



Di^o Distillation

Powered by Icon

All icon products are...

Easy to use: with an armoured glass wipe-clean touch-screen and intuitive multi-lingual graphic user interface.

Certified to global standards: ATEX, IECEx, TIIS, EAC, 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: 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 or calibration options and standard Modbus, 4-20mA, and digital contact outputs.



What does it do?

The icon scientific Distillation Analyser is used to measure individual boiling points or the boiling ranges of petroleum products from the light to middle distillate ranges.

The results obtained may be directly correlated to standard test methods such as ASTM D86, IP123 and ISO3405.

How does it work?

The unit works by carrying out a small-scale distillation on 20 ml of sample under controlled conditions. Our proven laser level measurement technology is used to accurately control the volume of sample in the distillation flask and to monitor the volume recovered; using the same piston setup for both measurements ensures any cross-system errors are negated. All results can be corrected for barometric pressure, as this is monitored throughout the distillation cycle. The temperature of the receiver block can also be controlled to allow distillations covering all ASTM sample groups.

Why choose the icon scientific Distillation Analyser?

Rapid cycle time: a complete distillation is achieved in 10-15 minutes.

Full distillation curve: available as raw data points for every 1% volume.

Auto validation/calibration: the analyser can be programmed to perform automatic validation or calibration on demand or on a timed basis.

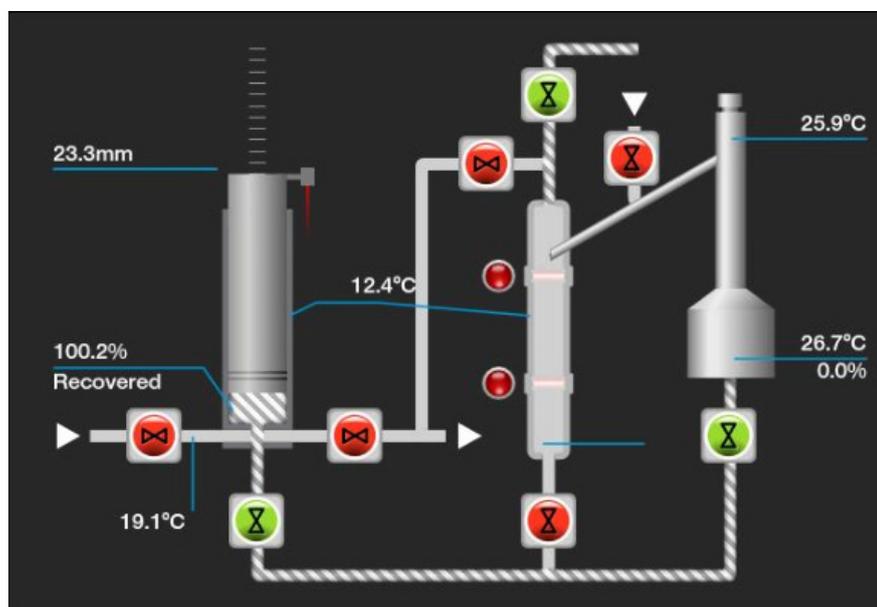
Auto de-coke: the analyser can be programmed to perform an automatic de-coke cycle to remove potential coke build-up on the flask walls.

Multiple configurations: for a wide variety of samples.

Precision laser level measurement: provides superior repeatability.

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

Programmable outputs: gives the user greater control over the analyser's analog outputs, Modbus, and OPC data points. Multiple fixed and configurable data points available, including IBP, FBP, temperature at percent recovered/evaporated, and volume recovered/evaporated at temperature.



Sample Requirements

Sample Filtration	Free from non-dissolved water and filtered to 10 microns.
Sample Inlet Temperature	At least 15°C below the expected initial boiling point.
Sample Inlet Pressure	3-5 barg
Sample Outlet Pressure	Atmospheric, with continuous fall to sample return point.
Sample Consumption	Typically 3-7 L/hr, non-continuous
Vent	Atmospheric, with continuous fall to vent point.

Utility Requirements

Instrument Air	4-5 barg 0.2 barg (3 psig) for optional electronics enclosure cooling.
Coolant	3-5 barg, at 10-20 L/hr Minimum 2 bar differential pressure. Filtered to 70 microns. Temperature for ASTM group 1 samples ≤ 20°C For other ASTM groups ≤ 40°C
Power	115VAC 50/60Hz, 230VAC 50/60Hz Max 1000VA

Installation Requirements

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

Control System

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 multilingual display.

Certification

Hazardous Area Certification	The Distillation analyser is Exd certified to ATEX, IECEx, and EAC 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.
IP Ratings	Tested and certified to IP66/IP67 (dust tight and protected from temporary total immersion in water).

Specification

Measuring Range	0-430 °C
Repeatability	Within the repeatability criteria of the ASTM D86 test for the measuring range and type of product under test.
Cycle Time	Typically 10-20 minutes, dependent on method and sample type.

Inputs/Outputs

Analog Outputs	4 x 4-20mA (active) isolated outputs and 4 x non-isolated outputs provided as standard. User configurable to be any of percent recovered/evaporated at temperature, or temperature at percent recovered/evaporated, including IBP and FPB.
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Digital (Contact) Inputs	Run / Standby: reads a customer supplied latching switch to toggle between run and standby modes. Remote Cal: reads a customer supplied momentary switch to remotely initiate a calibration cycle. Remote Val: reads a customer supplied momentary switch to remotely initiate a validation cycle.
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General Fault Alarms	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.
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Digital (Contact) Outputs	Fatal Alarm (NC): this general fault alarm will cause the analyser to suspend its operation when triggered. Warning Alarm (NC): this general fault alarm is for notification only. New Result (NO): a 10 second monostable contact to notify that a new analyser result is available. Data Valid (NO): this contact will indicate that the analyser is running, and that data is valid. As opposed to when a calibration or validation is in progress, or when the analyser is in standby. Cal/Val (NO): this contact will indicate that the analyser is in calibration or validation mode. Spill Alarm (NC): this alarm contact will trigger if a leak is detected in the analyser enclosure. All contact ratings are 24VDC 0.5A, 230VAC 1A
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Analog Inputs (optional)	The analyser can optionally read up to four 0-10V or 4-20mA active signals. These inputs may be displayed, and the values can each have an alarm level associated with them.
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Digital (Contact) Inputs (optional)	The analyser can optionally monitor up to four volt-free external contacts. These contacts may be included in the alarm table.
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Communications	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)

Streams can be individually named and have ASTM methods assigned from the Stream Switching Table.

An additional validation stream is also available, independent of the selected control mode.

Digital (Contact) Outputs (additional)

Current Stream: this contact will indicate the current stream when stream control is by digital input.

External Device Signals

24VDC signals provided for external stream selection solenoid valves.

Modbus/OPC

Full distillation curve of last completed distillation (raw data in 1% steps).

Multiple fixed and configurable data points available for each stream, including IBP, FBP, temperature at percent recovered/evaporated, and volume recovered/evaporated at temperature.

Contact icon for more information about available data.



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.

Dimensions & Weights

Notes:

All dimensions in mm

Unpacked weight approx. 420kg

Packed weight approx. 527kg

