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Freeze/Cloud Point Process Analyzer FRP-4/CPA-4

Credible Solutions for the Oil and Gas Industry

➔ Explosion protection

Marking	ATEX: II 2 G IIB (or 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
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➔ Technical data

Technology	optical turbidity detection
Method	compliant with: ASTM D2386, ASTM D1015, DIN ISO 3013, ASTM D7153-05, ASTM D7154-05, ASTM D2500
Measuring range	down to -40 °C (-40 °F)* down to -70 °C (-94 °F) optional: down to -80 °C (-112 °F)
Repeatability	≤ DIN EN/ASTM e.g. kerosene typ. 0.2 °C at -50 °C (-58 °F)
Reproducibility	≤ DIN EN/ASTM
Measuring cycle	discontinuous, cycle time 8 to 20 min depends on freezing point temperature cycle time 4 to 10 min depends on cloud point temperature*
Product streams	2 x sample, 1 x validation (additional hardware required)

■ Electrical data

Nominal voltage	AC 230 V ± 10 %, 1 phase; 50 Hz; other ratings on request
Maximum power consumption	approx. 500 W
Protection class	IP 54 (NEMA 13)
Ambient conditions	
Ambient temperature	operation 5 to 40 °C (41 to 104 °F) storage 0 to 60 °C (32 to 140 °F)
Ambient humidity	operation 5 to 80 % relative humidity, non-corrosive storage 5 to 85 % relative humidity, non-corrosive

Sample

Quality	filtered 50 µm, free of suspended water (≤ 37 cSt at inlet temperature)
Consumption	approx. 5 to 30 l/h
Pressure at inlet	2 to 3 bar (29 to 43.5 psi)
Temperature at inlet	5 to 15 °C (41 to 59 °F) min. 15 K above expected cloud point*

Utilities

Instrument air	
Consumption Purge	8 Nm ³ /h while purging (~12 min)
Operation	approx. 1 Nm ³ /h
Pressure at inlet	2 to 7 bar (29 to 101.5 psi)
Quality	humidity class 2 or better acc. to ISO 8573.1

■ Coolant

Consumption*	60 to 100 l/h
Temperature	20 to 40 °C (68 to 104 °F)
Pressure at inlet	1 to 3 bar (15 to 44 psi)
Quality	filtered 50 µm

Signal outputs and inputs

Analog outputs	freezing point temperature, cloud point temperature (others on request)
Digital outputs	Alarm, Ready signal, see options
Digital inputs	Stream Selection, Validation Request, Reset

Electrical data of signal outputs and inputs

Analog outputs	max. 8 (4 to 20 mA; 1000 Ω) active isolated on request
Analog inputs	4 to 20 mA; 160 Ω
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 Embedded Standard 7®
Control software	PACS

User interfaces

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

Connections

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

Weight and dimensions

Weight	approx. 250 kg
Dimensions (W x H x D)	approx. 1140 x 1900 x 710 mm
Space requirements	right: 500 mm/left: 500 mm

Optional interfaces

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

* FRP-4 measures only cloud point

Important notice FRP-4/CPA-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.