

Elexant 7300i Module

Installation Instructions



DESCRIPTION

The Raychem Elexant 7300i is Chemelex's next-generation controller for electric heat tracing control and monitoring. The Elexant 7300i delivers 920 functionality with a modern and intuitive graphical local user interface. Available in two variants — the ST1 (single-phase) and ST3 (three-phase). The Elexant 7300i is an open-type device that must be installed within an enclosure providing at least IP54 ingress protection in accordance with IEC/EN/UL/CSA 60079-0, and that is only accessible with the use of a tool.

For instructions on replacing a Raychem 920 controller with the Elexant 7300i, refer to the Elexant 7300i conversion kit instructions.

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

APPROVALS



Class I, Division 2, Group A, B, C, D T3
Class I, Zone 2, AEx ec IIC T3 Gc
Ex ec IIC T3 Gc



PENDING
IECEX UL 26.0018X
Ex ec IIC T3 Gc



PENDING
UL 26 ATEX 3522X
II 3 G Ex ec IIC T3 Gc

More details about product certification, approvals, and conditions of safe use are available at www.chemelex.com/raychem.

Statement of Compliance

Compliance with the Low Voltage Directive 2014/35/EU, the ATEX Directive 2014/34/EU, and the Electromagnetic Compatibility Directive 2014/30/EU is pending completion of the IECEX and ATEX approvals listed above. Compliant with Radio Equipment Directive 2014/53/EU.

Cybersecurity

To help protect the Elexant 7300i against unauthorized access, set a passcode on the module, disable Bluetooth when it is not in use, restrict physical access to the enclosure, and connect the RS-485 port only to trusted devices and networks.

KIT CONTENTS

Item	Qty	Description
A	1	Elexant 7300i Control Module

TOOLS REQUIRED

- Flat-blade screwdriver, 3.5 × 0.5 mm (0.14 × 0.02 in)
- Torque wrench, 8 mm (5/16 in), set to 0.8–1.1 N·m (7–10 in·lb)

⚠ WARNING:

Do not connect/disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
Ne débranchez pas l'équipement tant que l'alimentation est coupée ou que la zone est connue pour être non dangereuse.

⚠ IMPORTANT:

- Module must be provided with approved branch circuit protection not more than 20A.
- Peripheral equipment must be suitable for the location in which it is used.
- There are no non-incendive circuits or non-incendive field wiring within or associated with the unit.
- Only technically qualified service personnel are permitted to install or service the equipment.
- Do not disassemble the system – no user-serviceable parts inside.
- Do not operate the equipment if it has been damaged.
- Le module doit être équipé d'un dispositif de protection de circuit de dérivation homologué dont l'intensité ne doit pas dépasser 20 A.
- L'équipement périphérique doit être adapté à l'emplacement dans lequel il est utilisé.
- Il n'y a pas de circuits non incendiaires ni de câbles de terrain non incendiaires à l'intérieur ou associés avec l'équipement.
- Seul le personnel qualifié est autorisé à installer ou à entretenir l'équipement.
- Ne pas démonter le système – aucune pièce interne ne peut être réparée par l'utilisateur.
- N'utilisez pas l'équipement s'il a été endommagé.

VARIANTS

Not all variants are available in all regions.

Type	Part Number	Description
Elexant 7300i-ST1	2000006771	Single-phase Elexant 7300i module. Two independent circuits. 1-phase architecture. (Approved for Class I, Division 2/Zone 2 locations)
Elexant 7300i-ST3	2000006772	Three-phase Elexant 7300i module. Two independent circuits. 3-phase architecture with independent current measurement on phases A/B/C. (Approved for Class I, Division 2/Zone 2 locations)

TECHNICAL DATA

General

Parameter	Value
Module Supply Voltage	100–277 Vac $\pm 10\%$, 50/60 Hz
Power Consumption	20 W max
Applicable Standards	IEC/EN/UL/CSA 60079-0; IEC/EN/UL/CSA 60079-7; IEC/EN/UL/CSA 61010-1; UL 121201; CSA C22.2 No. 213
EMC	EN/IEC 61326-1, Class B

