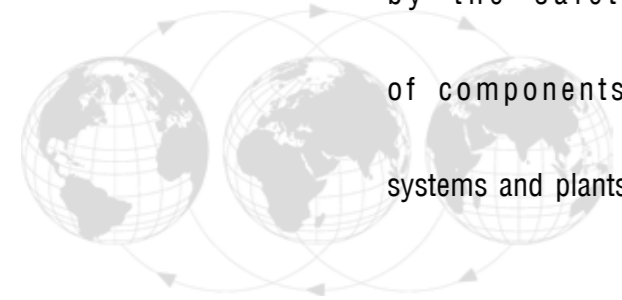


BARTEC GROUP  
protects people and  
the environment  
by the safety  
of components,  
systems and plants.



*Process Analyzer*  
**Distillation Process Analyzer DPA-4**

Credible Solutions for the Oil and Gas Industry

To remain competitive, today's refiners must employ all optimization and product control techniques available. The use of online physical property analyzers is one of the key features to reach those objectives because they measure important quality properties in the process directly.

Distillation is a physical method of separating the component substances from a liquid mixture by selective vaporization and re-condensation. Distillation is based on differences in volatilities of the components of the liquid mixture. The distillation curve is one of the most common quality parameters of liquid hydrocarbons such like naphtha, gasoline, kerosene, diesel and gas oil.

Your partner for innovative system solutions.



The BARTEC BENKE specialists have many years of experience. They create system solutions that you can rely on: efficient and dependable for decades to come.

The only ASTM D86 compliant design with flask – condenser – receiver

Capability to reduce cycle time by Rapid Analysis Mode (RAM)

Complete boiling curve can be measured from IBP to FBP

Suitable for operation at pressure below atmospheric pressure

De-coking feature

Network and fieldbus communication



### Special Features:

- The complete boiling curve is measured in every cycle (SAM)
- Measuring points of interest freely definable by software
- Cycle time reduction is possible: faster determination of distillation points (RAM)
- Enhances automatic control of blending processes
- De-coking
- Available communication interfaces:
  - Modbus/RTU, Modbus/TCP (bidirectional)
  - Remote access via Ethernet (VDSL or FOC is)
- Integrated failure diagnosis and self monitoring
- Validation report for quality assurance
- Freely programmable digital and analog inputs

### Norms and Standards:

#### Compliant with:

- ASTM D86
- DIN EN ISO 3405
- IP 123

### APPLICATION

The BARTEC BENKE Distillation Process Analyzer DPA-4 is the only distillation analyzer that is compliant with the master norm ASTM D86. Apart from measurement cycles fully compliant with the norm, the DPA-4 can be operated in the so called Rapid Analyzer Mode (RAM) in which the cycle time can be reduced to approx. 60%. It therefore serves to enhance automatic control of blending processes.

The DPA-4 offers to run the distillation process below atmospheric pressure which prevents samples that are sensitive to temperature (e.g. palm oils) from degradation. It also allows extending the measurement range to higher boiling points.

Make your decision for a strong partner!

Choose BARTEC GROUP also for:

- Fast Loop Systems
- Sample Conditioning Systems
- Validation Systems
- Recovery Systems
- Chillers
- Air Conditioning Systems/HVAC
- Pre Commissioned Analyzer Shelters/ Turn-Key Solutions



## EXPLOSION PROTECTION

<b>Marking</b>	ATEX: II 2 G IIC T4 Gb NEC 500: Class I, Div. 2, Groups B, C and D NEC 505: Class I, Zone 1, AEx d e ib px IIB or IIB+H2 TR CU Certification available
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## TECHNICAL DATA

