

+ Quick Guide

EE431 UL Temperature Sensor

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—
your partner
in sensor
technology.

i PLEASE NOTE

Find this document and further product information on our website at www.epluse.com/ee431.

EE431 is designed for "Indoor use" and "Wet location" with IP65 protection.

1 UL Compliance Statement



United States

UL Listed, CCN QUYX, Under UL 61010-1, Process Control Equipment;
FCC Compliant to CFR47, Part 15, Subpart B, Class A

Canada

UL Listed, CCN QUYX7, Under CSA C22.2 No. 61010-1, Signal Equipment;
Industry Canada Compliant, ICES-003

2 Electromagnetic Compatibility

EMC for industrial environment.

Radio-frequency disturbance (emission) Class A

⚠ WARNING / AVERTISSEMENT

This device is not intended for use in residential areas and cannot ensure adequate protection of radio reception in such environments.

Cet appareil n'est pas destiné à être utilisé dans les zones résidentielles et ne peut garantir une protection adéquate de la réception radio dans de tels environnements.

3 FCC Part 15 Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

4 ICES-003 Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

5 Intended Use

The EE431 duct and immersion temperature sensor is optimised for reliable and accurate temperature monitoring in air and liquids within the specified temperature range. Typical applications for the sensor are building automation, HVAC and process control.

⚠ WARNING / AVERTISSEMENT

Non-compliance with the product documentation may cause safety risks for people and the entire measurement installation.

The manufacturer is not liable for any damage resulting from improper handling, incorrect installation, or inadequate maintenance of the device.

- Never use the EE431 in explosive atmosphere or for measurement in aggressive gases.
- This device is not appropriate for safety, emergency stop or other critical applications where device malfunction or failure could cause injury to human beings.
- Use only the tools specified in this manual when manipulating the device.

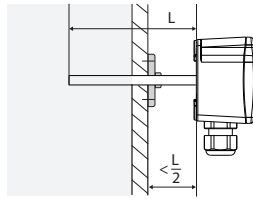
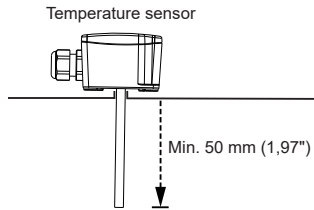
Le non-respect de la documentation produit peut entraîner des risques pour la sécurité des personnes ainsi que pour l'ensemble de l'installation de mesure.

Le fabricant n'est pas responsable des dommages résultant d'une mauvaise manipulation, d'une installation inadaptée ou d'un entretien inadéquat de l'appareil.

- *N'utilisez jamais l'EE431 dans une atmosphère explosive ni pour des mesures dans des gaz agressifs.*
- *Cet appareil n'est pas adapté aux applications de sécurité, d'arrêt d'urgence ou à d'autres applications critiques dans lesquelles un dysfonctionnement ou une défaillance de l'appareil pourrait entraîner des blessures corporelles.*
- *Utilisez uniquement les outils spécifiés dans ce manuel lors de la manipulation de l'appareil.*

6 Mounting Position

The enclosure may be installed vertically or horizontally in various orientations. However, the cable gland must be positioned facing downwards if possible. Installation with the cable gland facing upwards must be avoided!

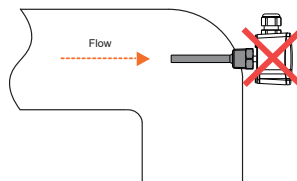
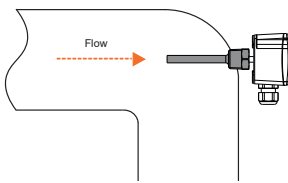


The part of the probe that remains outside the duct should not be longer than half of the probe's total length. This external part should be kept as short as possible. The probe length should be chosen according to the planned measurement setup.

6.1 Mounting with Immersion Well

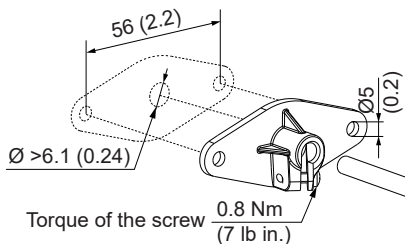
i PLEASE NOTE

- Avoid installing the sensor in regions with strong turbulence (e.g. directly after fittings)
- Mount the sensor facing opposite to the flow direction (see "Correct Position" below)



6.2 Mounting with Flange

- Mount the sensor approximately one meter from the inlet
- Install the probe so that the tip is placed at the centre of the duct



7 Electrical Ratings and Electrical Connections

⚠ WARNING / AVERTISSEMENT

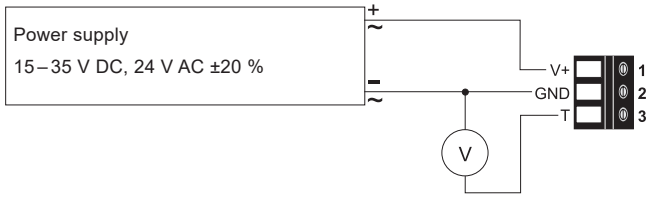
Improper installation, wiring or power supply may cause overheating and result in personal injury or property damage. Cables must not be under voltage during electrical installation and connection or disconnection, especially at terminal connections on circuit boards. For correct cabling, always observe the presented wiring diagram for the product version used.

The manufacturer cannot be held responsible for personal injury or damage to property caused by incorrect handling, installation, wiring, power supply or maintenance of the device.

Une installation ou un câblage incorrect, ou une alimentation électrique inadéquate, peut entraîner une surchauffe et causer des blessures corporelles ou des dommages matériels.

