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QM3G Series HMI PLC All-in-one

Open a brand-new automation control concept

October 2020 edition



It is a PLC

It is a HMI

It is an analog collector

It is a brand new control concept

It is a PLC integrated machine presented by Coolmay

BRAND STORY

The predecessor of Coolmay Technology is Coolmay apparel, which initially started with the production of lace machines, and the number of devices sold every year up to tens of thousands. This kind of device has low value and it is difficult for users to have after-sales budget. In addition, they lack professional maintenance technology, which makes after-sales maintenance of device a difficult problem. If users have any questions, they all come to the manufacturer to solve them, which causes a waste of costs for both parties. This requires the company to quickly solve the problem of the device after-sales program, and PLC is the core of the program. But after the company searched all the companies that produced PLC, this demand could not be met.

It is better to ask for yourself than for others. After careful consideration, the founder of Coolmay is determined to create a controller that can solve the after-sales problem of the device. In 2006, Coolmay officially started the journey of industrial automation, and Coolmay HMI PLC all-in-one machine was born.

Soon after entering the market, the actual effects of the product emerged. After using the all-in-one machine, the after-sales problem that a certain textile equipment manufacturer could not solve for many years was solved instantly, which made him even more powerful and developed into a leader in the textile industry.

This makes Coolmay's determination to engage in the all-in-one industry more firm. It is this force that drives Coolmay to embark on a new path of automation control concept.

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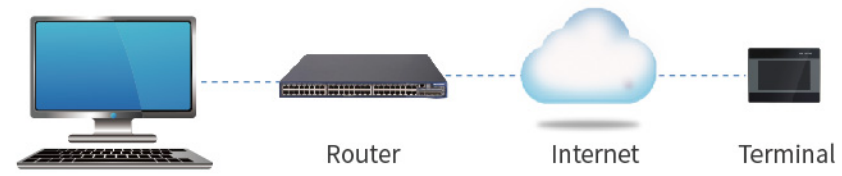
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Functions and features



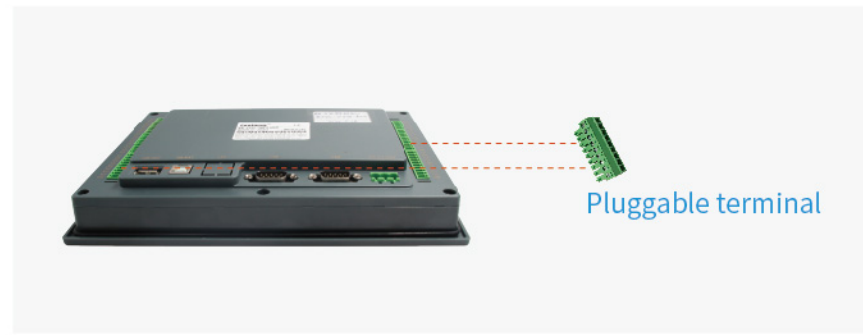
Post-retail cost

- Based on an all-in-one design, all control elements are integrated into one unit, and the product uses pluggable terminals.
- Users only need to replace the all-in-one machine to solve the problem, simple and convenient.
- All maintenance can be carried out remotely, without the need for professional technicians to come to service, thereby saving travel expenses.



Post-retail labor cost

- All maintenance problems of the device can be completed by the user without the need of standing professional after-sales personnel.



Zero development cost

- Coolmay research and development does not require software development, only hardware design, no manpower and material costs.

Zero development time

Research and development fast

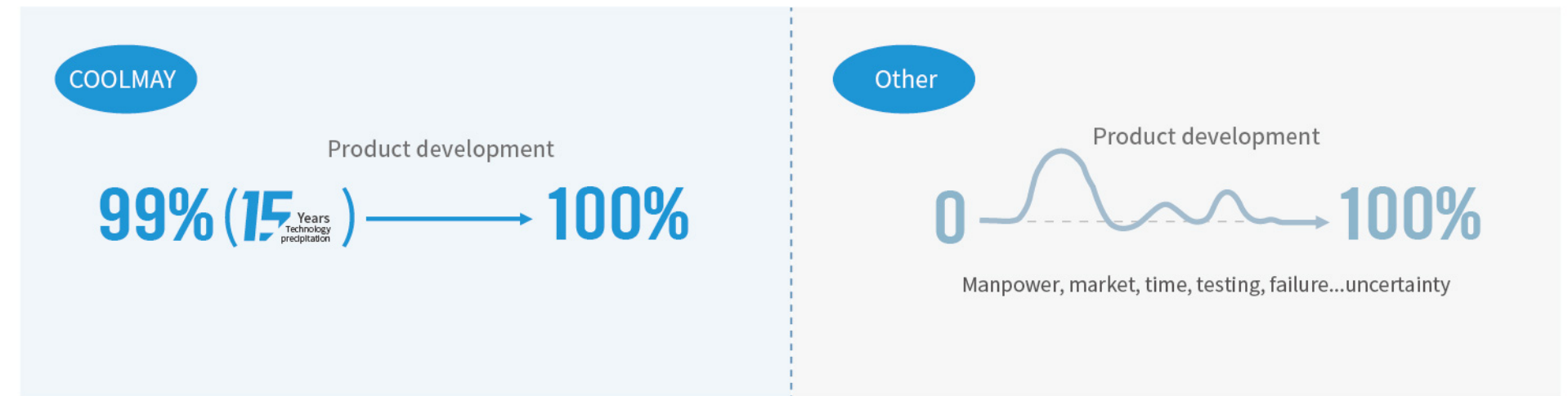
- Normal project development must start from the first code, but Coolmay only needs to adjust the hardware slightly. Under normal circumstances, it can be completed within a week.

Stable and reliable, can be put into production quickly for use

- All products have been tested by the market for more than ten years, and their reliability has been recognized by customers.

