Eltwin Solid State Power Contactors

Introduction to Solid State Power Contactors

A solid-state contactor (SSC) is a load-switching device similar to an electromechanical contactor (EMC). However, unlike EMCs that use coils and mechanical contacts, SSCs switch AC loads using electronic components such as triacs or thyristors (SC series employs triacs).

Contactors differ from typical relays in their ability to switch inductive motor loads and resistive loads.

When To Use Solid State Power Contactors

Solid-state contactors are ideal for use in a variety of applications, including the following:

- When high-frequency On/Off switching is required beyond that which can be handled by the capabilities of mechanical devices
- When long operating life is essential

Other Key Benefits

- Quiet operation
- Lower power dissipation
- Lower electrical noise generated by zero-cross switching
- Line voltage ratings up to 600V
- UL/cUL as a motor controller
- IEC AC51/AC53 resistive/inductive rated

Technology

Eltwin has implemented the latest technology in design and manufacturing of power electronics.

The products meet the requirements of international standards EN 60947-4-2 / EN 60947-4-3 and are approved according to CE and cULus.

Applications

Eltwin's range of products offers solutions for almost any power control application.

The product family consists of components designed for electrically harsh industrial applications.

All necessary protection is integrated at different utilization categories.

SC1DD2315

SC1DD2330

SC1DD2350

Eltwin SC-1 Solid State Single Pole Power Contactors (Single Phase)

SC1DD2315

SC1DD2330

SC1DD2350

Features

- Rated operational voltage up to 600VAC 50/60 Hz
- Rated operational current up to 15A, 30A, or 50A
- Control voltage from 5-24 VDC or 24-230 VAC/VDC
- Compact modular design width of 22.5, 45, or 90 mm
- LED status indication
- Meets EN 60947-4-3 requirements
- Requires no additional components
- Built-in varistor protection
- IP20 protection
- Zero cross switching

Standards and Approvals

- EN 60947-4-3
- UL file number E207530
- UL508, UL 60947-1, UL60947-4-2

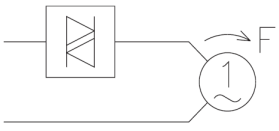
Eltwin SC-1 Solid State Power Contactors (Single Phase) Selection Guide

Part Number	Price	Rated Current @ 40°C [104°F] AC-1/51 Resistive Load/Heating Element	Operational Voltage Line Voltage @ 50/60Hz	Control Voltage	Rated Power @ 40°C [104°F] HP Ratings AC-3					Load AC-3 Motor	Load AC-55b Lamp	Load AC-56a Transformer	UL508 Short Circuit Current Rating @ 40C		Module Width	Drawing
					115VAC	230VAC	400VAC	480VAC	600VAC				Fuse Class	kA (rms)		
SC1DD2315	$89.00	15A	12-230 VAC	5-24 VDC	1	2				15A 10A @ 600VAC	15A	15A	Non-time delay K5 or H	5	22.5 mm [0.89 in]	PDF
SC1DA2315	$99.00			24-230 VAC/VDC	1	2										PDF
SC1DD4015	$91.00		24-480 VAC	5-24 VDC	1	2	3									PDF
SC1DA4015	$105.00			24-230 VAC/VDC	1	2	3									PDF
SC1DD2330	$96.00	30A	12-230 VAC	5-24 VDC	1	2				15A	20A	15A			45mm [1.77 in]	PDF
SC1DA2330	$99.00			24-230 VAC/VDC	1	2										PDF
SC1DD6030	$103.00		24-600 VAC	5-24 VDC	1	2	3		5							PDF
SC1DA6030	$112.00			24-230 VAC/VDC	1	2	3		5							PDF
SC1DD2350	$112.00	50A	12-230 VAC	5-24 VDC	1	2				15A	20A	15A			90mm [3.54 in]	PDF
SC1DA2350	$116.00			24-230 VAC/VDC	1	2										PDF
SC1DD6050	$135.00		24-600 VAC	5-24 VDC	1	2	3		5							PDF
SC1DA6050	$136.00			24-230 VAC/VDC	1	2	3		5							PDF

Applications

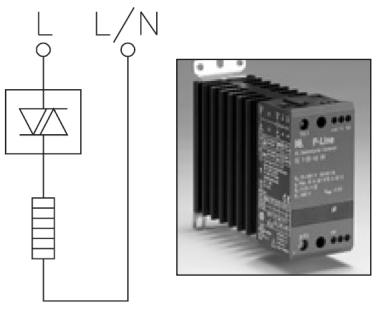
Control of general machine positioning, frequent switching

Electronic contactor for 1-phase motors



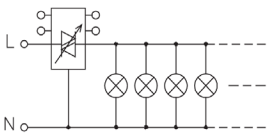
Switching of 1-phase heaters in industrial temperature applications

Electronic contactor for heating control 1-phase



Lamp load analog control of incandescent lamps

Control of incandescent or metal vapor lamps

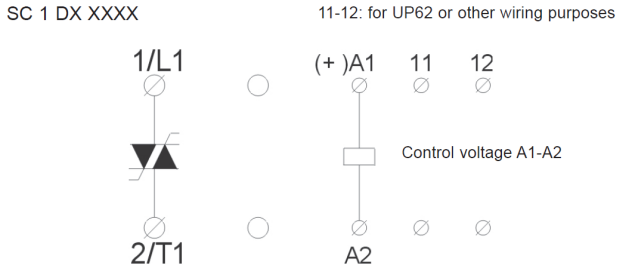


Eltwin SC-1 Solid State Single Pole Power Contactors (Single Phase)

Eltwin SC-1 Solid State Power Contactors (Single Phase) Specifications		
Output Load		
Leakage Current	1mA AC max	
Minimum Operational Current	10mA	
Duty Cycle	100%	
Control Terminals		
	SC1DDxxxx (DC)	***SC1DAxxxx (AC/DC)***
Control Voltage	5-24 VDC	24-230 VAC/VDC
Pick-Up Voltage Max	4.25 VDC	20.4 VAC/VDC
Drop-Out Voltage Min	1.5 VDC	7.2 VAC/VDC
Control Current Voltage	15mA @ 24VDC	6 mA / 1.5VA @ 24VDC
Max Control Voltage	32VDC	253 VAC/VDC
Response Time Max	1/2 cycle	1 cycle
Thermal Specifications		
Power Dissipation for Continuous Operation PDmax	1.2 W/A	
Power Dissipation for Intermittent Operation PD	1.2 W/A x duty cycle	
Cooling Method	Natural convection	
Mounting	Vertical ±30°	
Operating Temperature Range EN 60947-4-3	-5°C to 40°C [23°F to 104°F]	
Max Operating Temperature with Current Derating	60° [140°F]	
Storage Temperature EN 60947-4-3	-20°C to 80°C [-4°F to 176°F]	
Temperature Derating	**NOTE:** Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle. Max cycle time is 15 min. By 40°C: 100% load, duty cycle 100% By 50°C: 80% load, duty cycle max 0.8 By 60°C: 70% LOAD, duty cycle max 0.65	
Insulation		
Rated Insulation Voltage	U_i 690V	
Rated Impulse Withstand Voltage	U_{imp} 4kV	
Installation Category	III	
Environment		
Degree of Protection	IP20	
Pollution Degree	3	
Approval		
Approvals	cUL Std No. 508 UL File # E207530 UL: Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 600V maximum. Maximum surrounding temperature 40°C [104°F].	

