ASIC设计 • 智能屏 • AIoT终端

T5L
ASIC设计

DWIN Chip human machine interactive solution

Make a better life

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DWIN=Double WIN

DWIN Technology is a high-tech enterprise focusing on human-computer interaction solutions.

- The company was founded in 2003 and is headquartered in Beijing. A large-scale manufacturing and service base with a total construction area of approximately 250,000 square meters has been built in Taoyuan County, Hunan Province, and there are marketing and application support centers in Beijing, Guangzhou, Shenzhen, Suzhou, Hangzhou, Changsha, South Korea, Poland, Brazil, the United States and other countries and regions.

- The company has more than 1,200 employees. Among them, there are about 600 R&D, marketing and sales personnel.

- Adhering to the "win-win" business philosophy, DWIN Technology focuses on human machine interaction solutions, and has gradually realized the leap from smart screen application research and development to IC design-based, and even the integration of the entire industry chain.

- Relying on the product's leading and competitive advantages in function, quality, service, and price, DWIN Technology's human manchine interaction products and solutions are widely used in smart home appliances, new energy, financial machinery, engineering machinery, medical beauty, artificial intelligence, and exports In fields such as electromechanical products, it has won the trust and support of nearly 50,000 customers worldwide.

- DWIN Technology insists on changing lives with science and technology, continuously creating value for customers, adhering to the corporate philosophy of "win-win with people and growing together", and forging ahead towards the goal of "a comprehensive scientific and technological enterprise widely recognized by the society".

- Philosophy: Professionalism, honesty and trustworthiness (integrity), pursuit of excellence (success).

- Direction: Use and create technology that is acceptable to society, change life and create value through technology.

- Goal: To enter the world's top 500 and become a comprehensive technology enterprise widely recognized by the society.

About us

Beijing-Dwin Technology Headquarters

Located on the 18th floor of the National Defense Science and Technology Park of Beijing Institute of Technology, the office area is 2000m2

- Taoyuan County-DWIN Hunan Science and Technology Park, Manufacturing and service base, The total construction area is 250,000 m2
- Changsha, Hunan—Changsha Application Support Center

Jiangsu-East China Office

(Suzhou Office)

Guangdong-South China Office

(Guangzhou Office, Shenzhen Office)
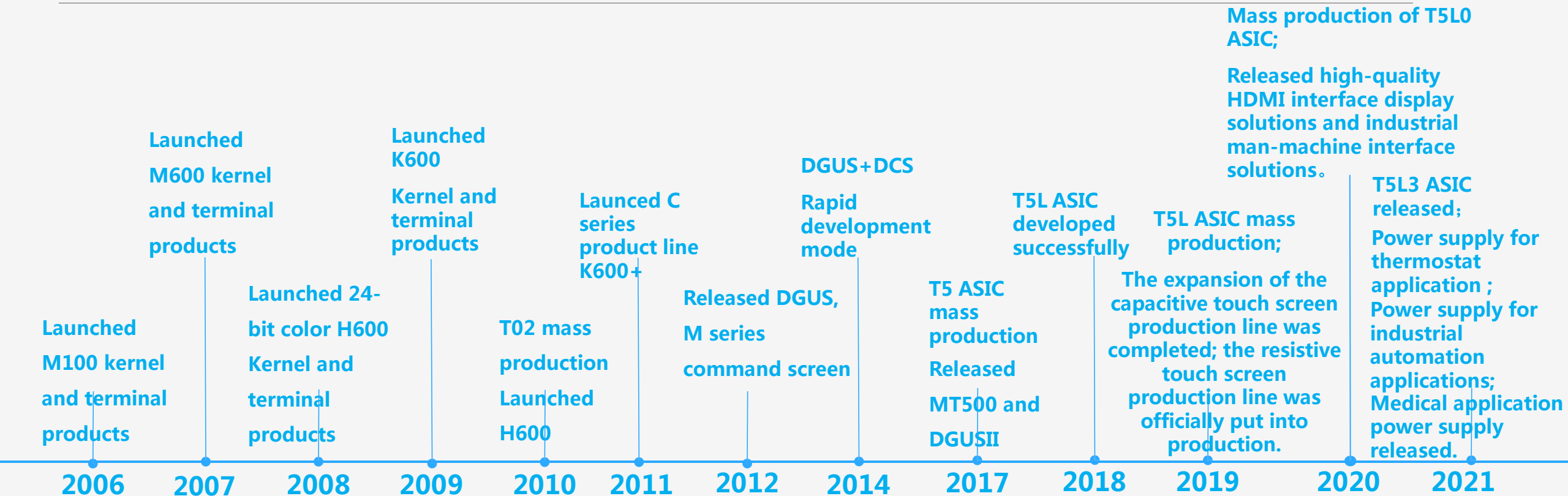
Zhejiang-East China Office

