



Industrial Automation

PCS1800 Distributed Control System



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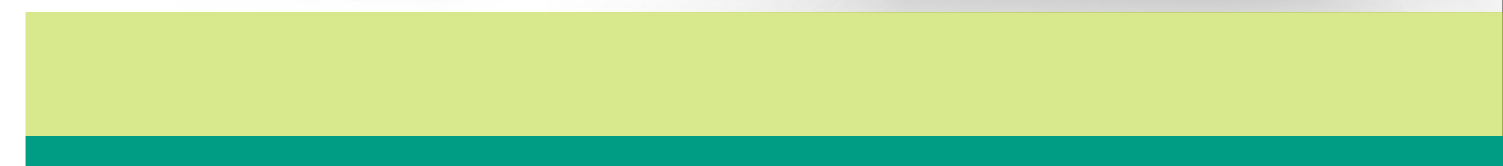
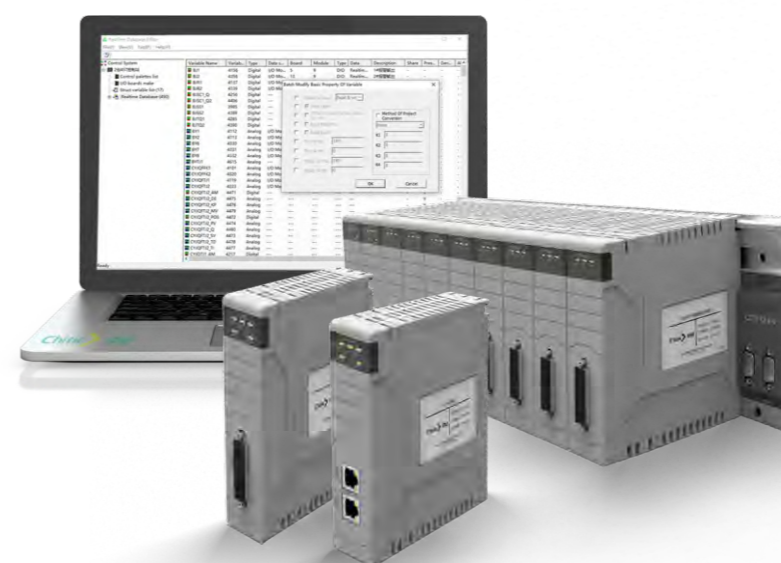
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Industrial Automation

PCS1800 Distributed Control System



PCS1800 DCS

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About CHINT

Founded in 1984, the Chint Group provides safe, reliable and stable industrial electrical equipment and solutions for energy efficient management systems. With 30 years of development, it has grown to be Asia’s largest low-voltage electrical product supplier and is the leading brand of the whole industry chain in industrial electric in Asia. With three R&D centers located in Europe, North America and China, there are also branches in over 20 countries and more than 30,000 employees in the world. CHINT provides reliable products, system solutions and services to more than 100 countries worldwide.



- 3 Global Research Centers: Europe, North America, Asia Pacific
- 6 International Marketing & Sales Area: Asia Pacific, Middle East and Africa, Europe, Latin America, North America, China
- 9 Manufacturing Bases: China (Wenzhou, Shanghai, Hangzhou, Jiaxing, Xianyang, Jiuquan), Thailand, Egypt, Germany
- 22 Logistics Centers
- 14 International Subsidiaries
- 17 Marketing Offices in China
- 2300 Sales Companies

About CHITIC

Chitic Control Engineering Co., Ltd. is a subsidiary company of Chint, and a leading provider of automation & control technologies and applications in China that helps the industry customers to improve operating safety, reliability and efficiency. Chitic has series of products including PCS1800 DCS, TDCS9200 DCS and CTS700 DCS, information platform for water company, control system for high speed rapier loom, drive system of switched reluctance motor, solar energy monitoring system, computing cloud center for new energy, etc. Chitic control system won 2006 National Science and Technology Progress Awards of China, CTS700 DCS won the award of 2010 Innovative Product of China. Chitic headquarter is located at the beautiful city of Hangzhou, two hours drive from Shanghai. Chitic has its own science & technology park, Chitic Park, which covers about six thousand square meters.



