

Standard panel mount package, 1-phase

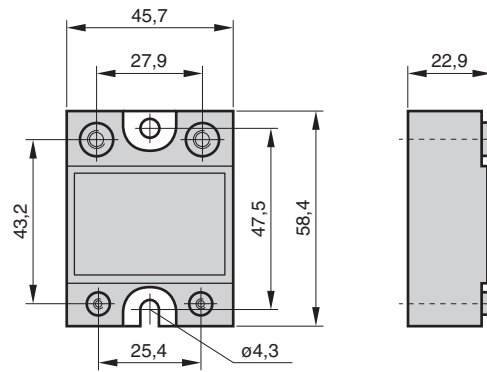
Solid-state relay HRS

- Control voltage range: 3 ... 32 Vdc, 90 ... 280 Vac
- Load voltage range: 24 ... 280 Vac rms
- Load current range: 0,04 ... 90 Arms

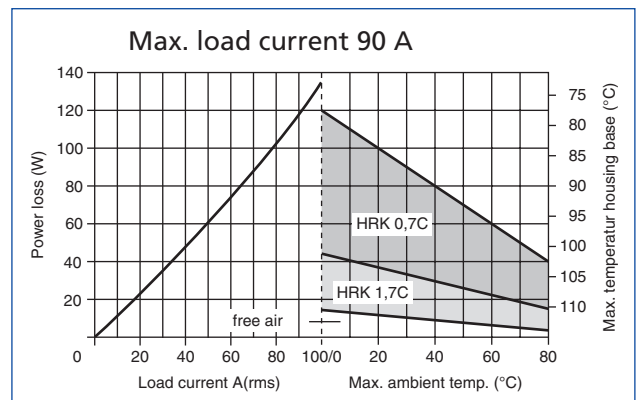
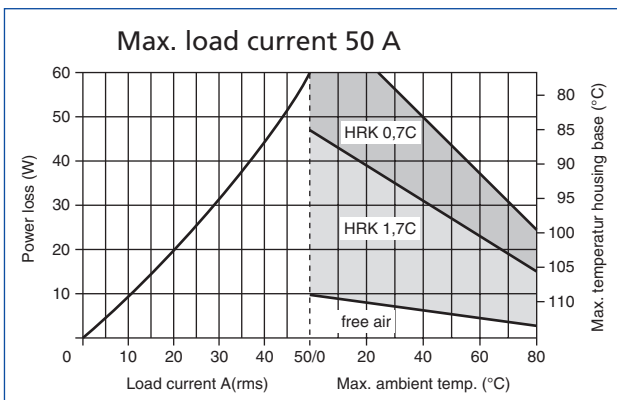
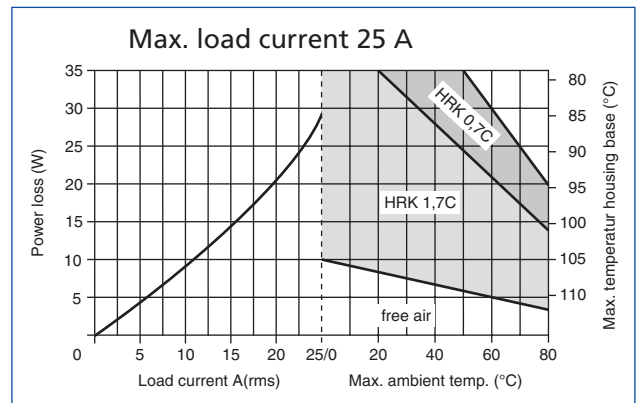
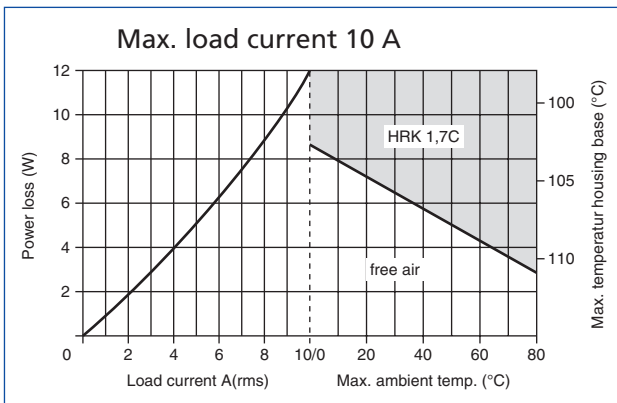


