



# Softstartere

## Motorkontrol og varmelegeme-styringer



## **Over 75 års erfaring – vi kender industrien**

Brd. Klee Ingeniør- og Handelsaktieselskab er grundlagt i 1944 og er siden 1986 noteret på OMX (tidligere Københavns Fondsbørs).

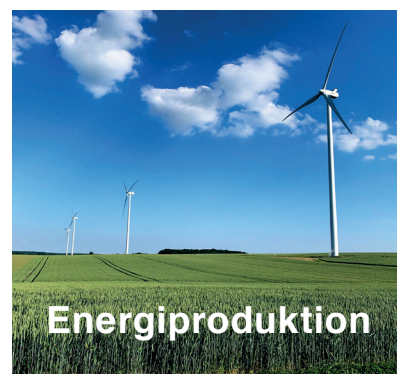
Vi er beliggende i Albertslund og tilbyder løsninger inden for tekniske komponenter og halvfabrikata til dansk industri. Vores brede og dybe sortiment er opdelt i otte områder: Gear & Gearmotorer, Motorer, Pumper & Blæsere, Styringer & Elektronik, Pneumatik & Hydraulik, Lineærteknik, Transmissionsdele, Greb, Maskin- & Normdele; Gummi & Plast.

På vores værksted bygger og samler vi kundespecifikke produkter, f.eks. i specialfarve, med kundelogo eller anden tekst. Mulighederne er mange.

Vi er ca. 65 ansatte i Danmark. Hertil kommer kolleger i vores datterselskaber i Taiwan og Kina med fokus på sourcing og kvalitetskontrol for vores danske og internationale kunder.



# KLEE løsninger



## RVS - AXO

### An Optimal Solution for Small to Medium Size Motors

The new RVS-AXO expands the analog capabilities of the reputable cornerstone of Solcon's soft Starters. Offering the OEM Market a cost effective solution that meets all application requirements and any safety standards that are set.

The RVS-AXO is designed with a simple interface for easy installation, in addition to a built in standard Modbus communication protocol that allows for remote monitoring giving the user a reduction of downtime and improved productivity.



*Range of Soft Starters, including both Low Voltage and Medium Voltage units, for a range of applications.*

## Features

- > Replaces star-delta & auto-transformer type starters
- > Easy to Install & Operate
- > Modbus Communication Protocol
- > Built-in Current Limit & Motor Protection
- > Integral Bypass
- > Full Soft Start/Soft Stop Functionality
- > 3-Phase Control



*Solcon Industries Ltd. is a dynamic power-electronics company that has been at the forefront of design, development and manufacturing of industrial electronic motor starting and control systems for over 40 years. We utilize advanced technology with leading edge designs based on continuous field research, testing and development. Solcon offers a complete range of Soft Starters, including both Low Voltage and Medium Voltage units, for a range of applications.*



## MODELS | 3-150A @ 400V

Frame	Starter	Control Volatage	Main Voltage	Dimensions	Weight				
	FCL (A)	V	V	H*W*D (mm)	kg				
A	3	110V - 240V	400V	175*92*95	0.8				
	4.5								
	7.5								
	11								
B	15			110V - 240V	400V	200*108*105	1		
	22								
C	30					110V - 240V	400V	222*125*132	2
	37								
	45								
	60								
	75								
D	90							110V - 240V	400V
	110	5.2							
	150								

\* Available for 220V & 500V

## Typical Applications Include:

- > Pumps
- > Fans
- > Compressors
- > Conveyors
- > Starting from Weak Power Sourcing

Meeting your needs across industries



## RVS-AX

### Analog, Low Voltage Soft Starter

### 8-170A, 220-600V

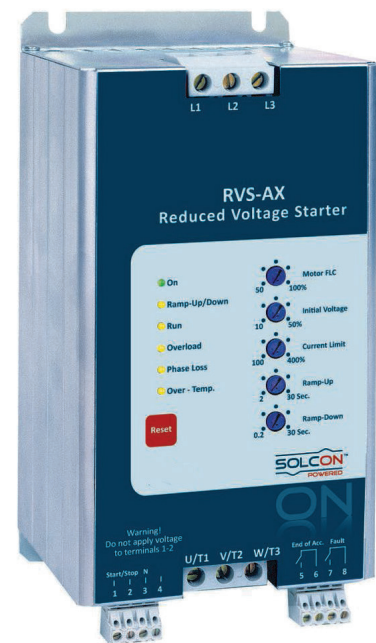
The RVS-AX provides an optimal solution for small to medium size motors and is an ideal cost effective replacement for Star- Delta and Auto-Transformer type starters. It is easy to install and operate with built-in Current Limit and Motor Protection, integral bypass and 3-phase control. Control voltage is not required to operate the RVS-AX

