GE
Intelligent Platforms

PAC8000 RTU

imagination at work

A ruggedized, reliable RTU

PAC8000 Remote Terminal Unit (RTU) thrives in the desert heat of the Arabian Peninsula and the arctic cold of Siberian oil fields—delivering quality, reliability and safety for your success.

With increasing pressure to improve operational performance, meet environmental specifications and overcome rising energy costs, oil and gas operations must efficiently and securely monitor and control entire processes across local and remote locations. You need a partner that understands your business and can deliver the expertise and capabilities to drive results.

The PAC8000 RTU solution from GE Intelligent Platforms enables you to easily monitor, diagnose and maintain your utility assets—even in the most hazardous environments. Access to timely and accurate mission-critical information from fixed assets such as oil and gas wells, compressor stations, pipelines, fluid storage tanks and utility meters, can eliminate critical gaps in your oil and gas operations, resulting in higher productivity and long-term growth.

Benefits

Designed by experienced process engineers, PAC8000 RTU is simple to use and delivers significant cost savings and value:

- Tough environmental specifications from –40 to +70 degrees Celsius continuous operation; 10 years of service in Class G3 corrosive environments
- Inherent reliability - redundant CPU, power supplies, communications
- Easy maintainability - hot replacement and automatic configuration
- Integrated intrinsic safety (optional)
- Integrate optionally with SafetyNet – TUV certified to SIL 2
- Scalability from 8 to 1024 I/O
- Extensive diagnostics for remote health monitoring
- Minimum cost field mounting
- Low cost of ownership

Ensuring continuous operations

In the unlikely event of failure, PAC8000 RTU maintains your operations with robust redundancy capabilities and flexible communications options.

Firmware updates

In keeping with its ability to maintain operations on a continuous basis, a redundant PAC8000 RTU can receive a firmware upgrade.

Controller redundancy

Redundant controllers can be used for critical applications whereby the redundant controller pair operates in parallel, checking status multiple times through the processing loop and enabling the backup controller to continuously monitor the health of the Master controller. It ensures a rapid and bumpless transfer to the standby controller.

Network redundancy

PAC8000 RTU has two high-speed Ethernet ports to provide communication security. Each port can be connected to an independent LAN, which is continuously monitored for its integrity. If the primary port detects a network failure, traffic is immediately switched to the other LAN to maintain full communication.

Communication protocols

- Modbus TCP over Ethernet
- Modbus RTU Serial
- Other Protocols under development

Each controller has two serial ports that can be configured as a Modbus Master to control and obtain information from Modbus Slaves. The serial ports can also be configured as a Modbus Slave, accepting write commands from Modbus Master devices and providing information on its data registers.

Executable programs

The control programs are held in nonvolatile memory and can be restored automatically after power cycling of the controller. A new control program can be downloaded to a controller while the existing program is still operating. When the download is complete, the controller will automatically switch to the new control program—without interruption to the operation of the plant.

Failsafe and automatic cold start

The RTU supports fault tolerant communications to the Control Room SCADA; however, in the unlikely event that the communications are lost, the RTU can either continue to operate autonomously or adopt a user-defined safe state. If the RTU continues to operate, data will be logged for transmission once communications have been restored. In the event of power loss, it will perform a cold restart, which restores the program(s) and assumes a predefined status. Controllers can also be configured to perform a "warm start" if RTU power is temporarily lost during a brownout.

Powerful features

With PAC8000 RTU, you can meet demanding oil and gas applications while gaining a sustainable competitive advantage.

PAC8000 RTU IN YOUR SYSTEM
PAC8000 RTU is designed for use in the harshest environments, operating over a temperature range of -40°C to +70°C, and it is resistant to 30g shock, 5g vibration and G3 corrosive environments.

Each PAC8000 RTU controller node can address up to 64 I/O modules, which, depending upon the number of channels per module, can provide up to 1024 I/O points at a single node! A node can consist of a mixture of analog and discrete modules—providing maximum flexibility to system designers.

HART® passthrough

PAC8000 RTU can pass smart HART information from field devices to a distant PC workstation, allowing you to readily interface to asset management software applications to remotely manage the HART information contained in your HART-based field instruments.

Hazardous area operation

PAC8000 RTU is designed to operate in Class I, Division 2 and Zone 2 hazardous areas and can control I/O modules that have field wiring extending into the more hazardous Division 1, Zone 1 and Zone 0 areas.