Eltwin SC-1 Solid State Single Pole Power Contactors (Single Phase)

Wiring



Short-Circuit Protection By Fuses

Two types of short-circuit protection can be used.

Short-circuit protection by fuses per IEC 60947-4-1

Fuse short-circuit protection is divided into two levels – Type 1 or Type 2

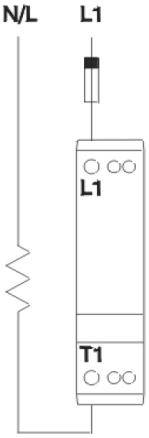
Coordination Type 1: Short-circuit protects the installation

SC 1 Dx xx15	Protection max. 50A gL/gG
SC 1 Dx xx30	Protection max. 50A gL/gG
SC 1 Dx xx50	Protection max. 50A gL/gG

Coordination Type 2: Short-circuit protects the installation and the semiconductors inside the motor controller

SC 1 Dx xx15	Protection max. i^2t of the fuse 610 A^2S
SC 1 Dx xx30	Protection max. i^2t of the fuse 1800 A^2S
SC 1 Dx xx50	Protection max. i^2t of the fuse 1800 A^2S

Short-Circuit Protection With Standard Fuse for SC1Dx xx15 (15A type)



Coordination Type 2 per IEC 60947-4-1

Line voltage up to 480V. Due to the oversized output SCRs, the contactor is fully protected by a standard fuse up to 16A.

Operating class gL/gG.

No need for Ultra Fast Fuses

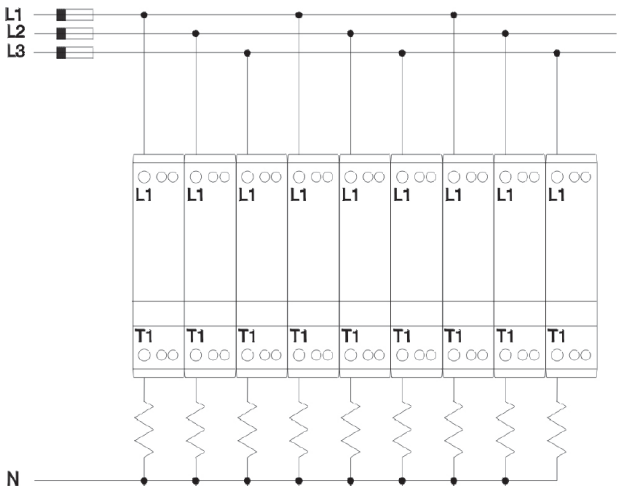
Max Load at 230V: 3.5 kW

Max Load at 400V: 6.0 kW

Max Load at 480V: 7.2 kW

Max Load at 480V: 7.2 kW

Common Short-Circuit Protection SC1Dx xx15



Short Circuit Protection for Several Contactors, e.g. SC1Dx xx15

Max fuse 5A gL/gG for short circuit

Coordination Type 1 per IEC 60947-4-1

SC1Dx2315 / SC1Dx4015

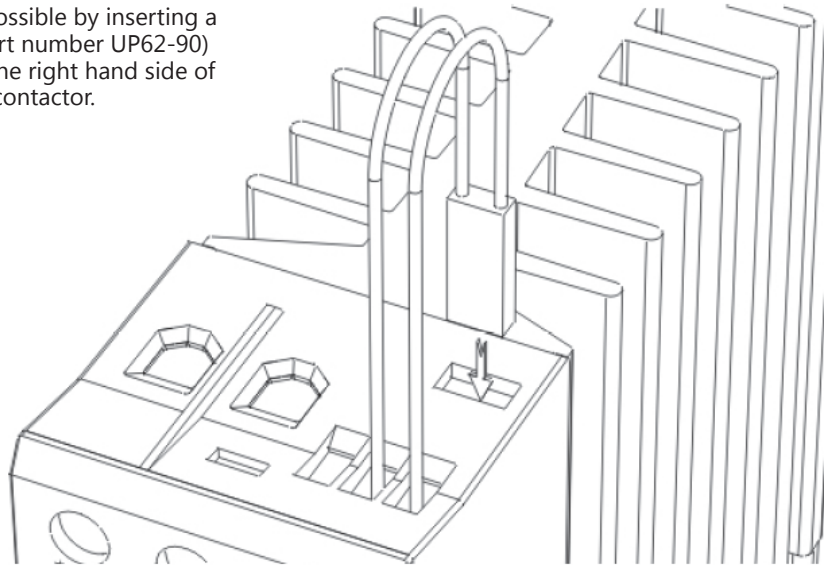
Max Fuse 1800 A^2s

Short Circuit Coordination type 2

Eltwin SC-1 Solid State Single Pole Power Contactors (Single Phase)

Thermal Overload Protection

Optional thermal overload protection is possible by inserting a thermostat (part number UP62-90) into a slot on the right hand side of the electronic contactor.

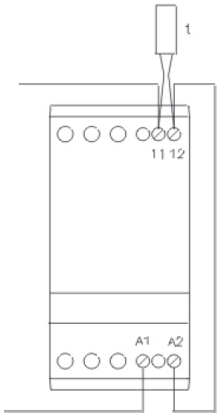


Example 1

The thermostat can be connected in series with the control circuit of the electronic contactor.

When the temperature of the heatsink exceeds 90°C [194°F] the electronic contactor will switch Off.

Note: When the temperature has dropped approximately 30°C below the switch-off temperature, the electronic contactor will automatically be switched on again.

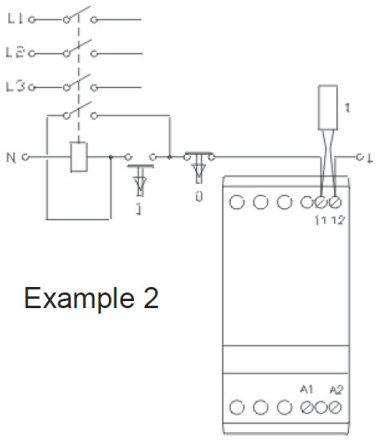


Example 2

The thermostat is connected in series with the control circuit of the main contactor.

When the temperature of the heatsink exceeds 90°C [194°F], the main contactor will switch Off.

Note: A manual reset is necessary to restart this circuit.