A Bird's Eye View Of Chitic Sci & Tech Park

Our Business Sector



Water Treatment



Oil & Petrochemical



Coal Chemical



Fine Chemical



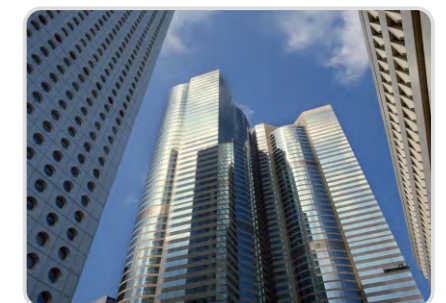
Thermal Power



Machinery



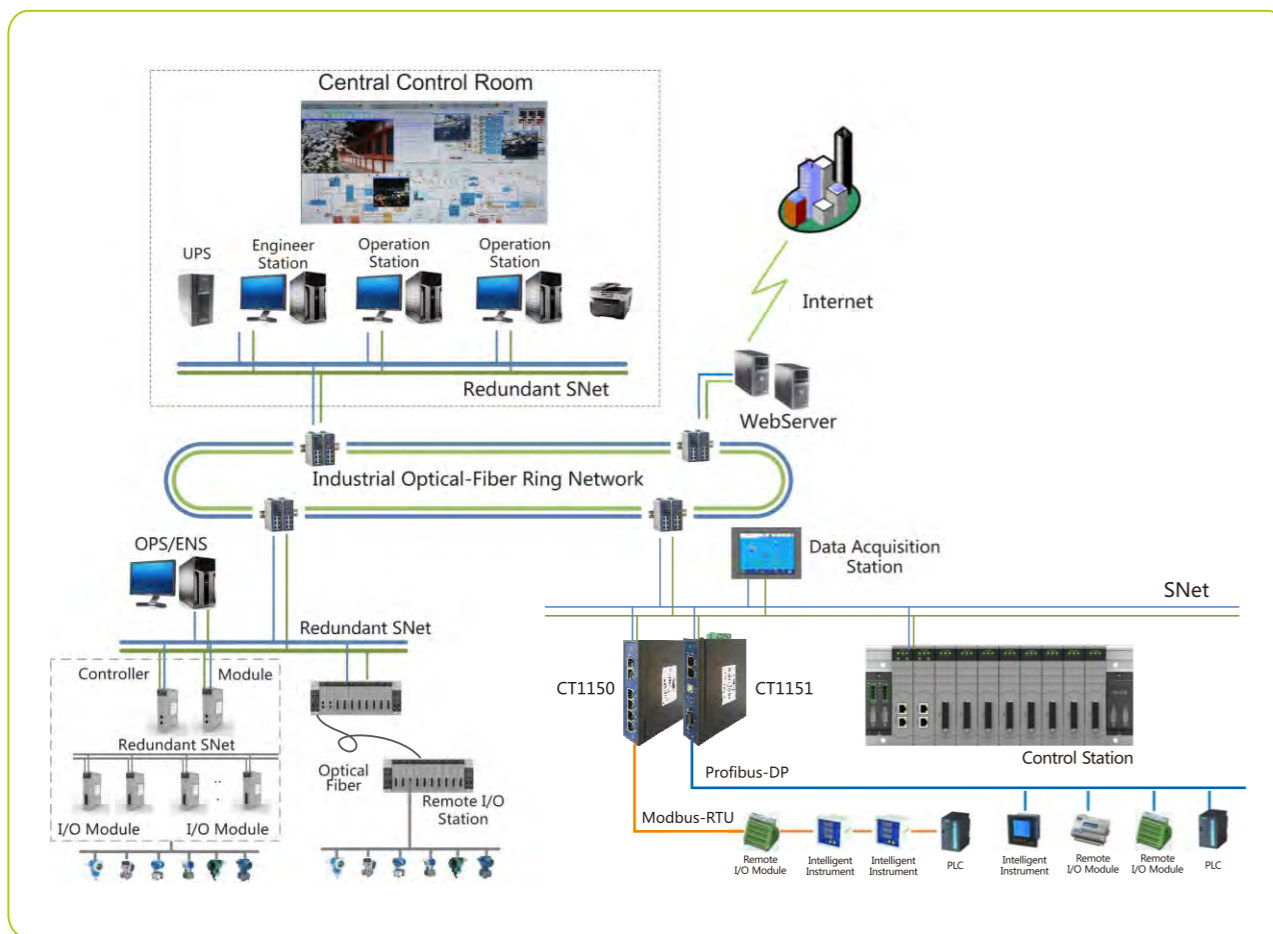
Biopharmaceutical



Public Utility

Overview

PCS1800 is an advanced distributed control system with excellent performance, compact size, easy assembling structure and powerful industry control software. It can help the customers to complete their various control applications safely and cost-effectively.



Feature

- Scalability/ Modularity
- Easy integration
- Openness
- Availability/Reliability
- Compatibility
- Flexibility
- Energy efficiency

System Component

PCS1800 consists of control station, operator/engineer station and communication network.

Control station—Undertaking Data acquisition, computing and control; consisting of local I/O station and remote I/O station if necessary

