iDOL 139 LoRa
CO2, Humidity and Temperature Sensor

1 Product description

iDOL 139 is a sensor for measuring carbon dioxide (CO_2) relative humidity and temperature. The sensor is intended for measurement in live-stock houses and industrial environments. It is protected by a sturdy casing and behind a filter.

Reading out of data takes place wirelessly using the LoRaWAN standard (Long Range Wide Area Network).

It requires a LoRaWAN gateway. (Gateway must be purchased separately).

2 Product survey

140356 iDOL 139 Wireless LoRa 24 VDC

For measuring of carbon dioxide (CO_2) relative humidity and temperature.

Transmits data wirelessly.

Supplied with 2 meter power cable for 24 V DC and a protective cap.

To be used with iDOL 64 gateway.

2.1 Accessories

140337 iDOL 139 power supply

For supply of 80-240 V AC.

140327 iDOL 64 Gateway modem wireless & analog

Receives wireless, LoRa-based and analog sensor data and forwards it to the dol-sensor cloud service.

4 pcs. standard M12 male with 5 pins.

Supplied with 2 m cable with plug.

140355 iDOL 64 Gateway modem wireless

Receives wireless, LoRa-based sensor data and forwards it to the dol-sensor cloud service.

Supplied with 2 m cable with plug.

2.2 Spare parts

140261 DOL 119/139 Protection cap plug 5 pcs.

Protection cap for DOL 119/139 for protection of the sensor during, for example, cleaning.

140269 Cable 2 m M12 plug incl. sealing plug

2 meter cable with M12 plug and sealing plug.

3 Installation guide

Installation, servicing and troubleshooting of all electrical equipment must be carried out by qualified personnel in compliance with the applicable national and international standard EN 60204-1 and any other EU standards that are applicable in Europe.
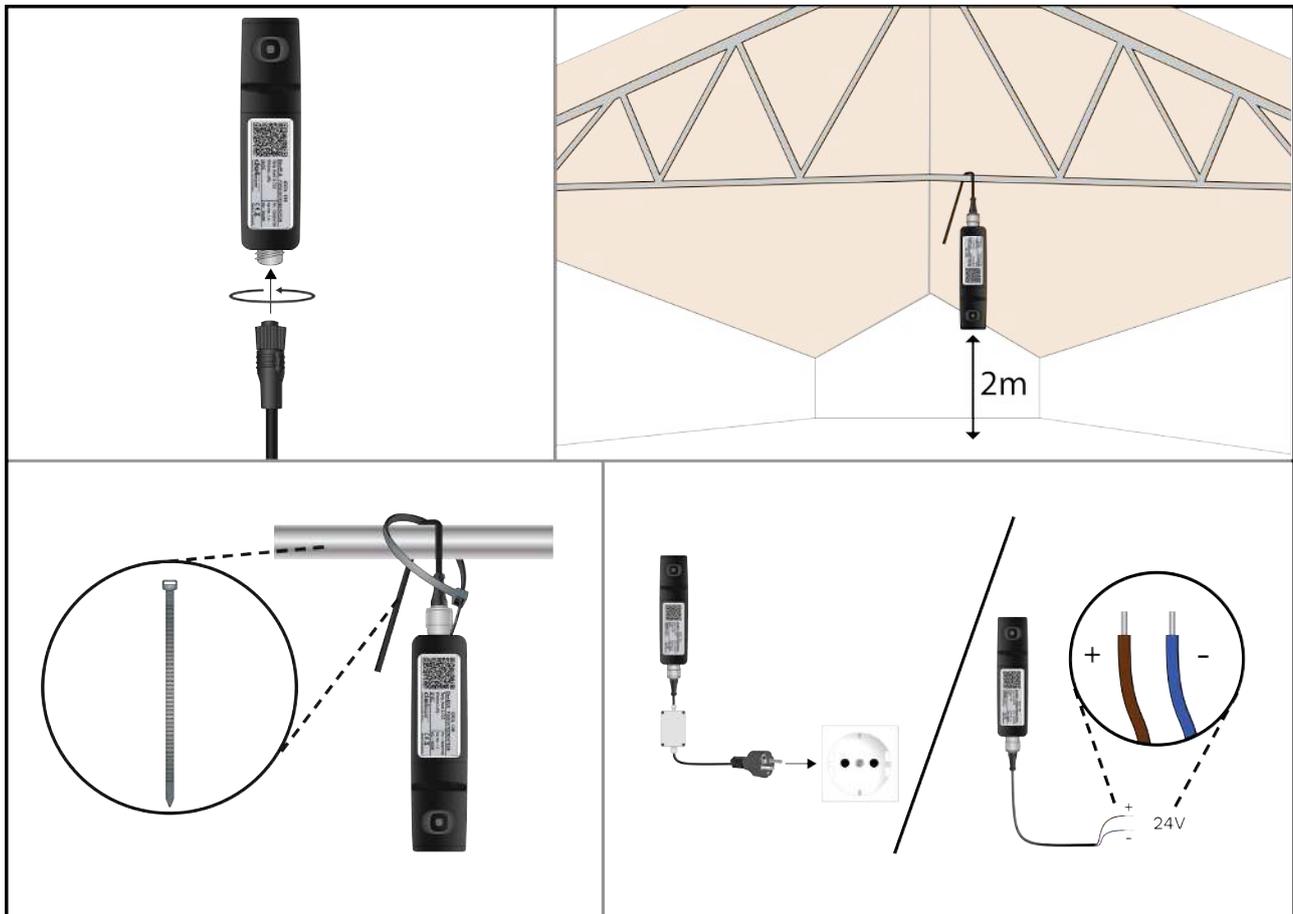
3.1 Setup