Construction S

Dimensions



Thermal diagrams



Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS D 2410	HRS D 2425	HRS D 2450
Zero switching	Yes	Yes	Yes
Instantaneous switching-on	–	–	–
Control circuit	dc	dc	dc
Load circuit	ac	ac	ac
Load circuit			
Voltage range (47 ... 63 Hz)	24 ... 280 Vac rms	24 ... 280 Vac rms	24 ... 280 Vac rms
Transient overvoltage	600 Vpk	600 Vpk	600 Vpk
Load current range	0,04 ... 10 Arms	0,04 ... 25 Arms	0,04 ... 50 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–	–	–
Max. surge current (16,6 ms/ac)	120 Apk	250 Apk	625 Apk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs	500 V/μs
Max. on-state voltage drop	1,6 Vpk	1,6 Vpk	1,6 Vpk
Max. turn-on time	1/2 cycle	1/2 cycle	1/2 cycle
Max. turn-off time	1/2 cycle	1/2 cycle	1/2 cycle
Max. I _{2t} for fusing (8,3 ms)	60 A ² s	260 A ² s	1620 A ² s
Cos. φ	> 0,5	> 0,5	> 0,5
Thermal resistance to base	1,48 °C/W	1,02 °C/W	0,63 °C/W
Output switching device	Tyristor	Tyristor	Tyristor
Built-in snubber network	33 μF / 33 Ω	33 μF / 33 Ω	33 μF / 33 Ω
Control circuit			
Control voltage range	3 ... 32 Vdc	3 ... 32 Vdc	3 ... 32 Vdc
Must operate voltage	3,0 Vdc	3,0 Vdc	3,0 Vdc
Must release voltage	1,0 Vdc	1,0 Vdc	1,0 Vdc
Max. reverse voltage	-32 Vdc	-32 Vdc	-32 Vdc
Nominal input impedance	1500 Ohm	1500 Ohm	1500 Ohm
Typical input current at nominal voltage	3,4 mA / 5 Vdc	3,4 mA / 5 Vdc	3,4 mA / 5 Vdc
Generalities			
Insulation input/output/base	4000 Vrms	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF	8 pF	8 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:			
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310101	42310102	42310103
(Order data see chapter 1)			

Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS D 2490	HRS A 2410	HRS A 2425
Zero switching	Yes	Yes	Yes
Instantaneous switching-on	–	–	–
Control circuit	dc	ac	ac
Load circuit	ac	ac	acC
Load circuit			
Voltage range (47 ... 63 Hz)	24 ... 280 Vac rms	24 ... 280 Vac rms	24 ... 280 Vac rms
Transient overvoltage	600 Vpk	600 Vpk	600 Vpk
Load current range	0,04 ... 90 Arms	0,04 ... 10 Arms	0,04 ... 25 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–	–	–
Max. surge current (16,6 ms/ac)	1200 Apk	120 Apk	250 Apk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs	500 V/μs
Max. on-state voltage drop	1,6 Vpk	1,6 Vpk	1,6 Vpk
Max. turn-on time	1/2 cycle	10 ms	10 ms
Max. turn-off time	1/2 cycle	40 ms	40 ms
Max. I _{2t} for fusing (8,3 ms)	6000 A ² s	60 A ² s	260 A ² s
Cos. φ	> 0,5	> 0,5	> 0,5
Thermal resistance to base	0,28 °C/W	1,48 °C/W	1,02 °C/W
Output switching device	Tyristor	Tyristor	Tyristor
Built-in snubber network	33 μF / 33 Ω	33 μF / 33 Ω	33 μF / 33 Ω
Control circuit			
Control voltage range	3 ... 32 Vdc	90 ... 280 Vac	90 ... 280 Vac
Must operate voltage	3,0 Vdc	90 Vac rms	90 Vac rms
Must release voltage	1,0 Vdc	10 Vac rms	10 Vac rms
Max. reverse voltage	-32 Vdc	–	–
Nominal input impedance	1500 Ohm	60 Ohm	60 Ohm
Typical input current at nominal voltage	3,4 mA / 5 Vdc	2 mA / 120 Vac rms	2 mA / 120 Vac rms
Typical input current at nominal voltage	–	4 mA / 240 Vac rms	4 mA / 240 Vac rms
Generalities			
Insulation input/output/base	4000 Vrms	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF	8 pF	8 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:			
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310104	42310111	42310112
(Order data see chapter 1)			

Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS A 2450	HRS A 2490
Zero switching	Yes	Yes
Instantaneous switching-on	–	–
Control circuit	ac	ac
Load circuit	ac	ac
Load circuit		
Voltage range (47 ... 63 Hz)	24 ... 280 Vac rms	24 ... 280 Vac rms
Transient overvoltage	600 Vpk	600 Vpk
Load current range	0,04 ... 50 Arms	0,04 ... 90 Arms
Max. surge current (8,3 ms/ac; 1s/dc)	–	–
Max. surge current (16,6 ms/ac)	625 Vpk	1200 Vpk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs
Max. on-state voltage drop	1,6 Vpk	1,6 Vpk
Max. turn-on time	10 ms	10 ms
Max. turn-off time	40 ms	40 ms
Max. I ² t for fusing (8,3 ms)	1620 A ² s	6000 A ² s
Cos. φ	> 0,5	> 0,5
Thermal resistance to base	0,63 °C/W	0,28 °C/W
Output switching device	Tyristor	Tyristor
Built-in snubber network	33 μF / 33 Ω	33 μF / 33 Ω
Control circuit		
Control voltage range	90 ... 280 Vac	90 ... 280 Vac
Must operate voltage	90 Vac rms	90 Vac rms
Must release voltage	10 Vac rms	10 Vac rms
Max. reverse voltage	–	–
Nominal input impedance	60 kOhm	60 kOhm
Typical input current at nominal voltage	2 mA / 120 Vrms	2 mA / 120 Vrms
Typical input current at nominal voltage	2 mA / 240 Vrms	4 mA / 240 Vrms
Generalities		
Insulation input/output	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8,0 pF	8,0 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:		
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310113	42310114
(Order data see chapter 1)		