Reduce uncertainty

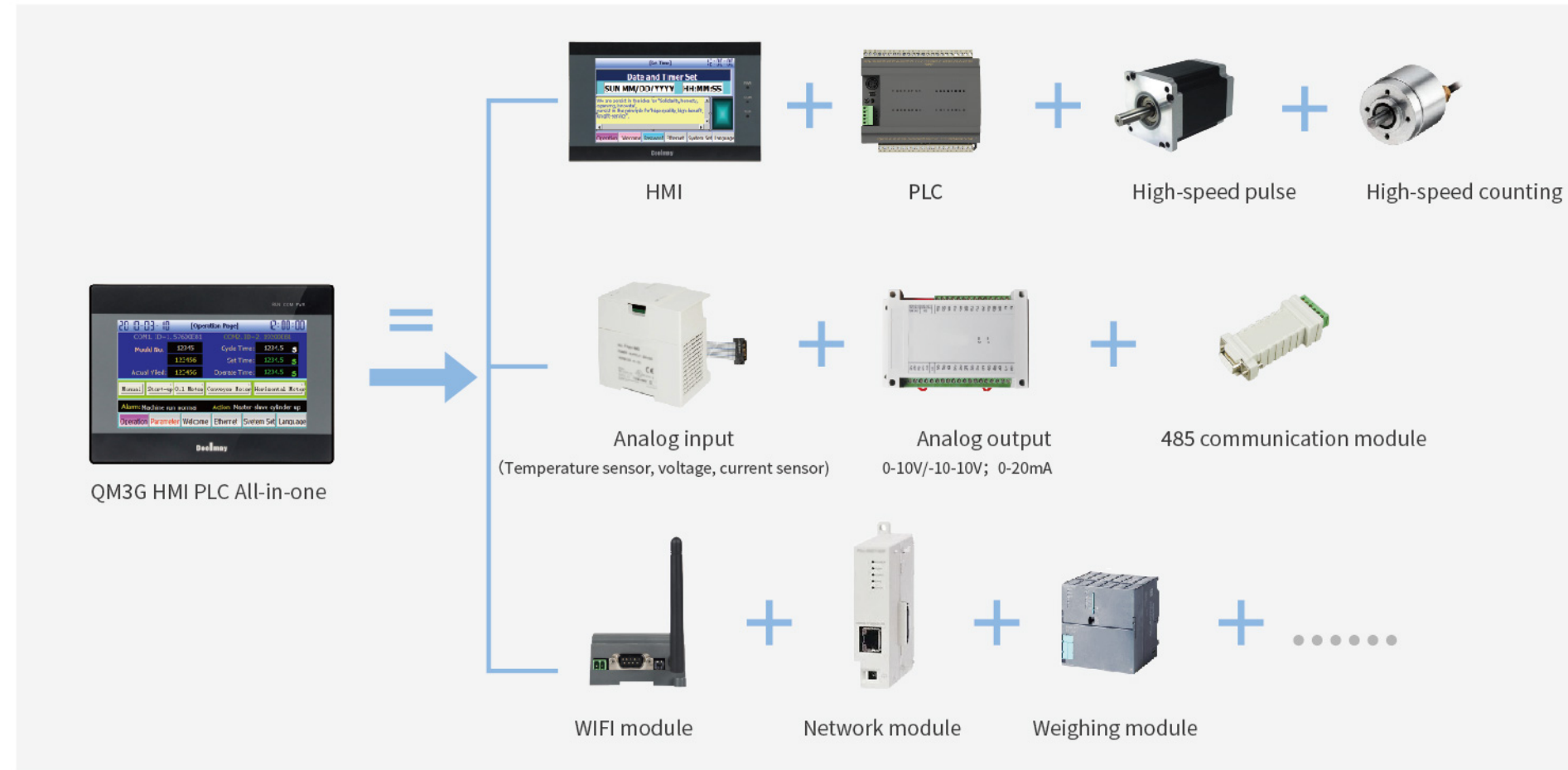
- General development requires multiple experiments to succeed. But Coolmay is based on 15 years of technology precipitation, and usually the development project can be completed once.



Highly integrated, new experience

QM3G series all-in-one machine

- Integrate logic control, analog input and output, and HMI functions in one.
- Support high-speed counting, high-speed pulse, communication port integrated.
- Support arc and linear interpolation.
- Support G code (under development).



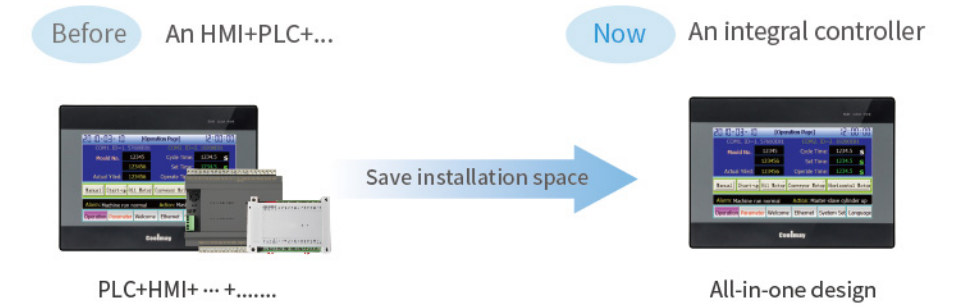
Customized panel close to user needs

- Non-logo panel: All-in-one and HMI panel can be specially made as neutral non-logo panel.
- Customized panel: If you need to change the line structure and button position, you can customize it as required.



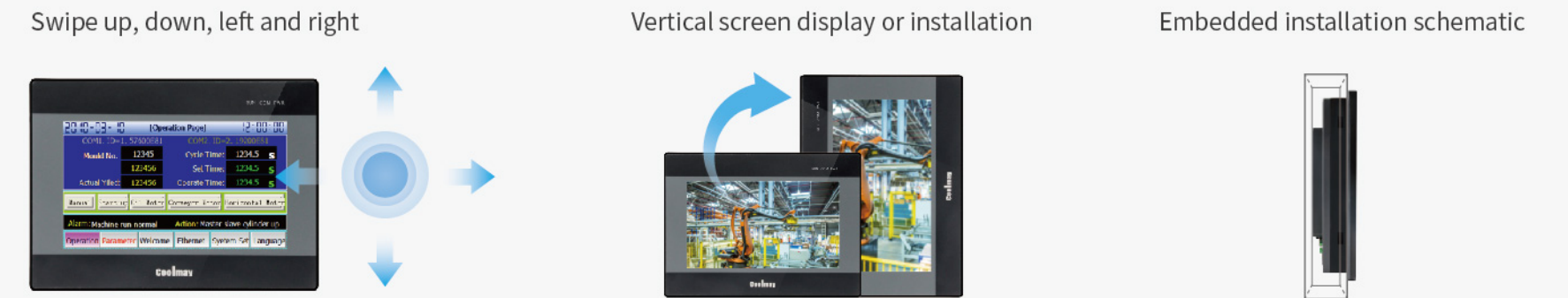
Compact structure design, save installation space

- Coolmay creates high-performance industrial all-in-one machines for users, which can save users time and cost, improve efficiency, and enhance the competitiveness of enterprises.



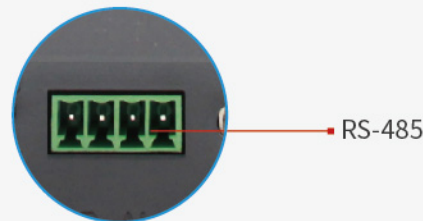
Flexible installation, free choice

- Support gesture operation, users can swipe up, down, left, and right to switch pages and experience a true all-in-one machine.
- Can be installed vertically or horizontally according to the actual situation on site.



PLC introduction

Coolmay PLC uses military-grade 32-bit chips, with nanosecond-level running speed and strong anti-interference ability. Both input and output are adopted optocoupler isolation. It integrates analog input and output modules, and RS-485, RS-232 communication modules, which are a brand-new control concept in terms of function, cost and convenience.



RS-485

Industry customization, zero development fee

- 15 years in the automation industry, zero-cost development can customize automation control systems for customers

Eliminating the need for engineering

- Multiple functions
- Digital quantity, analog quantity, high-speed counting, high-speed pulse, communication port are highly integrated

Motion control function

- Up to 8 high-speed pulses
- Circular arc, linear interpolation
- Support G code (under development)

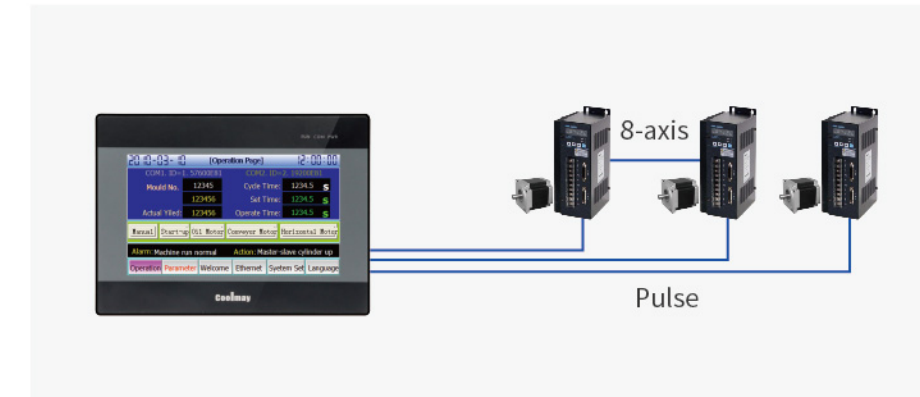
Communication function

- Support 2 RS-485 communication ports, both of which support Modbus communication protocol
- Support RS-232 communication port
- Support CAN port (2.0A/B)
- Support WIFI

