HCF 100 & HCF100A

HCF100 & HCF100A Refrigeration Gas Sensor

4-20mA   Freon

SPECIFICATION

Power

Power Supply	12-24V DC ± 10% from controller
Power Consumption	120mA at 13.8V

Technical Specification

Gas(es) Detected	Freon Gas
Sensor Technology	Semiconductor
Dimensions	HCF100 - Width 76mm | Height 176mm | Depth 57mm HCF100A - Width 100mm | Height 100mm | Depth 57mm
LED indicator	Green: Power ON
Mounting	Wall Mounted Mounted versions
Output Signal	4-20mA
Device Precision	1% FS
Autosetting	Yes
Working Temperature	-10°C to 60°C
Protective Rating	IP66 (HCF100A) IP55 (HCF100)

Perhipheral Specification

Maximum Sensor Distance	100m
Cable Diameter for Sensors	1mm² CSA (Screened and earthed at the controller end)

Compatibility

Controller Compatibility	All Conventional Duomo Controllers (Not Addressable BXI32)
Calibration Gas Compatibility	Duomo test Gases

Approvals, Certifications and Guarantee

Approvals	CE Certified and approved to EN50270, EN 378-1, (EU) No 517/2014 of the European Parliment and the Council of 16th April 2014
Guarantee	2 Year as Standard 3 Year by Registering at www.duomo.co.uk

FEATURES

- Freon Gas detection sensor
- Semiconductor sensor Technology
- 4-20mA signal sensor output
- Automatic Calibration
- Sintered Head
- IP66 (HCF100A) or IP55 (HCF100) Protective Rating
- CE Certified and approved to EN50270, EN 378-1, (EU) No 517/2014 of the European Parliment and the Council of 16th April 2014
- 2 Year Guarantee - 3 Year by Registering at duomo.co.uk

APPLICATION

Duomo is recognised within the gas industry for providing a comprehensive range of low cost, high reliability gas detection for many applications. We have installed and commissioned natural gas and carbon monoxide sensors in applications such as boiler rooms, kitchens, car parks and plant rooms. The HCF100 is the freon gas sensor used with the complete range of Duomo detector panels. All Duomo products are manufactured to meet relevant European Normatives and proposals for explosive and toxic gases.

OPERATION

When the HCF100 senses the presence of freon gas it sends a 4 - 20mA signal to the detector proportional to the level of gas. The detector then operates a pre-alarm relay used for remote sirens or visual indicators if the level of gas continues to rise. The main alarm relay is activated to break the electrical supply to a safety shut off valve, and is fixed at 300ppm of freon R134a.

The HCF100 is controlled by a microprocessor. This conducts both self diagnostics and automatically calibrates the sensor when ambient conditions vary, thus avoiding false alarms.

Precautions and Maintenence

Check the integrity of the unit after having removed it from the box.
Check that the data written on the box correspond to the type of gas used.

When doing the electrical connections, follow the drawing closely.

Any use of the detector for purposes other than the intended one is considered improper and as a result of which Duomo (UK) therefore disclaims any responsibility for possible damages caused to people, animals or objects.

Do not allow the sensor to become wet.

The product is not waterproof either when immersed in water or exposed to high levels of humidity.

Every six months must perform a function check of the sensor and connected controller. Suitable test gas must be used to avoid damaging the sensor. Disabling the sensor or the controller must be carried out by a suitably trained technician.

Every year a more accurate check must be performed by qualified personnel. Please call Duomo (UK) on 01905 797989

Important Notes

IMPORTANT: Assembly / maintenance of the appliance must be carried out by qualified personnel and in accordance with applicable laws and regulations.

