

# Flash Point Process Analyzer FPA-4



**ASTM correlation**

**Customized solutions**

**State-of-the-art technology**

**ATEX and CSA certified**

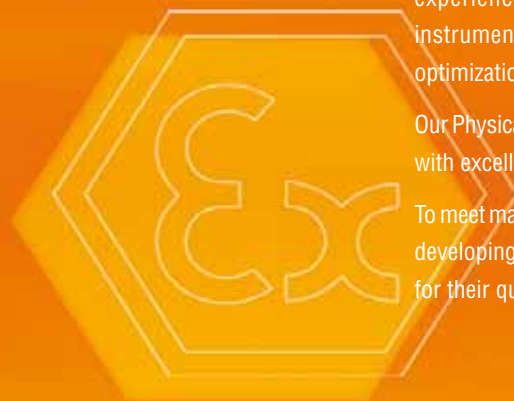
**Network Fieldbus communication**

Note: Picture shows an exemplary analyzer with the optional sample conditioning system and closed loop chiller.

We, BARTEC BENKE, represent over 50 years of experience and specialist knowledge in analytical instruments and analytical systems for control and optimization of production processes in plants.

Our Physical Property Process Analyzers are synonymous with excellence and reliability.

To meet market demands, BARTEC BENKE is continuously developing new products that are internationally known for their quality and innovation.



# Flash Point Process Analyzer FPA-4

## FPA-4 Redesign

The established Flash Point Process Analyzer FPA-4 and its measurement principle remains the best solution for jet fuel, kerosene, naphtha and other refinery applications.

The improved concept of the analyser design has resulted in an extended measuring range up to 180 °C (356 °F) which enables the FPA-4 to be used for additional applications such as Biodiesel.

## Features

- Continuous measurement
- Multi-stream capability
- Integrated failure diagnosis and self monitoring
- No coking of measuring cell by catalytic reaction
- Scheduled automatic regeneration
- Available communication interfaces:
  - Modbus/RTU, Modbus/TCP
  - Remote Access via modem or Ethernet

## Norms and Standards

- ASTM D 56
- ASTM D 93
- DIN EN ISO 13736
- DIN EN ISO 2719
- IP 170
- IP 34
- DIN 51755

## Explosion protection

### Ex protection type

Ex II 2G IIC T4 (or T3) Gb (Europe)  
Protection type depending on application

### Certification

pending for ATEX, IECEx and CSA US/CAN

## Technical data

### Method

ASTM D 56, ASTM D 93, DIN EN ISO 2719,  
DIN EN ISO 13736, IP 34, IP 170,  
DIN 51755

### Measuring range

+30 °C to +180 °C (+86 °F to +356 °F)

### Repeatability

≤ ASTM

### Reproducibility

≤ ASTM

### Measuring cycle

continuously operated

### Product streams

2 x sample,  
1 x validation (additional hardware required)

## Electrical data

### Nominal voltages

AC 230 V ± 10 %, 1 phase; 50 Hz  
AC 115 V ± 10 %, 1 phase; 60 Hz

### Maximum power consumption

approx. 700 W

### Protection class

IP 54

## Ambient conditions

### Ambient temperature

operation +5 °C to +40 °C  
(+41 °F to +104 °F)

### Ambient humidity

operation 5 to 80 % relative humidity,  
non-corrosive

## Sample

### Quality

clean and dry; liquid  
(≤ 37 cSt at inlet temperature)

### Consumption

2 to 3 l/h (at sample inlet)

### Pressure at inlet

1.5 to 5 bar

### Temperature at inlet

min. 15 K below expected FP

### Outlet

< 1 bar

## Utilities

### Coolant

(dependent on flash point temperature)

## Sample

### Consumption

30 to 60 l/h

### Temperature

max. +40 °C (+104 °F)

## Plant Cooling Water

### Consumption

10 to 40 l/h

### Temperature

max. +40 °C (+104 °F)

## Instrument air

### Consumption

min. 1.4 Nm³ per flushing cycle during  
start-up  
approx. 0.8 Nm³/h in normal operating mode  
only for leak compensation

### Pressure at inlet

2 to 7 bar

### Quality

dew point ≤ -40 °C (-40 °F)  
humidity class 2 or better  
according to ISO8573.1

## Signal outputs and inputs

### Analog outputs

flash point, temperature

## Digital outputs

sum alarm, measurement valid, see options

## Digital inputs

return from safe state, see options

## Electrical data of signal outputs and inputs

## Analog outputs

4 to 20 mA, 800 Ω out;  
active isolated on request

## Digital outputs

DC 24 V; max. 0.5 A

## Digital inputs

high DC 15 to 28 V  
low DC 0 to 4 V

## Auxiliary power supply output

DC 24 V; max. 0.8 A

## Control unit

### Central control unit

Industrial PC

### Operating system

Windows 7®

### Control software

PACS

## User interfaces

### Display

TFT display with touch function  
1024 x 768 pixels

### Keyboard

virtual keyboard, controlled via  
TFT display

## Connections

### Pipe fittings

Swagelok® 6 mm/12 mm/18 mm  
other fittings on request

### Vent/Slop

open to atmosphere

## Optional signal outputs and inputs

### Digital outputs

- Validation ID, stream ID
- warning/low-priority error
- valve switching
- calibration ID
- regeneration ID

### Digital inputs

- stream selection
- enable/disable automatic stream switching
- request validation
- request regeneration
- inhibit (force safe state)

## MODBUS interface

MODBUS/RTU via RS485 or RS422  
or FOC

MODBUS/TCP via FOC

## Remote access

via Modem or Ethernet

**Important notice:** FPA-4 is subject to continuous product improvement, specifications may be subject to change without notice.