High-speed processing capability

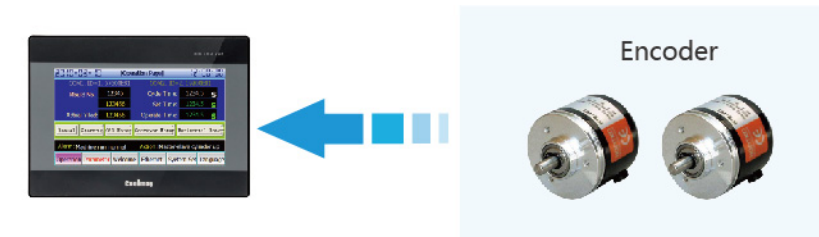
Positioning control—high-speed pulse

- Transistor output CPU: conventional 8-axis, Y0-Y3 is 100KHz, Y4-Y7 is 10KHz.
- Support positioning, can quickly complete the positioning function, up to 8 axes.
- Each axis control is realized by instructions, PLC program is highly readable and easy to maintain.



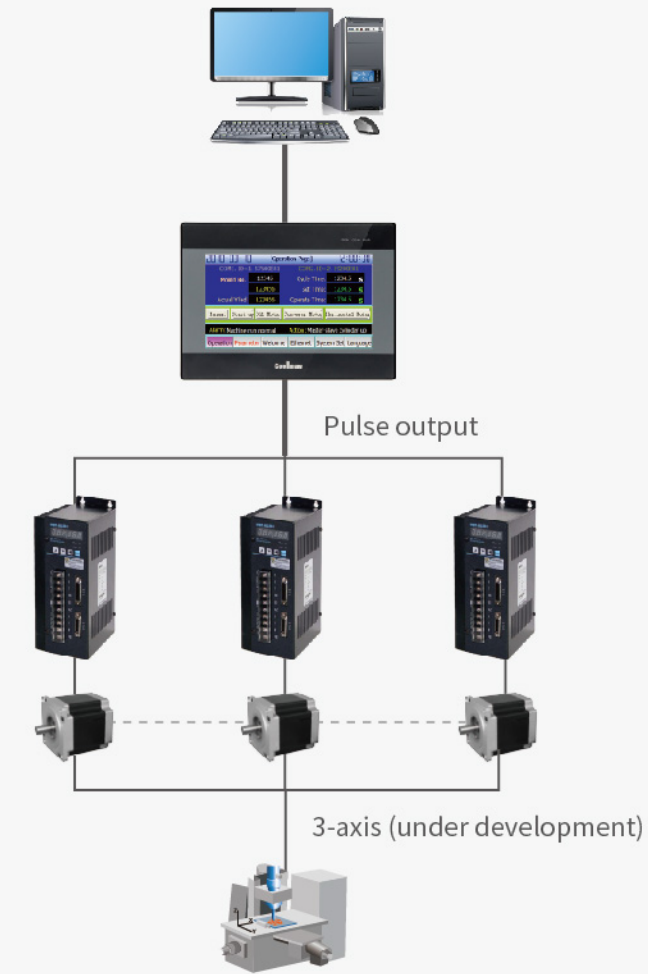
High-speed counting input

- Real-time high-precision monitoring: 6 channels of 60 KHz, which can be directly connected to the encoder to count the input of the encoder.
- Up to 6 external input interrupts.



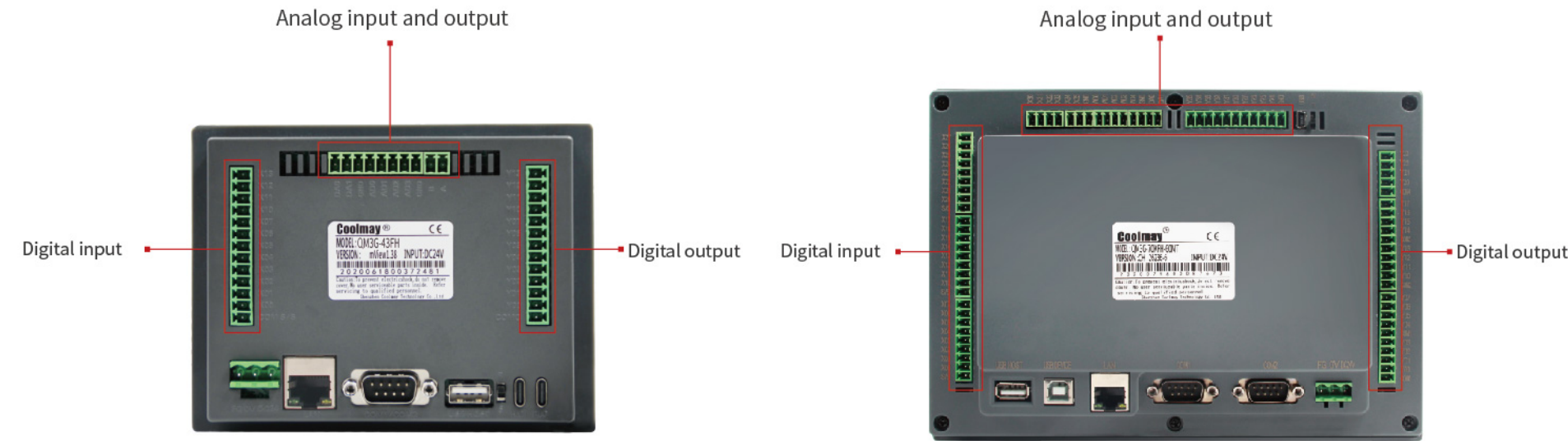
Motion control

- Specify Y0, Y1 for continuous interpolation; support Z axis (under development)



Rich analog acquisition function

- Up to 16 channels of analog input, optional for temperature, current and voltage; up to 8 channels of output, optional for current and voltage; 12-bit accuracy of analog input and output.
- Analog supports PID self-tuning.



