SUPCON

Add: No.309 Liuhe Road, Binjiang District, Hangzhou, 310053, China
Tel: +86 571 8666 7362
Fax: +86 571 8666 7318
Email: overseas@supcon.com
Web: http://en.supcon.com

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SUPCON

# Webfield®
# TCS-900
Safety Instrumented System

EXCELLENT IN SAFETY AND PROFITABILITY

# FEATURES

### Best safeguard for your plant

With Triple Modular Redundant (TMR) architecture, TCS-900 SIS system couples safety with process availability, helps you safeguard your plant operation and maximizes uptime by avoiding spurious shutdowns.

### Secure Your Operation

Past solutions for safe operations may no longer be sufficient. New international standards for safety, like IEC 61508 and IEC 61511, are prompting a re-examination of safety practices.

Certificated with TÜV SIL3, TCS-900 safety instrumented system helps you reliably protect your assets and improve your process availability whether standalone or integrated with a control system.

### Satisfy Your Safety Requirements

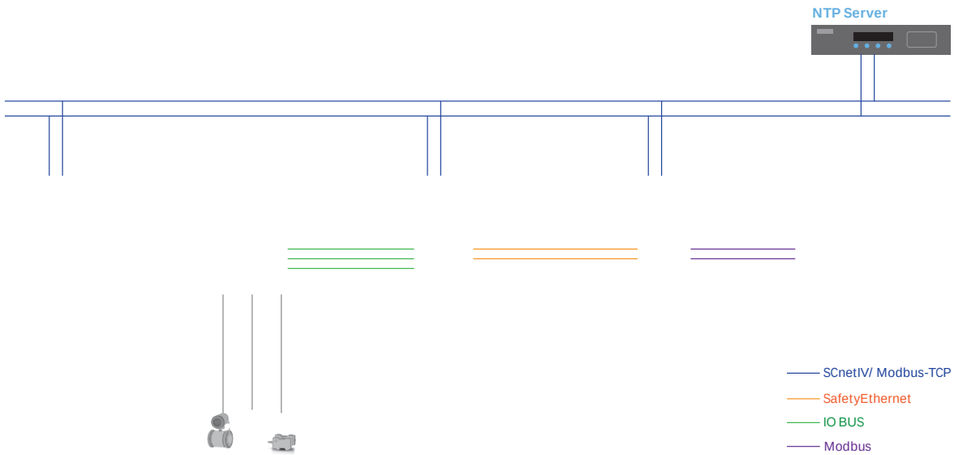
TCS-900 SIS system provides all safety and critical control solutions for process industry, especially in Oil& Gas, Chemical& Petrochemical, Energy, Metallurgy, and Machinery.
TCS-900 SIS system complies with major industry standards for safety applications:

- Emergency Shutdown Systems (ESD)
- Process Shutdown Systems (PSD)
- Interlock Systems
- Critical Control
- Boiler/Burner Management (BMS)
- Fire & Gas Protection/Detection (F&G)
- High Integrity Pressure Protection System (HIPPS)

# ARCHITECTURE

### Flexible Integrated Network

The TCS-900 Safety Instrumented System (SIS) inter-station communication is via SafeEthernet, which guarantees the scalability of the system. For large scale Plant SIS application, the TCS-900 enables you to integrate more than 128 SIS control stations together via SafeEthernet communication.

