

DELPHI



Technical Specifications

The Doble Delphi is an intelligent and robust on-line dissolved gas analysis (DGA) instrument.

Measured Values (2 types available):

Type CG4, Gases - Composite:

Hydrogen:
Percent 100%
Output uL/L (ppm)
Range 0-2000

Carbon Monoxide:
Percent 10-20%
Output uL/L (ppm)

Acetylene:
Percent 10-20%
Output uL/L (ppm)

Ethylene:
Percent 2-8%
Output uL/L (ppm)

Type H2, Gases:

Hydrogen:
Percent 100%
Output uL/L (ppm)
Range 0-2000

All other gases:
Percent <1%
Output uL/L (ppm)

Options:

Moisture:
Output RS%
Range 0-100%

Accuracy, Limit of Detection, Response:

Accuracy: H₂ ± 10% reading or ± 20 uL/L (ppm), whichever is greater

Limit of Detection: H₂ = 10 uL/L (ppm) at 99% confidence level

Response time, to 80% step change: ≤ 10 minutes

Response time, to 100% step change: ≤ 60 minutes

Operating Environment:

Oil Pressure at Sensor: Can with stand absolute vacuum to 0.7 Mpa (100 psi)

Outdoor Protection: Meets IEC 60529, IP 55

Vibration: Meets IEC 68-2-5

Mechanical: Stainless steel enclosure

High and low temperature: Meets IEC 68-2-1 & 68-2-2

Electronics Temperature range: -40 to 60°C (-40 to 140°F)

Sensor Temperature Range:
Gas Sensor: -20 to 70C (-4 to 158F) at sensor face, -20 to 105C (-4 to 221F) with finned attachment

Water sensor -40 to 180C (-40 to 356F)

EMC: Meets IEC61000-4-2/4/5/8, Grade 4

Standards:

CE marked
RoHS compliant

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Inputs and Outputs:

Standard Output: RS485, 1200m
Two (2) 4 to 20 mA
Channel 1: Gas Level (Scaled 0...2000 ppm)
Channel 2: Gas Alarm Level (Scaled 0...2000 ppm), or Water Content, %RS (Scaled 0...100%) if it is an installed option
Channel 2: RS485/232
Optional Output: RS485/232
Dry Contacts: 4
Rating: 5A/240VAC
Power Supply – Configuration 1: 110VAC/60 Hz ±15%, 60 Hz.
Power Supply – Configuration 2: 220VAC/50 Hz +/- 15%, 500 VA Max.
Alarm Types: Gas level, hourly trend, daily trend, sensor temperature, sensor
Alarm Types: Normal, Gas Hi, Gas Hi-Hi (also indicated on front panel)
External Alarm Indicators:
 Green Normal
 Orange High
 Red High-High
Host PC Software: Support Networking, Windows 2000/XP

Dimensions, Weights, Miscellaneous:

Enclosure Size: (W x H x D)
Value Mounted 272 x 350 x 272 mm
 10.7 x 13.8 x 10.7 in
Stand Mounted 381 x 610 x 246 mm
 15 x 24 x 9.7 in
Weight:
Value Mounted ≈ 15 kg / 34 lbs
Stand Mounted ≈ 20 kg / 45 lbs
Hardware and Firmware:
 Microprocessor, watchdog and real-time clock with embedded firmware
Enhanced Oil Flow:
 Use of micro-pump with inlet and outlet ports to force circulation
Popular Valve Mounting Options
 DN50 (Metric)
 2 inch NPT (English)

Model Option Selection:

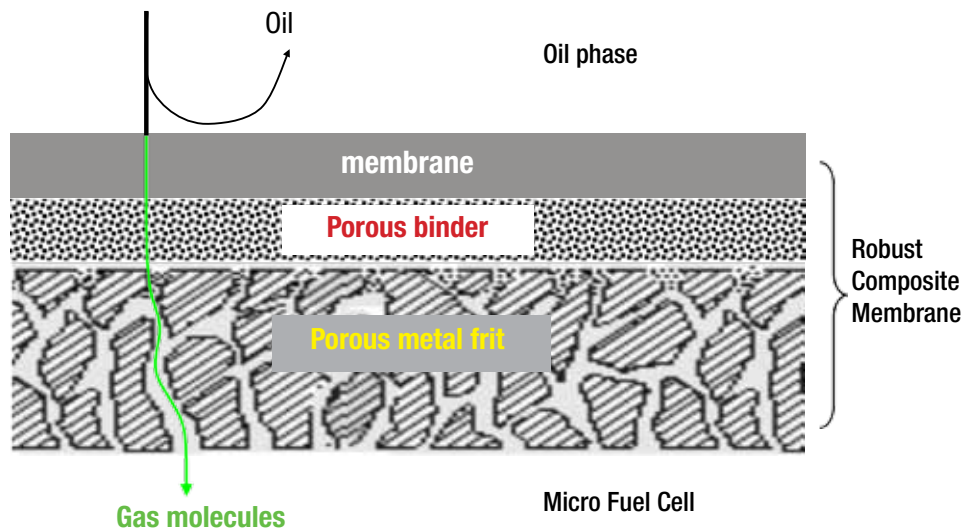
| | | |
|---|------------------|-----------|
| Base Unit | | Delphi |
| Forced Oil Flow: | Yes No | F N |
| Valve Mounted Stand Mounted | | V S |
| Moisture: | Yes No | 0 1 |
| Composite Gas (H ₂ , CO, C ₂ H ₂ , C ₂ H ₄) Hydrogen only | | CGA H2 |
| Input Power: | 110VAC 220VAC | 1 2 |

Example

For a unit with forced oil flow, valve mounted, no moisture, Composite gas and 110VAC operation the following ordering code would apply:

| | | | | | |
|--------|---|---|---|-----|---|
| Delphi | F | V | 1 | CGA | 1 |
|--------|---|---|---|-----|---|

Disolved gases



Patented membrane arrangement allows for vacuum resistance in the fuel cell membrane

