

Technical Specification

Hall Current Sensor GVS3000

The GVS range voltage sensor operates in current mode based on the fluxgate principle, enabling accurate measurement of voltages within the range of 1800V to 4200V. It features an electrostatic shield between the primary and secondary circuits to ensure perfect isolation. The sensor provides reliable electronic measurements for DC, AC, or pulsed voltages.



Features:

- Measurement range: 1800V to 4200V
- Supply voltage: $\pm 15V$ to $\pm 24V$
- High precision and excellent linearity
- Wide frequency bandwidth with optimized response time
- Current output for better system interfacing
- Primary and secondary connections via M5 studs for easy installation
- Built-in, compact device with low power consumption and minimal losses
- Very low temperature drift and high immunity to external interferences
- Minimal sensitivity to common mode voltage variations
- Exceptional accuracy (offset, sensitivity, linearity)
- Fast response time with quick delay

Application Domains:

- Industrial
- Railway

Standards:

- EN50178-1998
- EN50155:2021
- EN60947-1:2004
- UL94-V0



THE GVS is an innovative product offering 20KV galvanic isolation, unique on the market, ensuring maximum protection against electrical risks.

This technology is particularly useful in applications where precise voltage management is crucial, such as in high-voltage system management.

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SPECIFICATIONS:

$T_A = +25^{\circ}\text{C}$,

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|-----------------|-----------------------------|----------|----------|-------------|-----------|
| ELECTRICAL DATA | | | | | | |
| Primary nominal DC voltage | V_{PNDC} | | - | 3000 | - | V |
| Primary nominal AC RMS voltage | V_{PNAC} | | - | 3000 | - | V |
| Primary Current measuring range | V_{PM} | 1mn/hour | -4500 | - | 4500 | V |
| Current change Input: Output K_N | | | 50 | | | mA |
| Supply Voltage | V_{CC} | $\pm 5\%$ | ± 15 | | ± 24 | V |
| Current Consumption | I_c | | ± 40 | ± 90 | ± 115 | mA |
| Measuring Resistance | R_M | | 0 | 60 | 100 | Ω |
| Accuracy X_e | X_e | @0%~25%IPN | | | 3 | V |
| Accuracy X_e RD% | X_e RD | @25%IPN~IPM | | | 0.4 | % |
| Ratio error X_{Ge} | X_{Ge} | @0%~25%IPN | | | 3 | V |
| Ratio error X_{Ge} RD% | X_{Ge} RD | @25%IPN~IPM | | | 0.4 | % |
| Angle error X_{Pe} crad | X_{Pe} | | | | 0.5 | |
| Linearity ε_L (ppm) | ε_L | | | | 200 | ppm |
| Temperature drift coefficient TCI ppm/K TCI | T_{CI} | | | | 10 | ppm/K |
| Time drift coefficient TT ppm/month | | | | | 10 | ppm/month |
| Power supply anti interference TV ppm/V | | | | | 20 | ppm/V |
| Zero offset current IO | | $25 \pm 10^{\circ}\text{C}$ | | | ± 0.050 | mA |
| Zero offset current IOT Within the full operating temperature range | IOT | | | | ± 0.100 | mA |
| Ripple current In DC-10Hz (ppm) | | | | | 50 | ppm |
| Dynamic response time $t_r(\mu s)$ $di/dt=6KV/\mu s$ rise to 90% I_{PN} | | | | | 50 | μs |
| Bandwidth | | -3dB | 0 | | 12.8 | KHz |

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Insulation Coordination :

| Item | Symbol | Test Condition | Value | Unit |
|------------------------------------|--------|---|-------|------|
| RMS voltage for AC insulation test | Vd | 50Hz/1Min between primary and secondary. | 20 | KV |
| Impulse withstand voltage | Vw | 50μs between primary and secondary. | 30 | KV |
| Clearance | dCl | Shortest distance through air between primary and ground. | 45 | mm |
| Creepage distance | dCP | Shortest path along device body between primary and ground. | 140 | mm |
| Clearance | dCl | Shortest distance through air between secondary and ground. | 25 | mm |
| Creepage distance | dCP | Shortest path along device body between secondary and ground. | 25 | mm |

