Zhejiang SUPCON Technology Co., Ltd.
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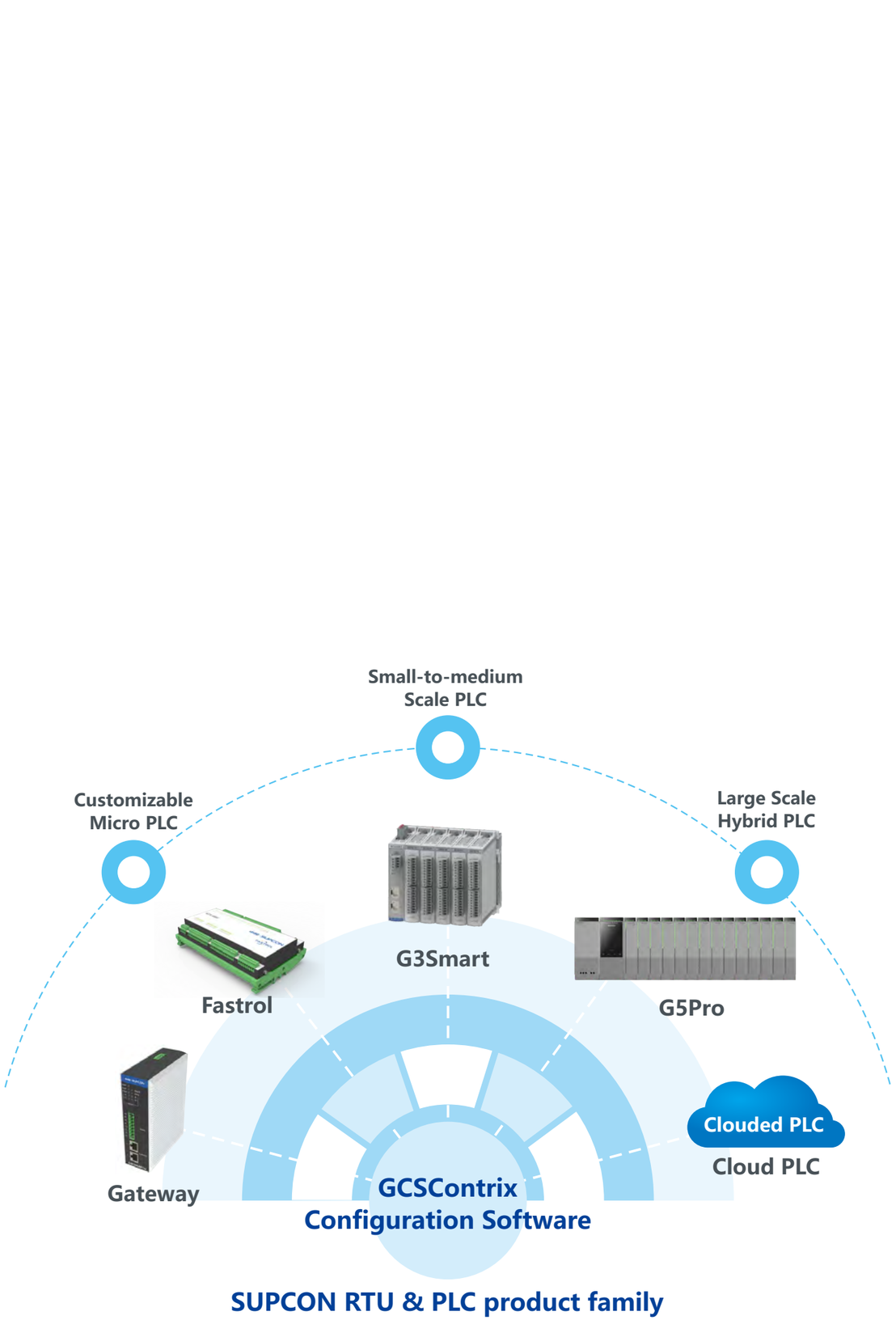
SUPCON RTU & PLC product family

ZHEJIANG SUPCON TECHNOLOGY CO.,LTD.



SUPCON RTU & PLC product family

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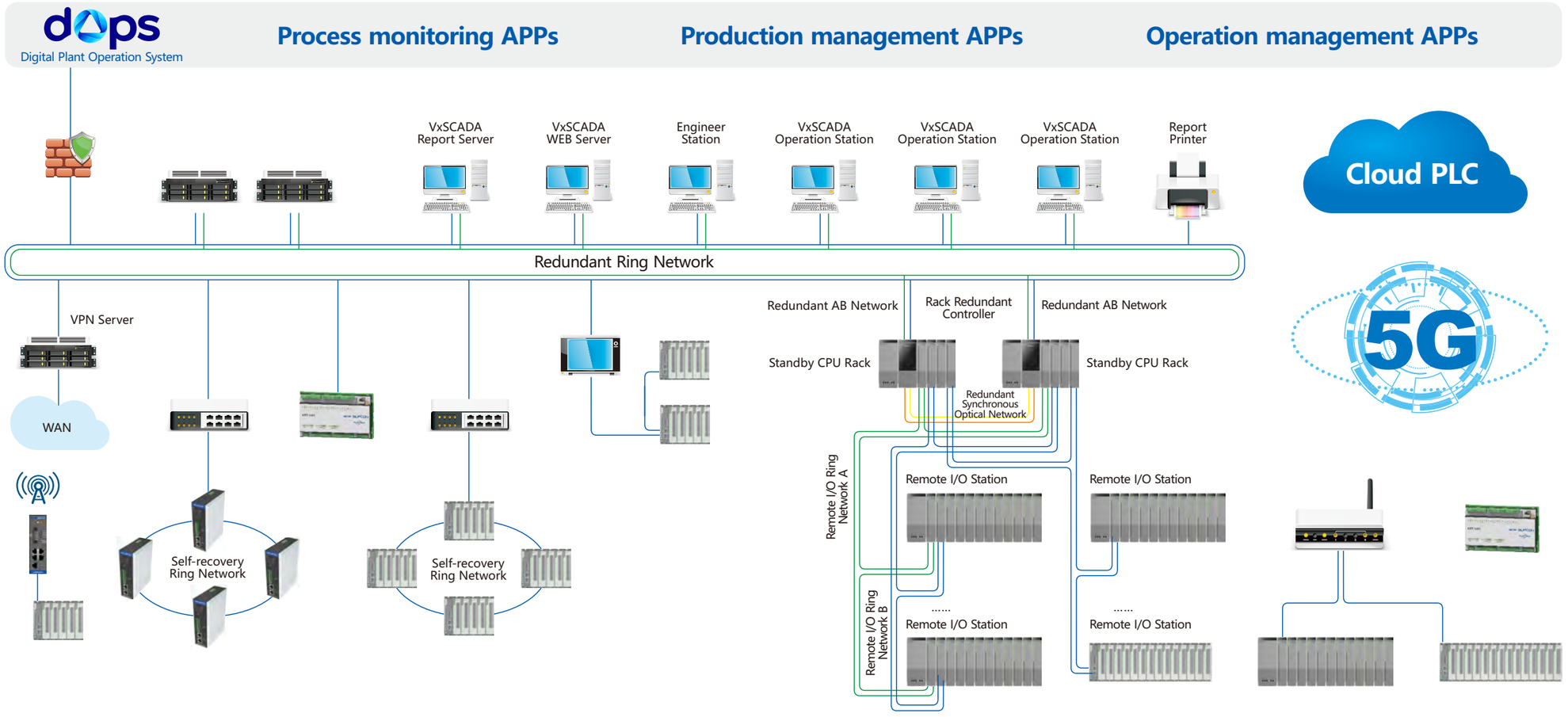


