Zone 2 Control & Monitoring Panels

Raychem

Zone 2 Control, Monitoring and Power Distribution Panels

PRODUCT OVERVIEW

The Raychem Zone 2 Control, Monitoring and Power Distribution panels are configurable Electric Heat-Tracing (EHT) panels that are ATEX and IECEx approved. The enclosure and all components are Zone 2 approved, including the Circuit Breakers, Raychem controllers and Solid-State Relays used for switching the heat-tracing circuits.

The panels meet the IEC/EN 61439 and 60079 series standards and are designed, manufactured, tested & Zone 2 certified.

The Control, Monitoring and Power Distribution solution can consist out of a combination of various panels mounted on a skid. The enclosures on the skid can be configured in different ways:

- Control & Monitoring
- Power Distribution
- Combination of Control, Monitoring and Power Distribution in the same enclosure

Each panel on the skid has its own approval and will be configured separately via the configuration string as described in the datasheet.

The following table shows the maximum configuration possible in an enclosure. Via the configuration string the detailed content shall be defined all depending upon circuit loads and ambient temperatures.

Panel type (cm)	Controllers / Maximum circuits		
	NGC-40	NGC-30	Elexant 4020i
Control (60 x 60 x 30)	6 circuits	5 circuits	–
Control (107 x 93 x 32)	18 circuits	20 circuits	–
Control & Power Distribution combined (75 x 50 x 21)	–	–	2 circuits
Control and Power Distribution combined (107 x 93 x 32)	6 circuits, 6 RCBO 32A, 30mA	–	–
Power Distribution (107 x 93 x 32)	18 RCBO's 32A, 30mA		

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Zone 2 panel

Ingress Protection	IP66
Minimum ambient operating temperature Control panel	–55°C
Ambient storage temperature Control panel	–55°C to +70°C
Minimum ambient operating temperature Power Distribution Panel	–20°C
Ambient storage temperature	–20°C to +70°C
Max. altitude	2000 m
Humidity	5 –90% non-condensing
Controller types	NGC-40: mix of NGC-40-HTC / HTC3 / IO / SLIM modules NGC-30: mix of NGC-30-CRMS, NGC-30-CTM / NGC-30-CVM boards Elexant 4020i: all version of the available Elexant 4020i controllers Other electronics upon request and validation
Gland entries	The Zone 2 panels can be delivered with predrilled holes and glands when specified during the ordering process. If holes need to be drilled onsite, special instructions of safe use shall be applied.

Panel configuration string

The configuration for the Zone 2 panel is represented by a configuration string, and the parameters in the string define the content of the panel. Any comments can be added to the string or discussed with the sales representative. The following table shows each parameter and presents examples:

Config string parameter	Values
Type of panel	NGC30: NGC-30 NGC40: NGC-40 E4020i: Elexant 4020i
Electrical standard	E: IEC
Area class	SAFE: Safe Area ZONE2: Zone 2
Panel size (# of circuits)	0-40
Enclosure	SS: Stainless Steel (IP66) SW: Stainless Steel with Window (IP66) AL: Aluminium
Control voltage (L-N)	230: 230 Vac 400: 400 Vac
Power distribution	PDY: Power distribution included PDN: No power distribution included
MCB/Load switch	LS80: Load Switch 180 Amp MCB160: MCCB 160A, 10kA
Heated	HTN: Panel not heated HTY: Panel heated via patented heating system
CNTRL	CNTRL: Control PD: Power Distribution PD/CNTRL: Power Distribution and Control
Number of circuits	0-40
Circuit breaker type	RCBO/2P20C: circuit breaker with earth leakage protection, 2 Pole, 20 Amps, type C RCBO/2P25C: circuit breaker with earth leakage protection, 2 Pole, 25 Amps, type C RCBO/2P32C: circuit breaker with earth leakage protection, 2 Pole, 32 Amps, type C

