

# Soft Starter (SMC 3 / SMC 32 two controlled phases)



- Rated operational voltage up to 600 VAC 50/60Hz
- Rated operational current up to 25A/30A
- Output signal for By-Pass and Start/Stop
- Ramp Up and Down time adjustable
- Initial Torque adjustable with kick start
- Wide control voltage range
- Meets EN 60947-4-2 requirements
- High number of start/stop operations pr. hour. See data

## Item selection and technical specifications (see also motor table at page 11)

Load ratings	Item number by 208-240VAC 50/60Hz Line Voltage	Item number by 400-480VAC 50/60Hz Line Voltage	Item number by 550-600VAC 50/60Hz Line Voltage	Ramp-Up / Down adjustment	Torque adjustment	Module-width
<b>Items with built-in by-pass relays</b>						
3.5A AC-53b	SMC 3 DA 2303	SMC 3 DA 4003 415V	SMC 3 DA 6003	Ramp-up time 0.5 - 10 sec. Ramp-down time 0.5 - 10 sec.	0- 85% adjustable of nominal torque with selectable kick start 200ms (break loose function)	22.5mm
3.5A AC-53b		SMC 3 DA 4803 480V				22.5mm
15A AC-53b		SMC 32 DA 4015BP 415V*				45mm
15A AC-53b						45mm
<b>Items for 100% duty-cycle (AC-53a)</b>						
15A AC-53a	SMC 3 DA 2315	SMC 3 DA 4015	SMC 3 DA 6015	Ramp-up / Ramp down time 0.5 - 20 sec.		45mm
25A AC-53a	SMC 3 DA 2325	SMC 3 DA 4025	SMC 3 DA 6025			90mm
25A AC-53a	SMC 3 DA 2325BP	SMC 3 DA 4025BP	SMC 3 DA 6025BP	Ramp-up / Ramp down time 0.5 - 20 sec.		90mm
27A AC-53b w. by-pass	SMC 3 DA 2325BP	SMC 3 DA 4025BP*	SMC 3 DA 6025BP			90mm

## Output current profile

<b>SMC 3 DA XX03 / SMC 32 DA XX15BP AC-53b</b>	More info. page 45	<b>SMC 3 DA XX25BP AC-53a / AC-53b</b>	More info. page 45
Overload current profile XX03 (with internal by-pass relay)	X-Tx:4-10 : 110	Overload current profile (without by-pass contactor)	X-Tx:6-5 : 100-120
Overload current profile XX15BP (with internal by-pass relay)	X-Tx:8-3 : 110	Overload current profile (with by-pass contactor)	X-Tx:5-5 : 30
Overload relay trip class	10 or 10A	Overload relay trip class	10 or 10A
<b>SMC 3 DA XX15/25 AC-53a</b>	More info. page 45	<b>SMC 3 DA 4025BP</b>	*Note: External by-pass contactor shall be used for bypassing the soft starter during running by 30A/15kW load @400V.
Overload current profile	X-Tx:8-3 : 100-3000		
Overload relay trip class	10 or 10A		
SMC 3: Leakage current: 5mA ACmax. / Min. operational current: 50mA		SMC 32: Leakage current: 5mA ACmax. / Min. operational current: 50mA	

## Control voltage specifications

Control voltage by line voltage 208-240VAC <b>A1-A2</b>	24 - 230 VAC/DC
Control voltage by line voltage 400-600VAC <b>A1-A2</b>	24 - 480 VAC/DC
Pick-up voltage max.	20.4 VAC/DC
Drop-out voltage min.	5 VAC/DC
Max. control current for no operation	1mA
Response time max.	70msec.
Control current / power max.	15mA / 2VA

## AC auxiliary contacts / SMC 3 DA XX25BP

<b>Auxiliary specifications:</b>
<b>Terminal: 13-14</b> , AC SCR Output for start/stop function, <b>Terminal: 23-24</b> , AC SCR Output for connection of by-pass contactor.
<b>Load specifications:</b> AC SCR: 0.5A AC-14, AC15 24-230/480VAC 50-60Hz Fusing: gl/gG Max i <sup>2</sup> t 72A <sup>2</sup> S
<b>General for terminal: 11-12</b> , have no connection with the internal circuit. Can be used in conjunction with a thermal overload protection or for other wiring purposes. See general technical information.

