



ZHEJIANG SUPCON TECHNOLOGY CO.,LTD.

Add: SUPCON Park, No.309 Liuhe Road,
Binjiang District, Hangzhou 310053, China
Tel: +86-571-8666-7361
Fax: +86-571-8666-7318
Email: overseas@supcon.com
Http://www.supcon.com/en

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ADVANTAGES

Increase Your Performance with SUPCON Webfield® ECS-700 FCS

Intelligent Operation Assistance

ECS-700 brings plant-wide historical information for operators, and helps them to analyze and predict process changes and to make fast, intelligent decisions. ECS-700 provides various functions to assist operator for fast and fluent operation, such as One Key Association, system diagnose detailed to channel, most critical alarm list, etc.

Powerful Engineering Assistance

By implementing a variety of state-of-art technologies, ECS-700 provides you with lots of powerful engineering functions and tools to assist engineers during life cycle of system.

Expandable Large Scale System

By implementing Control Domain and Operation Domain strategy, ECS-700 supports flexible expansion of your plant up to 65,000 I/Os for each control domain and supports up to maximum 60 control domains. By adopting ECS-700, you can expand your plant scale as you wish.

Plant-wide Data Platform

As the core digital automation platform of a modern plant, ECS-700 captures plant-wide data in real time via various standard interfaces, such as OPC, MODBUS, HART, FF and PROFIBUS, PROFINET, EtherNet/IP and delivers the right data to the right person at right time.

Safe and Intelligent Plant Operation

User Authorization Management ensures the safety of operation; the enhanced design will safeguard your process immune to virus and other internet risks. With a variety of interconnection facilities (OPC, VBA, TCP/IP), ECS-700 provides you with a very open application environment, and offers your operators easy accesses to total plant information.

Reliable Production Control Platform

ECS-700 is a highly reliable control system. The stable operation throughout the whole process is completely free from the failure of any single component.

Non-Stop Improvement of Maintenance

ECS-700 improves your personnel's ability of emergency handling with powerful operation and maintenance functions such as friendly operating environment, alarm management, real-time database platform, and remote system diagnose assistance.