Config string parameter	Values
Module type	4020iMOD: 4020i-Mod 4020iModIS: 4020i-Mod-IS 4020iModISLIM: 4020i-Mod-IS-LIM 4020iMod3P: 4020i-Mod-3P 4020iMod3PIS: 4020i-Mod-3P-IS 4020iModISPROF: 4020i-Mod-IS-PRF 4020iModISLIMPRF: 4020i-Mod-IS-LIM-PRF 4020iMod3PISPRF: 4020i-Mod-3P-IS-PRF NGC40HTC: NGC-40-HTC NGC40-HTC3: NGC-40-HTC3 NGC40-IO: NGC-40-IO (*1) NGC30CRM: NGC-30-CRM NGC30-CRMS: NGC-30-CRMS NGC20CE: NGC-20-C-E NGC-20CLE: NGC-20-CL-E
Additional module	NGC-40SLIM: NGC-40-SLIM NGC30CTM: NGC-30-CTM NGC30CVM: NGC-30-CVM
Poles	1, 2, 3
Phase selection	LN: L-N LL: L-L L1L2L3: L1-L2-L3 L1L2L3N: L1-L2-L3-N
Type of relay and rating	SS3EX: 32A 277 Vac, 6 mm^2 cable SS3ZEX: 32A 277 Vac, 6 mm^2 cable, Low Smoke Zero Halogen SS3LEX: 32A 277 Vac, 10 mm^2 cable SS3LZEX: 32A 277 Vac, 10 mm^2 cable, Low Smoke Zero Halogen SS3REX: 32A 277 Vac, high in-rush, 6 mm^2 cable SS3RZEX: 32A 277 Vac, high in-rush, 6 mm^2 cable, Low Smoke Zero Halogen SS3RLEX: 32A 277 Vac, high in-rush, 10 mm^2 cable SS3RLZEX: 32A 277 Vac, high in-rush, 10 mm^2 cable, Low Smoke Zero Halogen SSH3EX: 32A 690 Vac, 6 mm^2 cable SSH3ZEX: 32A 690 Vac, 6 mm^2 cable Low Smoke Zero Halogen SSH3LEX: 32A 690 Vac, 10 mm^2 cable SSH3LZEX: 32A 690 Vac, 10 mm^2 cable Low Smoke Zero Halogen SSH6LEX: 63A 690 Vac, 10 mm^2 SSH6LZEX: 63A 690 Vac, 10 mm^2 cable Low Smoke Zero Halogen 3SSR-SS3: Heated, 32A 277 Vac 3SSR-SS3R: Heated, 32A 277 Vac, High inrush 3SSR-SSH3: Heated, 32A 690 Vac
Skid	Yes No
Transformer	TransYes: Transformer included TransNo: No Transformer

Config string parameter	Values
General options	T1500: TOUCH 1500-EX UIT: NGC-UIT3-EX W800: Wireless 868 MHz W2400: Wireless 2.4 GHz Ant: Omni Antenna for wireless AL: Alarm Lights (power / control alarm) AR: Alarm Relay (power / control alarm) RMM3, RMM3-24VDC RMM2-DI
Comment box	Free format text

Examples:

NGC40-E-ZONE2-18-SS-230- PDN-HTN-CNTRL-18-NGC40HTC-1-LN-SS3REX-T1500-AR-AL

- NGC-40 panel, Zone 2, 18 circuits:
  - Stainless steel
  - Phase-Neutral = 230 Vac
  - No power distribution
  - Non heated
  - Circuit Configuration:
    - 18 circuits NGC-40-HTC, 1 pole switching Line-Neutral, Solid state relay 32 Amp switching high inrush
  - TOUCH 1500 user interface
  - Alarm relays
  - Alarm lights

NGC40-E-ZONE2-15-SS-230- PDN-HTN-CNTRL-12-NGC40HTC-1-LN-SS3REX-3-NGC40HTC3-2-LL-SS3REX-AR-AL

- NGC-40 panel, Zone 2, 15 circuits:
  - Stainless steel
  - Phase-Neutral = 230 Vac
  - No power distribution
  - Non heated
  - Circuit Configuration:
    - 12 circuits NGC-40-HTC, 1 pole switching Line-Neutral, Solid state relay 32 Amp switching high inrush
    - 3 circuits NGC-40-HTC3, 2 pole switching Line-Line, Solid state relay 32 Amp switching high inrush
  - Alarm relays
  - Alarm lights

NGC40-E-ZONE2-13-SS-230-PDN-HTY-CNTRL-10-NGC40HTC-1-LN-HSS3EX-3-NGC40HTC3-3-LLL-HSS3EX-W24-ANT-AL-AR

- NGC-40 panel, Zone 2, 13 circuits
  - Stainless steel
  - Phase-Neutral = 230 Vac
  - No power distribution
  - Heated
  - Circuit Configuration:
    - 10 circuits NGC-40-HTC, 1 pole switching Line-Neutral, Solid State relay 32 Amp switching
    - 3 circuits NGC-40-HTC3, 3 poles switching, L1-L2-L3, Solid State relay 32 Amp, Wireless radio 2.4 GHz, Alarm lights, Alarm relays, TOUCH 1500
  - Wireless radio 2.4 GHz
  - Antenna
  - Alarm Lights
  - Alarm Relays

