



# HVT 300-DX

## Failsafe High Voltage Monitor for up to 1.000V DC



### Application

Electrification of numerous industries is prevalent. This is especially true for the automotive industry. Voltage levels of next generation powertrains or batteries in electric cars and trucks are increasing. Currently, 800-1200V is made standard to achieve higher efficiency and faster charging time. This poses challenges to the safety of workers and equipment during manufacturing and testing of high voltage powertrain components.

Typically, the voltage transmitter HVT 300-DX is used in applications which require safety measures to cope with the risk of high voltages. This can be e.g., controlling the access to an automotive test bed or simulation of high voltage powertrain components using a failsafe voltage threshold (for example 50 VDC). Due to the flexible software configuration, the HVT 300 series is suitable for numerous industries and various electrification components.

### Scope of use

- Battery
- Battery Management System
- Motor
- Inverter
- Climate Aggregate
- Charger
- Compressor
- HV-Supply

### Safety Features

Featuring a safety-by-design approach, the HVT 300-DX provides a wide range of diagnostic functions. In order to create a safety loop, the desired output must be evaluated in conjunction with one of the two diagnostic relays REL3/REL4. This way, two individually configurable safety outputs can be created, for which either the relays REL1/REL2 or the 4...20mA analog output are available.

## Main Benefits

- Failsafe voltage monitoring
- Simple software configuration via USB or Modbus RTU
- 0-1000V DC measurement range
- Redundant architecture
- Robust design with high dielectric strength
- SIL2 according to IEC/EN 61508
- Two individual safety outputs
- LED status: Power, Error, Alarm
- 10-year proof test interval

| Safety Properties                 | FMEDA   |
|-----------------------------------|---------|
| Category                          | SIL 2   |
| Device type                       | Type B  |
| HFT                               | 0       |
| SFF                               | 95 %    |
| DC                                | 89 %    |
| Safe failure rate                 | 331 FIT |
| Safe detected failure rate        | 0 FIT   |
| Safe undetected failure rate      | 331 FIT |
| Dangerous failure rate            | 362 FIT |
| Dangerous detected failure rate   | 325 FIT |
| Dangerous undetected failure rate | 37 FIT  |

| Technical Data                  |   |
|---------------------------------|---|
| Certificate                     | SIL 2 according to IEC 61508                                |
| Measurement range               | 0.. 1000V DC  |
| Input Resistance                | 12 MΩ each channel  |
| Analog Output Load              | 0/4...20 mA   |
| Accuracy                        | Max 500 Ω at 22mA<br>< 0,5%                                 |
| Contact outputs                 | Normally Open   |
| Switching Power                 | Max 62,5 VA / Max 30W                                       |
| Switching Voltage               | Max 125VAC/110VDC   |
| Switching Current               | Max. 1A   |
| Contact Material                | AG Pd + 10 μAu  |
| Status LEDs                     | Power: Green<br>Error / SIL Alarm: Red<br>REL1/REL2: Yellow |
| USB Interface                   | USB 2.0   |
| RS485 Interface                 | Half duplex, no scheduling                                  |
| Baud rate                       | 9600 bps  |
| Device Address                  | 1-248   |
| Supply                          | 24VDC (20...30VDC)  |
| Power Consumption               | Max. 1,9W   |
| Temperature Storage / Transport | -10°C...+60°C   |
| Perm. Humidity                  | -20°C...+70°C   |
| Max. operating Altitude         | 10%...90% r.H no cond.<br><2000m above mean sea level       |
| Temperature Coefficient         | <0,01%/K (max)<br><0,005%/K (typical)                       |
| Galvanic isolation              | 4,3 kV AC test voltage                                      |
| Overvoltage category            | CAT II: 1000V Pollution Degree 2                            |
| PCB Material                    | FR4   |
| Housing Material                | Polyamide   |
| Protection Class                | IP20  |
| Flammability UL94               | V0  |
| Mounting type                   | 35mm DIN rail   |