Example 2

EMC

This component meets the requirements of the product standard EN 60947-4-3 and is CE marked according to this standard. This product has been designed for Class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

Utilization Categories (EN 60947-4-3)

AC-51 Switching of resistive loads

AC-55a Switching of electric discharge lamp controls

AC-55b Switching of incandescent lamps

AC-56a Switching of transformers

Eltwin SC-2 Solid State Dual Pole Power Contactors (Single Phase)

SC2DD2330

SC2DA4050

Features

- Rated operational voltage up to 600VAC 50/60 Hz
- Rated operational current up to 30A/50A (accumulated)
- Control voltage from 5-24 VDC or 24-230 VAC/VDC
- Compact modular design width of 45 or 90 mm
- LED status indication
- Meets EN 60947-4-3 requirements
- Requires no additional components
- Built-in varistor protection
- IP20 protection
- Zero cross switching

Standards and Approvals

- EN 60947-4-3
- UL file number E207530
- UL508, UL 60947-1, UL60947-4-2

Eltwin SC-1 Solid State Power Contactors (Single Phase) Selection Guide

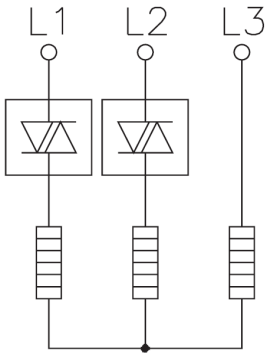
Part Number	Price	Rated Current @ 40°C [104°F] AC-1/51 Resistive Load/Heating Element	Operational Voltage Line Voltage @ 50/60Hz	Control Voltage	Rated Power @ 40°C [104°F] HP Ratings AC-3					Load AC-3 Motor	Load AC-55b Lamp	Load AC-56a Transformer	UL508 Short Circuit Current Rating @ 40C		Module Width	Drawing
					115VAC	230VAC	400VAC	480VAC	600VAC				Fuse Class	kA (rms)		
SC2DD2330	$142.00	30A accumulated	12-230 VAC	5-24 VDC	1	2				15A	20A	15A	Nontime delay K5 or H	5	45mm [1.77 in]	PDF
SC2DA2330	$126.00			24-230 VAC/VDC	1	2										PDF
SC2DD4030	$113.00		24-480 VAC	5-24 VDC	1	2	3									PDF
SC2DA4030	$117.00			24-230 VAC/VDC	1	2	3									PDF
SC2DD2350	$156.00	50A accumulated	12-230 VAC	5-24 VDC	1	2				15A	20A	15A			90mm [3.54 in]	PDF
SC2DA2350	$174.00			24-230 VAC/VDC	1	2										PDF
SC2DD4050	$145.00		24-480 VAC	5-24 VDC	1	2	3									PDF
SC2DA4050	$142.00			24-230 VAC/VDC	1	2	3									PDF

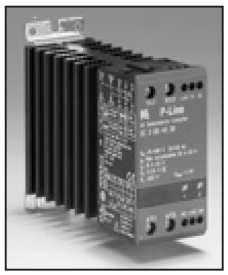
Application

Switching of 3-phase heaters in industrial temperature applications without neutral. Economical circuit, two phases switched

Electronic contactor for heating control 3-phase (without neutral)

3-phase can be switched by using three SC-1 units.





Eltwin SC-2 Solid State Dual Pole Power Contactors (Single Phase)

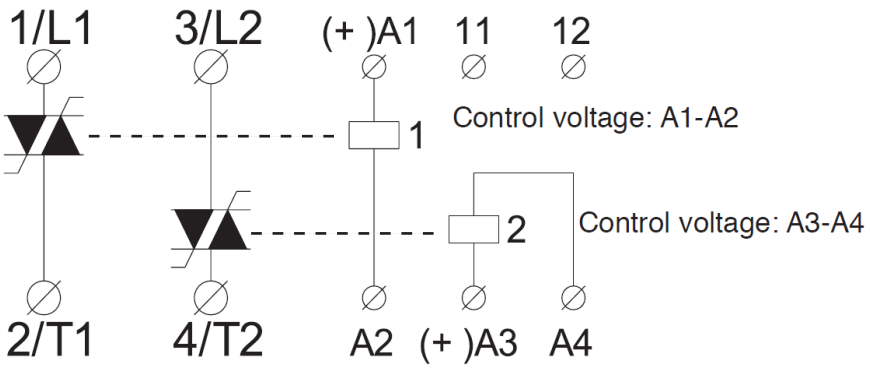
Eltwin SC-2 Solid State Dual Pole Power Contactors (Single Phase) Specifications		
Output Load		
Leakage Current	1mA AC max	
Minimum Operational Current	10mA	
Duty Cycle	100%	
Control Terminals		
	SC2DDxxxx (DC)	***SC2DAxxxx (AC/DC)***
Control Voltage	5-24 VDC	24-230 VAC/VDC
Pick-Up Voltage Max	4.25 VDC	20.4 VAC/VDC
Drop-Out Voltage Min	1.5 VDC	7.2 VAC/VDC
Control Current Voltage	15mA @ 24VDC	6 mA / 1.5VA @ 24VDC
Max Control Voltage	32VDC	253 VAC/VDC
Response Time Max	1/2 cycle	1 cycle
Thermal Specifications		
Power Dissipation for Continuous Operation PDmax	2.2 W/A	
Power Dissipation for Intermittent Operation PD	2.2 W/A x duty cycle	
Cooling Method	Natural convection	
Mounting	Vertical ±30°	
Operating Temperature Range EN 60947-4-3	-5°C to 40°C [23°F to 104°F]	
Max Operating Temperature with Current Derating	60° [140°F]	
Storage Temperature EN 60947-4-3	-20°C to 80°C [-4°F to 176°F]	
Temperature Derating	**NOTE:** Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle. Max cycle time is 15 min. By 40°C: 100% load, duty cycle 100% By 50°C: 80% load, duty cycle max 0.8 By 60°C: 70% LOAD, duty cycle max 0.65	
Insulation		
Rated Insulation Voltage	U_i 660V	
Rated Impulse Withstand Voltage	U_{imp} 4kV	
Installation Category	III	
Environment		
Degree of Protection	IP20	
Pollution Degree	3	
Approval		
Approvals	cUL Std No. 508 UL File # E207530 UL: Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 600V maximum. Maximum surrounding temperature 40°C [104°F].	

Eltwin SC-2 Solid State Dual Pole Power Contactors (Single Phase)

Wiring

SC 2 DX XXXX

11-12: for UP62 or other wiring purposes



Short-Circuit Protection By Fuses

Two types of short-circuit protection can be used.

Short-circuit protection by fuses per IEC 60947-4-1

Fuse short-circuit protection is divided into two levels – Type 1 or Type 2

Coordination Type 1: Short-circuit protects the installation

SC 2 Dx xx30 Protection max. 50A gL/gG

SC 2 Dx xx50 Protection max. 50A gL/gG

Coordination Type 2: Short-circuit protects the installation and the semiconductors inside the motor controller

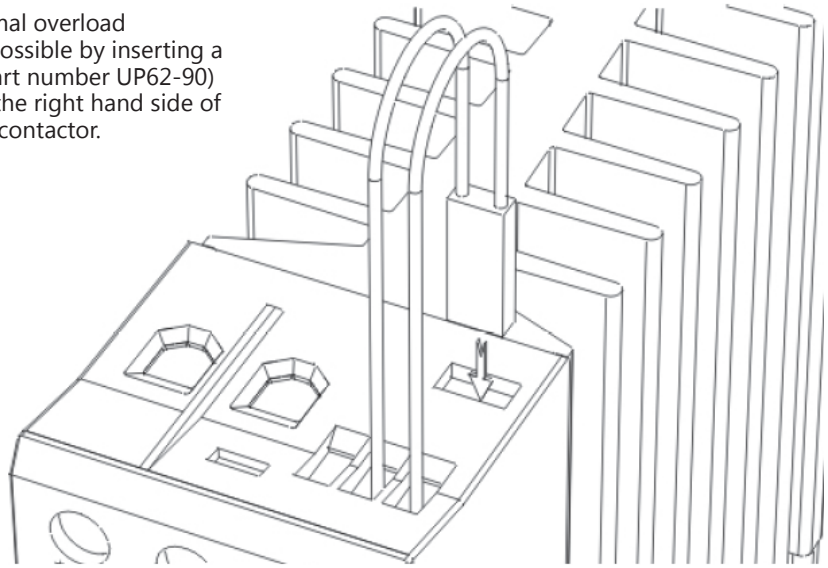
SC 2 Dx xx30 Protection max. i^2t of the fuse 1800 A^2S

SC 2 Dx xx50 Protection max. i^2t of the fuse 1800 A^2S

Eltwin SC-2 Solid State Dual Pole Power Contactors (Single Phase)

Thermal Overload Protection

Optional thermal overload protection is possible by inserting a thermostat (part number UP62-90) into a slot on the right hand side of the electronic contactor.

