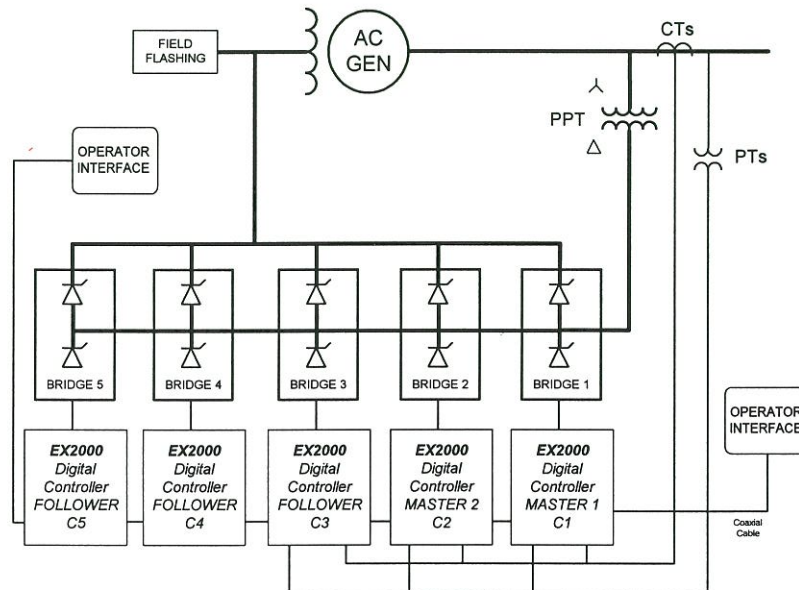




EX2000M MULTI-BRIDGE EXCITATION SYSTEM

Fact Sheet for Retrofit Applications



EX2000M Simplified One-Line Diagram

The EX2000M is a digital, static, multi-bridge potential source excitation system, utilizing the latest hardware and software technology. To meet customer and operational requirements, a full range of control and protection functions are available for the product.

Benefits of EX2000M

- 99.98% Availability
- Replaces Old and Failing Components
- Full Digital Design
- Improved Performance
- Exceeds IEEE 421 for HIR Exciter
- Built-in Diagnostic System
- Faster System Checkout
- Reduced Maintenance
- High Degree of Accuracy, $\pm 0.25\%$
- Configurable with a PC

The EX2000M system comes equipped with up to a maximum of five (5) full-wave, full-inverting, thyristor bridges which supply excitation power to the rotating field winding of the main AC generator. In addition, all control and protective functions are implemented in the system software. There are no moving parts, such as motor operated setpoint adjusters, as are found in the older excitation systems. Digital technology coupled with over 35 years of GE static exciter design experience allows the EX2000M to maintain 99.98% availability.

Complete redundancy is available through the Master-Master Fault Tolerant Control option. This option provides triple modular redundancy (TMR) for both control and power conversion. Also, the On-Line Maintenance option can be added to provide the capability of repairing the exciter with the generator on-line.

Standard Features & Functions

- Up to Five Three-Phase, full wave SCR bridges
- Thyristor bridge circuit filtering
- Thyristor bridge conduction monitor
- Diagnostic display panel
- Shaft voltage suppressor circuit
- Surge Protection
- Field De-Excitation Circuit
- Field Ground Detector (64F)
- Over Excitation Limiter (OEL)
- Under Excitation Limiter (UEL)
- Automatic Voltage Regulator (AVR)
- AVR Software Reference Adjusters
- Manual Voltage Regulator (FVR)
- FVR Software Reference Adjusters
- Bi-directional AutoTracking Function
- Volts per Hertz Limiter (V/Hz LIM)
- Volts per Hertz Protection (24G)
- Generator Overvoltage Protection (59G)
- Off-Line Over Excitation Protection (OLOP)
- On-Line Over Excitation Protection (OET)
- Loss of Excitation Protection (40)
- Exciter Phase Unbalance Protection (EUT)
- Reactive Current Compensation (RCC/ARCC)
- Sensing PT Failure Detector (PTFD)
- Field Temperature Calculation
- Multiple Dual source bulk power supplies
- Three Phase Voltage Sensing
- Two Phase Current Sensing
- Field flashing circuit (*when required*)
- PT and CT Isolation Switches
- Multiple 100 millivolt shunts
- User-Friendly Operator Interface
- 4-20 mA Programmable Analog Outputs
- Strip Heaters
- Input Power Potential Transformer (PPT)
- NEMA-I Enclosure

Applications

- Steam Turbine Generators
- Hydro Turbine Generators
- Synchronous Condensers
- GE and Non-GE Units

Optional Features & Functions

- Power System Stabilizer (PSS)
- Master-Master Fault Tolerant Control
- On-Line Maintenance
- VAR/PF Controller
- Voltage Matching
- Data Link with GE's MARK V Turbine Control
- Crowbar Circuit (Hydro Units Only)
- Monitoring and Trending Software
- PLC-based Digital Interface
- Installation Design Engineering Package
- PSS Tuning Study

Product History

The first EX2000 exciter was shipped in April 1993. Since that time an average of over 120 units per year have been shipped between retrofit and new unit applications. This unprecedented volume is a strong indicator of the products' market acceptance and dominance.

EX2000M Retrofits

- Replaces Alterrex Exciters
- Replaces Water-Cooled Diodes
- Replaces Shaft and Gear Driven Exciters
- Replaces MG Sets
- Replaces Older Static Exciters
- Eliminates Amplidynes
- Eliminates Diactors (Carbon Piles)
- Eliminates Commutator Maintenance
- Eliminates the need for TILs 961, 1027, and 1097.

EX2000M Enclosure Information*

Configuration	Amps (Simplex/ Master-Master)	Width	Weight (lbs)
3 Bridges	6,000/4,000	246"	21,210
4 Bridges	8,000/6,000	294"	28,000
5 Bridges	10,000/8,000	318"	34,790

* All enclosures are 104"H x 46"D

