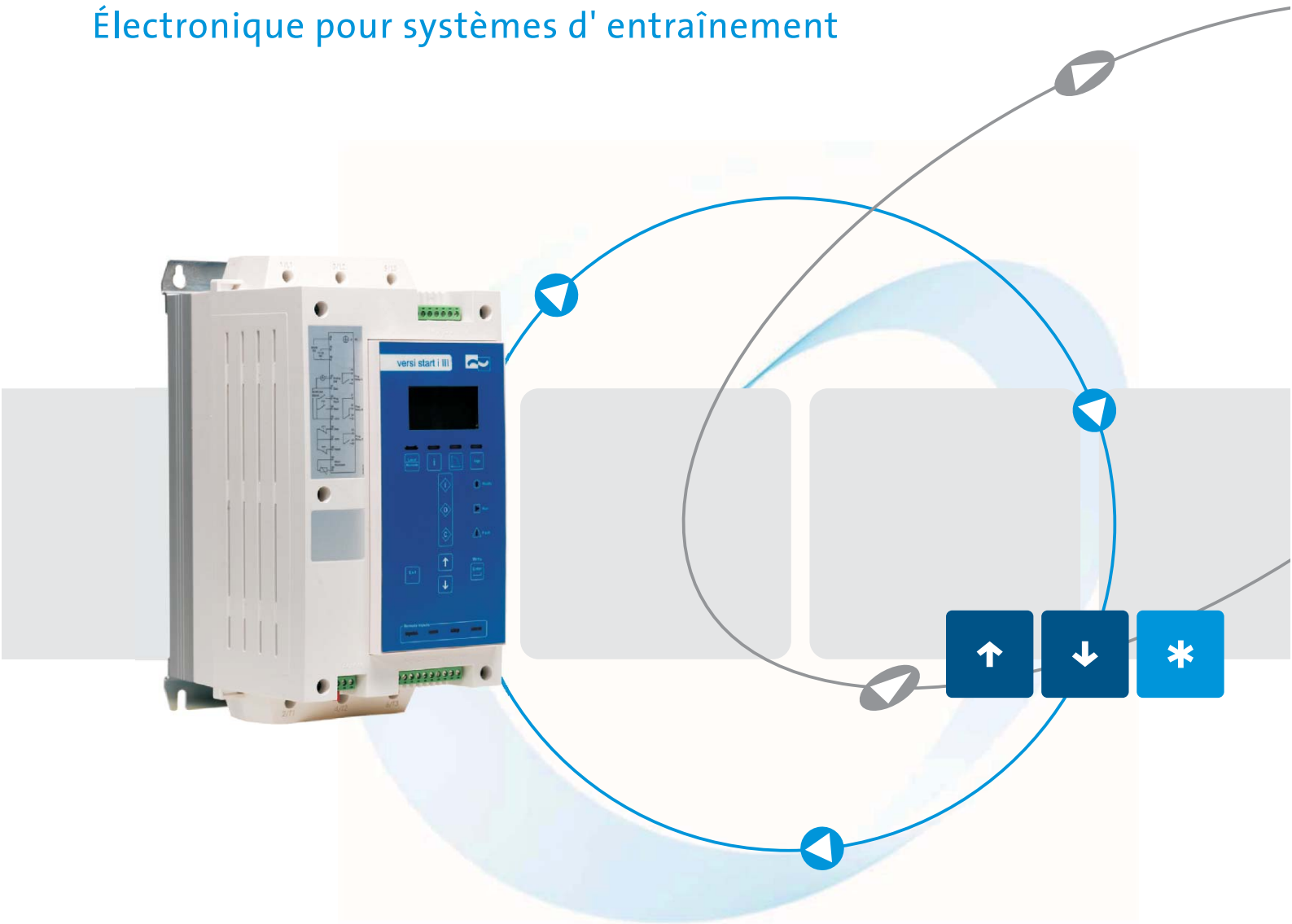
PETER electronic

Soft Starters 2012
Elektronik für Antriebe
Electronic drives
Électronique pour systèmes d' entraînement



LGA InterCert Zertifiziertes QM System ISO 9001:2008

Quality is our Drive.