Intelligent Gateway

- 4G/5G networking
- Serial port service
- Data acquisition

Fastrol

- Rapid customization
- Rich interfaces
- Easy programming

G3Smart

- Compact architecture
- Strong environmental resistance
- Networked deployment
- Easy installation and integration

G5Pro

- Hybrid architecture
- Whole network redundancy
- Built-in Information security
- Reliable security certification

Cloud PLC

- Clouded Deployment
- Wide Area Debugging
- Large-scale Access
- High-Performance Computing

High Reliability | **Easy Deployment** | **Openness & Scalability** | **Information Security** | **Easy Maintenance** | **Strong Environmental Resistance**

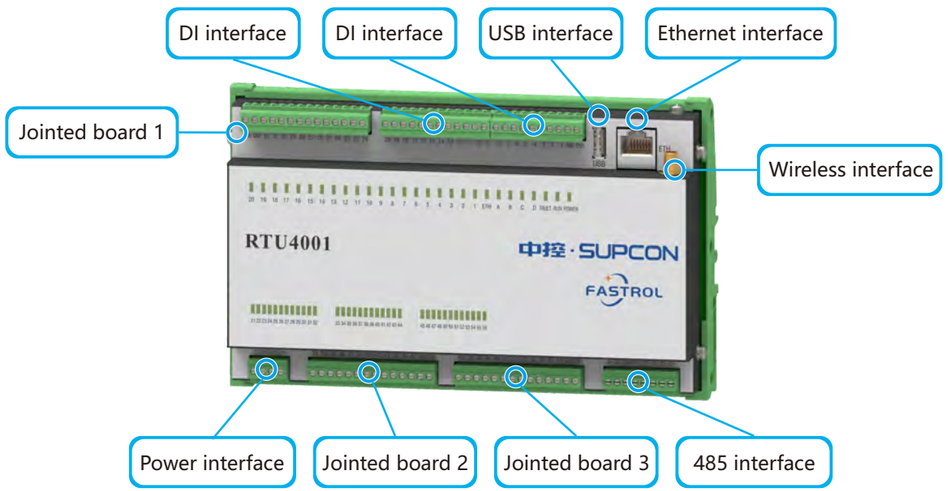
Fastrol

Overview

Fastrol is a customizable micro PLC which can be applied flexibly in various small scale data acquisition and control requirements such as environmental protection data acquisition, pharmaceuticals canning, cold chain transportation, etc. It has rich interfaces and optional modules meeting various custom requirements.

Functional Features

- Built-in I/O : 12 DI channels and 8 DO channels;
- Rich interfaces: 1 Ethernet interface, 4 RS-485 communication interfaces, 1 USB interface and 1 extensible wireless communication interface;
- Internal extension: 3 extensible modules supporting 12 DI, 12 DO, 6 AI, 4 AIO, 8 AO, 4 RTD and 2 PI;
- Programming: Follow IEC61131-3 standard programming language for multitask processing;
- Wireless networking: Support 4G/5G/Wifi/Bluetooth/LoRa/NB-IoT;
- Data storage: Support SQLite3 and CSV storage;
- Quick customization: Rapid customization of special interface, functions, algorithm and forms according to the customer’ s requirements.



Parameters		Description
Working environment		
Working temperature		-30℃ to 75℃
Storage temperature		-40℃ to 85℃
Normal working temperature (%)		No condensation under 10%RH-90%RH
Storage humidity (%)		No condensation under 10%RH-90%RH
Working atmosphere		62kPa-106kPa
Basic Parameters		
Power supply		9-36V DC
Static power consumption		＜5W
Module size (width × height × depth)		203mm×128mm×53mm
Installation mode		DN35 guide rail installation
Performance Parameters		
Computing speed (bit operation command)		0.04μs/command
Memory	Integrated storage memory	256M
	Program memory	512K Bytes
	Data memory	512K Bytes
I/O Modules		
Communication interface	Ethernet interface	1 pcs
	RS485 interface	4 pcs
	4G/WIFI interface	1 pcs (reserved, USB interface type)
Communication protocol		MODBUS TCP, MODBUS RTU, OPC, UCP, MQTT, etc.
Expansion interface		USB HOST and MicroSD
Built-in I/O interface	Digital input	12 channels
	Digital output	8 channels
Internal extension Jointed board	Maximum extension	3 Jointed boards
	Digital input	12 channels
	Digital output	12 channels
	Analog input	6 channels, supporting (4-20) mA
	Thermistor input	4 channels, PT100, Cu50 and pure resistance (1-400)Ω
	Analog output	8 channels, supporting (4-20) mA
	Analog input/output	4 channels, supporting (4-20) mA, (1-5) V and (0-10) V
	Pulse input	2 channels, 100KHZ
Programming language		IEC61131

G3Smart

Overview

G3Smart is a high reliability & flexibility PLC developed for small-to-medium scale high-density and distributed data acquisition and control applications in wide range of industries. It is designed very compact and robust to support installation in various environments and spaces.

