



Raychem

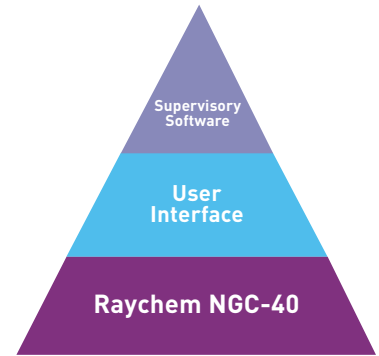
INDUSTRIAL CONTROL SOLUTIONS

NGC-40 ADVANCED HEAT-TRACING CONTROL SYSTEM

RAYCHEM NGC-40



Raychem NGC-40 is an advanced modular control, monitoring and power distribution system whose single control module per heat-tracing circuit provides the highest reliability architecture for your heat-tracing application.



flexibility to the Raychem NGC-40. An intelligent SIL 2 certified safety temperature limiter module is available as part of the system. Using the Raychem NGC-40 control system, the wiring cost of temperature sensors can be reduced significantly, as it fully supports a distributed architecture.

The Raychem NGC-40 monitors and controls the heat-tracing at the desired temperature and will intervene and alarm if power requirements go outside the specification of the circuit breakers and control relays. Heat-tracing system status, upsets and faults are reported to the user with clear messages and alarms, optimizing maintenance and recovery time.

The Raychem NGC-40 control and monitoring system complements any Heat Management System and is true to Pentair's corporate commitment "We manage the heat you need".

High reliability, centralized control, and monitoring have become increasingly important for industrial heat-tracing installations. The Raychem NGC-40 control system has been designed to meet these objectives.

The dedicated, single controller per heat-tracing circuit architecture of the Raychem NGC-40 provides the most reliable central control and monitoring solution for your Heat Management System.

The innovative Raychem Touch 1500 user interface provides intuitive, easy-to-use access to the Raychem NGC-40 system. This allows plant personnel to quickly and easily find necessary information to make configuration changes or fix problems.

The local access via the Raychem Touch 1500 combined with Raychem Supervisor software, allows local and remote configuration and monitoring. This enables tighter control of pipe maintain temperatures and optimization of maintenance activities. The result can be improved

production quality, process yields and less operational downtime.

The Raychem NGC-40 control system offers a truly modular heat-tracing control, monitoring and power distribution system. The system is fully flexible from a configuration point of view and offers individual single-phase and three-phase electrical heat-tracing controllers. Input / Output (I/O) modules provide additional expansion



Raychem NGC-40 modules individually packaged in DIN rail mountable housings

RAYCHEM NGC-40 FEATURES

- State-of-the-art 15" panel mountable user interface with touch screen technology for monitoring and configuration purposes.
- Each circuit is controlled by individual single-phase or three-phase controllers.
- I/O modules allow additional temperature and analog/digital signals to interface with the control modules.
- Many heat-tracing related control algorithms available such as ON/OFF, ambient sensing, PASC (Proportional Ambient Sensing Control) and proportional control (if used with solid-state relays).
- Modules are "plug and play" and DIN-rail mountable. Wiring is minimized by using CAN-based network.
- Control and monitoring of up to 80 individual circuits per panel with multiple panels connected to one Raychem Touch 1500 user interface.
- Capability to monitor temperature, ground-fault currents and operating currents.
- Power and current control on heat-tracing circuits to reduce inrush currents and unnecessary circuit breaker trips.
- Central monitoring and configuration via client-server software Raychem Supervisor with various levels of access for different user groups.
- Automatic self-test function and many more features.

RAYCHEM NGC-40 BENEFITS

- Intelligent SIL 2 safety temperature limiter IEC 61508: 2000) with up to 3 sensors for three-phase systems.
- Provides easy intuitive access to configuration, status, alarms and events of the heat-tracing system.
- Individual CPU per heat-tracing circuit leads to the highest reliability and control flexibility.
- Maximum flexibility in heat-tracing control design provides the highest functionality and value at the lowest cost.
- Choosing the right control algorithm leads to the most optimized heat-tracing solution by minimizing the energy consumption and installation cost.
- Individual control and standard communication wiring leads to flexible and optimized panel design to customer requirements.
- Strategic location of Raychem Touch 1500 user interface linked to a group of heat-tracing panels leads to optimized maintenance activities.
- Permanent supervision of the integrity of the heat-tracing circuit and detailed problem reporting simplifies maintenance and increases personnel safety.
- Control of inrush currents leads to a reduction of panel power requirements and therefore significant savings on power distribution costs.
- Raychem Supervisor as a client-server application offers options for data logging, trending, fault finding and other analysis to help streamline operations and maintenance activities.
- The heat-tracing system integrity is continuously monitored. Malfunctions are reported to users via clear messages.

