
**For more information about our
new Guardian® OSP system
and other state-of-the-art products
from the world leader
in turbomachinery control,
please contact a CCC office near you.
We are uniquely qualified to
solve turbomachinery control problems.
We will help you achieve
maximum performance of your
turbomachinery, regardless of your
equipment or process.**

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GUARDIAN®

**Guardian®
Overspeed
Prevention
System:
Security,
Dependability,
and
Flexibility**



Guardian® Overspeed Prevention System: Security, Dependability, and Flexibility

The Guardian Overspeed Prevention (OSP) system helps keep your plant running at peak capacity. The OSP system offers end users the security and dependability of a two-out-of-three voting system with the flexibility and ease of do-it-yourself installation and configuration.



Security

The OSP system provides a reliable, economical solution for protecting your turbine. Its two-out-of-three voting feature monitors turbine speed, and will initiate a trip command, to prevent an overspeed condition from occurring. The OSP System includes three identical speed modules, which individually measure a frequency input signal from a passive or active magnetic pickup sensor.

A supervisor module continually monitors the three speed modules for proper operation, which helps to eliminate unnecessary downtime, and increases your system's availability.

Multi-Level Password

The OSP system provides users with a multilevel password function for added security. Each level provides access to higher system functions.

1. Peak Speed Reset
2. Overspeed Test Mode
3. Configuration Mode
4. Set New Passwords



Dependability

The three speed modules provide a greater level of dependability. Each speed module is a microprocessor-based board, which independently monitors an active or passive magnetic pickup signal. Open-pickup detection on "passive" sensors is provided as well as "dynamic" sensor failure detection via the supervisor module, which knows when a speed module should be receiving a valid frequency input. Active sensor power is provided as an output as well. Each speed module can display its current speed and current set point. Additionally, each speed module includes four dedicated LEDs for indicating overspeed test, trip, MPU failure, and fault conditions.

Self-Diagnostics: Supervisor Module

The OSP system also features complete continuous self-diagnostics. The supervisor module monitors proper operation of the speed modules and power supplies. A four-line by 20-character alphanumeric display is integrated into the operator interface. A test mode provides testing of each speed module including the verification of the voting relays operation. This module also includes a dedicated LED for indicating an alarm condition.

Configuration of the speed modules is performed from the supervisor user-interface. The OSP system is configured through the supervisor module during setup. A single failure of the supervisor module will not affect normal operation of the OSP system. The supervisor operates as a background device collecting information and monitoring the operation of the speed modules.

The supervisor module provides additional features not available by other two-out-of-three voting OSP systems currently on the market. For example, the supervisor module handles such high-overhead tasks such as Modbus communication, which allows the speed modules to concentrate on their primary task of monitoring the frequency input signal. With the Guardian OSP system, an operator with proper access privilege can enable the overspeed test mode and test each speed module. All overspeed tests are verified and time-stamped in the history log. Alarms and peak-speed recordings are also time stamped. An overspeed test can not be activated if an alarm, trip, or fault condition is present, thereby eliminating accidental trips. During an overspeed test, the supervisor module turns ON an LED indicator on the front panel of the affected speed module to indicate that a module is being tested.



Flexibility

Two power supply modules provide redundant power to the relay board, speed modules, and supervisor. These two modules provide all the system power, and each can be powered by 18 to 32Vdc and/or 85 to 265Vac. The outputs of the two power supply modules provide system power through circuitry located on the Relay Board. A failed power supply module can be replaced without interrupting the operation of the OSP system.

With the Guardian OSP system, you no longer have to order separate systems for specific power requirements or required trip logic. De-energize-to-trip or energize-to-trip logic is jumper selectable. By meeting a broad range of installation requirements, this OSP system can be installed with any turbomachinery train for virtually any application.

What's more, installation and configuration can be completed by your own in-house personnel.

Relay Board

The relay board contains the following output relays (all socketed):

- Overspeed Trip Output #1: DPDT Relay
- Overspeed Trip Output #2: DPDT Relay
- ALARM : DPDT Relay

On-line replacement (hot swapping) of failed supervisor, power supply, and speed modules is a standard feature. The relay board includes the power supply diode-voting circuitry and contains connectors for the different boards in the system to obtain DC power.

API / ISO Compliant

The Guardian OSP system is API and ISO compliant, making integration with your existing system easier. This definitely gives the OSP system a huge advantage over other electronic overspeed systems on the market. Even though some competitive systems are available with simplex, redundant, and triplex speed switches, they may not comply with the latest API and ISO requirements. Many OSP systems lack self diagnostic testing and data communication capability. These are standard features with the Guardian OSP system.

Step Up to the Guardian®: Advanced Overspeed Prevention System

The Guardian OSP system provides the security, dependability, and flexibility you need. For more information on this OSP system or to discuss solutions for your specific turbomachinery control needs, contact your CCC Sales Representative or the CCC office nearest you.

Features:

- ▲ API 670 Machinery Protection Systems: Compliant
- ▲ Multilevel Password Protected
- ▲ Redundant Power Supply Modules
- ▲ Self-Diagnostics
- ▲ Two DPDT Trip Relays
- ▲ <40 ms Response Time
- ▲ Alarm and History Log: Time Stamped
- ▲ RPM Deviation Alarm
- ▲ Passive and Active Pickups
- ▲ Open Pickup and Dynamic Sensor: Failure Detection
- ▲ Multiple Alarms
- ▲ Manual Overspeed Test and Verification
- ▲ Modbus RTU for Remote Monitoring
- ▲ Hot-Swap Modules
- ▲ Digital Indication of Trip Set Point and Current Speed
- ▲ IP65 (NEMA 4 Type) Enclosure
- ▲ Wide Temperature Range
- ▲ Cold-Coil Monitoring for Energized-to-Trip Logic
- ▲ USA: Class 1, Division 2, Groups A-D, T4A
- ▲ Canadian: Class 1, Zone 2, Group IIC, T4A
- ▲ European (ATEX): Group II, Cat. 3, G, EEx, nACL, IIC, and T4