ENVIRONMENTAL

Parameter	Value
Ambient Operating Temperature	–40°C to +55°C (–40°F to +131°F)
Ambient Storage Temperature	–60°C to +70°C (–76°F to +158°F)
Relative Humidity	5% to 95%, non-condensing
Max Altitude	2,000 m (6,562 ft)
IP Rating (Module)	IP20 (module only — must be installed in IP54 or better enclosure)
Environment	Pollution degree 2, CAT III
Environmental Compliance	RoHS, WEEE, REACH, TSCA, Prop 65

CONTROL & LOAD

Parameter	Value
Control Circuits	Two independent circuits per controller
Control Algorithms	On/Off (deadband), PASC, Proportional (SSR), Always On, Always Off
Load Voltage (Maximum)	Conductors passing through the CT tubes may be rated up to 690Vac. The Module measures voltage 90-305Vac. Above 277 V L-N, use a step-down transformer and voltage turns ratio.
Load Current (Maximum)	0–63 A per circuit
Output Types	SSR and EMR/contactors — both supported

TEMPERATURE SENSOR INPUTS

Parameter	Value
Quantity	4 total (2 per circuit, 2 circuits)
Sensor Input Type	100 Ω platinum RTD — 3-wire, $\alpha = 0.00385$ ohms/ohm/°C only. 2-wire and Ni-Fe RTD types are not supported.
Multisensor Logic	Average, lowest, primary/failover per circuit

MONITORING

Parameter	Value
Temperature	Low alarm: configurable per-circuit High alarm: configurable per-circuit
Ground Fault	Alarm and trip thresholds 20-250 mA per circuit Alarm: configurable threshold, independently enable/disable, latching configurable Trip: configurable threshold, independently enable/disable, The ground fault protection implementation conforms to UL 1053. This standard is for equipment protection, and is not a human safety device for ground faults.
Heater Current	0-63 A per circuit Low alarm: configurable per-circuit High alarm: configurable per-circuit Elexant 7300i-ST3: current measured on each phase.
Voltage Measurement	90-305 Vac, 50/60 Hz
Autocycle	Periodic and on-demand autocycle for circuit integrity verification
Wiring	All wiring run through monitoring sensors shall be of an approved insulated wiring type

DIGITAL INPUTS / OUTPUTS

Parameter	Value
Digital I/O	Three 24 Vdc compliant
EMR/ SSR Drive Outputs	24 Vdc, 70 mA per output
Digital Output	24 Vdc, 45 mA per output; 135 mA max

CONNECTION TERMINALS

Terminal Type	Specification
Power Input / Heater Output / Earth	Cage Clamp, 0.08 to 2.5 mm ² (28 to 12 AWG)
Signal Wiring (RTD, RS-485, SSR/EMR, DIO, 24 Vdc)	Cage clamp, 0.08 to 2.5 mm ² (28 to 12 AWG)

COMMUNICATIONS

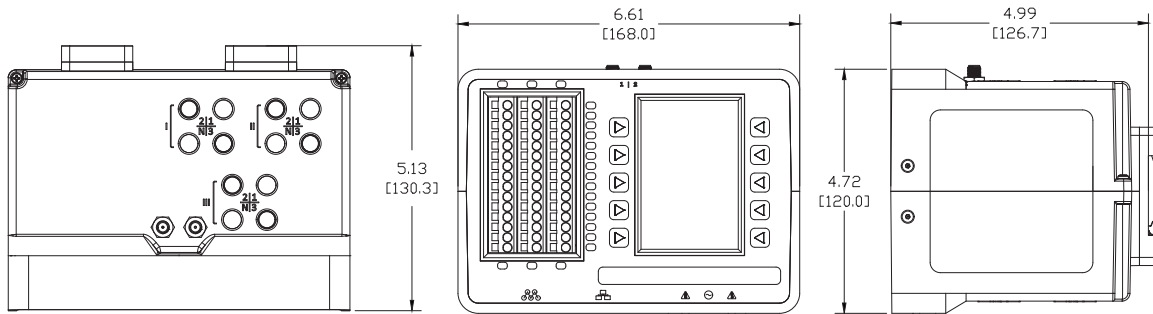
Parameter	Value
RS-485 / Protocol	Isolated 2-wire RS-485, Modbus RTU 920 Modbus emulation mode included
Supported Baud Rates	9600, 19200, 38400, 57600 baud
Parity	None, even, odd
Stop Bits	1, 2
Max Devices per Port	Modbus addresses 1-247
Bluetooth	Bluetooth Low Energy (BLE) Secure local interaction and firmware updates Enable/disable configurable