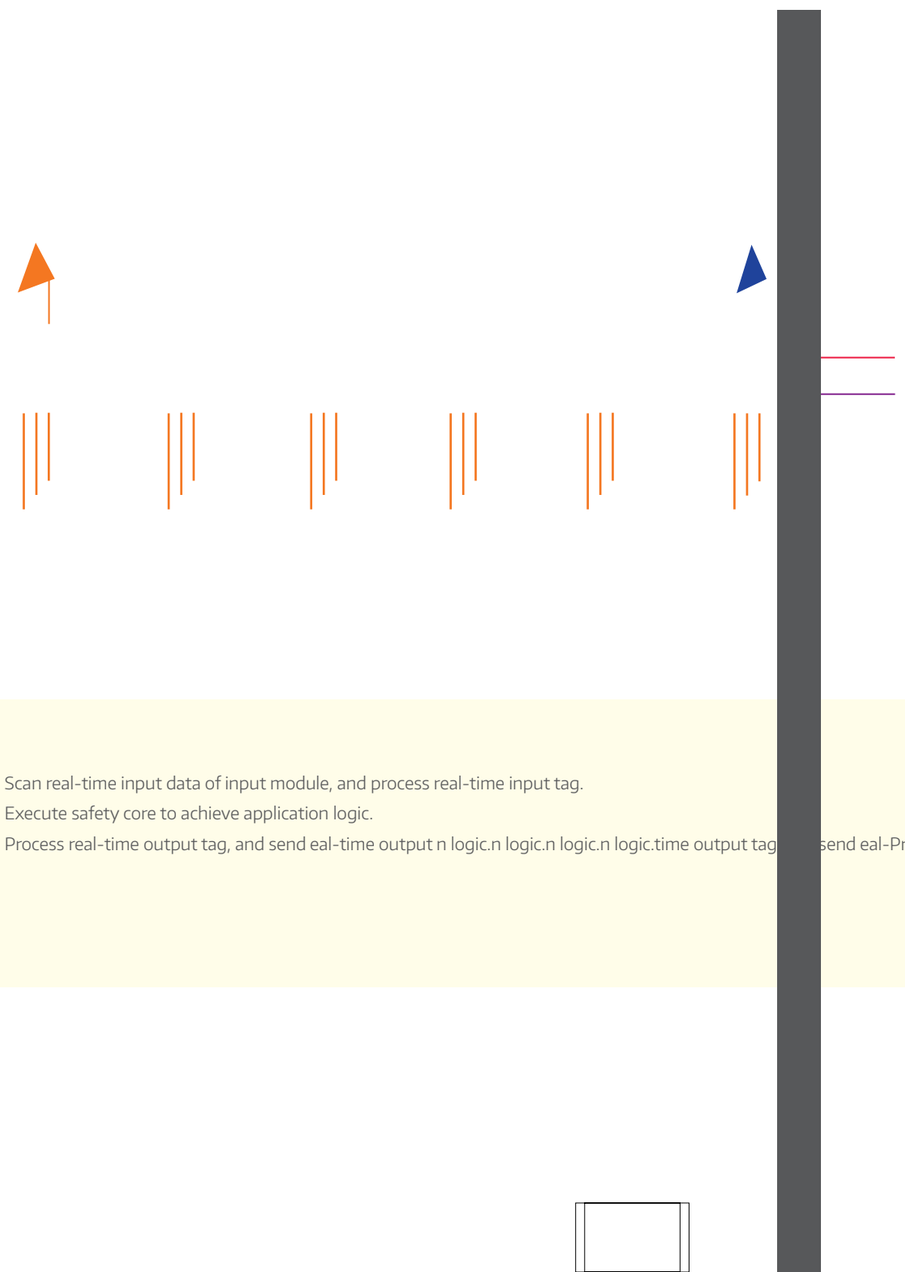


### Voting Algorithm

Minimize STR (Spurious Trip Rate) with 3-3-2-2-0 degradation mode

TCS-900 is designed to maximize plant availability and therefore improve productivity. Key to this promise is TCS-900's TMR architecture. Each module ( processor or I/O module ) adopts TMR structure, meanwhile two same type of modules can be configured as hot standby redundancy.

With this design, no single point of failure or multiple failures will trigger a shutdown. Thus, spurious trip is avoided and there's no need to stop TCS-900 for any kind of hardware or software expansion or maintenance.