(Hangzhou Office)

Overseas service

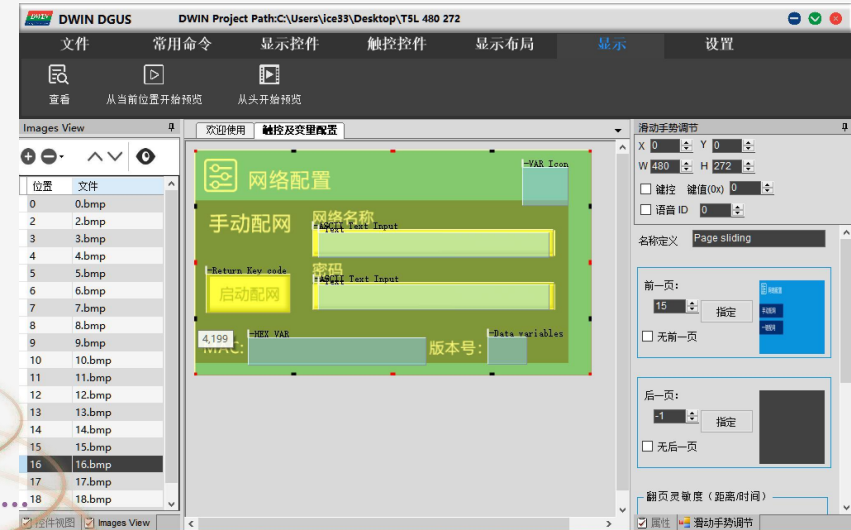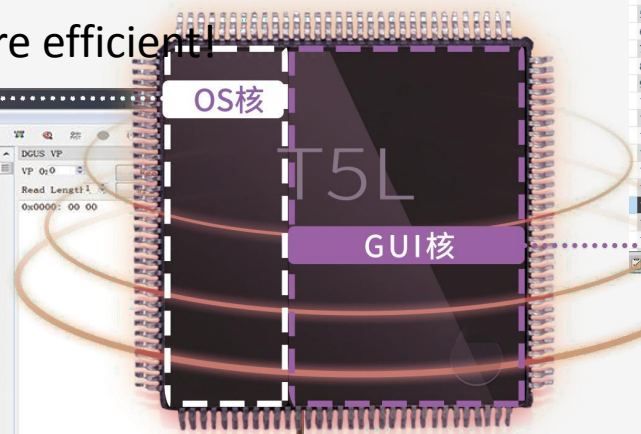South Korea, Poland, Brazil, the United States, etc.

