ES

Soft Starters and Motor Controller

- ***For three-phase induction motors of up to 22 kW / 400 V.***
- ***Built in heat dissipater and electro-mechanical bypass relay.***
- ***Substitutes the conventional contactors. One in direct start-up and three in star-delta start-up cycle. Offers greater life cycle.***

- Lower maintenance cost.
- No pressure surge when using pumps and compressors. Reduces hammering.
- Less current and voltage drop during start up. Allows for reduced power consumption.
- Mechanical dimensioning can be optimised.
- Simplified automation.
- Assembly, setting, installation, commissioning and maintenance are made easy by the compact design.
- Reduces start and stop torque, eliminating mechanical problems.
- Additional cooling is not necessary thanks to the bypass built-in relay.
- Substitutes the conventional contactors: one for direct start-up and three for star-delta start-up Y-Δ.

ES-3

ES-12

ES-25

ES-45

PROTECTION FUNCTIONS

- Soft start
- Soft stop

ES -25 and ES -45 model include:

- Phase imbalance or phase loss
- Overtemperature
- Phase sequence
- U> Overvoltage
- U< Undervoltage
- Hz > Overfrequency
- Hz < Overfrequency
- I> Overcurrent
- Long ramp Long ramp

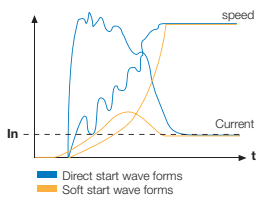
MODELS*		ES 400-3	ES 230-12	ES 400-12	ES 230/400-25E	ES 230/400-45E	ES 230/400-25F	ES 230/400-45F
Nominal voltage 50/60 Hz V±15%		400	230	400	220-400	220-400	220-400	220-400
Maximum current A		3	12	12	25	45	25	45
Motor power	kW	1,1	3	5,5	5,5/11	11/22	5,5/11	11/22
	CV	1,5	4	7,5	7,5/15	15/30	7,5/15	15/30
Code		**41803**	**41801**	**41812**	**41825-E**	**41845-E**	**41825-F**	**41845-F**

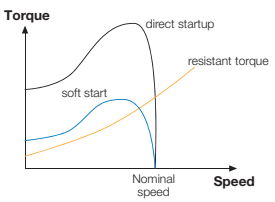
* Other voltages available upon request. (380V,480V and 600V)

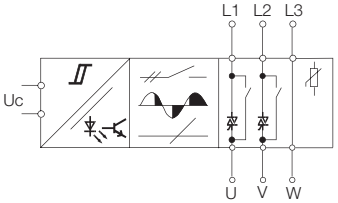
CHARACTERISTICS			
Control voltage (±15%)	A1-A2=24-100 Vac,dc / A1-A3=110-480 Vac	A1-A2=110-400 Vac	A1-A2=24 Vac/dc
Degree of protection	IP20		
Operating temperature	-20°C +50°C	-20°C +60°C	
Standards and approvals	IEC947-4-2 UL, CSA and CE mark		

INDICATIONS			
Supply	green	POWER ON green	POWER ON green
Ramps	yellow	RAMPING yellow	RAMPING yellow
Bypass relay	yellow	BYPASS yellow	BYPASS yellow
Alarm		OVERHEAT red	OVERHEAT red

ADJUSTMENTS		
Start torque (% of nominal torque)	0 - 85%	0 - 70%
Start-up time	0,5 - 5 s	1 - 10 s
Stop time	0,5 - 5 s	1 - 30 s







OPERATION

These units represent the best protection against premature ageing of motors and mechanical items.

Sudden starts and stops, that can produce damages in the bearings and gears of the motors, are eliminated.

They prevent frequent faults and objects falling onto conveyer belts.

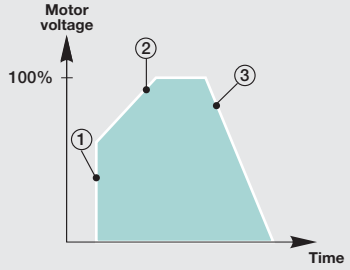
They reduce mechanical impact in motors, axles, gears and belts, significantly prolonging the operating life of the controlled units.

An electronic circuit with semiconductors starts the motor without using the contacts. Hence these do not withstand sparks or erosion.

When the minimal voltage of the motor is reached the semiconductors are bypassed by the relay contacts. Thanks to this technology, the ES starters have a longer operating life than conventional contactors.

