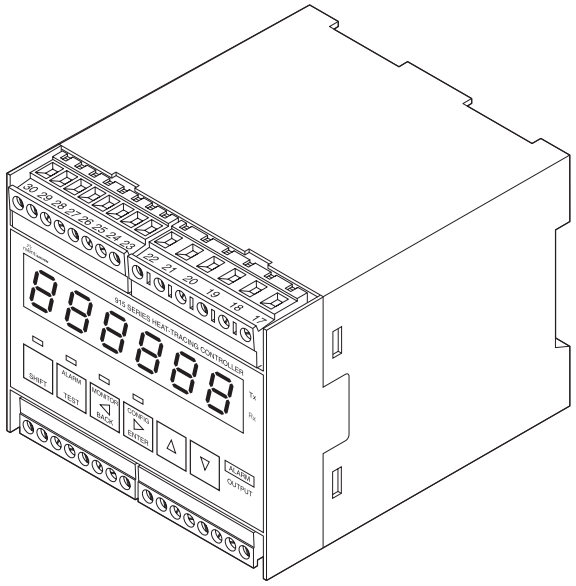
HTC-915-CONT

CONNECT AND PROTECT

Heat-Trace Control system

PRODUCT OVERVIEW



The nVent RAYCHEM HTC-915 system is a compact, full-featured microprocessor-based single-point heat-trace controller. The HTC-915-CONT provides control and monitoring of electrical heat-tracing circuits for both freeze protection and temperature maintenance and can be set to monitor and alarm for high and low temperature, high and low current, ground fault level, and voltage. The nVent RAYCHEM HTC-915-CONT is provided with two outputs: one to drive an external contactor coil, and the other to drive an external solid-state relay (SSR). Communications capability is included for remote control and configuration, complete with Supervisor software capability.

CONTROL

The nVent RAYCHEM HTC-915-CONT measures temperature via 3-wire platinum PT100 connected directly to the unit. When used with an Ex approved PT100 sensor (as is the MONI-PT100-EXE) the controller can measure temperatures in a hazardous area. Open, shorted, or out of range PT100 resistance is automatically detected. If an PT100 failure occurs, the control output trips open and an alarm is generated. The controller can be used in line sensing, ambient sensing, proportional ambient sensing, and power limiting mode.

MONITORING

A broad variety of parameters are measured including: temperature, voltage, power, contactor cycles, hours in use, load resistance, load current, and ground-fault current. To ensure system integrity, the system can be programmed to periodically check the heating cable for faults, alerting maintenance personnel of a heat-tracing problem. A potential free relay is provided for alarm annunciation back to a Distributed Control System (DCS) or alarm indicator.

GROUND-FAULT ALARMING

Optionally, the HTC-915-CONT can be programmed to measure ground-fault current. This option allows for the generation of early warnings before the ELCB trips. The trip level of the early alarm is user definable and can be set at any value between 10 and 250 mA. The ground fault alarms allow for preventive maintenance to be scheduled before the safety device trips and causes down time of important pipelines. Note that this alarm may only be used to generate a warning, it is not intended to replace the RCD (ELCB), which is mandatory for most applications.

OVERTEMPERATURE PREVENTION

In order to assure that T class temperatures inside hazardous areas are not being exceeded the HTC-915-CONT can be equipped with the temperature limiter HTC-915-LIM. The HTC-915-LIM is a compact microprocessor based temperature limiter that provides protection against overtemperature of heating cables. (Refer to the installation instructions of the HTC-915-LIM for the full list of details.)

INSTALLATION

The nVent RAYCHEM HTC-915-CONT comes ready to install, and the DIN rail mount plastic enclosure is approved for use in indoor locations. The HTC-915-CONT operator interface includes LED displays and function keys that make it easy to set-up and maintain - no additional devices are needed. Alarm conditions and program settings are easy to interpret on the full-text front panel. Settings are stored in nonvolatile memory in the event of power failure.

COMMUNICATIONS

Multiple nVent RAYCHEM HTC-915-CONT units may be networked to a host PC running Windows-based Supervisor software for central programming, status review, and alarm annunciation. The HTC-915-CONT supports the Modbus protocol and includes an RS-485 communications interface.