R & D capabilities

Launched M100 kernel and terminal products — **2006**

Launched M600 kernel and terminal products — **2007**

Launched 24-bit color H600 Kernel and terminal products — **2008**

Launched K600 Kernel and terminal products — **2009**

T02 mass production Launched H600 — **2010**

Launced C series product line K600+ — **2011**

Released DGUS, M series command screen — **2012**

DGUS+DCS Rapid development mode — **2014**

T5 ASIC mass production Released MT500 and DGUSII — **2017**

T5L ASIC developed successfully — **2018**

The expansion of the capacitive touch screen production line was completed; the resistive touch screen production line was officially put into production. — **2019**

T5L ASIC mass production; — **2019**

Mass production of T5L0 ASIC; Released high-quality HDMI interface display solutions and industrial man-machine interface solutions。 — **2020**

T5L3 ASIC released; Power supply for thermostat application ; Power supply for industrial automation applications; Medical application power supply released. — **2021**

2006 2007 2008 2009 2010 2011 2012 2014 2017 2018 2019 2020 2021

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R & D capabilities

ASIC design

serial number	CPU	Mass production time	Design	Craft	Main features	Application platform
1	T02V10	2008	ODM	TSMC0.35um	100MHz8051	M100/M600/K600/H600/K600+
2	T03V10	2010	ODM	TSMC90nm	Display coprocessor	K600
3	TPS01	2010	ODM	TSMC0.25um	Analog front end	K600+/DCS100
4	T03V11	2012	ODM	TSMC90nm	Display coprocessor	K600+(DGUS)
5	T2	2015	ODM	TSMC60nm	200MHz8051+FPGA	DGUS+/DGUSII
6	TPS03	2016	ODM	TSMC0.18um	Analog front end	MT500/DGUSII
7	T5	2017	DWIN	TSMC40nm	600MHz double kernel 8051	MT500/DGUSII/DCS500
8	T03V12	2017	DWIN	SK Hynix65nm	Display coprocessor	DGUSII
9	TPS05	2018	DWIN	TSMC0.18um	Analog front end	DGUSII/DCS500
10	T5L1/2	2019	DWIN	T5L1(55nm)/ T5L2(40nm)	350MHz double kernel 8051	DGUSII
11	T5L0	2020	DWIN	HLMC40nm	18bit color cost reduction scheme	DGUSII
12	T5L3	2021	DWIN	SMIC40nm	Increase VPU and DDR on the basis of T5L2	Multimedia platform
13	M3	2021(expectation)	DWIN	HLMC55nm	400MHz ARM Cortex M3 kernel	High-performance analog signal processor
14	T5G	2022(expectation)	DWIN	TSMC40nm	300MHz 8051*2+DWIN RISC CPU	DGUSII (Streaming media application)

DWIN Open Source Platform

DGUS+OS efficient development mode

GUI development is simpler and more efficient!

OS

- The hardware can lead to 20 IOs, 4 UARTs, 1 CAN interface, and multiple ADs;

- Support standard 8051 development, quickly realize data processing and logic operation;

- Users can flexibly expand peripherals:
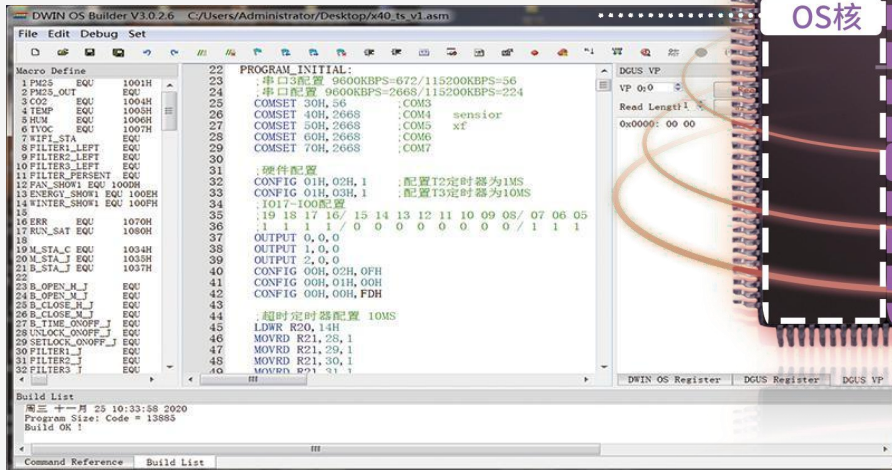
DGUS Graphical development interface, clear logic and easy to understand;

- Complete GUI development with zero code, display content and touch response in one step;

- The interface can be arbitrarily designed through PhotoShop and other software to meet the aesthetic needs of consumers;

- Support various UI materials: pictures, icons, music files, fonts.