I/O modules

I/O modules transfer signals to and from field instruments. Input modules receive signals from transmitters and sensors and convert them into a digital form for presentation to the controller, while output modules receive commands from the controller and transfer them to actuators.

There are a wide range of modules, including types for low-level instrumentation, AC mains and intrinsically safe signals. I/O modules typically have 4, 8 or 16 field channels. A small footprint with a packing density of 3-6mm per channel allows for installations where space is a premium.

Field terminals

Field terminals provide the interface between the I/O modules and the field wiring, including fusing and loop-disconnect as options. A mechanical keying system prevents an I/O module from being inadvertently connected to the wrong type of field terminal.

Mounting onto the module carrier, one to each I/O module, field terminals are clamped firmly by the I/O module to form an electrical and mechanical assembly of high integrity and may be replaced in service without removing carriers or disturbing the operation of other modules.

Carriers

Carriers form the RTU's physical and electrical backbone by providing a mounting to support and interconnect the controller, power supplies, I/O modules and field terminals, and carry the address, data and power lines of the internal Railbus.

They provide termination points for the LAN and field wiring cable shields and can also distribute bussed field power to the I/O modules; I/O module carriers are available to support four or eight I/O modules.

System power supplies

System power supplies are available for the node to convert local AC or DC supplies to power the node and provide field power for I/O modules. Power supplies can be optionally redundant and any failures are flagged. GE's innovative bussed field power scheme for distributing field power avoids complex wiring at the field terminal and minimizes the carrier wiring.

Affordable intrinsic safety

Our expertise is built into the front end of IS I/O modules for direct connection to hazardous area field wiring. This means no external barriers or isolators, no additional wiring and no extra cost. All you pay for is the integrated IS I/O module.

Integrated power supplies

Power for IS I/O modules is derived from integrated, modular power supply units, which can each supply between 8 and 20 I/O modules, depending on the I/O type and mix.

Optional power supply redundancy is supported by means of an additional, redundant supply unit connected in an "n+1" arrangement. In applications with mixed IS and non-IS field wiring, the full facilities of the bussed field power regime are retained for the non-IS part of the system. In nodes populated only with IS I/O modules, a separate system power supply module provides power for the Bus Interface Module and "node services" with redundancy capabilities.

Versatility and tough design to meet your process I/O needs

Oil and gas

PAC8000 RTU is designed for the most remote places where oil and gas are found, and its wide temperature range means that it can be mounted outdoors on the plant anywhere in the world. Using redundant power supplies and network cables can increase system availability in these conditions further.

Natural gas pipelines

When I/O is installed in remote locations, it needs to be reliable and simple to maintain. PAC8000 RTU's I/O modules can be "hot-swapped" on a live system. The configuration is backed up locally so no re-configuration is necessary even if several modules are removed and replaced at the same time.

FOR MORE INFORMATION ABOUT HOW PAC8000 RTU CAN DELIVER RESULTS FOR YOUR BUSINESS, VISIT WWW.GE-IP.COM/PAC8000RTU

PAC8000 RTU

At the heart of PAC8000 RTU is a powerful, robust controller for advanced control strategies.

Controllers

- Controls up to 64 sixteen-channel modules
- Redundant controllers with dual redundant Ethernet® connections
- Wide range of protocols including Modbus over Ethernet®
- Regulatory and IEC-61131-3 software execute concurrently providing both process and discrete control
- On-line configuration and reconfiguration