### Features

- > Built-in motor protection
- > Built-in bypass (31-170A)
- > Soft start & soft stop
- > Start / Stop with voltage free contact
- > Current limit
- > User friendly set up and operation

### Models | 8-170A, 220-600V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	8	4	232	120	105	2.6
	17	8				
	31	15				
	44	22				
B	58	25	275	129	185	5
	72	37				
C	85	45	380	120	185	8.4
	105	55				
	145	75				
D	145	75	380	172	195	11.8
	170	90				



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# iStart

## Advanced Low Voltage Soft Starter 17-1100A, 208-690V

The iStart is Solcon's most advanced soft starter, with built-in bypass and 2 or 3-phase control. It incorporates enhanced soft-start and soft-stop characteristics, to provide the best solution for a wide range of applications. The comprehensive motor protection package guarantees long term reliability while the built-in bypass ensures excellent performance all in a small, versatile design.



### Features

- > Universal Interchangeable Control Module
- > Multi-language user interface
- > Real-time, Online, 99 event and Trip Log (Including Currents, Voltages)
- > Optimized for High Efficiency Motors (IE3)
- > 2-Phase Mode for On-site Phase Fault Operation
- > Basic, Professional and Expert Set-up Menus
- > User Defined Metering and Monitoring of 3 Phase Voltages, 3 Phase Currents and Power Factor
- > USB Interface for Setup and Software Updates
- > Option Cards include Analogue Output Including Thermistor, Three Thermal Sensors, Motor Insulation Monitor
- > Auto Reset for Selected Faults
- > 3 Thermistor inputs
- > Frequency Auto Tracking 45-65 Hz
- > Inline and Inside Delta Connection
- > 3 Current Transformers
- > Economical 2-phase Control Units Available

### Comprehensive Protection Package

- > Under voltage
- > Phase sequence
- > Sheer-pin current
- > Under current
- > Overload classes (IEC, NEMA)
- > Current imbalance
- > Ground fault
- > Excessive number of starts
- > Excessive starting time
- > Soft starter over temperature
- > Programmable external fault
- > Phase loss
- > Delta wrong Connection Alarm

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## Standard Models | 17-1100 A

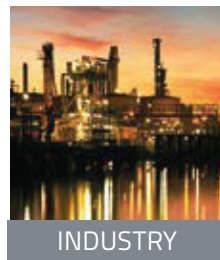
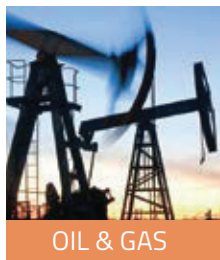
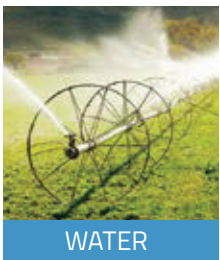
Starter Type	Frame Size	Motor KW	Motor KW	Motor KW	Dimensions (mm) & Weight			
		400V	480V	600V	W	H	D	Kg
iStart 17	A	11	13	16	122	245	147	3.2
iStart 31		19	23	29	122	245	147	3.2
iStart 44		27	33	41	122	245	147	3.2
iStart 61		38	46	57	122	245	147	3.2
iStart 72	B	45	54	67	132	275	208	5.2
iStart 85		53	64	80	132	275	208	5.2
iStart 95		59	71	89	132	275	208	5.2
iStart 105	C	65	79	98	175	388	234	10.9
iStart 145		90	108	136	175	388	234	10.9
iStart 170		106	127	159	175	388	234	10.9
iStart 205		128	153	192	175	388	234	10.9

Starter Type	Frame Size	Motor KW	Motor KW	Motor KW	Dimensions (mm) & Weight			
		400V	480V	690V	W	H	D	Kg
iStart 230	D	143	172	247	365	554	275	37
iStart 310		160	230	333	365	554	275	37
iStart 350	E	200	260	376	365	554	275	37
iStart 430		250	320	462	365	643	284	37
iStart 515	G	290	385	553	480	791	302	56
iStart 590		330	440	634	480	791	302	56
iStart 690		400	515	742	480	791	302	56
iStart 720	H	415	538	774	510	791	305	60
iStart 850		500	636	914	510	791	305	60
iStart 960	I	560	718	1032	558	814.6	316	85

### Soft Start & Soft Stop

- > Acceleration control
- > Current limit start
- > 6 adjustable curves for pumps, generators standard and torque controlled applications
- > Soft stop
- > Kick start
- > Restart delay (3 sec)

### Meeting your needs across industries





# Solbrake | DC Injection Brake 8-820A, 208-690V

The Solbrake electronic brake provides fast, smooth, frictionless braking of standard motors by injecting controlled DC current into the motor windings after the line contactor has opened. This DC current induces a stationary magnetic field which exerts a braking torque on the rotor.