Safe and Efficient Project Management

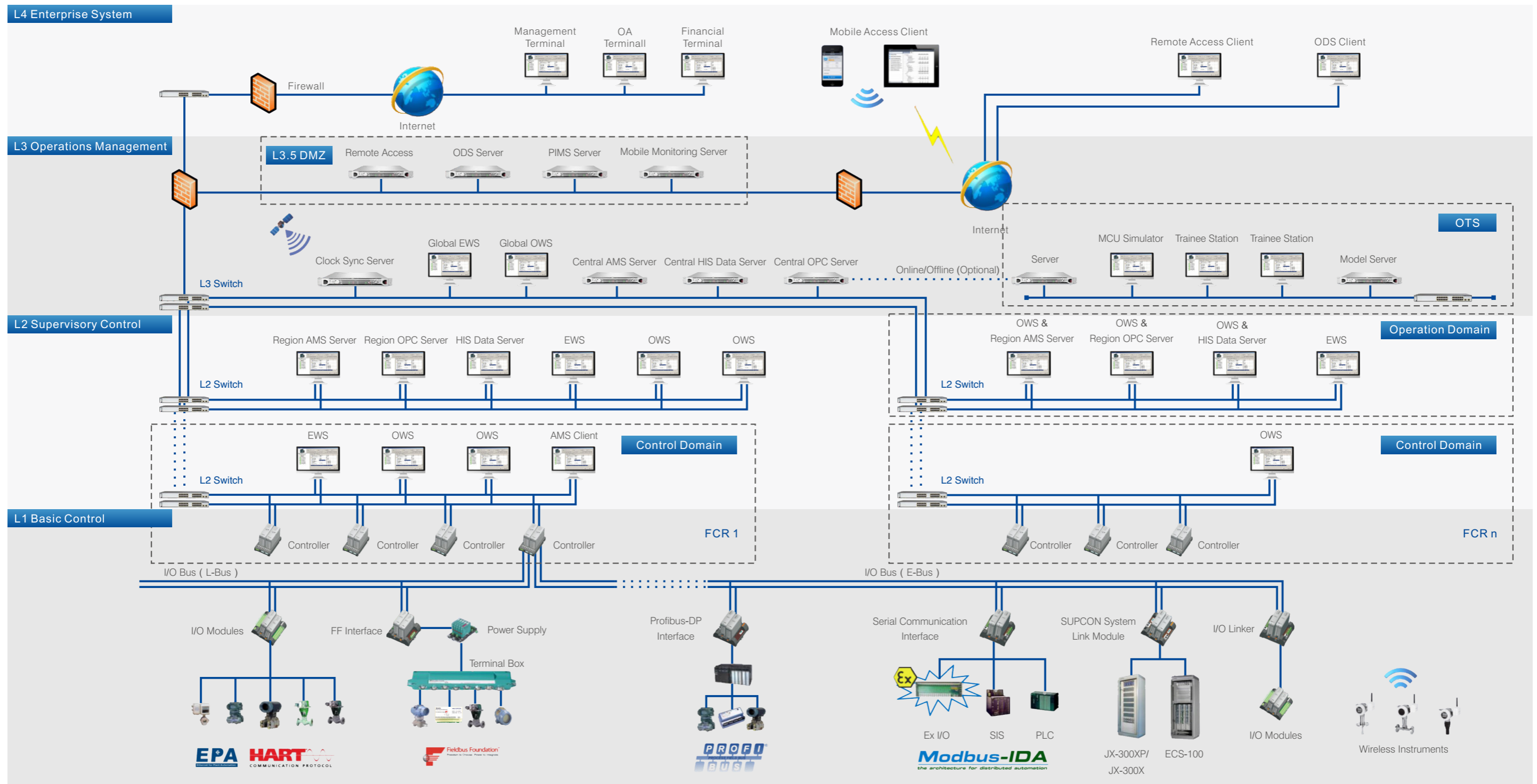
ECS-700 is a reliable and efficient automation platform for process control, providing your engineers an easy integration solution of DCS, SIS, RTU, SCADA, MMS, LDS, TGS, etc.

ECS-700 Features

- Integration
- Efficiency
- Reliability
- Scalability
- Availability
- Industry Standard

ARCHITECTURE

A Typical Architecture Covers a Variety of Plant Sizes & Industries



HARDWARE

■ Controller ■ Communication ■ I/O Module



Fault Diagnosis

Diagnosing failures of module, channel, and transmitter/transducer, failures such as open-circuits of thermocouple can be eliminated easily.

Event Recording Function

Supporting 1ms Sequence of Events (SOE), operator's operation recording, process parameter alarm records, etc., which are configured with corresponding event access, analysis, printing and recalling software, etc.

On-line Download

A bumpless switchover between old and new configuration allows engineers to perform on-line downloading, which allows continuous production without shutdown for system upgrade or extension.

High Accuracy

I/O modules adopt the up to date high-accuracy Analog-to-Digital Sampling technology (Σ -A/D), advanced signal isolation technology, strictly proven hot-plugging technology, multi-layer board and surfaced mounting technology, which makes high-accuracy analog signal measuring and more stable modules.

Openness and Integration

Integrates various industry communication interfaces such as Modbus, Profibus, Profinet, EtherNet/IP, HART, EPA and OPC, etc. which makes it easier to connect with third-party systems and various intelligent field instruments, thus to improve asset utilization and management efficiency.

Robust Design

Designed in compliance with European Community EMC Directive II, and special anti-corrosion coating in compliance with ISA71.04 standard G3. Also, the system has EMC and LVD CE certificates.

