REIVAX

RTX POWER

EXCITATION SYSTEM

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Excitation System

*The **RTX POWER** excitation system is based on our most advanced platform designed to ensure high performance and reliability.*

It has all the voltage regulation functions, excitation, monitoring and protection, thus allowing its use in generators, condensers and synchronous motors.

Experience

REIVAX, founded in 1987, has supplied over 2,300 systems controlling more than 170 GW in power generation. We are leaders in control system retrofits world wide.

Applications

Hydro | **Thermal** | **Substation** (Synchronous Condensers) | **Industry** | **Oil & Gas**

- **Modular and scalable design along with highly configurable software allow for meeting the most varied requirements and characteristics of each application.**
- **Certified to meet main electromagnetic compatibility standards and designed considering the most demanding segments to operate in highly aggressive environments.**
- **RTX POWER was successfully tested by Kestrel Power Engineering and meets the most stringent performance requirements required to operate in North America, according to NERC and IEEE standards.**

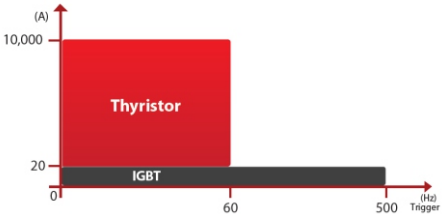
COMMUNICATION PROTOCOLS

Modbus TCP
Modbus RTU
IEC 60870-5-101
IEC 60870-5-104
IEC 61850 – MMS/GOOSE
DNP3.0

CLOCK SYNCHRONIZATION INTERFACES

IRIG - B
NTP
PTP

POWER DRIVE TECHNOLOGIES



ARCHITECTURE

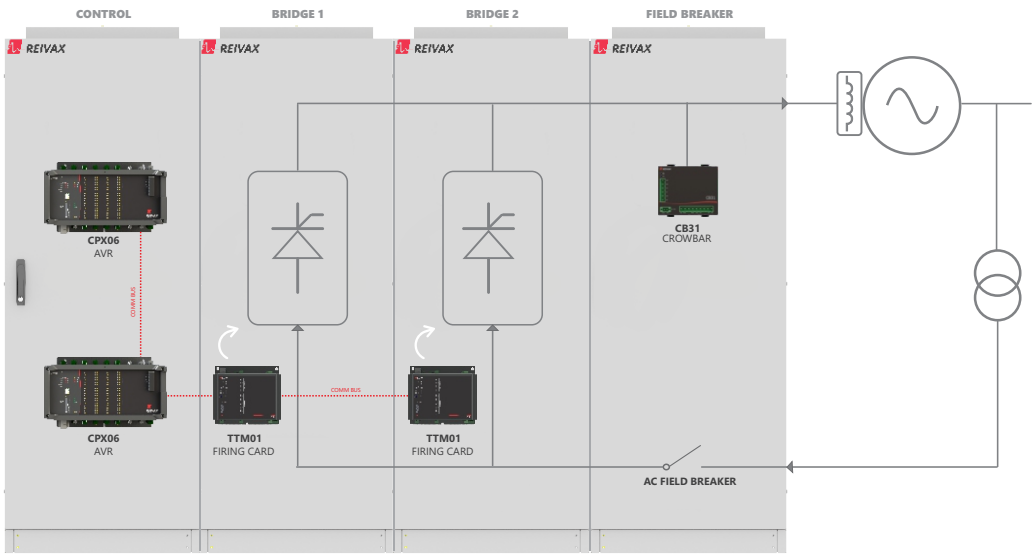
The POWER platform supports single or fully redundant controllers, increasing the availability of the synchronous machine.

Likewise, the power drive can be designed with redundancy, according to the particular requirements of each system.

Redundancy Options

Redundancy aims to maximize the uptime of the synchronous machine, allowing repairs or replacements of components even with the unit in operation. Components that can be provided with redundancy:

- Control power supply
- Control Hardware
- Input and output modules
- Power drives
- Power drive cooling system
- Field flashing circuit
- Other options on request



MAIN CONTROL FUNCTIONS

- IEEE 421.5 compliant
- Voltage control mode (AUTO)
- Field current control mode (MANUAL)
- Reactive power (VAR) and power factor control modes
- Three PID settings for main control loop
- Reactive current compensation (RCC or LDC) and active current compensation
- Compensation for rotating or brushless exciter dynamics
- Overexcitation limiter (OEL)
- Underexcitation limiter (UEL)
- Volts per hertz limiter
- Stator current limiter (SCL)
- AVR pre-tuning assistant
- Control tracking for bumpless switching
- Current equalization between parallel rectifiers
- Rectifier open-loop control for testing and maintenance
- Controller settings and test the step response integrated into the HMI
- Soft start voltage build-up with field flashing supervision
- Protection and supervision functions
- Automatic frequency response test tool
- PSS tuning tool