The manufacturer assumes no responsibility for the use of products that have to comply with particular environmental and / or installation standards.
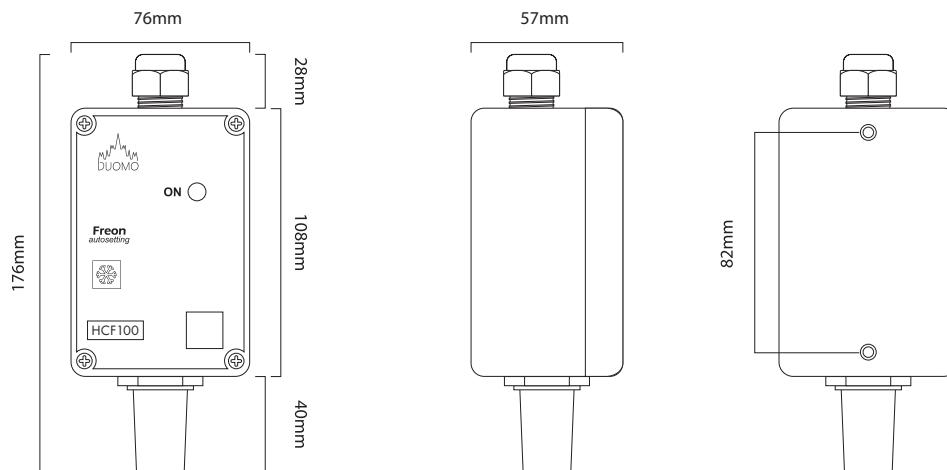
IMPORTANT: Before connecting the equipment, it is recommended that you read the instruction manual carefully and keep it for future reference.
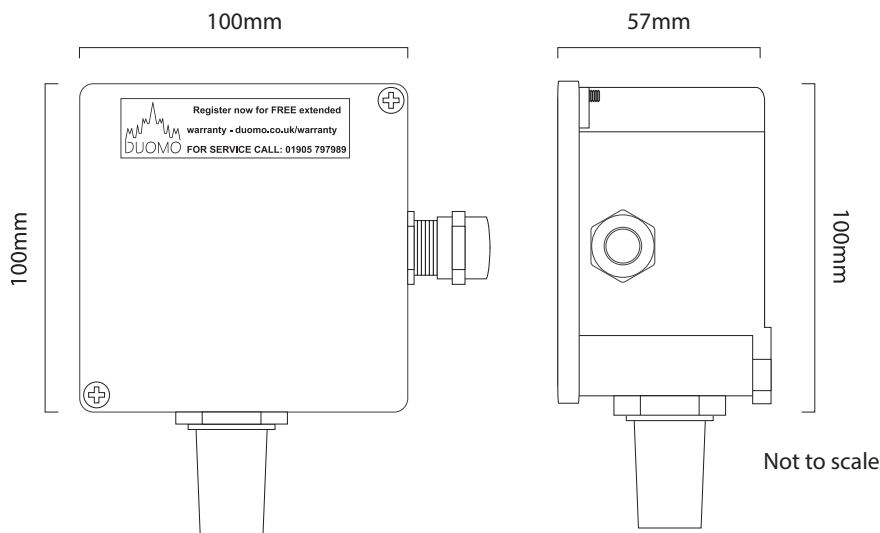
Electrical Connections

IMPORTANT: Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to Regulations in force, keeping in mind that the signal cables should be laid separate from the power cables.
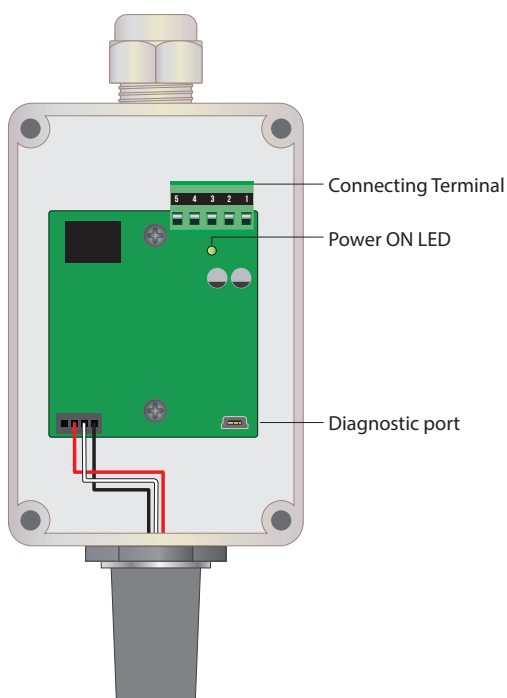
Overall Dimensions HCF100 (mm)

76mm

28mm

176mm

108mm

40mm

ON

Freon
autosetting

HCF100

57mm

82mm

Overall Dimensions HCF100 A (mm)

100mm

100mm

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FOR SERVICE CALL: 01905 797989

57mm

100mm

Not to scale

Connections and LED indicator

Connecting Terminal

Power ON LED

Diagnostic port

CONNECTING TERMINAL
1. Positive Supply Voltage
2. 0V
3. Return Sensor Voltage
4. Relay common
5. Relay output

POWER ON LED
This LED illuminates Green when power is ON and the sensor has a power supply from the controller.