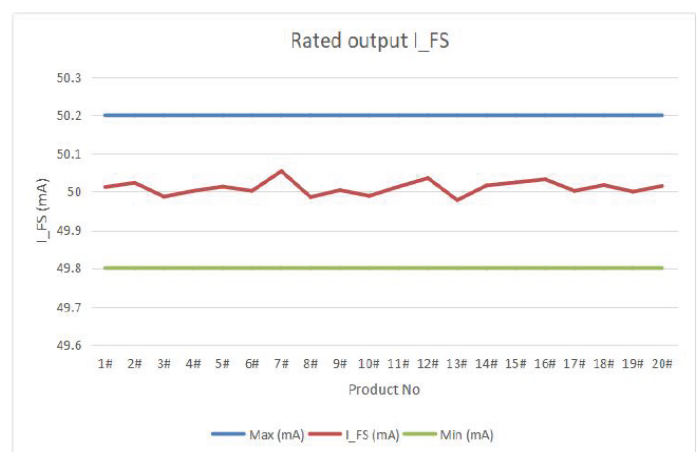
General Data :

| Parameter | Value |
|-------------------------------|-------------|
| Operating Temperature TA (°C) | -40 ... +85 |
| Storage Temperature TS (°C) | -45 ... +85 |
| Mass M (g) | 1000 |

Offset Output Current(@Ambient Temperature 25°C)

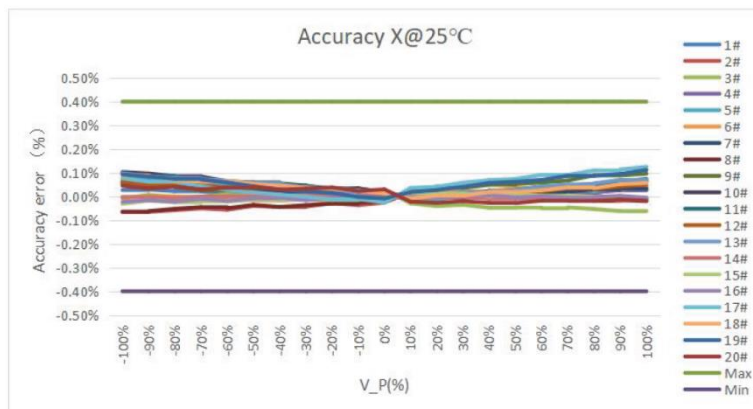


Rated Output Current(@Ambient Temperature 25°C)

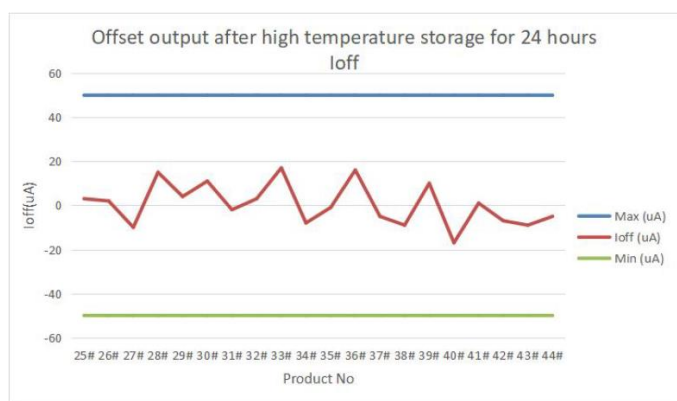


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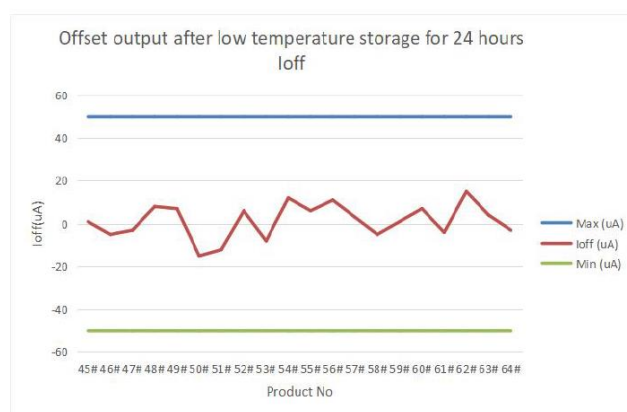
Accuracy(@Ambient Temperature 25°C)



