nVent

RAYCHEM

Elexant 9200i
Wireless Communications Interface

Installation Instructions

DESCRIPTION

The nVent RAYCHEM Elexant 9200i is a Wireless Communications Interface that provides an alternative solution to hardwired Remote Monitoring and Configuration of Electric Heat Tracing (EHT) systems. It integrates with nVent RAYCHEM Supervisor software and Electric Heat Trace (EHT) controllers, helping reduce TIC/TOC of a project.

The Elexant 9200i product line consists of the following:

- Standalone enclosures
- A wireless communications option within a given Control Panel
- External antenna packages

A minimum of two radio transceivers are required to establish a network. Standalone enclosures can be configured in many ways, enabling the customer to choose from a range of options: enclosure material, radio frequency, and antenna type.

TOOLS REQUIRED

Small flat-blade screwdriver (terminal driver), wire strippers and utility knife, and/or wire cutters.

SUPPORTING INFORMATION

Further information pertaining to transceiver hardware and software can be found within associated manufacturer's documentation.

APPROVALS

Areas of Use	Class I, Division 2 / Zone 2 Hazardous locations
Approvals (applicable to Enclosures)	Hazardous Locations

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E490519
Proc. Cont. Eq.
For Haz.Loc

Class I, Division 2, Group A,B,C,D T4
Class I, Zone 2, IIC T4
Type 4X
IP64 (FW), IP66 (SW)

Ex

IECEx UL 20.0056 X Ex ec IIC T4 Gc IP64 (FW), IP66 (SW)
DEMKO 20 ATEX 2376 X
UL21UKEX2318X
II 3G Ex ec IIC T4 Gc IP64 (FW), IP66 (SW)

VARIANTS (NOT ALL VARIANTS ARE AVAILABLE IN ALL REGIONS)

nVent RAYCHEM Elexant 9200i Wireless Enclosures

(See Notes 1 and 2)

Description	Catalog Number	Part Number	Weight (kg/lbs)
Elexant 9200i 868 MHz Phoenix Contact module in FG enclosure with window, antenna, and pre-drilled holes for power (M25) and communications (M20)	10392-100	9200i-E-PC-868-FW	3.9 / 8.6
Elexant 9200i 868 MHz Phoenix Contact module in FG enclosure with window, external antenna connection, and pre-drilled holes for power (M25) and communications (M20) - antenna & coax sold separately	10392-101	9200i-E-PC-868-FW-EXT	3.2 / 7.1
Elexant 9200i 868 MHz Phoenix Contact module in SS enclosure with window, antenna, and pre-drilled holes for power (M25) and communications (M20)	10392-102	9200i-E-PC-868-SW	6.7 / 14.7
Elexant 9200i 868 MHz Phoenix Contact module in SS enclosure with window, external antenna connection, and pre-drilled holes for power (M25) and communications (M20) - antenna & coax sold separately	10392-103	9200i-E-PC-868-SW-EXT	6.0 / 13.2
Elexant 9200i 900 MHz Phoenix Contact module in FG enclosure with window and antenna	10392-104	9200i-A-PC-900-FW	3.9 / 8.6
Elexant 9200i 900 MHz Phoenix Contact module in FG enclosure with window and external antenna connection - antenna & coax sold separately	10392-105	9200i-A-PC-900-FW-EXT	3.2 / 7.1
Elexant 9200i 900 MHz Phoenix Contact module in SS enclosure with window and antenna	10392-106	9200i-A-PC-900-SW	6.7 / 14.7
Elexant 9200i 900 MHz Phoenix Contact module in SS enclosure with window and external antenna connection - antenna & coax sold separately	10392-107	9200i-A-PC-900-SW-EXT	6.0 / 13.2
Elexant 9200i 2.4 GHz Phoenix Contact module in FG enclosure with window and antenna	10392-108	9200i-A-PC-024-FW	3.9 / 8.6
Elexant 9200i 2.4 GHz Phoenix Contact module in FG enclosure with window and external antenna connection - antenna & coax sold separately	10392-109	9200i-A-PC-024-FW-EXT	3.2 / 7.1
Elexant 9200i 2.4 GHz Phoenix Contact module in SS enclosure with window and antenna	10392-110	9200i-A-PC-024-SW	6.7 / 14.7
Elexant 9200i 2.4 GHz Phoenix Contact module in SS enclosure with window and external antenna connection - antenna & coax sold separately	10392-111	9200i-A-PC-024-SW-EXT	6.0 / 13.2
Elexant 9200i 2.4 GHz Phoenix Contact module in FG enclosure with window, antenna, and pre-drilled holes for power (M25) and communications (M20)	10392-112	9200i-E-PC-024-FW	3.9 / 8.6
Elexant 9200i 2.4 GHz Phoenix Contact module in FG enclosure with window, external antenna connection, and pre-drilled holes for power (M25) and communications (M20) - antenna & coax sold separately	10392-113	9200i-E-PC-024-FW-EXT	3.2 / 7.1
Elexant 9200i 2.4 GHz Phoenix Contact module in SS enclosure with window, antenna, and pre-drilled holes for power (M25) and communications (M20)	10392-114	9200i-E-PC-024-SW	6.7 / 14.7
Elexant 9200i 2.4 GHz Phoenix Contact module in SS enclosure with window, external antenna connection, and pre-drilled holes for power (M25) and communications (M20) - antenna & coax sold separately	10392-115	9200i-E-PC-024-SW-EXT	6.0 / 13.2