Functional Features

Strong processing capacity

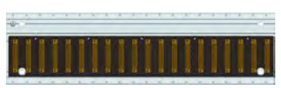
- Industrial 32-bit processor chip.
  Main frequency: up to 536M;
- Fast computing speed
  Processing speed of CPU: up to 20ns;
- Strong data processing capacity.
  Integrated with 160M memory;
- Dual network port supporting switch
  or independent redundant network mode;
- Built-in communication interface .

Flexible access capability

- Rich I/O modules;
- Various communication modules;
- Swappable terminal;
- Module diagnosis indicator;
- Channel status indicator.

Extra-high integration capability

- Compact design:
  module wide: 22mm; rack wide:
  450mm, supporting 20 lots.

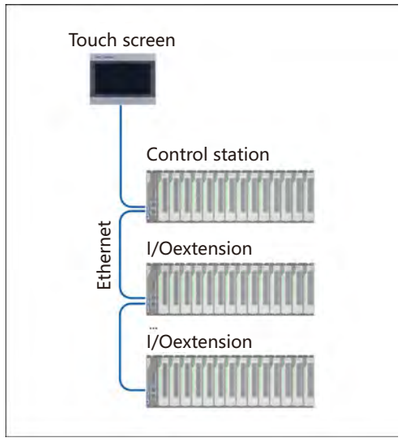


High-speed communication capability

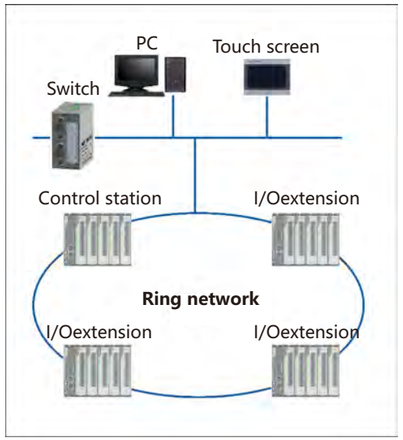
- High-speed backboard bus;
- Hot Swappable modules.

System networking

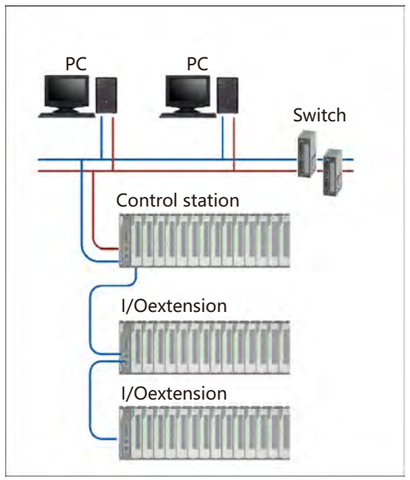
Support single and redundant network, star/linear/ring topology, and centralized/ distributed deployment.



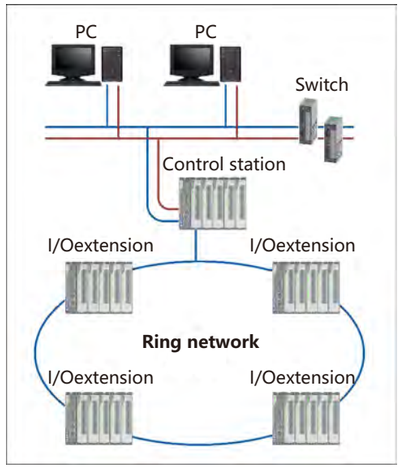
Single network centralized deployment



Single network distributed deployment



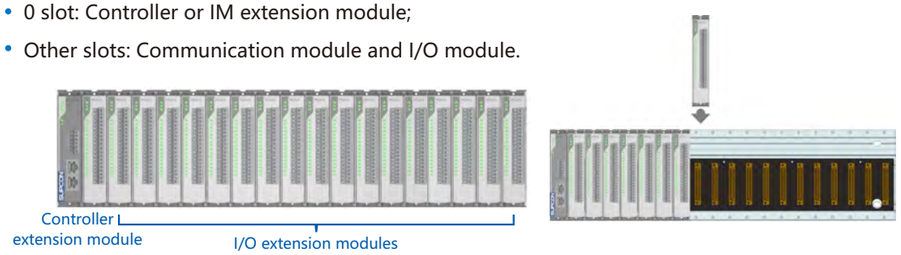
双网集中部署



双网分布式部署

Module installation

- 0 slot: Controller or IM extension module;
- Other slots: Communication module and I/O module.