I/O Modules

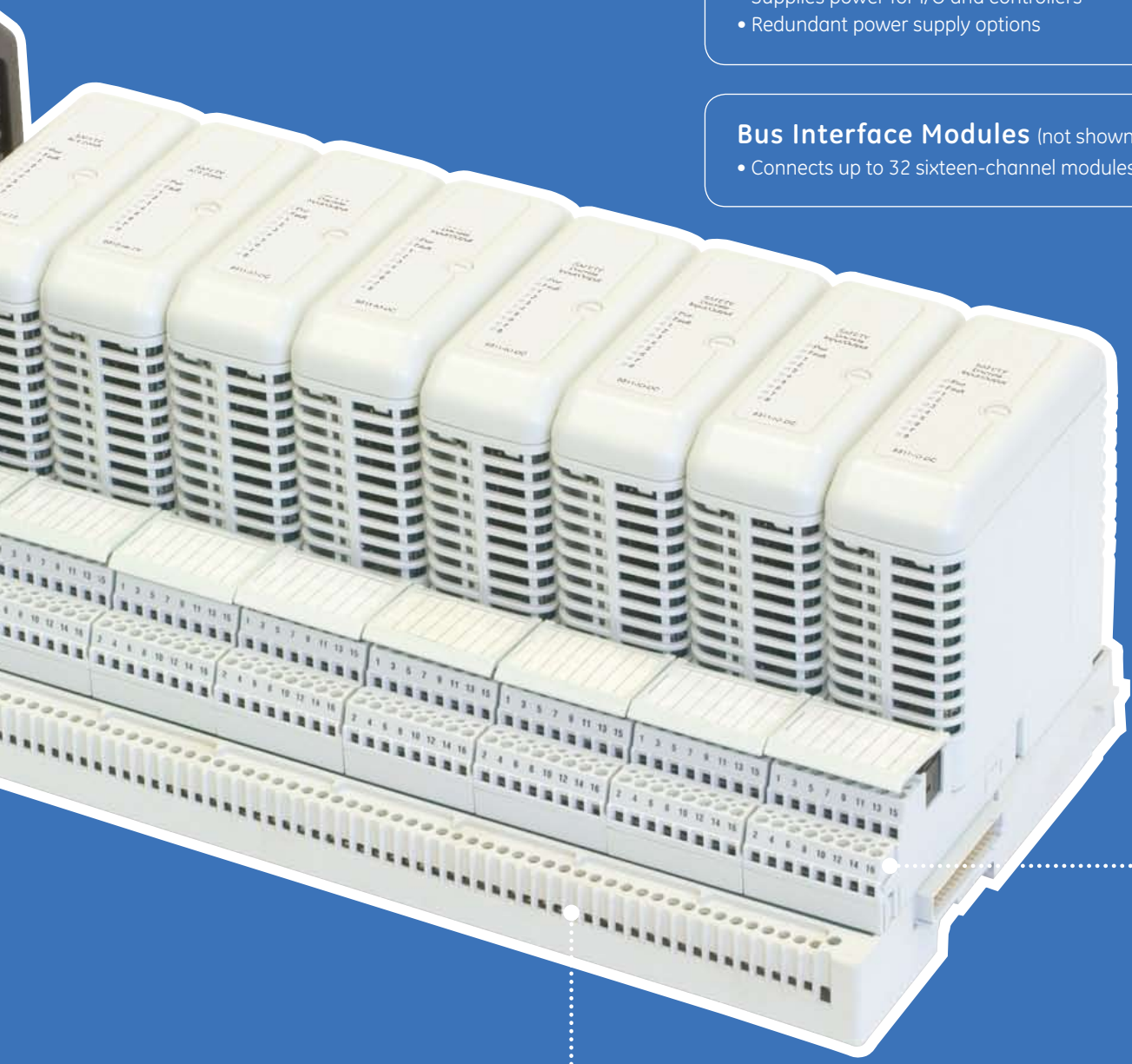
- Wide range of I/O for virtually any process signal, including HART® Smart analog, thermocouple, RTD, potentiometer, high-speed counter, frequency and quadrature
- Suitable for safe-area, non-incendive and intrinsically safe applications
- Remote configuration and interrogation of smart devices
- Packing density: 3-6mm per channel
- Live "hot swapping"
- Keying stops modules from being fitted in the wrong position
- Isolation between I/O bus and field wiring
- Diagnostic services for each channel

Power Supplies (not shown)

- AC power or 24V dc input versions
- Supplies power for I/O and controllers
- Redundant power supply options

Bus Interface Modules (not shown)

- Connects up to 32 sixteen-channel modules



Carriers

- Tough polycarbonate base – protects against shock and vibration
- Choice of four module, eight module and Node Services versions
- Cable ground and shield terminals along front edge
- Reliable – no active components – so there is nothing to fail
- Replacement modules are configured automatically, so maintenance is simplicity itself

Field Terminals

- Unique, removable terminals for fast wiring and field replacement
- Optional fuses and disconnects – no interposing terminals required
- Direct termination for field wiring
- Field power routed to terminals – no daisy chaining at the field terminals
- Integral tagging system

GE Intelligent Platforms Contact Information

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Global regional phone numbers are listed by location on our web site at **www.ge-ip.com/contact**

www.ge-ip.com/pac8000rtu

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