

escostart DS2 escostart DS3

Digital Softstarters
for motor capacities up to 710 kW



esco – your strong partner for electrical and mechanical drives:

- competent advice and engineering
- safe and future-proof technologies
- complete drive projects using components of highest quality and performance
- pre- and aftersales-services
- instant delivery

Strong partnership in the service of customers

esco antriebstechnik gmbh provides innovative drive concepts. The company is located in Troisdorf, Germany and is part of the worldwide present esco group.

product range

electrical drives:

- Frequency inverters
- Softstarters
- Induction motors
- Servo systems

Automation:

- Touch panel and panel-PCs
- PLC
- SCARA-robots
- Motor protection switches

Mechanical drives

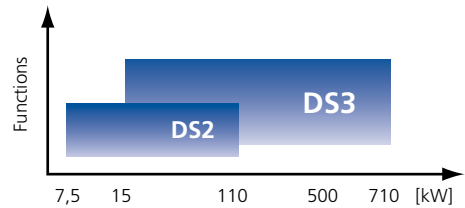
Service, consultancy and system solutions



escostart Softstarters

escostart softstarters accelerate and decelerate induction motors without torque and current transients:

- pumps, fans and compressors
- conveyors, crushers, shakers
- saws and millig machines
- door and carriage drives

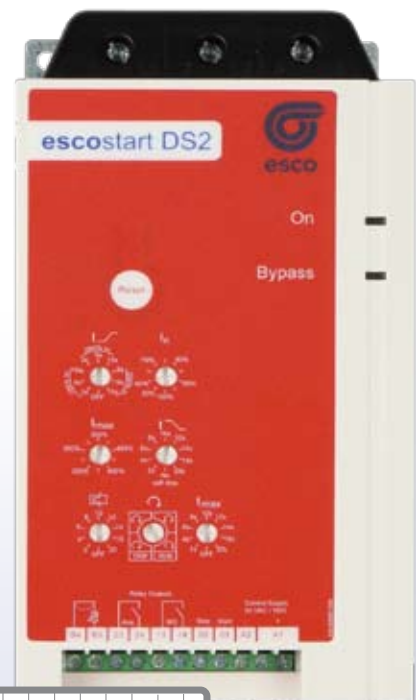


Perfect motor control, complete protective functions, flexible integration variants and convenient commissioning (e.g. with the comfortable PC software) are your advantage.

escostart DS2: compact - easy - functional

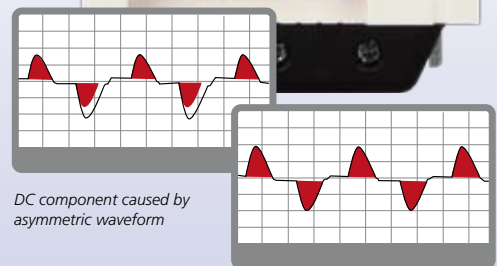
The softstarter escostart DS2 excels at its functional concept without compromising about control functions and protection. Three installation sizes in protection class IP20 cover a capacity range from 7.5 kW to 110 kW. The integrated bypass minimizes losses, saves space and facilitates installation. Protective functions like

- Thermistor surveillance (PTC input)
- trip at over-current, over-temperature of softstart or motor, excess starting time, current imbalance, wrong phase rotation, winding short and communication fault ensure safe and continuous operation.



Symmetrical current waveform

An innovative phase control ensures a balanced current waveform with a minimized DC component. In comparison to common two-phase concepts accustical noise is greatly reduced, which is an advantage not only in sound-conducting ducts and pipeworks: The drive starts smoothly with even torque and high efficiency.