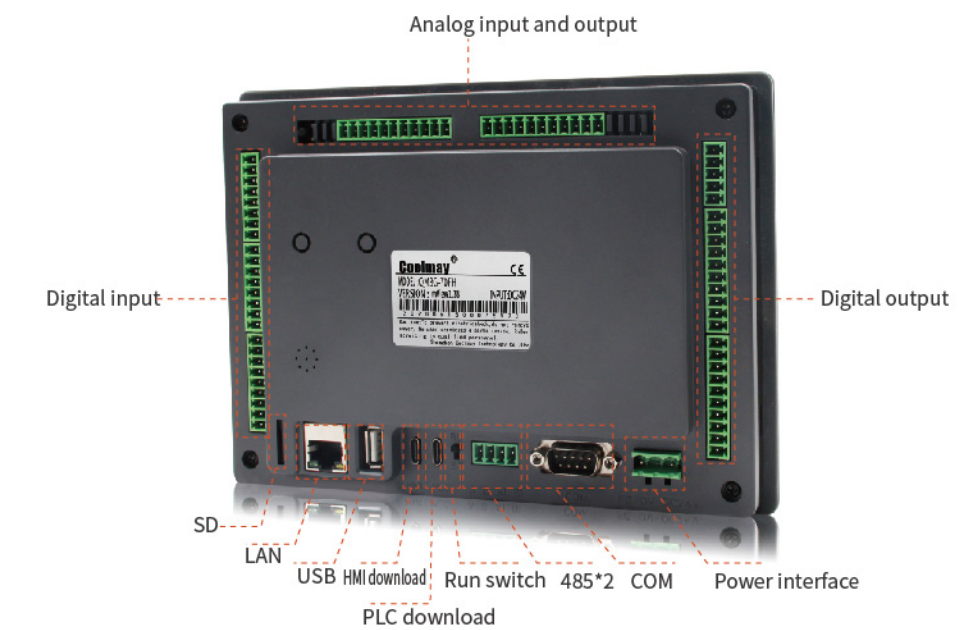
Analog

Model	QM3G-43FH/50FH	QM3G-70FH/HD	QM3G-70KFH/100FH
Analog	Analog input type: E/K/S/T/J type thermocouple (support negative temperature)/PT100/PT1000/NTC10K/NTC50K/NTC100K/0-10V/0-5V/0-20mA/4-20mA or mixed type and other special specifications (7 inch and 10 inch optional -5V~5V and -10V~10V)		
	Analog output type: 0-10V/0-5V/0-20mA/4-20mA or mixed type optional	Analog output type: 0-10V/ 0-5V/ 0-20mA/4-20mA/-5-5V/-10-10V optional (each negative voltage occupies two DA)	
	Up to 4 AI 2 AO	Up to 12 AI 8 AO	Up to 16 AI 8 AO

Rich appearance interface

- Supports communication with standard Modbus protocol, and can connect multiple controllers supporting Modbus protocol in the same device, such as PLC, frequency converter, servo drive, instrument, etc.
- Supports micro printers, so as to realize real-time printing of data sharing and collecting curves.

QM3G-70FH



QM3G-43FH/50FH



QM3G-70KFH/100FH



Powerful programming port function

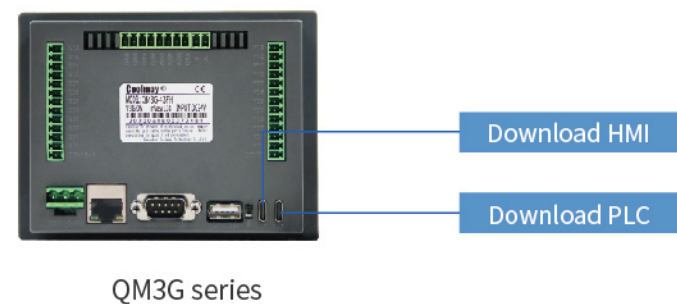
Based on Type-C/Type-B port, mini USB port, program download is quick and time-saving

The USB interface conforms to the USB specification and uses a commercially available USB cable, which can perform high-speed data transmission and greatly shorten the download time.



Multi-function design of programming port

Through the USB penetration function of the touch screen, HMI and PLC programming use the same programming cable, users do not need to change repeatedly, all only need one cable.



Penetration communication function

The penetrating communication function provided by HMI is to use PLC programming software on the computer, and connect to the PLC through the human-machine interface connected to the computer and PLC. In this way, you can monitor, upload, and download PLC programs.

The connection between PC and HMI is USB (virtual serial port), and the connection between HMI and PLC is serial connection. For the convenience of debugging, the PC can directly download or monitor the PLC program through the HMI to improve work efficiency.

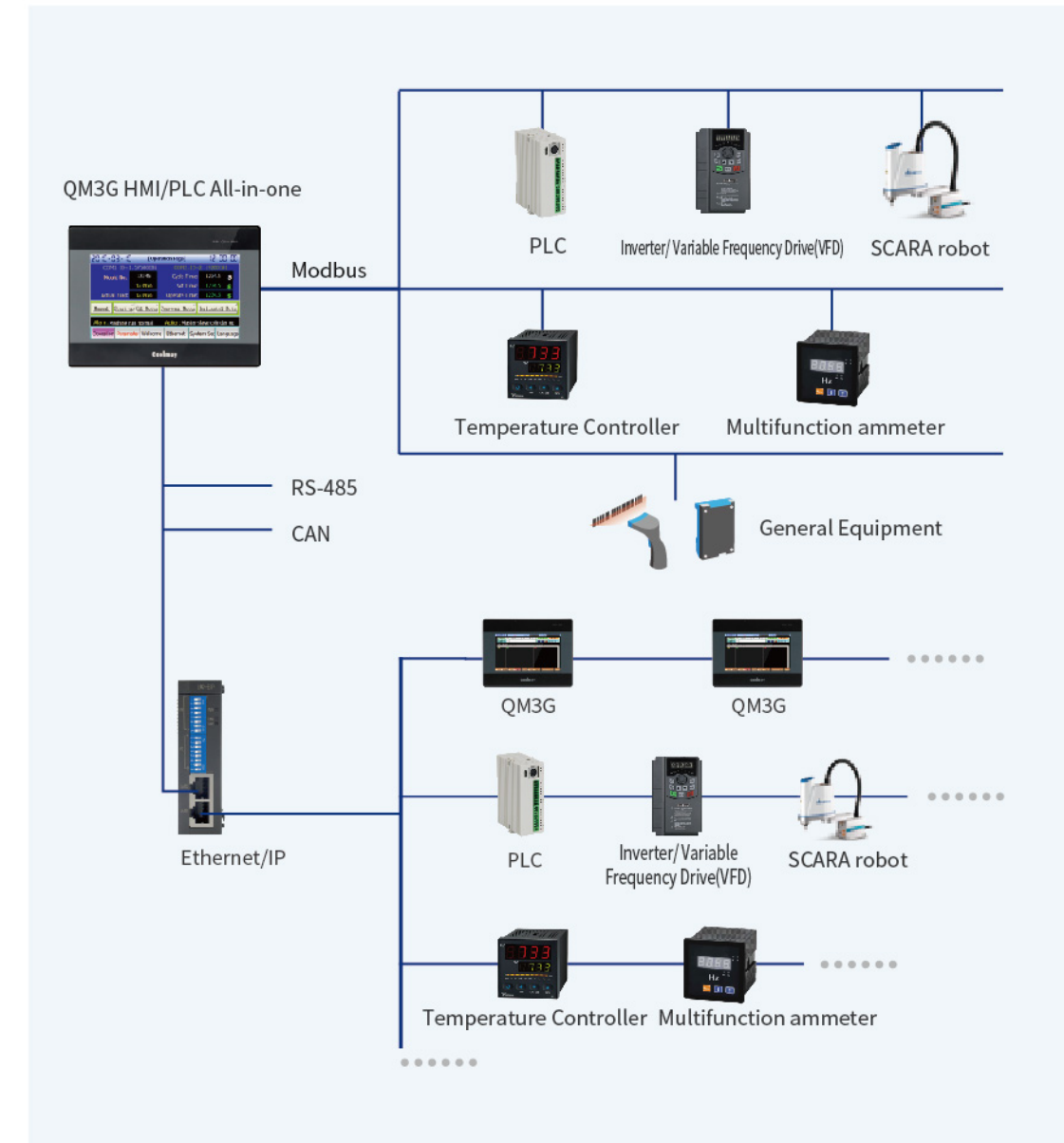


QM3G series host

- Optional 2 RS-485, support Mitsubishi programming port protocol, Modbus protocol, Freeprot protocol, Mitsubishi BD board protocol, support N:N protocol, easily realize PLC interconnection and communication with external equipment such as human-machine interface and inverter.
- Optional 1 CAN port, support CAN2.0A, CAN2.0B, Modbus and Freeprot protocol, can easily realize multi-channel interconnection.
- Optional 1 high-speed Ethernet interface, support Mitsubishi programming port protocol, Modbus TCP/UDP protocol, Ethernet/IP protocol.

