



Gas detecting sensor

DGS

For codes: 080Z2830, 080Z2831, 080Z2832, 080Z2833, 080Z2834, 080Z2835, 080Z2836, 080Z2837, 080Z2838, 080Z2839, 080Z2840, 080Z2841, 080Z2842

Description

DGS sensors can be used in stand-alone or integrated systems via Modbus, where continuous real-time, automatic monitoring with Danfoss ADAP-KOOL® Refrigeration Control & Monitoring System and/or Building Management Systems is applied.

DGS supports our customers in complying with environmental F-Gas Regulations and Health & Safety requirements on new or existing systems in: supermarkets, process refrigeration plants, refrigerated storage and warehousing and special application areas/zones.

Features & benefits

- Wide range of detectable gases halocarbons, carbon dioxide and hydrocarbons
- Modbus RTU RS485
- 1 Analog Output
- Remote sensor up to 15 m
- Sensing technology varies to optimize gas detection for performance and cost
 - DGS-IR is based on infrared sensor technology
 - DGS-SC is based on semi-conductor technology
 - DGS-PE is based on pellistor technology

Applications

Typical refrigerant gas applications include:

- halocarbons: HFCs, HCFCs, CFCs
- carbon dioxide (CO₂/R744)
- hydrocarbons (e.g. R290)
- other special application gases to customer request

Sensing technology varies to make the best detection for a given gas, in terms of performance and cost. DGS-IR is based on infrared sensor technology, DGS-SC is based on semiconductor and DGS-PE is based on pellistor.

Ordering

Product code numbers

Product description	Sensor Type	Refrigerant	Code No.
DGS-SC HFC grp 1 ⁽¹⁾	Semiconductor	See footnote ⁽¹⁾	080Z2833
DGS-SC HFC grp 2 ⁽²⁾	Semiconductor	See footnote ⁽²⁾	080Z2834
DGS-SC HFC grp 3 ⁽³⁾	Semiconductor	See footnote ⁽³⁾	080Z2835
DGS-PE Propane	Pellistor	R290	080Z2836
DGS-IR CO ₂	Infrared	R744	080Z2830
DGS-IR CO ₂ 5 m	Infrared	R744	080Z2831
DGS-IR 2 CO ₂ - 5 m	Infrared	R744	080Z2832
DGS-SC HFC grp 1 ⁽¹⁾ + B&L	Semiconductor	See footnote ⁽¹⁾	080Z2839
DGS-SC HFC grp 2 ⁽²⁾ + B&L	Semiconductor	See footnote ⁽²⁾	080Z2840
DGS-SC HFC grp 3 ⁽³⁾ + B&L	Semiconductor	See footnote ⁽³⁾	080Z2841
DGS-PE Propane + B&L	Pellistor	R290	080Z2842
DGS-IR CO ₂ + B&L	Infrared	R744	080Z2837
DGS-IR CO ₂ 5 m + B&L	Infrared	R744	080Z2838

⁽¹⁾ HFC grp 1: R1234ze, R454C, **R1234yf**, R455A, R452A, R454B, R513A, R452A, R1233zd, R515b

⁽²⁾ HFC grp 2: R407F, R416A, R417A, R407A, R422A, R427A, R449A, R437A, **R134A**, R438A, R422D, R450A

⁽³⁾ HFC grp 3: R448A, R125, R404A, R32, R507A, R434A, R410A, R452B, **R407C**, R143B

Bold = calibration gas

Note: DGS is also available for alternative refrigerant gases on request. Please contact your local Danfoss sales office for details.

Accessories code numbers



148H6226

**Sensors, Splash Guard.,
GDC; GDH; GDHF:GDHC;
GDA**

Splash Guard., Used for product: GDC; GDH; GDHF:GDHC; GDA, Packing format: Industrial pack, Quantity per packing format: 5



148H6238

**Sensors, Remote kit.,
GDHF; GDC; GDH; GDHC;
GDA**

Remote kit., Used for product: GDHF; GDC; GDH; GDHC; GDA, Packing format: Multi pack, Quantity per packing format: 10



148H6236

**Sensors, Duct Set, GDC;
GDH; GDHF:GDHC; GDA**

Duct Set, Used for product: GDC; GDH; GDHF:GDHC; GDA, Packing format: Multi pack, Quantity per packing format: 5



080Z2820

Service kit, DGS

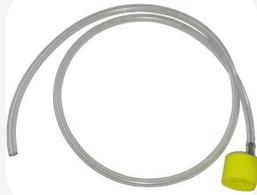
Gas detecting sensor version:
Hand Held Service tool



080Z0057

Electron. control accessories, AK-PS 063 STEP3 Accessory Power Supply, Power supply

