

ISO9001:2015 Quality System Certification

ASTGEK 028

SERIES SPECIFICATION



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1. Model Definition

The model number of the product is defined in the figure below:

ASTGEK028RGD	
ASTG	ASTG Serial Screen Series
E	Economic section;
K	K indicates support for keystrokes;
028	The LCD screen size is 2.8 inches;
R	N for no TP, R denotes with TP;
G	Indicates shell color gray;
D	D indicates that the serial port is for 485 communication;

2.Product Description

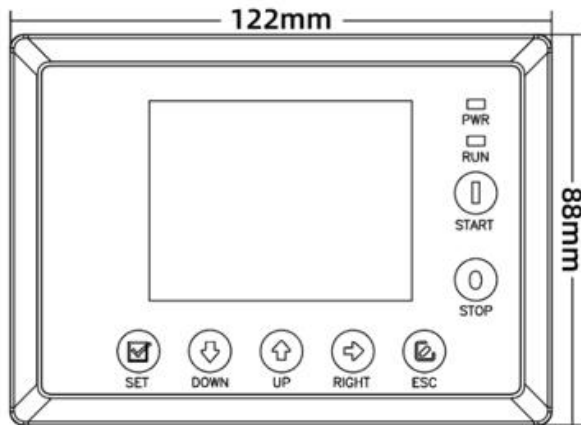
2.1 Product Model



model number	Specification
ASTGEK028NGD	2.8" Serial LCD, DC5~30V, 8Mbyte SPI NOR Flash, 485 communication without TP;
ASTGEK028RGD	2.8" Serial LCD, DC5~30V, 8Mbyte SPI NOR Flash, 485 Communication with TP;

2.2 Product Size

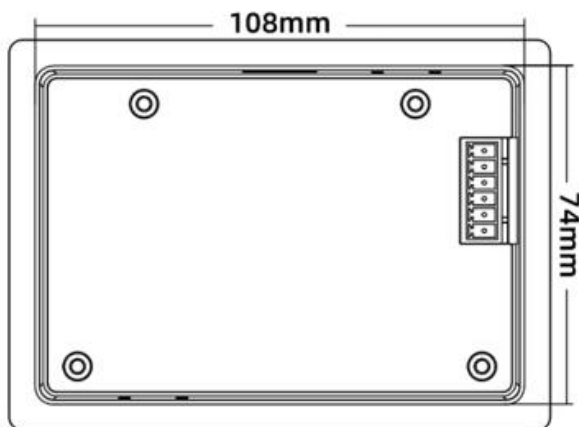
Display size	Product Series	Size of the whole machine	Effective display area size	Hole Size	Recommended opening size
2.8 inches	ASTGEK028RGD	122*88*25mm	57.6*43.2mm	108*74mm	110*76mm