They are easy to install and control. They can operate by means of an external control signal, such as a programmable automation.

POTENTIOMETER SETTING



① Par: INITIAL TORQUE.
Voltage when ramp-up begins.

② Ramp up time: RAMP UP.

③ Ramp-down time: RAMP DOWN.

Potentiometers ① ② and ③

- Initially set potentiometers ② and ③ to maximum.
- Connect the supply and set potentiometer ① so that the motor begins to rotate as soon as the supply is applied.
- Set the ramp-up and ramp-down times to the desired value.

MODE OF OPERATION

a) Change from on line direct start to soft start:

1) Cut off the cable from the motor and insert the ES starter.

2) Connect the control input to two of the input lines. Set the potentiometers according to the settings mode.

3) Reconnect the power supply.

On connecting C1, the starter performs a soft motor start. On disconnecting C1, the motor stops, the starter resets to zero and after 0.5 seconds a new soft start up may be performed.

b) Soft Start / Soft Stop

When S1 is closed (connection diagram), the soft motor start is realised according to the potentiometers setting of initial t and % torque.

When S1 is open the soft stop is done in accordance with the ramp down potentiometer setting.

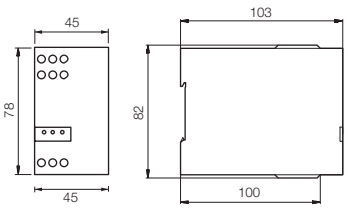
APPLICATIONS

For three-phase motors in applications such as:

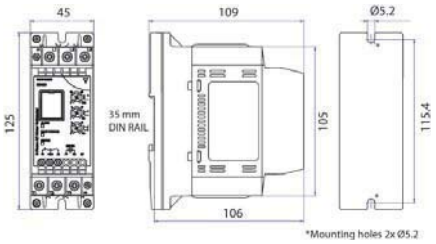
- Pumps.
- Cold compressors.
- Conveyor belts, lifting devices, etc.
- Mixers.
- Fans, extractor fans and blowers.
- Garage doors and elevators.
- Concrete mixers.
- Palletizer devices, etc.

DIMENSIONS (mm)

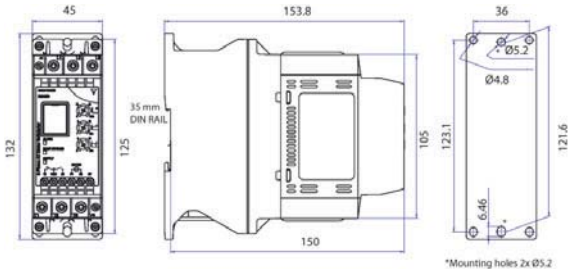
ES 3 -12



ES 25



ES 45



WIRING DIAGRAMS

ES 230-12

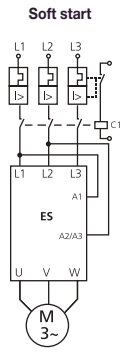


fig. 1

ES 400-3, 400-12

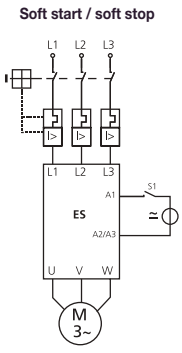


fig. 2

ES - 25E

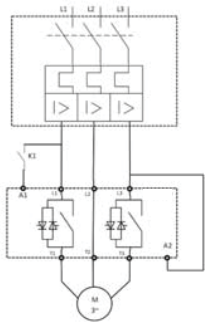


fig. 3

ES - 25F

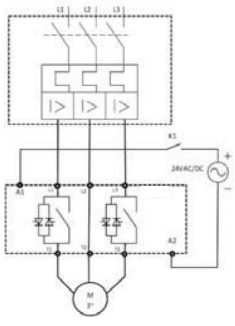


fig. 4

ES - 45E

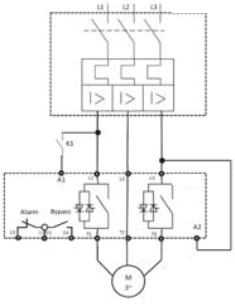


fig. 5

ES - 45F

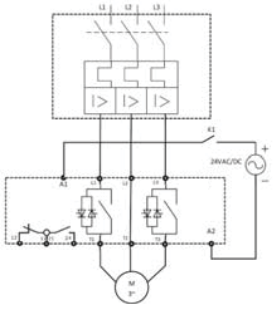


fig. 6