High Availability

Adopts fully redundant system structure. Undisturbed control cycle switchover maximizes system availability to 99.99%, and average failure-free time to 1 million hours.



CONTROLLER

Main Features

Flexible Control Cycle
Configurable system scanning cycle.

Fail-Safe Design
Provides fail-safe function to ensure reliable system output in case of fault.

G3 Standard Design
All modules designed according to G3 standard for enhanced anti-corrosion, dust-proof and anti-seismic ability of the system, and increase reliability of module.

Easy Integration
Supports Modbus, HART, Profibus, FOUNDATION Fieldbus.

Fully Redundant
Controller, SCnet, I/O bus, I/O module, communication module, power supply.

Online Download
Adopts single-point online download strategy to improve the update speed of configuration and ensure the safety.



Specification of FCU712 (Controller)

Item	Performance Indexes	
	FCU712	FCU713
Working voltage	24VDC±5%	24VDC±5%
RAM	256MB	256MBytes
Flash	152MB	152MBytes
Maximum number of local I/O module	512	512
Maximum number of I/O link module or communication module	7	31
Maximum number of I/O point	4000	4000
Maximum number of AI	2000	2000
Maximum number of AO	1000	1000
Maximum number of DI	4000	4000
Maximum number of DO	2000	2000
Maximum number of user-defined integer	500	1000
Maximum user-defined digital signal	2000	5000
Maximum user-defined analog signal	2000	3000
Maximum pages of custom program	200	500
Capacity of user-defined program code area	4MB	8MB
Capacity of user-defined data area	2MB	8MB
Capacity of user-defined function module library	512KB	4MB
Transfer capacity of inter-station communication	512B	512Bytes
Receive capacity of inter-station	512Bx16	512Bytesx16
Fastest inter-station communication cycle	200ms	200ms
Basic scanning cycle	100ms,200ms,500ms	100ms,200ms,500ms
Fastest scanning cycle	20ms, 50ms	20ms, 50ms
Multicast cycle	Fixed at 1s	Fixed at 1s
Hot swapping	Support	Support
Power consumption	5W	5W
Battery Type	ICR14500	ICR14500
Rechargeable Battery	Support	Support
Battery duration	3 Years	3 Years
Features	Seamless replace of old controller with performance improved by 2.5 times	High-performance controller for complicated large scale control

COMMUNICATION

Main Features

L-BUS Layer Communication

HART
AI/AO modules support HART, and acquire conventional 4~20mA signals and HART signal simultaneously.

FF
Via FF H1 interface module, supports communication with FF intelligent instruments.

RTU
Via I/O link module, supports remote I/O nodes.

