



# HVT 400-DX

## Failsafe High Voltage Monitor for up to 1.500V AC/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 400-DX is used in applications in which safety measures must be switched safely depending on a certain voltage threshold (for example 50 V). 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 400 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 400-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.

**HVT 300-DV**  
Shunt current  
Measurement

**HVT 300-DP**  
Balance Voltage  
Measurement

**HVT 300-DX**  
Voltage Monitor

**HVT 400-DX**  
Voltage Monitor

## Main Benefits

- Failsafe voltage monitoring
- Simple software configuration via USB or Modbus
- 0-1500V AC/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	0.. 1500V AC/DC
Overrange	1800V (permanent)
Input Resistance	12 MΩ
Analog Output	0... 22 mA / 22...0 mA
Load	Max 500 Ω at 22mA
Accuracy	< 0,005%
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
Front socket	
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: 1500V Pollution Level 1
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