nVent RAYCHEM Elexant 9200i Wireless Antenna Packages

All Antenna Packages listed are accessories to the Enclosures shown above, and are shown to assist the customer in product selection. However, they are not included in the approvals of the Enclosures. Each component of the antenna packages must have its own suitable certification for each use case. Refer to the section on 'SPECIFIC CONDITIONS OF SAFE USE' for further information.

(See Notes 1 and 2)

Description	Catalog Number	Part Number	Weight (kg/lbs)
Elexant 9200i 868 MHz Antenna Package Accessory - OMNI 2 dBi antenna with 3 meter coaxial cable, antenna bracket, and gland	10392-151	9200i-E-PC-ANT-868-OM1-3	1.4 / 3.1
Elexant 9200i 868 - 900 MHz Antenna Package Accessory - OMNI 2 dBi antenna with 3 meter coaxial cable, antenna bracket, and gland	10392-152	9200i-A-PC-ANT-900-OM2-3	1.4 / 3.1
Elexant 9200i 2.4 GHz Antenna Package Accessory - OMNI 2 dBi antenna with 3 meter coaxial cable, antenna bracket, and gland	10392-153	9200i-C-PC-ANT-024-OM3-3	1.4 / 3.1
Elexant 9200i 868 - 900 MHz Antenna Package Accessory - OMNI 5 dBi YAGI antenna with 3 meter coaxial cable, antenna bracket, and gland	10392-154	9200i-C-PC-ANT-900-YA1-3	2.1 / 4.6
Customized Antenna Package Accessory	9200i-ANT-C	9200i-ANT-C	N/A

Notes:

1. Many countries restrict the use of specific Radio Frequencies. In general, the following frequencies can be used accordingly:
   a. 868 MHz – EMEAI
   b. 900 MHz – North America
   c. 2.4 GHz – Global
2. Further information pertaining to specific regional information can be found within the manufacturer's documentation.

⚠ WARNING:

This component is an electrical device that must be installed correctly to ensure proper operation and to prevent shock or fire.

GENERAL

Electromagnetic compatibility	Conformance with EMC Directive's 2004/108/EC and 2004/30/EU
Supply voltage	100 – 240 VAC, 50-60 Hz
Internal power consumption	< 9 W (900MHz), 2W (868MHz & 2.4GHz)
Transmission power	< 1 W

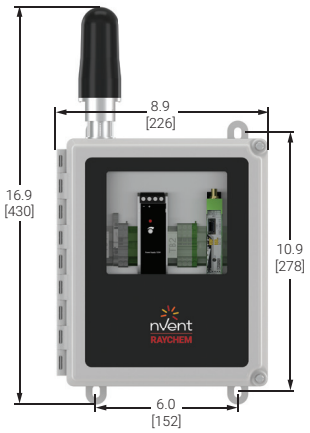
ENVIRONMENTAL

Protection	NEMA 4X, IP64 (FG enclosure), IP 66 (Stainless Steel Enclosure)
Materials	Fiberglass (FG) or Stainless Steel (SS304)
Ambient operating temperature	–40°C to 47°C (–40°F to 116°F) cULus variants –40°C to 52°C (–40°F to 125°F) IECEX / ATEX / UKEx variants
Ambient storage temperature	–40°C to 85°C (–67°F to 185°F)
Relative humidity	20% to 85% noncondensing
Environment	PD2, CAT III
Max. altitude	2,000 m (6,562 ft)