MEMORY AND CONFIGURATION

Parameter	Value
Memory	Non-volatile Settings retained through power loss
Stored Maintenance Data	Energy, max power, max ground fault, current, voltage, temperature min/max, hours in use, hours running, heater on time, contactor count
User Interface	3.5" diagonal graphical LCD Units: °C or °F
Status LEDs	Module Status, Circuit 1 Status, Circuit 2 Status, Bluetooth Status, RS-485 Status

INSTALLATION

For installation and operation, always observe applicable national safety regulations, accepted engineering practices, local electrical installation codes (IEC 60079-14 / EN 60079-14, National Electrical Code, Canadian Electrical Code), and the instructions stated in this installation manual. Carry out all work on the device in the de-energized state only.

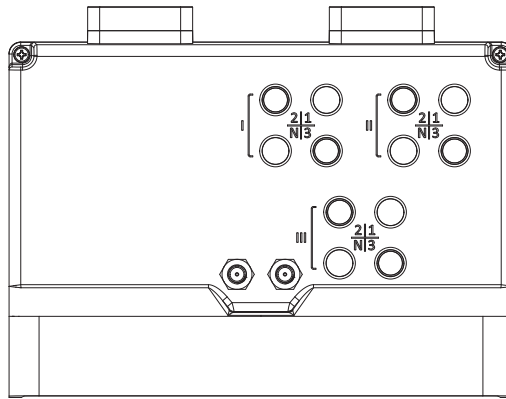


MOUNTING THE ELEXANT 7300I

The Elexant 7300i control module mounts onto a IEC/EN 60715, TS35 x 7.5 mm DIN rail inside a suitable enclosure.

MOUNTING: Insert the rear bottom of the module clip onto the DIN rail, then push up and rotate inwards to engage the clip.

REMOVAL: Push the module upwards to disengage the clip, then rotate the module down toward you.



NOTE: The enclosure shall provide a minimum ingress protection of IP54 in accordance with IEC/EN/UL/CSA 60079-0 and shall be accessible only with the use of a tool. Mount the enclosure on a suitably sized structure in an upright position per the enclosure manufacturer's recommendations.

Mechanical Installation

The Elexant 7300i module is an open-type device. It must be mounted within an enclosure providing at least IP54 in accordance with IEC/EN/UL/CSA 60079-0 and shall be accessible only with the use of a tool. Mount the module to a IEC/EN 60715, TS35 x 7.5 mm DIN rail or equivalent inside the enclosure.

Connecting Cables and Cable Glands

At ambient temperatures below -20°C (-4°F) and above 45°C (113°F), special care must be taken when selecting and installing cables and glands. Temperature-resistant cables and glands may be required.

Notice: Purchasers should make the manufacturer aware of any external effects or aggressive substances that the equipment may be exposed to.

Grounding and Bonding (Earthing)

The Elexant 7300i module must be earthed in accordance with local wiring regulations.