Operator station—HMI with the function of monitoring and operator, data alarm, history data recording

Engineer station—Undertaking system configuration, device maintenance and management, control strategy editing and downloading

Communication network—The PCS1800 network consists of two levels: redundant system network(SNet) and redundant control network(CNet). Communication between operator/engineer station and control units is over SNet and communication between I/O modules and control units is over CNet. SNet is compliant with the IEEE 802.3 Ethernet standard. The network can be connected to upper level one such as ERP or MIS via management network (MNet).

System Capacity

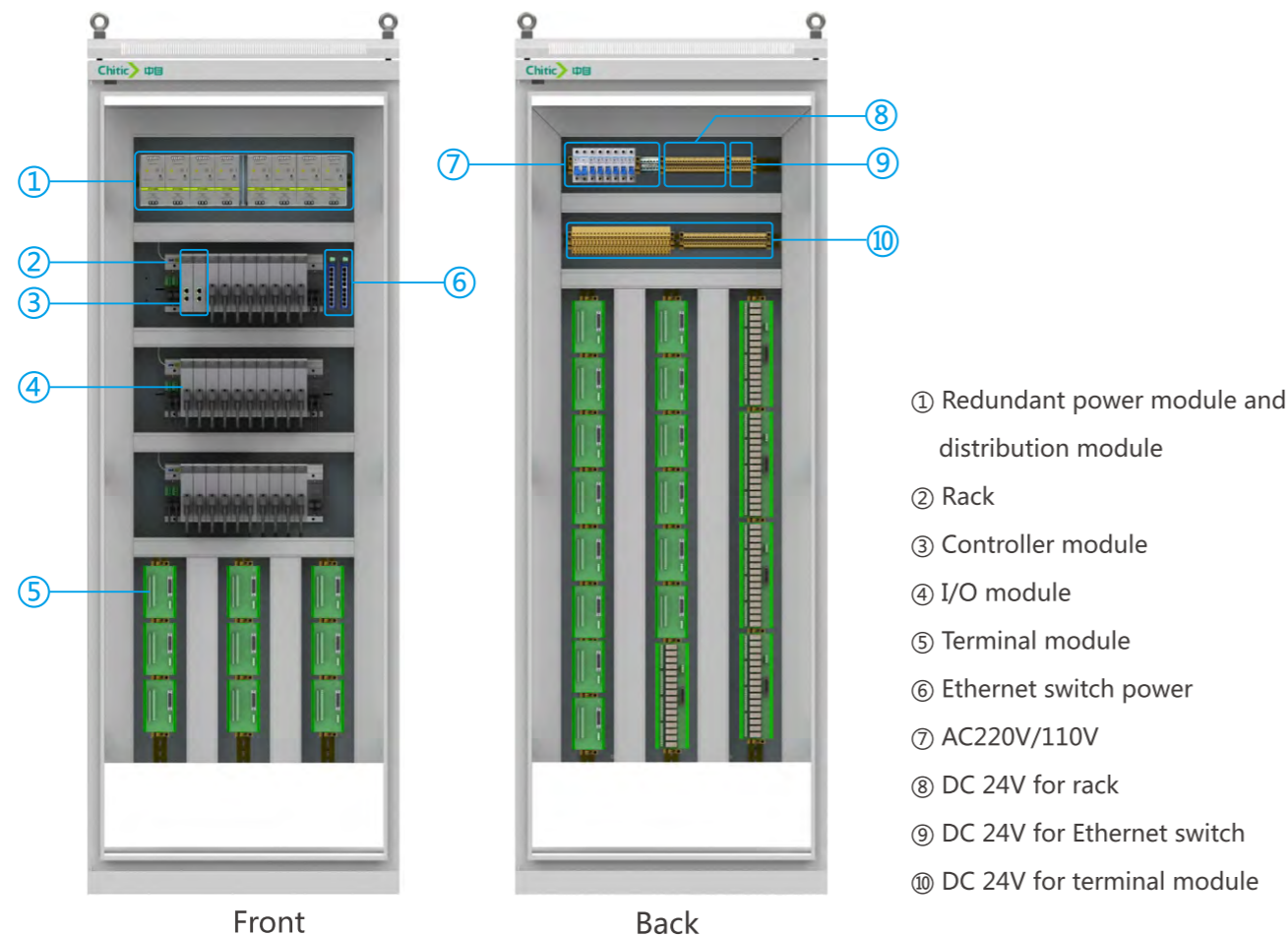
System scale	FCS count	32
	OPS count	64
Single FCS capacity	I/O count	(AI/AO)256/(DI/DO)512
FCS I/O capacity	Total I/O count	(AI/AO)8192/(DI/DO)16384
Single OPS capacity	Total tag count	65535