DWIN Open Source Platform

DWIN Cloud, open the smart interconnection

DWIN Technology provides users with innovative and efficient smart IoT solutions-DWIN Cloud Platform, which can help

users better perform remote control and data management. Connecting networked devices to intelligent voice assistant

platforms (such as Tmall Genie, Baidu Xiaodu) can quickly realize intelligent voice control.

Generate the management background based on the Dwin

Cloud platform and generate the H5 page by itself with the

help of the Diwen Cloud APP architecture, Focus on core

cloud business development more efficiently and near zero

cost.

ASIC+ whole industry chain solution

Based on mature and stable smart screen solutions, DWIN Technology can provide customers with

ASIC+LCD/TP/WIFI modules and other core devices or supporting modules, which facilitate the implementation of customer product creativity.

ASIC+ whole industry chain solution
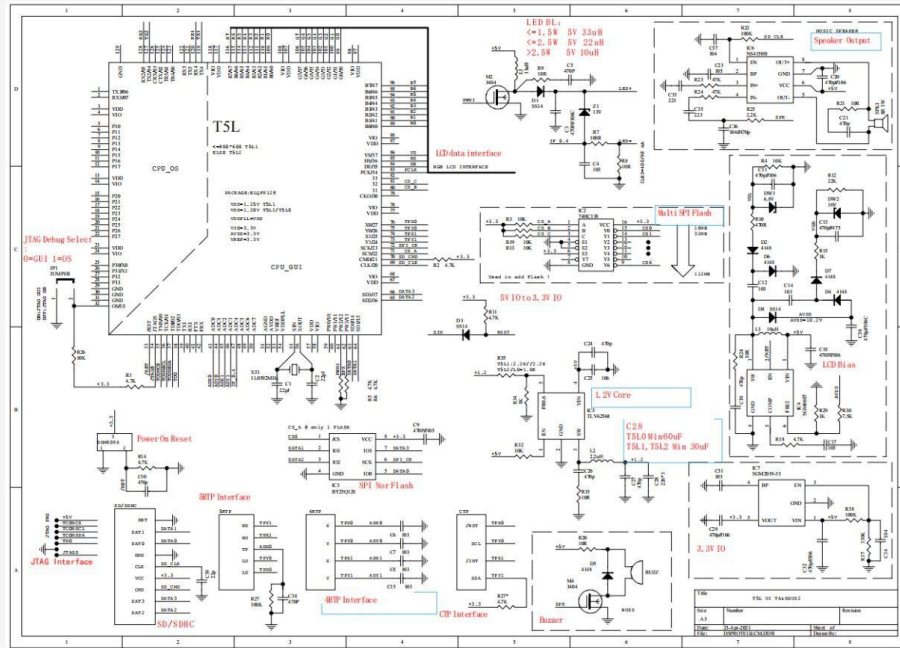
Typical design drawing

- T5L ASIC can open OS core (standard 8051 core) for secondary development of customers.

- The following T5L chip resources can be operated:

- 4*UARTs, 20*IOs, 1*CAN, 2 or 6* 12bit AD, 1*PWM, 64Kbytes Flash,

- 320KB RAM.

- Support keil online simulation and debugging, customer code transplantation is extremely convenient

Production Base

250,000 ㎡ large-scale manufacturing and service base, located in

Taoyuan County, Changde City, Hunan Province.

DWIN Technology adopts the aircraft carrier model to integrate the

entire industry chain, help customers quickly respond to the market

with the advantage of scale,

ensure the high quality and price competitiveness of products.

