



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	+/- 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

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

