



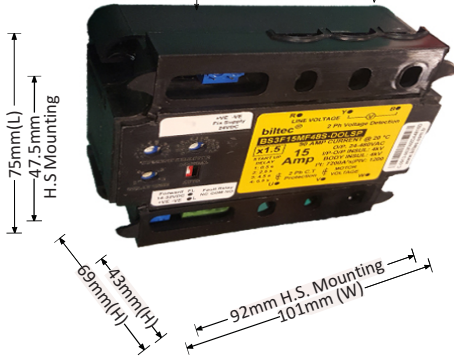
SOLID STATE RELAY

BS3F5MF48S 2,2KW
BS3F10MF48S 3,7KW
BS3F15MF48S 5,5KW

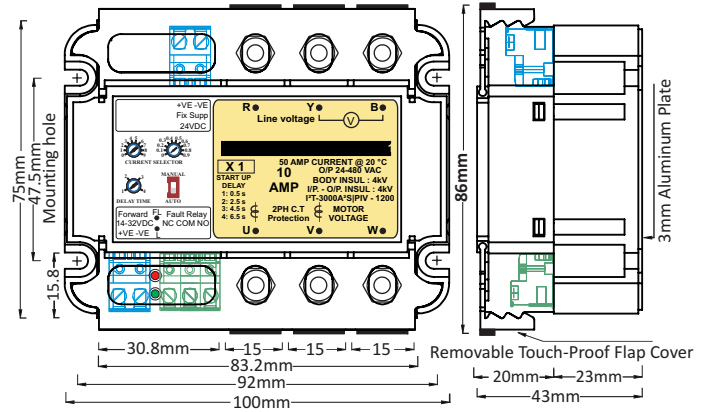
**3 PH FORWARD SEMICONDUCTOR
MOTOR STATER WITH DIRECT OVERLOAD
/SINGLE PHASE PROTECTION
- CURRENT AND VOLTAGE DETECTION**

BS3F15MF48S 5,5KW

Max. 25Sqmm Lugs



TYPE "E-75"
1 Nos.
Current upto 21Amp @40°C
with Din Rail 45mm
Thermal Resistance
R_{θSA} = 3°C/W
R_{θSA} = 278.15 K/W
ΔT = 75°C
Surface Area:
267mm²X75mm
=20025 mm²
101mm(W) X 75mm(L)
X 15mm(H) + SSR
Weight : @ 119gms

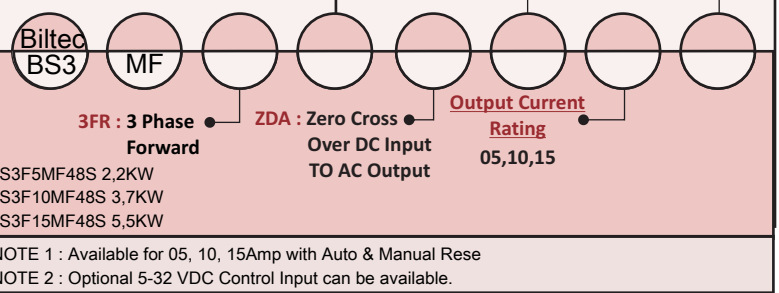


ADVANTAGES :

- ❖ Over load current setting by POT
- ❖ Starting delay timer POT for initial inrush current bypass
- ❖ Output will be OFF during any Fault conditions like Phase Failure, Overload, Single phasing etc.
- ❖ Single module for Forward control of 3 phase AC motor with inbuilt motor protection via current and voltage detection
- ❖ No need to use external bimetallic overload relay or MPCB protection
- ❖ Very compact design which occupies less space and has easy panel wiring
- ❖ Remote fault indication via mechanical changeover relay
- ❖ Selectable starting delay timer POT to disable false fault detection due to initial inrush current.
- ❖ Starting delay timer can solve locked rotor/shaft problem.
- ❖ Motor Output will be OFF if there is current inrush after fixed starting delay time.
- ❖ For any Fault, when current exceeds 150mA output will be OFF within 500 ms

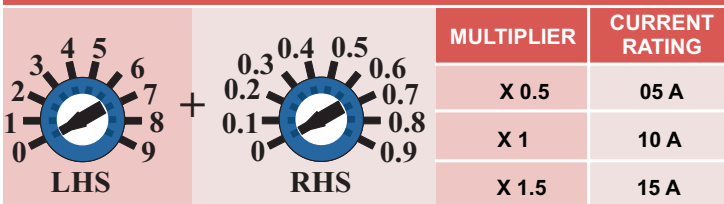
ORDERING FORMAT

DOLSP : Direct Overload Single Phase Protection
Output Voltage : 48: 24-480 VAC
Control Input : 01 : 14-32 VDC



| Fault condition | SSR Output | Fault red LED indication | Fault Mechanical Relay Change Over |
|----------------------|------------|--------------------------|------------------------------------|
| Current Overload | OFF | YES | YES |
| Single Phasing | OFF | YES | YES |
| Input Phase Failure | OFF | YES | YES |
| Phase Unbalance | OFF | YES | YES |
| Locked Rotor / Shaft | OFF | YES | YES |
| Earth Fault | OFF | YES | YES |