Standard panel mount package, 1-phase

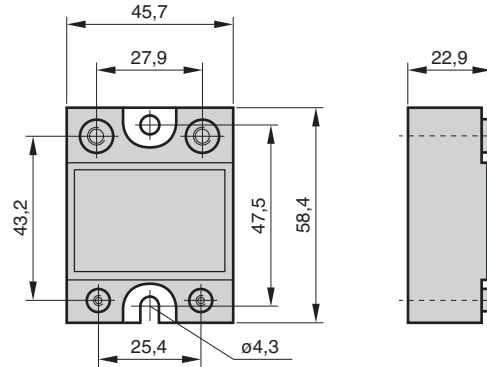
Solid-state relay HRS



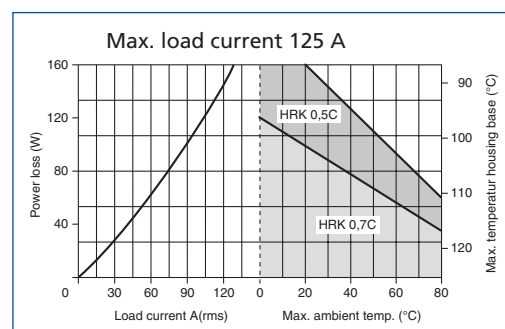
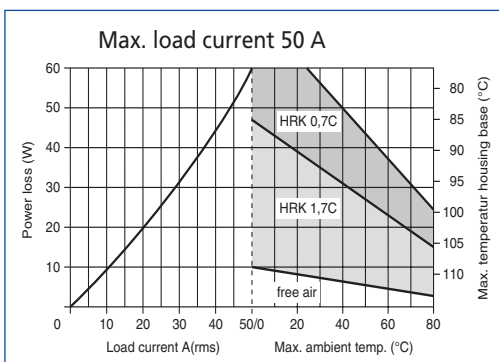
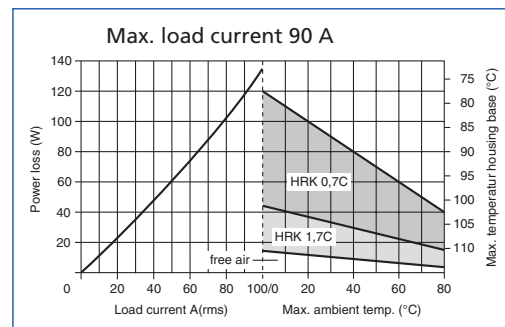
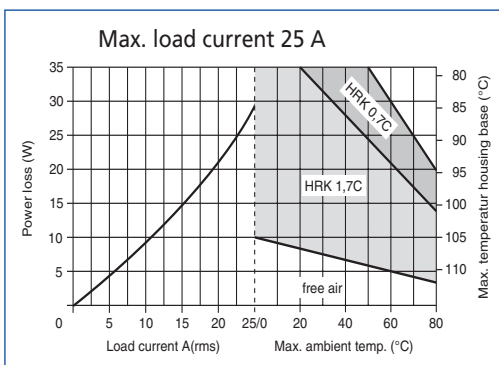
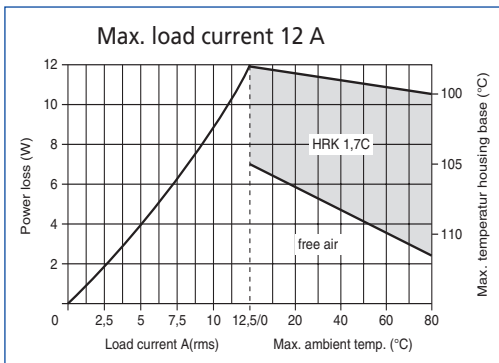
Construction S

- Control voltage range: 3 ... 32 Vdc, 18 ... 32 Vdc / 24 ... 46 Vac
- Load voltage range: 48 ... 660 Vac rms
- Load current range: 0,15 ... 125 Arms