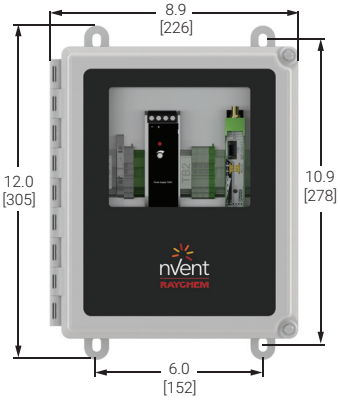
MOUNTING THE ELEXANT 9200I ENCLOSURE

The ideal mounting method is to secure the enclosure to channel strut, or other structural components, using the included mounting hardware.

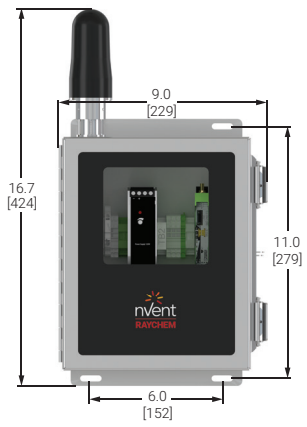
Typical enclosure dimensions: inches [mm].



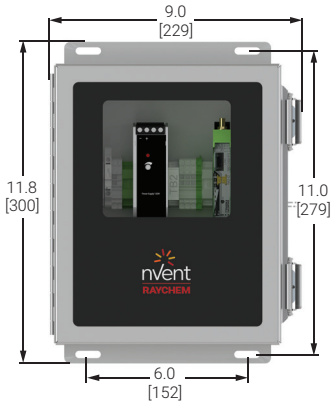
FG enclosure with enclosure mounted antenna



FG enclosure without the antenna



SS enclosure with enclosure mounted antenna



SS enclosure without the antenna

CONNECTIONS AND INDICATORS

Power supply input	Fuse terminal, 26 – 10 AWG (0.14 – 6 mm^2), torque 0.6 – 0.8 Nm
	Neutral terminal, 20 – 10 AWG (0.5 – 6 mm^2), cage clamp
	Ground (Earth), 20 – 10 AWG (0.5 – 6 mm^2), cage clamp
Minimum conductor temp. rating	80°C (176°F)
RS-485 communications	Comm terminals, 22 – 12 AWG (0.25 – 4 mm^2), cage clamp
	Ground (Earth), 22 – 12 AWG (0.25 – 4 mm^2), cage clamp

A. TB-1 Wiring	
Terminals	Function
1	Power IN (L1)
2	Power IN (N)
PE	Earth Ground (G)

B. TB-2 Wiring	
Terminals	Function
1	RS-485 +
2	RS-485 –
IE NOTE1	RS-485 Shield (SH)
PE	Earth Ground (G)

Note 1: To provide isolated earth for comm shield, remove jumper between IE & PE.

C. Antenna Connection

Note: Internal antenna connections made at factory. An external connection applies if using an external antenna package; such a connection method is provided.

D. Status LEDs – Radio transceivers	
PWR	Green LED indicating status of supply voltage
Off	No supply voltage present
On	Supply voltage OK

DAT	Green LED indicating status of bus communications
Off	No communication
Flashing	Unit in Configuration mode
On	Cyclic data communication

⚠ WARNING:

Shock Hazard. Disconnect from live voltage prior to accessing terminals

ERR	Red LED indicating error state
Off	No error
Flashing – Slow (1.4 Hz)	When unit configured for I/O data mode
	Double assignment of I/O map address
	Missing input module
	Missing output module
	RAD ID changed
	When unit configured for PLC/Modbus RTU mode
	Double assignment of I/O map address
	RAD ID changed
	No Modbus communication
Flashing – Fast (2.8 Hz)	Wireless connection interrupted
On	Local bus error

RX	Green LED indicating Receive data activity of wireless transmissions, in conjunction with serial interface

TX	Green LED indicating Transmit data activity of wireless transmissions, in conjunction with serial interface

