

MODEL SILO2

NTRON 'SAFETY INERTING SYSTEM'

The SILO2 Safety Inerting System has been certified by an ATEX notified body as a 'Safety Device' (Annex II Section 1.5 of ATEX Directive 94/9/EC) and approved for Category 1 applications. It complies with the requirements of IEC 61508 SIL 2, EN50104 and EN 1127-1

Inerting of equipment is widely used to avoid the formation of hazardous flammable atmospheres and thus to prevent explosions. By feeding inert gas into the equipment which is protected the oxygen concentration is reduced below the maximum allowable oxygen concentration (MAOC). If Inerting is the prime or only basis of safety the safety of the process is determined by the reliability of the Inerting Control System. The reliability of the control system required can be defined accordingly to a risk assessment according to IEC 61511



Features

- SIL 2 approved Inerting Control System.
- Full FMEA calculations for complete Inerting System.
- Meets Category 1 requirements for hazardous application.
- Inerting System based on Oxygen and Pressure measurements.
- Certified by an ATEX notified body as a 'Safety Device'
- Can be applied to an OEM or end user application.



NTRON's SILO2 Safety Inerting System Features:

Safety Shutdown.

The Ntron SILO2 is designed as a stand-alone Safety Inerting system to monitor and control the inert atmospheres for safety critical applications (Category 1 applications). Based on the continuous real-time measurement of Oxygen (dual sensors) and Pressure the SILO2 controls the inert atmosphere within the process below the MAOC. The SILO2 utilizes two CLAM (configurable logic array modules) control modules operating in parallel with each other perform the control and shutdown functions for the system. A proof test interval of one year of the system needs to be carried out on the system to prove its integrity.

System Calibration

The SILO2 is equipped to direct and control the Calibration of each Oxygen sensor input through the use of remotely located solenoid valves. Sensor Calibration can be initiated through a remote trigger, sent from a user control device or a key switch on the front of the instrument.

System Diagnostics:

During calibration, the SILO also performs a series of Diagnostic checks. It scans its own operating system, checks I/O circuitry and performs a Sample Flow Switch operability test. The Flow Switch check is especially important for Process monitoring applications, where harsh sampling conditions are the norm. The Ntron Sampling systems are designed to continuously extract aggressive gas samples from chemical processing vessels/streams, so that "representative safety reading can be performed in real time. The Flow Switch must indicate properly at all times, so that safety margins are known not to be compromised by a lack of gas flow from the process.

The Sensorguard feature of the SILO2 is designed to differentiate between low oxygen concentrations and a dead oxygen sensor. The sensorguard is activated when the analyzer sees a low concentration of oxygen for a configurable period of time. The analyzer shall inhibit all alarm and analog outputs and trigger calibration verification. Upon successful completion of the verification, the oxygen analyser will return to normal operation and continue to monitor the low oxygen level. Should the low level continue to be present after a user definable period of time, the Sensorguard process will activate again.

Configuration options:

The SILO2 2000™ is available in many configurations and is fully programmable, per the requirements of the application at hand. It can be wall or rack mounting and contains the relevant IS barriers. In all configurations, the SILO2 is designed to operate as part of a stand-alone Process Safety system; capable of controlling directly any process safety interlocks. The system is also designed to integrate with user control systems as well

SILO2 Specifications

February 2004, Rev. B

Model No:	SILO2
Nomenclature	Safety Inerting System
Enclosure:	19" X 9U X 310mm Rack Mounted. 600 X 600 X 474 (mm) Wall Mounted Enclosure. Safe Area Mounting.

System Inputs	Dual Oxygen Sensor (Electrochemical) Pressure Transmitter
Range:	0 to 25% Oxygen
Resolution:	0.1% Oxygen 1 mBar Pressure
Display:	LCD Display X 3 for Oxygen Concentration and Pressure. Color Coded LEDs for system status:
Signal Interface	4 to 20 mAmp Output signal for Each Sensor
Alarm Output Signals:	Hazard Contact (SIL 2) Fault Alarm, Flow Alarm, Calibration in Progress Alarm Sample Pump Inhibit Alarm
Digital Inputs	Request to Calibrate Inhibit / System Standby. Remote Reset
Accuracy:	0.25% Oxygen full range, with Oxygen sensor Linearization.
Warm up Time:	The SILO2 requires a total of 5 minutes warm-up and Stabilization time
Power:	85 to 230 VAC 5 amps 100 Watts.
Operating Temperature:	-10° to 50° C



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