**APPLICATIONS**

- Reading of SF6 gas density
- Monitoring of critical parameter of SF6 such as pressure, temperature, density
- Digital version with RS485 Modbus RTU for smart grid application
- Predictive signals available for digital version
- Suitable to work with pure SF6 or mix
- Suitable for indoor or outdoor, IP67 protection
- Industrial, medical or aerospace fields

**HIGHLIGHTS**

- Absolute compensated pressure reading
- High accuracy +/- 1°C FSO over a wide temperature range
- Ceramic primary element chemically resistant
- Excellent long term stability
- Quick response time
- Factory calibration by laser trimming and automated process
- 14 bit ASIC core
- Multiple transmission data output customizable on request

High voltage or medium voltage circuit breakers commonly used for distribution and transmission are reliable if they are able to operate in steady and controlled conditions. The use of SF6 as quenching gas is extremely important to guarantee a safe operation during the life of equipment. In order to have continuous check of gas filling and immediate warning in case of leakage the EMD transmitter is suitable to be connected to most standard monitoring systems. It is ready to operate immediately after installation because of our technology based on ceramic primary element capable of reading the temperature and pressure of gas and calculate density. All the materials used, such as thick ceramic and stainless steel are insensitive to chemical attack of corrosive and polluted gases. The case is very robust and it is tested to face heavy duty conditions, so all the inner parts are immersed into resin to guarantee resistance to moisture and vibrations. The sensor is available with both analog or digital output. The analog version is a two wires loop powered and the digital is a standard Modbus RTU 485.

Density calculation is based on measurement of two physical data: pressure and temperature; proprietary algorithm is used to convert these data into density and can be customized by changing some coefficients to meet specific request.
SF₆ Gas density transmitter

All specs are subject to change without notice
SF₆ Gas density transmitter

TECHNICAL FEATURES

- Measurement range: 0 - 5000 µbar
- Operating temperature: -10°C to +60°C
- Humidity: relative humidity up to 95%
- Accuracy: ±2% of reading
- Response time: < 100 ms
- Output: 4-20 mA
- Power supply: 12V DC
- Dimensions: 96 x 96 x 22 mm
- Weight: 0.2 kg

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### Table of Telegram

<table>
<thead>
<tr>
<th>Function</th>
<th>Type</th>
<th>Address Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>000</td>
<td>SF6 Gas density Transmitter</td>
</tr>
<tr>
<td>1</td>
<td>001</td>
<td>Firmware Release</td>
</tr>
<tr>
<td>2</td>
<td>002</td>
<td>Date/Time Read (00-99)</td>
</tr>
<tr>
<td>3</td>
<td>003</td>
<td>Temperature Read (x.0)</td>
</tr>
<tr>
<td>4</td>
<td>004</td>
<td>Pressure Read [bar/abs]</td>
</tr>
<tr>
<td>5</td>
<td>005</td>
<td>Counter Read (0000-9999)</td>
</tr>
<tr>
<td>6</td>
<td>006</td>
<td>Conductive Read [%]</td>
</tr>
<tr>
<td>7</td>
<td>007</td>
<td>Conductive Read [µA/µm]</td>
</tr>
<tr>
<td>8</td>
<td>008</td>
<td>Counter Read (00-99)</td>
</tr>
<tr>
<td>9</td>
<td>009</td>
<td>Counter Read (0000-9999)</td>
</tr>
</tbody>
</table>

**Example:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bit stop</td>
</tr>
<tr>
<td>2</td>
<td>Error parity</td>
</tr>
<tr>
<td>8</td>
<td>Bit error</td>
</tr>
<tr>
<td>1200</td>
<td>Read protocol</td>
</tr>
<tr>
<td>217</td>
<td>Address 127 default</td>
</tr>
</tbody>
</table>

Protocol settings are available on request.
STORAGE

If the complex must be stored before use, please keep it dry and repaired. Do not leave it outdoor. Device is strongly sensitive to humidity hence avoid to store where relative humidity is more than 90%.

STORAGE TEMPERATURE: -30°C ÷ +70°C
RELATIVE HUMIDITY: max 90% @ +40°C

MAINTENANCE

Maintenance of transmitter must be done compulsory in factory. We recommend every 5 years to send back transmitter for calibration check and inspection.

WARRANTY

Device is covered by 24 months after installation or max 36 months after delivery. In case of service the transmitter must be sent back to factory for inspection.

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WARNINGS

CAUTION
Do not drop or hit the transmitter. The sensor is fragile and may break from sudden shock. When transporting the transmitter, use the original shipping box from Electronsystem MD.

NOTE
Keep the transmitter dry and clean. Do not remove the transparent transport protection caps before you are ready to install the transmitter.

NOTE
Connect the transmitter directly to the main SF$_6$ gas volume, not behind a sampling line because this is the area where high humidity tends to accumulate and where the temperature of gas is not the imagine of gas near breaker. The use of original cable wiring is advised to have the better protection performances.
INSTALLATION

1. Remove the transparent transport caps when you are ready to install the transmitter. Check o-ring is clean without dust and properly assembled.

2. Install the transmitter to the mechanical coupling and tighten gently by hand. Then use a 30mm wrench to tighten the connection. Use a sufficient force to achieve a tight installation (recommended 10-15Nm). The system must be leak-free for accurate measurement.
3. Connect proper circular wiring into the output port checking the correct polarization of the connector then turn firmly the rotating crown of the cable. Use a cable with a suitable outdoor IP67 connector for your installation (straight or angled).

4. In case the weather shield is needed (optional), can be added to the transmitter by fitting the two rubber clamps on the body of transmitter and tightening to assure it can remain in place. Assure that the stainless roof completely cover the transmitter and the cable connection.
DISCLAIMER NOTE:

While we provide application assistance it is up to the customer to determine the suitability for its use.

Specification may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However we assume no responsibility for its use.

The quality of ElectronsystenMD products is guaranteed by a Quality, Safety and Environmental management system certified by DNV according to ISO 9001, ISO 18001 and ISO 14001. Electronsysten MD works in partnership with its customers in designing customized executions in order to meet specific requirements, please contact us.

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