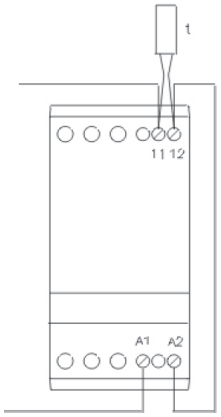


Example 1

The thermostat can be connected in series with the control circuit of the electronic contactor.

When the temperature of the heatsink exceeds 90°C [194°F] the electronic contactor will switch Off.

Note: When the temperature has dropped approximately 30°C below the switch-off temperature, the electronic contactor will automatically be switched on again.

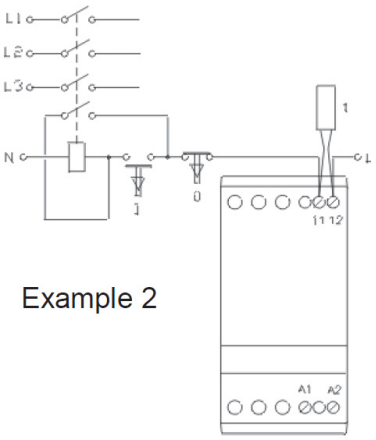


Example 2

The thermostat is connected in series with the control circuit of the main contactor.

When the temperature of the heatsink exceeds 90°C [194°F], the main contactor will switch Off.

Note: A manual reset is necessary to restart this circuit.



Example 2

EMC

This component meets the requirements of the product standard EN 60947-4-3 and is CE marked according to this standard. This product has been designed for Class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

Utilization Categories (EN 60947-4-3)

AC-51 Switching of resistive loads

AC-55a Switching of electric discharge lamp controls

AC-55b Switching of incandescent lamps

AC-56a Switching of transformers

Eltwin SC-3 Solid State Power Contactors (3 Phase)

SC3DD2310

SC3DD4020

Features

- Rated operational voltage up to 600VAC 50/60 Hz
- Rated operational current up to 10A/20A (AC1)
- Control voltage from 5-24 VDC or 24-230 VAC/VDC
- Compact modular design width of 45 or 90 mm
- LED status indication
- Meets EN 60947-4-3 requirements
- Requires no additional components
- Built-in varistor protection
- IP20 protection
- Zero cross switching

Standards and Approvals

- EN 60947-4-3
- UL file number E207530
- UL508, UL 60947-1, UL60947-4-2

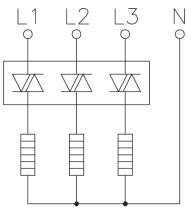
Eltwin SC-3 Solid State Power Contactors (3 Phase) Selection Guide

Part Number	Price	Rated Current @ 40°C [104°F] AC-1/51 Resistive Load/Heating Element	Operational Voltage Line Voltage @ 50/60Hz	Control Voltage	Rated Power @ 40°C [104°F] HP Ratings AC-3					Load AC-3 Motor	Load AC-55b Lamp	Load AC-56a Transformer	UL508 Short Circuit Current Rating @ 40C		Module Width	Drawing
					115VAC	230VAC	400VAC	480VAC	600VAC				Fuse Class	kA (rms)		
SC3DD2310	$119.00	10A	12-230 VAC	5-24 VDC	1.5	3				10A	10A	5A	Nontime delay K5 or H	5	45mm [1.77 in]	PDF
SC3DA2310	$119.00			24-230 VAC/VDC	1.5	3										PDF
SC3DD4010	$119.00		24-480 VAC	5-24 VDC	1.5	3	5	5								PDF
SC3DA4010	$119.00			24-230 VAC/VDC	1.5	3	5	5								PDF
SC3DD2320	$135.00	20A	12-230 VAC	5-24 VDC	1.5	3				10A	10A	5A			90mm [3.54 in]	PDF
SC3DA2320	$135.00			24-230 VAC/VDC	1.5	3										PDF
SC3DD4020	$136.00		24-480 VAC	5-24 VDC	1.5	3	5	5								PDF
SC3DA4020	$136.00			24-230 VAC/VDC	1.5	3	5	5								PDF

Applications

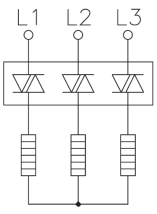
Switching of 3-phase heaters on/off in industrial temperature applications, 3-phase with neutral

Electronic contactor for heating control 3-phase (with neutral)



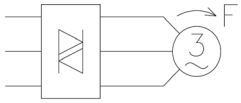
Switching of 3-phase heaters in industrial temperature applications, 3-phase without neutral

Electronic contactor for heating control 3-phase (without neutral)



Control of general machine positioning, frequent switching

Control of electronic contactor for 3-phase motors



Eltwin SC-3 Solid State Power Contactors (3 Phase)

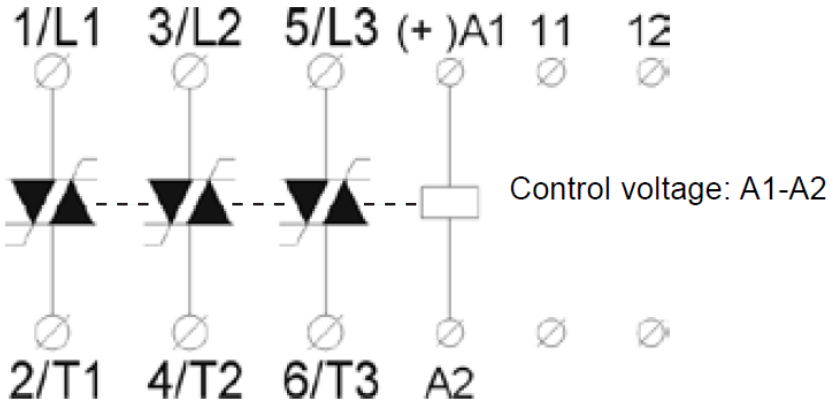
Eltwin SC-3 Solid State Power Contactors (3 Phase) Specifications		
Output Load		
Leakage Current	1mA AC max	
Minimum Operational Current	10mA	
Duty Cycle	100%	
Control Terminals		
	SC3DDxxxx (DC)	***SC3DAxxxx (AC/DC)***
Control Voltage	5-24 VDC	24-230 VAC/VDC
Pick-Up Voltage Max	4.25 VDC	20.4 VAC/VDC
Drop-Out Voltage Min	1.5 VDC	7.2 VAC/VDC
Control Current Voltage	15mA @ 24VDC	6 mA / 1.5VA @ 24VDC
Max Control Voltage	32VDC	253 VAC/VDC
Response Time Max	1/2 cycle	1 cycle
Thermal Specifications		
Power Dissipation for Continuous Operation PDmax	3.3 W/A	
Power Dissipation for Intermittent Operation PD	3.3 W/A x duty cycle	
Cooling Method	Natural convection	
Mounting	Vertical ±30°	
Operating Temperature Range EN 60947-4-3	-5°C to 40°C [23°F to 104°F]	
Max Operating Temperature with Current Derating	60° [140°F]	
Storage Temperature EN 60947-4-3	-20°C to 80°C [-4°F to 176°F]	
Temperature Derating	**NOTE:** Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle. Max cycle time is 15 min. By 40°C: 100% load, duty cycle 100% By 50°C: 80% load, duty cycle max 0.8 By 60°C: 70% LOAD, duty cycle max 0.65	
Insulation		
Rated Insulation Voltage	U_i 660V	
Rated Impulse Withstand Voltage	U_{imp} 4kV	
Installation Category	III	
Environment		
Degree of Protection	IP20	
Pollution Degree	3	
Approval		
Approvals	cUL Std No. 508 UL File # E207530 UL: Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 600V maximum. Maximum surrounding temperature 40°C [104°F].	

