

## Devices for determination of the SF<sub>6</sub> gas quality

For verification of several parameters with only one measurement

3-035R-R...

**MIRROR-ANALYSER<sup>SF6</sup>**

This multi-functional device allows the determination of up to three quality parameters with only one measurement:

- Moisture concentration (frost point / dew point)
- SF<sub>6</sub> volume percentage
- SO<sub>2</sub> concentration

The MIRROR-ANALYSER<sup>SF6</sup> uses the physical dew point mirror measuring principle which is characterised by its high precision and utmost reliability in order to measure the moisture content. By cooling the integrated mirror the moisture content of the gas is determined by measuring the temperature depending on the condensation or icing of the mirror. The other parameters of SF<sub>6</sub> quality are determined by measuring the speed of sound (SF<sub>6</sub> volume percentage) and electrochemical reaction (SO<sub>2</sub> concentration).



- High accuracy and reliability in moisture determination (dew point mirror measuring principle)
- No emissions of measuring gas (integrated gas return system)
- Modular interchangeability of the sensors
- Low maintenance due to self-test functions
- Easy and user-friendly menu navigation via high quality 7" capacitive colour touch screen
- Results of up to 500 measurements can be stored with name, date and time
- USB- and LAN connection
- Adjustable user languages: DE, EN, FR, ES
- Compact design, easy handling and transportation (installed in a trolley case)

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### MIRROR-ANALYSER SF<sub>6</sub>

The "MIRROR-ANALYSER SF<sub>6</sub>" is a compact, user- and maintenance-friendly device which guarantees high measuring precision. The unit allows different kinds of measurements and treatment of the measuring gas in one of the following ways:

- The measuring gas can be stored in an internal storage vessel and pumped back into the gas compartment (up to 10 bar p<sub>e</sub>)
- External storage of the measuring gas into a cylinder

For measurements on cylinders, vessels or gas compartments with higher pressure (max. inlet pressure 35 bar p<sub>e</sub>) or if the measuring gas should not be pumped back into the unit, a cylinder can be connected directly to the outlet (max. 10 bar p<sub>e</sub>). It is not necessary to use a pressure reducer and to separate the device from the gas cylinder or the gas compartment.

- External storage of the measuring gas into a gas collecting bag

An external gas collecting bag can be connected allowing continuous measurements (inlet pressure max. 35 bar p<sub>e</sub>) without pumping the gas back. Afterwards it is possible to empty the external bag by using the MIRROR-ANALYSER SF<sub>6</sub>, a service cart or compressor unit.

Precise and correct results for subsequent measurements can be guaranteed by rinsing the measuring hose prior to each measurement. The device is very maintenance-friendly. The residual lifetime of the SO<sub>2</sub> electrochemical sensor is indicated automatically. The dew point mirror has self-test functions.

A very practical and useful device.

#### Technical data:

Dimensions: Length 500 mm, Width 625 mm, Height 297 mm
Weight: approx. 27.5 kg
Inlet pressure: p <sub>e</sub> 0.2 – 35 bar
Operating temperature: -10 °C to +40°C
Ambient moisture: max. 90 % relative moisture, non-condensing during operation
Operating voltage: 100 - 240 VAC 50/60 Hz
Number of measured values to be stored: max. 500
Interface: USB/LAN
Measuring time: variably calculated by the system (5-7 min; max. 10 min)
Limit value dew point: adjustable from -50°C to +20°C
Limit value vol.-%: adjustable from 0.0 to 99.9%
Limit value SO <sub>2</sub> : adjustable from 0.0 to 499.9 ppm <sub>v</sub>
Indication of moisture concentration in dew point °C or °F, referred to atmospheric or inlet pressure, reversible to indication in ppm <sub>v</sub> , ppm <sub>M</sub>
Inlet pressure indication in pa or p <sub>e</sub> , psi, kPa, MPa

#### Standard equipment:

Transport case; 6 m long connecting hose with DILO couplings DN8 and DN20; 2 m long connecting cable
USB stick with data evaluation and reading out of measured data
1 operating manual (multilingual)

3-035R-R...

**MIRROR-ANALYSER** SF<sub>6</sub>**Sensor data:**

	<b>Frost- /Dew point</b>	<b>Volume percentage</b>	<b>SO<sub>2</sub></b>
Measuring principle	Dew point mirror (physical measuring principle)	Velocity of sound	Electrochemical reaction
Measuring range	-50 °C to +20 °C	0 - 100.0 vol.-% SF <sub>6</sub>	0 - 20 ppm <sub>v</sub> 0 - 100 ppm <sub>v</sub> 0 - 500 ppm <sub>v</sub>
Measuring accuracy	±0.5 °C	±0.5 %	< 2 % of the measuring range
Reproducibility	±0.2 °C	±0.3 %	< 4 % / year or < 2 % / month
Long-term stability			< 2% signal loss / month
Recommended calibration interval	2 years	2 years	2 years

**Ordering designation of the MIRROR-ANALYSER** SF<sub>6</sub>:

Single measuring device for moisture: -50 to +20°C	<b>3-035R-R102</b>
Two-in-one measuring device for moisture: -50 to +20°C, percentage 0-100 vol.-%	<b>3-035R-R201</b>
Three-in-one measuring device for moisture: -50 to +20°C, percentage 0-100 vol.-%, SO <sub>2</sub> with 0-20 ppm <sub>v</sub>	<b>3-035R-R301</b>
Three-in-one measuring device for moisture -50 to +20°C, percentage 0-100 vol.-%, SO <sub>2</sub> with 0-100 ppm <sub>v</sub>	<b>3-035R-R302</b>
Three-in-one measuring device for moisture -50 to +20°C, percentage 0-100 vol.-%, SO <sub>2</sub> with 0-500 ppm <sub>v</sub>	<b>3-035R-R303</b>

**Options (please inquire separately):** All devices with percentage measuring system are additionally available for SF<sub>6</sub> concentrations in SF<sub>6</sub>/CF<sub>4</sub> gas mixtures (measuring accuracy: ±2.0 vol.-%). Thus it is possible to switch over between the SF<sub>6</sub>/N<sub>2</sub> and SF<sub>6</sub>/CF<sub>4</sub> measurement.

**Optional accessories at an extra charge:**

External compressor for increase of pressure for application of the MIRROR-ANALYSER SF <sub>6</sub> in medium voltage switchgear with a pressure < 0.2 bar pe	<b>3-826-R003</b>
Discharge gas collecting bag	<b>B151R95</b>
Adapter case for measuring devices	<b>Z340R42</b>
6 m long connecting hose with self-closing couplings (as extension hose)	<b>3-531-R060</b>

**Packing:**

Packing for 3-035R-R...	<b>3-775-R024-C</b>
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