



HVT 300-DP

Failsafe Busbar Symmetry Monitor for +/-250 V



Application

Monitoring the busbar symmetry is a safety-relevant task for different processes. For instance, in hydrogen electrolysis it is crucial for optimizing the efficiency, safety, and reliability of the process, as well as for ensuring consistent and high-quality hydrogen production.

Busbars distribute electrical current to the electrolyzer cells, which are responsible for the hydrogen generation process. If the busbar symmetry is not maintained, it can lead to uneven distribution of current among the cells. This imbalance can result in reduced efficiency and performance of the electrolyzer, leading to suboptimal hydrogen production or even safety risks like local overheating.

The HVT 300-DP is often used in Chlorine-Alkali processes to proactively detect cell ruptures, leakages or insulation faults.

Scope of use

Battery Testing
 High power supplies
 Chlorine Alkaline Electrolysis

Safety Features

Featuring a design approach that involves thorough self-monitoring, the HVT 300-DP 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
- +/- 250V 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 | +/- 250 VDC |
| Input Resistance | 12 MΩ each channel |
| Analog Output | 0/4...20 mA |
| Load | Max 500 Ω at 22mA |
| Accuracy | < 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 Error / SIL Alarm: Red 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 | -10°C...+60°C |
| Storage / Transport | -20°C...+70°C |
| Perm. Humidity | 10%...90% r.H no cond. |
| Max. operating Altitude | <2000m above mean sea level |
| Temperature Coefficient | <0,01%/K (max) <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 | V0 |
| Mounting type | 35mm DIN rail |