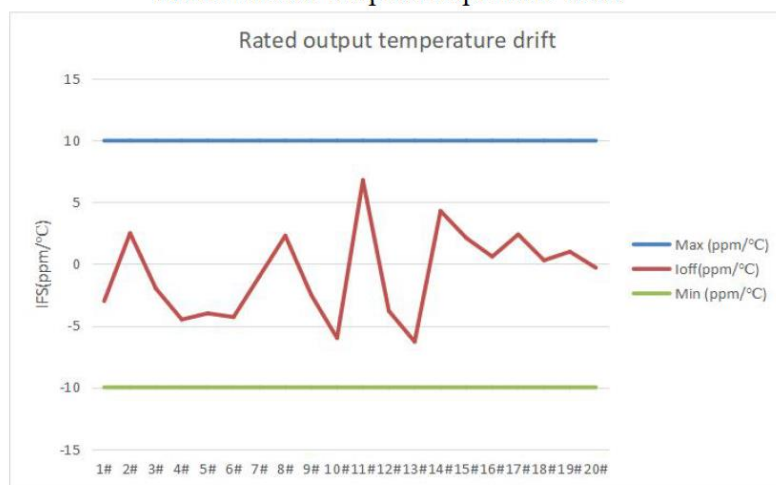
Offset Current After 24 Hours High Temperature Storage