Soft Starters

PETER electronic

Soft Starters SAS 3 ... 11, SAS 11PUST, SAS 22PUST 1.01

Features:

- single-phase controlled soft starter
- all devices for pole-changing motors
- dual-voltage, for 400V and 230V networks
- terminal arrangement suitable for switchgear connection
- for snap-mounting on 35mm standard rail
- integrated bypass relay
- no mains neutral conductor (N) required
- special voltages up to 640V
- also for single-phase applications
- degree of protection IP 20 (SAS 3 ... SAS 11)
  degree of protection IP 00 (SAS 11PUST, 22PUST)

Soft Starters
SAS 3 ... 11
SAS 11PUST, 22PUST
CE

Function:

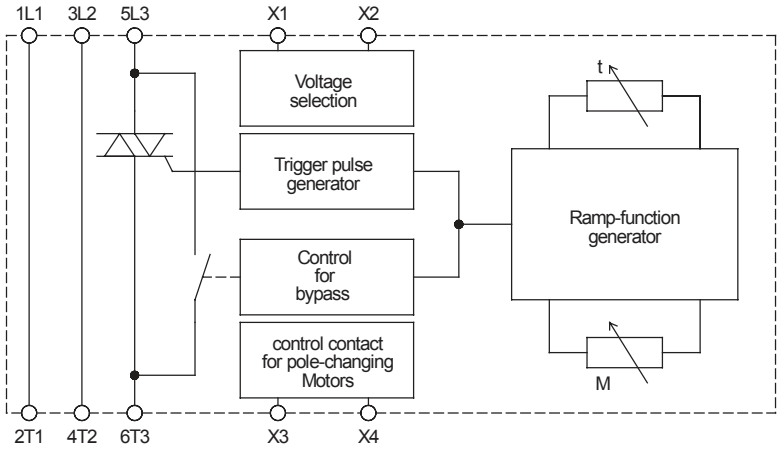
- soft start
- 2 separately adjustable parameters
  starting torque, starting time
- control contact for pole-changing
  motors

Upon Request:

- potential-free input
  control voltage 10 ... 30VDC
- SAS 3 up to SAS 11:
  standard up to 480V
  special voltages 500V up to 640V
  (all types in 100mm-housing)
- SAS 11PUST and SAS 22PUST:
  special voltages up to 690V

Typical Applications:

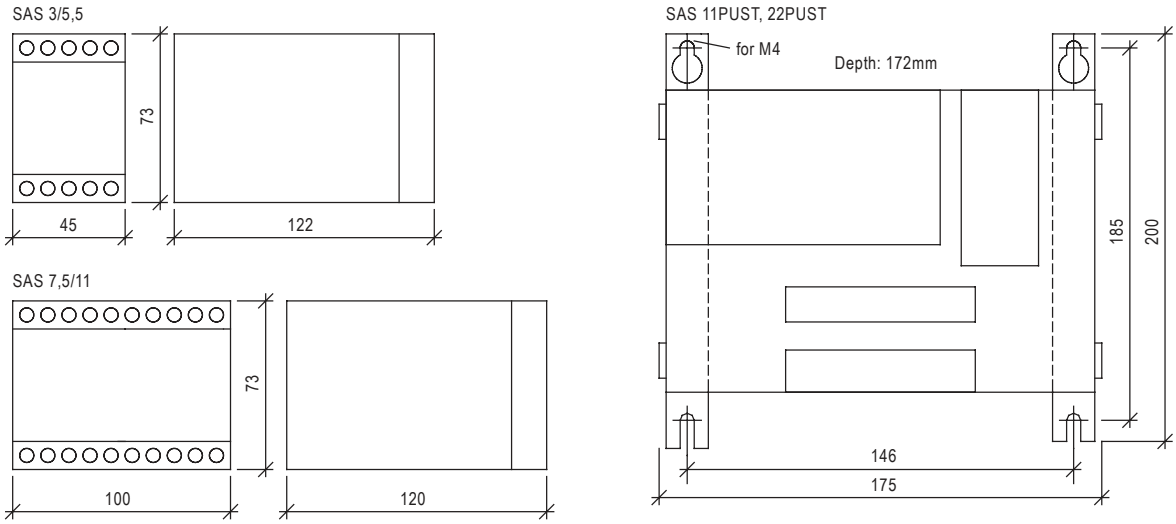
packaging machinery
sliding doors
belt drives
conveying machinery
door drives of passenger and goods lifts
limitation of starting current for transformers