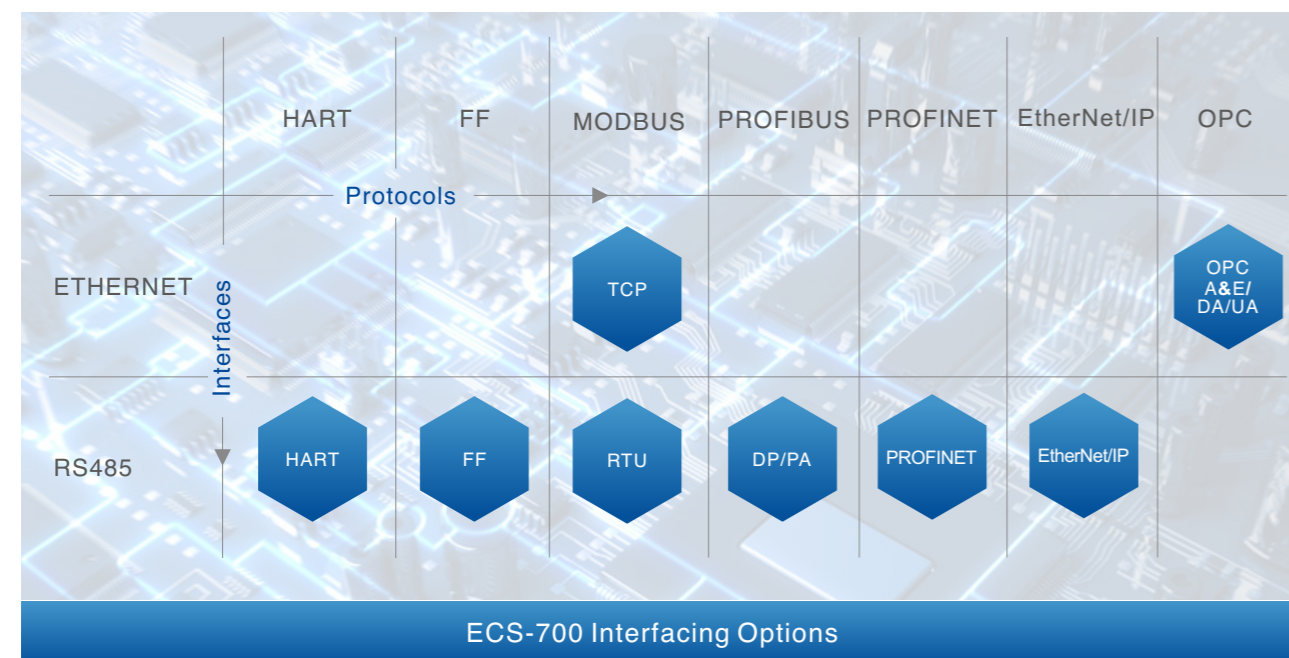
E-BUS Layer Communication

MODBUS
Via Modbus interface module, supports Modbus-RTU/TCP and self-defined protocol communication.

PROFIBUS
Via Profibus interface module, supports Profibus-DP/PA protocol communication.

List of Modules

Model	Descriptions
A. E-BUS Layer Communication Module	
COM711-S I/O Link Module	Remote I/O nodes each pair supported: -up to 64 I/O modules -up to 4 I/O racks
COM722-S PROFIBUS Communication Module	Protocol supported: -PROFIBUS-DP -PROFIBUS-PA
COM723-S PROFINET Communication Module	Protocol supported: -EtherNet/IP
COM725-S EtherNet/IP Communication Module	Protocol supported: -PROFIBUS-DP -PROFIBUS-PA
COM741-S Serial Communication Module	Protocol supported: -MODBUS-RTU -self defined protocol
COM742-S Serial Communication Module	Protocol supported: -MODBUS-TCP -self defined protocol
B. L-BUS Layer Module with Communication Function	
AI711-H Analog Input Module	Conventional signal: current signal (4~20mA) input, 8 channels. Protocol supported: HART
AI713-H Analog Input Module	Conventional signal: current signal (4~20mA) input, 16 channels. Protocol supported: HART
AO711-H Analog Output Module	Conventional signal: current signal (4~20mA) output, 8 channels. Protocol supported: HART
AO713-H Analog Output Module	Conventional signal: current signal (4~20mA) output, 16 channels. Protocol supported: HART
Am712 FF Interface Module	Each pair support: up to 2 FF segments. Each segment support: up to 16 FF devices.
AM716-S FF Interface Module	Each pair support: up to 4 FF segments. Each segment support: up to 16 FF devices.