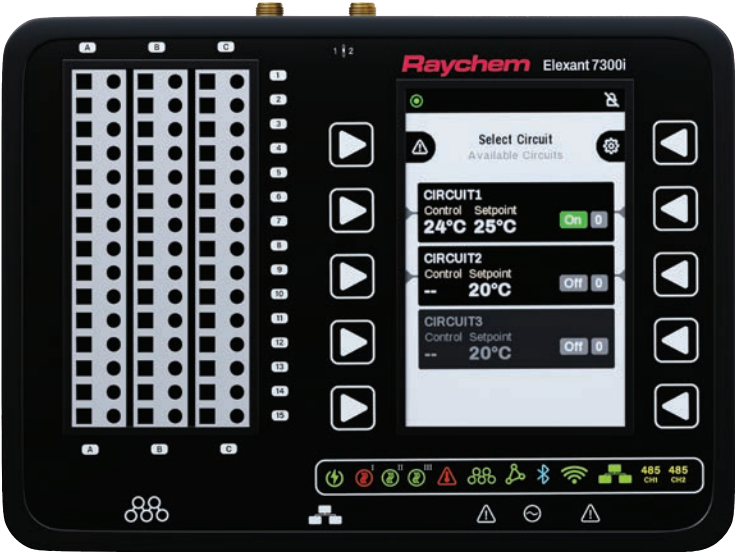
Electrical Installation

Refer to the numbered connection sections below for all wiring procedures. All wiring shall comply with local electrical codes and the National Electrical Code or Canadian Electrical Code as applicable.

- Approved branch circuit protection must be provided and not be more than 20 A
- Field wiring must be rated for 105°C minimum

CONNECTIONS AND INDICATORS

The Elexant 7300i control module features three terminal block connector columns — A, B, and C — providing 15 positions each. Refer to the terminal schedule below for full wiring assignments.



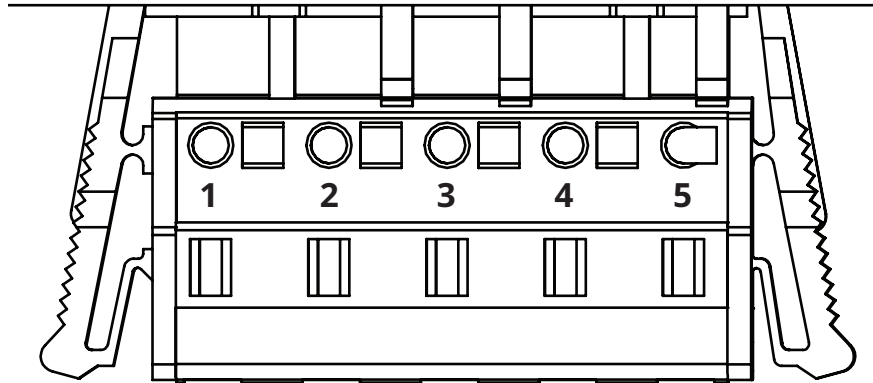
Terminal Block Layout

Pin	Column A	Column B	Column C
1	Channel 1 — RTD — SRC	Channel 4 — RTD — SRC	Reserved — do not connect
2	Channel 1 — RTD — SEN	Channel 4 — RTD — SEN	Reserved — do not connect
3	Channel 1 — RTD — COM	Channel 4 — RTD — COM	Reserved — do not connect
4	Channel 2 — RTD — SRC	Reserved — do not connect	Reserved — do not connect
5	Channel 2 — RTD — SEN	Reserved — do not connect	Reserved — do not connect
6	Channel 2 — RTD — COM	Reserved — do not connect	Reserved — do not connect
7	Channel 3 — RTD — SRC	Reserved — do not connect	EMR/SSR DO 1 +
8	Channel 3 — RTD — SEN	Reserved — do not connect	EMR/SSR DO 1 –
9	Channel 3 — RTD — COM	Reserved — do not connect	EMR/SSR DO 2 +
10	RS485 IN +	Channel 7 — DIO 1 = Alarm relay	EMR/SSR DO 2 –
11	RS485 IN –	Channel 7 — DIO 2 = External Input	Reserved — do not connect
12	RS485 IN COM	Channel 7 — DIO 3 = External Output	Reserved — do not connect
13	RS485 OUT COM	Reserved - do not connect	24VDC OUT +
14	RS485 OUT +	Reserved - do not connect	24VDC IN +
15	RS485 OUT –	Reserved - do not connect	24VDC COM –

Status LEDs: Module Status | Circuit 1 Status | Circuit 2 Status | Bluetooth Status | RS-485 Status

1. INPUT POWER

Input power is connected at the cage clamp terminals on the AC Connector terminal block. Refer to the Terminal Block Layout in the CONNECTIONS section for full terminal assignments.



