



# CloudPoint

Powered by icon



**icon scientific limited**

**t** +44 (0) 1225 667050

**e** [info@iconscientific.com](mailto:info@iconscientific.com)

**w** [www.iconscientific.com](http://www.iconscientific.com)



## All icon products are...

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

**Certified to the latest global standards:** ATEX and IECex 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, 2x4-20mA and alarm contact outputs.

**Guaranteed:** with a two-year warranty if commissioned by icon scientific Ltd.

## 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 operate 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.



CloudPoint status screen



CloudPoint last cycle screen



## Additional information

Standard measuring range	Adjustable for any range between -50°C to +30°C.
Repeatability	≤0.2°C.
Reproducibility	Equal to or better than the reproducibility criteria of the relevant test.
Cycle time	4-8 minutes depending on sample.

## Sample requirements

Filtration	Sample should be free from non dissolved water and filtered to 70 microns or better.
Sample pressure at inlet	To be maintained between 1.0 and 5.0 bar(g).
Sample pressure at outlet	At least 0.5 bar(g) below the sample inlet pressure.
Sample temperature at inlet	At least 10°C above the expected Cloud Point and not exceeding 60°C.
Sample flow	Typically 20-60L/hr.

## Utility requirements

Instrument air	Not required.
Power	115-220V (±15%) AC 50/60Hz Maximum Consumption 500VA.
Coolant	Water or antifreeze mixture, at a temperature of not more than 50°C above the lowest cloud point to be measured, is required. The typical flow rate is 40-60L/hr. Maximum pressure is 10 bar. Minimum differential pressure is 0.5 bar.

## Installation Requirements

Location	Unit should be located out of direct wind sun and rain.
Ambient temperature	Unit should be used at ambient temperatures between +5 and +50 °C.
Ambient humidity	0 to 95 % relative humidity, non-condensing.

## Control System

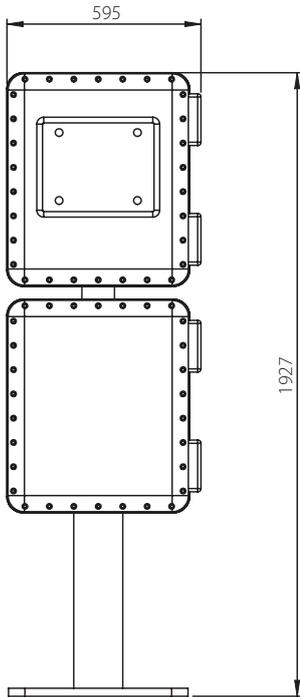
Control system:	Based on fan-less industrial PC with solid state hard drive.
Graphical User Interface (GUI)	17" dual-touch, touch-screen panel that can be wiped clean and operated with gloved hands.
Language	Screen language selectable between English, French, Spanish and Chinese (others on request).

## Inputs/Outputs

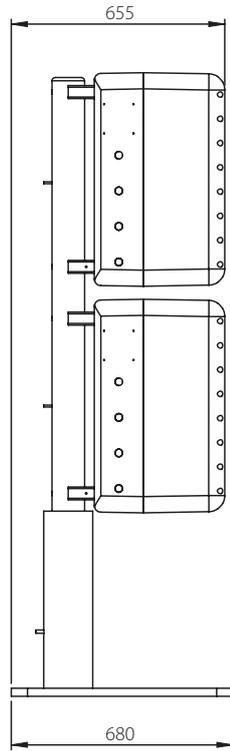
Analog outputs	2 x 4-20ma isolated outputs are provided as standard.
Modbus output	Wired Modbus RTU (RS485) and Modbus RTU over Ethernet available as standard.
Analog inputs	The analyser can read in up to 4 customer provided 0-10V or 4-20mA signals. These inputs may be named scaled and displayed and the values can have alarm levels associated with them.
Digital (contact) inputs	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.
Contact outputs	<p>In addition to the above alarm contacts, the analyser also provides the following contact outputs.</p> <p>New Result: a two second contact to notify that a new analyser result is available.</p> <p>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.</p> <p>Service Alarm: the analyser monitors a number of internal functions and will warn the user if key items require service.</p> <p>All contact ratings are 24VDC 0.5A.</p>
Hazardous area certification	<p>The icon CloudPoint Analyser is ATEX and IECEx certified Exd (Tamb. -20°C to +60°C) suitable for zone 1 or zone 2 use in gas groupings of IIA, IIB or IIB+H2 with a variable T-rating depending on application.</p> <p>ATEX cert No. ITS10ATEX17188.</p> <p>IECEx cert No. IECEx ITS 10.0057.</p>
IP ratings	Tested and certified to IP66 (dust tight and protected from powerful water jets) and to IP67 (dust tight and protected from temporary total immersion in water).

# Dimensions & Weights

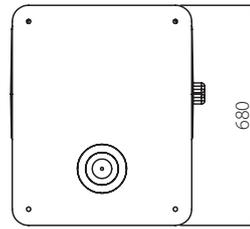
Front view



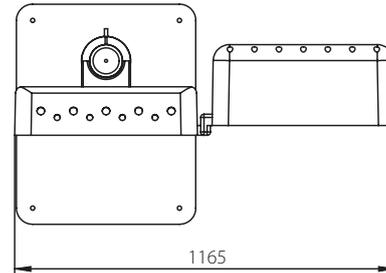
Side view



Top view



Top view with door open



**Notes:**

All dimensions in mm

Unpacked weight approx 300kg

Packed weight approx 350kg

**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.



**Control Panel Navigation:**

- Home (Cp logo)
- Status
- Charts
- Alarms
- Settings
- Maintenance

**Status**

Run Standby Manual

**Current Status**

Date	Date
Time	Time
TagNo.	TagNo.
Version	Version
Serial No.	Serial No.
Sample	Diesel

**Current Status**

Mode	Run
Cycle Type	n/a
Cycle Step	Flush
Time	0 sec
Countdown Timer	45 sec

**Last Cloud Point**

# 20°C

**Alarm History**

Name	xxxxxx
Start Time	00:00:00
End Time	00:00:00
Type	xxxxxx
Number	xxxxxx

**Alarm Status**

Fatal	Healthy	🟢
Warn	Healthy	🟢
New Result	Off	🟢
Data Valid	Invalid	🔴
Calibrating	No	🟢
service	Healthy	🔴

**Detector** 0000 mV  
**Slope** 0000 mV/s  
**Cell Temperature** 0000 °C  
**Cooling Rate** 0000 °C/min  
**Power** 000 %  
**Spill Sensor** 🟢  
**Vacuum Status** 🟢

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