Scan real-time input data of input module, and process real-time input tag.
Execute safety core to achieve application logic.
Process real-time output tag, and send eal-time output n logic.n logic.n logic.n logic.time output tag send eal-Prtion log5

### Module List

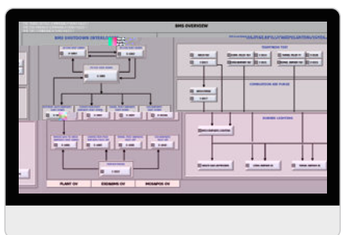
| Module | Type | Description |
|---|---|---|
| SCU9010 | Controller | TMR design, support redundancy, 180MHz |
| SCU9020 | Controller | TMR design, support redundancy, 800MHz |
| MCN9010 | Main rack | For installing controller, extended communication module, network communication module and I/O module, etc.<br>For building SIL3 security loop |
| MCN9020 | Extended rack | For installing 10 pairs of I/O modules |
| MCN9030 | Empty slot cover | Provide cover plate for empty slot |
| SCM9010 | Extended communication module | Extend the system bus to extended/ remote rack, each rack supports 3 extended communication |
| SCM9020 | Bus terminal module | TMR design, support redundancy |
| SCM9040 | Network communication module | Installed in main rack, for communication between engineer station and third-party, and inter-station communication, etc. |
| SCM9041 | Network communication module | Installed in main rack, for communication between engineer station and third-party, and inter-station communication, etc. Support Modbus as master station |
| SCM9011 | Star-bus communication module | Support 4 racks |
| SDI9010 | DI module | 32-channels, 24V DC, SIL3, TMR |
| SAI9010 | AI module | 32-channels, (4~20)mA, SIL3, TMR |
| SDO9010 | DO module | 32-channels, 24V DC, SIL3, TMR |
| SAI9020-H | AI module | 16-channels, (4~20)mA, SIL3, HART, TMR |
| SAO9010-H | AO module | 16-channels, (4~20)mA, SIL3, HART, TMR |
| SPI9010 | PI module | Pulse input module, 9-channels PI, 2-channels DO, SIL3, TMR |
| TDI9010 | DI terminal board | Terminal board, 32-channels, 24VDC, SIL3 |
| TDI9012 | DI terminal board | Terminal board, 32-channels, 48VDC, SIL3 |
| TAI9012 | AI terminal board | Terminal board, 32-channels, (1~5)V DC, SIL3 |
| TAI9020 | AI terminal board | Terminal board, 16-channels, 24V DC, SIL3, HART |
| TAO9010 | AO terminal board | Terminal board, 16-channels, 24V DC, SIL3, HART |
| TDO9010 | DO terminal board | Terminal board, 32-channels, 24VDC, SIL3 |
| TPI9010 | PI terminal board | Terminal board, 9-channels input, 2-channels output, SIL3 |
| SafeContrix | Configuration software | IO configuration, programming, etc. |
| SOEServer<br>SOEBrowser | SOE software | SOE management |
| VFtimeSycn | Time synchronization software | Time synchronization |
| SafetyManager | System diagnose software | System diagnose |
| OPC Server | OPC server | OPC DA, OPC A&E |
| VxSCADA | HMI software | |

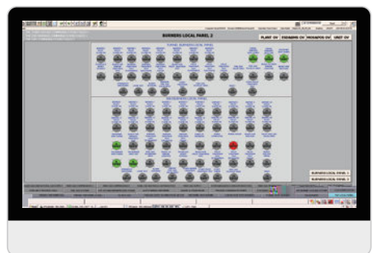
# COMMUNICATION

**Seamless Integration with ECS-700 ( SUPCON DCS )**

The TCS-900 Safety Instrumented System (SIS) is more than just a shutdown system. Seamlessly integrated with SUPCON's ECS-700 Distributed Control System (DCS), it provides the backbone of safe plant operation.

# PROGRAMMING





# SERVICE

SUPCON as a service partner offers your plant regular scrutiny by certified technicians. You'll 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 which you can select and combine the most suitable services from a variety of options.

### Make a Need-Oriented Decision

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

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 allow us to proactively deliver the service your operations require. We'll help you preempt the hassle and expense of unexpected breakdowns and potential 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 Service Packages for Your Plants

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

Our main service packages include:

- Training
- Repair service
- On-site service
- Spares management
- Project start-up support
- Security assessment service
- Backup and recovery service
- Sysetem upgrade/migration service
- Control performance improvement & modernization consulting studies