After installation the sensor must be connected to an idol 64 Gateway.

To do this, the device type and DevEUI is required. These can be read manually from the label or scanned from the QR code on the label.

4 LED indication

Sensor status on LED.

State	Description
Green ON	The sensor is connected to gateway and operation ok.
Green flash	The sensor is attempting to connect to the gateway.
Red ON	Sensor fault.
Red flash	Measurement outside the specified range.

5 Maintenance

When cleaning and disinfecting the house, the protective cap must be put on the sensor so that it hangs with the tip up, as shown in the picture.

Alternatively, the sensor must be removed from the house and the cable's M12 sealing plug installed.

Sensor is cleaned with:
- Water and brush
- High-pressure cleaning with cold water (only with attached protective cap)

Avoid using:

- High-pressure cleaning with hot water
- Highly compressed air
- Solvents
- Corrosive/caustic agents
- Alcohol-based disinfectants

After the sensor has been exposed to water and condensation, it requires a period where the relative humidity is lower than 80 %RH in order for it to measure correctly.

5.1 Recycling/Disposal

The label indicates that the product must not be disposed of as general refuse disposal and must be treated as electronic waste.
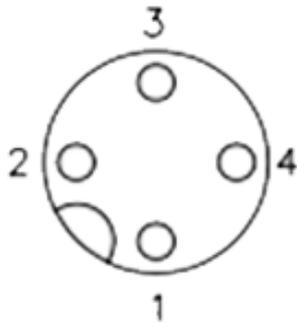
The label indicates that the product is suitable for recycling.

It must be possible for customers to deliver the products to local collection sites/recycling stations in accordance with local instructions. The recycling station will then arrange for further transport to a certified plant for reuse, recovery and recycling.

6 Technical data

Specification		Parameter	Unit
		iDOL 139 LoRa	
LoRa modul	LoRaWAN version	1.0.2	-
	Regional parameters version	Revision B	-
	Radio frequency plan	Europe – 863-870	Mhz
	Spreading factor	7–12 (Depends on noise and obstacles)	-
	Transmission frequency	1 (SF 7) 3 (SF 12)	min
	Range	Up to 300 in livestock houses. (Depends on walls and installation height of sensor and gateway).	m
Relative humidity	Measuring range	0-100	%RH
	Resolution	0.1	V/%RH
	Accuracy +10 °C - +40 °C (40-80% RH)	+/-3	%RH
	Accuracy 10%RH – 95%RH	+/-3 + 4% of measured value	%RH
	Time constant: T63	10 min. at 0.5 m/s air speed	-
Temperature	Measuring range	-40 - +60	°C
	Resolution	0.1	V/°C
	Accuracy -15 °C - +30 °C	+/-0.75	°C
	Accuracy -40 °C - -15 °C	+/-1.5	°C
	Accuracy +30 °C - +60 °C	+/-1.5	°C
	Time constant T63	7 min. at 0.5 m/s air speed	-
CO2	Measuring range	0-10000	ppm
	Resolution	0.001	V/ppm
	Accuracy 400 - 10000	100 $\pm$ 5% of measured value	ppm
	Time constant T63	2 min. at 0.5 m/s air speed	-
Supply voltage		5-30	VDC
Supply current	Normal	9	mA
	Maximum for data transmission	105	mA
Temperature, operation CO_2		0 - +50	°C
Temperature, operation		-40 - +60	°C
Temperature, storage		-40 - +70	°C
IP classification		IP67 (DIN 40050-9)	-
		NEMA 1, 3, 4, 6	-
Dimensions (diameter/width)		34	mm
Dimensions (length)		150	mm
Weight		180	g
Approvals		CE	-

6.1 Connection terminal

Pin connection in M12 plug	Digital signal (sensor output)	Color
Pin 1	24 V	Brown
Pin 2	Reserved	White
Pin 4	Reserved	Black
Pin 3	GND	Blue

6.2 Dimensions

Dimensions in mm.