LED Bar Graph		Green and Yellow LEDs indicating receive signal strength	
Graph status	LEDs	Receive signal	RSSI voltage
	All 4 LEDs are lit	Connection with maximum receive signal strength	2.5 to 3.0 V
	1 Yellow LED and 2 Green LEDs are lit	Connection with very good receive signal strength	2.0 to 2.5 V
	1 Yellow LED and 1 Green LED is lit	Connection with good receive signal strength	1.5 to 2.0 V
	1 Yellow LED lit	Connection with weak receive signal strength	1.0 to 1.5 V
	All LEDs off	Not connected Configuration mode Overload	0 VDC

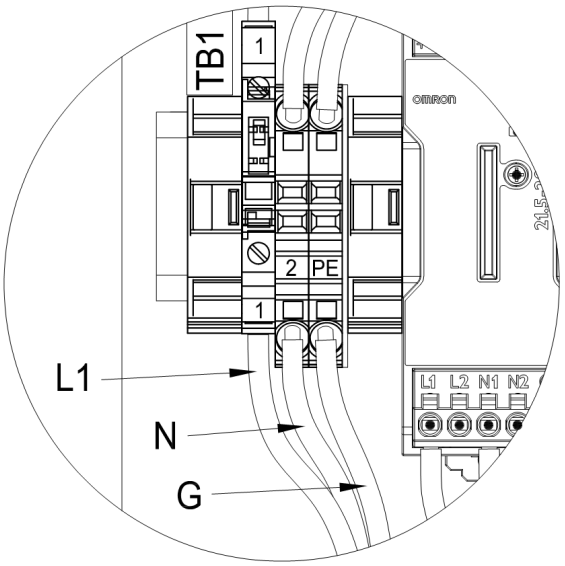
868 MHz Radio Levels						
LED Bar Graph	1.2k	9.6k	19.2k	60k	120k	RSSI voltage
	–90 dBm	–85 dBm	–80 dBm	–75 dBm	–70 dBm	>= 2.5 V
	–100 dBm	–95 dBm	–90 dBm	–85 dBm	–80 dBm	>= 2.0 V
	–110 dBm	–105 dBm	–100 dBm	–95 dBm	–90 dBm	>= 1.5 V
	LINK	LINK	LINK	LINK	LINK	~1.0 V
	Not Connected, Configuration more, or overload					0 V

900 MHz Radio Levels					
LED Bar Graph	16k	125k	250k	500k	RSSI voltage
	–75 dBm	–70 dBm	–65 dBm	–60 dBm	2.5 to 3.0 V
	–85 dBm	–80 dBm	–75 dBm	–70 dBm	2.0 to 2.5 V
	–95 dBm	–90 dBm	–85 dBm	–80 dBm	1.5 to 2.0 V
	LINK	LINK	LINK	LINK	1.0 to 1.5 V
	Not Connected, Configuration more, or overload				0 V

2.4 GHz Radio Levels				
LED Bar Graph	16k	125k	250k	RSSI voltage
	–70 dBm	–65 dBm	–60 dBm	>= 2.5 V
	–80 dBm	–75 dBm	–70 dBm	>= 2.0 V
	–90 dBm	–85 dBm	–80 dBm	>= 1.5 V
	LINK	LINK	LINK	~1.0 V
	Not Connected, Configuration more, or overload			0 V

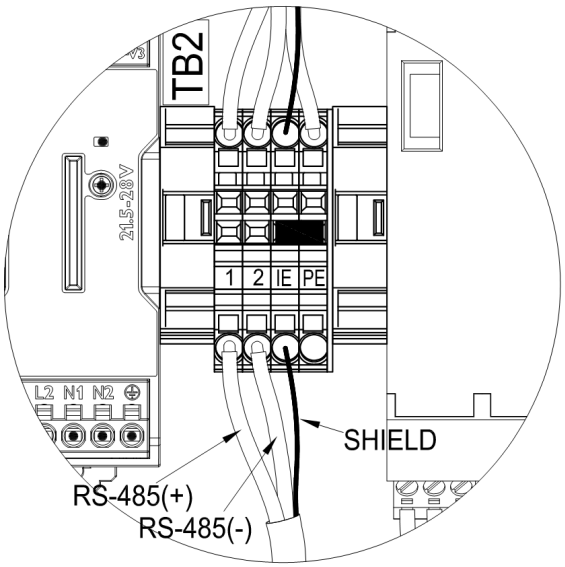
1. INPUT POWER

The input power connection is made at the screw terminals on Terminal Block TB-1.