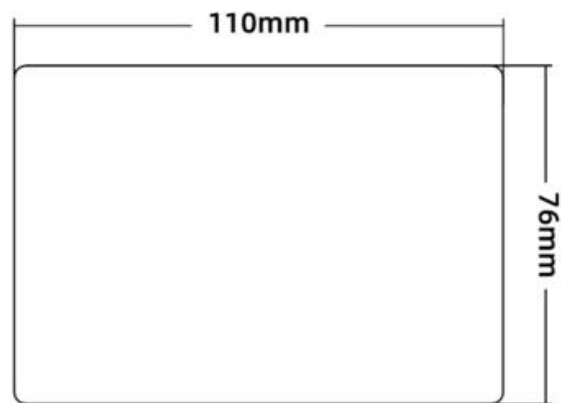
positively



lateral side



The reverse side



Recommended opening size

2.3 Product Parameters

Product Specification		
hardware performance	model number	ASTGEK028RGD/ASTGEK028NGD
	monitor	2.8" TFT LCD
	coloration	65536 colors
	Resolution (Px)	320*240
	luminance	250 cd/m ²
	Backlight	LED
	LED Lifetime	20,000 hours
	touchscreens	ASTGEK028RGD: Support 4-wire industrial resistive touch screen (surface hardness 4H)
	CPU	200MHz ARM Cortex-M4F
	memory (unit)	8Mbyte SPI NOR Flash
	RTC	Real-time clock built-in
	buzzers	there are
	Power down data saving	unsupported
	USB port	not have
	Program download method	SD Card Download
	USB flash drive	unsupported
communication port	RS485 serial communication	
Electrical Specifications	rating	0.8W
	voltage range	DC 5-30V (anti-reverse connection, distinguishing between positive and negative power supply)
Environmental specifications	operating temperature	-10°C~50°C

	Storage temperature	-30°C~70°C
	Environmental humidity	10~90%RH (non-condensing)
	seismic defenses	10-25 Hz (X, Y, Z direction, 2g/30 min)
	Cooling method	natural air cooling
	Size of the whole machine	122*88*25mm
	Effective display area size	57.6*43.2mm
	Hole Size	108*74mm
	Recommended opening size	110*76mm
	Net weight	40g
baud rate range	Support baud rate range 1200-230400	

3. Hardware Introduction

3.1 Terminal Block Pin Definition



③ keypads



④ DC24V power supply interface and communication input interface



② SD card holder, support SD card to download configuration or upgrade the underlying program

Port Definition		
Device Location Number	clarification	
①	DC24V power supply interface and communication input interface	
②	SD card holder, support SD card to download configuration or upgrade the underlying program	
③	keypads	
Power supply (6pin:3.5mm pitch)-1①		
Pin	define	clarification
1	GND	POWER GROUND
2	NC	unoccupied
3	GND	RS485 communication ground
4	RS485B1	RS485B1(-)
5	RS485A1	RS485A1(+)
6	+24V	Power Positive

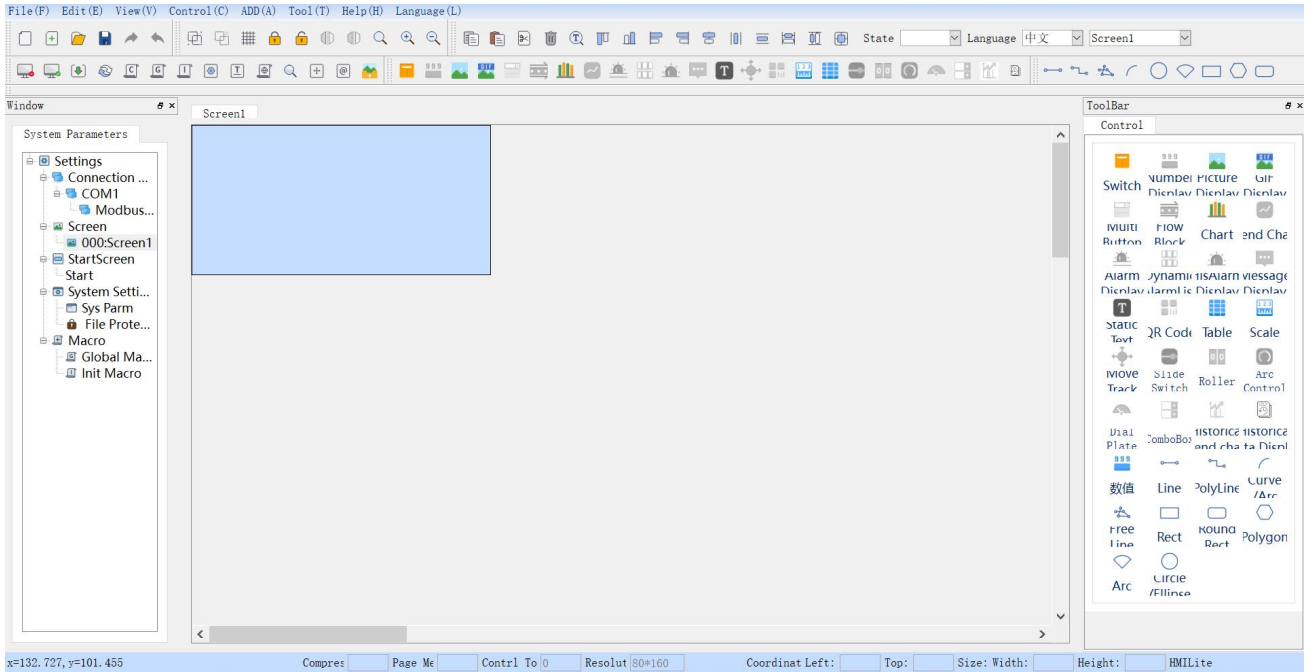
Keyboard - ③ (Check the box on the software to use an external keyboard)		
Pin	define	clarification
1	SET	Confirmation buttons (click SET after selecting a control to confirm, open keyboard input, switch screens, set bit registers, etc.)
2	DOWN	Move Down button (moves down the selection control), in key modification mode