## Common thermal specifications

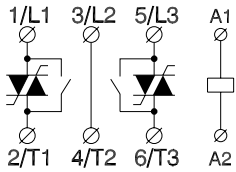
Power dissipation for continuous operation PDmax	2 W/A without BP	Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle of the soft starter as shown in the table. Max.cycle time 15min. Note: SMC 3 DA XX03 / SMC 32 DA XX15BP see page 45.
Power dissipation with semiconductor by-passed	4 W Max.	
Cooling method	Natural convection	
Mounting	Vertical +/-30°	
Operating temperature range EN 60947-4-2	-5°C to 40°C	
Max. operating temperature with current derating	60°C	
Storage temperature EN 60947-4-2	-20°C to 80°C	
		By 40°C
		By 50°C
		By 60°C
		100% load Duty-cycle 100%
		80% load Duty-cycle max. 0.8
		70% load Duty-cycle max. 0.65

\* NOT cUL APPROVED

# Soft Starter (SMC 3 / SMC 32 two controlled phases)

## Wiring specifications

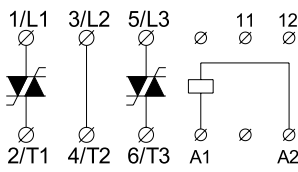
### SMC 3 DA XX03 SMC 32 DA XX15BP



Control voltage A1-A2

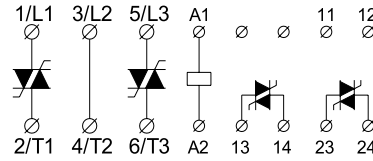
### SMC 3 DA XX15/25

11-12: for UP62 or other wiring purposes



### SMC 3 DA XX25 BP

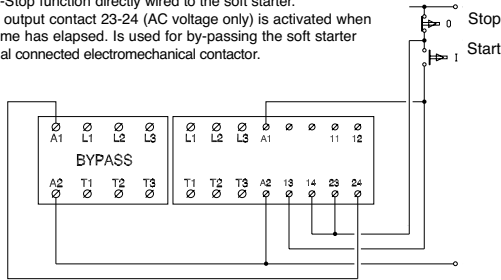
11-12: for UP62 or other wiring purposes



Control voltage A1-A2      Output 13-14: For control of Start/Stop function      Output 23-24: By end of ramp up time for by-pass contactor

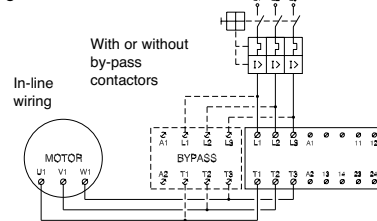
## Wiring example Start/Stop-By-pass (SMC 3 DA XX25 BP)

Auxiliary SCR output contact 13 - 14 (AC voltage only) is used for controlling a Start-Stop function directly wired to the soft starter.  
Auxiliary SRC output contact 23-24 (AC voltage only) is activated when the ramp-up time has elapsed. Is used for by-passing the soft starter with an external connected electromechanical contactor.



## Motor wiring with or without by-pass (SMC 3 DA XX25 BP)

Standard wiring of a softstarter to a 3-phase motor in delta configuration.



\*Use UL approved Magnetic Circuit Breaker or UL specified back-up fuse type K5 or H Class

## Short-circuit protection by circuit breaker or fuses

Two type of short-circuit protection can be used:

- Short-circuit protection by circuit breaker.
- Short-circuit protection by fuses.

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

**Co-ordination Type 1:** Short-circuit protects the installation

**Co-ordination Type 2:** Short-circuit protects the installation and the semi-conductors inside the motor controller

### a) Short-circuit protection

Co-ordination type 1 will be obtained when using magnetic circuit breakers or standard gI/GI fuses.

Co-ordination 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. The table indicates suitable fuses for co-ordination type 2 protection.

### b) Short-circuit protection by fuses

Type 1: SMC 3 DA XX03	Protection max. 25 A. gL/gG
Type 1: SMC 32 DA XX15 BP	Protection max. 50 A. gL/gG 63A T
Type 1: SMC 3 DA XX15	Protection max. 50 A. gL/gG 63A T
Type 1: SMC 3 DA XX25	Protection max. 80 A. gL/gG 63A T
Type 1: SMC 3 DA XX25 BP	Protection max. 80 A. gL/gG 63A T

Type 2: SMC 3 DA XX03	Protection max. $i^2t$ of the fuse 72 A <sup>2</sup> S
Type 2: SMC 32 DA XX15 BP	Protection max. $i^2t$ of the fuse 1800 A <sup>2</sup> S
Type 2: SMC 3 DA XX15	Protection max. $i^2t$ of the fuse 1800 A <sup>2</sup> S
Type 2: SMC 3 DA XX25	Protection max. $i^2t$ of the fuse 6300 A <sup>2</sup> S
Type 2: SMC 3 DA XX25 BP	Protection max. $i^2t$ of the fuse 6300 A <sup>2</sup> S

Fuses from e.g. Ferraz, Siba, Bussmann can be used as short-circuit protection Type 2

More information concerning Co-ordination Type 2 see page 45

## Approval

cUL Std No. 508 (Not approved SMC 32 DA XX15BP)

## Application, adjustment hints and general specifications

See page 10-11 / 44-45

## Dimensions (see also page 44)

Type	H	D	W
22.5 mm module	94 mm	123.8 mm	22.5 mm
45 mm module	94 mm	128.1 mm	45 mm
90 mm module	94 mm	128.1 mm	90 mm