I/O MODULE



Main Features

High Performance

- SOE resolution: 1ms
- Cycle time: up to 20ms
- Analog accuracy: 0.1%

High Reliability

- Fail-safe design: AO & DO modules
- Fully redundant: all typical I/O modules

High Availability

- Hot-swapping & Plug and Play
- Self-diagnose & Self-configuration

List of I/O Modules

Model	Descriptions
A. Typical I/O Module	
AI711	Analog inputs: 8 channels, voltage signals or current signals. Suffix: -S: conventional signal input only. -H: support smart HART instrument.
AI713	Analog inputs: 16 channels, 4~20mA current signal. Suffix: -S: conventional signal input only. -H: support smart HART instrument.
AI722-S	Analog inputs: 8 channels, thermocouple signals.
AI731-S	Analog inputs: 8 channels, RTD signals.
AO711	Analog outputs: 8 channels, 4~20mA current signal. Suffix: -S: conventional signal output only. -H: support smart HART instrument.
AO713	Analog outputs: 16 channels, 4~20mA current signal. Suffix: -S: conventional signal output only. -H: support smart HART instrument.
DI711-S	Digital inputs: 16 channels, 24V DC, dry/wet contacts, via terminal board supports proximity switch inputs.
DI715-S	Digital inputs: 32 channels, 24V DC, dry/wet contacts, via terminal board supports proximity switch inputs.
DI716-S	Digital inputs: 16 channels, 48V DC, dry/wet contacts.
PI711-S	Pulse Input: 6 channels, 0~10000Hz.
DO711-S	Digital outputs: support 16-channel transistor DC 24V output and one-shot pulse-width output; support redundancy.
DO712-S	Digital outputs: support 16-channel transistor output and one-shot pulse-width output; support redundancy.
DO716-S	Digital outputs: support 32-channel transistor output and digital signal output; support redundancy.
B. SOE Module	
DI713-S	SOE digital inputs: 16 channels, 24V DCS, 1ms resolution.
DI718-S	SOE digital inputs: 16 channels, 48V DCS, 1ms resolution.

SOFTWARE

■ ES Software ■ OS Software ■ Application Software



Compatibility

Supporting Windows 7 and Windows XP, ECS-700 can exchange information with other control system via open interfaces such as Excel software, VBA language, OPC data communication protocol and TCP/IP network protocol in different hierarchies.

Alarm Management

ECS-700 can manage alarms in unlimited alarming area, including events alarm, alarm priority, alarm filtration and input/output of remote alarm concerning equipment through dialing number.

User-friendly

Graphical operation & maintenance interface, and graphical configuration & programming software in compliance with IEC61131-3, such as Ladder diagram (LD), Function Block Diagram (FBD), Sequence Function Chart (SFC), and Structured Text (ST), which enables system maintenance and various control strategies to be implemented easily.

Powerful Engineering Assistance

Providing debugging and simulation environment offline, ECS-700 helps you shorten commissioning time on site and reduce risks during production period.

Engineering Interoperation

Integrated plant-wide database allows interoperable configuration and debugging.

Multiple System Integration

Support integration of multiple DCS, SIS and other monitoring and control systems via OPC, TCP/IP, etc.

ENGINEER STATION SOFTWARE

Model	Function
VFSysBuilder VFHMICfg VFExplorer	Configuration Control Software: System structure configuration Configuration access control Downloading and publishing control
VFIOBuilder VFTAGBuilder VFExport	I/O Configuration Software: Import/export I/O configuration Auto generation of I/O configuration
VFFBDBuilder VFLDBuilder VFSFCBuilder VFSTModule	Programming Software: IEC 61131-3 based programming tools Online debugging Online download Customized FBD
VFDraw	Graphic Software: Rich graphics, templates and control toolkits Comprehensive dynamic functions, support expression Support mathematical definition of graphics size, color and other attributes Rich script, function library
VFReport	Report Software: Support native Excel reports, statistic analysis Support offline query
VFAccess	Authorization Control Software: 4 level: Observer, Operator, Engineer, Privilege Access: password based authority, and bumpless switchover Multi-factor identification: support password authentication, IC card authentication, and combination authentication
VFComBuilder VFFFBuilder DPCon PNCon CIPCon	Communication Configuration Software: Modbus, FF, PROFIBUS, PROFINET, EtherNet/IP

OPERATOR STATION SOFTWARE

Model	Function
VFLaunch	Real-time Supervision Software: Process graphics Historian trend view and operation records view Alarm management Report view System diagnosis Support HPHMI