Control Station

The PCS1800 control station can achieve data acquisition, control strategy executing, control instruction output. According to different configuration and setting of hardware and software, different control stations of different usage can be built ,such as process control station, logic control station, data acquisition station.

Function

- Real-time data acquisition, data computing, control unit error alarm
- Standby control unit taking over without disturbance in case of main unit failure
- Real-time data and self-diagnostic information transferred to operator station via SNet
- Receiving operation instructions or process optimization parameters from operator station
- Receiving system configuration information and control strategy files from engineer station



Rack

The rack is integrated the function of mounting ,redundant power supply and redundant CNet communication for controller unit and I/O modules. It can be extended via CNet cables. The rack backplane is made of aluminum alloy and solid.

Model	Description	Size(L×W×D)
CT1111A	6 slot rack	270×150×18 mm
CT1111B	10 slot rack	405×150×18 mm
CT1111C	12 slot rack	470×150×18 mm



Controller module

The control unit is the core part of the control station, undertaking data processing and exchanging and executing control algorithm. It supports hot swap, redundance,fault diagnosis and online configuration & downloading for control strategy. The OS inside is a real-time multitasking operating system.

Specification


- Embedded industrial microprocessor
- 2G data area, 512M memory
- Real-time multitasking operating system RTOS
- Real-time database
- 1:1 redundancy

Figure	Model	Description
<p>Size: 150x120x32mm</p>	CT1161	Ethernet×2, Supporting SNet and Modbus TCP Slave Protocols, Redundant
	CT1161A	Ethernet×2, RS-485×2, supporting SNet,Modbus TCP and ModbusRTU slave protocols, HMI available
	CT1161B	Ethernet×2, RS-485×2, supporting Modbu TCP slave protocol, Modbus RTU master and slave protocols, slave devices available up to 8






► I/O Module and Terminal Module

Signals from or to industry site are connected to terminal modules ,which connected to the I/O modules with prefabricated cable DB25. The I/O module and terminal module forms a complete signal processing unit for each site signal.

