



## 3 PHASE UNIVERSAL TO AC & DC TO AC SSR SOLID STATE RELAY

## BS3F50D48S

35mm Plastic Din Rail to SSR 10kV isolation

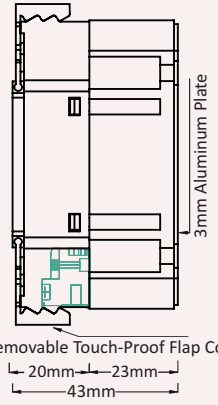
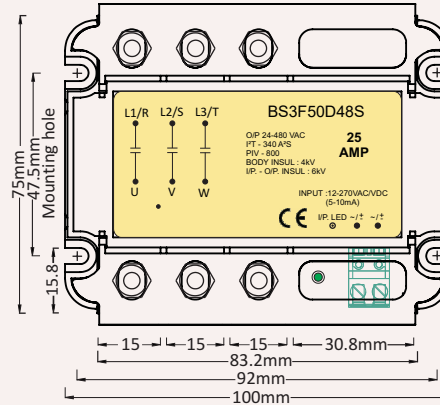


Approved By  
CE  
EN-62314



LEAD-FREE  
RoHS  
COMPLIANT

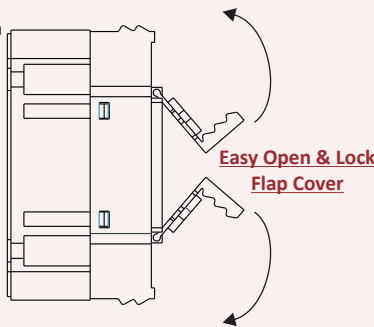
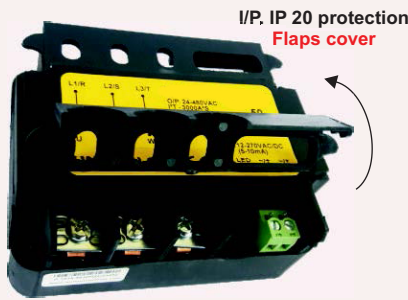
HEAT SINK TYPE "A-100" with dinrail 45 mm  
905 Model  
Current up to 80Amp at 55°C (26Amp 1phX3ph=78Amp)  
Thermal Resistance  
R<sub>BSA</sub> = 0.65°C/W, ΔT = 60°C  
Surface Area:  
2630mm<sup>2</sup> x 100mm  
Weight : @ 690gms



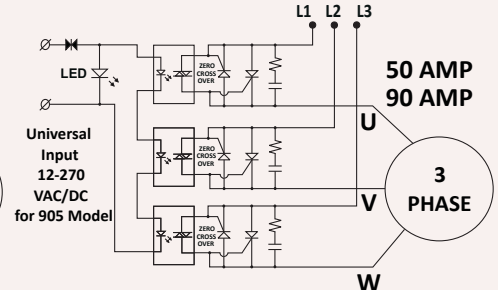
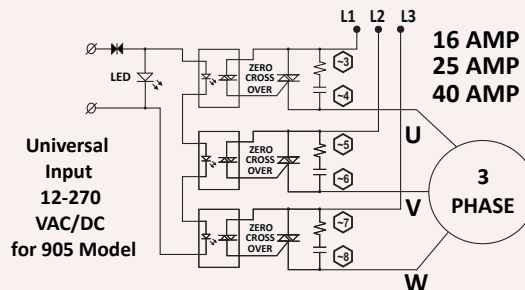
- Zero Voltage Turn-On .
- Rating from 16 Amp to 90 Amp @25°C 24-480 VAC.
- Short Circuit Current Rating As Per UL508A.
- Short Circuit Protected SSR up to 40 Amp per phase current by help of suitable "B" curve MCB.
- No need to use semiconductor Fuse due to short circuit protected SSR.
- With easy open & lock IP 20 protection Flaps on O/P Terminals.

- Fire Retardant Plastic as per UL94 VO GRADE.
- New improved SEMS Screw - Washers input & Output terminals.
- High resistance to aggressive chemicals and dust due to special PU Potting.
- Logic compatibility, Fast switching, Low coupling capacitance.

