

TURBINE OVERSPEED PROTECTION DEVICE

P2oo2 Trip Manifold Assembly



Technology Highlights

- Fast Trip Times
- High tripping & operational reliability
- Compact design & packaging
- Versatile Mounting
- Apply to various steam turbine OEM
- Hazardous area options
- Comprehensive Offering

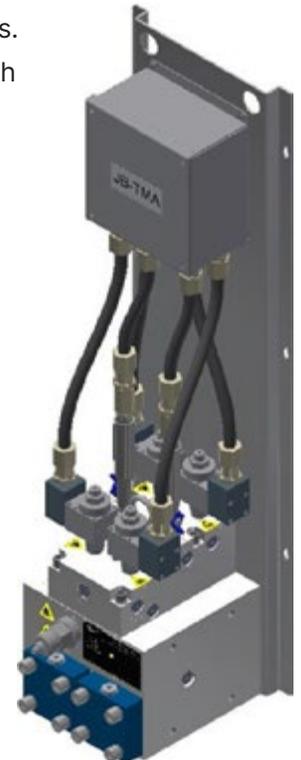
Overview

The Parallel 2-out-of-2 (P2oo2) Trip Manifold Assembly (TMA) from GE Vernova is specially designed as a high availability and high reliability turbine shutdown device for safety critical applications. This fast-acting TMA is a complementary component to any best-in-class turbine overspeed protection system as compared to a legacy mechanical bolt or single solenoid emergency trip device (ETD). This TMA acts as the electro-hydraulic-mechanical interface between a control system and a turbine—and can operate on turbines with a wide range of operating conditions and hydraulic fluid specification, in both hazardous and non-hazardous areas. The P2oo2 TMA features an eloquent design that affords online trip testing (without defeating overspeed protection) along with online maintainability of key components. The high availability of this system is further enhanced when paired with a 2oo3 overspeed detection logic solver to provide a solution with no single point of failure. This advanced design can achieve extremely high flow rates and fast valve dump speeds to meet the most stringent turbine trip requirements, plus it is SIL 3 capable.

Benefits

The TMA provides performance, operability, and reliability for today's connected plant.

- Fast Trip Times – Solenoid valve response time <20 milliseconds with Valve Flow Coefficient (Cv) Rating: 18 (with ISO 32 oil @ 40°C, Worst Case with 1 Dump Valve Failure)
- High Tripping & Running Reliability – Certified IEC61508 SIL 3 Capable
- Versatile Applications –Wide range of system supply pressure offerings between 50-500 PSIG (3.45-34.47 BARG), without cavitation or micro-dieseling. This allows the P2oo2 TMA to be applied to a variety of steam turbine OEMs.
- Multiple Types of Operating Fluid – Mineral oil, phosphate ester, or polyalkylene glycol.
- Seals – Ammonia resistant seals.
- Hazardous Area Options – North America: Class 1, Division II. Europe: ATEX Zone II.



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Features

- Poppet valve construction for increased flow volumes and tripping reliability
- Online testing capability with advanced control system
- Capable of reduced speed overspeed testing with suitable control system
- Online maintainability of solenoid coils and pressure transmitters
- No single-point failure
- Pressure Transmitter indication of solenoid valve position for system monitoring and online diagnostics
- Resistant to fluid contamination and degradation
- Flexible installation with small footprint

Operator Interface

The P2oo2 TMA interfaces with the turbine control system via (qty 4) 24VDC trip solenoid drivers and (qty 2) 4-20mA pressure transmitter input channels. The status of the trip solenoid driver outputs and pressure transmitter input values will be available for operator inspection, SOE trending and historian data archival/retrieval through the turbine control system.

Specifications

Operating Pressure	Solenoid Voltage	Pressure Transmitter (4-20mA)	Junction Box
50-85 PSI 3.5-5.9 BAR	24 VDC	0-700 PSI 0-48.3 BAR	Optional
86-135 PSI 5.9-9.3 BAR	24 VDC	0-700 PSI 0-48.3 BAR	Optional
136-185 PSI 9.3-12.8 BAR	24 VDC	0-700 PSI 0-48.3 BAR	Optional
186-325 PSI 12.8-22.4 BAR	24 VDC	0-700 PSI 0-48.3 BAR	Optional
326-500 PSI 22.4-34.5 BAR	24 VDC	0-700 PSI 0-48.3 BAR	Optional



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