## Advanced Features

- Reduces stopping time of high inertia loads - increases production rate in machine tools and safety of hazardous machines
- Adjustable braking time
- Auto stop - DC Injection stops when the motor stops
- DIN Rail mounting (Rated current 10A)
- Soft, smooth stopping, preventing wear and tear of mechanical parts
- Adjustable braking torque, matching load size and required stop time
- Auto stop, reducing motor heating

## Models | 8-820A, 208-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	10	5	75	45	105	0.7
	17	7.5				
B	31	15	190	65	114	1.4
	58	30				
C	105	55	280	154	160	5.2
	210	90				
D	310	110	384	224	222	12
	390	160				
E	460	220	384	224	222	13.2
	820	470				



# TPS

Thyristor Power System  
8-1500A, 230-1200V

The TPS is a heavy duty 3-phase power unit for controlling the voltage applied to either inductive or resistive heating elements. It is a heavy duty, digital, zero crossing and phase control power system.



## Models | Up to 690VAC

Model	Rated Current (A)	Load kW @400V	Unit Dimensions (mm)			Weight (Kg)
			H	W	D	
A	8	6	291	172	185	6.3
	17	12				6.3
	31	21				6.4
	44	30				6.5
	58	40				6.5
B	72	50	390	172	195	6.5
	85	59				8.5
C	105	73	385	274	238	14.5
	145	100				14.5
D	170	118	455	380	292	31
	210	145				31
E	310	215	555	380	292	51
	390	270				51
F	460	318	640	470	302	53
	580	401				53
G	820	567	1225	1050	471	53
	950	657				172
	1100	761				172
	1400	969				172
	1500	1038	Consult Factory			

## Advanced Features

- Range: 8-1500A, 230-1200V, 50/60Hz
- Zero crossing & phase control (field programmable)
- Comprehensive protection package
- Communication: Modbus
- Line and Inside delta connection
- Synchronized mode (up to 10 units)

## Models | 1200VAC

Rated Current (A)	Motor kW @1000V	Unit Dimensions (mm)			Weight (kg)
		H	W	D	
55	95	550	280	346	33.5
200	346				

# RVS-DN

Heavy Duty, Low Voltage Soft Starter  
 8-3000A, 220-1,200V

The RVS-DN is a heavy duty, advanced Soft Starter with over 25 years of reliability. Designed to operate under severe conditions for the start of motors in the most demanding applications, such as those in Marine and Mining installations. Advanced features such as pump control, slow speed, electronic reverse and enhanced motor protection make it one of the best and most popular soft starters in the industry.

## Advanced Features

- Robust construction
- Highly advanced starting & stopping characteristics
- User friendly set up and operation
- Line or Inside delta connection models up to 690V
- Ambient operating temperature: up to 60°C
- Motor insulation tester
- Communication: Modbus, Profibus, DeviceNet
- Thermistor input
- Analog output
- 45-65Hz Auto-tracking frequency range
- Can be operated without bypass contactor at 50°C up to 820A
- Designed to meet Marine Industry standards up to 3000A

## Soft Start and Soft Stop Functions

- Soft start and soft stop
- Soft, stepless acceleration & deceleration
- Current limiting
- Torque & current control - for optimized acceleration and deceleration
- Pump control program
- Dual adjustment - two start/stop characteristics
- Slow speed with electronic reverse
- Pulse start



## Models | 8-3000A, 220-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	8	4	310	153	170	4.5
	17	7.5				
	31	15				
	44	22				
	58	30				
B	72	37	385	274	238	14.5
	85	45				
	105	55				
	145	75				
C	170	90	455	380	292	32
	210*	110				
	310*	160				
D	390*	200	455	380	292	39
	460*	250				
	580	315				
	820	450				
E	950	560	660	623	290	83.5
	1,100	630				
	1,400	800				
F	1,800	950	1,100	723	370	170
	2,150	1,250				
G	2,400	1,400	1,300	750	392	240
	2,700	1,575				
	3,000	1,750				

\* Dimensions differ with Marine approvals.

# KLEEdrive

## Vores eget brand af elmotorer

Brd. Klee forhandler et bredt program af elmotorer, som kan anvendes med motorstyring som f.eks. softstarter og frekvensomformer. KLEEdrive AC-motorer er i høj ensartet kvalitet i alle IEC størrelser, og lagerføres i IE2, IE3 og IE4 AC-motorer.