APPLICATION

Type	Surface sensing/ambient sensing
Area of use	Non-hazardous area indoors, typically panel mounted
Approval certification	CE marked EAC TC RU C-BE.БЛ08.B.01634 Made in CA

PRODUCT SPECIFICATION

Temperature range controller	–60°C to 570°C in steps of 1 K
Control algorithms	EMR: Line sensing on/off, proportional ambient SSR: Line sensing on/off, proportional, proportional ambient, power limiting, soft start
Switching accuracy	1 K

ELECTRICAL PROPERTIES

Connection terminals		Screw type terminals. All terminals suitable for stranded and solid core connection cables having a cross section between 0.5 and 2.5 mm^2 (24 to 12 AWG)
Supply voltage		100 Vac to 250 Vac, +10% –10%, 50/60 Hz, 0.15 A to 0.06 A
Power consumption		Max 20 VA with limiter connected
Control output	Contactor control output	(EMR) Electromechanical relay rated 3 A/250 Vac, 50/60 Hz
	Solid-state relay control output	(SSR) 12 VDC, 75 mA. max. to drive normally open Solid state relays. Depending on the application, one, two or three phase switching elements have to be used. (Solid state relays are not included)
Switching capacity		Depends on the type of switch element used (The switch element is external)
Alarm output relay		Relay contact rated 3 A/250 Vac, 50/60 Hz Output is user programmable to open or to close on alarm.
Power output		12 Vdc, 200 mA max.

TEMPERATURE SENSOR

Type	100 Ω platinum Pt 100, 3-wire, α = 0.00385 Ω/°C. Can be extended with a three core shielded cable of maximum 20 Ω lead resistance per conductor.
Quantity	2 RTD inputs available

COMMUNICATIONS

Protocol	Modbus RTU or ASCII
Topology	Multidrop/daisychain
Cable	Single shielded twisted pair, 0.5 mm^2 (24 AWG) or larger
Length	Typical 2.7 km max @ 9600 Baud
Quantity	Up to 32 devices
Address	Programmable

PROGRAMMING AND SETTING

Method	Via programmable keypad or via RS485 interface
Units of measure	°C or °F
Digital display	Actual temperature, control temperature, heater current, load power, voltage, resistance, ground fault level, alarm status, programming parameter values.
LED indicators	LEDs available for: display mode, heater ON, alarm condition, receive/transmit data.
Memory	Nonvolatile, restore after power loss.
Stored parameters (measured)	Minimum and maximum process temperature. Maximum ground fault current, maximum heater current. Power accumulator. Contactor cycle counter. Time in use clock.
Alarm conditions	Low/high temperature, Low/high current, Low/high voltage. Low/high resistance. Groundfault alarm/trip. RTD failure, loss of programmed values, switch failure.
Other	Multi language support, password protection.

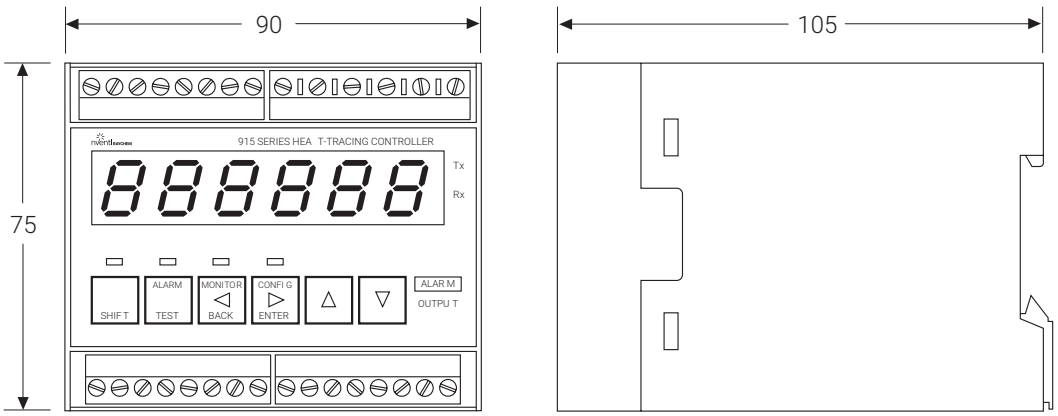
MONITORING

Temperature	Low/High alarm range –60°C to 570°C or OFF
Ground fault (via external CT, optional)	Alarm/Trip range 10 mA to 250 mA or OFF
Load current (via external CT, optional)	Low/High alarm range 0.3 A to 100 A or OFF (can be ajusted to match heater current)
Voltage	Low/High alarm range 10 Vac to 330 Vac or OFF
Resistance	Low resistance range 1 to 100% deviation (can be ajusted to match heater current) High resistance range 1 to 250% deviation
Power	Power limit 3 W to 33 KW
Auto cycle	Diagnostic test interval adjustable from 1 to 240 minutes or 1 to 240 hours