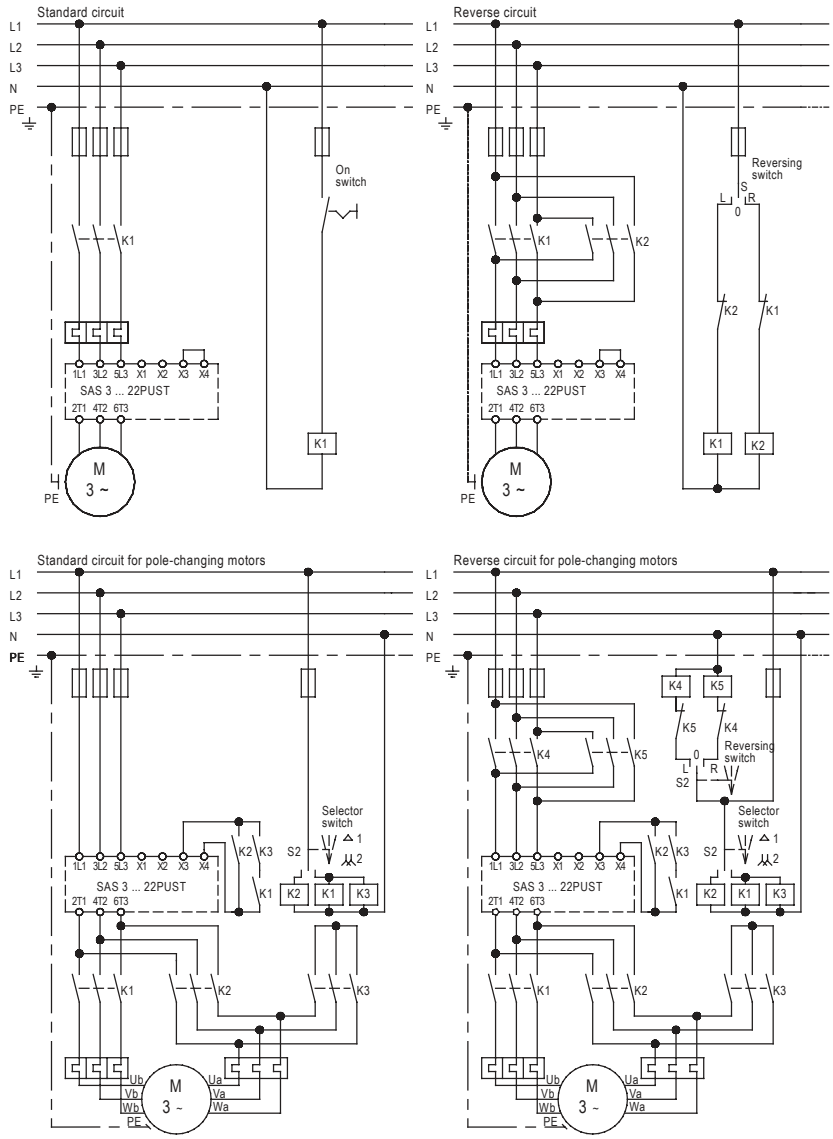
Technical Data	SAS					
	3	5,5	7,5	11	11PUST	22PUST
Mains / Motor voltage X1-X2 jumpered according to DIN EN 50160 (IEC 38)	160 ... 240V ± 10%				400V ±15%	
Mains / Motor voltage X1-X2 not jumpered according to DIN EN 50160 (IEC 38)	380 ... 480V ± 10%					
Device nominal current	6,5A	12A	16A	25A	25A	45A
Mains frequency	50/60Hz					
Motor rating at 230V	1,5kW	3kW	4kW	5,5kW		
Motor rating at 400V	3kW	5,5kW	7,5kW	11kW	11kW	22kW
min. motor current	10% of the device rated current					
Starting torque	0 ... 50%					
Starting time	0,5 ... 5s					
Reset time	200ms					
max. Switching cycle at 3x Ie and 5s t_{an}	240/h	200/h	120/h	70/h	240/h	120/h
max. Cross-sectional area	2,5mm²				16mm²	
I^2t-Value Power semiconductor in A^2s	265	610	800	1250	5000	10500
Ambient / Storage temperature	0°C ... 45°C / -25°C ... 75°C					
Weight / kg	0,3	0,3	0,5	0,5	2,7	3,0
Order number	20700. 40003	20700. 40005	20700. 40007	20700. 40011	20800. 38011	20800. 38022