Eltwin SC-3 Solid State Power Contactors (3 Phase)

Wiring

SC 3 DX XXXX

11-12: for UP62 or other wiring purposes



Short-Circuit Protection By Fuses

Two types of short-circuit protection can be used.

Short-circuit protection by fuses per IEC 60947-4-1

Fuse short-circuit protection is divided into two levels – Type 1 or Type 2

Coordination Type 1: Short-circuit protects the installation

SC 3 Dx xx30 Protection max. 50A gL/gG

SC 3 Dx xx50 Protection max. 50A gL/gG

Coordination Type 2: Short-circuit protects the installation and the semiconductors inside the motor controller

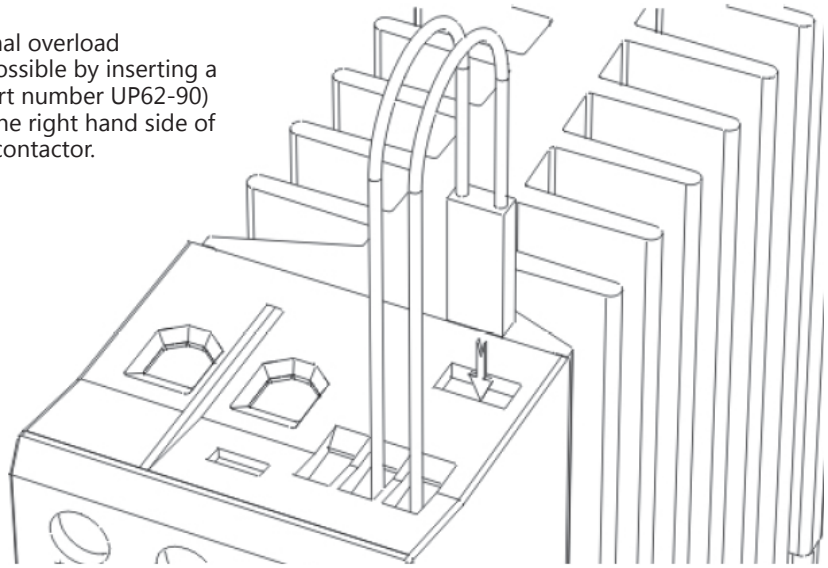
SC 3 Dx xx30 Protection max. i^2t of the fuse 610 A^2S

SC 3 Dx xx50 Protection max. i^2t of the fuse 610 A^2S

Eltwin SC-3 Solid State Power Contactors (3 Phase)

Thermal Overload Protection

Optional thermal overload protection is possible by inserting a thermostat (part number UP62-90) into a slot on the right hand side of the electronic contactor.

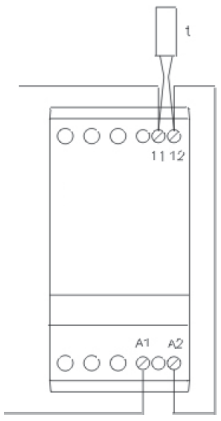


Example 1

The thermostat can be connected in series with the control circuit of the electronic contactor.

When the temperature of the heatsink exceeds 90°C [194°F] the electronic contactor will switch Off.

Note: When the temperature has dropped approximately 30°C below the switch-off temperature, the electronic contactor will automatically be switched on again.

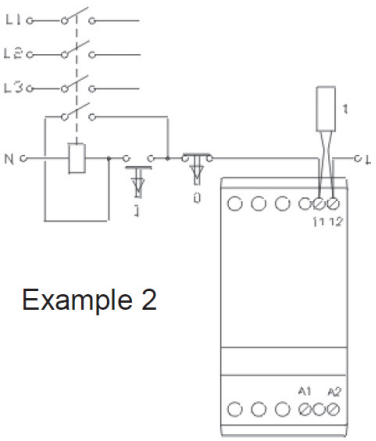


Example 2

The thermostat is connected in series with the control circuit of the main contactor.

When the temperature of the heatsink exceeds 90°C [194°F], the main contactor will switch Off.

Note: A manual reset is necessary to restart this circuit.



Example 2

EMC

This component meets the requirements of the product standard EN 60947-4-3 and is CE marked according to this standard. This product has been designed for Class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

Utilization Categories (EN 60947-4-3)

AC-51 Switching of resistive loads

AC-55a Switching of electric discharge lamp controls

AC-55b Switching of incandescent lamps

AC-56a Switching of transformers

Eltwin SMC 3 DOL Direct On Line Electronic Motor Contactor (3 Phase)

SMC3DA2315DOL

Features

- For Direct On Line start of 3-phase motors
- Rated operational voltage up to 600VAC 50/60 Hz
- Rated operational current up to 15A (AC-53)
- Control voltage from 24-60 VDC / 24-480 VAC
- High number of start/stop operations per hour
- LED status indication
- Meets EN 60947-4-2 requirements
- Requires only 45mm of DIN rail space
- Zero cross switching

Standards and Approvals

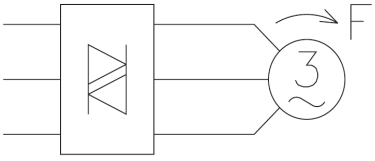
- EN 60947-4-3
- UL file number E207530
- UL508, UL 60947-1, UL60947-4-2

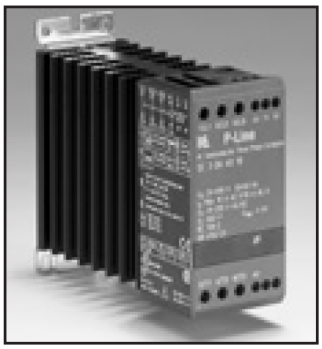
Eltwin SMC 3 DOL Direct On Line Electronic Motor Contactor (3 Phase) Selection Guide											
Part Number	Price	Rated Current @ 40°C [104°F] AC-1/51 Resistive Load/Heating Element	Operational Voltage Line Voltage @ 50/60Hz	Control Voltage	Rated Power @ 40°C [104°F] HP Ratings AC-3			Load Ratings	UL508 Short Circuit Current Rating @ 40C		Module Width	Drawing
					230VAC	400VAC	480VAC		Fuse Class	kA (rms)		
SMC3DA2315DOL	$147.00	15A	12-230 VAC 50/60 Hz	24-60 VDC	5			10A (AC-53) 8A (AC-4)	Nontime delay K5 or H	5	45mm [1.77 in]	PDF
SMC3DA4015DOL	$143.00		400-480 VAC 50/60 Hz	24-480 VAC	5	10	10					PDF