AK-PS 063 STEP3 Accessory Power Supply, Used for product: Power supply, Packing format: Single pack, Quantity per packing format: 1



148H6232

Sensors, Calibration adapter, GDHF; GDC; GDH; GDHC; GDA

Calibration adapter, Used for product: GDHF; GDC; GDH; GDHC; GDA, Packing format: Multi pack, Quantity per packing format: 12



080Z2822

Service kit, DGS

Gas detecting sensor version: Strobe & Horn

Spare parts code numbers



080Z2814

Service kit, DGS

Gas detecting sensor version: Spare sensor CO2 - 5m



080Z2817

Service kit, DGS

Gas detecting sensor version: Spare sensor HFC gr.3



080Z2813

Service kit, DGS

Gas detecting sensor version: DGS-IR CO2



080Z2815

Service kit, DGS

Gas detecting sensor version: Spare sensor HFC gr.1



080Z2816

Service kit, DGS

Gas detecting sensor version: Spare sensor HFC gr.2



080Z2818

Service kit, DGS

Gas detecting sensor version: Spare sensor Propane

080Z2815 = HFC grp 1: R1234ze, R454C, **R1234yf**, R455A, R452A, R454B, R513A, R452A, R1233zd, R515b

080Z2816 = HFC grp 2: R407F, R416A, R417A, R407A, R422A, R427A, R449A, R437A, **R134A**, R438A, R422D, R450A

080Z2817 = HFC grp 3: R448A, R125, R404A, R32, R507A, R434A, R410A, R452B, **R407C**, R143B

Product details

General data

Table: Technical data

Power supply	24 V DC \pm 20 % ; reverse polarity protected 24 V AC - 10 % / + 15 %		
Power consumption (24 V DC)	Max. 250 mA (6 VA)		
Digital input	Alarm acknowledge and test alarm: Potential-free contact Alarm relay /fault relay: 40 V AC/DC, 0.5 A, change-over contact (SPDT) Critical relay: normally closed (SIL II compliant), warning relay: normally open		
Analogue output signal	Proportional, overload and short-circuit proof, load \leq 500 Ohm Measuring range: 0 – 10 V / 2 – 10 V (default) / 0 – 20 mA / 4 – 20 mA		
Factory setting	38400, 8, E, 1 Node ID 95		
Modbus physical	5 V DC, 250 mA max. overload, short-circuit and reverse-polarity protected		
Enclosure rate	IP65		
Humidity range	15 – 90 % RH not-condensing		
Burning behaviour	UL 94 V2		
Housing colour	Black		
Dimensions (W x H x D in mm)	94 x 130 x 57		
Installation	Wall mounting		
Cable entry	2 x M12 / 3 x M20		
Wire connection	Power supply, Modbus: screw-type terminals 0.25 – 2.5 mm ² Analogue output, digital input: screw-type terminals 0.25 – 1.3 mm ² Sensor head: 3-pin plug connector		
Sensor information	DGS-IR (CO ₂)	DGS-SC (HFC)	DGS-PE (Propane)
Temperature range	-35 – 50 °C	-30 – 60 °C	-30 – 60 °C
Response time T90	<90 sec.	\leq 150 sec.	<15 sec.
Recovery time, T0	90 sec.	180 sec.	120 sec.
Maximum calibration interval	60 months	12 months	12 months
Measuring range	0 – 20000 ppm	0 – 2000 ppm	0 – 5000 ppm
Lowest threshold	10% of the measuring range	10% of the measuring range	10% of the measuring range
Default alarm threshold	5000 ppm	500 ppm	800 ppm
Compliance	CE EN61010-1		
B&L - Buzzer and Light (option by product selection)	Light (LED): Red / yellow /green (alarm - fault - operation - service) Buzzer: >85 dB (A) (0.1 distance) 2300 Hz \pm 300 Hz		

Accessories

Service tool

Figure: Service tool



Hand-held device for display, calibration, addressing and parameters changes. Communication and power supply will be ensured via the cable that is plugged into the respective devices.

Features:

- User-friendly design
- Simple menu structure
- Two-line display / 16 characters
- Six operating buttons
- Three LEDs for status display
- Communication / power supply via a cable

Table: Specifications

Features	Description
Electrical	
Power supply	5 V DC from device, reverse-polarity protected
Power consumption	50 mA, max. (0.25 VA)
Serial interface local bus	5 V level / 19200 baud
Ambient conditions	
Temperature range	-10 – +40 °C (14 – 104 °F)
Humidity range	0 – 90% RH non-condensing
Physical	
Housing	Polycarbonate
Dimensions	117 x 78 x 25 mm
Weight	Ca. 200g
Protection class	IP65
Cable length	1.50 m
Regulations	
Directives	EMC directives 2014/30/EU CE Conformity to: EN 61010-1:2010 ANSI/UL 61010-1 CAN/CS-C22.2 No. 61010-1

Strobe & Horn

Figure: Strobe & Horn



Electronic sounder that allows two levels of alarm (warning, critical) controllable via independent electric contacts.

