# CloudPoint

Powered by icon

icon

intelligent scientific analysis

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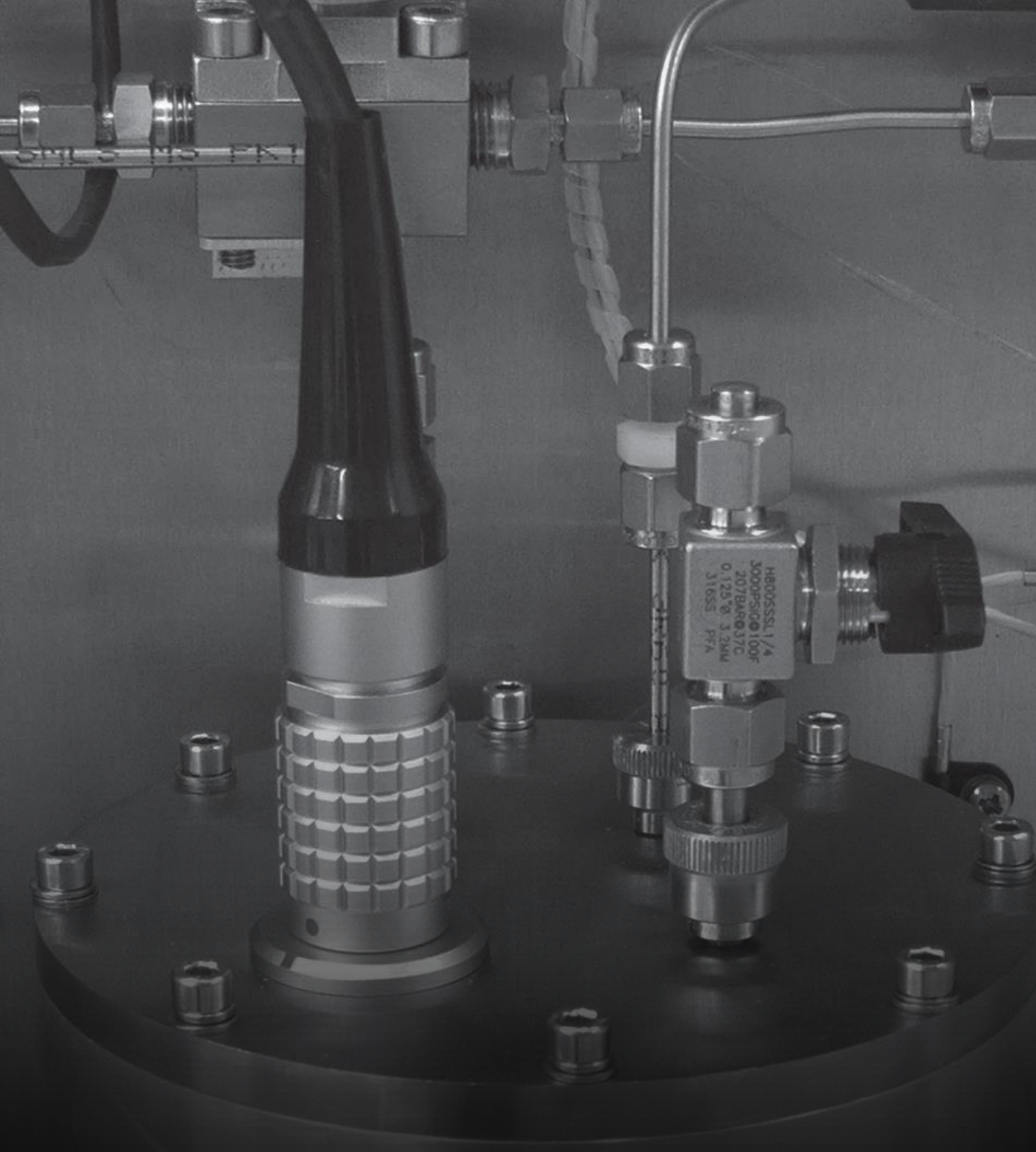


## All icon products are…

**Easy to use:** with an intuitive glass touch-screen, wipe-clean graphic user interface with multi-language options.

**Certified to global standards:** ATEX, IECEx, TIIS, EAC-EX, ETL approved to give absolute confidence and peace of mind in hazardous areas.