Universal control methods

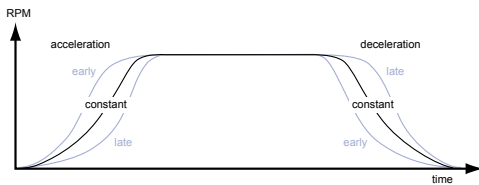
- Two- or three-wire operation
- Programmable relais
- Fieldbus options for Profibus® DP, DeviceNet® and Modbus® RTU
- Series -L: control board supply 24V AC/DC
- Series -H: control board supply 110 ... 240 V AC or 380 ... 440V AC
- DS2-H use 110...230 V AC signal voltage
- Optional I/O-module to monitor external signals like temperature, feed pressure, over/under-pressure or additional signals from a PLC
- remote control (option)

Options for escostart DS2 and DS3

- Commissioning software for Windows®
- Profibus® DP module
- DeviceNet® module
- Modbus® RTU module
- Remote control
- I/O extension modules
- IP20 finger protection für busbars

escostart DS3: intelligent motor management

The escostart DS3 softstarter sets new standards for motor control: The adaptive acceleration control determines the properties of motor and load within few starts. Subsequent starts and stops are performed according to the selected characteristic (early / constant / late acceleration / deceleration).



The function provides ideal control of drives with high inertia or different pump head heights.

Of course the escostart DS3 handles more start and stop methods:

- kickstart (starting torque boost)
- constant current limit
- current ramp (for variable loads)
- reverse rotation with low torque
- DC current braking
- coast stop
- prolonged soft-stop ramp
- soft braking in the reverse direction with external contactor

Easy commissioning and intuitive service

Nine types of parameter presets cover the requirements of most standard applications. The multi-language menu visualizes actual conditions on the integrated graphic display. Access to the programming can be restricted with a passphrase. Graphical screens are user-configurable.

99 past events (e.g. starts, stops, trips) and detailed information about the past eight trips can be retrieved with a timestamp.



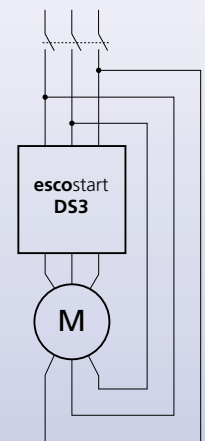
Maximum reliability

The abundant set of protective functions prevents improper operation conditions and warn or trip the DS3 in case of over-current, under-current, excess start time, over-temperature, phase loss, phase imbalance and many others. A reset can be performed automatically after an adjustable waiting time. The emergency function ignores trip causes. Even after the failure of one thyristor the escostart DS3 can maintain operation. The sophisticated thermal motor model makes it possible to react to increased load even before the motor is over-heated.

Integrated bypass

A bypass contactor is integrated (currently up to 110/160 kW). The escostart DS3 can be connected In-Line (conventionally in the motor lead) or In-Delta (between the motor windings), thus enabling it to drive motors with larger capacity (see technical data on the last page).

The escostart DS3 has a second motor parameter set for switching between several motors or to drive motors with tapped windings (Dahlander principle).



In-Delta connection

Softstarter or Frequency Inverter?

Softstarters reduce mechanical stress and current transients in facilities and machines by smoothly accelerating and decelerating induction motors. Also hydraulic systems greatly benefit from eliminating pressure transients and kickbacks.

Induction motors consume a four- to sixfold starting currents when started directly. Thus the electrical installation is protected from overload when using a softstarter.

Softstarters do not provide continuous control of speed and torque, this is the application domain of frequency inverters.