Terminal	Input
1	Line / L1 Power Input
2	Line / L2 Power Input (for Elexant 7300i-ST3)
3	Line / L3 Power Input (for Elexant 7300i-ST3)
4	Neutral Power Input
5	Ground / PE

⚠ WARNING — EXPLOSION HAZARD

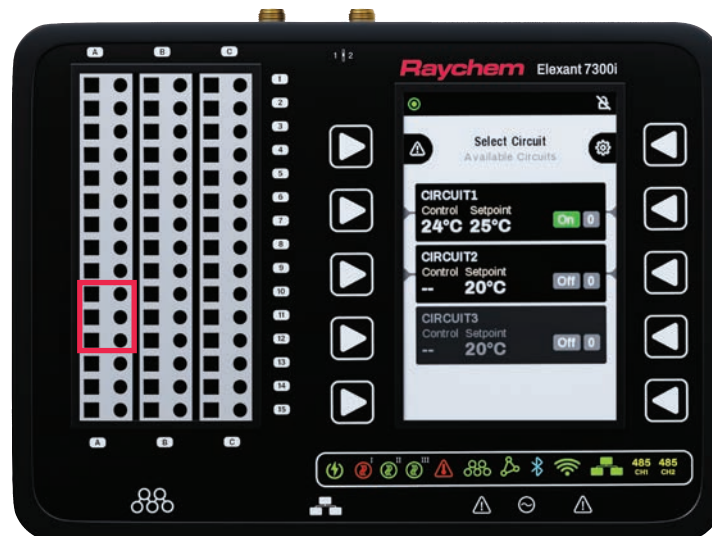
Disconnect from live voltage prior to accessing terminals.

⚠ AVERTISSEMENT — RISQUE D'EXPLOSION

Déconnectez de la tension de réseau avant d'accéder aux bornes.

2. RS-485 IN

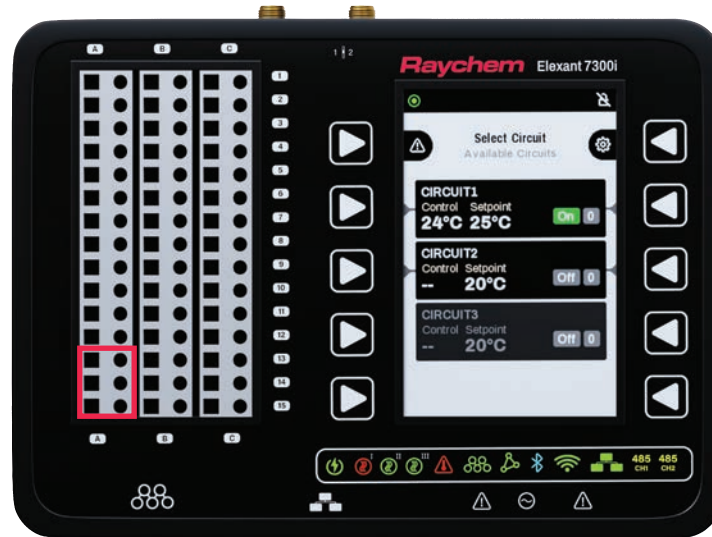
RS-485 IN wiring is terminated as shown in the terminal block layout above. No shield wires should be terminated directly on the module terminal pins. For best performance, connect an additional signal ground wire between COM and the signal ground of the upstream device to reduce noise from ground potential differences. Supported baud rates: 9600, 19200, 38400, 57600. Parity: none, even, odd. Stop bits: 1, 2.



3. RS-485 OUT

RS-485 OUT wiring is terminated as shown in the terminal block layout above.

NOTE: Configure the 120 Ω termination resistor via module configuration if this is the last device in the communications bus.