**Robust and fully explosion proof:** no air or inert gas purging required for safe operation in explosion hazard areas.

**Safety assured:** with an alarm for internal sample leakage.

**Highly efficient:** with low sample consumption and a sample flow monitor.

**Flexible:** with auto validation calibration options and standard modbus, 4-20mA and alarm contact outputs.

# What does it do?

The CloudPoint Analyser is used to provide an indicator of the lowest temperature at which typically a diesel fuel may be used. The analyser uses advanced thermoelectric cooling and optical detection to provide exceptional results, in most cases without the need for chilled water. The optical detector arrangement also provides excellent immunity to dissolved water in the sample, giving you outstanding repeatability.

The cell is equipped with an LED light source, photodiode detector and thermoelectric Peltier cooler. Crucially, there is no physical contact between the LED, detector and measuring cell. To improve cooling performance and eliminate condensation, ice formation and the effect of stray light, the whole system is housed in a patented, sealed containment vessel held under vacuum. The vessel features detection systems to monitor the vacuum and alert you to any sample leakage. The obtained results are compatible with those of any standard cloud point test methods such as ASTM D2500 and ASTM D5771/2/3.

# How does it work?

The low mass measuring cell traps a small amount of the sample. This is then cooled at a controlled rate by the Peltier-based thermoelectric cooler using a pulse width modulated control signal. The cooling continues until sufficient light-scatter is detected from precipitating wax crystals to trigger cloud point detection. The old sample is then flushed away and the cycle is repeated. If the sample enters the unit at too low a temperature, the Peltier control is reversed to warm the sample before carrying on with the analysis.

# Why choose the icon scientific CloudPoint Analyser?

**Excellent repeatability:** with advanced detection algorithms and pulse width modulated variable rate Peltier cooler control it achieves better repeatability than the standard test methods.

**Best in class cooling performance:** with reduced thermal losses thanks to the low mass measuring cell, patented vacuum insulation system and non-contacting light source and detector, this provides the highest differential between cooling water temperature and the lowest measurable cloud point.

**Increased measuring cell life:** as well as giving improved cooling performance, vacuum insulation eliminates premature cell failure caused by condensation and cooling errors due to ice formation.

**Cell service exchange plan:** to aid planned maintenance and reduce downtime in the unlikely event of a problem, icon operates a CloudPoint cell-service exchange plan. The cell is sent to icon or their local representative, and a fully-refurbished cell is delivered by return.
This process enables considerable savings on the individual cost of parts. It can also save you time and money by reducing the risks associated with carrying out your own cell repairs.

## Specification

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|---|---|
| Measuring range | Adjustable for any range between -50°C to +30°C |
| Repeatability | Equal to or better than the repeatability criteria of the relevant test |
| Cycle Time | 4-8 minutes depending on sample. |

## Sample Requirements

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|---|---|
| Filtration | Sample should be free from non-dissolved water and filtered to 10 microns |
| Sample Pressure at Inlet | Between 1–5 Barg |
| Sample Pressure at Outlet | At least 1 bar below the sample inlet pressure and not exceeding 4 bar. |
| Sample Temperature at Inlet | Not exceeding 50°C. |
| Sample Consumption | 6-30L/h. |

## Utility Requirements

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|---|---|
| Instrument Air | Not required. |
| Coolant | Water or antifreeze mixture at a temperature not more than 40°C above the lowest Cloudpoint to be measured is required. The typical flowrate is 40-60L/hr. Maximum pressure is 10 bar. |
| Power | 100-240VAC 50-60Hz, Max 500VA |

## Installation Requirements

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| Location | Unit must be located out of direct wind sun and rain |
| Ambient Temperature | +5 to +40 deg.C |
| Ambient Humidity | 0-95% RH, non-condensing. |

## Control System

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|---|---|
| Control System | Based on fan-less industrial PC with solid state hard drive. |
| Graphical User Interface(GUI) | 17” armoured glass touch-screen. The GUI is used to program the unit and display current and historical analyser results and alarm status. |
| Language | User selectable multi-language. |