APPLICATION SOFTWARE PACKAGE

Model	Function
Domain Variable Configuration	Strong secondary calculation, alarm, memory data caching. Support connection to 3rd party systems via OPC、Modbus、FetchWrite drive software.
SOE	SOE Software: To collect and record SOE events such as the operation of breaker and switch triggering, etc.
VF Historical Data Server	Historical Data Server Software: Provides historical data collection and delivers historical data for all clients, such as OS and ES
VF OPC Server	OPC Software: Collects all system real-time data and delivers data for all clients Support OPC DA and A&E Support redundant OPC server to guarantee communication reliability
VF AMS	AMS Software: Provides AMS function for plant wide intelligent instruments Supported protocols: HART, FF, Partial Stroke Test (PST) function supported
Simulation Controller	Visual Controller Simulating Software: Debug: debug the configuration and control logic offline, stripping reliance upon real controller Control mode: breakpoint setting, by step, slow/fast cycle Records: detailed records of each step Fault tolerant: auto check of network status in case of conflict

SOLUTIONS

- SAMS
- FF
- Cyber Security
- Integrated Platform

Industry is considered a driver for innovation, growth, and social stability. At the same time, however, competition is growing more intense. Only those who can make do with less energy and fewer resources will be able to cope with the growing cost pressure. These challenges can be overcome. As a partner of customer, SUPCON developed a variety of automation solutions to assist your plant performance; these solutions cover the lifecycle of your plant, such as: SAMS, FF, SCSS, integrated platform, OTS, MES, APC, Batch, etc.

SAMS

SAMS (SUPCON Asset Management System) Software, as the software part of SUPCON intelligent device management solution, is to realize the management of HART, FOUNDATION Fieldbus PROFIBUS and other intelligent instruments. SAMS has functions including device status monitoring, device configuration, fault diagnosis, device alarm and operation record, etc.

SAMS Makes Predictive Maintenance Possible

Alarms generated by SAMS will be reported to system; based on the information from SAMS maintenance, engineers can take predictive maintenance action to reduce unplanned shutdown. In addition, engineers can sort all the alarms, and the typical prioritized alert list includes:

- Output failure
- Excessive loop variability
- Local override
- Device out of service reports
- Loop in manual
- Input failure/process variable has bad status

SAMS Supports the Device of FDT/DTM

Users can use the device DTM to easily modify parameter and execute advanced diagnosis. Device DTM provides more advanced diagnosis functions combined with graph and is more illustrative.

SAMS Supports VDS (Valve Diagnostic Software)

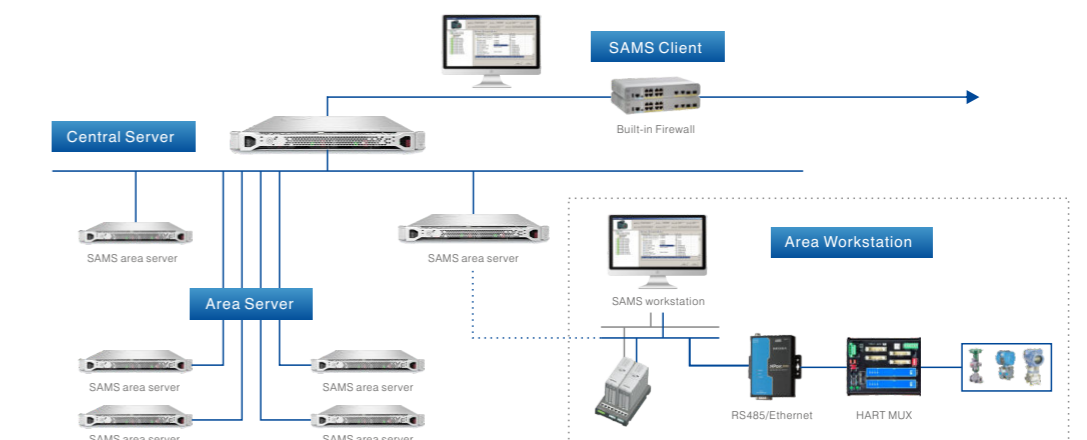
The embedded valve diagnostic software in SAMS can be used to evaluate the operation and health of the valve comprehensively. Compatible with devices of Fisher, Masoneilan, Metso, Siemens etc.