Application

Control of general machine positioning. Direct On Line Start (DOL) for inching, jogging and frequent switching

Inching and jogging of 3-phase motors





Eltwin SMC 3 DOL
Direct On Line Electronic Motor Contactor

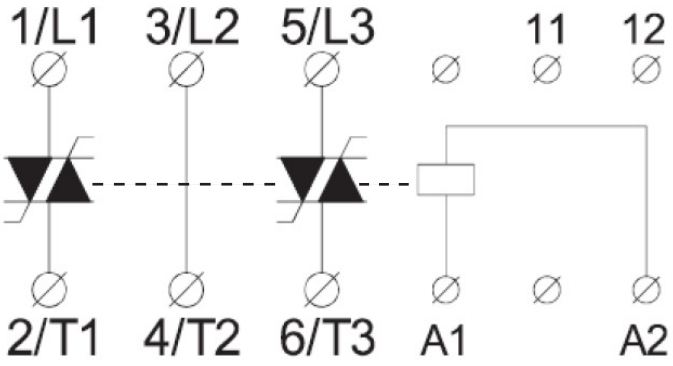
Eltwin SMC 3 DOL Direct On Line Electronic Motor Contactor Specifications	
Output Load	
Leakage Current	5mA AC max
Minimum Operational Current	50mA
Duty Cycle	100%
Control Terminals	
Control Voltage	24-60 VDC; 24-480 VAC
Pick-Up Voltage Max	20.4 VAC/VDC
Drop-Out Voltage Min	5 VAC/VDC
Control Current / Power Max	6mA / 1.5 VA
Max Control Voltage	510VAC
Response Time Max	1 cycle
Thermal Specifications	
Power Dissipation for Continuous Operation PDmax	2.2 W/A
Power Dissipation for Intermittent Operation PD	2.2 W/A x duty cycle
Cooling Method	Natural convection
Mounting	Vertical ±30°
Operating Temperature Range EN 60947-4-3	-5°C to 40°C [23°F to 104°F]
Max Operating Temperature with Current Derating	60° [140°F]
Storage Temperature EN 60947-4-3	-20°C to 80°C [-4°F to 176°F]
Temperature Derating	**NOTE:** Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle. Max cycle time is 15 min. By 40°C: 100% load, duty cycle 100% By 50°C: 80% load, duty cycle max 0.8 By 60°C: 70% LOAD, duty cycle max 0.65
Insulation	
Rated Insulation Voltage	U_i 660V
Rated Impulse Withstand Voltage	U_{imp} 4kV
Installation Category	III
Environment	
Degree of Protection	IP20
Pollution Degree	3
Approval	
Approvals	cUL Std No. 508 UL File # E207530 UL: Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 600V maximum. Maximum surrounding temperature 40°C [104°F].

Eltwin SMC 3 DOL
Direct On Line Electronic Motor Contactor

Wiring

SMC 3 DA XX15 DOL

11-12: For UP62 or other wiring purposes



Short-Circuit Protection

Two types of short-circuit protection can be used per IEC 60647-4-1:

a) Short-circuit protection by circuit breaker

b) Short-circuit protection by fuses

Short-circuit protection is divided into two levels – Type 1 or Type 2

Coordination Type 1 will be obtained when using magnetic circuit breakers or standard gl/Gl fuses.

Coordination Type 2 will be obtained when using semiconductor fuses When using semiconductor fuses, the SCR will not be damaged due to transients and short circuits.

Short-Circuit Protection By Fuses

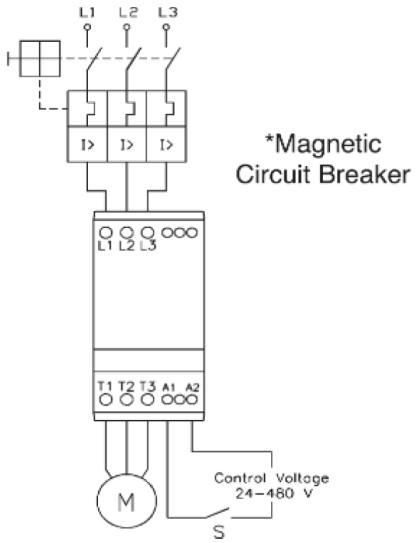
Type 1: SMC 3 DA xx15 DOL

Type 2: SMC 3 DA xx15 DOL

Protection max 50A gL/gG

Protection max i^2t of the fuse 1800 A^2S

Overload Protection in Motor Control Reversing



*Magnetic Circuit Breaker

Overload protection of the motor is easily achieved by installing a manual thermal magnetic circuit breaker on the supply side of the motor.

The circuit breaker provides means for padlocking and the necessary clearance for use as a circuit isolator according to EN 60204-1.

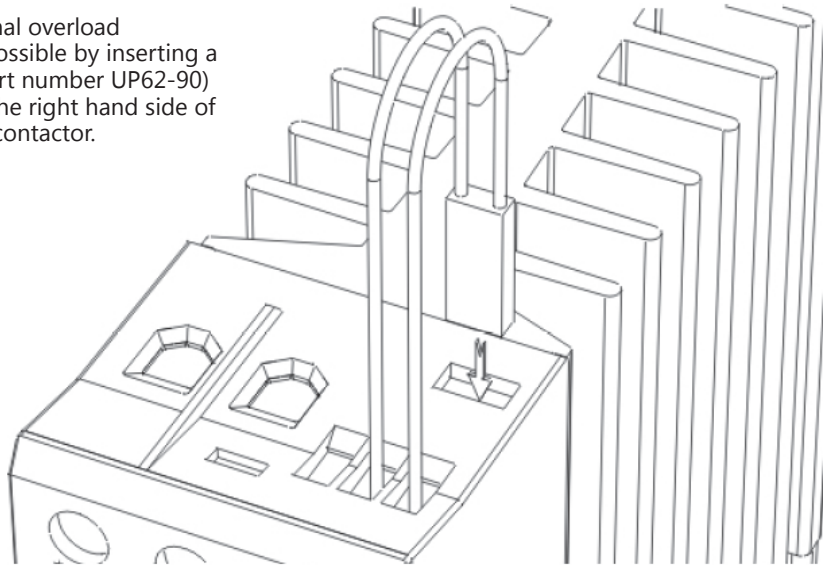
Adjust the current limit on the MCB according to the rated nominal current of the motor.

****Use UL approved magnetic circuit breaker (Eaton, Fuji Electric or Gladiator MCCB) or UL specified back-up fuse type K5 or H Class***

Eltwin SMC 3 DOL
Direct On Line Electronic Motor Contactor

Thermal Overload Protection

Optional thermal overload protection is possible by inserting a thermostat (part number UP62-90) into a slot on the right hand side of the electronic contactor.