Flashing red indicates gas is being detected.

Constant red indicates alarm state.

Constant Amber indicates fault condition.

DIAGNOSTIC PORT
This can be connected to a A hand-held datalogger that can printout information about the sensor (serial number, powering up information, sensor condition, alarm activations, expected lifespan, auto adjusts made and the preset calibration state.
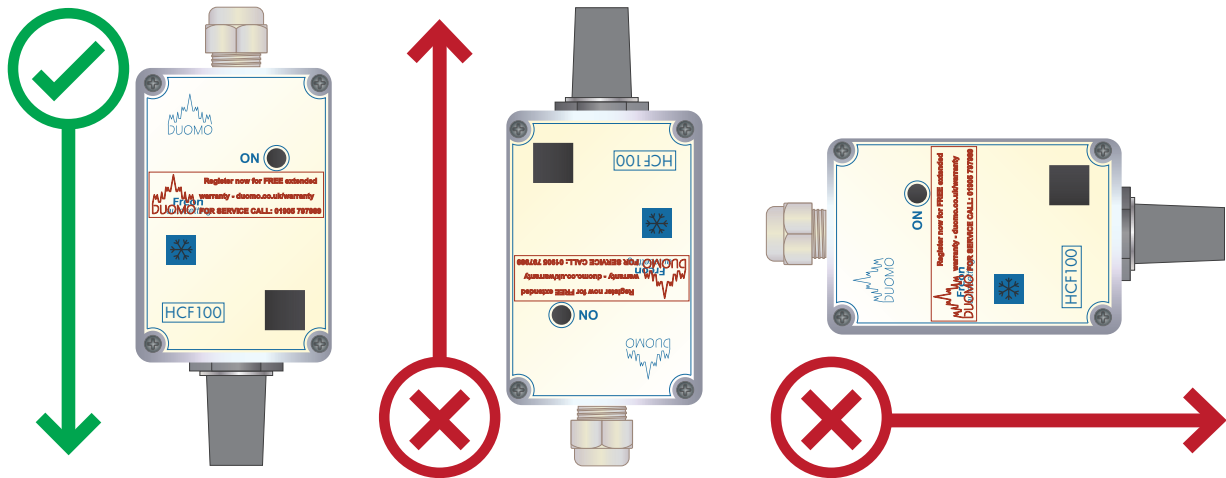
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Compatible Controllers

Please consult the below table for a list of compatible controllers along with a comparison of key features and options available.

	BX150	GS100M	GS300M	GS300Mc	BX444Mc	BX316
Channels	1	1	3	3	4	2
Maximum Sensors	1	1	3	3	4	16
Addressable	-	-	-	-	-	-
Display	-	-	-	Colour Change Digital Display	Colour Change Digital Display	Illuminated Digital Display
Mounting	Panel	Wall & Panel	Wall & Panel	Wall & Panel	Wall & Panel	Wall
Power	12V or 230V	230V	230V	230V	230V	230V
4-20mA Input	✓	✓	✓	✓	✓	✓
Self Diagnostic	✓	✓	✓	✓	✓	✓
Manual Test	✓	✓	✓	✓	✓	✓
Internal Alarm	✓	✓	✓	✓	✓	✓
Emergency Stop Function	-	-	-	✓	✓	✓
Alarm Stages	Pre Alarm Main Alarm	1st Alarm 2nd Alarm Main Alarm	1st Alarm 2nd Alarm Main Alarm	1st Alarm 2nd Alarm Main Alarm	1st Alarm 2nd Alarm Main Alarm	Pre Alarm Main Alarm
O_2 Monitoring	-	-	-	✓	✓	✓
Positive Safety	✓	✓	✓	✓	✓	✓
IP Rating	IP42	IP44	IP44	IP44	IP44	IP65
Extended Guarantee *	3 Year	3 Year	3 Year	3 Year	3 Year	3 Year