4. 3-WIRE RTD CONNECTIONS

RTD field wires are terminated as shown in the terminal block layout above. Only 3-wire 100 Ω platinum (Pt100) RTDs are supported ($\alpha = 0.00385$ ohms/ohm/ $^{\circ}\text{C}$). 2-wire and Ni-Fe RTD types are not supported.



5. SSR / EMR OUTPUT CONNECTIONS

SSR and EMR/contactor output connections are made as shown in the terminal block layout above. Both SSR and EMR/contactor output approaches are supported, including 1-, 2-, and 3-pole switching configurations.



⚠ WARNING — EXPLOSION HAZARD

Disconnect from live voltage prior to accessing terminals.

⚠ AVERTISSEMENT — RISQUE D'EXPLOSION

Déconnectez de la tension de réseau avant d'accéder aux bornes.

6. DIGITAL INPUTS / OUTPUTS

Three 24 Vdc-compliant digital I/O channels are available as shown in the terminal block layout above. Channels are configurable as inputs or outputs (e.g., common alarm).

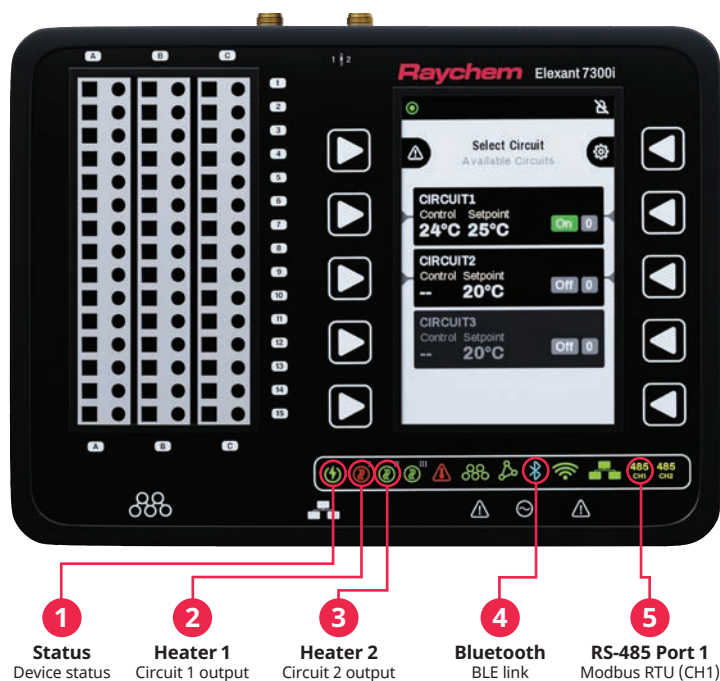


7. BLUETOOTH

The Elexant 7300i supports Bluetooth Low Energy (BLE) for secure local interaction and firmware updates. Bluetooth can be enabled or disabled via device configuration. Firmware can be updated over Bluetooth, see Operations Manual (N10206).

8. FIRST POWER UP

Start-up delay set by the last serial number.



Indicator	Normal State	Activity / Alarm State
Power / Status	Solid green when no system alarm is active	Red blink (500 ms on / 500 ms off) when one or more system alarms are active. Circuit-only alarms do not change this LED.
Heater 1 and Heater 2	Solid green when the circuit is enabled with no circuit alarm; off when it is disabled	Yellow for an active circuit alarm; red for an output override. Red takes priority over yellow. The selected color blinks (800 ms on / 200 ms off) while the physical heat relay is energized.
Bluetooth	Solid blue when connected; off when disabled, advertising, or not connected	Quick blue blink (100 ms on / 100 ms off) for one second on a new connection or an accepted GATT read/write, then returns to solid blue.
RS-485 Port 1	Solid green	Yellow pulse (100 ms) when the controller replies to a Modbus RTU request addressed to it. There is no pulse for frames addressed to other devices, invalid frames, or requests with no reply.

SAFETY INSTRUCTIONS

Please read all instructional literature carefully and thoroughly before starting. The information contained in this document is subject to change without notice. Keep these instructions, as well as the Operating Instructions, in a place always accessible to all users.