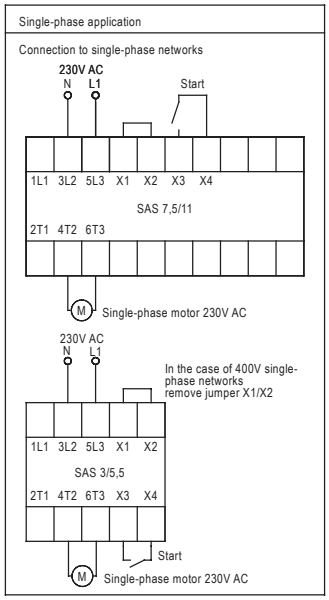
Please observe supplementary sheet with dimensioning rules.

Dimensions:



Connection Diagrams:





The terminal destination for SAS 11PUST and SAS 22PUST are like following:

L1 - 1L1
L2 - 3L2
L3 - 5L3
U - 2T1
V - 4T2
W - 6T3

EMC

The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, that is definitely attributable to the operation of the soft starters "SAS", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
to connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0,15µF) in parallel to the supply voltage terminals.

By jumpering the contacts X1/X2 diveces SAS 3, SAS 5,5, SAS7,5 and SAS 11 can also be used for 220/240V networks. (no at SAS 11PUST and SAS 22PUST).

Subject to change without notice.

PETER electronic

Soft Starters DUOSTART 1,5 ... 5,5 1.03

Features:

- two-phase controlled soft starter
- easy mounting, also for retrofitting into existing plants
- integrated bypass relay
- no mains neutral conductor (N) required
- parameterization by means of three potentiometers
- economically priced replacement for star/delta switches
- for mounting on top hat rail
- current reduction during acceleration
- very compact design, overall width from 45mm on
- degree of protection IP20

Soft Starters
DUOSTART 1,5 ... 5,5
CE

Function:

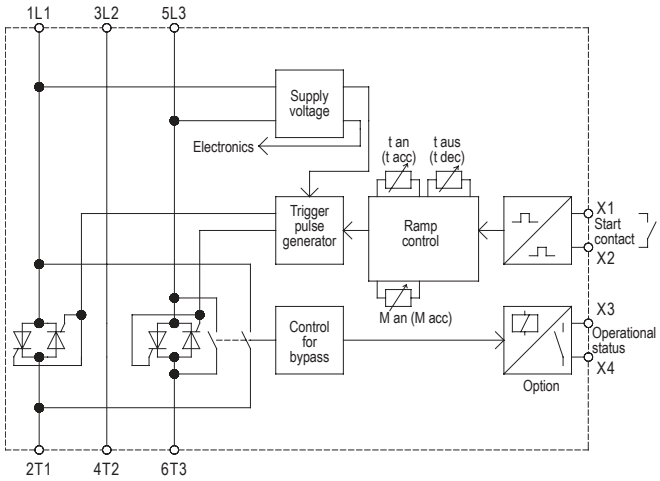
- soft start and soft stopp
  potential-free control input for soft start and soft stop
- 3 separately adjustable parameters
  starting torque, acceleration time, deceleration time
- control (start/stop) with contact or voltage
  10-42VDC

Options: (upon request)

- DUOSTART ... M (beginning of acceleration until end of deceleration)
- DUOSTART ... S
  control (start/stop) with voltage 10-42VDC
- external 24V supply voltage
  (wide voltage range capability)

Typical Applications:

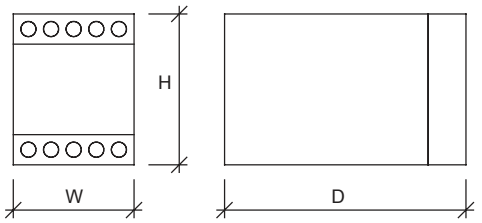
door and gate drives
pumps, ventilators
conveyors
packaging machinery
transformer soft start