		Decreasing value after pressing SET
3	UP	Move Up button (moves the selection control upward), in key modification mode Incremental value after pressing SET
4	RIGHT	Right Shift button (moves the selected control to the right), in key modification mode After pressing SET for data bit checking (individual, tens, hundreds, thousands, etc.)
5	ESC	Default bound key ESC, or directly corresponding to LB103, in key modification mode ESC is the exit key
6	STOP	Default binds to number key 2, or directly corresponds to LB102
7	START	Default binds to numeric key 1, or directly corresponds to LB101

Keyboard - ③ (use of external keyboard is not checked on the software)		
Pin	define	clarification
1	SET	LB104 set
2	DOWN	LB105 set
3	UP	LB106 set
4	RIGHT	LB107 set
5	ESC	LB103 set
6	STOP	LB102 set
7	START	LB101 set

4. Upper configuration software description and download program description

4.1 development software



The upper configuration software **HMILite** is a set of customers can be arbitrarily edited by the upperScreen software, customer applications are all based on the upper software for the development of the upper software, the upper software consists of a wealth of control composition, any combination, so as to realize the functions desired by the customer

Controls are included:

<p>switch button</p>	<p>Includes "bit buttons", "word buttons", "indicator lights", "screen buttons", "function buttons", and "multistate buttons". "Function buttons" and "Multi-state buttons" can be used to touch the connected device and monitor the status.</p>
<p>Numerical input and display</p>	<p>Includes multiple binary inputs and displays, ASCII inputs and displays for displaying monitored address values(Up to 16 ascii displays + QR code controls on a single screen)</p>
<p>mobile block</p>	<p>Animated graphics that simulate the state of liquid flow in a pipe</p>
<p>Static text/table/scale</p>	<p>A variety of basic shapes, including lines, circles, ellipses, rectangles, etc.</p>
<p>Image display and gif animation</p>	<p>Picture display box showing one or more pictures</p>

meter	Bar graphs, gauges, circles, showing some state value of the data
trend chart	Real-time dynamic display of monitoring address data trend graphs(Trend charts + historical trend charts up to 4 supported)
Historical Data Display	Display the data acquired by the data collector in tabular form
Historical Trend Chart	Real-time dynamic display of the trend graph of the data acquired by the data collector(Trend charts + historical trend charts up to 4 supported)
Multi-function buttons	An on/off button, with which all functions can be easily and quickly accessed.(Add up to 2 functions)
trajectory	Control address data by dragging a scrolling block
two-dimensional barcode	Dynamically generated QR code, access to web site by scanning, payment and other functions(Up to 6 ascii displays + QR code controls for a single screen)
Alarm display	Displays information about alarms currently occurring on the device(divided into digital and analogical alarms) , Alarm settings must be configured before the control can be used.(Up to(Up to 128 digital alarms can be created)
Dynamic Alarms	Used to display the current alarm, which is different from the alarm control in that the dynamic alarm bar displays the current alarm in the form of scrolling text.
Historical Alarm Display	displaying all generated alarm messages.3S detection saving, up to 3 articles
drop-down box	Drop-down list to select the corresponding item/status
slide switch	Create a slider area to change the value of the specified word address by pressing the slider left/right/up/down.
tire	Create a data area and scroll up and down to modify the current value
circular adjustment	Use the arc style to display the current value, and adjust the current value by