Public performance indicator

Parameters		Description
System Parameters		
Power supply		24VDC±20% (DC)
Grounding resistance		Less than 4Ω (ordinary occasion)
		Less than 1Ω (special occasion)
Group pulse		3B (power supply, RJ45, RS485 and I/O)
Static electricity		3B (whole component)
Physical Parameters		
Working temperature		-30℃ to 75℃
Storage temperature		-40℃ to 85℃
Working humidity		No condensation under 10%RH-90%RH
Relative humidity		No condensation under 5%RH-95%RH
Working altitude		Below 4000m
Vibration		0.0075m@10-58Hz (constant intensity)
		1g@58-150Hz (constant acceleration)
Impact strength		15g, 11ms
Corrosion resistance		ISA G3 standard
Hot Swappable		√
IP protection grade		IP20
Dimension/module (height x width x depth)		110mm×22mm×80mm

Technical parameters

Controller Parameters			GCU3202	GCU3208R
Power supply	Power voltage		24VDC±20%	
	Static power consumption		< 5W	
	Power redundancy		√	
	Overload and short-circuit protection		Fuse	
	Power reverse polarity protection		√	
Memory	FLASH		32M+128MBytes	
	DDR2		256M	
Input memory			4096 Bytes	8192 Bytes
Output memory			4096 Bytes	8192 Bytes
Hot plugging			√	
Communication function	Ethernet	Communication protocol	UCP/Modbus TCP	
		Interface	2 RJ45 interfaces	
		Transmission rate	10M/100M, self-adaption	
		Network redundancy	AB dual-network redundancy	
	Serial port	Rs458 interface	2 channels, 6 terminals, supporting user-defined protocol, Modbus master-slave station protocol and 64 slave station node accesses	
Power-off retention			Data storage in MRAM. No need of separate button cell	

G3Smart Product catalogue of

Serial number	Module		Specifications
Controller module			
1	Controller	GCU3202	CPU module, 2 Ethernet ports, 2 serial port interfaces, AB network redundancy, supporting PN slave station, Modbus master-slave station and 64 serial ports
2	Controller	GCU3208R	
Communication module			
1	IM extension module	IM3202RJ	2 Ethernet ports, supporting star/daisy chain and 31 nodes at most
2	PROFINET slave-station coupler module	IM3202PN	PROFINET slave-station coupler module
3	TCP communication extension module	COM3202TCP	TCP communication extension module
4	4-channel RS485 communication modules	COM3204RTU	4 RS485 communication modules
5	DP master station communication module	COM3201DP	DP master station communication module
6	PN master station communication module	COM3202PN	PN master station communication module
I/O Module			
1	8-channel analog input module (current)	AI3208	8-channel analog current signal input module, supporting (0-10) mA and (4-20) mA
2	4-channel analog input module	AI3204IV	4-channel voltage (±10V, 0V-5V), current (0-20) mA input card, point-point isolation
3	6-channel thermistor input modules	AI3206RTD	6-channel thermistor input modules, point-point isolation
4	8-channel thermistor input modules	AI3208TC	8-channel thermistor input modules
5	8-channel analog output module (current)	AO3208	8-channel analog current signal output modules, supporting (0-10) mA, (4-20) mA and (0-20) mA
6	4-channel analog output module	AO3204IV	4-channel voltage (±10V, 0V-5V), current (0-20) mA input card, point-point isolation
7	16-channel Digital input module	DI3216	16-channel digital input module, supporting passive contact signal,
8	16-channel Digital output module	DO3216	16-channel digital output module, supporting passive transistor contact output
9	8-channel relay output module	DO3208RLY	8-channel digital output module, supporting relay output and point-point isolation
Function module			
1	4-channel pulse input module	PI3204	4-channel pulse input, 100K input frequency
2	1-channel SSI input module	AM3201	4DI, 4DO, 1-channel SSI input module, supporting access of absolute value encoder module
3	Empty module	AM3200	Empty module
Rack			
1	6-slot rack	CN3206	Rack (6 slots), size (height x width): 120mm×135mm
2	10-slot rack	CN3210	Rack (10 slots), size (height x width): 120mm×225mm
3	14-slot rack	CN3214	Rack (14 slots), size (height x width): 120mm×315mm
4	20-slot rack	CN3220	Rack (20 slots), size (height x width): 120mm×450mm

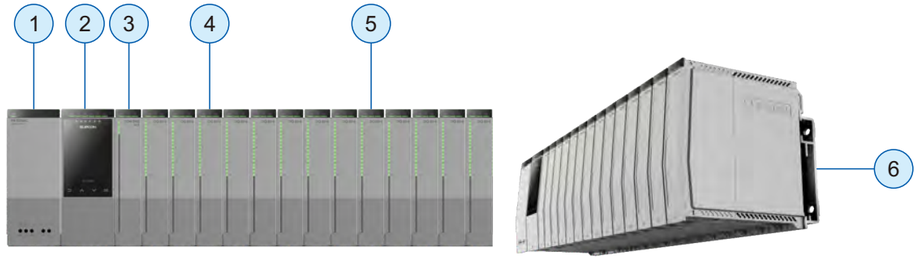
G5Pro

Overview

As a part of GCS series control system, G5-Pro is a new generation of fully-redundant medium/large-sized high-reliability programmable logic control system developed by SUPON independently. Due to the adoption of unified UCP communication protocol, GCS series control system (such as G3 and G5) can realize seamless compatibility of data interaction. The control system has been widely applied to industries such as oil and gas pipeline, rail transit, heating pipe network, sewage treatment, intelligent water supply, traffic tunnel, utility tunnel, nuclear power and equipment supporting.

G5Pro hardware

G5Pro hardware includes power module, controller module, extension communication module, heterogeneous communication, I/O module, rack and accessories.



- Power module: Supporting two modes: AC/DC and DC/DC;
- Controller module: Supporting redundancy and single card, realizing redundant double network; Self-redundant optical fiber synchronous module;
- Extension communication module: Data between controller rack and extension rack, with 2 RJ45 interfaces to form the ring network;
- Heterogeneous communication module: Including Modbus RTU/TCP heterogeneous access module, Profibus DP heterogeneous access module and Profinet communication module;
- I/O module: System input/output module, including conventional modules such as AI/AO/DI/DO, TC/RTD, PI and HART;
- Rack: 6, 10, 14, 18 and 22 slots.

Product characteristics

Fully redundant

- Controller redundancy;
- Power redundancy;
- Communication module redundancy;
- Network redundancy;
- I/Omodule redundancy.

Autonomous and safe

- Supporting 100% localized hardware version;
- CPU dual core, realizing physical isolation of control core and network core;
- Autonomous control core, private communication interface and protocol, ensuring the privacy and security of underlying control and data interaction;
- Safe system information.