I/O Module Type

Figure	Model	Description	Signal type
 <p>Size: 150x120x32mm</p>	CT1213	8-CH AI (voltage, current & thermocouple input) module	0~5VDC、0~10mADC、1~5VDC、4~20mADC、thermocouple(B、E、J、K、S、T)、0~20mV、0~100mV.
	CT1215	8-CH RTD input module	Pt100 and Cu50
	CT1223	8-CH AO module	0~10mA、4~20mA、0~20mA
	CT1232	16-CH DI module	Active contact (24V)
	CT1233	16-CH SOE input module	Active contact input (24VDC)
	CT1242	16-CH DO module	Transistor type

Terminal Module Type

Figure	Model	Description	Size(L×W×D)
	CT1172	8-CH AI terminal module	138×79×55mm
	CT1173	16-CH DI terminal module	138×79×55mm
	CT1174	16-CH DO terminal module	276×79×65.8mm
	CT1175	8-CH AI redundant terminal module	138×79×55mm
	CT1176	8-CH AO redundant terminal module	138×79×55mm

Operator / Engineer station



Operator Station

- Data display
- Operating log
- Data alarm
- Alarm acknowledge
- Data report
- History data recording

Engineer Station

- Device configuration
- System diagnosis
- Control strategy programming
- Monitoring graphics building

PCS1800 Software

Chitic PCS1800 industry control software is the Windows based integrated development environment(IDE) for PCS1800.

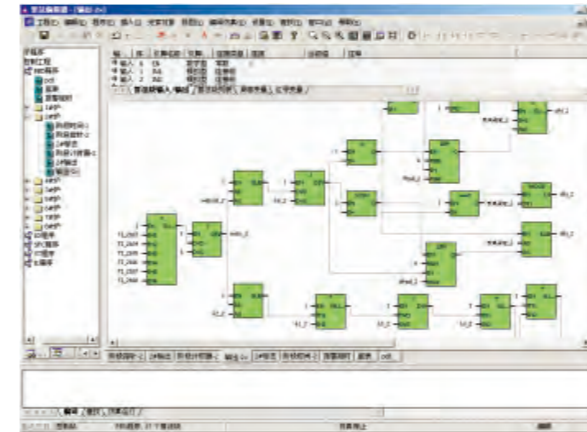
It mainly consists of engineer configuration software ChiticMaker for engineer station and real-time monitoring software ChiticView for operator station. With this software customers can easily implement their automation applications such as programming , automation control, data monitoring, alarm and history data recording, etc.

Software Feature

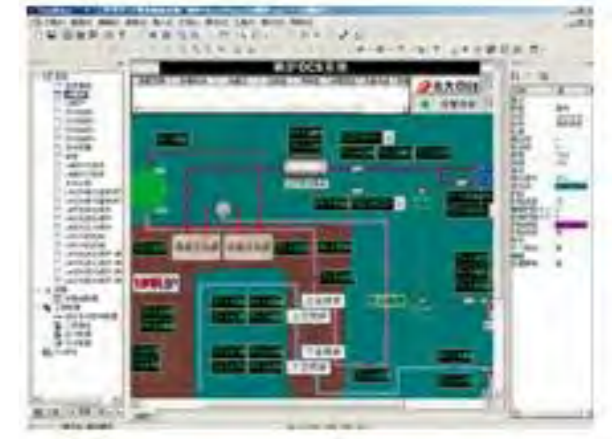
Generality	<ul style="list-style-type: none"> • Programming languages conforming to IEC61131-3 • More than 150 built-in common algorithms
Availability	<ul style="list-style-type: none"> • Similar style with Windows OS
Convenience	<ul style="list-style-type: none"> • Supporting simulation and system tracing
Flexibility	<ul style="list-style-type: none"> • Powerful graph making system with rich picture gallery • Rich function blocks,function blocksand subprograms

➤ ChiticMaker

With its powerful functions, the ChiticMaker software can easily complete the customer's automation tasks such as hardware configuration, programming, and system diagnosis. The programming languages are FBD, LD, ST, SFC and IL, which are compliant with IEC61131-3 standard. There are more 150 built-in common algorithms in the software library and comprehensive program can be built easily for process automation. The ChiticMaker graphic editor is a tool for building process monitoring graphics, also easy to use and rich in factory symbol library. It can provide accurate pictorial representation of the process in graphics.