Products and Services

In Hunan DWIN Technology Park, DWIN Technology has been completed and put into production:

- 9 LCD module lines, the production capacity can reach 75,000 pieces/day
- Two-phase aging line, LCD screen after 30 days of electrified aging, can support at most at the same time
- 2 million LCDs are aging at the same time;
- Resistive touch screen line, with a monthly production capacity of 500,00 pieces;
- Capacitive touch screen line, with a monthly production capacity of 300,000 pieces;
- Continuously expanding glass cover line, with a target monthly productio capacity of 2 million pieces;
- 8 SMT lines with a single line capacity of 200,000 devices/hour;
- Several assembly lines with a production capacity of 800,000/month;
- Sheet metal and stamping production lines, mold injection production lines, etc.

Products and Services

Production line overview

LCM Line

- Complete the whole process of production from large plate glass cleaning, cutting, IC bonding, lamination to backlight assembly and testing.

- The LCM production line is expanded to 9 lines, and the total production capacity of the expanded LCM production line can reach 75,000 pieces/day.

Products and Services
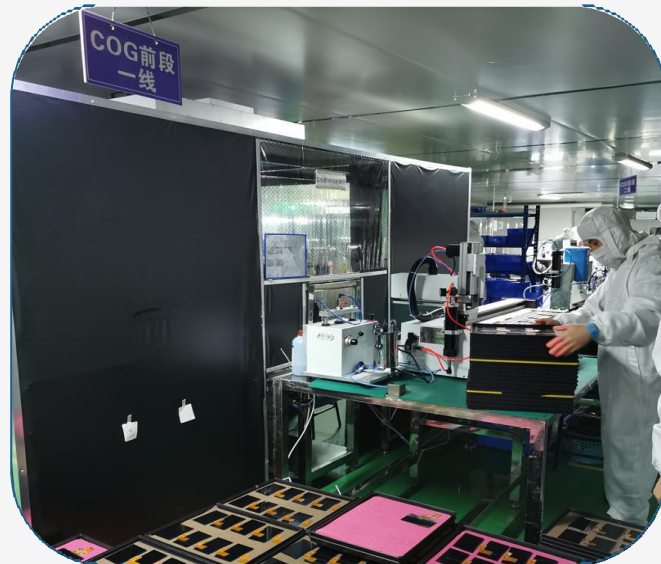
Production line overview

Aging Line

- The LCD screens produced by the LCM production line are screened for 30-day live aging, and the quality is improved through aging feedback.

- At present, the aging of up to 2 million LCD screens can be carried out at the same time.
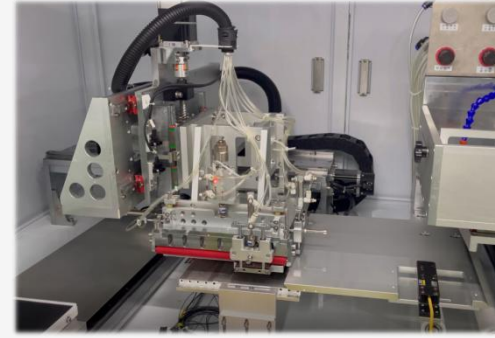
Products and Services

Production line overview

TP production line

The CTP line has a capacity of 300,000 pieces/month, and the RTP line has a capacity of 500,000 pieces/month, which can provide OCA bonding services.

CTP Line

RTP Line

Products and Services

Production line overview

SMT production line

- Each line includes printers, placement machines, reflow soldering, AOI, and corresponding connection stations to complete the PCBA process of the entire placement components.
- The smallest SMD device is 0201, and the single-line production capacity is about 200,000 CPH (devices/hour), and there are currently 8 lines.

Injection molding line

- Finished injection molding of plastic shell, mold repair, currently there are 4 lines.

Assembly line

- Several assembly lines with a capacity of 800,000 pieces/month.

Products and Services

Production line overview

Final inspection line

- Complete the final inspection, packaging and storage of all products.

