Trusted Safety System

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The Trusted® solution features a Triple Modular Redundant (TMR) controller. It is designed to provide maximum safety and system availability. Trusted uses control to minimize system trips and provides high availability, fault tolerance and fail-safe features as part of its intrinsic, safety-related functionality. The architecture features:

**Trusted controller** is a highly compact solution. It can hold up to 240 TMR I/O channels in a single Trusted controller chassis, including a spare processor, dual ethernet and multiple serial communications capability.

**Trusted expander** can connect up to 28 I/O expander chassis, totalling up to 128 I/O modules per system. The expander chassis may be located up to 5km away and are connected to the controller processor chassis by triplicated fiber optic links.

**Trusted I/O modules** are designed to meet the SIL 3 requirement, for both analog and digital signals. All models have full "stuck on / stuck off" signal testing and configurable line monitoring. Trusted offers a wide range of standard I/O module types including 120V AC and 125V DC inputs and outputs.

**Modular power system** can be powered directly from a single or dual conditioned 24V DC supply, or from AC power sources and redundant power feeds.

**Benefits**

**Maximum Safety and Availability**
- A Safety Integrity Level of 3 (SIL3) and fault tolerant
- Stable, predictable operation
- High capacity and high speed
- Easy to use and maintain
- High density I/O (up to 60 channels/module)

**Hardware Voting Technology**
- High test coverage of potential faults
- Tolerance to multiple failures
- No restrictions on time-to-repair
- Accurate fault identification
- Reduced operating system size and complexity

**Comprehensive Programming Environment**
- IEC 61131 programming environments in five languages
- Define up to 250 programs per project
- Offline simulation, Online debug

**Communications Options**
- Modbus TCP/IP, Modbus RTU and EtherNet/IP communications to Programmable Automation Controllers
- OPC DA (Data Access) & A&E (Alarm & Event) communications

**Trusted® Architecture**
Trusted supports a number of I/O modules that meet special process control requirements

**The Valve Test module**
Partial stroke testing of critical valves is a crucial feature that meets the latest process safety standards. The Trusted system integrates automatic valve testing inside a TMR, TÜV approved SIL3 architecture, providing maximum safety and availability. With this package, you are able to periodically test the valve and actuator subsystem without shutting down your process.

**The Zone Interface module**
The Trusted Zone Interface helps reduce the complexity of a Fire & Gas system by integrating all functions into a single module. It can be used in combination with any other Trusted hardware. The 40-channel Zone Interface module provides:
- Fault tolerant monitoring of any 4-20mA gas detector, in addition to any low-voltage digital signal, with line monitoring. These include flame, smoke or heat detectors and manual alarm call points.
- Outputs for the control and alarm of hazards as well as the calibration of detectors.

**The Speed Monitor module**
Trusted offers a high integrity solution for the protection of gas/steam turbine acceleration and over-speed prevention. The module provides:
- Autonomous over-speed protection for up to three rotating machines. Each over-speed trip has three independent, fault tolerant speed inputs and a fault tolerant digital output.
- Speed inputs have a wide, dynamic range of 0.1 Hz to 30 kHz.
- Sequence-of-events reporting with a 1 ms resolution.

<table>
<thead>
<tr>
<th>Typical Applications*</th>
<th>SIL Target</th>
<th>Demand</th>
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<tbody>
<tr>
<td>Emergency Shutdown (ESD)</td>
<td>2 &amp; 3</td>
<td>Low / High</td>
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<tr>
<td>Fire and Gas (F&amp;G)</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>Turbo Machinery Control (TMC)</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>Burner Management Systems (BMS)</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>High Integrity Pressure System (HIPPS)</td>
<td>3</td>
<td>Low</td>
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</tbody>
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* All safety applications are unique. We encourage you to speak with a Rockwell Automation Safety Consultant to be certain the correct SIS system is selected for your application.

| TÜV Rhineland Certification | | |
|----------------------------|------------------|
| IEC 61508                  | EN54             |
| IEC 61511                  | EN298            |
| NFPA 72                    | EN50156          |
| NFPA 85                    | UL 508           |
| NFPA 86                    | IEC61508 2010 Ed:2 | 

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<thead>
<tr>
<th>Trusted Certification</th>
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<tbody>
<tr>
<td>UL listed for use in Class 1 Div 2 Groups A, B, C and D and EExnAL IIC T4: DEMKO 05 ATEX 136991X</td>
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<tr>
<td>Conforms to UL508</td>
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<tr>
<td>Certified to CSA C22.2 NO 14 and CSA C22.2 NO 142</td>
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