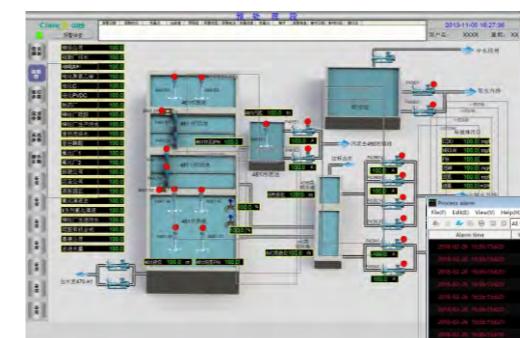
Program Editor



Graphics Editor

➤ ChiticView

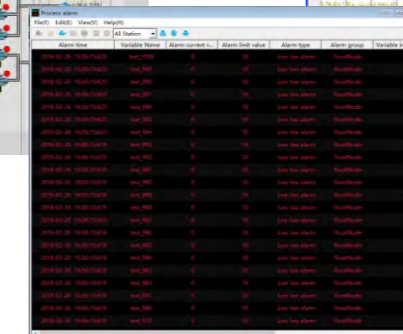
The ChiticView is the efficient and capable user interface of the control system. Its advanced capabilities maximize operator effectiveness. Different operator stations play different roles according to different functions such as data display, alarming, history data recording, etc. Operators operates under authorization.



Process Display



Trend Analysis



Alarm Display

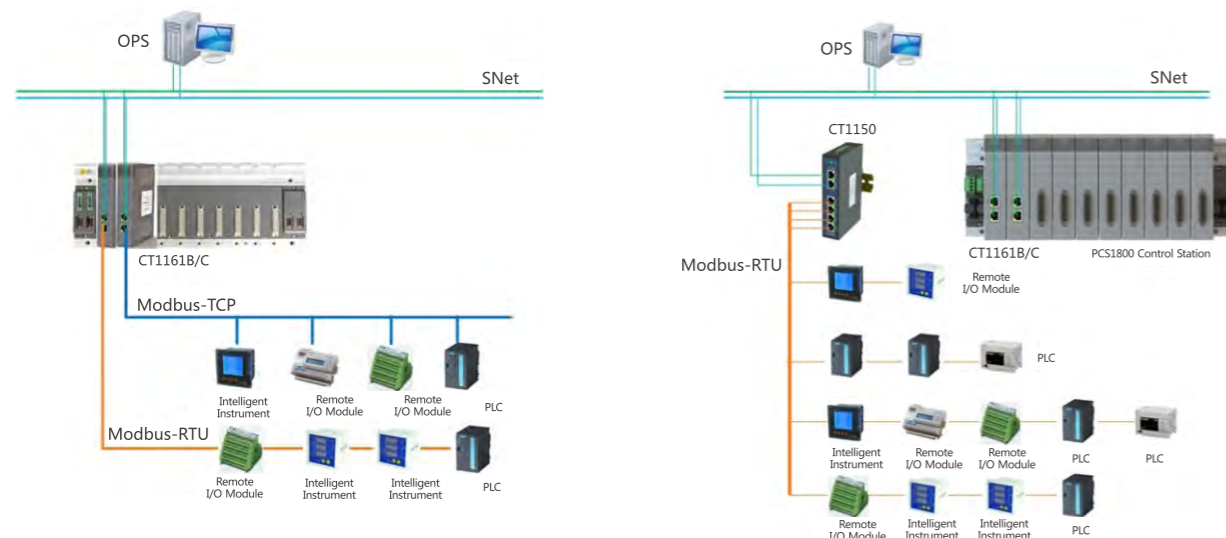
Open Interface

PCS1800 is an open system supporting the mainstream communication protocols in industry automation applications.