Strong performance

- 1G main frequency;
- Large memory, 64M FLash memory, 1.5G DDR memory;
- High I/O access capacity, 128K input/output storage area;
- 500,000+ program variables;
- With LCD to display the system status and diagnosis information visually.

Rich interface

- With serial communication interface, supporting Modbus RTU slave station mode;
- SD card extension and program transplant loading;
- With information security lock to isolate the system from outside;
- With 2 independent Ethernet interfaces, supporting Modbus TCP slave station mode;
- With 2 independent synchronous optical ports, realizing high-speed synchronization of redundant CPU.

Convenient and flexible I/O

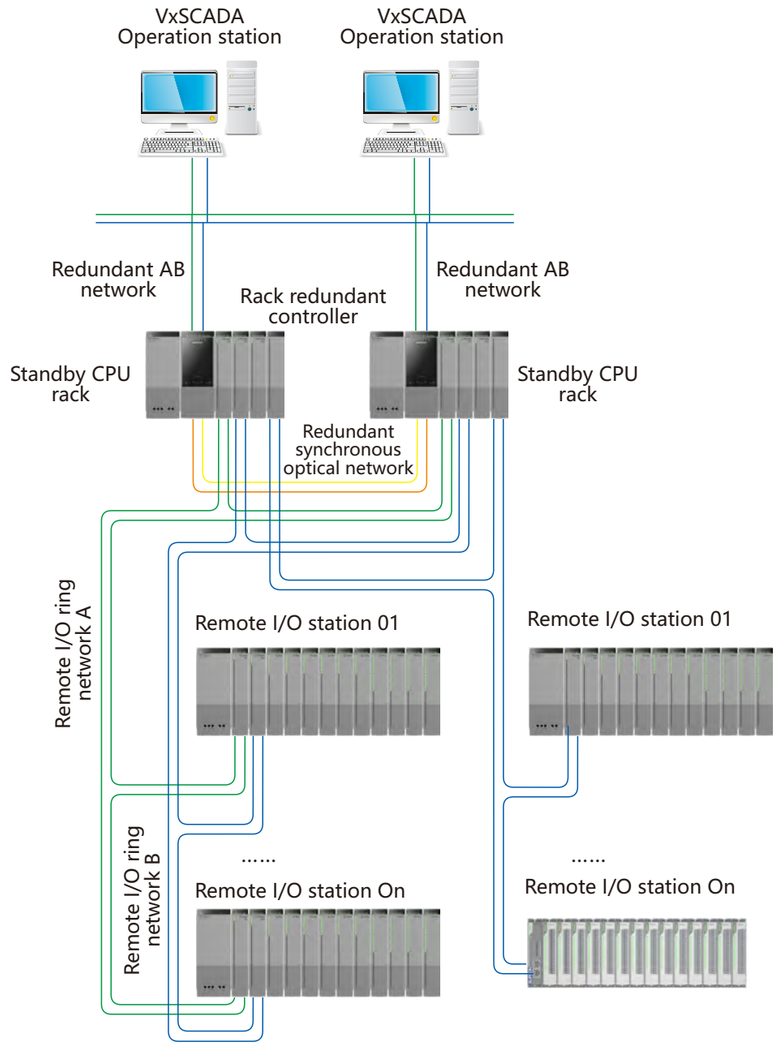
- I/Omodule and communication module supporting redundancy;
- Modules with status indicator;
- Modules with diagnostic channel indicator;
- Modules supporting terminal connection and switching;
- Hot-plugging modules;

Reliable and high-speed backboard

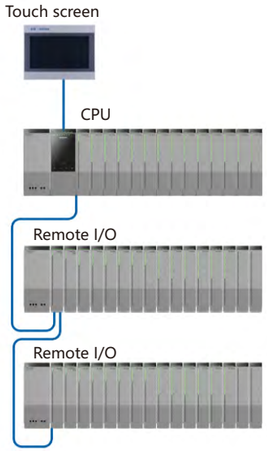
- Integrated backboard, improving the reliability of power supply communication;
- Redundancy between power supply and communication bus, improving the fault tolerance;
- Integrated with high-speed and private backboard bus.

Network architecture

G5Pro control system supports the redundancy of CPU rack, power supply, network, communication module and I/O module. The system is applicable to large-scale application scenarios and has fully redundancy measures, fast redundancy switching time and perfect diagnosis mechanism, which greatly improves the redundant fault tolerance of system and guarantees the system reliability and availability.



Application examples of G5Pro system



Single CPU application

CPU rack:

- For installing power supply, CPU, communication module and I/O module;
- CPU module supports data opening of single/double network; Realize remote I/O rack extension with IM interface module.

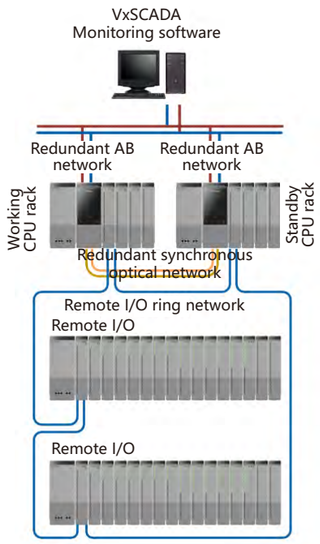
Remote I/O rack:

- For installing remote power supply, extension module and communication module;
- Support various network connections with CPU rack.

Redundant CPU application

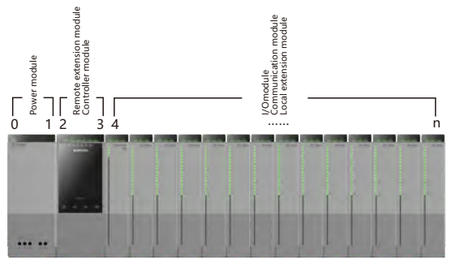
Redundant CPU rack:

- For installing redundant power supply, CPU and communication module;
- All modules of master and standby redundant racks shall be matched;
- Redundant CPU module supports single/double network data opening;
- Realize remote I/O rack extension with IM interface module.



