



# Fp Flash Point

Powered by Icon

## All Icon products are...

**Easy to use:** with an intuitive multilingual graphic user interface on a large armoured-glass wipe-clean touch-screen display.

**Certified to global standards:** ATEX, IECEx, UKEx, TIIS, EACEx, and ETL approved to give absolute confidence and peace of mind in hazardous areas and manufactured under an ISO9001:2015 certified Quality Management System.

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

**Highly efficient:** with low sample consumption, sample flow monitoring, and minimal or no utility requirements.

**Safety assured:** with configurable general fault alarms, and a dedicated alarm for internal sample leakage.

**Flexible:** with auto validation or calibration options and standard Modbus, 4-20mA, and digital contact outputs.



## What does it do?

The Icon Flash Point analyser measures the lowest temperature at which kerosene or diesel fuel will typically form a flammable vapour mixture with air. The analyser heats a sample and applies a test spark to the headspace above the liquid. Delivering repeatable results, it enables you to minimise give-away when blending to specifications, and to determine the safe storage temperatures for various petroleum products.

Using sample heating and spark ignition to measure flash point, the analyser correlates well with standard laboratory tests and is immune to sulphur compounds. It is equipped with computer-controlled air and sample flow rates, positive spark detection, integral sample cooler, internal camera, and electrode decoking system. These state-of-the-art features allow you to observe the spark and inspect the electrodes without having to open the explosion-proof enclosure. The results are fully compatible with those produced by any standard flash point test methods, such as IP170, ASTM D56, ASTM D92 and ASTM D93.

## How does it work?

The sample is pumped into a test cup and trapped within it. At a controlled rate, air is also introduced to the test cup, which is then heated. At selected intervals, a high-voltage spark is generated by electrodes positioned over the sample. When it is reached, the flash point is detected by a highly sensitive low-mass thermocouple. The sample flow is then re-established and the air flow increased, allowing the test cup to cool in preparation for the next cycle.

## Why choose the Icon Scientific Flash Point Analyser?

**Precise inbuilt flow control:** an internal sample flow metering pump and an internal mass air flow controller provide programmable and more accurate flow rate control as standard, compared to traditional flowmeters.

**Inbuilt inspection facility:** an internal HD camera enables flash point and spark observation without the need to open the explosion-proof box, and makes the whole process safer and easier to monitor.

**Sulphur immunity:** sparking flash test methods are inherently immune to the effects of sulphur compounds in the sample, thereby removing and avoiding the expensive maintenance and upkeep normally associated with catalytic methods.

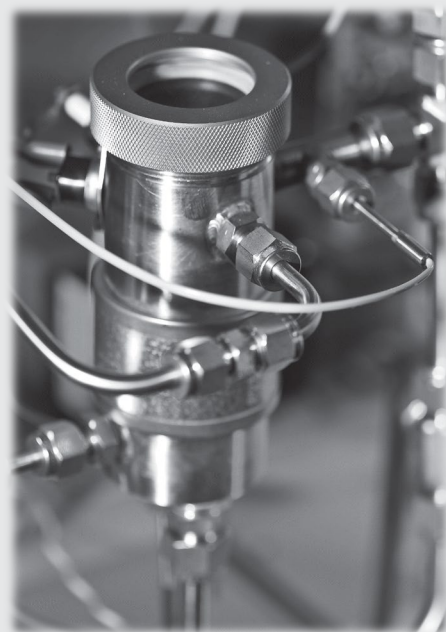
**Coke resistant:** with a unique spark-electrode cleaning system, a small volume of air is blown through the electrode assembly whilst a spark discharge between the electrodes oxidises and removes any carbon deposits that may have formed. This keeps the electrodes clean and provides automatic routine maintenance without having to open the explosion-proof enclosure.

**Wax/Gum resistant:** an optional automatic flash cup cleaning system may be used to further reduce maintenance frequency by automatically washing out any waxy/gum residue that may have collected in the cup. This requirement is sample dependant and helps to achieve a maintenance-free analyser. Contact Icon for more details.