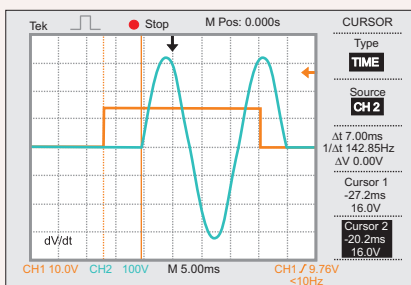
- No electromechanical or acoustical noise
- Long life cycle . Up to 10<sup>11</sup> cycles
- No contact arcing, low electromagnetic interference, high surge capability
- SSRs can be provided as surface-mount technology (SMT)parts, which means lower cost and easier SMT printed-circuit board manufacture



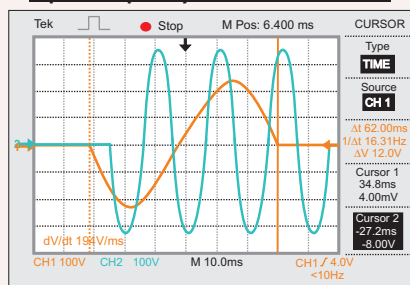
### 3 PH UNIVERSAL I/P SSR



### ZERO CROSSOVER Waveform

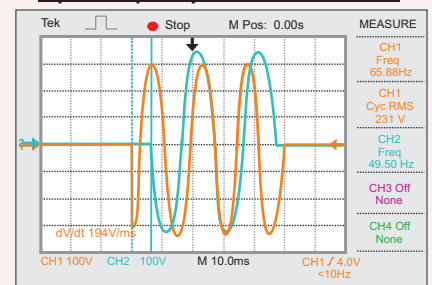


### Input Voltage Range: 12-270VAC/DC Input Frequency Practical Waveform



Input Voltage/Frequency : 160VAC/16 Hz  
Output Voltage/Frequency : 230VAC/50 Hz

### Input Voltage Range: 12-270VAC/DC Input Frequency Practical Waveform



Input Voltage/Frequency : 230VAC/65 Hz  
Output Voltage/Frequency : 230VAC/50 Hz

Note : Specifications are subject to change without prior notice.

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## SOLID STATE RELAY

### General Specification

Max Barrier Layer Temperature (T <sub>max</sub> )	< 125 °C
Ambient Temperature Range (T <sub>amb</sub> )	0-85 °C
SSR Storage Temperature Range (T <sub>st</sub> )	-40°C to 80°C
Input Terminal Screw Torque Range	T = 0.5 N.m (Max.)
Output Terminal Screw Torque Range	T = 2.5 N.m (Max.)
Power Factor COSφ @Max. Load @480VAC	> 0.55
Housing Material	UL-94 V0 Grade
Base Plate	Aluminium
SSR Weight	350 grams
Control Input Electrical Wire Size ( Max. )	Up to 2.1 sq mm(14 AWG)
Power Output Electrical Wire Size ( Max. )	Up to 25 sq mm(3 AWG)
Test Standards:	IEC 60947-5-1,IEC 62314:2016, ROHS,IP20
Pending Approvals:	UL 508,VDE ,TUV ,CSA 22-2
CE compliant :	IEC 61000-4-2,3,4,5,6, IEC 61000-6-2,4 & EN 55011

### Input Technical Specifications

Parameters	Unit	ZUA (905 MODEL)
Control Voltage Range	V	12-270 VAC / VDC
Input Frequency Range	Hz	15 - 65 Hz
Control Supply Current Consumption	mA	5-10 mA
Input Impedance (Current Regulator Circuit Impedance)	Ω	2 kΩ - 27 kΩ
Minimum Turn ON Voltage	VDC	9.5 VAC/VDC
Turn OFF Voltage	VDC	< 9 VAC/VDC
Control Input Status Indication	-	Green LED Indication
Maximum Turn ON Time	mS	≤ 20 mS
Maximum Turn OFF Time	mS	≤ 20 mS