OPTIONS FEATURES

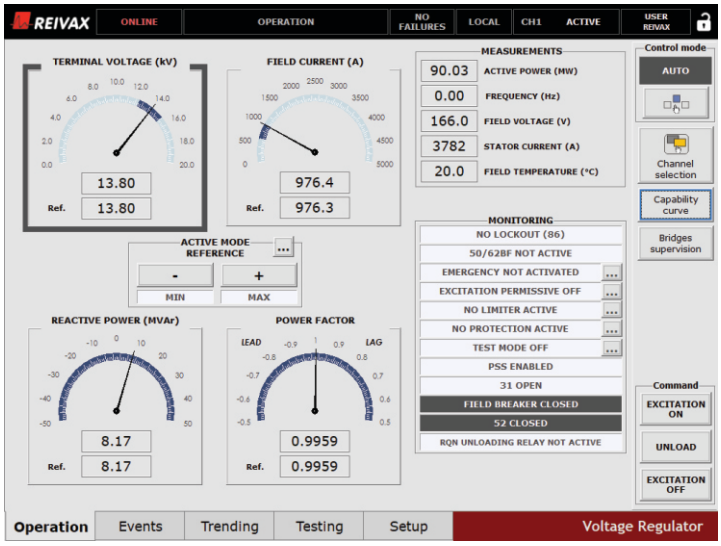
- Power System Stabilizer (PSS2C or PSS4B)
- Minimum excitation limiter (MEL)
- Field temperature calculation (IEEE 115-2009)
- Voltage matching
- Rotating exciter diode monitoring
- ANSI 64R (rotor earth fault) function
- Reactive load sharing via communications

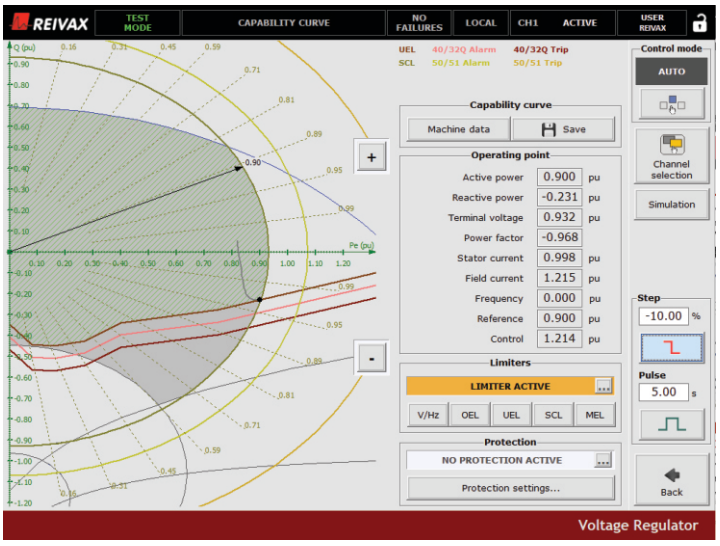
BASIC HARDWARE

- Programmable controller that allows editing of logic, protection and remote communication
- High-density I/O module (48 digital inputs / 30 digital outputs / 16 analog inputs / 16 analog outputs / 3 PT inputs / 3 CT inputs). Insulation class: 2,000 V
- Dedicated module for supervision, control and protection of thyristor triggering

HUMAN-MACHINE INTERFACE

The **RTX POWER** user friendly HMI allows for advanced operation monitoring, such as real-time visualization of the machine's capability curve, with the current operating point and limiters.





SUPPORT AND MAINTENANCE TOOLS

The RTX POWER excitation system is supplied with a package of software tools for support, maintenance and analysis:

- Programming software, allowing changes or inclusions of new features. Graphic and intuitive environment according to IEC 61131-3
- View continuous and discrete signals directly on block diagram
- Simulation tool for software testing
- Sequence of Events Recorder (SOE) with multi-client server
- Time-stamped datalogger with configurable triggers
- Datalogger viewer
- Test mode for checking inputs and drive outputs
- Support for verification and validation of remote communication protocols
- Parameter report generator

→ TECHNICAL ASSISTANCE

Technical support including weekends and holidays.

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