Laboratory

- The total area is about 1,000 square meters, including environmental durability laboratory, optoelectronic performance laboratory, materials and chemistry laboratory, anechoic chamber, comprehensive laboratory building, etc., which are under continuous construction.

Smart manufacturing

- The 22-floor ,No. 9 factory was completed in 2019, with a construction area of 105,000 square meters. After the start of production in 2020, the company's TP and LCM production capacity was greatly increased.

High quality LCD module

Direct supply and long-term cooperation with the world's first-line component brands

Ingenuity

- The original factory A gauge glass is directly sourced;
- Strict process control;
- 30-day electrified aging screening.

Customize

- Special screens such as long life, high brightness, ultra-wide temperature, electromagnetic protection, etc.;
- RGB, LVDS, MIPI, HDMI and other interfaces;
- Touch screen supporting and full fitting services.

Products and Services

High-quality capacitive touch screen and cover

DWIN Technology can provide touch screen customization, glass cover customization, and OCA full-fit customization services based on user needs.

Direct supply and long-term cooperation with the world's first-line component brands

Advantages

●Adopt first-line brand raw materials;

●Years of field application experience accumulated to provide customers with reliable anti-interference design;

●I2C, USB, UART multiple user interfaces can be selected;

●From cover plate, sensor to laminating are all produced i in DWIN Science and Technology Park, reducing the turnoverlink,

●Improve yield and reliability;

●DWIN Technology can provide stable supply all year round.

Products and Services

Integrated touch screen renderings

Covering
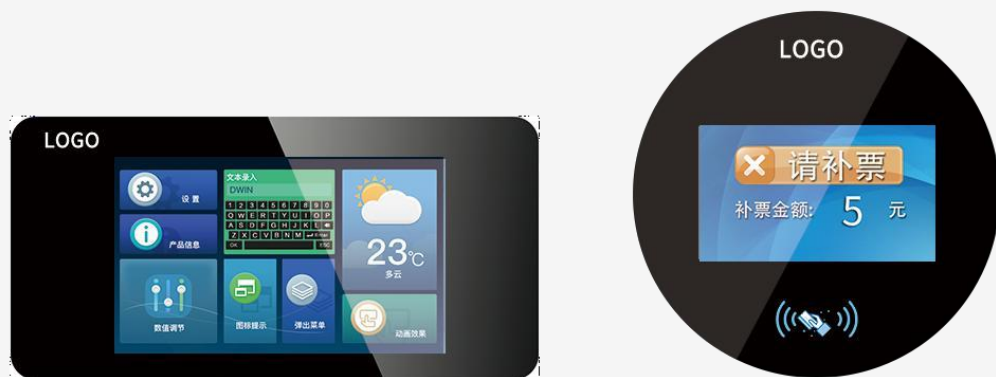
OCA bonding

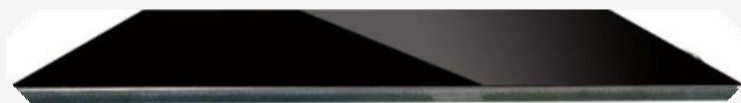## Ultra-thin narrow border renderings

DWIN Technology's manufacturing base has built a 2500 square meter dust-free workshop and has already put into operation 2 production lines. It is expected to expand to 5 production lines in 2021. The production capacity of CTP can reach 300,000 pieces/month, and the production capacity of OCA is 300,000 pieces/month.

# Products and Services

Quality Inspection

All smart screen products of DWIN Technology have undergone a series of process reliability tests before mass production, including tests for aging, high and low temperature, static electricity, pulse and surge, glass stress, four-point bending, ultraviolet light, and waterproof lamps to ensure the product quality.
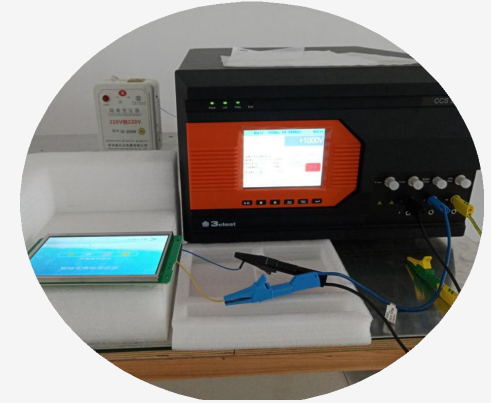