**Return to pressure:** where no atmospheric return point is available, an optional internal recovery unit is offered to return against back pressures up to 5 bar.

**Inbuilt sample coolers:** internal peltier-based sample coolers provide additional cooling to help ensure that incoming sample is cooled below the flash point temperature, and to raise the maximum acceptable sample inlet temperature.

**Atmospheric pressure compensation:** analyser results can be automatically adjusted according to atmospheric pressure as defined in the standard test methods.



## Sample Requirements

<b>Inlet Temperature</b>	At least 5°C (9°F) below the lowest expected result, with internal coolers fitted. Or without internal coolers, at least 20°C (36°F) below. Maximum 80°C (176°F).
<b>Inlet Pressure</b>	Minimum 0.2 bar (3 psi) Maximum 1.0 bar (15 psi)
<b>Outlet Pressure</b>	Atmospheric, with continuous fall to sample return point (standard).  Optional internal sample recovery tank with pumped return to 5 bar (73 psi). For higher pressure return contact Icon.
<b>Sample Flow</b> (non-continuous)	Maximum 5.4 L/H N.B: Flow only during Flush/Cool Typical Consumption < 2 L/H
<b>Sample Quality</b>	Filtered to 10 microns (µm). Sample should contain no free water.
<b>Inlet Viscosity</b>	Maximum 10 cSt (for IIB+H2) Maximum 30 cSt (for IIA) For higher viscosities contact Icon.
<b>Vent</b>	Atmospheric, with continuous fall to vent point.

## Utility Requirements

<b>Instrument Air</b>	
<b>Pressure</b>	Minimum 1 bar (15 psi) Maximum 2 bar (30 psi)
<b>Consumption</b>	Typically 30-60 L/H
<b>Quality</b>	ISO 8573.1 Class 3 ANSI / ISA-7.0.0
<b>Optional extra</b>	If optional cell and/or electronics enclosure cooling is selected, then a supply of instrument air is also required at 0.2 bar (3 psi), typically 5-10 L/H.
<b>Coolant</b>	Not Required
<b>Power</b>	115VAC 50-60Hz, 230VAC 50-60Hz Max 500VA

## Installation Requirements

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

## Control System

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

## Certification

<b>Hazardous Area Certification</b>	Exd certified to ATEX, IECEx, UKEx, TIIS, and EACEx standards, suitable 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 the USA and Canada Class 1, Div 1, groups B,C,D.
<b>IP Ratings</b>	Tested and certified to IP66/IP67 (dust tight and protected from temporary total immersion in water).

## Specification

<b>Measuring Range</b>	Standard: 30-200°C (86-392°F) For other ranges contact Icon.
<b>Repeatability</b>	Equal to or better than repeatability criteria of the relevant test.
<b>Cycle Time</b>	Typically 4-10 minutes.

## Inputs/Outputs

<b>Analog Outputs</b>	2 x 4-20mA (active) isolated outputs provided as standard for process and calibration/validation results.
<b>Digital (Contact) Inputs</b>	<b>Run / Standby:</b> reads a customer supplied latching switch to toggle between run and standby modes.  <b>Remote Cal:</b> reads a customer supplied momentary switch to remotely initiate a calibration cycle.  <b>Remote Val:</b> reads a customer supplied momentary switch to remotely initiate a validation cycle.
<b>General Fault Alarms</b>	Alarm limits can be configured for monitored conditions, and set to be Fatal, Warning, or Inactive. Active alarms are notified on screen and stored in the alarm history table.