<b>Technology</b>	batch distillation
<b>Method</b>	SAM compliant with: ASTM D86, DIN EN ISO 3405, IP 123 RAM correlates with: ASTM D86, DIN EN ISO 3405, IP 123
<b>Measuring range</b>	20 to 420°C (68 to 788°F) output of any temperature/distillate amount via Modbus
<b>Repeatability</b>	≤ DIN EN/ASTM e.g. gasoline typ. T@ 50% rec. 1°C
<b>Reproducibility</b>	≤ DIN EN/ASTM
<b>Measuring cycle</b>	typical time for gasoline/diesel in SAM (in min) IBP: approx. 24/29 50 % recovered: approx. 36/41 FBP: approx. 45/50 cycle time will be reduced by approx. 40 % in RAM
<b>Product streams</b>	up to 3 x sample, 1 validation sample each (additional hardware required)
<b>Electrical data</b>	
<b>Nominal voltage</b>	230 VAC ± 10 %, 1 phase; 50 Hz; other ratings on request
<b>Maximum power consumption</b>	approx. 600 W
<b>Protection class</b>	IP 54 (NEMA 13)
<b>Ambient conditions</b>	
<b>Ambient temperature</b>	operation 5 to 40°C (41 to 104°F) storage 0 to 60°C (32 to 140°F)
<b>Ambient humidity</b>	operation 5 to 80 % relative humidity, non-corrosive storage 5 to 85 % relative humidity, non-corrosive
<b>Sample Quality</b>	filtered 50 µm, bubble-free (≤ 37 cSt at inlet temperature)
<b>Consumption</b>	approx. 10 to 40 l/h (≥ 10 cSt: max. 15 l/h)
<b>Pressure at inlet</b>	1.5 to 2 bar (21.8 to 29 psi)
<b>Temperature at inlet</b>	depends on application, max. 55°C (131°F)
<b>Utilities</b>	
<b>Instrument air</b>	
<b>Consumption</b>	
Purge	8 Nm <sup>3</sup> /h while purging (~12 min)
Operation	approx. 1 Nm <sup>3</sup> /h
<b>Pressure at inlet</b>	2 to 7 bar (29 to 101.5 psi)
<b>Quality</b>	humidity class 2 or better acc. to ISO 8573.1

<b>Coolant Consumption</b>	max. 60 l/h
<b>Temperature</b>	-10 to 55°C (14 to 131°F)
<b>Pressure at inlet</b>	2 to 7 bar (29 to 101.5 psi)
<b>Quality</b>	filtered 50 µm

### Signal outputs and inputs

<b>Analog outputs</b>	temperature at specific distillation batch
<b>Digital outputs</b>	Alarm, Ready / Valid
<b>Digital inputs</b>	Stream Selection, Validation Request, Reset

### Electrical data of signal outputs and inputs

<b>Analog outputs</b>	max. 8 (4 to 20 mA; 1000 Ω) active isolated on request
<b>Analog inputs</b>	4 to 20 mA; 160 Ω
<b>Digital outputs</b>	24 VDC; max. 0.5 A
<b>Digital inputs</b>	high: 15 to 28 VDC low: 0 to 4 VDC
<b>Auxiliary power supply output</b>	24 VDC; max. 0.8 A

### Control unit

<b>Central control unit</b>	Industrial PC
<b>Operating system</b>	Windows Embedded Standard 7®
<b>Control software</b>	PACS

### User interfaces

<b>Display</b>	TFT display with touch function 1024 x 768 pixel
<b>Keyboard</b>	virtual keyboard, controlled via TFT display with touch function

### Connections

<b>Tube fittings</b>	Swagelok® 6 mm/12 mm/18 mm other fittings on request
<b>Vent/Drain</b>	open to atmosphere backpressure on request

### Weight and dimensions

<b>Weight</b>	approx. 250 kg
<b>Dimensions (W x H x D)</b>	approx. 1140 x 1900 x 710 mm
<b>Space requirements</b>	right: 150 mm / left: 100 mm

### Optional interfaces

<b>Analog outputs</b>	on request
<b>Analog inputs</b>	density
<b>MODBUS interface</b>	MODBUS/RTU via RS485 or RS422 or FOC is, MODBUS/TCP via FOC is
<b>Remote access</b>	via Ethernet (VDSL or FOC is)

**Important notice** DPA-4 is subject to continuous product improvement, specifications are preliminary and may be subject to change without notice. If your technical data do not comply with existing data, please contact us for technical clarification.