Available as a complete control, monitoring and power distribution system

Pentair Industrial Heat Tracing Solutions offers the Raychem NGC-40 as a complete solution, where the control system is already fully integrated into engineered control and power distribution panels.

Using standard industrial enclosures, specific care has been taken to design the systems to highest safety standards by enabling optimum access for easy maintenance, as well as a clear layout of the functional blocks and terminals. The systems are pre-wired, tested and certified at the factory, requiring only application specific settings once installed on site.

The panels are available in various sizes (number of circuits/spares), types of control options, type of contactors (solid state or mechanical), circuit breaker size (MCB and individual circuit breakers) and many other options.

A Raychem NGC-40 system can consist of multiple panels linked via a dedicated RS-485 or Ethernet communication link where a master panel contains the Raychem Touch 1500 user interface. All can be connected to Raychem Supervisor running on the local area network (LAN).

Raychem NGC-40 intelligent safety temperature limiter approved as a SIL 2 device

The Raychem NGC-40 control system has a safety temperature limiter module that meets the requirements of IEC 61508: 2000 and is approved as a SIL 2 device.

The safety temperature limiter has been equipped with a feature that can eliminate false alarms or trips caused by the process operating temperature exceeding the area classification. It can accommodate up to three temperature sensors for three-phase heat-tracing circuits.

Raychem Touch 1500 for easy access on site

The Raychem Touch 1500 user interface is a state-of-the-art 15" colour touch screen and allows convenient user access to all heat-tracing circuits. The Raychem Touch 1500, can be installed either on the panel door of the NGC-40 control system, or in a remote location and communicate to the Raychem NGC-40 heat-tracing controllers via Ethernet or serial interface.

The Touch 1500 software is multilingual, offers 4 levels of integrated security and records alarms and events for maintenance purposes.

Ground-fault monitoring simplifies maintenance

Ground-fault monitoring offers a very good indication of the electrical integrity of the heat-tracing circuits. The Raychem NGC-40 control modules offer continuous monitoring of ground-fault levels for each single-phase and three-phase circuit. Ground-fault alarms can be set below the mandatory trip levels to provide an early indication of possible ground-fault problems. This allows maintenance personnel to schedule a convenient time to investigate a problem pro-actively, rather than risk disabling the heat-tracing due to a trip condition. The system identifies which branch circuit has the increased ground-fault current, and action can



then be taken before the circuit stops operating. This can significantly simplify maintenance activities.

Raychem Supervisor Software brings it all together

The Raychem Supervisor Software package provides a remote, graphic interface for the Raychem NGC-systems. The software allows the user to configure and monitor the heat-tracing system from a central or multiple locations. It also provides audible and remote alarming, features to acknowledge and clear alarms, and includes advanced features such as data logging, trending, implement changes in batches, and other useful functions.

Users can access all information from anywhere in the world, making Raychem Supervisor a powerful management tool for the entire Heat Management System.

The software is multilingual and supports multi-client and multi-server technology based upon Microsoft's .NET architecture and SQL-server, a proven enterprise-class database system.

Raychem NGC-40 heat-tracing controllers offers many options

The distributed modular system architecture of the Raychem NGC-40 allows



Touch 1500
15" touch screen display

full flexible configuration of the heat-tracing control system. Each heat-tracing circuit controller has its own processor and is therefore independent of other elements in the chosen system configuration. The Raychem NGC-40 offers heat-tracing controllers specifically designed for single-phase and three-phase systems. The controllers contain specific heat-tracing functionality which enables optimization of the operations and maintenance cost of the heat-trace installation. Additional I/O modules enable the possibility to extend the heat-tracing control with digital inputs and additional temperature control.