Dimensions



Thermal diagrams



Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS D 4812	HRS D 4825	HRS D 5325M
Zero switching	Yes	Yes	–
Instantaneous switching-on	–	–	Yes
Control circuit	dc	dc	dc
Load circuit	ac	ac	ac
Load circuit			
Voltage range (47 ... 63 Hz)	48 ... 530 Vac rms	48 ... 530 Vac rms	48 ... 530 Vac rms
Transient overvoltage	1200 Vpk	1200 Vpk	1200 Vpk
Load current range	0,04 ... 12 Arms	0,04 ... 25 Arms	0,04 ... 25 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–	–	–
Max. surge current (16,6 ms/ac)	140 Apk	250 Apk	250 Apk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs	500 V/μs
Max. on-state voltage drop	1,7 Vpk	1,7 Vpk	1,7 Vpk
Max. turn-on time	1/2 cycle	1/2 cycle	0,02 ms
Max. turn-off time	1/2 cycle	1/2 cycle	0,02 ms
Max. I _{2t} for fusing (8,3 ms)	81 A ² s	260 A ² s	260 A ² s
Cos. φ	> 0,5	> 0,5	> 0,5
Thermal resistance to base	1,48 °C/W	1,02 °C/W	1,02 °C/W
Output switching device	Tyristor	Tyristor	Tyristor
Built-in snubber network	33 μF / 47 Ω	33 μF / 47 Ω	33 μF / 47 Ω
Control circuit			
Control voltage range	3 ... 32 Vdc	3 ... 32 Vdc	3 ... 32 Vdc
Must operate voltage	3,0 Vdc	3,0 Vdc	3,0 Vdc
Must release voltage	1,0 Vdc	1,0 Vdc	1,0 Vdc
Max. reverse voltage	-32 Vdc	-32 Vdc	-32 Vdc
Nominal input impedance	Current limiter	Current limiter	Current limiter
Typical input current at nominal voltage	2 mA	2 mA	2 mA
Generalities			
Insulation input/output/base	4000 Vrms	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF	8 pF	8 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:			
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310105	42310106	42310135
(Order data see chapter 1)			

Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS D 4850	HRS D 5350M	HRS D 4890
Zero switching	Yes	–	Yes
Instantaneous switching-on	–	Yes	–
Control circuit	dc	dc	dc
Load circuit	ac	ac	ac
Load circuit			
Voltage range (47 ... 63 Hz)	48 ... 530 Vac rms	48 ... 530 Vac rms	48 ... 530 Vac rms
Transient overvoltage	1200 Vpk	1200 Vpk	1200 Vpk
Load current range	0,04 ... 50 Arms	0,04 ... 50 Arms	0,04 ... 90 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–	–	–
Max. surge current (16,6 ms/ac)	625 Apk	625 Apk	1200 Apk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs	500 V/μs
Max. on-state voltage drop	1,7 Vpk	1,7 Vpk	1,7 Vpk
Max. turn-on time	1/2 cycle	0,02 ms	1/2 cycle
Max. turn-off time	1/2 cycle	1/2 cycle	1/2 cycle
Max. I _{2t} for fusing (8,3 ms)	1620 A ² s	1620 A ² s	6000 A ² s
Cos φ	> 0,5	> 0,5	> 0,5
Thermal resistance to base	0,63 °C/W	0,63 °C/W	0,28 °C/W
Output switching device	Antipara. Thyristors	Antipara. Thyristors	Antipara. Thyristors
Built-in snubber network	33 μF / 47 Ω	33 μF / 47 Ω	33 μF / 47 Ω
Control circuit			
Control voltage range	3 ... 32 Vdc	3 ... 32 Vdc	3 ... 32 Vdc
Must operate voltage	3,0 Vdc	3,0 Vdc	3,0 Vdc
Must release voltage	1,0 Vdc	1,0 Vdc	1,0 Vdc
Max. reverse voltage	-32 Vdc	-32 Vdc	-32 Vdc
Nominal input impedance	Current limiter	Current limiter	Current limiter
Typical input current at nominal voltage	2 mA	2 mA	2 mA
Generalities			
Insulation input/output/base	4000 Vrms	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF	8 pF	8 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:			
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310107	42310136	42310108
(Order data see chapter 1)			

Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS AD 4890E	HRS D 48125	HRS D 6650
Zero switching	Yes	Yes	Yes
Instantaneous switching-on	–	–	–
Control circuit	ac/dc	dc	dc
Load circuit	ac	ac	ac
Load circuit			
Voltage range (47 ... 63 Hz)	48 ... 530 Vac rms	48 ... 530 Vac rms	48 ... 660 Vac rms
Transient overvoltage	1200 Vpk	1200 Vpk	1200 Vpk
Load current range	0,04 ... 90 Arms	0,15 ... 125 Arms	0,15 ... 50 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–	–	–
Max. surge current (16,6 ms/ac)	1200 Apk	1750 Apk	625 Apk
Max. off-state leakage current (rated voltage)	10 mArms	10 mArms	10 mArms
Min. off-state du/dt	500 V/μs	500 V/μs	500 V/μs
Max. on-state voltage drop	1,7 Vpk	1,7 Vpk	1,6 Vpk
Max. turn-on time	1/2 cycle	1/2 cycle	1/2 cycle
Max. turn-off time	1/2 cycle	1/2 cycle	1/2 cycle
Max. I _{2t} for fusing (8,3 ms)	6000 A ² s	12700 A ² s	1620 A ² s
Cos φ	> 0,5	> 0,5	> 0,5
Thermal resistance to base	0,28 °C/W	0,22 °C/W	0,63 °C/W
Output switching device	Antipara. Thyristors	Antipara. Thyristors	Antipara. Thyristors
Built-in snubber network	33 μF / 47 Ω	33 μF / 47 Ω	–
Control circuit			
Control voltage range	18 ... 32 Vdc /	3 ... 32 Vdc	4 ... 32 Vdc
		24 ... 46 Vac	--
Must operate voltage	3,0 Vdc	3,0 Vdc	4,0 Vdc
Must release voltage	1,0 Vdc	1,0 Vdc	1,0 Vdc
Max. reverse voltage	-32 Vdc	-32 Vdc	–
Nominal input impedance	Current limiter	Current limiter	Current limiter
Typical input current at nominal voltage	2 mA	2 mA	25 mA
Generalities			
Insulation input/output/base	4000 Vrms	4000 Vrms	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF	8 pF	8 pF
Ambient operating temperature range	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C	-40 ... +125 °C	-40 ... +125 °C
Weight (typical)	87 g	87 g	87 g
Approvals	UL, VDE, CSA	UL, VDE, CSA	UL, VDE, CSA
Screw torque requirements:			
6-32 screws (Control circuit)	≤ 0,5 Nm	≤ 0,5 Nm	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm	≤ 1,5 Nm	≤ 1,5 Nm
Article number	42310132	42310134	42310137
(Order data see chapter 1)			

Standard panel mount package, 1-phase

Solid-state relay HRS

Technical specifications	HRS D 6690
Zero switching	Yes
Instantaneous switching-on	–
Control circuit	dc
Load circuit	ac
Load circuit	
Voltage range (47 ... 63 Hz)	48 ... 660 Vac rms
Transient overvoltage	1200 Vpk
Load current range	0,15 ... 90 Arms
Max. surge current (8,3 ms/ac; 1 s/dc)	–
Max. surge current (16,6 ms/ac)	1200 Apk
Max. off-state leakage current (rated voltage)	1,0 mArms
Min. off-state du/dt	500 V/ μ s
Max. on-state voltage drop	1,6 Vpk
Max. turn-on time	1/2 cycle
Max. turn-off time	1/2 cycle
Max. I ² t for fusing (8,3 ms)	6000 A ² s
Cos. φ	> 0,5
Thermal resistance to base	0,28 °C/W
Output switching device	Antipara. Thyristors
Control circuit	
Control voltage range	4 ... 32 Vdc
Control voltage range parallel	–
Control voltage range serie	–
Must operate voltage	4,0 Vdc
Must release voltage	1,0 Vdc
Max. reverse voltage	–
Nominal input impedance	Current limiter
Typical input current at nominal voltage	25 mA
Generalities	
Insulation input/output/base	4000 Vrms
Insulation resistance	10 ⁹ Ohm / 500 Vdc
Max. capacitance input/output	8 pF
Ambient operating temperature range	-40 ... +80 °C
Ambient storage temperature range	-40 ... +125 °C
Weight (typical)	87 g
Approvals	UL, VDE, CSA
Screw torque requirements:	
6-32 screws (Control circuit)	≤ 0,5 Nm
8-32 screws (Load circuit)	≤ 1,5 Nm
Article number	42310138
(Order data see chapter 1)	