<b>Digital (Contact) Outputs</b>	<b>Fatal Alarm (NC):</b> a general fault alarm that causes the analyser to suspend its operation when triggered.  <b>Warning Alarm (NC):</b> a general fault alarm for notification only.  <b>New Result (NO):</b> a variable-length momentary contact to notify that a new analyser result is available.  <b>Data Valid (NO):</b> indicates that the analyser is currently running on a process stream, and that data is valid. As opposed to when in standby, or when in Cal. or Val. modes.  <b>Cal/Val (NO):</b> indicates that the analyser is currently in Cal/Val mode.  <b>Spill Alarm (NC):</b> an alarm contact that triggers if a leak is detected in the analyser enclosure.  All contact ratings are 24VDC 0.5A, 230VAC 1A
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<b>Digital (Signal) Outputs</b>	<b>Calibration Valve:</b> provides a 24VDC signal to an external solenoid valve to switch between process and calibration samples.  <b>Cleaning Valve:</b> provides a 24VDC signal to an external solenoid valve to direct cleaning solvent to the flash cup for additional automatic cleaning.
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<b>Analog Inputs</b> Set of 4x inputs (optional)	The analyser can optionally read up to four 0-10V or 4-20mA active signals. These input values can each have high/low alarm levels associated with them to trigger either of the analyser's general fault alarms.
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<b>Digital (Contact) Inputs</b> Set of 4x inputs (optional)	The analyser can optionally monitor up to four volt-free external contacts or customer alarms. These contacts may also be included in the analyser alarm table to trigger the general fault alarms.
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<b>Communications</b>	Modbus RTU or OPC over RS485 or Ethernet (TCP/IP), with optional fiber optics. Optional OPC server software.
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## Stream Switching (optional)

### Control Modes

Stream switching control can be assigned to any of the following selectable modes:

- Digital Input (up to 2 streams)
- Modbus (up to 3 streams)
- OPC (up to 3 streams)
- Internal Stream Switching Table (up to 3 streams)

Each stream can be individually named and can have their own ASTM method assigned from the internal stream switching table or over Modbus.

A single validation stream is also available as standard, and is controlled independently of the process stream switching modes selected above.

### Analog Outputs

(additional)

2 x additional 4-20mA (active) analog outputs provided for flash point results from streams 2 and 3.

The current stream number is also available over Modbus and OPC.

### Digital (Contact) Outputs

(additional)

**Current Stream:** this contact indicates the current stream, applicable when stream control is by digital input.

### External Device Signals

24VDC signals provided for external stream selection solenoid valves.

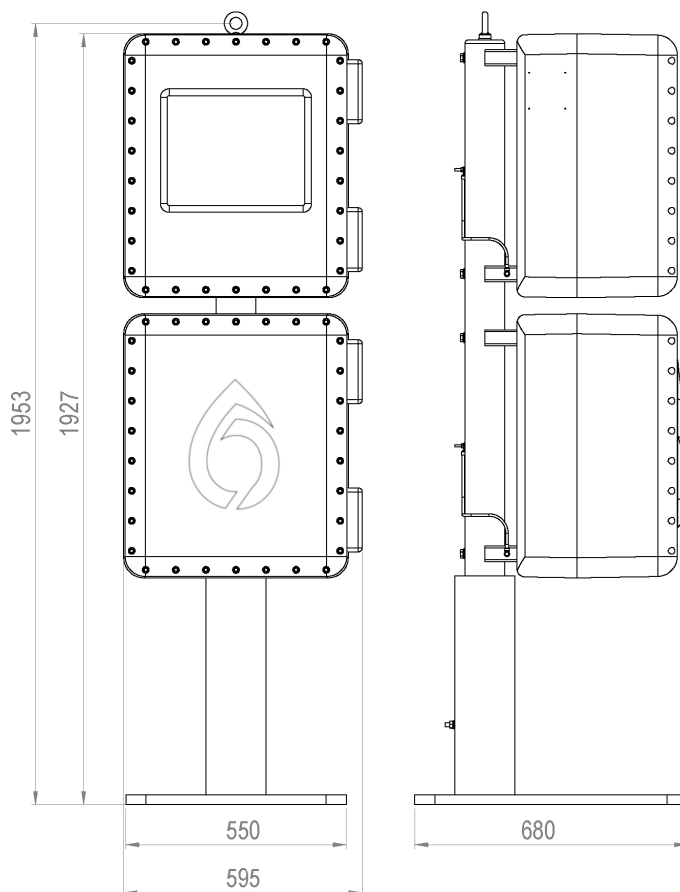
## Dimensions & Weights

### Notes:

All dimensions in mm

Unpacked weight approx. 416kg

Packed weight approx. 523kg



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.