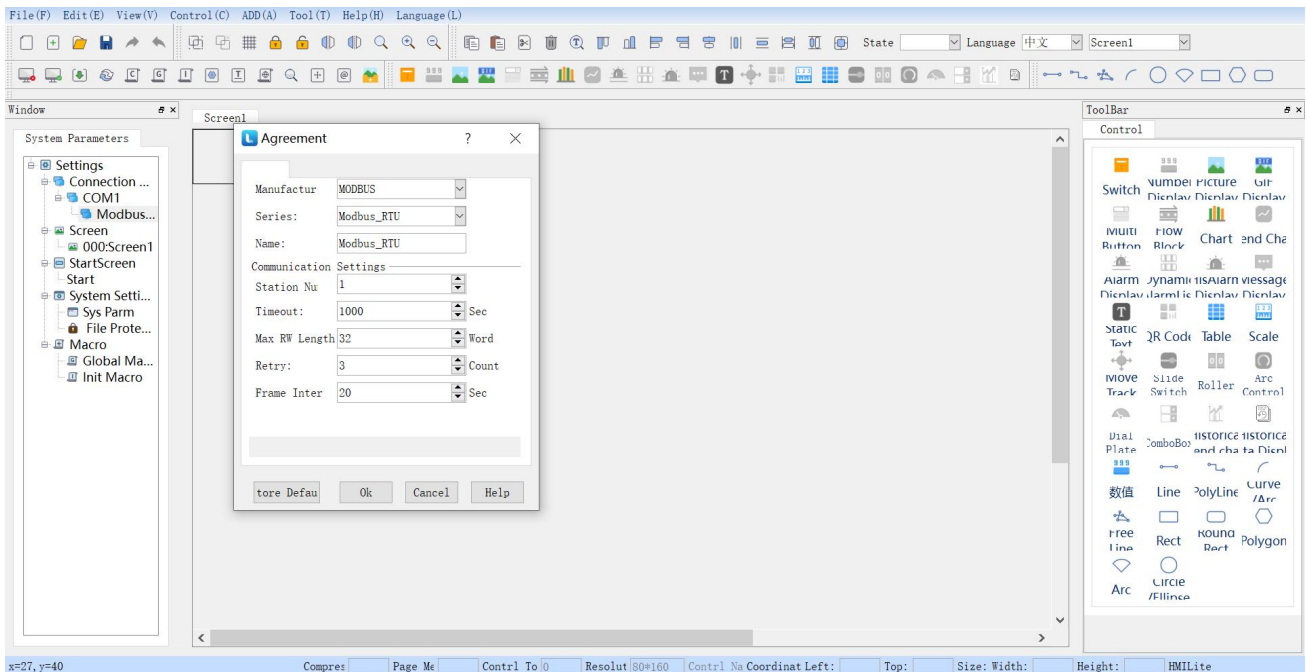
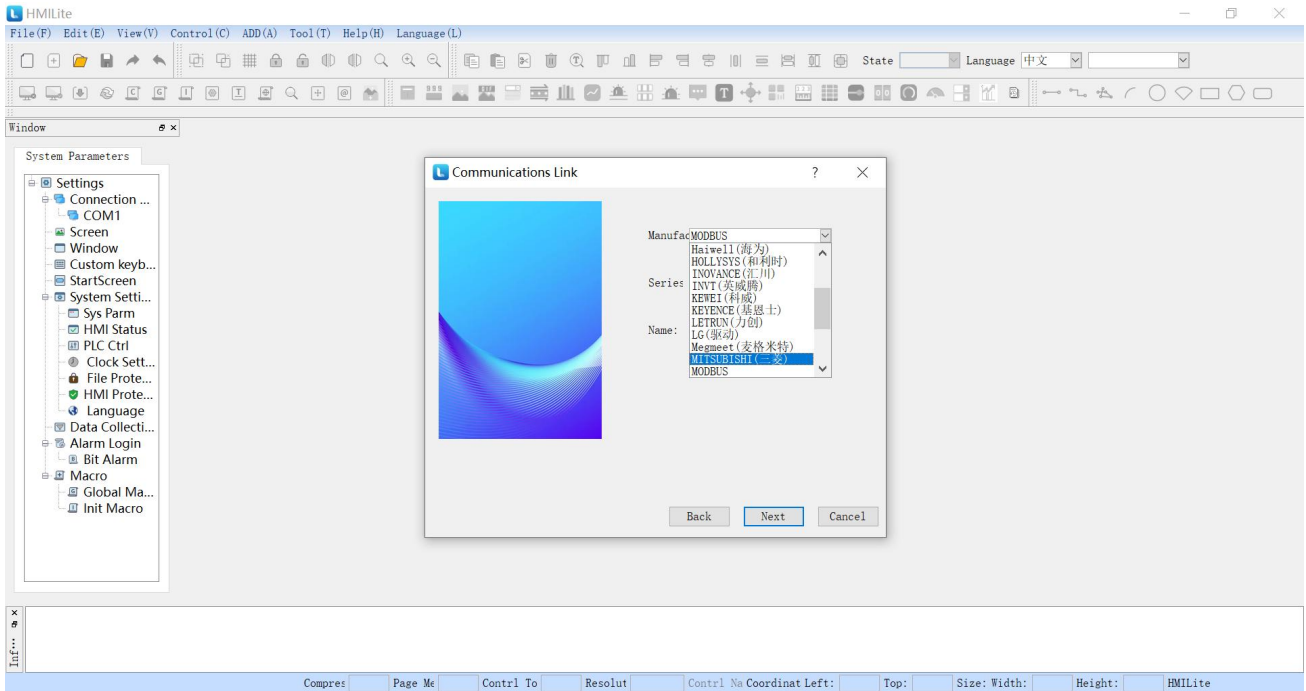
	dragging the slider to modify it.
meter dial	Use dials to display time, progress, speed and other data