Remote I/O rack:

- For installing remote power supply, extension module and communication module;
- Support various network connection with redundant CPU rack.



Module installation

0-1: Power module slot

2-3: Controller module slot

Remote extension module slot

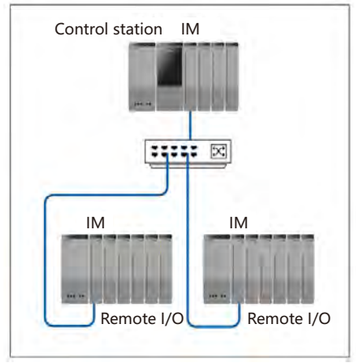
4-n: Local extension module slot

Communication module slot

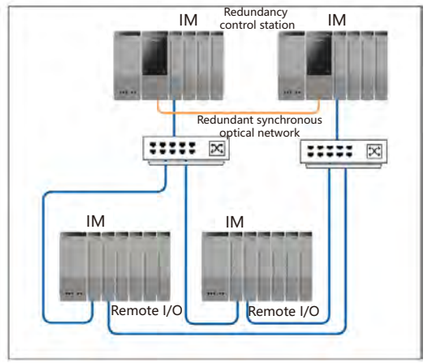
Io module slot

Remote I/O extension

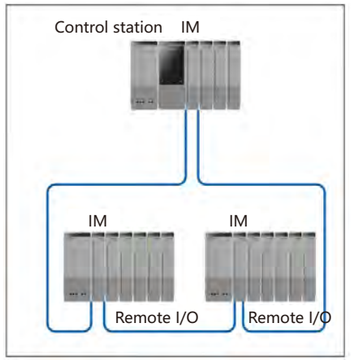
Remote I/O supports star/linear (supplemented if there is no linear connection in the figure) and single/double network connection of single CPU and redundant CPU.



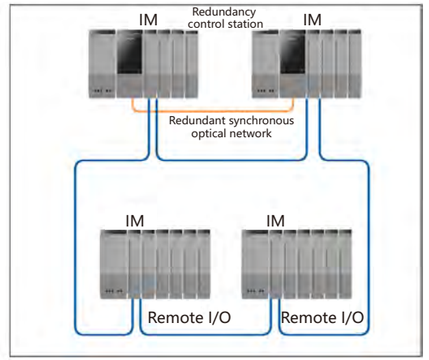
Star connection of single CPU



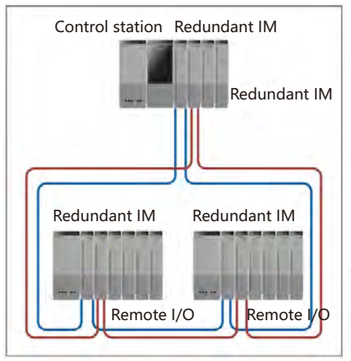
Star connection of redundant CPU



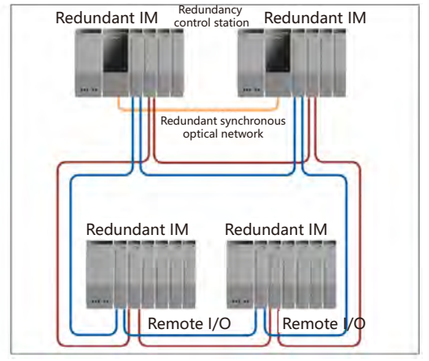
Single ring network connection of single CPU



Single ring network connection of redundant CPU



Double ring network connection of single CPU



Double ring network connection of redundant CPU

Public performance indicator

Public performance indicator	
System electrical characteristics	
System power supply	AC/DC card: 90VAC-264VAC or 120VDC-300VDC, 47Hz-63Hz
	DC/DC card: 18VDC-75VDC
Grounding resistance	Less than 4Ω (ordinary occasion)
	Less than 1Ω (special occasion)
Environmental and dimensional indicators	
Working temperature	-20℃ to 70℃
Storage temperature	-40℃ to 85℃
Working humidity	No condensation under 10%RH-90%RH
Relative humidity	No condensation under 5%RH-95%RH
Working altitude	Below 4000m
Vibration	0.0075m@10-58Hz (constant intensity)
	1g@58-150Hz (constant acceleration)
Impact strength	15g, 11ms
Corrosion resistance	Whole series support, compliant with G3 standard
EMC indicator	Industrial level III B
Hot plugging	Whole series support
IP protection grade	IP20
Dimension/module (height x width x depth)	AC power and controller: 145mm×60mm×140mm
	Other modules: 145mm×30mm×140mm

Technical parameters

Technical parameters			
Parameter item	Notes	Controller module (GCU5001)	Controller module (GCU5003)
Power supply	Power voltage	24V DC±20%	
	Static power consumption	< 10W	
	Power redundancy	Supported	
	Overload and short-circuit protection	Supported	
	Power reverse polarity protection	Supported	
Redundancy	Redundancy mode	Rack redundancy	Adjacent redundancy
CPU	Processor	Cortex-A7 dual core	
	FLASH	64M Bytes	
	DDR4	1G Bytes+512M Bytes ECC	
	MRAM	512K Bytes	
	Input memory	128K	
	Output memory	128K	
Ethernet	Quantity	2 channels	
	Mode	AB network redundancy	
	Communication rate	10M/100M/1000M self-adaption	
	Protocol	Modbus TCP server, PROFINET server and UCP	
	Capacity	Modbus server can be connected with 64 client devices at most	
RS-485	Quantity	1 channel	
	Mode	Slave station mode	
	Protocol	Modbus RTU protocol	
Other functions	Information security	Supported	
	Information security lock	Supported	