Features:

- Selectable tones
- Separate electric control for strobe and horn

Table: Specifications

Alarm Sounder	Description
Operating voltage	12 – 24 V DC
Operating temperature	-40 – +55 °C
Number of user-selectable tones	32
Lens colour	Red
IP rating	IP65

Sensor head protection

Figure: Sensor head protection



Plastic protective cap with non-slip, knurled rim, for covering sensors of the DGS series.

The elastic protective cap is placed on the sensor to protect it from contamination during installation, cleaning and painting work and to protect the sensor element from poisoning, e.g. by silicone vapours.

When commissioning, it is essential to remove the tight-fitting cap to ensure the proper functioning of the sensor.

Features:

- Easy to use
- Perfect coverage of the sensor head
- Protection against pollution/poisoning

Table: Specifications

CAP	Description
Material	Plastic TPE
Colour	Red (RAL 3000)
Dimensions inside	Ca. 24 mm x 18 mm (D x G)
Temperature range cap	-50 °C to +120 °C (-58 °F to 248 °F)

Splash guard

Figure: Splash guard



Cap for protecting the DGS sensor against splash water.

The cap is placed over the sensor head and secured by means of a detachable zip tie. It protects the sensor against rain and splash water coming from all directions.

The splash guard is used in gas warning systems, which are mounted outside unprotected from the weather. It can also be used to protect the sensor during cleaning work.

Features:

- Protection against rain, splash water and other weather conditions
- Easy installation. Assembly and disassembly possible at any time due to detachable zip tie.

Table: Specifications

REDCAP	Description
Material	LDPE+PC
Dimensions	25 x 37 mm (D x H)
Protection class	IP66

Duct set

Figure: Duct set



The duct mounting set consists of a sampling tube with hose and adapter for DGS sensors. Duct mounting set for sampling from air ducts.

Features:

- Easy to use
- Perfect coverage of the sensor head
- Double pipe can be cut to length for adaptation to the duct diameter

Table: Specifications

Sampling SET	Description
Gas sampling	Via sampling tube / connecting hose
Flow rate	Min. 5000 m/h (3.1 mph), max. 20,000 m/h (12.4 mph)
Air duct diameter	Min. 0.1 m (3.94 in), max. 1.0 m (39.37 in)
Length of sampling tube	250 mm (9.84 in), adaptable to the duct diameter by cutting to length: 192 mm (7.56 in), 133 mm (5.24 in) or 77 mm (3.03 in)
Hose length	2 x 1000 mm (39.37 in)
Assembly	<ul style="list-style-type: none"> • Arrow at the sampling set in flow direction • Always install in the center of the duct • Keep a minimum distance of at least 1000 mm to duct bends etc.

Calibration adapter

Figure: Calibration adapter



Calibration adapter for comfortable gas supply to DGS sensors. The calibration adapter is used for the targeted supply of zero and test gases to the sensor head.

Features:

- Easy to use
- Perfect coverage of the sensor head
- Double pipe can be cut to length for adaptation to the duct diameter

Table: Specifications

Item	Description
Cap	
Material	PE-LD
Dimensions (D x G)	25 x 20 mm (0.98 x 0.79 in)
Hose	
Material	PVC-P polyvinyl chloride
Temperature range	-20 – +60 °C (-4 – +140 °F)
Diameter	OD = 7 mm, ID = 4 mm
Length	1 m (39.37 in)

Remote kit

Figure: Remote kit



Cable extension with housing for remote mounting of DGS sensors. The remote kit is used as a cable extension (5 meters) for the remote installation of sensors.

Features:

- Easy to use
- Perfect coverage of the sensor head
- Double pipe can be cut to length for adaptation to the duct diameter

Table: Specifications

Features	Description
Physical	
Material	Polycarbonate
Flammability classification	UL 94 V2
Dimensions (W x H x D)	94 x 65 x 57 mm
Weight	0.2 kg (0.66 lb)
Protection class	NEMA 4X (IP65)
Mounting	Wall mounting
Knockouts for cable entry	2 x M25
Regulations	
Directives	EMC directives 2014/30/EU CE, UKCA

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
EU-UK Declaration	Danfoss EU-UK 080R1223.AC	Danfoss	LVD, UK RoHS, EU RoHS, EMC
Export Control Declaration	DGS Gas Detector	Danfoss	
EAC Declaration	EAC KZ 7500651.13.12.08142	EAC - Eurasian Customs Union	EMC

Contact details

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