Extended functionality of the host machine configuration software:

macro instruction	C programming to implement a variety of more complex logic or functions(Create up to 50 macro instructions, up to 10 variables for a single macro instruction, up to 100 variables for all macro instructions, no more than 6 global macro calls)
PLC control	HMI control via PLC(Control switching of HMI screen and switching of current user level by PLC register value)
HMI Protection	The HMI can be used normally within a certain period of time, if the time exceeds the time specified by the user, the HMI will jump to the specified screen previously set by the user, in the specified screen, the user only places the function button below the "panel protection unlock button".(up to 3 levels)
document protection	Do you need to enter a password to open the project?
User password level	Set user privileges and passwords, access to the appropriate privileges need to enter the appropriate passwords(8 user levels in total)
boot screen	User can customize the boot-up Logo screen
Offline simulation	Before compiling and downloading the screen to the HMI device, you can use the offline simulation function that comes with HMILite to check the correctness of the configuration screen and the effect of the display.
Online Simulation	Online simulation allows you to communicate with plc and other related devices through your personal computer (HMILite configuration software must be installed first) without using HMI.
Supports multiple controller communication protocols	Suitable for a variety of PLC, inverter, servo controller, microcontroller control system, etc. (Mitsubishi, Panasonic, Omron, Delta, Xinjie, Yonghong, Siemens, Keens, LG, modbus, customized and other communication protocols) the user only needs to operate directly in the software to select the call can be!
Custom Add Gallery	Support for customizing the gallery, users can intercept their favorite images loaded into a custom gallery to call according to need
keypads	Support Chinese and English keyboard input, the user can freely switch the use of
image archive	Rich gallery, support Png, Jpg, Gif, Bmp and other formats of the picture, vector gallery, any zoom non-aliased
Customized Keyboards	Support custom keyboard, according to their own needs to do keyboard style