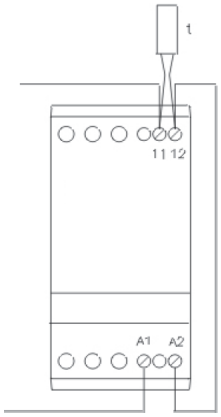


Example 1

The thermostat can be connected in series with the control circuit of the electronic contactor.

When the temperature of the heatsink exceeds 90°C [194°F] the electronic contactor will switch Off.

Note: When the temperature has dropped approximately 30°C below the switch-off temperature, the electronic contactor will automatically be switched on again.

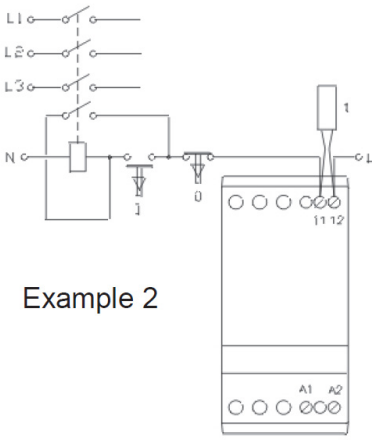


Example 2

The thermostat is connected in series with the control circuit of the main contactor.

When the temperature of the heatsink exceeds 90°C [194°F], the main contactor will switch Off.

Note: A manual reset is necessary to restart this circuit.



Example 2

EMC

This component meets the requirements of the product standard EN 60947-4-2 and is CE marked according to this standard. This product has been designed for Class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

Utilization Categories (EN 60947-4-2)

Category AC-53: Starting or switching off motors during running

Category AC-4: Starting, plugging or reversing the motor rapidly while running

Category AC-52a: Control of slipring motor stators

Category AC-53a: Control of squirrel cage motors

Category AC-58a: Control of hermetic refrigerant compressors with automatic resetting of overload releases

Eltwin SRC
3-Phase Electronic Reversing Contactor

SRC3DD4010

Features

- Rated operational voltage up to 480VAC 50/60 Hz
- Rated operational current up to 10A (AC-53)
- Two separate control inputs with mutual interlock
- Control voltage from 5-24 VDC or 24-230 VAC/VDC
- LED status indication
- Meets EN 60947-4-2 requirements
- Requires only 45mm of DIN rail space
- Built-in varistor protection
- Zero cross switching

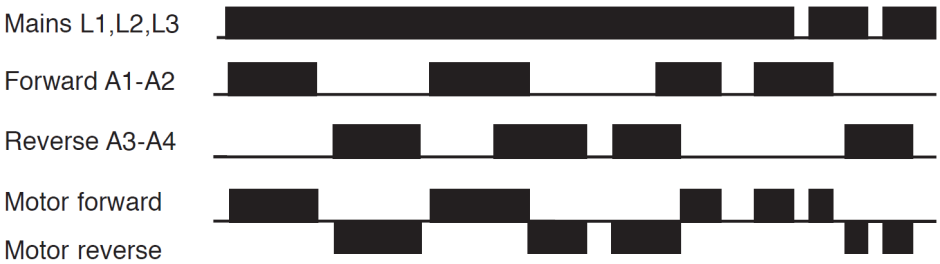
Standards and Approvals

- EN 60947-4-3
- UL file number E207530
- UL508, UL 60947-1, UL60947-4-2

Eltwin SRC 3 3-Phase Electronic Reversing Contactor Selection Guide

Part Number	*Price*	*Rated Current @ 40°C [104°F] AC-53 Motor Loads*	*Operational Voltage Line Voltage @ 50/60Hz*	*Control Voltage*	*Rated Power @ 40°C [104°F] HP Ratings AC-3*			*Rated Current @ 40°C [104°F] AC-4 Motor Loads*	*UL508 Short Circuit Current Rating @ 40C*		*Module Width*	*Drawing*
					115VAC	*230VAC*	*400VAC*		*Fuse Class*	*kA (rms)*		
SRC3DD4010	$161.00	10A	24-480 VAC 50/60 Hz	5-24 VDC	1.5	3	5	8A	Nontime delay K5 or H	5	45mm [1.77 in]	PDF
SRC3DA4010	$186.00			24-230 VAC/VDC	1.5	3	5					PDF

Functional Diagram

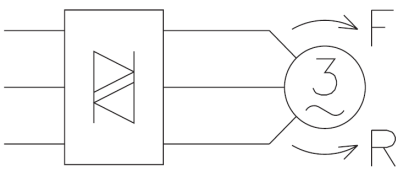


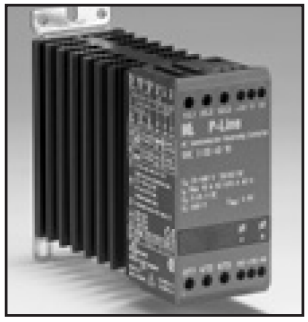
Note: Response time ON/OFF is 1/2 to 1 cycle period, with respect to the actual frequency. At 60Hz, the 1/2 to 1 cycle period range is 8.33 milliseconds to 16.67 milliseconds.

Application

Control of material transportation, conveyor cranes. Reversing.

Reversing of 3-phase motors





Eltwin SRC
3-Phase Electronic Reversing Contactor

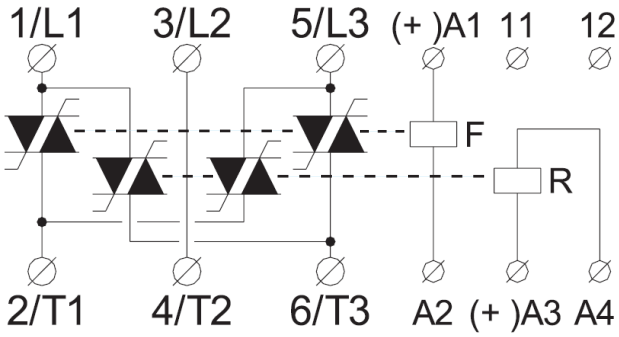
Eltwin SRC 3 3-Phase Electronic Reversing Contactor Specifications		
Output Load		
Leakage Current	5mA AC max	
Minimum Operational Current	50mA	
Duty Cycle	100%	
Control Terminals		
	SRC3DD4010	***SRC3DA4010***
Control Voltage	5-24 VDC	24-230 VAC/VDC
Pick-Up Voltage Max	4.25 VDC	20.4 VAC/VDC
Drop-Out Voltage Min	1.5 VDC	7.2 VAC/VDC
Control Current	25mA @ 4VDC	6mA (power max 1.5 VA @ 24VDC)
Response Time Max	1/2 cycle	–
Interlock Time Max	80 msec	150 msec
Thermal Specifications		
Power Dissipation for Continuous Operation PDmax	2.2 W/A	
Power Dissipation for Intermittent Operation PD	2.2 W/A x duty cycle	
Cooling Method	Natural convection	
Mounting	Vertical ±30°	
Operating Temperature Range EN 60947-4-3	-5°C to 40°C [23°F to 104°F]	
Max Operating Temperature with Current Derating	60° [140°F]	
Storage Temperature EN 60947-4-3	-20°C to 80°C [-4°F to 176°F]	
Temperature Derating	**NOTE:** Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle. Max cycle time is 15 min. By 40°C: 100% load, duty cycle 100% By 50°C: 80% load, duty cycle max 0.8 By 60°C: 70% LOAD, duty cycle max 0.65	
Insulation		
Rated Insulation Voltage	U_i 660V	
Rated Impulse Withstand Voltage	U_{imp} 4kV	
Installation Category	III	
Environment		
Degree of Protection	IP20	
Pollution Degree	3	
Approval		
Approvals	cUL Std No. 508 UL File # E207530 UL: Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 600V maximum. Maximum surrounding temperature 40°C [104°F].	

