



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

Credible Solutions for the Oil and Gas Industry

## ➔ Explosion protection

<b>Marking</b>	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

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

## ■ Electrical data

<b>Nominal voltage</b>	AC 230 V ± 10 %, 1 phase; 50 Hz; other ratings on request
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<b>Maximum power consumption</b>	approx. 500 W
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<b>Protection class</b>	IP 54 (NEMA 13)
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## ■ Ambient conditions

<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

## Sample

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

### ■ Instrument air

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

<b>Consumption*</b>	60 to 100 l/h
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<b>Temperature</b>	20 to 40 °C (68 to 104 °F)
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<b>Pressure at inlet</b>	1 to 3 bar (15 to 44 psi)
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<b>Quality</b>	filtered 50 µm
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## Signal outputs and inputs

<b>Analog outputs</b>	freezing point temperature, cloud point temperature (others on request)
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<b>Digital outputs</b>	Alarm, Ready signal, see options
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<b>Digital inputs</b>	Stream Selection, Validation Request, Reset
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## Electrical data of signal outputs and inputs

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

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

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

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

<b>Weight</b>	approx. 250 kg
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<b>Dimensions (W x H x D)</b>	approx. 1140 x 1900 x 710 mm
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<b>Space requirements</b>	right: 500 mm/left: 500 mm
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## Optional interfaces

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