4.2 Protocol Configuration

Users can run MODBUS RTU, Mitsubishi, Siemens, Delta, Xinjie and other protocols through the upper computer configuration. Open **HMLite** configuration software, click **[New Project]**, you can select the desired communication protocol in **[New Project]**. You can also modify and select your desired communication protocol within the project by opening the protocol below the com1 port settings and changing it. As shown in the following figure.



4.3 Download program description

Download: SD card download

Download process steps: After making a good configuration program, first find the software above the download project, open the compilation, browse and select the SD card

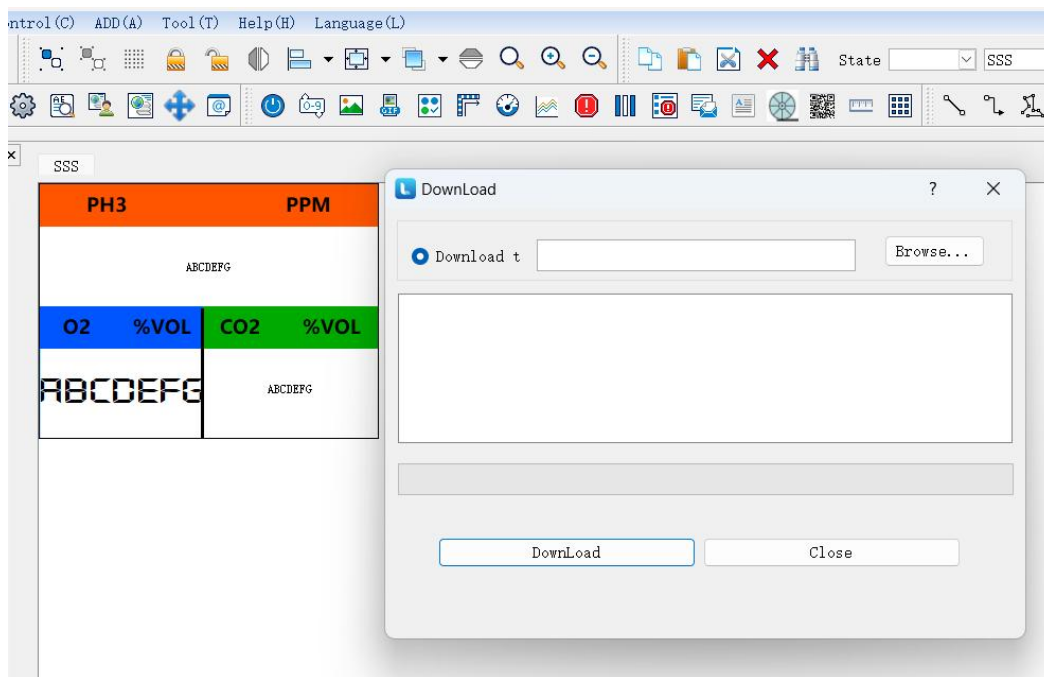
identification location, download the program to the root directory of the SD card. Then first insert the SD card into the card slot on the touch screen, power on the touch screen, the touch screen will automatically update the program.

