

OVERSPEED PROTECTION SYSTEM

SpeedSys 200

GAME CHANGING INNOVATION FOR SIL RATED OVERSPEED PROTECTION



The SpeedSys 200 is a high integrity overspeed protection system. The robust design with advanced self-monitoring, galvanic separated in- and outputs and certification by design make a high-end product that stands out in the market. The focus on the core safety functions make a system that is easy to use and to maintain, with very long proof test intervals.

ADVANCED OVERSPEED PROTECTION FOR A WIDE RANGE OF APPLICATIONS

The system architecture is designed for versatility. A single module can offer a reliable and economical solution for overspeed protection. For more demanding applications or increased availability, redundancy and voting structures can be created.

Typical applications include:

- Compressors and pumps
- Microturbines
- Wind turbines
- Gas- and steam turbines
- Hydroelectric power stations
- Marine applications

SAFETY SYSTEM BY DESIGN

- Fast reaction time to overspeed – typically < 10 ms
- 2 safety relays + 1 safety analog output per module
- External voting for redundant configurations
- Advanced self-monitoring and diagnostics
- 10 year proof test interval (typical)
- Basic and advanced proof test functionalities

VERSATILE ARCHITECTURE

Every channel is designed to work as an independent module. SIL 2 certified protection can be achieved with a single module. To maximize availability, the double-pole safety relays can easily be wired into various configurations as shown below.

Configuration examples

| Setup | SIL rating | Voting | HFT | Redundancy |
|--------------------------------|------------|--------|-------|---------------|
| 1 SpeedSys module + 1 sensor | SIL 2 | 1oo1 | HFT 0 | Not redundant |
| 2 SpeedSys modules + 2 sensors | SIL 2 | 1oo2 | HFT 1 | Redundant |

**SIL 3 requirement? Upgrade to SpeedSys 300 for certified SIL 3, 2oo3 overspeed protection.*

STANDARDS

Industrial standards

- API670 and API612 compliant
- SIL 2 certified (IEC 61508)
- ATEX (IECEX) Zone 0,1,2 (EX-ia) (input only)

International standards

- Europe: CE
- USA/Canada: cMETus; FCC

HAZARDOUS AREAS

EX ia isolated inputs – no additional barriers or isolators required

SPECIFICATION

| Input | |
|---|---|
| Sensor input | |
| Eddy-current sensor (Proximity) | 2-wire current input Advanced sensor monitoring ATEX EX ia zone 0 II C input isolator |
| Electronic sensor (Hall-effect) | 3-wire voltage input Advanced sensor monitoring functions ATEX EX ia zone 0 II C input isolator |
| Electromagnetic sensor (Magnetic pick-up MPU) | 2-wire voltage output Open circuit detection ATEX EX ia zone 0 II input isolator |
| General sensor input | |
| Frequency range | 0.025 Hz ... 35 kHz |
| Input impedance | 100 kOhm |
| Input voltage range | 20 mV ... 80 V rms |
| Trigger level | 0 V ... 5 V (software selectable) |
| Sensor supply | +/- 24 V ±0.5 V; max 30 mA; short circuit proof |
| Binary input (1x) | |
| Range | Isolated binary input for basic proof test Low: < +5 V; High: > +15 V |

| Output | |
|-----------------------------------|---|
| Relay output (4x) | |
| Trip relay (2x) | DPST safety relay System limits (AND / OR combined values) Hysteresis freely programmable; upper and lower set-points for each limit Contacts change-over: 30 VDC / max. 2 A Certified for SIL safety loops |
| Status relay (1x) | SPST system status relay |
| Alarm relay (1x) | SPST alarm relay (non-safety) System status, system limits, combined values |
| Open collector output (1x) | |
| Analog output (1x) | Isolated frequency output |
| | Isolated current output 4 ... 20 mA 16 bit resolution Programmable range Certified for SIL safety loops |
| Binary output (1x) | |
| | Isolated binary output Self-monitoring status indication (system OK) |

| System | |
|-------------------------------|---|
| Reaction time | |
| Hardware reaction time (Th) | < 2 ms |
| Measurement time (Tm) | Dependent on signal frequency and averaging |
| Total reaction time | Th + Tm; typically < 10 ms for high speed applications |
| PC interface | USB-B mini for programming and status reading (Windows exe) |
| Power supply | 2 x 24 Vdc (18 ... 36 Vdc) |
| Connectors | Plug-in connectors with screw terminals |
| Operating temperature | -20 ... + 60 °C |
| Dimensions (W x H x D) | 45 x 120 x 114 mm |

ABOUT ISTECS

Rotating machines are one of the most critical parts of industrial processes. The monitoring and surveillance of these machines requires state of the art systems that meet the increasing demands of industrial applications.

Our expertise is to support the control of these critical sensors and systems during their operational life; to guarantee maximum machine availability and safety and to provide new monitoring data and machine insights.

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