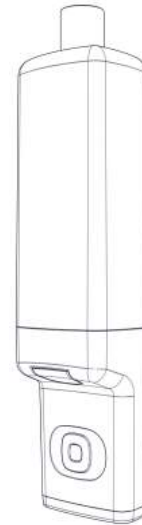# DOL 139
CO2 - Humidity - Temperature sensor

For other language variants of this document we refer to www.dol-sensors.com or your local dealer.

1 Product description

DOL 139 is a sensor for measuring carbon dioxide/CO2, relative humidity and temperature. The sensor is intended for measurement in live-stock house and industrial environments.

The sensor is protected by a sturdy casing and behind a carefully selected filter. The sensor is supplied with cable and a protection cap for protection of the sensor during washing and disinfection.

The sensor must be placed in the middle of the house.

1.1 Accessories

140261 DOL 119/139 protective cap, silicone (5 pcs.)

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

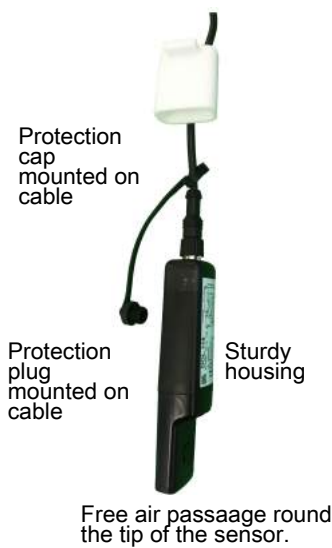**301241 Cable 2m 5xAWG 22 UL2464, M12 female plug**

2m cable for sensor mounting.

2 Installation

The sensor must be mounted freely hanging in the cable.

Remember that the protection cap must be mounted on the cable before the cable is mounted.

Protection cap mounted on cable

Protection plug mounted on cable

Sturdy housing

Free air passaage round the tip of the sensor.

Free air passage around the tip of the sensor.

Mount the sensor so it is not exposed to direct sunlight, as this would affect the measurement.

The sensor must warm up for 10 minutes after power on.

Figure 2

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

3 Connection

Installation, servicing and troubleshooting of all electrical equipment must be performed by qualified personnel in accordance with the applicable national and international standard EN 60204-1 and any other EU standards that are applicable in Europe.
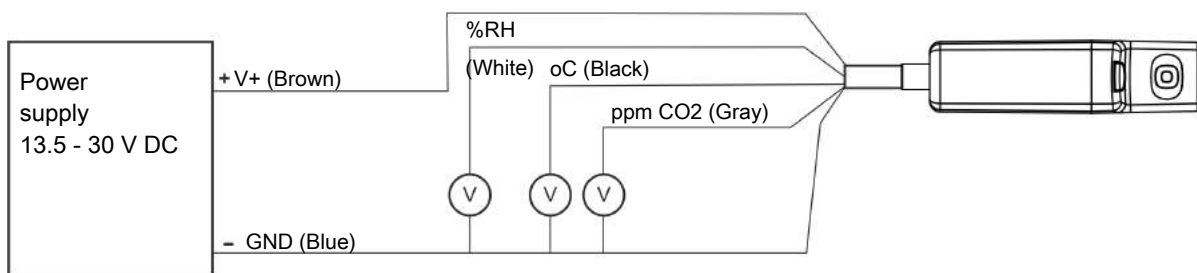
Name	Wire colour	M12 pin
24 V	Brown	1
Relative humidity (%RH)	White	2
Temperature (°C)	Black	4
CO_2 (ppm)	Gray	5
GND	Blue	3

Connection to iDOL 63 Cloud Gateway

DOL 139 can be connected to iDOL 63 which has 8 ports for sensor connections.

If you have purchased the PRO app or access via Web-UI, you can configure the ports freely and choose which ports are used for the sensors.

We recommend that DOL 139 is connected to iDOL 63 with the following connections

- IN1: CO2 (gray)
- IN3: Relative humidity (white)
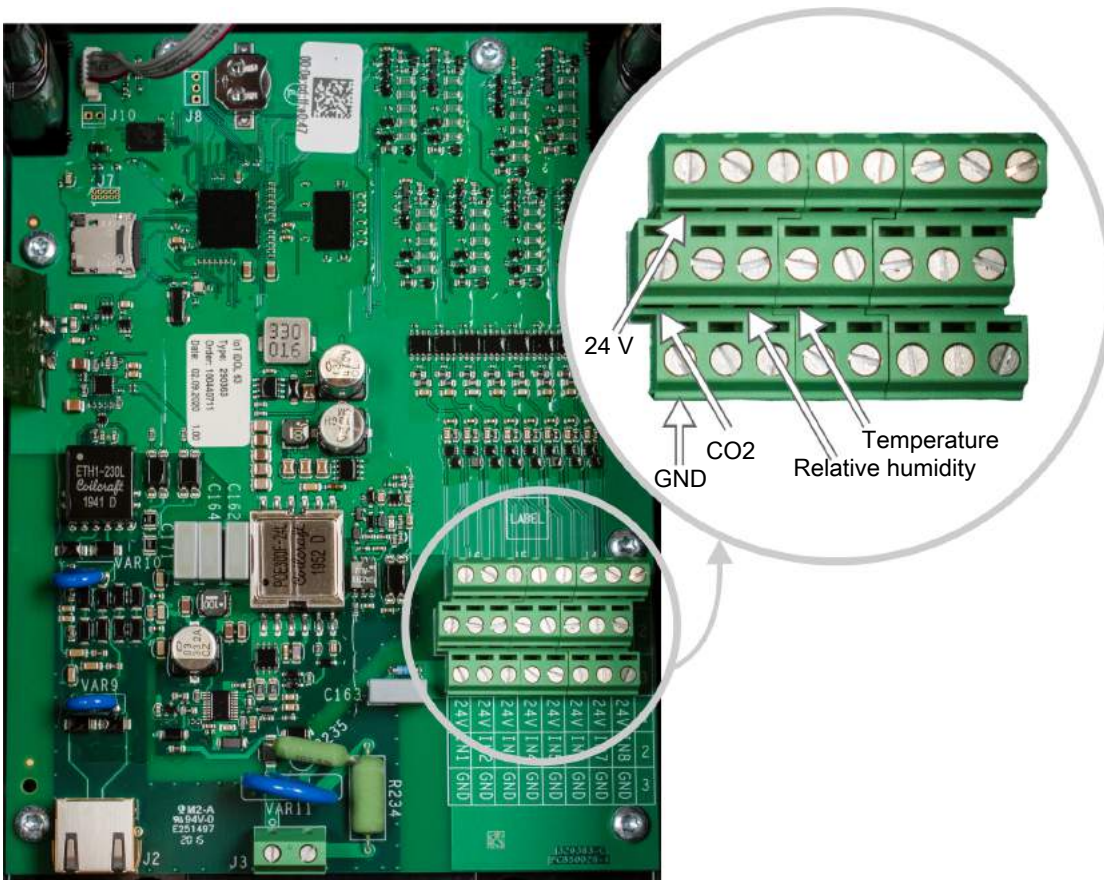- IN4: Temperature (black)