Use the Elexant 7300i only for its intended purpose and operate it only in clean, undamaged condition. Do not make any modifications to the 7300i that are not expressly mentioned in this document or the Operating Instructions. If the Elexant 7300i is used in a manner not specified by Chemelex, the protection provided by the equipment may be impaired.

The safety of any system incorporating the Elexant 7300i is the responsibility of the assembler of the system.

Carry out all work on the device in the de-energized state only.

For installation and operation, always observe the applicable national safety regulations, accepted engineering practices, and local electrical installation codes (IEC 60079-14 / EN 60079-14, National Electrical Code, Canadian Electrical Code).

Warning Statements

⚠ WARNING — EXPLOSION HAZARD

DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.

⚠ AVERTISSEMENT — RISQUE D'EXPLOSION

NE PAS DEBRANCHER TANT QUE LE CIRCUIT EST SOUS TENSION A MOINS QU'IL NE S'AGISSE D'UN EMPLACEMENT NON DANGEREUX.

⚠ WARNING — EXPLOSION HAZARD

Substitution of components may impair suitability for Class I, Division 2 and Zone 2 hazardous locations.

⚠ AVERTISSEMENT — RISQUE D'EXPLOSION

La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2 et Zone 2.

⚠ WARNING — EXPLOSION HAZARD

To prevent the risk of electrostatic discharge, clean the equipment enclosure only with a damp cloth.

⚠ AVERTISSEMENT — RISQUE D'EXPLOSION

Pour éviter tout risque de décharge électrostatique, ne nettoyez le boîtier de l'appareil qu'avec un chiffon humide.

SPECIFIC CONDITIONS OF USE

- The equipment shall only be used in an area not more than pollution degree 2, as defined in IEC/EN/UL/CSA 60664-1.
- The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC/EN/UL/CSA 60079-0 and is only accessible with the use of a tool.
- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
- The Elexant 7300i module does not contain any user-serviceable components and shall not be opened.
- Enclosures of the module shall be fitted with a locking mechanism such that the enclosure is only accessible with the use of a tool.
- To maintain an adequate pollution degree environment, after opening the enclosure, make sure there is no visible condensation or dust. Power the device and allow it to heat up for 5 minutes before closing the enclosure door.
- Only install in areas with low risk of mechanical impact.
- Not more than one single or multiple stranded wiring lead shall be connected to any terminal.
- Leads connected to terminals shall be insulated for the appropriate voltage and this insulation shall extend to within 1 mm (0.04 in.) of the body of the terminal throat.
- Leads connected to terminals shall be rated for a minimum service temperature of 105°C.
- Clean the Elexant 7300i and associated enclosures with a soft, damp cloth only.
- Branch circuit protection (20A max) and disconnection devices shall be provided at a location that is easily reached and identified as the disconnect device for the equipment.
- Les dispositifs de protection et de déconnexion des circuits de dérivation doivent être placés à un endroit facilement accessible et identifiés comme étant le dispositif de déconnexion de l'équipement.
- For information related to adjustment and parameter setting set-up; maintenance; repair; taking out of service and dismantling contact Chemelex LLC.

AREA OF USE

Elexant 7300i modules are approved for use in both hazardous (Class I, Division 2 / Zone 2 Gas) and non-hazardous areas. When used in an indoor or outdoor location, the module shall be installed in an enclosure providing proper environmental protection for the area of installation.

For ATEX and IECEx applications, the equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC/EN/UL/CSA 60079-0 and is only accessible with the use of a tool.

ORDERING INFORMATION

Name	Description	Part Number
Elexant 7300i-ST1	1 Phase Elexant 7300i-ST1 Module	2000006771
Elexant 7300i-ST3	3 Phase Elexant 7300i-ST3 Module	2000006772

Europe

Chemelex, Romeinse straat 14, 3001 Leuven, Belgium

North America

Chemelex, 899 Broadway Street, Redwood City, CA 94063, United States of America

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

chemelex
excellence is everything

Raychem

Tracer

Pyrotenax

Nuheat