SAMS Supports PST (Partial Stroke Test)

SAMS Software develops PST diagnosis function which is applicable to various kinds of instruments and valves through the use of Equipment DTM. PST enables users to extend the time interval between proof tests of safety valves and reduce plant maintenance cost.

SAMS Supports OPC Application

SAMS is embed with OPC Server, supporting OPC DA and OPC A&E protocol. Control systems or management software can access the parameters of intelligent devices such as HART instruments and FF instruments on site through the OPC client.



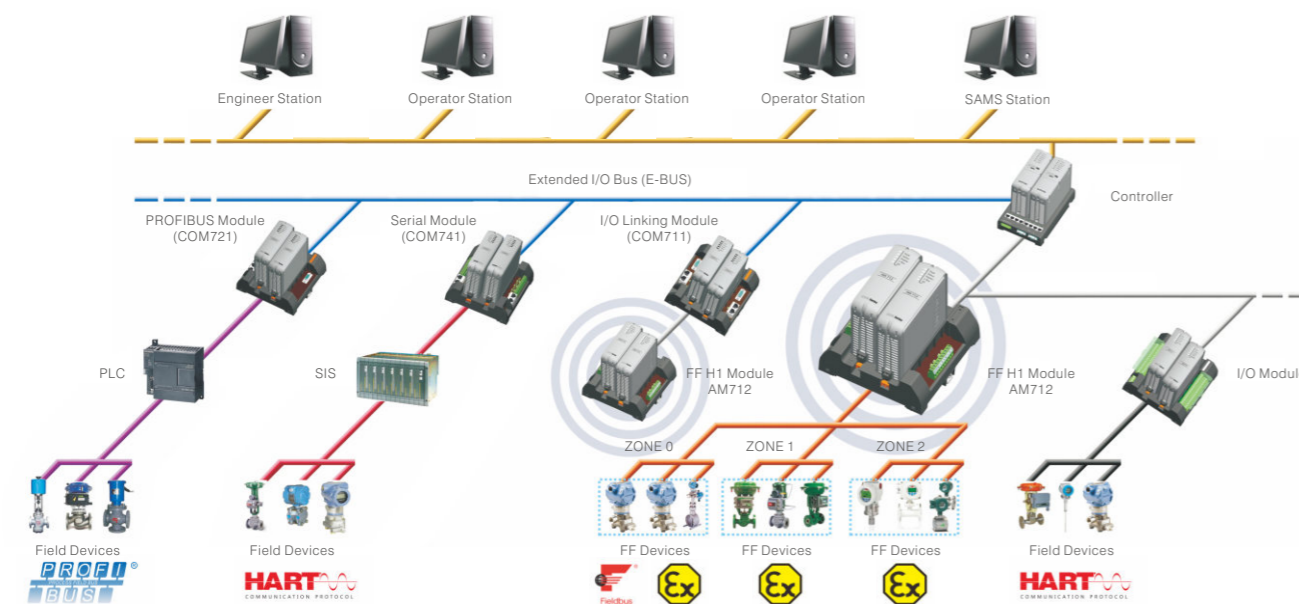
FOUNDATION FIELDBUS

SUPCON FOUNDATION Fieldbus System is based on WebField™ ECS-700, which conforms to the 61b standards of FF host system and can meet the application requirements of Fieldbus project.