Figure 1: iDOL 63 Cloud gateway.

Each port works separately and must be configured separately via Omni Cloud to the connected sensor. Follow this procedure to connect DOL 139:

1. Make sure power is disconnected from iDOL 63.
2. Select the port to be used.
3. Follow the instructions in this manual for correct connection of power, signal and ground connection.
4. Connect POE (power and internet) by means of the RJ45 internet plug.
5. Update Onmi Cloud with information about the sensors connected to the individual ports. Follow the instructions in the Omni UI User Guide or pass the information on to the owner/administrator of the Omni Cloud account.
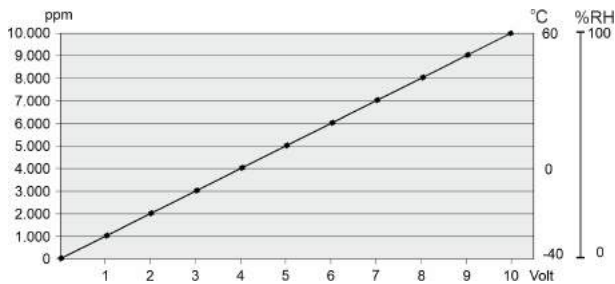
4 Functions

Figure 2: Operation curve.

5 LED indication

LED indication	Sensor status
GREEN ON	Operation OK
GREEN flashes	Outside normal range (Below 0 °C or above 50 °C)
RED ON	Connection error Load < 500 Ω
RED flashes	Sensor defective Over/under voltage alarm Overload

Table 3.

6 Maintenance

Clean the sensor with water and a brush without using:

- High-pressure cleaner
- Highly compressed air
- Solvents
- Corrosive/caustic agents
- Alcohol-based disinfectants

During cleaning and disinfection, the sensor should be removed and the sealing plug for the cable should be mounted. Alternatively, the sensor protective cap can be mounted. The sensor must be placed with the tip pointing upwards during disinfection.

Figure 5.

7 Technical data

Specification		Parameter	Unit
		DOL 139 0-10V	
Specification		Parameter	Unit
Output	Voltage range	0 - 10	VDC
	Limited output power per port	20	mA
	Output impedance	<1	Ω
	Recommended load impedance	>100	kΩ
	Max. Cable length @ 0.75 mm^2	100	m
	Max. cable length @ 1.50 mm^2	200	m
	Load impedance	0.5 – 10000	kΩ
Relative humidity	Measurement range	0-100	%RH
	Output resolution	0.1	V/%RH
	Accuracy +10 °C - +40 °C (40-80% RH)	+/-3	%RH
	Accuracy 10%RH – 95%RH	+/-3 $\pm$ 0.02 x mv	%RH
	Time constant: T63	4 min. at 0.5 m/s air speed	
Temperature	Measurement range	-40 - +60	°C
	Output resolution	0.1	V/°C
	Accuracy +10 °C - +40 °C	+/-0.75	°C
	Accuracy 0 °C - +60 °C	+/-1.5	°C
	Time constant T63	7 min. at 0.5 m/s air speed	
CO_2	Measurement range	0-10000	ppm
	Output resolution	0.001	V/ppm
	Accuracy 400 - 10000	50 ppm $\pm$ 5% of measured value	ppm
	Time constant T63	2 min. at 0.5 m/s air speed	s
Supply voltage		13.5 - 30	VDC
Supply current	No load	9	mA
	Max. load	105	mA
Temperature, operation		0 - +60	°C
Temperature, storage		-40 - +60	°C
IP classification		IP67 (DIN 40050-9)	
		NEMA 1, 3, 4, 6	
Cable length		2	m
Cable conductor size		5 x 0.34 (5 x AWG22)	mm^2
Dimensions (diameter/ width)		33.3	mm
Dimensions (length)		128.3	mm
Weight (sensor and cable)		243	g
Approvals		CE	

7.1 Dimensions

Figure 3: In mm.