SafWatch™

Crane Safety Diagnostic System

Monitoring Your Critical Lifting Equipment

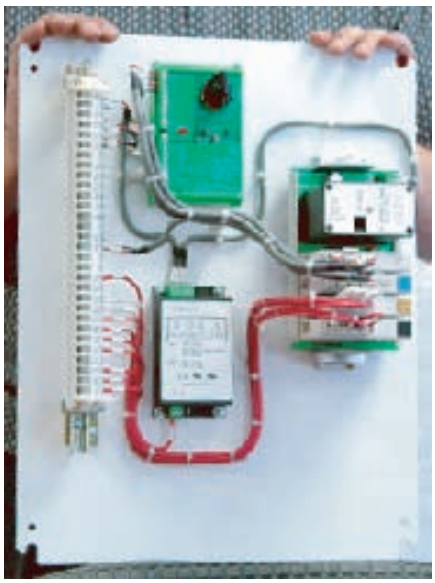
American Crane's SafWatch™ device can help you enhance your new or existing equipment with increased safety protection. The SafWatch™ provides a fail-safe control system which exceeds the requirements of NUREG 0554 and ASME NOG-1. SafWatch™ allows you to take the safety of your equipment to the next level.

SafWatch™ Monitoring Includes:

- Operation in excess of design speed as well as monitoring operator requested speed compared to actual speed.
- Incorrect movement including wrong direction, wrong response to operator request, lack of movement and unauthorized motion.

Additional Features Include:

- Independent Hard Wired Watch Dog Circuit monitoring SafWatch™ processors and power supply.
- Unique Encoder Line Receivers to provide feedback for hoist motor, drum direction and drum speed.
- Rack mounted Modular Input / Output Units providing flexibility by allowing a mixture of input and output types.



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TECHNICAL SPECIFICATIONS

Overspeed

Detect Operation in Excess of Design Speed.

- Detect overspeed in excess of 115% of critical lift speed.
- Detect overspeed in excess of 115% of non-critical lift speed.
- Brakes are automatically applied when an overspeed fault is detected.

Drive Train Discontinuity

Detect Difference Between Drum and Motor Speed.

- Detect incorrect drum movement (Speed Differential.)
- Response time may vary based on existing driveline design.
- Brakes are automatically applied when drive train discontinuity is detected.

Differential Motion

Compare the direction and speed of the hoist to the direction and speed initiated by the operator.

- Response time may vary based on existing drive acceleration, deceleration and operator reverse plugging.
- Brakes are automatically applied when differential motion is detected.

Commanded Not Operated

When the equipment does not respond to a command to operate.

- Detect lack of drum movement when drum movement is initiated by the operator.
- Detect failure of encoder feedback and control circuit.
- Response time may vary based on existing driveline design and drive torque proof testing.
- Brakes are automatically applied when a commanded not operated fault is detected.

In Motion

Operator notification of hoist up and down motion that is independent of the hoist control circuit providing compliance with NOG 6411.6(f).

- Detect upward or downward drum movement and prompt operator.

Uncommanded Motion

Detect drum movement not initiated by operator input or drum movement in the wrong direction

- Detect incorrect upward or downward drum movement.
- Detect reversal of drum rotation.
- Response time may vary based on hoist drive deceleration or operator initiation of reverse plugging.
- Brakes are automatically applied when an uncommanded fault is detected.

Watch Dog Circuit

Independent hard wired circuit to detect failure of the SafWatch™ processors and power supply.

- Detect 5 VDC and 12 VDC power supply failure.
- Detect MCU (Microchip PIC series Microcontroller) hardware or software failure.
- Detect CPLD (Complex Programmable Logic Device) hardware or software failure.
- Brakes are automatically applied when a watch dog fault is detected.

Encoder Line Receiver

Unique encoder line receivers utilized for hoist motor and drum direction / speed feedback to increase reliability and fault detection.

- Allows the use of quadrature differential encoders for long distance operation.
- +/-15kV ESD (Electrostatic Discharge) protection, increased common mode rejection.
- Alarm flags to indicate open, shorted line conditions, excessive common-mode voltage range, and low-signal strength.
- Brakes may be automatically applied when an encoder alarm is detected.

Modular Input / Output Units

Rack mounted modular I/O units to allow a mix of analog, digital, and serial inputs and outputs at different voltage levels.

- UL recognized rack and I/O modules ranging from 5 VDC to 240 VAC.
- Up to 8 rack slots available for a total of 32 digital input or outputs.
- Analog and serial modules supported.