Ethernet/IP

- The communication bus protocol uses the standard Ethernet/IP communication bus. QM3G HMI/PLC all-in-ones support Ethernet/IP protocol slaves, which can be easily connected with PLCs or industrial computers that support Ethernet/IP protocol to achieve barrier-free connection.







Human-machine interface (HMI)

Superior performance, extraordinary quality

- Onboard 408MHz high-performance 32Bit industrial-grade CPU: fast running speed, high data processing efficiency, strong anti-interference ability.
- Original built-in PLC function (optional) to realize internal communication.
- 65K color TFT, new high-brightness, high-contrast display LCD, providing colorful operation interface
- Optional WiFi, 802.11b/g/n wireless communication standard protocol.
- Conveniently realize the upload/download function of configuration software through the network cable.
- Support cloud service platform.

Multiple sizes optional (4.3", 5.0", 7.0", 10", 15")

	TFT LCD screen	480*272	400cd/m ²
	TFT LCD screen	800*480	300cd/m ²
	TFT LCD screen	800*480/1024*600	300cd/m ²
	TFT LCD screen	1024*600	300cd/m ²

mView1.38 programming software



mView1.38 is simple to program, easy to use, and powerful

mView1.38 is a set of stable and reliable man-machine interface programming software for industrial occasions. Independent and original system design, running speed increased by 200%, memory usage reduced by 50%. The screen is intuitive and easy to grasp, and the usage is similar to commonly used file editing software; you can easily make charts, histograms, various button displays and other functions with the mouse.

Powerful functions, including complete industrial environment requirements, such as recipe functions, data recording, historical data management, historical trend graphs, alarm management, etc., as well as advanced grammar checking, gesture page changing, password management and data protection, macro commands, HMI Program simulation...etc.

Supports many communication protocols; it can communicate with more than 200 PLCs and controllers on the market.



Multi-lingual

Chinese, English, Traditional...Programming
Support hundreds of languages display and continue to develop



Sound output

Set the button sound and alarm sound
by yourself
Import and export sound files



Powerful function

Engineering conversion ability
Data scheduling function

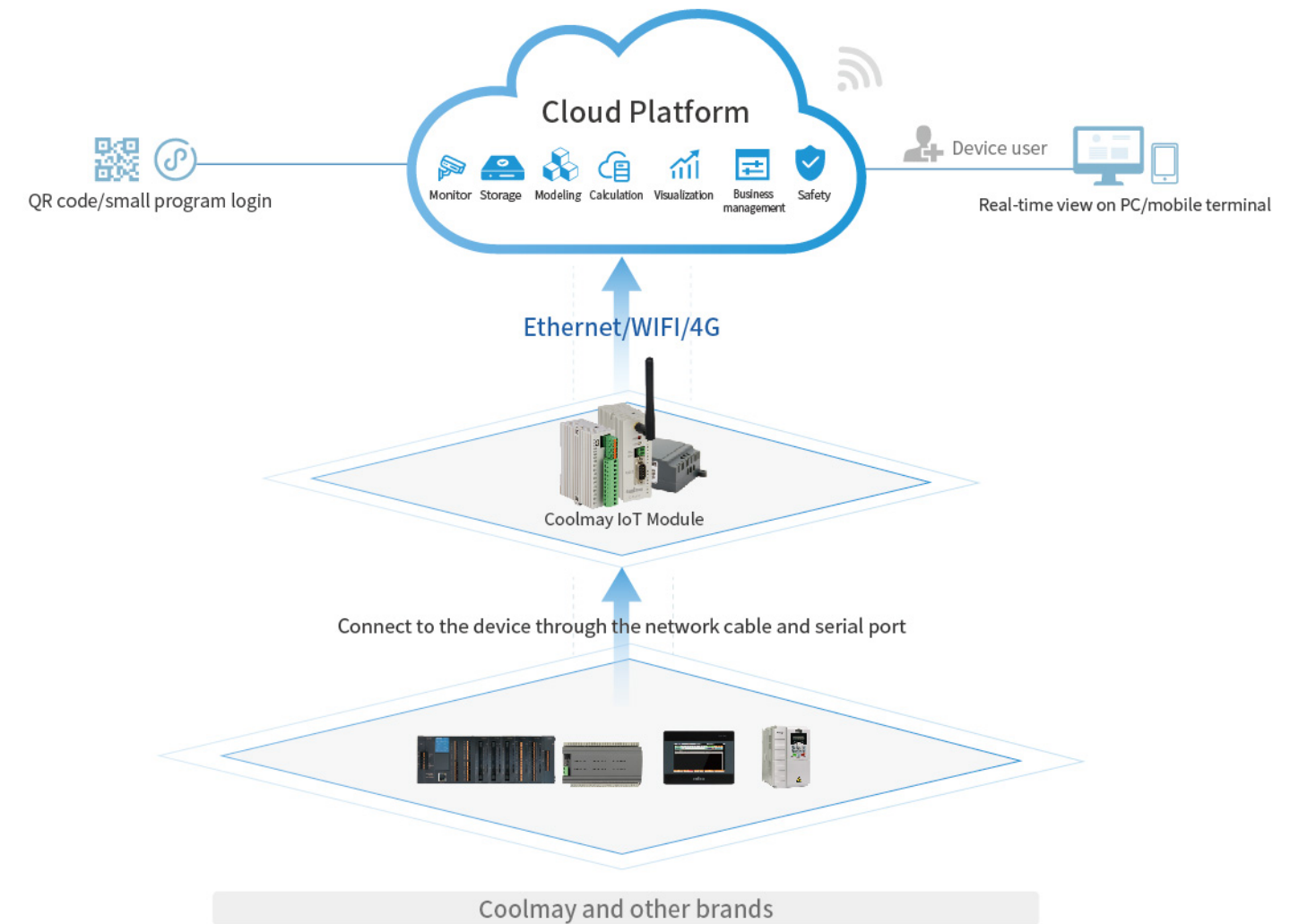


Custom screen

Personalized screen,
program customization

Coolmay cloud platform

The cloud platform is an IoT system that can complete terminal device data collection, real-time control, alarm push, group management, configuration design, video monitoring and other functions in one stop.



