



Guardian SDS

The Guardian Surge Detection System (SDS) offers SIL-rated surge and overspeed protection for your rotating equipment — all in one device. Protect against damaging surge events in a safety-rated device that is independent of the control system.

Protecting your workforce and rotating assets is critical to your business. With the Guardian SDS, you never have to sacrifice safety for performance. By using a safety system physically separate from the control system, you can protect your equipment not only from physical issues such as sensor or controller failure, but also from devastating cyberattacks. The system's settings can only be changed with direct access to the unit, offering another layer of protection for your assets.

The Guardian SDS incorporates all Guardian ODS overspeed detection functionality into a single unit while maintaining the capability of a TUV certified SIL-3. Compliant with API-670, API-611 and API-612 standards, the Guardian SDS integrates seamlessly with industry-leading CCC control systems — making it easier than ever to safeguard your rotating assets.

Guardian SDS Specifications

- Three independent, hot-swappable, surge/speed monitoring modules with 2-out-of-3 voting
- Surge, overspeed and acceleration detection in one enclosure
- CCC surge detection technology
- IEC 61508 SIL-3 (Safety Integrated Level 3) certified with 2003 voting
- Monitor up to three machine stages with one device
- API-670, API-611 and API-612 compliant
- Online testing and repair
- 12 millisecond response time for 0.5 to 80,000 rpm
- IP56 and IEC 721-3-3 1994 environmental class 3C2 rated
- Operating temperature of -20 to +60°C

Input Signals

Power Source

Two redundant

- High voltage power supply (88–264 Vac/47–63 Hz; 90–150 Vdc) @ 90 W
- Low voltage power supply (18–32 Vdc) @ 100 W

Speed Signals

One per module (three total)

- Inputs can be configurable to accept signals from:
 - MPUs (100–32 000 Hz) @ (1–35 Vrms)
 - Proximity probes (0.5–25 000 Hz) @ 24 Vdc
 - Gear tooth range (1–320 teeth)

Surge Monitoring

Analog Inputs

All inputs on each module

- Inlet pressure
- Outlet pressure
- Flow

Discrete Inputs

Three per module (nine total)

- Alarm/trip reset command
- Start command
- Speed fail override command

Output Signals

Discrete Output Relays

Voted relay models

- Shutdown relay output (two total, 2-out-of-3 voted) - also configurable as independent outputs
 - Rated for 8 A @ 220 Vac or 8 A @ 24 Vdc
- Alarm relay output (one per module; three total)
 - Rated for 2 A @ 24 Vdc

4–20 mA Analog Output

One per module (three total)

- Dedicated to function as a speed meter readout

Communication Ports

One per module (three total)

- Serial RS-232, RS-422, RS-485 Modbus port

Regulatory Compliance

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These listings apply to stationary industrial markets only and are limited only to those units bearing the CE Marking.

✓ EMC Directive:

- Declared to Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC)

✓ Low Voltage Directive:

- Directive 2014/35/EU on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

✓ ATEX Directive:

- Directive 2014/34/EU on the harmonization of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres Ex II 3 G, Ex nA IIC T4 Gc

Other European Compliance

✓ RoHS Directive

- Restriction of Hazardous Substances 2011/65/EU: Compressor Controls Corporation products are intended exclusively for sale and use only as a part of Large Scale Fixed Installations per the meaning of Art.2.4(3) of directive 2011/65/EU. This fulfills the requirements stated in Art.2.4(c) and as such the product is excluded from the scope of RoHS2.

Other International Compliance

✓ Australia
(& New Zealand)

- Compliance is limited to application for those units bearing the Regulatory Compliance Mark (RCM). Only EMC is applicable in virtually all Woodward intended applications:

✓ RCM

- RCM on CCC products is very limited due to allowed exemptions from applying the RCM or having a DoC. Electromagnetic Compatibility (EMC) Declaration of Conformity (DoC) RCM requirements for the Australian (& New Zealand)

✓ EMC

- Radiocommunications Act is a separate document only created for products applying the RCM to the label. Products with a RCM on the label have an EMC Declaration of Conformity available:
CCC products typically comply with at least CISPR11 Group1, Class A emissions limits, Electromagnetic Interference (EMI) testing, even if not marked with the RCM: as long as the "CE mark" is on the label

✓ TÜV

- TÜV certified for SIL-3 per IEC 61508 Parts 1-7, Functional Safety of Electrical / Electronic / Programmable Electronic Safety Related Systems

North American Compliance

✓ CSA

- CSA Certified for Class I, Div.2, Groups A,B,C, and D, T4 and 60 °C Ambient for use in Canada and the United States. Certificate 80044025

Other Compliance

✓ CSA

- IEC60068-2-60:1995 Part 2.60 Methods 1 and 4 (conformal coating)

✓ Machinery Protection

- API670, API612, API-611 compliant