Technical Data	DUOSTART		
	1,5	3	5,5
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ±10% 50/60Hz		
Device nominal current	3,5A	6,5A	12A
Motor rating at 400V mains voltage	1,5kW	3kW	5,5kW
min. motor current	40% of the device rated current		
Starting torque	0 ... 80%		
Acceleration time	0,5 ... 12s		
Deceleration time	0,5 ... 12s		
Reset time	200ms		
max. Switching cycle at 3x Ie and 5s t_{an}	200/h	120/h	70/h
max. Cross-sectional area solid stranded	2x 2,5mm² 2x 1,5mm²	2x 2,5mm² 2x 1,5mm²	2x 2,5mm² 2x 1,5mm²
I²t-Value Power semiconductor in A²s	72	265	610
Ambient / Storage temperature	0°C ... 45°C / -25°C ... 75°C		
Weight / kg	0,4	0,4	0,4
Special voltages	230V	230V 480V	230V 480V
Order number Option „M“ Option “S”	21500.40001 21501.40001 21502.40001	21500.40003 21501.40003 21502.40003	21500.40005 21501.40005 21502.40005

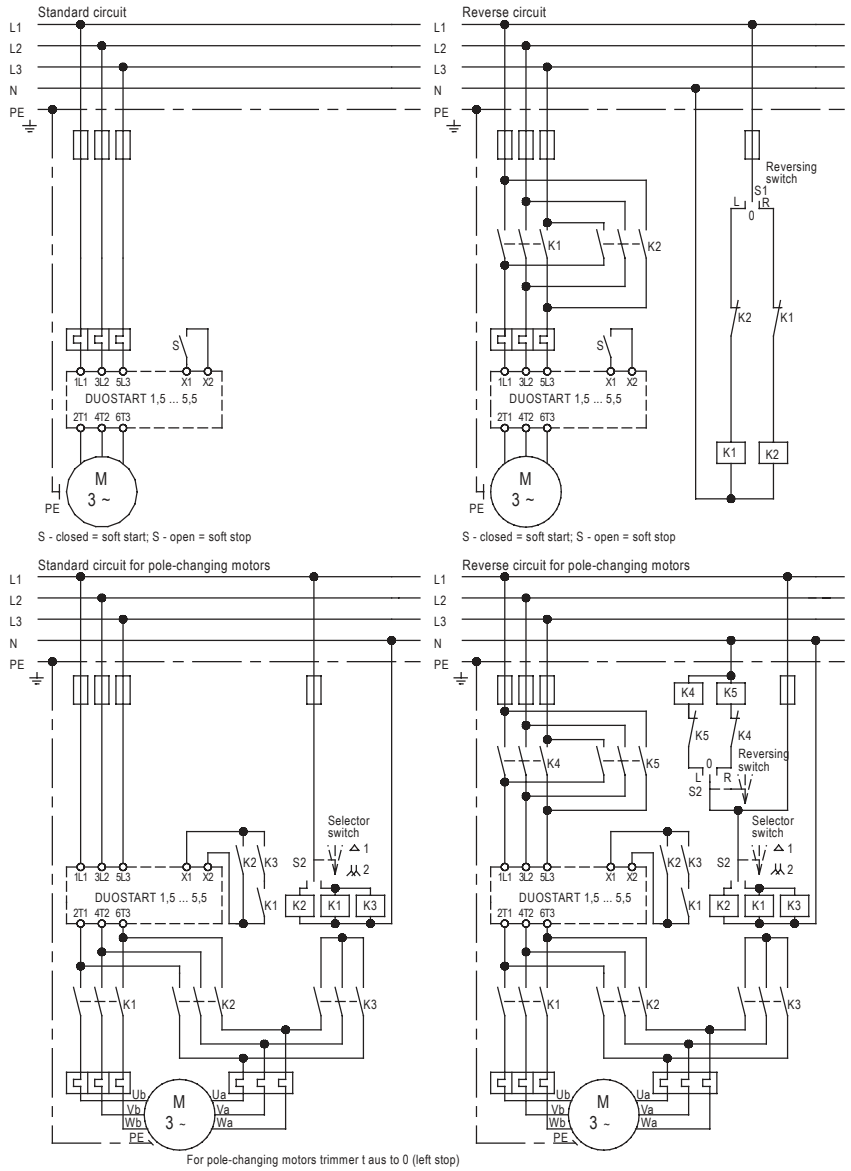
Please observe supplementary sheet with dimensioning rules.