Solution I

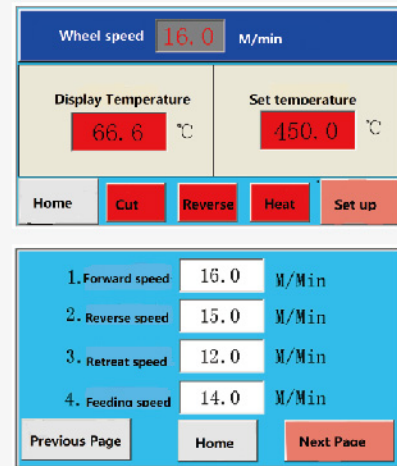
Hot air seam sealing machine solution

Mechanical characteristics

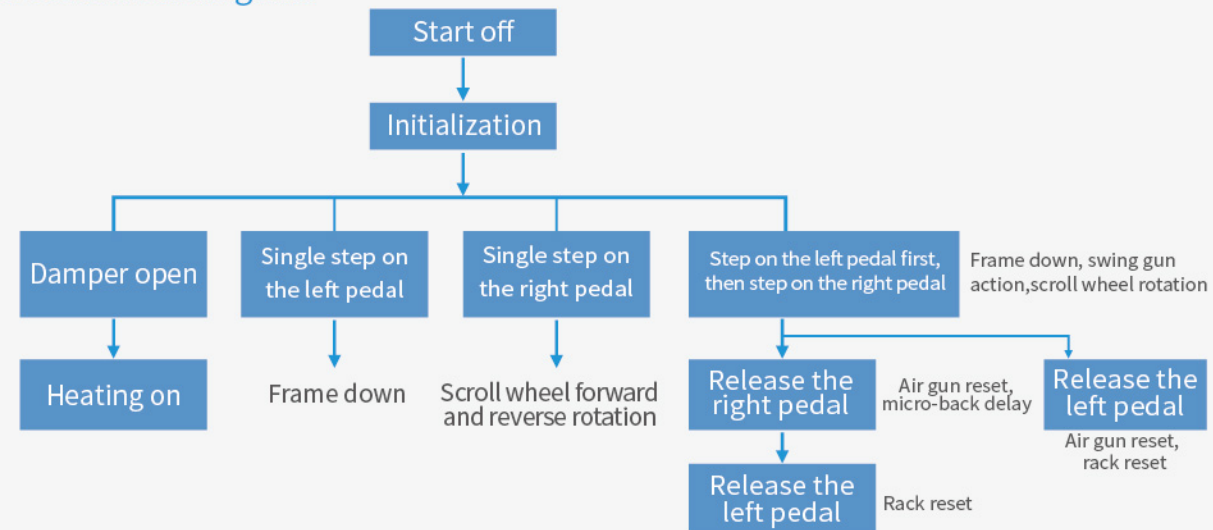
- Different speed adjustment of upper and lower wheels is suitable for different elastic materials.
- Fitting program segments (lead, middle, and end) setting parameters are more flexible.
- Intelligent tape feeding mechanism, the glue strip fits smoothly, and the size can be flexibly controlled for elastic materials.
- The movement trajectory of the composite nozzle makes the temperature of the belt start and the intermediate stop process more even, and the product is better.
- New appearance design, wider operating space.
- PLC programming control system, simple and stable operation.



System main interface



Process flow diagram



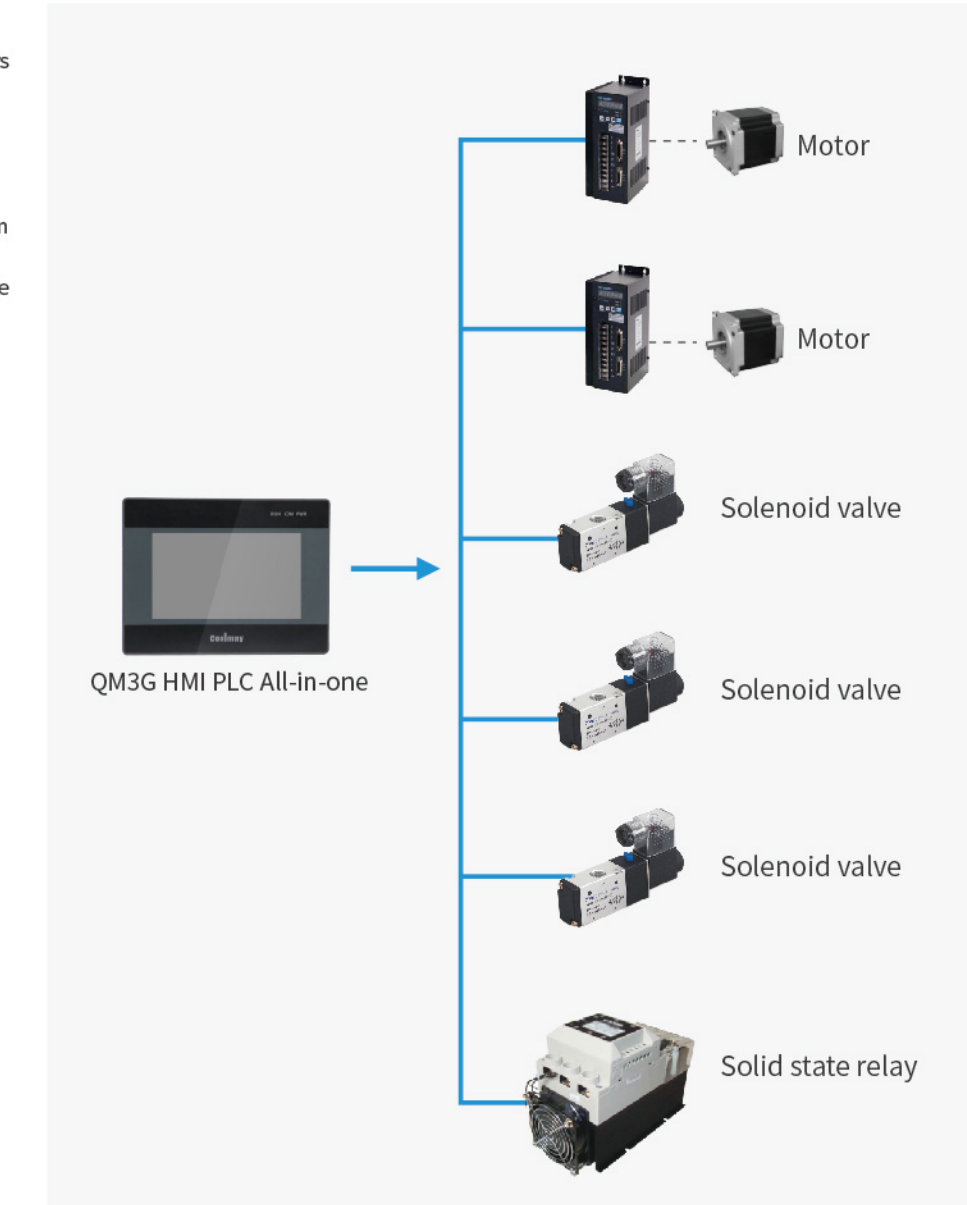
System Feature

- Coolmay QM3G HMI PLC all-in-one has the function of controlling DC motor speed (PWM).
- Coolmay QM3G HMI PLC all-in-one has the function of controlling the speed of 2 stepping motors (up to 8 channels can be controlled).
- Automatic compensation, automatic micro push, reduce press belt blank.
- Automatic tape cutting, tape feeding, automatic tape tail completion, reducing material loss.
- With 2 high-precision thermocouple temperature control inputs.
- Automatic temperature control, high stability performance, temperature upper limit alarm design, protect heating wire.
- Up to 12-30 groups of transistor output switching control solenoid valves (10 times more durable than relays).
- Optional 4.3 inch, 5 inch, 7 inch, 10 inch HMI touch screen.
- Possesses continuous and stable operation capability throughout the day (24 hours).