Aging test

high and low temperature
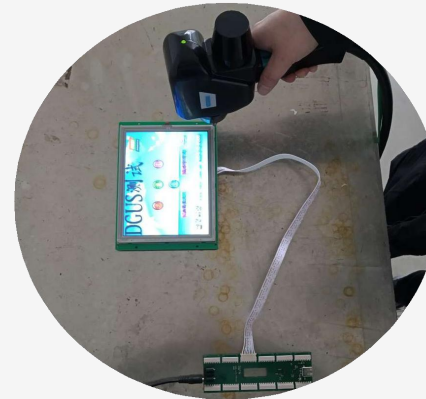
static electricity

pulse and surge

UV test

four-point bending

ultraviolet light

waterproof lamps
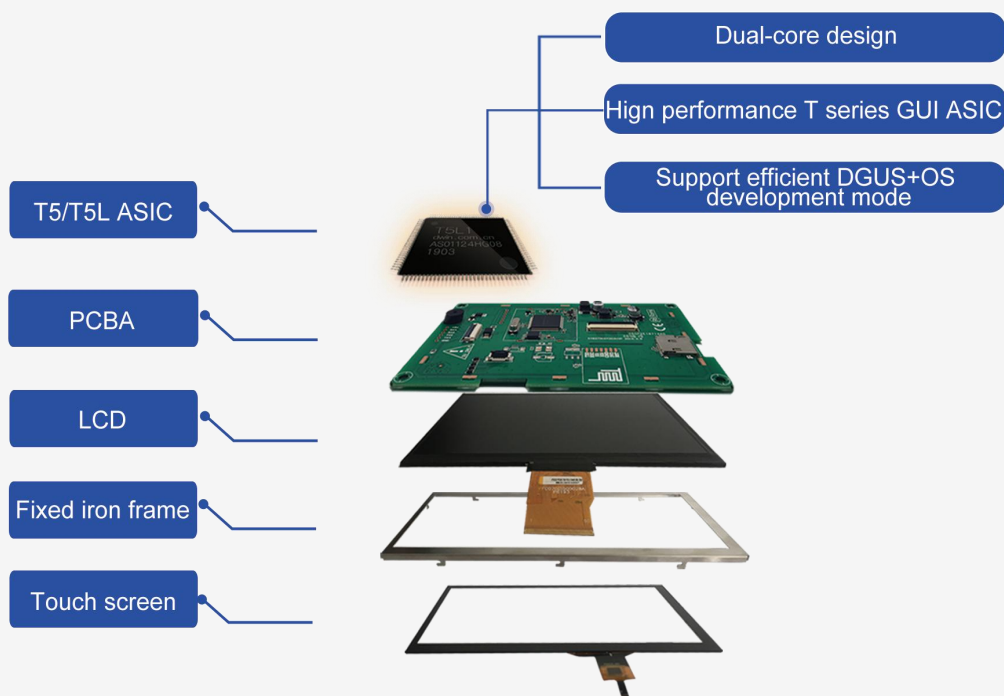
Supply systems

DWIN Technology has established a long-term stable cooperative relationship with the original core device manufacturer
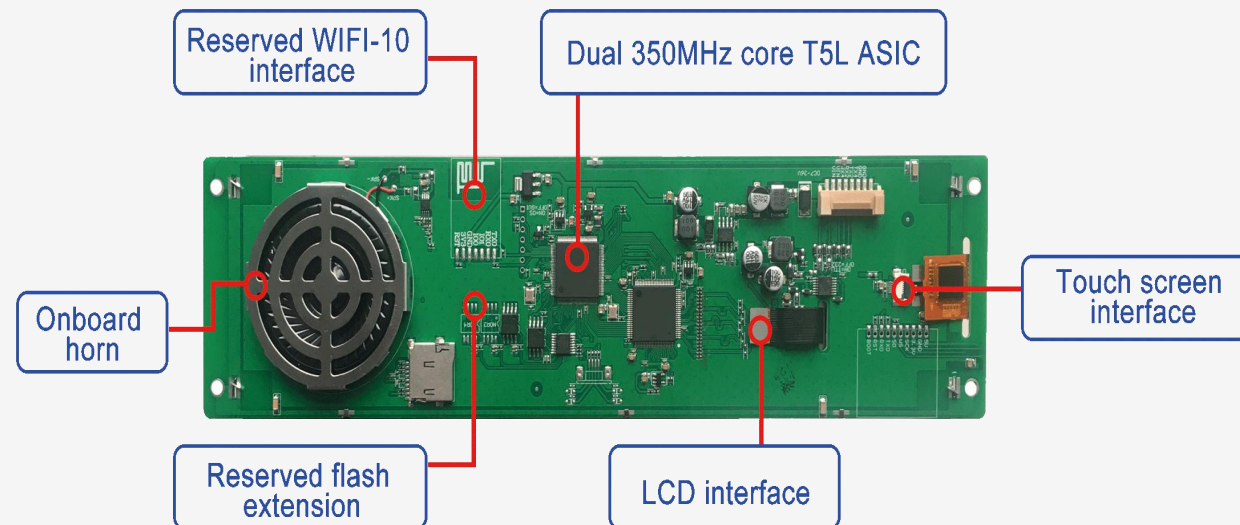
LCM line, RTP line, CTP line, SMT line, injection molding line and other supporting manufacturers settled in DWIN Technology Park. Multiple guarantees of price, quality, and delivery

Smart screen

DWIN touch screen product structure

Dual-core design

Hign performance T series GUI ASIC

Support efficient DGUS+OS development mode

T5/T5L ASIC

PCBA

LCD

Fixed iron frame

Touch screen

Common smart screen driver composition

Reserved WIFI-10 interface

Dual 350MHz core T5L ASIC

Onboard horn

Touch screen interface

Reserved flash extension

LCD interface

The smart screen is designed based on DWIN Technology T series ASIC, and integrates the DGUS development platform to help users efficiently develop hardware products for man-machine interface applications.

According to the application environment, it is divided into consumer grade, commercial grade, industrial grade, medical grade, harsh environment application, and automotive grade.

Products and Services

