χs-ES

300 A – 850 VDC – 2 000 A Breaking Capability 20 cycles

HYBRID DC POWER RELAY

FEATURES & BENEFITS

- DC specific design
- Bidirectional
- Bistable (Monostable Q1 2019)
- Arc-less
- Galvanic Insulation
- Low Weight
- Enhanced cycling performances
- Built-in turn ON fault detection
- Compact Design

APPLICATIONS

- Electrical Energy Storage
- PV Installations
- DC Grids
- Fast Charging

χs-ES have been engineered to provide high DC switching performances versus conventional mechanical power relays. This series addresses DC-applications like Electrical Energy Storage, PV installations and other DC-Smart Grid.

χs-ES provide maximum flexibility in equipment design and ultimate DC operation performance. This Power Relay is a Hybrid technology with the capability of switching both high voltage and high current, designed specially for Energy Storage applications.

TECHNICAL DATA

General data	
Mounting Method	Screws M5
Housing Material	PA66 V0 (planned)
Mass	Typ. 600g
Dimension	Typ. 90 x 87 x 80 mm^3
Lifetime	Min. 100.000 cycles (mechanical)
	Min. 50,000 cycles (electrical)
	Min. 20 cycles @ 2000 A (L/R = 0ms)
Tightening torque	15 Nm for M10 studs

Other Data	
Device Current Polarity	Bidirectional
Rated Voltages (U_N)	400 to 850 VDC
Max. Voltage (U_{MAX})	1000 VDC
Rated Current (I_N)	300 A
Max/ Switching Current ON ($I_{max\ On}$)	1000 A*2
Max/ Switching Current OFF ($I_{max\ Off}$)	2000 A*2
L/R @ I_N	1 ms
Dielectric Strength	2500 VDC
Contact Voltage Drop	150 mV
Operating Time (t_{ON})	90 ms
Operating Time (t_{OFF})	10 ms

Control circuit	
Working Voltage (U_B)	10 – 32 VDC
Control Voltage (U_{ON})	0 – 5 VDC
Control Voltage (U_{OFF})	9 – 32 VDC
Switching Current (I_S)	Typ. 10 A (for 20ms)
Holding Current (I_H)	Typ. 0,1 A (for 20ms

Planned Values for a Series Product	
Holding current (I_{H1})	5000 A for 25ms
	2400 A for 1s
	780 A for 10s
	420 A for 1000s
Degree of protection	IP 54
Ambient Temperature	-40°C … 85°C

DIAGNOSTIC OUTPUT (STATUS)

The status output is ‘low’ when the HVR10 is active and no error is present. The following errors are signaled:

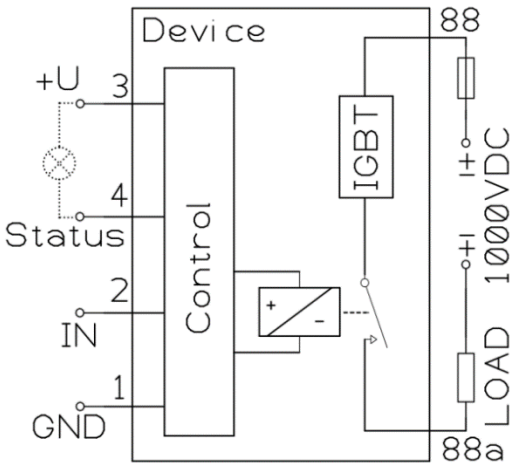
- Cable status output defective
- Voltage U+ < 9 V
- Microcontroller defective
- Switch-On command was not executed
- Switch-Off command was not executed

PIN ASSIGNMENT

Pin No.	Terminal ref.	Voltage potential
	88	+ / - (HV electrical system)
	88a	- / + (HV electrical system)
1	31 (GND)	Ground (12/24 VDC electrical system)
2	86 (IN)	U_{OFF} (0 – 5 V) U_{ON} (9 – 32 V)
3	30 (U+)	U_B (12/24 VDC electrical system)
4	Status	24 V

Tyco Connector 1-967640-1 (not included)

WIRING DIAGRAM



DIMENSIONS