With SUPCON WebField™ ECS-700 Fieldbus System, you will benefit from system design, installation, debugging, startup, operation and maintenance. FCS simplified infrastructure saves cost of investment, its high distribution and self-control with field devices will improve the system control performance.

Openness and Interoperability

The system is based on the open system interconnection model of ISO/OSI, take the physical layer, data link layer and the application layer as the corresponding layers for H1 communication model, and add the user layer on the application layer, that conforms to the international standard of IEC 61158-2 Fieldbus protocol. Supporting all devices which are tested and certificated by Fieldbus Foundation, there are more than 350 manufacturers who can provide Fieldbus devices.



CYBER SECURITY

Nowadays, security threats aimed at control systems are increasing by malwares (i.e. worms, viruses, Trojan horse, etc.) and appearance of Advanced Persistent Threats (APT) (i.e. targeted attacks). To ease your mind, SUPCON developed SUPCON Cyber Security Solution (SCSS) to protect your IACS from these threats. It is a management system based on the risk assessment.



Typical Procedures to Reach SCSS

- Identification of the assets
- The evaluation of the risks
- Continuous monitoring and revision
- Organization of the security committee
- Identification and evaluation of the threats
- Identification and evaluation of the vulnerability
- Design and implementation of the security measures
- Examination and enforcement of system change management

INTEGRATED PLATFORM

The unique design of ECS-700 FCS simplified the integration of plant automation control system, and shorten the installation and commissioning process; in addition, the seamless integration of SUPCON ECS-700 (FCS) and TCS-900 (SIS) will bring you more benefits.

Integrated Platform Based on ECS-700 and TCS-900

The TCS-900 Safety Instrumented System (SIS) is more than just a shutdown system. TCS-900 supports seamless integration with ECS-700 via Scnet IV, meanwhile TCS-900 control stations can talk together via SafeEthernet, it provides the backbone of secure, and safe plant operation.

Functions

- Integrated engineering tools
- Enhanced cyber security design
- No single point of failure design
- Integrated asset management platform
- Intuitive and integrated operation platform
- EEMUA guidelines oriented alarm management platform

SERVICE

Delivering Just What Your Plant Needs



Your plant is unlike any other, yet all plants require regular service to maintain ongoing safety and productivity. SUPCON offers a range of flexible service contracts that allows us to proactively deliver the service your operations require. We'll help you preempt the hassle and expense of unexpected breakdowns and developing inefficiencies. Depending on your needs, SUPCON's scheduled service and maintenance contracts may cover routine repairs, period upgrades, recalibration and wireless network diagnostics and services.

Tailor Our Service Modules for Your Plants

SUPCON defines several service modules that contain all the right elements to tailor a program to fit your specific support needs by addressing your specific availability, performance improvement, and sustainability requirements.

Our main service modules include:

- Training
- Repair Service
- On-Site Service
- Spares Management
- Project Start-Up Support
- Security Assessment Service
- Backup and Recovery Service
- System Upgrade/Migration Service
- Control Performance Improvement & Modernization Consulting Studies

Lifecycle Service Solution Diagram



Production Excellence Centered Service

Process improvement and optimization solutions.

Asset Excellence Centered Service

To minimized down-time, and enhanced protection for your investment.

Safety Excellence Centered Service

Comprehensive solutions for cyber security.

SUPCON as a service partner ensures that your plant undergoes regular scrutiny by local SUPCON certified technicians. You'll come to rely on them as valuable advisors who know every detail of our devices and understand the unique nuances of your processes.

What is Lifecycle Agreement?

Lifecycle Agreement is an integrated package of solution services that optimizes maintenance by tailoring it to the customer's equipment lifecycle. This program meets diverse needs by creating a lifecycle plan for each customer's system, and based on it, selects and combines the most suitable services from a variety of options.

Make a Needs-Based Decision

Experts from the nearest Regional Service Center can provide a full appraisal of your facility and help you make an informed decision about the level of service you truly need.