Specifications escostart DS2

escostart DS2-	18	34	42	48	60	75	85	100	140	170	200
Rated current [A] *	18	34	42	48	60	75	85	100	140	170	200
Recommended motor capacity [kW] **	7,5	15	18,5	22	30	37	45	55	75	90	110
Bypass	integrated										
Input voltage **	3ph. 200...440 V (+10/-15 %), 45...66 Hz										
Power connections	Terminals, 10...25 mm ²					Terminals, 25...50 mm ²			Busbars		
Protection class	IP20								IP00 (IP20 with option)		
Control board supply voltage	Series "-L-": 24 V =/~ ; Series "-H-": 110...240 V~ or 380...440 V~										
Control input terminals	1 x start; 1 x stop; 1 x motor thermistor										
Control output terminals	1 x relays to switch main contactor; 1 x programmable relays (both: 6 A, 30 V=, cosphi=1; 2 A, 400 V~ AC11)										
Environment	Operating temperature: -10...+60 °C, relative humidity 5...95 %, pollution degree 3										
Installation height	0...1000 m, above 1000 m with reduced load										
Heat dissipation during start	3 W/Ampere										
Heat dissipation during operation	10 W typically										
Electromagnetic conformity	Class A										
Certification	CE, GOST-R, UL										

* DS2 18...60: at 400% starting current, 6 seconds starting time, 6 minutes waiting time (DS2 75...200: 10 minutes waiting time), < 1000 m

** 4-pole industrial standard induction motors

*** DS2-xxx-500-H: 3-ph. 200...575 V (+10/-15 %), 45...66 Hz

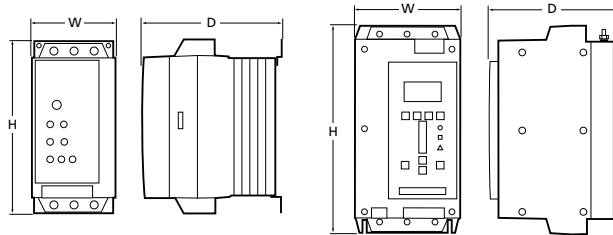
Specifications escostart DS3

escostart DS3-	23	43	53	76	105	145	170	220	255	380	430	650	790	930	
In-Line rated current [A] *	23	43	53	76	105	145	170	220	255	380	430	650	790	930	
In-Line recomm. motor capacity [kW] **	11	18,5	22	37	55	75	90	110	132	200	250	355	450	500	
In-Delta rated current [A] *	34	64	79	114	157	217	255	330	382	570	645	975	1185	1395	
In-Delta recomm. motor capacity [kW] **	15	30	37	55	75	110	132	160	200	315	355	500	630	710	
Bypass	integrated								external						
Input voltage	3ph. 200...525 V (±10 %), 45...66 Hz														
Power connections	Terminals 6...50 mm ²						Busbars								
Protection class	IP20				IP00 (IP20 with option)				IP00						
Control board supply voltage	Series "-L-": 24 V =/~ ; Series "-H-": 110...120 V~ or 220...240 V~														
Control input terminals	1 x start; 1 x stop; 1 x reset; 1 x programmable input; 1 x motor thermistor														
Control output terminals	3 x programmable relays (10 A, 250 V~, cosphi=1; 5 A, 250 V~, AC15, Lf 0,3); 1 x analogue output 0/4...20 mA adjustable														
Environment	Operating temperature -10...+60 °C (above 40 °C with reduced load), relative humidity 5...95 %, pollution degree 3														
Installation height	0...1000 m, above 1000 m with reduced load														
Heat dissipation during start	4,5 Watt/Ampere (ca.)														
Heat dissipation during operation	<39 W (ca.)			<51 W (ca.)			<120 W (ca.)			4,5 Watt/Ampere (ca.)					
Electromagnetic conformity	IEC 60947-2 class B														
Certification	CE, GOST-R, UL								CE, GOST-R, UL						

* DS3 23...53: at 300% starting current, 10 seconds starting time, 6 minutes waiting time (DS3 78...1600: 10 minutes waiting time), < 1000 m, < 40 °C

** 4-pole industrial standard induction motors

...	W	H	D
18 34 42 48 60	98	203	165
75 85 100	145	215	193
140 170 200	202	240	214



...	W	H	D
23 43 53	156	295	192
76 105	156	295	223
145 170 220	282	438	250
255	390	417	281
380 430 650 790 930	430	545 +105*	302

* Busbars