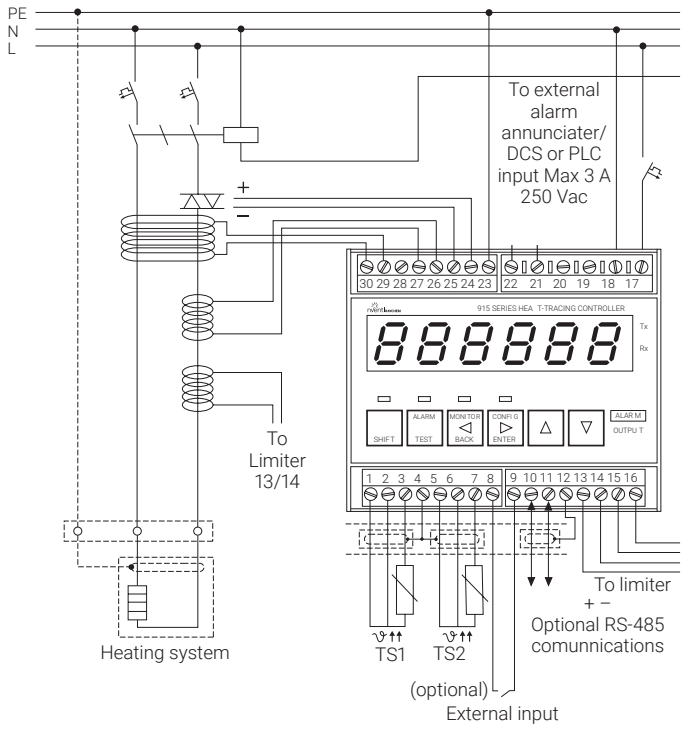
ENCLOSURE

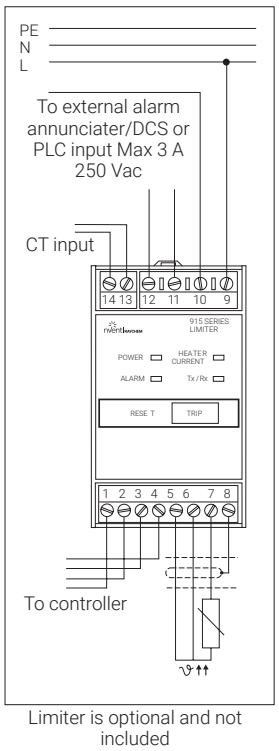
Ambient operating temperature range	–40°C to +50°C
Ambient storage temperature range	–40°C to +85°C
Relative humidity	0% to 90% Non condensing
Ingress protection	Housing: IP40, Terminals: IP20
Material	ASA-PC, color: green
Flammability class	V0 (UL94)
Mounting method	Panel mounting on 35 mm DIN rail

ENCLOSURE DIMENSIONS



WIRING DIAGRAM





Terminal assignments for the controller

1. RTD 1 source
2. RTD 1 sense
3. RTD 1 common
4. Shield
5. RTD 2 source
6. RTD 2 sense
7. RTD 2 common
8. External Input + (Inhibit/override)
9. External Input – (Inhibit/override)
10. Communications (RS-485+)
11. Communications (RS-485 –)
12. Shield
13. Digital common (to Limiter 1)
14. +12 Vdc out (to Limiter 2)
15. TX data (to Limiter 3)
16. RX data (from Limiter 4)
17. Mains Input (L1)
18. Mains Input (L2/neutral)
19. Control relay output
20. Control relay output
21. Alarm relay output
22. Alarm relay output
23. PE
24. SSR control output +
25. SSR control output –
26. Load Current CT input
27. Load Current CT input
28. Shield
29. GF CT input
30. GF CT input

ORDERING DETAILS

Controller	Part description	HTC-915-CONT	
	PN (Weight)	10275-001 (0.4 kg)	
Limiter	Part description	HTC-915-LIM	
	PN (Weight)	10275-003 (0.2 kg)	
Current sensor (load current transformer)		HTC-915/CT	1244-000276 (0.15 kg)
Current sensor (earth leakage current transformer)		HTC-915/ELCT	1244-000277 (0.15 kg)
RTD for Hazardous area zone 1		MONI-PT100-EXE	967094-000 (0.44 kg)
RTD for non hazardous area		MONI-PT100-NH	140910-000 (0.22 kg)
RS485 Communication cable		See datasheet RS485-WIRE	
Solid state relays	20 A 230 Vac single phase	DT-SSR-1-23-20	1244-001468 (0.16 kg)
	50 A 480 Vac single phase	DT-SSR-1-48-50	1244-001467 (0.75 kg)

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