AIoT Application

01 **Application terminal: thermostat**

- TFT color liquid crystal display
- Integrated capacitive touch screen
- Standard 86 installation
- Start-up music, voice prompt
- Can be directly connected to control the central air conditioner
- Can be connected to DWIN Cloud with zero code, remote control and interaction

02 **WIFI Module**

- Can be directly connected to control the central air conditioner
- Can be connected to Diwen Cloud with zero code, remote control and interaction

03 **DWIN ClOUD**

- Seamless connection with DWIN smart screen and WIFI module
- Customizable PC background software
- Customizable mobile application

AIoT Application

Application terminal: thermostat

DWIN ultra-thin thermostat structure

旭硝子玻璃盖板

盖板

后壳

PCB板

前壳

强电板

AIoT application

Application terminal: thermostat

Customized solution 1: Smart display solution with ultra-thin COF structure

Customized Solution 2: Integrated black touch panel technology

Application industry

engineering vehicle	**Agricultural machinery**	**Charging pile**	**Power detection instrument**	**BUS POS**
3D printer	**packing machine**	**Money counter/sorting machine**	**Heat pump**	**Blood tester**
Air purifier	**Water purifier**	**High speed blender**	**Wall panel**	**Medical ventilator**

团队风貌

客服团队

业务与研发团队

生产部

Double WIN

DWIN Technology

Make UI design easier！