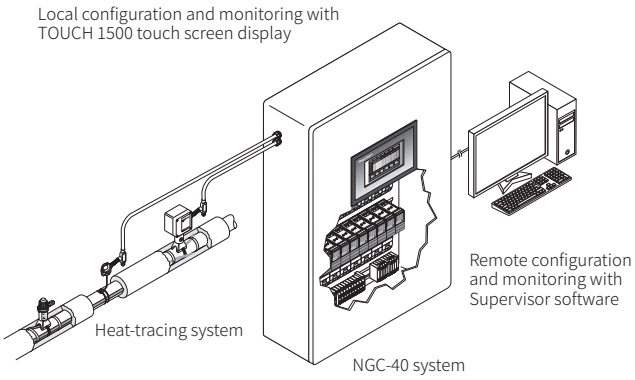
1	#	2	#	3	#	4	#	5	#	6	#	7	#	8	#	9	#
Type of Panel		Electrical Standard		Area Class		Panel size (# of circuits)		Enclosure		Control Voltage (L-N)		Power Distribution		MCB/ Load Switch		Heated	
NGC-20 NGC-30 NGC-40 Elexant-4020i		IEC		Safe Area ZONE2		0..40		SS = Stainless Steel SW = Stainless Steel with Window FG = Fiber Glass		230 400		Yes No		LS180 MCB200		Yes No	

To be repeated for each controller configuration

10	#	11	#	12	#	13	#	14	#	15	#	16	#	17	#	18	#	19	#	20	#	21
CNTRL		Number of Circuits		Circuit Breaker Type		Module Type		Ad-ditional Module		Poles		Phase Selec-tion		Type of Relay and Rating		Skid		Trans-former		General Options		Com-ment
CNTRL: Control PD: Power Distri-bution PD/ CNTRL: Power Distri-bution and Control		0..40		RCBO/ 2P20C RCBO/ 2P25C RCBO/ 2P32C		Elexant-4020i-xxx NGC40-xxx NGC30-xxx NGC20-xxx		NGC30-xxx NGC40-xxx		1 2 3		L-N L-L		SS3 SS3Z		Yes No		Trans-yes: Trans-former in-cluded Trans-No: No Trans-former		T1500 UIT W800 W2400 ANT AL AR RMM3 RMM2-DI		

Controller / main electronics selection

Raychem NGC-40



The Raychem NGC-40 is a multipoint electronic control system with a unique single point controller architecture for heat-tracing used in process temperature maintenance and freeze protection applications. By taking advantage of innovative modular packaging techniques, the NGC-40 control system provides configuration and component flexibility so that it may be optimized for a customer's specific needs.

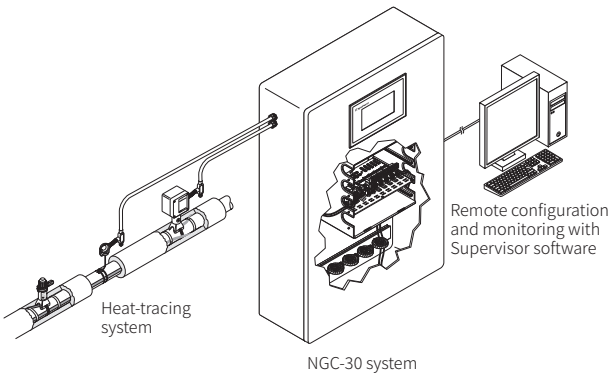
The NGC-40 uses a single controller module per heat-tracing circuit for maximum reliability. The NGC-40 control system in combination with the solid-state relays can be used for 1-phase and 3-phase heat-tracing circuits up to 63 Amp at 690 Vac. The NGC-40 control modules include ground-fault measurements and as well single-phase and three-phase line current measurements. The Safety Temperature limiter can be used in combination with hazardous area approved contactors for control limited designs in Zone 1 applications (with controller panel in Zone 2).

Temperature inputs: Each IO module accepts up to four additional RTD inputs. Each RMM3 module installed in the field can accept up to 8 RTDs. 16 RMM3 Modules can be daisy chained together via RS-485 for a total of 128 (8x16) RTDs. Since multiple RMM3's can be networked over a single cable to the NGC-40, the cost of RTD field wiring will be significantly reduced.

Digital inputs: The NGC-40 control system can be extended with the Digital Input module RMM2-DI. This enables the capability monitoring of equipment in the field like circuit breakers, switches etc.