Application scenario



System topology diagram



Solution II

Auto-screwdriving machine solution

Mechanical characteristics

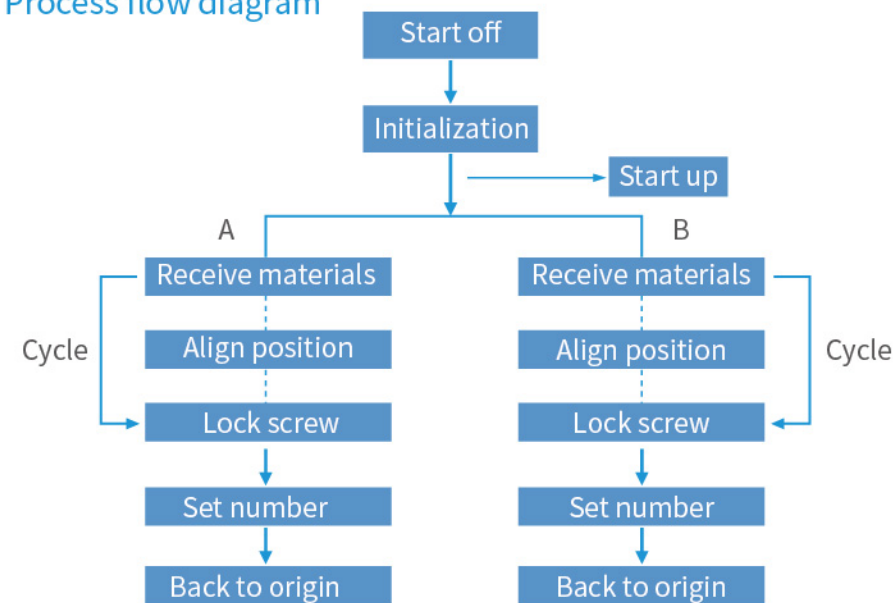
- XY workbench and online 1-4 axis are optional; lock multiple screws at the same time, which can replace multiple labor.
- According to the requirements of the lock screw product, the appropriate torque adjustment range is configured, and the torque can be adjusted separately for each axis.
- High degree of automation, easier to replace products, just call out the corresponding program.
- Highly integrated, it can be equipped with a variety of manipulators such as locking screws, soldering, dispensing, handling, assembly, etc.
- Programming is easier, just write the motion trajectory and modify the motion parameters, and the employees can quickly master the operation and debugging.
- The machine is equipped with leak lock/floating lock/sliding teeth and other lock failure detection and alarm.
- Quality is trustworthy, professional engineers carry out personalized design and debugging according to products, and dedicated after-sales service.
- High efficiency, high stability, high quality, realizing high intelligent and unmanned operation of screw locking operation.



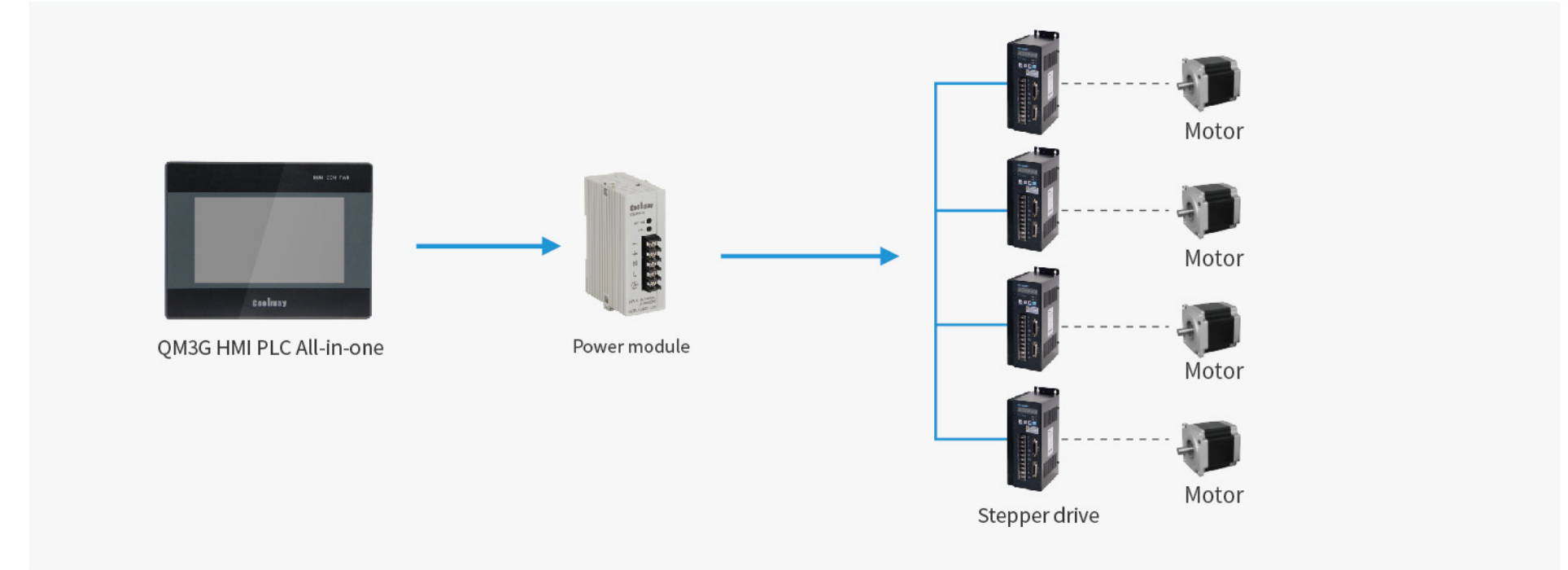
System main interface



Process flow diagram



System topology diagram



System Feature

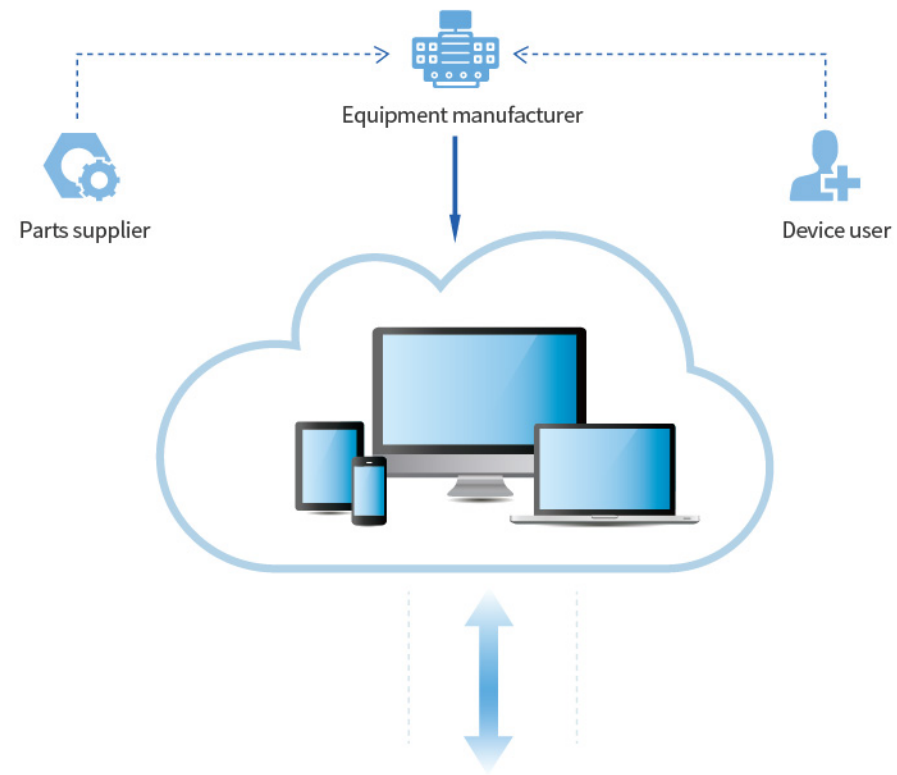
- CM100 screw machine control system has 4 motor control axes, which can support gantry type four-axis automatic locking screw control; meet the needs of existing gantry type automatic locking screw control schemes.
- The hand-held alignment of CM100 uses a simple editor to make programming easier and clearer.
- CM100 adopts QM3G all-in-one control scheme, with powerful calculation and flexible customization capabilities, short speed refresh time, and superior motion control acceleration and deceleration performance.
- CM100 motion control motherboard has 32M storage space, can store 40 screw machine control processing files, each file can store 30 solder processing programming points, with a display for visual display.