Product catalogue of G5Pro

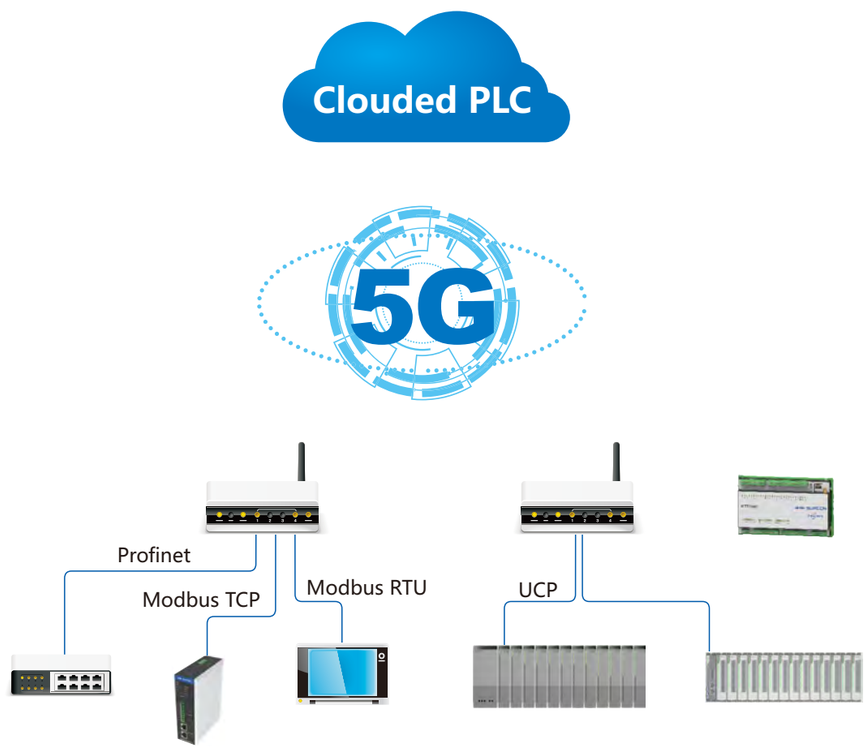
Serial number	Name	Model	Specification
Controller/power supply			
1	Controller	GCU5001	General controller, supporting rack redundancy
2	Controller	GCU5003	General controller, supporting adjacent redundancy
3	Power module (AC)	PW5005AC	AC 220V input, 120W
4	Power module (DC)	PW5005DC	DC 24V input, 120W
Communication module			
1	Extension connecting module	IM5002RJ	One 2×RJ45 interface, supporting ring network and access of 32 remote nodes
2	Serial communication module	COM5004RTU	4 RS-485 interfaces, supporting 64 serial devices and master-slave mode. It can support 64 slave devices and 256 commands in master station mode, and 32 slave devices for single serial port
3	Ethernet communication module	COM5002TCP	One 2×RJ45 interface, supporting 64 MODBUS TCP devices, 256 commands and master-slave mode
4	Pn master station communication module	COM5002PN	1 RJ45 interface
Input/output module			
1	Current analog signal input module	AI5008	8 current signal inputs, supporting (4-20) mA and (0-10) mA signal
2	Analog signal input module (8 channels, voltage/current)	AI5008IV	8 analog signal inputs, point-point isolation, supporting (4-20) mA, (0-10) mA, (0-20) mA, (1-5) V, (0-10) V and (-10-10) V
3	Thermistor signal acquisition module	AI5008RTD	8 thermistor signal inputs, point-point isolation, (1-400)Ω, (2-1000)Ω, Pt100 and Cu50
4	Current analog signal output module	AO5008	8 current signal outputs, (0-10) mA, (0-20) mA and (4-20) mA
5	Analog signal output module (4 channels, voltage/current)	AO5004IV	4 analog signal outputs, point-point isolation, supporting (4-20) mA, (0-10) mA, (0-20) mA, (1-5) V, (0-10) V and (-10-10) V
6	Digital signal input module	DI5016	16 digital signal inputs, supporting dry contact signal, DC24V active signal, NPN and PNP signal
7	Digital signal input module (32 channels)	DI5032	32 digital signal inputs
8	Digital signal output module	DO5016	16 digital passive transistor outputs
9	Digital signal output module (16 channels, relay signal)	DO5016RLY	16 digital relay outputs
10	Digital signal output module (32 channels)	DO5032	32 digital transistor outputs
11	High-speed pulse input module (8 channels)	PI5008	8 high-speed pulse inputs, 100K
12	Mixed signal module	UIO5008	8 general IOs, each channel is configurable and supports dry contact and DC24V active digital signal input, DC24V digital output, (4-20) mA input and (4-20) mA output
13	G5pro empty module	AM5000	Empty-slot cover plate
Rack			
1	Rack (6 slots)	CN5006	Rack (6 slots), size (height x width): 120mm×180mm
2	Rack (10 slots)	CN5010	Rack (10 slots), size (height x width): 120mm×300mm
3	Rack (14 slots)	CN5014	Rack (14 slots), size (height x width): 120mm×420mm
4	Rack (18 slots)	CN5018	Rack (18 slots), size (height x width) 120mm×540mm
4	Rack (22 slots)	CN5022	Rack (22 slots), size (height x width) 120mm×660mm
Accessories			
1	Dual-row 40-core socket	FDC508NM -7018-40P	Screw terminal of I/O module
2	Dual-row 40-core socket	FDC2NM -7017-40P	Spring terminal of I/O module
3	Synchronous optical fiber module	SF-3F1-20F	Single-mode, LC
4	Single-mode fiber		0.95m, Armour, LC-LC, blue

Clouded PLC

Overview

SUPCON Clouded PLC is a new generation of controller that can be deployed at cloud based on autonomous control core. Connect the I/O access module deployed on site with the center controller deployed at cloud by means of high-bandwidth low-delay 5G communication network and IoT technology, realize high-speed communication, so as to transfer the local control confined by hardware performance to cloud and meet the special application requirements such as large-scale access, wide area debugging, collaborative control, complex algorithm and remote deployment.