Dimensions:



Mounting dimensions	W	H	D
DUOSTART 1,5 ... 5,5	45mm	73mm	122mm

Connections Diagramms:



EMC
The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, that is definitely attributable to the operation of the soft starters "DUOSTART", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
to connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0,15µF) in parallel to the supply voltage terminals.

PETER electronic

Soft Starters VersiStart II ...-17...45 1.05

Features:

- two-phase controlled soft starter
- controlled by microcontroller
- optimized soft start
- connection in the motor delta winding (cost saving via smaller rating)
- current and torque reduction during acceleration
- easy mounting, for snap-mounting on 35mm standard rail
- integrated bypass relay
- parameterization by means of three potentiometers
- no additional control voltage required
- no mains neutral conductor (N) required
- economically priced substitute for star-delta starters
- plug-in power terminals
- control outputs with spring-loaded terminals
- heat sink temperature monitoring
- compact design, 45mm up to 32A and 52.5mm at 45A
- degree of protection IP20

Soft Starters
VS II ...-17...45

CE c UL us LISTED

Function:

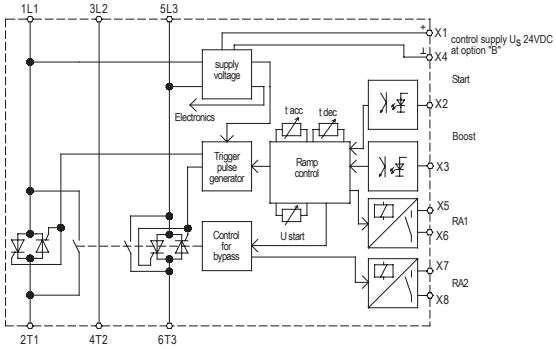
- soft acceleration and deceleration
- potential-free control input for soft acceleration and deceleration
- 3 separately adjustable parameters accel. time, start voltage, decel. time
- boost-start selectable
- potential-free relay output for operating state – unit bypassed – and failure

Options (upon request)

- special voltages 230V and 480V
- wide voltage range 400-600V with external control supply voltage U_S 24VDC (B)
- signaling contact (M) beginning of acceleration until end of deceleration
- motor PTC

Typical Applications:

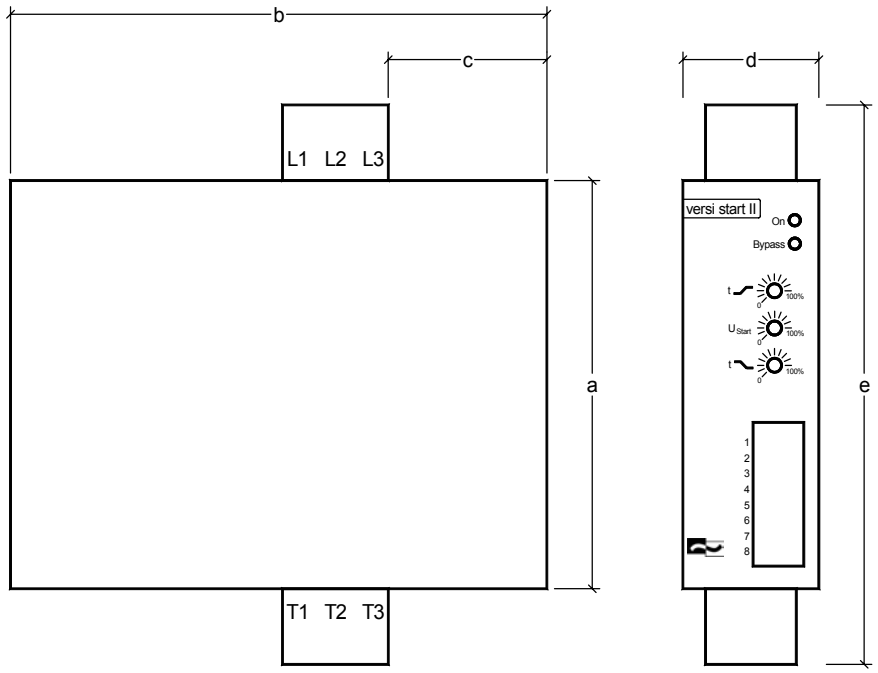
door and gate drives
pumps, ventilators, fans
conveying systems
packaging machines
transport systems, assembly lines
machine applications