Les câbles ne doivent pas être sous tension lors de l'installation électrique, ni lors du raccordement ou du débranchement, en particulier au niveau des connexions sur les cartes électroniques. Pour un câblage correct, respectez toujours le schéma de câblage fourni pour la version du produit utilisée. Le fabricant ne peut être tenu responsable des blessures corporelles ou des dommages matériels causés par une manipulation, une installation, un câblage, une alimentation électrique ou une maintenance incorrects de l'appareil.

7.1 EE431 – Voltage Output (Order Code “A3” = 0 – 10 V)



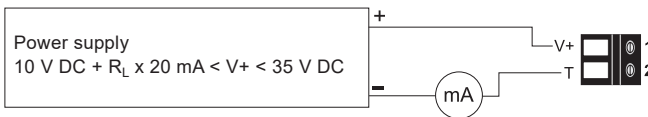
Supply:

Model	Supply Input	Terminals
	Voltage/Frequency/Power	
EE431-M3A3xxx xxx ... order code	Indoor use: 15 – 35 V DC LPS <0.1 W 24 V AC ±20 % 50/60 Hz Class 2 <0.3 W	V+ (1) – GND (2)

Analogue Output:

Outputs			
Model	Type	Ratings	Terminals
EE431-M3A3xxx xxx ... order code	T	0 – 10 V (SELV Limited Energy source)	T (3) – GND (2)

7.2 EE431 – Current Output (Order Code “A6” = 4 – 20 mA)



Minimum supply voltage V+ depending on load resistance $R_L \leq 500 \Omega$

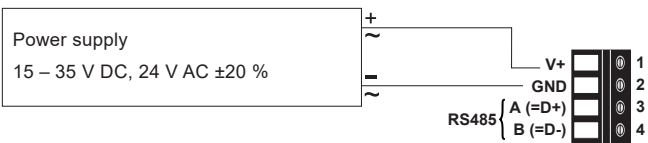
Example: $V_{+min} @ R_{Lmax} = 10 \text{ V DC} + R_L \times 20 \text{ mA} \rightarrow 10 \text{ V DC} + 500 \Omega \times 20 \text{ mA} = 20 \text{ V DC}$

R_L = load resistance

Analogue Output:

Outputs			
Model	Type	Ratings	Terminals
EE431-M3A6xxx xxx ... order code	T	4 – 20 mA (SELV Limited Energy source)	V+ (1) – GND (2)

7.3 EE431 – With Digital Interface (Order Code “J3” = RS485)



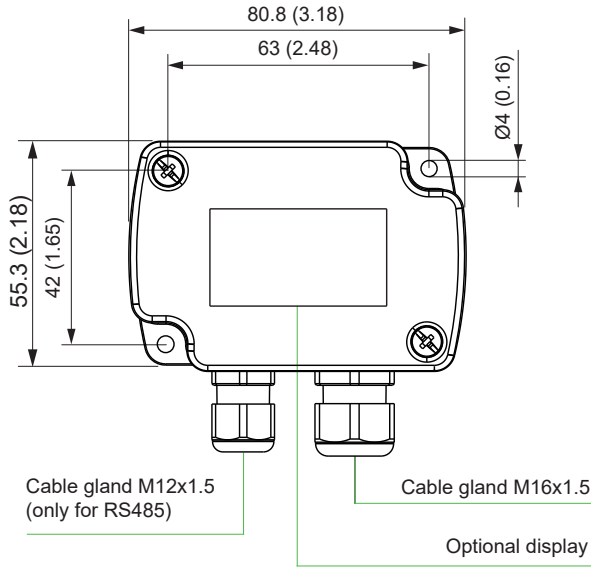
Supply:

Model	Supply Input	Terminals
	Voltage/Frequency/Power	
EE431-M3J3xxx xxx ... order code	Indoor use: 15 – 35 V DC LPS <0.1 W 24 V AC ±20 % 50/60 Hz Class 2 <0.3 W	V+ (1) – GND (2)

Digital Output:

Outputs			
Model	Type	Ratings	Terminals
EE431-M3J3xxx xxx ... order code	RS485	0 – 5 V (SELV Limited Energy source)	RS485 A (D+) (3) – RS485 B (D-) (4)

8 Installation



Wire size: 30 – 16 AWG

Type: Cu

Terminal torque: USA: 7 lb in.

CANADA: 0.8 Nm

Min. cable temperature 80 °C for devices with 70 °C ambient temperature

M12 cable gland:

Torque for fixing cable in cable gland: 2 Nm (17.7 lb in.)

Torque for fixing cable glands and screw plugs in enclosure: 2 Nm (17.7 lb in.)

M16 cable gland:

Torque for fixing cable in cable gland: 3 Nm (26.6 lb in.)

Torque for fixing cable glands and screw plugs in enclosure: 3.5 Nm (31 lb in.)

M12 screw plugs torque:

0.9 Nm (8 lb in.)

M16 screw plugs torque:

1.3 Nm (11.5 lb in.)

M12 cable diameter:

Min. 3.5 mm (0.14"), Max. 6.5 mm (0.24")

M16 cable diameter:

Min. 4.5 mm (0.18"), Max. 8 mm (0.31")

Close unused cable glands with plugs or screw plugs.

Product weight ranges from 80 g (L65, no display) to 110 g (L300, with display).

9 Temperature Range

Measurand	Duct sensor (probe tip)	With immersion well (probe tip)		Electronics without display	Electronics with display
		Active	Passive		
Temperature working range	-40...+110 °C (-40...+230 °F)	-40...+130 °C (-40...+266 °F)	-40...+150 °C (-40...+302 °F)	-40...+70 °C (-40...+148 °F)	-20...+50 °C (-4...+122 °F)

10 Maintenance

Clean the EE431 with a wet or dry cloth.

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