explain the steps

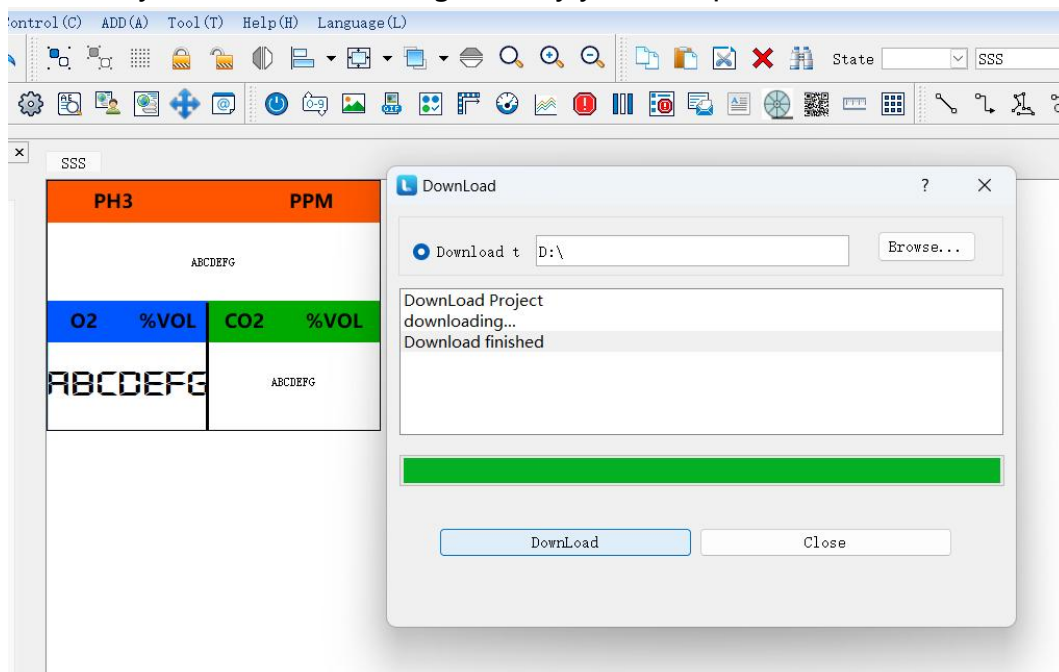
(1) Open the configuration program and select the Download button in the upper left



corner of the upper toolbar. Compile, compilation is completed pop-up download dialog box



(2) Insert the SD card into your computer and select the "Browse" button. Find the root directory of the SD card recognized by your computer. Then click the "Download" button.



(3) After the configuration program is successfully downloaded to the SD card, insert the SD card into the card slot of the touch screen and power up the touch screen, at which time the touch screen system will automatically update the program.

5. Reliability Testing

All products are subjected to a series of processed reliability tests before mass production: ESD, high and low temperature aging and other tests to ensure product quality.

5.1 ESD testing



Implementation standard: IEC 61000-4-2

Test process: Place the product flat on the test bench, and conduct contact and air discharge for the touch screen iron buckle periphery and display area in turn, as shown in the following figure. Observe whether the screen resets and restarts, display abnormalities and other phenomena.

Test Data

Product Series	Type of discharge	discharge value	Test results
ASTGKE028RGD	exposure	+/-4KV;	No reboot, crash, splash screen and other abnormal phenomena. Normal function
	atmosphere	+/-8KV;	No reboot, crash, splash screen and other abnormal phenomena. Normal function

5.2 High and low temperature aging test



Test environment: high and low temperature aging test chamber

Testing Temperature: -10°~50

Test process: Place the product in the high and low temperature aging test chamber. Through the 50 ° high temperature, -10 ° low temperature, high and low temperature alternately changing aging test, observe the test process and test after the test whether there is a reset restart, display anomalies, abnormal function and other phenomena.

Test Data

Product Series	temp	humidity level	Test results
ASTGKE028RGD	High temperature 50°	60%	No reboot, crash, splash screen and other abnormal phenomena. Normal function
	Low temperature -10°	60%	No reboot, crash, splash screen and other abnormal phenomena. Normal function
	Alternating high and low temperatures (-10°~50°)	60%	No reboot, crash, splash screen and other abnormal phenomena. Normal function

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