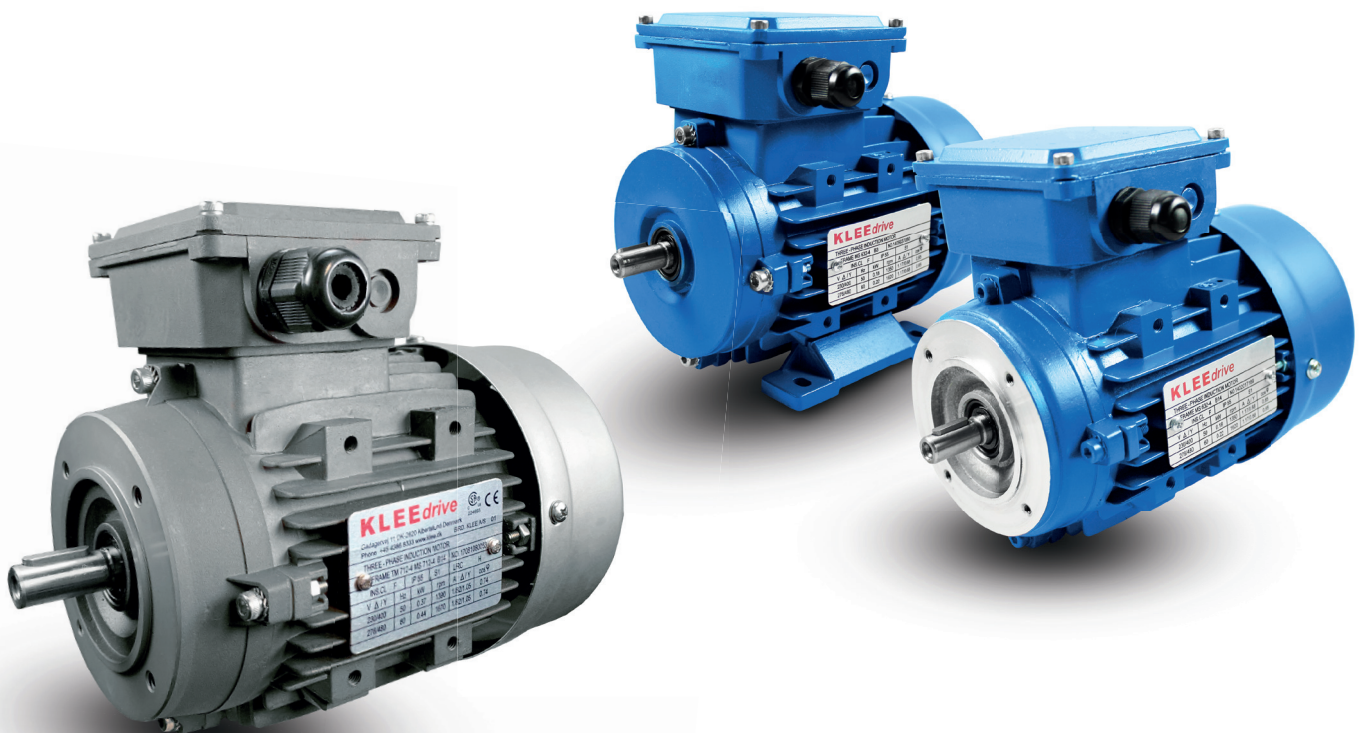
Fås i alu eller støbejern i 0,06-315 kW. 2-4-6-8 poler. Med eller uden forhøjet effekt (tunede motorer). KLEEdrive leveres med UL/CSA som standard. Alle IE3 modeller leveres desuden med PTC-føler. IP55. Alle motorer er forberedt for frekvensomformerdrift. Fås i byggeform B3, B14, B5, B34 og B35.

Mulighed for kundespecifikt design, f.eks. speciallængde på akse, specialfarve etc. Kontakt os for ønsker.

Også version med speciel overfladebehandling, som er velegnet til fødevarer- og medicinalindustri. Disse er ligeledes IP55 samt UL/CSA

godkendte og leveres med skrue i rustfast stål og med elektrogalvaniseret ventilatorskjold.

Derudover tilbyder vi et bredt program af specialmotorer, bremsemotorer mv., som kan findes på [klee.dk](http://klee.dk)





**KLFEdrive** CE IE1

U <sub>N</sub>	I <sub>N</sub>	P <sub>N</sub>	n <sub>n</sub>	f <sub>n</sub>	U <sub>1</sub>	I <sub>1</sub>	P <sub>1</sub>	n <sub>1</sub>	f <sub>1</sub>
230V	1.1A	250W	1400	47.6	230V	1.1A	250W	1400	47.6
400V	0.6A	250W	1500	50.0	400V	0.6A	250W	1500	50.0







Se mere på [www.klee.dk](http://www.klee.dk)

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