwidth.

2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.

Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.

Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.

1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.

128Kbytes variable storage space for exchanging data with OS CPU Core and memory.

Support DGUS development and simulation on PC. Support background remote upgrade.

Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:

Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.

64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.

28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channle 16-bit PWM of adjustable resolution.

Support IAP on-line simulation and debugging with unlimited number of breakpoints.

Upgrade code online through DGUS system.

1Mbytes on-chip Flash with DWIN patent encryption technology ensure code and data security.

Operating temperature ranges from -40℃ to +85℃(IC operating temperature customizable from -55℃ to 105℃).



**DWIN encourages users to design your own customized product based on T5L.**

# 9 Revision records

| Rev | Revise Date | Content | Editor |
|---|---|---|---|
| 00 | 2025-7-25 | First Edition | Chen Xian |

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!

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