### Output Technical Specifications @ 25°C Unless Specified

Parameters	Symbol	Unit	16 Amp	25 Amp	40 Amp	50 Amp	90 Amp
Operating Voltage Range	V <sub>AC</sub>	V <sub>RMS</sub>	24-480 VAC-905 Model				
Operating Frequency Range	f	Hz	47-63 Hz				
Peak Inverse Voltage	PIV	V <sub>PK</sub>	800	800	800	1200	1200
<b>Max. Surge Voltage With Stand Capacity (&lt;1 Second)</b>	V <sub>surge</sub>	V <sub>RMS</sub>	<b>2700 V<sub>RMS</sub> (3800 V<sub>PK</sub>)</b>				
<b>Rated Operational Current AC51a @ 20°C (Resistive Load)</b>	I <sub>T</sub>	Amp	<b>16</b>	<b>25</b>	<b>40</b>	<b>50</b>	<b>90</b>
Rated Operational Current AC53a @ 55°C (Inductive Load-Motor)	I <sub>T</sub>	Amp	2	6	9	15	25
<b>Maximum Load Short Circuit Protection Current @ 55°C</b>	I <sub>sc</sub>	Amp	-	-	-	<b>15</b>	<b>40</b>
<b>"B" Curve D.P. MCB Rating for Short Circuit Protection</b>	MCB	Amp	-	-	-	<b>16</b>	<b>40</b>
Maximum 3 Phase Motor Rating	hp	hp	1 hp	2 hp	3 hp	5 hp	7.5 hp
	kW	kW	0.745	1.49	2.23	3.72	5.59
NON Repetitive Surge Peak ON-State Current @ Rated V <sub>RRM</sub> applied for 1/2 Cycle t=10 ms/t=8.33 ms (50 Hz/60 Hz)	I <sub>TSM</sub> @ 50 Hz	A <sub>p</sub>	120	260	420	800	1200
	I <sub>TSM</sub> @ 60 Hz	A <sub>p</sub>	126	273	441	840	1260
Max. I <sup>2</sup> t for Fusing @ t=10 ms (50Hz)	I <sup>2</sup> t	A <sup>2</sup> s	72	340	880	3000	7200
Max. I <sup>2</sup> t for Fusing @ t=8.33 ms (60Hz)	I <sup>2</sup> t	A <sup>2</sup> s	65	305	795	2750	6510
Max. Peak ON-state voltage Drop	V <sub>TM</sub>	V <sub>RMS</sub>	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2
Minimum Isolation Resistance between Input Terminals (~1,~2) to Output Terminals (L1,L2,L3,U,V,W) @ 500 VDC	Ω	GΩ	50	50	50	50	50
Isolation Voltage Input Terminals (~1,~2) to Output Terminals (L1,L2,L3,U,V,W) for 1 Minute	V <sub>ISO</sub>	kV	6	6	6	6	6
Isolation Voltage Input & Output Terminal (~1,~2,L1,L2,L3,U,V,W) to Body Isolation for 1 Minute	V <sub>ISO</sub>	kV	4	4	4	4	4
Phase to Phase Isolation between terminals (L1,L2,L3) to (U,V,W) for 1 Minute	V <sub>ISO</sub>	kV	4	4	4	4	4
Isolation Voltage I/P (+1,-2) to O/P terminals (R3,U4,S5,V6,T7,W8) & I/P & O/P terminals(+1,-2,R3,U4,S5,V6,T7,W8) to Body Isolation	V <sub>ISO</sub>	kV	4	4	4	-	-
Max. Rate of Rise OFF-State Voltage	dV/dt	V/μS	400	400	500	600	1000
Max. Rate of Rise OFF-State Current	di/dt	A/μS	50	22	50	100	150
Max. Peak Repetitive Forward OFF-State Voltage	V <sub>DRM</sub>	V	800	800	800	1200	1600
Max. Peak Repetitive Forward OFF-State current	I <sub>DRM</sub>	mA	0.05	0.05	0.05	0.1	0.05
Max. Peak repetitive reverse off-state Voltage	V <sub>RDM</sub>	V	800	800	800	1200	1600
Max. Peak repetitive reverse off-state current	I <sub>RDM</sub>	mA	0.05	0.05	0.05	0.1	0.05
Max. DC Gate Trigger Voltage	V <sub>GT</sub>	V	1.2	1.2	1.5	1.5	1.5
Max. DC Gate Trigger Current	I <sub>GT</sub>	mA	50	50	50	8.8	20
Turn OFF Time	t <sub>q</sub>	μS	25	20	35	120	200
Maximum Latching Current	I <sub>L</sub>	mA	80	100	100	160	200
Maximum Holding Current	I <sub>H</sub>	mA	60	75	60	150	150
Thermal Resistance R <sub>θ</sub> (Junction to case )	R <sub>θ(j-c)</sub>	°C/W	2	1.2	1.1	1	0.32
OFF State SSR Leakage Current @ Rated Voltage & Frequency (Snubber Leakage)	I <sub>leak</sub>	mA	< 2 mA	< 2 mA	< 2 mA	< 2 mA	< 2 mA
SCCR Current Rating	I <sub>SCCR</sub>	kA	-	-	-	10 kA	10 kA
SSR Weight - 905 Model	W	gram	350	350	350	370	370

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