

Factory Test Certificate
Complete DGA and moisture monitor

Product / Model: Calisto 9 / C900S
 Serial Number: XXXXX
 Manufacturing Date: YYYY-MM
 Software Version: Calisto Manager X.X.X
 Firmware Version: Main I/O X.XX
 GC I/O X.XX
 PSU X.X.X
 Power requirements: 100-240 VAC / 50 - 60 Hz or 100-210 VDC, 350 W

We certify that the above mentioned unit has been tested and found to operate according to MS' specification for this product. The measurements were performed by comparison with laboratory results. Laboratory equipment was calibrated using gaseous reference standards and documented calibration techniques. All gaseous standards used in the laboratory and/or for calibration of the above instrument are traceable to NIST¹ standards. The reference methods for calculation of detection limits, accuracy and precision threshold values are traceable to the ASTM D-3612 standard when applicable.

Unit was tested with the following equipment, according to proprietary internal test procedures:

Dissolved Gas References: **Gas-in-oil generator and ISO 17025 accredited laboratory analyses**

Dissolved Moisture Reference: **ISO 17025 accredited laboratory analyses**

Specified Accuracy:

- ± (5% hydrogen (H₂) + 0.5 ppm LDL²)
- ± (15% carbon monoxide (CO) + 10 ppm LDL)
- ± (5% carbon dioxide (CO₂) + 15 ppm LDL)
- ± (5% methane (CH₄) + 0.2 ppm LDL)
- ± (5% acetylene (C₂H₂) + 0.2 ppm LDL)
- ± (5% ethylene (C₂H₄) + 0.2 ppm LDL)
- ± (6% ethane (C₂H₆) + 0.2 ppm LDL)
- ± (15% oxygen (O₂) + 500 ppm LDL)
- ± (15% nitrogen (N₂) + 2,000 ppm LDL)
- ± (15% Sulfur hexafluoride (SF₆) + 2 ppm LDL)
- ± 3%RS or ± 3 ppm for moisture

Specified Repeatability:

- ± (3%, of hydrogen (H₂) + 0.5 ppm LDL)
- ± (10% of carbon monoxide (CO) + 10 ppm LDL)
- ± (5% carbon dioxide (CO₂) + 15 ppm LDL)
- ± (3% methane (CH₄) + 15 ppm LDL)
- ± (3% acetylene (C₂H₂) + 0.2 ppm LDL)
- ± (3% ethylene (C₂H₄) + 0.2 ppm LDL)
- ± (4% ethane (C₂H₆) + 0.2 ppm LDL)
- ± (10% oxygen (O₂) + 500 ppm LDL)
- ± (10% nitrogen (N₂) + 2,000 ppm LDL)
- ± (10% Sulfur hexafluoride (SF₆) + 2 ppm LDL)
- ± 2%RS or ± 2 ppm for moisture

¹ NIST: National Institute of Standards and Technology

² LDL: Lower Detection Limit

TEST DESCRIPTION

Prior to Start-up:

- Visual inspection of all components for apparent defect OK
- Visual inspection of all connectors OK

Start-up:

- Visual/functionality inspection of:
- Internal/external fans OK
 - Main I/O, cell I/O, GC I/O OK
 - CPU boards OK
 - VFD display OK
 - Calibration Gas plumbing OK
 - CGM Assembly³ OK

Calibration:

- Cell pressure sensor Completed
- GC detector Completed
- Assignable Analog 4-20 mA outputs Completed
- Assignable Analog 4-20 mA inputs Completed

Operation tests:

- Gas extraction module PASS
- Temperature regulation PASS
- Oil circulation PASS
- Heating/Cooling elements PASS
- Alarm relays (10) PASS
- No internal / external oil leak PASS
- 120/240 VAC Supply PASS
- 13.5 VDC Accessory Supply PASS
- CGM Helium leak tested
- Internal Regulator Helium leak tested
- Calibration Gas Helium leak tested

Communication:

- USB 2.0 port PASS
- RS-232 port PASS
- RS-485 port PASS
- Ethernet port / IEC 61850 (if applicable) PASS

Safety/Protection:

- HiPot test PASS
- Oil flow monitoring PASS
- Door watertightness PASS
- Bubble eliminator PASS

Date: Cliquez ici pour entrer une date.

QC Technician: _____

Date: Cliquez ici pour entrer une date.

QC Manager: _____

³ CGM: Carrier Gas Manifold