Model	Description	Signal type
CT1161	Controller Module	Ethernet×2, Supporting Modbus TCP Slave Protocols
CT1161A	Controller Module	Ethernet*2, RS-485*2, supporting Modbus TCP and ModbusRTU slave protocols, HMI available
CT1161B	Controller Module	Ethernet*2, RS-485*2, supporting Modbus TCP slave protocol, Modbus RTU master and slave protocols, slave devices available up to 8
CT1161C	Controller Module	Ethernet*2, RS-485*2, supporting Modbus RTU slave, Modbus TCP master and slave protocols, slave devices available up to 32
CT1150	Communication module	Ethernet*2, RS-485*4, supporting Modbus TCP slave protocol, Modbus RTU master protocols
CT1151	Communication module	Ethernet*2, Profibus-DP*1, supporting Modbus TCP slave and Profibus-DP master protocols

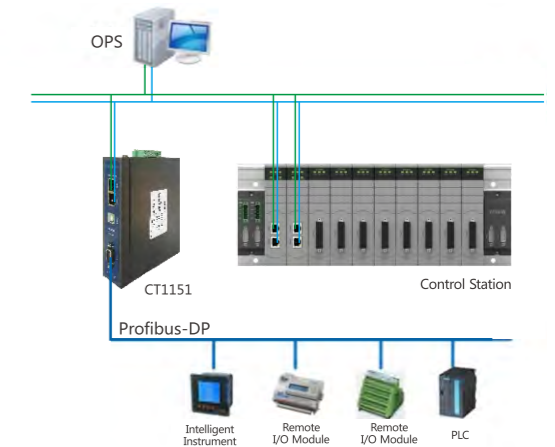
➤ Modbus-TCP/ Modbus-RTU (Master)

The third-party device compliant with Modbus TCP or Modbus RTU can be connected to PCS1800 via controller module CT1161B/CT1161C, or the third-party I/O module, PLC or other smart device, compliant with Modbus RTU can be connected to the communication module CT1150 via RS-485 port and then CT1150 connected to system via SNet/Modbus TCP.



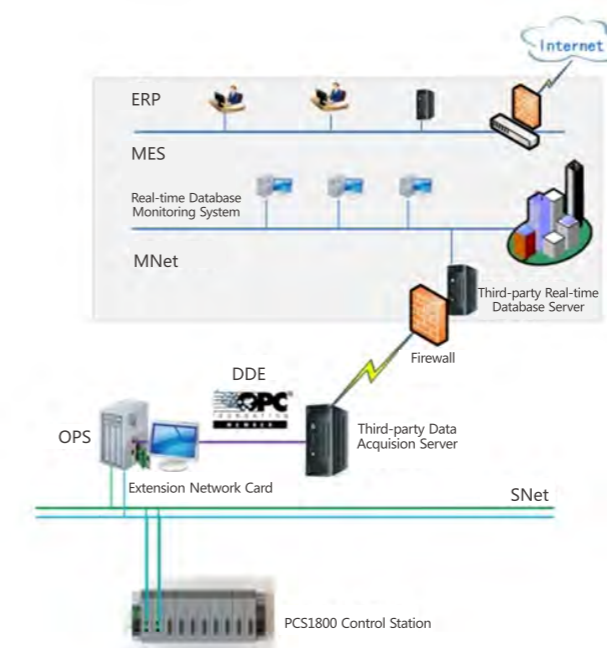
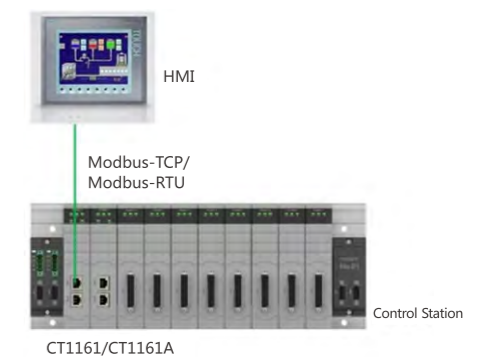
➤ Profibus-DP (Master)

The third-party device compliant with Profibus-DP can be connected to PCS1800 via communication module CT1151. The maximum number of the DP slave device is 64 and the baud rate is 9.6kbps~1.5Mbps



➤ Modbus-TCP/ Modbus-RTU (Slave)

PCS1800 can be connected as Modbus-TCP/Modbus-RTU slave to the operator station or HMI via controller module CT1161/CT1161A.



➤ OPC, DDE

Data sharing is important for customers and ChiticView supports OPC and DDE service. Customer can implement data sharing efficiently.