Technical Data (standard)	VS II 400-17	VS II 400-25	VS II 400-32	VS II 400-45
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ±10% 50/60Hz			
Rated device current	17A	25A	32A	45A
Motor rating at 400V mains voltage	7,5kW	11kW	15kW	22kW
max. Power dissipation - in operation - in standby	29,5W 7,5W	29,5W 7,5W	28,5W 7,5W	27W 7,5W
min. motor current	20% of the device rated current			
Acceleration time	0,5 … 10s			
Start voltage	40 … 80%			
Deceleration time	0,5 ... 10s			
Restart time	200ms			
max. Switching frequency at 3x Ie and 5s t_{an}	50/h	35/h	25/h	10/h
Cross-sectional area: Control terminals Power terminals	1,5mm² 6mm²		1,5mm² 16mm²	
I²t - Power semiconductor in A²s	4900	4900	6050	6600
Tightening torque	1,2-1,5 Nm 11-13 lbs in			1,5-1,7 Nm 13-15 lbs in
Input resistance Control inputs	10kΩ			
Switching rating of relay output RA1/RA2	3A/250VAC; 3A/30VDC			
Overvoltage category / Pollution degree	III (TT / TN systems) / 2			
Installation class	3			
Surge strength	4kV			
Ambient / Storage temperature	0°C ... 45°C up to an altitude of 1000m / -25°C ... 70°C			
Weight / kg	1			
Special voltages (optional)	230V / 480V / wide voltage range 400-600V with external control supply voltage U_S 24VDC±10%/150mA			
Order number	25700.40017	25700.40025	25700.40032	25700.40045

Please observe supplementary sheet with dimensioning rules.

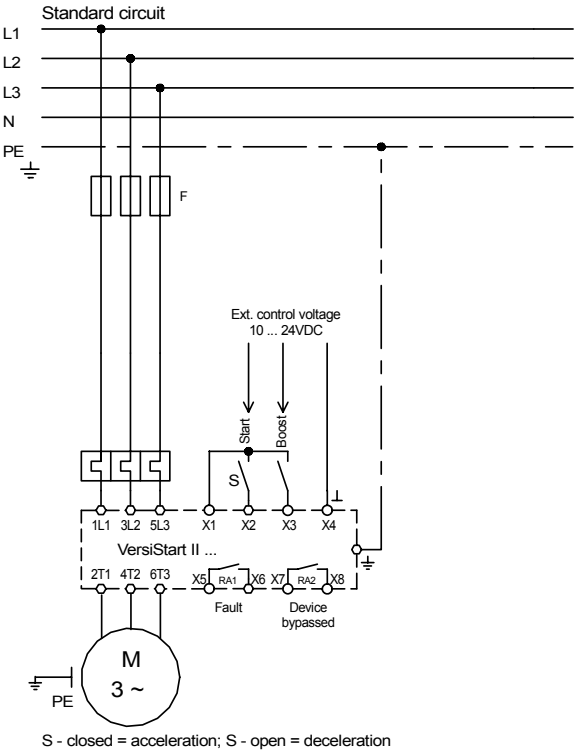
Dimensions:



Mounting dimensions	a	b	c	d	e
VS II ...- 17…32	125	158	53	45	173
VS II ...- 45	125	158	53	52.5	178

All dimensions indicated in mm.

Connection Diagram:



S - closed = acceleration; S - open = deceleration

EMC

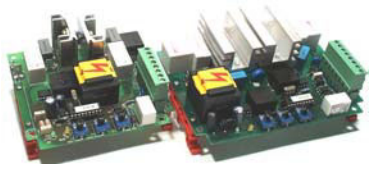
The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, which is definitely attributable to the operation of the soft starters "VersiStart II … ", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
To connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0.15µF) in parallel to the supply voltage terminals.