Delivering the optimized heat-tracing system solution

The Raychem NGC-40 has heat-tracing specific control algorithms with related alarm capabilities. Each controller measures the current to the heat-tracing circuit. Three-phase circuits measure the current per individual phase and have the option to alarm on abnormalities. The controller has a dynamic soft start algorithm supported by a technique involving measured inrush current and the Switch Current Ratings. It checks and controls the heat-tracing power consumption to ensure it will stay within the specification of the installed circuit breaker. Alarms are reported via the Raychem Touch 1500 user interface or Raychem Supervisor.

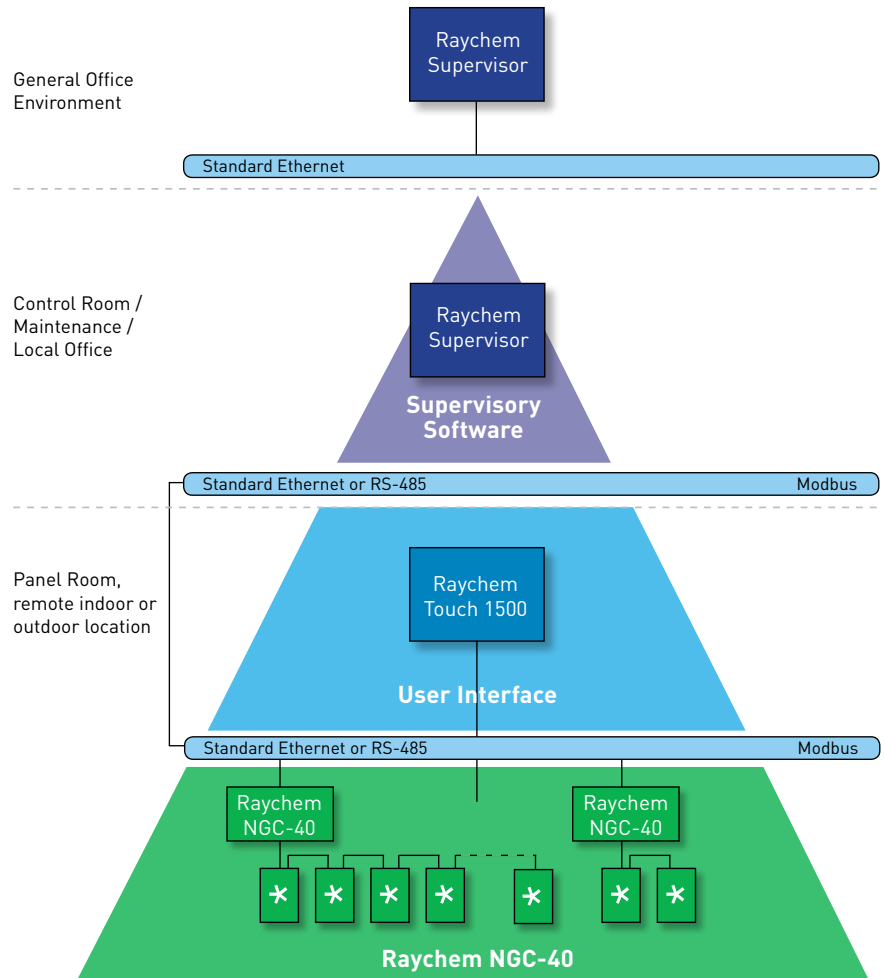
RAYCHEM NGC-40 SYSTEM OVERVIEW

Raychem NGC-40 is a true modular heat-tracing control, monitoring and power distribution system for industrial heat-tracing applications.

Raychem NGC-40 is a powerful heat-tracing control system that offers great flexibility with the highest reliability.

Temperatures, ground-fault currents, operating currents and other valuable information reflecting the integrity of the heat-tracing circuit can be monitored and communicated to a central location, to the right person at the right time. The information is visible via the Raychem Touch 1500 user interface with touch screen technology and via the Client-Server software application Raychem Supervisor.

Raychem NGC-40 handles single-phase and three-phase heat-tracing circuits. Input / Output (I/O) modules provide additional control flexibility and an intelligent SIL 2 certified safety temperature limiter is available as part of the system.



* Raychem NGC-40 module





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