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Sensor Orientation

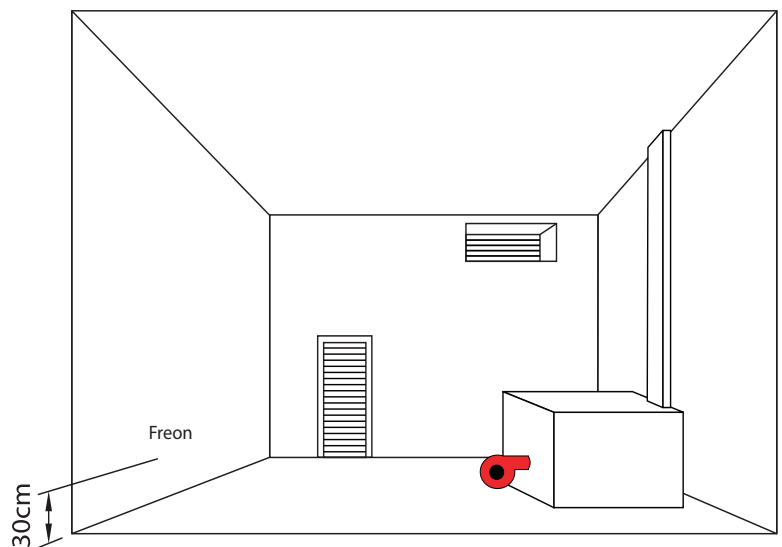The sensors must be mounted as shown below with the sintered head pointing vertically down.

Sensor Positioning

The HCF100 sensor should be mounted in accordance with certain considerations. Do not position next to burners, heaters or ovens where temperatures above the room ambient may be experienced. It is, if possible, better to mount the sensors on the opposite wall. This is, of course, dependant on the size of the protected area.

Freon R134a is heavier than air, therefore the HCF100 sensor should be mounted 30cm from the lowest point on floor of the protected area.

If you require assistance regarding locating sensors please call our Droitwich factory on (01905) 797989 or email us: sales@duomo.co.uk

Important Notes

Always check the wiring before powering up the system.

When replacing sensors never seperate a sensing head from its PCB. The sensor will have been calibrated using this particular board and therefore will not function correctly with any other.

Do not test this sensor with anything other than Duomo test gas. Concentrations above this will damage the sensor and shorten sensor life.

The installation of this gas sensor does not release the user from observing all the regulations concerning the characteristics of the installation and use of gas appliance, the ventalation of the protected environment and the removal of the products of combustion. Duomo (UK) will not be held responsible or liable for any damage caused to people, property or animals resulting from incorrect connection, installation or application of this gas sensor.

To ensure correct function after installation Duomo provide a commissioning service using calibrated test gases. For this service call +44 1905 797989.

In case of alarm

Extinguish any naked flames.
Do not switch lights or electrical devices on or off.
Open all windows and door to increase ventalation.

- If the ALARM LED is off the levels of gas have dropped. A responsible, qualified person is now safe to find the cause of the alarm.
- If the alarm sound reamins constant and the cause is not evident or not possible to eliminate turn off the emergency isolation valves to the area and contact your gas provider emergency line. They will advise accordingly.

Troubleshooting

The Problem	The Solution
The sensor does not power up	Check that the 12/24 VDC power is present, and that positive and negative polarity has not been inverted.
This is a working document and will be updated as new troubleshooting and FAQs become apparent. If your issue is not listed here please call Duomo (UK) on 01905 797989 and inform us so we can list your issue and associated solution here.	

Still experiencing difficulties?

If you have made the checks above and are still experiencing diffculties then please call **Duomo (UK) Ltd** on **+441905 797989** for technical assistance.

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Commisioning, Service & Maintenence

Commisioning

It is strongly recommended that this HCF100 gas sensor and connected detection system is commissioned and serviced by Duomo Commissioning Engineers or engineers approved by Duomo. A quotation for commissioning or service will be provided upon request.

Email site details and preferred date for commissioning or service to sales@duomo.co.uk to the Duomo Service Department. Or call +44 1905 797989

The benefits of this equipment being commissioned by Duomo are:
- On board spares - If for whatever reason this equipment doesn't function correctly Duomo engineers will have spares on board to ensure that the commissioning is successful.
- A Duomo Commissioning Certificate is provided - A certificate from the original maufacturer ensures that the commisioning or servicing carried out is at a high professional standard by a competent and qualified service engineer.

It is prudent to make electrical connection to the detector terminal plus when withdrawn and leave the plug off the detector so that the Duomo Engineer is the first to power up the unit on site. This allows wiring to be checked prior to commissioning and avoids damage due to incorrect connection. Guarantees for this product will become void if damage is caused by the installer.

Maintenence

This sensor must be function checked as described above using calibrated test gas every 6 months.

To arrange for a Duomo engineer to conduct this work or to arrange a service contract please call +44 1905 797989.

Notes

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