Application scenario



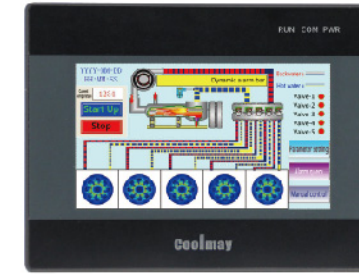
Application scenario

Food packaging machinery, electronic manufacturing equipment, printing machinery, textile machinery, medical machinery, testing machinery, wind power equipment, engineering machinery, plastic machinery, tobacco machinery, agriculture, forestry and animal husbandry (aquaculture), environmental protection equipment, automobile manufacturing, AGV trolleys, logistics storage equipment...



Product model

QM3G HMI PLC All-in-one



QM3G-43FH



QM3G-50FH



QM3G-70FH



QM3G-70KFH



QM3G-100FH



Specifications and parameters

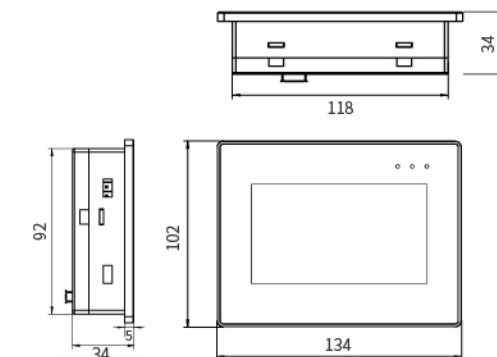
Model	QM3G-43FH	QM3G-50FH	QM3G-70FH/HD	QM3G-70KFH	QM3G-100FH
Display screen	4.3 "TFT LCD screen	5 "TFT LCD screen	7 "TFT LCD screen	7 "TFT LCD screen	10.1 "TFT LCD screen
Resolution(pixels)	480*272	800*480	800*480/1024*600	800*480	1024*600
Dimension	134*102*34mm	151*96*36mm	200*146*36mm	226*163*36mm	275*194*36mm
Cutout size	120*94mm	143*86mm	192*138mm	217*154mm	262*180mm
Display size	97*56mm	108*65mm	154*87mm	154*87mm	222*125mm
brightness	400cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²
Contrast ratio	400:1	400:1	400:1	400:1	400:1
Backlight	LED	LED	LED	LED	LED
Display color	65536 true color	65536 true color	65536 true color	65536 true color	65536 true color
Touch type	4-wire resistive panel	4-wire resistive panel	4-wire resistive panel	4-wire resistive panel	4-wire resistive panel
Touch accuracy	Length(X)±1.5% Width(Y)±1.5%	Length(X)±1.5% Width(Y)±1.5%	Length(X)±1.5% Width(Y)±1.5%	Length(X)±1.5% Width(Y)±1.5%	Length(X)±1.5% Width(Y)±1.5%
ROM (Flash)	NOR Flash 8MB	NOR Flash 16MB	NOR Flash 16MB	NOR Flash 16MB	NOR Flash 16MB
RAM	64MB	64MB	64MB	64MB	64MB
CPU	408MHz	408MHz	408MHz	408MHz	408MHz
USB Device	USB 2.0*1(Type-C)	USB 2.0*1(Type-C)	USB 2.0*1(Type-C)	USB 2.0*1(Type-B)	USB 2.0*1(Type-B)
Serial port	RS-232	RS-232	RS-232 or RS-485	RS-232 or RS-485	RS-232 or RS-485
PLC part (compatible with PLC programming software GX Developer8.86 and GX Works 2)					
I/O	Max 12DI/12DO		Max 24DI/20DO(16 MR)	Max 30DI/30DO(28 MR)	Max 30DI/30DO(28 MR)
I/O type	Transistor output: low level NPN, COM connected to negative; Relay output: normally open dry contact. Input: passive NPN, common terminal isolation.				
DO type	Relay MR or MOS (Relay output: max load 5A/ MOS output: max load 2A)		Relay (MR) or transistor (MT, Y0-Y3 are MOS) or mixed (MRT)(Relay output: max load 5A/ transistor output: max load 500mA)		
High-speed counting	6 single-phase 60KHz, or 2 AB (Z) phase 60KHz + 1 AB phase 10KHz				
High-speed pulse	Conventional 8 channels: Y0-Y3 is 100KHz, Y4-Y7 is 10KHz; high-speed counting + high-speed pulse≤480KHz				
Analog	Analog input type: E/K/S/T/J thermocouple (support negative temperature)/PT100/PT1000/NTC10K/NTC50K/NTC100K/0-10V/0-5V/0-20mA/4-20mA or mixed (7 inch and 10 inch optional -5V-5V and -10V-10V)				
	Analog output type: 0-10V/0-5V/0-20mA/4-20mA or mixed optional		Analog output type: 0-10V/ 0-5V/0-20mA/4-20mA/-5-5V/-10-10V optional (each negative voltage occupies two DA)		
COM port	Max 4AI/2AO		Max 12AI/8AO	Max 16AI/8AO	Max 16AI/8AO
	Default 2 PLC programming ports (1 TYPE-C, faster download speed; 1 RS232 programming port)		Default 2 PLC programming ports (1 Mini USB, faster download speed; 1 RS232 programming port)		
COM port	Optional 1 RS485 or 2 RS485 COM ports (One of the RS485 is changed from the default 232); Optional WIFI (will occupy the default port 232)		Optional 1 RS485 or 2 RS485 (RS485 port on HMI and RS232 on PLC will be unavailable)	Optional 1 RS485 or 2 RS485 (one of the RS485 is changed from the default RS232)	
	Optional CAN port (2.0A/B), network port, WIFI (will occupy the default 232 port)				

*Other general data are the same as other products

Dimension

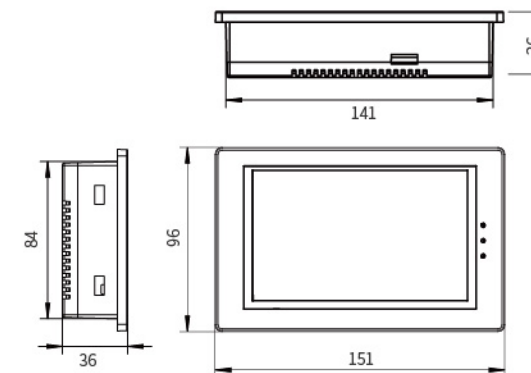
QM3G-43FH

Cutout size: 120*94mm



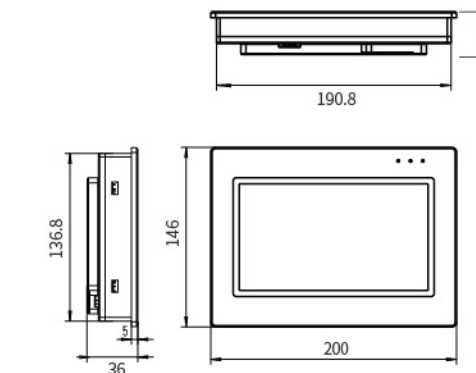
QM3G-50FH

Cutout size: 143*86mm



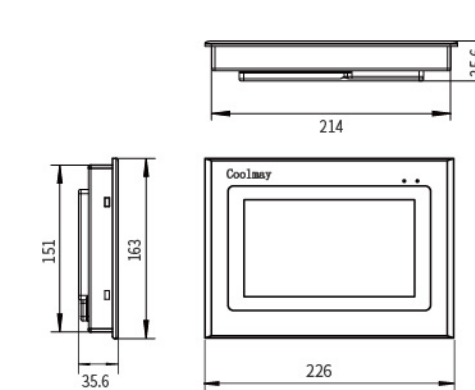
QM3G-70FH/HD

Cutout size: 192*138mm



QM3G-70KFH

Cutout size: 217*154mm



QM3G-100FH

Cutout size: 262*180mm