Eltwin SRC
3-Phase Electronic Reversing Contactor

Wiring

SRC 3 DX 4010

11-12: for UP 62
or other wiring purposes



Short-Circuit Protection

Two types of short-circuit protection can be used per IEC 60947-4-1:

a) Short-circuit protection by circuit breaker

b) Short-circuit protection by fuses

Short-circuit protection is divided into two levels – Type 1 or Type 2

Coordination Type 1 will be obtained when using magnetic circuit breakers or standard gl/Gl fuses.

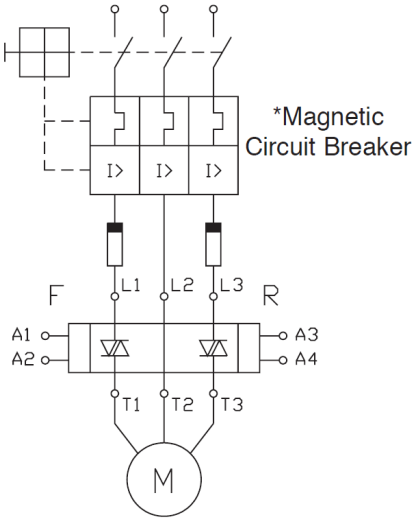
Coordination Type 2 will be obtained when using semiconductor fuses When using semiconductor fuses, the SCR will not be damaged due to transients and short circuits.

Short-Circuit Protection By Fuses

Type 1: SRC 3 Dx 4010 – Protection max 50A gL/gG

Type 2: SRC 3 Dx 4010 – Protection max i^2t of the fuse 610 A^2S

Overload Protection in Motor Control Reversing



Overload protection of the motor is easily achieved by installing a manual thermal magnetic circuit breaker on the supply side of the motor.

The circuit breaker provides means for padlocking and the necessary clearance for use as a circuit isolator according to EN 60204-1.

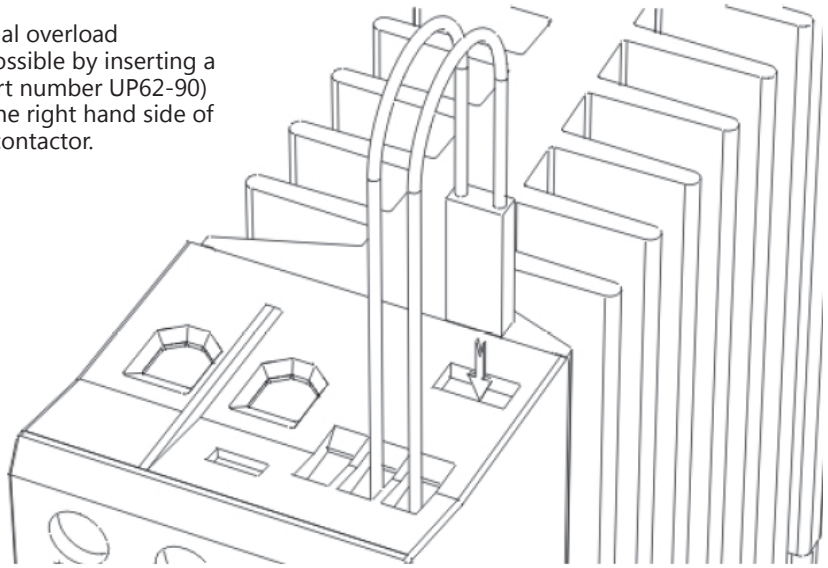
Adjust the current limit on the MCB according to the rated nominal current of the motor.

****Use UL approved magnetic circuit breaker (Eaton, Fuji Electric or Gladiator MCCB) or UL specified back-up fuse type K5 or H Class***

Eltwin SRC
3-Phase Electronic Reversing Contactor

Thermal Overload Protection

Optional thermal overload protection is possible by inserting a thermostat (part number UP62-90) into a slot on the right hand side of the electronic contactor.

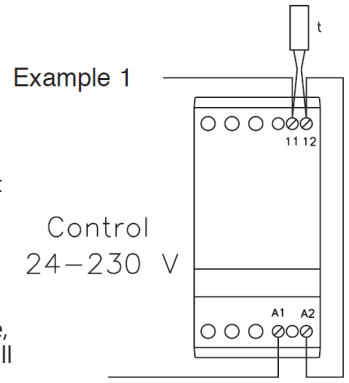


Example 1

The thermostat can be connected in series with the control circuit of the electronic contactor.

When the temperature of the heatsink exceeds 90°C [194°F] the electronic contactor will switch Off.

Note: When the temperature has dropped approximately 30°C below the switch-off temperature, the electronic contactor will automatically be switched on again.

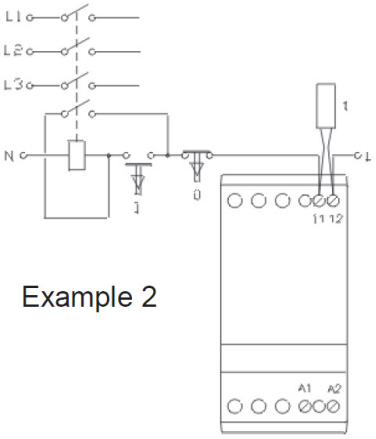


Example 2

The thermostat is connected in series with the control circuit of the main contactor.

When the temperature of the heatsink exceeds 90°C [194°F], the main contactor will switch Off

Note: A manual reset is necessary to restart this circuit.



EMC

This component meets the requirements of the product standard EN 60947-4-2 and is CE marked according to this standard. This product has been designed for Class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

Utilization Categories (EN 60947-4-2)

Category AC-53: Starting or switching off motors during running

Category AC-4: Starting, plugging or reversing the motor rapidly while running

Eltwin Solid State Contactors Temperature Limit Switch

UP62-90

The UP62-90 temperature limit switch is a thermostat that will protect solid state contactors from over-temperature conditions. It is easily mounted into slots on the body of the contactor and rests in close proximity to the contactor's heat sink.

The UP62-90 will turn off the device if the operating temperature reaches 90°C [194°F]. The contactor will be reactivated once the temperature drops approximately 30°C below the cut-off temperature.

Standards and Approvals

- EN 60947-4-3
- UL file number E50124 = UCHIYA
- UL508, UL 60947-1, UL60947-4-2

Eltwin UP62-90 Temperature Limit Switch Selection Guide

Part Number	*Price*	*Description*	*Cut-off Temperature*	*Reset*	*Connection to Solid State Contactor*	*Drawing*
UP62-90	$9.50	Temperature limit switch designed to protect solid state contactors from over-temperature conditions	90°C [194°F]	Once temperature drops by 30°C. Approximate reset temperature is 90°C - 30°C = 60°C [140°F]	Wire pigtails	PDF