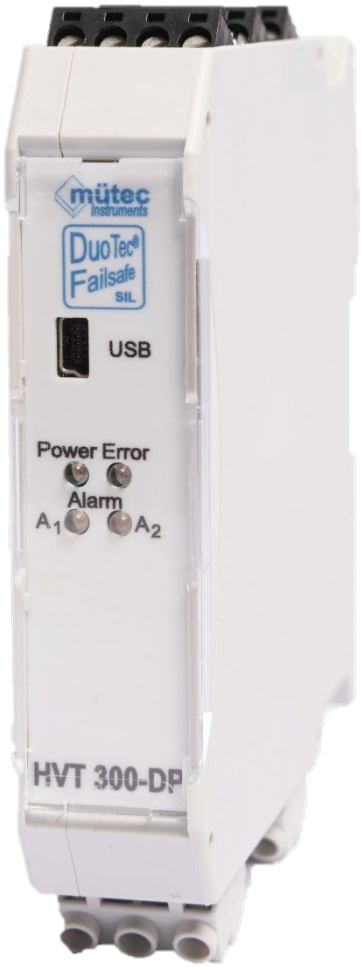

HVT 300-DP

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

Technical Data	
Certificate	SIL 2 according to IEC 61508
Measurement range Input Resistance	+/- 250 VDC 12 MΩ each channel
Analog Output Load Accuracy	0/4…20 mA Max 500 Ω at 22mA < 0,5%
Contact outputs Switching Power Switching Voltage Switching Current Contact Material	Normally Open Max 62,5 VA / Max 30W Max 125VAC/110VDC Max. 1A AG Pd + 10 µAu
Status LEDs	Power: Green Error / SIL Alarm: Red REL1/REL2: Yellow
USB Interface	USB 2.0
RS485 Interface Baud rate Device Address	Half duplex, no scheduling 9600 bps 1-248
Supply Power Consumption	24VDC (20…30VDC) Max. 1,9W
Temperature Storage / Transport Perm. Humidity Max. operating Altitude	-10°C…+60°C -20°C…+70°C 10%...90% r.H no cond. <2000m above mean sea level
Temperature Coefficient	<0,01%/K (max) <0,005%/K (typical)
Galvanic isolation Overvoltage category	4,3 kV AC test voltage CAT II: 1000V Pollution Degree 2
PCB Material Housing Material Protection Class Flammability UL94 Mounting type	FR4 Polyamide IP20 V0 35mm DIN rail

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