OVER CURRENT SELECTOR POT



Ex. LHS (2)+RHS (0.6)=2.6x 0.5 =1.3 Amp (05 Amp Current Rating SSR)

Ex. LHS (7)+RHS (0.1)=7.1x 1 =7.1 Amp (10 Amp Current Rating SSR)

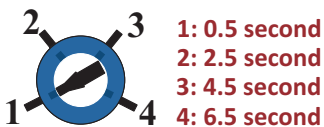
Ex. LHS (9)+RHS (0.9)=9.9x 1.5 =14.85 Amp (15 Amp Current Rating SSR)

BS3F5MF48S 2,2KW

BS3F10MF48S 3,7KW

BS3F15MF48S 5,5KW

STARTING DELAY TIME POT



MANUAL/AUTO RESET SWITCH



Manual Reset: Output will be latched for any fault condition and reset after switching OFF/ON 24 VDC fix supply
AUTO Reset: Output will be latched for 18 seconds for any fault condition and reset after every 18 seconds.

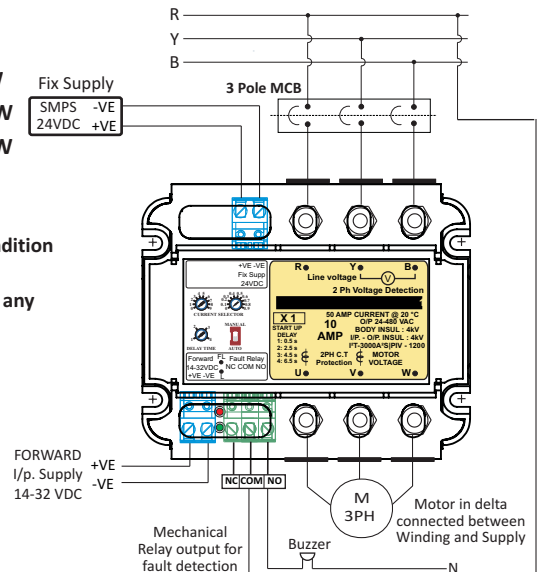
SSR SELECTION FOR 3 PHASE MOTOR (INDUCTIVE LOAD)

| HP / kW Rating | 05 AMP | 10 AMP | 15 AMP |
|----------------|----------|----------|----------|
| HP Rating | Upto 3 | Upto 5 | Upto 7.5 |
| kW Rating | Upto 2.2 | Upto 3.7 | Upto 5.5 |

APPLICATIONS:

- LAMINATION EXTRUSION
- ACTUATORS
- CNC MACHINES
- CRANE MOTOR

3 PH FORWARD SEMICONDUCTOR MOTOR STATER WITH EXTERNAL SHORT CIRCUIT PROTECTION DEVICE CONNECTION DIAGRAM

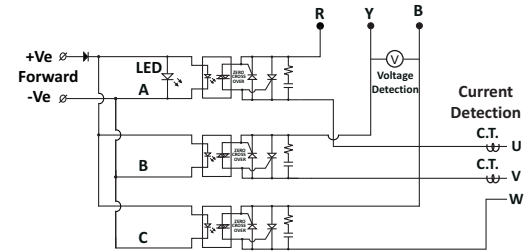




| General Specification | | Input Technical Specifications | | |
|---|--|--|-------------|--------------------|
| Max Barrier Layer Temperature (T _{max}) | < 125 °C | Parameters | Unit | ZDA |
| Ambient Temperature Range (T _{amb}) | 0-85 °C | Forward Control Voltage Range (V _c) | V | 14-32VDC |
| SSR Storage Temperature Range (T _{st}) | -40°C to 80°C | Control Supply Current Consumption | mA | 5-6mA |
| Input Terminal Screw Torque Range | T = 0.5 N.m (Max.) | Input Forward Surge voltage Protection V _{PK} | VAC/VDC | 325VAC/DC |
| Output Terminal Screw Torque Range | T = 2.5 N.m (Max.) | Fix Supply Voltage (V _s) | VDC | 22-26 VDC |
| Power Factor COSφ @Max. Load @480VAC | > 0.55 | Fix Supply Current Consumption | mA | 38 mA |
| Housing Material | UL-94 V0 Grade | Fix Supply Voltage Surge Protection | VDC | 80 VDC |
| Base Plate | Aluminium | Input Impedance (Current Regulator Circuit Impedance) | Ω | 1 kΩ - 2 kΩ |
| SSR Weight | > 430 grams | Minimum Turn ON Voltage(V _{ON}) | VDC | 13.5 VDC |
| Control Input Electrical Wire Size (Max.) | Up to 2.1 sq mm(14 AWG) | Turn OFF Voltage(V _{OFF}) | VDC | < 13 VDC |
| Power Output Electrical Wire Size (Max.) | Up to 25 sq mm(3 AWG) | Forward Control Input Status | - | GREEN LED |
| Test Standards: | ROHS,IP20 | Maximum Turn ON Time | mS | ≤ 1/2 Cycle(10 mS) |
| Pollution Degree | 3 | Maximum Turn OFF Time | mS | ≤ 1/2 Cycle(10 mS) |
| Pending Approvals: | UL 508,VDE ,TUV ,CSA 22-2 IEC 60947-5-1:2016 IEC 60947-4-2 | | | |