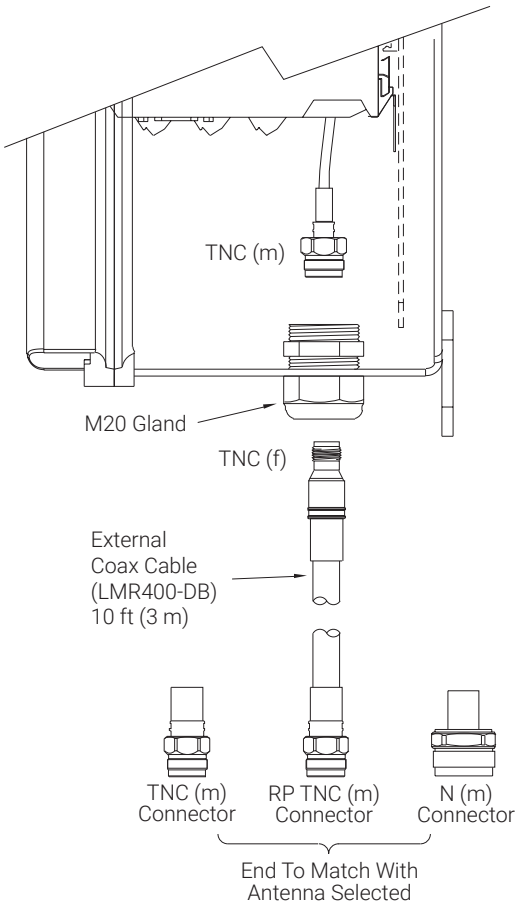
2. RS-485 CONNECTIONS

Wiring for RS-485 communications is made at screw terminals on Terminal Block TB-2.



3. ANTENNA COAXIAL CONNECTION

Depending on the package purchased, an external antenna may need to be connected.



SPECIFIC CONDITIONS OF SAFE USE

- The enclosure of the device shall be fitted with a locking mechanism such that it is only accessible with the use of a tool
- To maintain an internal pollution degree 2 environment, after opening the enclosure, make sure there is no visible condensation or dust. Power the device and let it heat up for 5 minutes before closing the enclosure door
- Only install in areas with low risk of mechanical impact
- Enclosure openings must be filled by equipment marked for use in ATEX / UKEx / IECEX Zone 2 areas, and match or exceed the IP rating of the enclosures. General Guide to Cable Entry Positions into Cable Gland or Enclosure Side:
  - Maximum hole diameter is major thread diameter of cable gland plus 0.7 mm (.03")
  - Minimum material to be maintained between holes: Glands M16 through M32: 15 mm (0.59") Glands M35 through M75: 20 mm (0.79") Glands M75 through M100: 35 mm (1.38"). Prior to making holes in the enclosure wall or gland plate, verify that the selected gland will not interfere with the sealing washer and locknut
  - Select a gland for the correct application with the proper certifications. Make certain all cable gland accessories are included for through hole installation. Additional accessories may include locknut and sealing washers
  - Install the gland in accordance to the manufacturer's instructions
  - Holes must be located to prevent sealing washer and locknut from interfering with gasket
- Externally mounted antennas and accessories must be suitable for ATEX / UKEx / IECEX Zone 2 areas, and match or exceed the IP rating of the enclosures
- The fuse for incoming power shall be considered user replaceable. Refer to Enclosure Drawing Bill of Materials for the correct Current Rating, Model, and Part Number of the fuse. Prior to replacing the fuse, disable or disconnect from power. Upon replacing the fuse, remove the fuse plug / housing, replace the fuse per note above, close and re-seat the fuse plug / housing securely

⚠ WARNING: Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2 hazardous and nonhazardous locations

⚠ AVERTISSEMENT - Risque D'explosion - La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2

⚠ WARNING: Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous

⚠ AVERTISSEMENT - Risque D'explosion - Avant de débrancher l'equipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux

⚠ WARNING: Explosion Hazard – To prevent the risk of electrostatic discharge, only clean the equipment enclosure with a damp cloth

⚠ AVERTISSEMENT - Risque D'explosion - Pour éviter toutrisque de décharge électrostatique, ne nettoyez le boîtier de l'appareil qu'avec un chiffon humide

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