Overall architecture



Functional Features

- Clouded deployment: Supporting public/private cloud deployment, remote deployment and maintenance;
- Wide area debugging: Remote login of clouded PLC, realizing cross-region joint debugging;
- Large-scale access: Supporting communication protocols such as Profinet, Modbus, UCP and MQTT and realizing mass data access;
- Strong computing power: Realize complex control algorithm with powerful hardware of cloud platform;
- Collaborative control: Scheduling linkage of multiple systems, realizing collaborative flexible production.

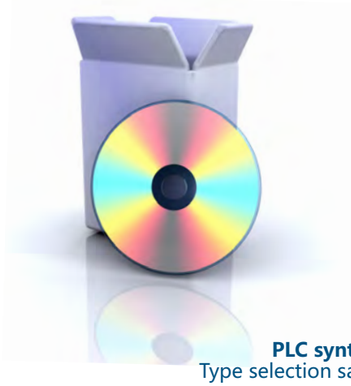
Related products

SUPCON clouded controller software can execute system signal acquisition, data storage, logical operation and interlocking control, suitable for deployment and operation of hardware platform and have strong computing power, big data capacity, large-scale control task concurrent processing capacity and large concurrent network connection processing capacity. It focuses on open design, supports various Internet/IoT protocols and can be deeply integrated with IT technologies such as 5G/cloud computing/edge computing.

Functional Features

- Suitable for CPU command sets of x86/ARM/MIPS/LONGSON;
- Suitable for ubuntu/centos/Galaxy/Kirin/Feiteng system deployment;
- IEC61131-3 logic programming, preemptive multitask scheduling;
- Supporting protocols such as OPCUA/HTTP/Modbus -TCP/SQL/MQTT/DNP3;
- Collect site signals with GW300X multi-protocol gateway;
- Supporting KV/relational/chronological data storage;
- Supporting C/C++/Python advanced language programming;
- Supporting mainstream public/private cloud deployment

such as Aliyun/Huawei cloud/Jinshan cloud.



Gateway

Border gateway

GW3006 border gateway is used for connecting the field I/O device with clouded PLC, supporting 1 Gigabit Ethernet port, 1 Profinet interface, 1 USB2.0 interface, 2 RS232/RS485 interfaces and multifunctional extension ports.

The working temperature range of this series products is -20°C to 70°C and the EMC performance is good; Equipped with Cortex-A53 Series CPU to realize excellent computing power; Besides, the product is provided with 512M DDR memory and high-capacity eMMC hard disk which are suitable for high-load communication occasions.

Product specification	
Processor	Cortex-A53 @ 1.00GHz
Memory capacity	512M
Hard disk capacity	eMMC 8GB and NorFlash 16MB
Customer data capacity	256K Byte
Profinet communication	1 channel, supporting master station
Modbus TCP communication	1 channel, supporting modbus master/slave station
Modbus RTU communication	5 channels, supporting modbus master/slave station
Installation method	Guide-rail installation
Dimension (length x width x height)	135mm×100mm×70mm
Working temperature	-20℃ to 70℃
Power supply	DC 12V
Corrosion prevention level	G3
Relative humidity	10%-95% (no condensation)
EMC level	ESD3 and EFT4 level

Serial service gateway GW3004RTU

Gw3004 serial communication gateway supports conversion between 485 serial port and Ethernet interface and can be applied to the scenarios such as communication device network, data acquisition, communication interface and protocol conversion. Meanwhile, the gateway supports IEC programming, data access, local processing and forwarding and star/linear/ring networking.

Key parameter indexes

Parameter item	Specification
Power supply	24V DC±20%V
Static power consumption	< 5W
Installation mode	DN35 guide rail
Outline dimension (height x width x depth)	143mm×49mm×111mm
Working temperature	-30℃ to 75℃
Corrosion resistance	G3 corrosion prevention
EMC	Industrial level III B
485 communication interface	4 independent channels, supporting master-slave module and 64 serial slave station access
Ethernet communication interface	1 double network ports, supporting star/linear/ring networking
Communication protocol	Modbus TCP, Modbus RTU, OPC and UCP

Public network communication gateway Gw315

Gw315 public network communication module is mainly used for connecting PLC with public network and realizing data interaction and program download in public network communication environment. GW315 module supports wired/wireless public network and all operators.

Key parameter indexes

Parameter item	Specification
Power supply	(24±5%) VDC
Static power consumption	<6W
Installation mode	DN35 guide rail
Outline dimension (height x width x depth)	144mm×40mm×100mm
Working temperature	-20℃ to 70℃
EMC	Industrial level II B
WAN	1 wired WAN port and 1 wireless WAN port
LAN	Four 10/100Mbps self-adaption ports
485	1 RS485 port

GCSContrix Configuration Software

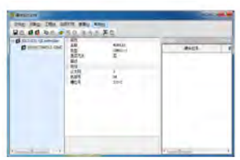
Overview

GCSContrix is the general configuration software for SUPCON PLC. It conforms to IEC61131-3 international standard based on Windows environment. The core components are: hardware configuration software of control station, tag configuration software, configuration software of control plan, programming software of function block and configuration software of customer task, supporting offline/online download and configuration upload. The software takes hardware configuration software as the core, and all modules coordinate mutually to constitute a software platform that fully supports system structure and function configuration. Meanwhile, GCSContrix is provided with general OPC Server to realize seamless connection with monitoring software that supports OPC mode.

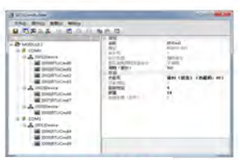
Functional Features

- The system has a clear configuration structure and convenient operation interface;
- Good openness;
- The control algorithm configuration is multifunctional and combines graph configuration with language configuration based on IEC61131-3;
- The programming language (LD, FBD, SFC and ST) of function block can be defined according to user’ s requirements;
- Control plan based on multitask;
- Batch processing, supporting configuration, inspection and download of master/control/production recipe;
- Realize tag operation of I/O data access and improve the system response and data capacity;
- Structural data encapsulation;
- Configuration is stored according to the file format and realize normalization convention;
- Engineering configuration upload;
- Stable online download.

Planning software



Configuration software



Communication software

Control software

Simulation debugging

Device management software