## Inputs/Outputs

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|---|---|
| Analog Output | 2 x 4-20mA active isolated outputs are provided as standard (1 for process, 1 for calibration/validation). |
| Communications | Modbus RTU over RS485, Ethernet (TCP/IP) or optional fiber optics.<br><br>Optional OPC c/w server software over RS485. |
| Analog Inputs (optional) | The analyser can read in up to 4 active 0-10V or 4-20mA signals. These inputs may be named scaled and displayed and the values can have alarm levels associated with them. |
| Digital (contacts) Inputs (optional) | The analyser can monitor up to four volt free external contacts. The contacts can be allocated names for screen display and may be included in the alarm table. |
| Alarms | Any available alarm condition within the analyser may be allocated as active or inactive. Active alarms are notified on screen and stored in the alarm history table. Active alarms can be set by the user to activate a warning alarm contact or a fatal alarm contact. A warning alarm is for notification only while a fatal alarm causes the analyser to suspend its operation. |
| Digital (contacts) Outputs | In addition to the above Alarm contacts, the analyser also provides the following contact outputs;<br><br>**New Result**: a 10 second contact to notify that a new analyser result is available.<br><br>**Data Valid**: this contact will operate if the analyser is operating but the data is not valid because calibration or validation is in progress or the analyser is being run in manual mode.<br><br>**Calibration/Validation**: indicates that the analyser is in calibration/validation.<br><br>**Spill Alarm**: This contact will operate in the case of a leak being detected in the Cloudpoint cell or analyser enclosure.<br><br>All contact ratings are 24VDC 0.5A, 230VAC, 1A |

## Certification

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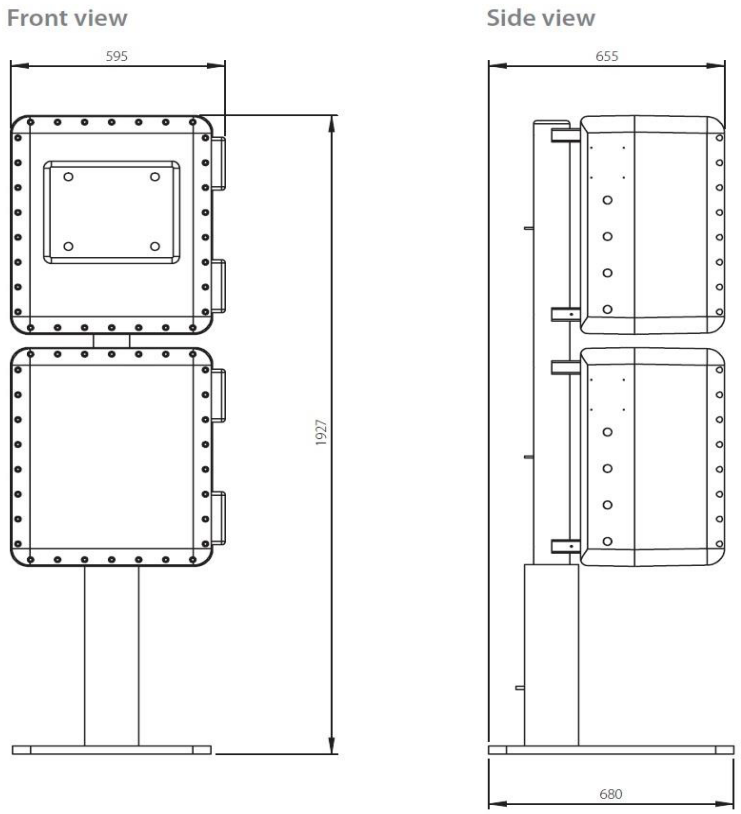
|---|---|
| Hazardous Area Certification | The icon Cloudpoint analyser is Exd certified to ATEX, IECEx, TIIS and EAC-EX standards, for zone 1 or zone 2 use in gas groups IIA, IIB or IIB+H2 with a variable T-rating depending upon application. It is also ETL listed for Canada and the USA Class 1, Div 1, groups B,C,D. |
| IP Ratings | Tested and certified to IP67 (dust tight and protected from temporary total immersion in water). Classification broadly equivalent to NEMA 6 |

# Dimensions & Weights

**Notes:**

All dimensions in mm
Unpacked weight approx. 414kg
Packed weight approx. 521kg




***Note:*** *icon scientific products are subject to a program of continuous development and improvement and specifications are liable to change without notice. Please check that you have the latest information available before relying on any specification.*