Communication: The NGC-40 support Industry 4.0 and the Internet of Things (IoT) by offering a flexible Modbus map creating a very easy way of integrating the TOUCH 1500 user interface with external control systems. The NGC-40 system supports multiple communications ports, allowing serial interfaces (RS-485 and RS-232) and Ethernet connections to be used with external devices. All communications with the NGC-40 panel are accomplished through the NGC-40-BRIDGE module which acts as the central router for the system, connecting the panel's control modules, IO modules, TOUCH 1500 touch screen and Remote Monitoring Modules (RMM3), as well as upstream devices such as Raychem Supervisor and the TOUCH 1500 user interface.

Raychem NGC-30



NGC-30 system

The Raychem NGC-30 is a multi-circuit electronic control system for heat-tracing used in process-temperature maintenance and freeze-protection applications. The NGC-30 Controller can accommodate temperature inputs from a variety of sources: hard-wired to the panel mounted CRM(S) modules or from Remote Monitoring Modules (RMM3).

The NGC-30 for Zone 2 applications is equipped with the card rack module for solid-state-relays (CRMS), rated up to 63 Amp at 690 Vac.

Up to four Pt100 sensor inputs for each heat-tracing circuit allow for a variety of combinations of temperature control, monitoring, and alarming. The ability to monitor and configure the controller is available both locally and remotely with the User Interface Unit (NGC-UIT3-EX) and the Supervisor software.

Raychem Elexant 4020i

The Raychem Elexant 4020i is a compact, full-featured, touch screen based, single-point heat-tracing controller. It provides control and monitoring of Electric Heat-Tracing (EHT) circuits for both freeze protection and process temperature maintenance. This controller can monitor and alarm on high and low temperature, high and low current, ground-fault levels, voltage, and supports a host of additional features to offer the utmost in control and monitoring of EHT. The Elexant 4020i controller provides three output types: a line powered relay for driving contactors, a DC output for driving solid-state relays (SSRs) and a 0-10 V analog output for driving variable output power modules. Multiple communication ports allow flexible connectivity for remote monitoring, configuration, and ease of integration with Supervisor software, TOUCH 1500-EX or a Process Control System.

Solid state relay modules

The Zone 2 approved solid state relay (SSRs) modules are available in various versions and may be used with any of the controller products outlined above. They are mounted on the side of the panel enabling good heat transfer to keep heat away from the inside of the panel. The heated SSR module always contains groups of three SSR modules mounted on one heat sink. The Type of SSR, including voltage, amperage, inrush current as well as the cable size and type of cable are specified at the panel configuration procedure.

The minimum ambient operating temperature of the heated SSRs is –55°C .

Elexant 9200i wireless radio

Each panel can be optionally equipped with the Elexant 9200i wireless radio modules. The radios enable wireless communications between the Zone 2 panels and the network User Interfaces such as the TOUCH 1500-EX, UIT3-EX, and/or Supervisor. The radios using 868 MHz and 2.4 GHz are available, and they support point-to-point, star, line, and Mesh network topologies. Security is ensured through use of the 128-bit Advanced Encryption Standard (EAES). Reliability is enhanced by network self-healing capabilities and auto-negotiation of alternate pathways in the event of lost communications. Antennas can be installed on the panel or when needed, antenna packages are available to allow remote installation for improved range. For more details see the specifications of the Elexant 9200i.

APPROVALS

Panel

For use in ordinary and hazardous area Zone 2 (Gas)

Temperature classification

Temperature classification depends on panel configuration

Product certification

More details about product certification, approvals and conditions of safe use are available in the installation manual at chemelex.com.

NGC-30 / NGC-40 / Elexant 4020i

For use in ordinary and hazardous area Zone 2 (Gas)

Temperature classification

NGC-40: T4

NGC-30: T5

Elexant 4020i: T4

Product certification

More details about product certification, approvals and conditions of safe use are available in the installation manual at chemelex.com.

ORDERING INFORMATION

Optional components

The Zone 2 panels provide flexible configurations - the following items are optionally available:

Item	Can be used with
TOUCH 1500-EX	NGC-40, Elexant 4010i / 4020i, (field mounted) NGC-20
NGC-UIT3-EX	NGC-30, (field mounted) NGC-20
Alarm Lights	All controllers and Power Distribution
Alarm Relay	All controllers and Power Distribution
RMM3	Remote monitoring module for Temperature Inputs
RMM2-DI	Remote monitoring module for Digital Inputs

North America
Tel +1 800 545 6258
info@chemelex.com

Latin America
Tel +1 713 868 4800
info@chemelex.com

Europe, Middle East, Africa, India
Tel +32 16 213 511
Fax +32 16 213 604
info@chemelex.com

Asia Pacific
Tel +86 21 2412 1688
infoAPAC@chemelex.com

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