System Specification

Item	Parameter	Index
Accuracy	AI Error	±0.1%F.S.
	AO Error	±0.15%F.S.
	SOE	1ms
Real-time performance	Scan cycle	DI/DO 50ms AI/AO 100ms
	Control loop cycle	100ms
	Logic control cycle	50ms
	Response time of monitoring graph	≤0.5s
Network performance	CNet communication rate	1Mbps
	SNet communication rate	100Mbps
	MNet communication rate	100M/1000Mbps
Input & Output performance	AI input impedance	10MΩ for voltage input ; 250Ω for current input
	AO load	750Ω @ 4 ~ 20mA 1000Ω @ 0 ~ 10mA
	DI input impedance	> 6.8kΩ
	MAX DO load capacity	100mA @ 24VDC (transistor , integrated in module) 5A @ 250VAC (relay, connecting by terminal module)
	Power supply via I/O channel	50mA(Max)/ch
	Over voltage and current protection	Yes
System Load (recommended)	Operation station	< 30%((under standard setting)
	SNet	< 25%
	Control station	< 28%
	CNet	< 25%

System Specification

Item	Parameter	Index
Reliability	Redundant power supply	Optional
	Redundant network	Optional for CNet, SNet
	Redundant control units	Optional
	Hot swap supporting	Yes
	AO retain	Yes(system not powered off)
	MTBF	≥100000h
	MTTR	≤5min
	Availability	≥99.95%
	Anti-interference	AICMRR : ≥120dB AI NMRR : ≥60 dB EMC : industry level 4
	Input/output isolation	≥20MΩ @ 500V
Power supply	AC power supply	165V~265VAC , 47Hz ~ 53Hz
	DC output	< 0.8% voltage loss under max load
	Ripple factor	< 5%
	Over-current protection	Activated when load>110% of rated current
	Over-voltage protection	Activated when voltage>rated 125 % of rated voltage
Working environment	Working temperature	0~50°C(rack mounted horizontally)
	Storage temperature	-20~70°C
	Working humidity	10~85% relative humidity,non-condensing
	Atmospheric pressure	86~106kPa
	Protection degree	IP20,In accordance with IEC60529

Selection Guide

Item	Model	Description
Operator station/engineer station		
1	CT1411	Chitic PCS1800 industry control software V8.0
2	CT1614	Operator station/ engineering station (INC. mother board, monitor, network card, keyboard)
3	CT1643	SNet switch (8-port)
Control station		
1	CT1111A	6-slot rack
2	CT1111B	10-slot rack
3	CT1111C	12-slot rack
4	CT1161	Controller module with interface for Modbus TCP Slave device
5	CT1161A	Controller module with interface for Modbus TCP and Modbus RTU slave device
6	CT1161B	Controller module with interface for Modbus TCP slave, Modbus RTU master and slave device
7	CT1161C	Controller module with interface for modbus RTU slave, Modbus TCP master and slave device
8	CT1213	8-CH AI (voltage, current & thermocouple input) module
9	CT1215	8-CH RTD input module
10	CT1223	8-CH AO module
11	CT1232	16-DI module
12	CT1242	16-DO module
13	CT1251	6 AI/ 2 AO module
14	CT1263	10 DI/ 6 DO module
15	CT1233	16-CH SOE input module
16	CT1291	8-CH pulse input module
17	CT1172	8-CH analog terminal module
18	CT1173	16-CH DI terminal module

Selection Guide

Item	Model	Description
Control station		
19	CT1174	16-CH DO terminal module (with 16pcs of 10 A relays)
20	CT1177	10 DI/ 6 DO terminal module
21	CT1175	8-CH AI redundant terminal module
22	CT1176	8-CH AO redundant terminal module
23	CT1132B	System power module (24V, 10A)
24	CT1134B	Distribution power module (24V, 10A)
25	CT1007B	I/O signal cable (1.5m)
26	CT1008A	CNet communication cable (1m)
27	CT1004	SNet communication cable (2m)
28	CT1150	4 serial-port communication module supporting Modbus RTU
29	CT1151	4 serial-port communication module supporting Profibus DP