| Output Technical Specifications @ 25°C Unless Specified | | | | | |
|--|--|------------------|--|-----------------------------------|---------------|
| Parameters | Symbol | Unit | 05 Amp | 10 Amp | 15 Amp |
| Rated Operational Voltage | U _e | V _{RMS} | 24-480 VAC 3Q TRIAC | 24-480 VAC BACK TO BACK SCR | |
| Operating Frequency Range | f | Hz | 47-63 Hz | | |
| Peak Inverse Voltage | PIV | V _{PK} | 1200 | 1200 | 1200 |
| Max. Surge Voltage With Stand Capacity (<1 Second) (U_i) | V _{surge} | V _{RMS} | 2700 V_{RMS}(3800 V_{PK}) | | |
| Rated Operational Current AC53a @ 40°C(Inductive Load-Motor) | I _e | Amp | 5 | 10 | 15 |
| Rated Operational Current AC53a @ 20°C | I _T | Amp | 40 | 60 | 90 |
| Maximum 3 Phase Motor Rating | hp kW | hp kW | 3 hp 2.2 | 5 hp 3.7 | 7.5 hp 5.5 |
| NON Repetitive Surge Peak ON-State Current @ Rated V _{RRM} applied for 1/2 Cycle t=10 mS/ t=8.33 mS (50 Hz/60 Hz) | I _{TSM} @ 50 Hz @ 60 Hz | Ap | 420 441 | 800 840 | 1200 1260 |
| Max. I ² t for Fusing @ t=10 mS (50Hz) | I ² t | A ² s | 880 | 3000 | 7200 |
| Max. I ² t for Fusing @ t=8.33 mS (60Hz) | I ² t | A ² s | 795 | 2750 | 6510 |
| Max. Peak ON-state voltage Drop | V _{TM} | V _{RMS} | ≤1.2 | ≤1.2 | ≤1.2 |
| Min. Isolation Resistance between F-R Input Terminals (-R1,+R2) & (-F1,+F2) to Output Terminals R,Y,B,U,V,W) @ 500 VDC | Ω | GΩ | 50 | 50 | 50 |
| Isolation Voltage F-R Input Terminals (-R1,+R2) & (-F1,+F2) to Output Terminals (R,Y,B,U,V,W) for 1 Minute (U _{imp}) | V _{ISO} | kV | 4 | 4 | 4 |
| Isolation Voltage I/P & O/P Terminal (-R1,+R2,-F1,+F2,R,Y,B,U,V,W) to Body Isolation for 1 Minute(U _{imp}) | V _{ISO} | kV | 4 | 4 | 4 |
| Max. Rate of Rise OFF-State Voltage | dV/dt | V/μS | 500 | 600 | 1000 |
| Max. Rate of Rise OFF-State Current | di/dt | A/μS | 50 | 100 | 150 |
| Max. Peak Repetitive Forward OFF-State Voltage | V _{DRM} | V | 800 | 1200 | 1600 |
| Max. Peak Repetitive Forward OFF-State current | I _{DRM} | mA | 0.05 | 0.1 | 0.05 |
| Max. Peak repetitive reverse off-state Voltage | V _{RDM} | V | 800 | 1200 | 1600 |
| Max. Peak repetitive reverse off-state current | I _{RDM} | mA | 0.05 | 0.1 | 0.05 |
| Max. DC Gate Trigger Voltage | V _{GT} | V | 1.5 | 1.5 | 1.5 |
| Max. DC Gate Trigger Current | I _{GT} | mA | 50 | 8.8 | 20 |
| Turn OFF Time | t _q | μS | 35 | 120 | 200 |
| Maximum Latching Current | I _L | mA | 100 | 160 | 200 |
| Maximum Holding Current | I _H | mA | 60 | 150 | 150 |
| Thermal Resistance R _θ (Junction to case) | R _{θ(j-c)} | °C/W | 1.1 | 1 | 0.32 |
| OFF State SSR Leakage Current @ Rated Voltage & Frequency (Snubber Leakage)(I _l) | I _{leak} | mA | < 2 mA | < 2 mA | < 2 mA |
| SCCR Current Rating | I _{SCCR} | kA | - | 10 kA | 10 kA |
| SSR Weight | W | gram | 430 | 450 | 450 |
| Output Fault Indication | Red LED & Mechanical Relay change over 230 VAC-1Amp | | | | |

| | FORWARD | FAULT |
|----------------|---------|-------|
| LED INDICATION | ● GREEN | ● RED |



Note : Biltek Elektrik Otomasyon Malzemeleri İmalat Dış Tic.san

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