Offset Current After 24 Hours Low Temperature Storage

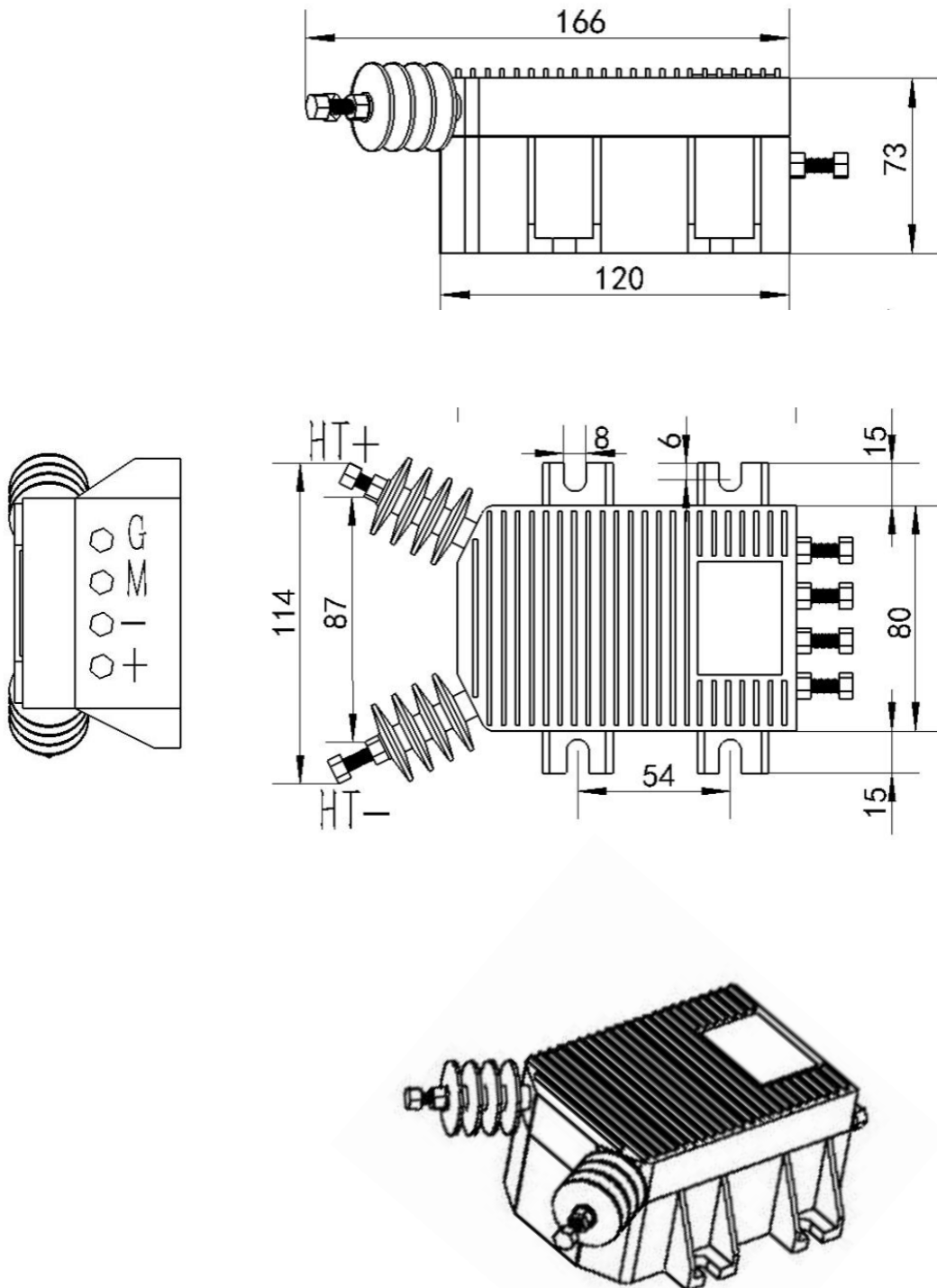


Rated Current Output Temperature Drift



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DIMENSION



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1. General Safety Warnings

- **Intended Use:** This transducer is designed for installation in electrical and electronic systems. It must be used in compliance with applicable international standards, such as **IEC 61010-1**, as well as local regulations and codes.
- **Applicable Standards:** The transducer must be operated according to the Adisens's operating instructions to ensure compliance with relevant safety standards, including:
 - **IEC 61010-1:** Safety requirements for electrical equipment for measurement, control, and laboratory use.
 - **EN 50178:** Safety requirements for electronic equipment for power installations.
- **Installation by Qualified Personnel:** Only qualified professionals, trained in handling high-voltage systems and electrical components, should install, commission, and maintain the transducer. Misuse or incorrect installation may result in electric shock, fire, or severe equipment damage.

2. Electrical Shock Risk

- **Risk of Electric Shock:** This transducer operates in high-voltage environments. It must be handled with care to avoid direct contact with live electrical components. There is a risk of serious injury or death from electric shock if proper precautions are not taken.
- **Limited-Energy Secondary Circuits:** To ensure safe operation, this transducer must be used exclusively within limited-energy secondary circuits, as specified by **IEC 61010-1**, which governs the safe design of electrical circuits to reduce the risk of injury and electrical hazards.
- **Isolation Requirements:** This transducer provides galvanic isolation between the primary (high-power) and secondary (low-power) circuits. However, the device should not be assumed to provide absolute protection against electric shock. Always de-energize circuits before installation or maintenance.

3. Installation Precautions

- **Environmental Conditions:** The transducer is designed to operate in controlled environments. Ensure that the operating temperature, humidity, and surrounding conditions comply with the transducer's specifications provided in the technical datasheet. Avoid exposure to moisture, corrosive environments, or areas prone to electrical interference.
- **Mounting:** Secure the transducer properly in a location that prevents movement or vibration during operation. Improper mounting may cause electrical arcing or contact with live components.
- **Grounding:** Ensure that the transducer is correctly grounded in accordance with the electrical system design. This will help prevent electric shock and improve system safety and performance.

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4. Operational Guidelines

- **Operating Limits:** Operate the transducer strictly within the specified voltage, current, and temperature ranges. Overloading the transducer beyond its rated capacity may result in equipment failure or create safety hazards.
- **Routine Maintenance:** Inspect the transducer regularly for signs of wear, damage, or abnormal operation. Discontinue use if any issues are detected and consult the manufacturer for replacement or repair.

5. Handling and Storage

- **Handling Precautions:** Avoid direct contact with transducer terminals during handling. Always handle the device with protective gear, including insulated gloves, to avoid accidental electric shock.
- **Storage Conditions:** Store the transducer in a clean, dry, and temperature-controlled environment. Prolonged exposure to harsh conditions may degrade performance and compromise safety.

6. Emergency Procedures

- **Power Disconnection:** In case of a malfunction, electrical fault, or other emergency, immediately disconnect the power supply to the transducer and seek professional assistance for inspection and repair.
- **First Aid:** If an electric shock occurs, follow established first aid protocols and seek emergency medical assistance immediately.

7. Disposal

- **Environmental Considerations:** Dispose of the transducer according to local regulations for electronic waste. Do not incinerate, and avoid disposing of the device in general waste, as it may contain hazardous materials.

8. Manufacturer's Support

For additional information, technical support, or to report any issues with the transducer, please contact us on contact@adisens.fr. Ensure that you have the model number, serial number, and installation details on hand for a prompt response.