PETER electronic

Soft Starters VersiStart II 3 ... 15LDS 1.07

Features:

- two-phase controlled soft starter
- controlled by microcontroller
- easy mounting, also for retrofitting into existing plants
- integrated bypass relay
- no additional control voltage required
- no mains neutral conductor (N) required
- parameterization by means of three potentiometers
- economically priced substitute for star-delta starters
- current reduction during acceleration
- circuit-board version for mounting onto DIN rail
- plug-in control terminals
- degree of protection IP00



Soft Starters
VS II 3 ... 15LDS

CE

Function:

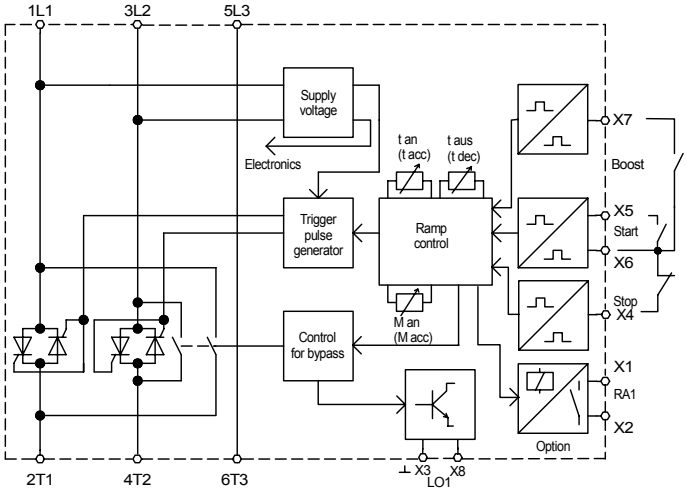
- soft acceleration and deceleration
- potential-free control input for soft acceleration and deceleration
- 3 separately adjustable parameters: starting torque, accel. time, decel. time
- two wire or three wire control via contact or voltage 10-42VDC
- boost-start selectable

Typical Applications:

door and gate drives
pumps, ventilators
conveying systems
packaging machines

Options: (upon request)

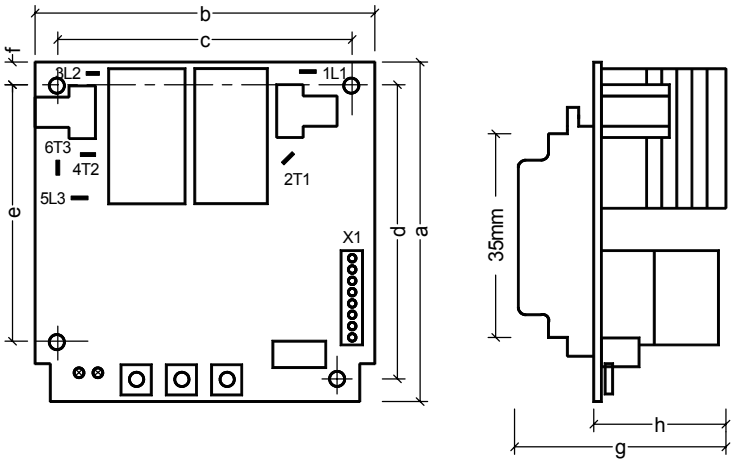
- Special voltages 230V and 480V



Technical Data					
	VS II 3 LDS	VS II 5,5 LDS	VS II 7,5 LDS	VS II 11 LDS	VS II 15 LDS
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ±10% 50/60Hz				
Rated device current	6,5A	12A	15A	25A	32A
Motor rating at 400V mains voltage	3kW	5,5kW	7,5kW	11kW	15kW
min. motor current	20% of the device rated current				
Starting torque	0 ... 80%				
Acceleration time	0,5 ... 10s				
Deceleration time	0,5 ... 10s				
Restart time	200ms				
max. Switching frequency at 3x Ie and 5s t_{an}	120/h	65/h	100/h	65/h	35/h
Cross-sectional area FASTON 6.3	1,5mm²		2,5mm²		litz 2,5mm²
I^2t – Power semiconductor in A^2s	265	610	4900	4900	6050
Techn. parameter of relay output RA1	3A/250VAC; 3A/30VDC				
Techn. parameter of open-collector LO1	24VDC / 200mA				
Ambient / Storage temperature	0°C ... 40°C / -25°C ... 75°C				
Weight / kg	0,27		0,4		
Special voltages (optional)	230V / 480V				
Order number	25723.40003	25723.40005	25723.40007	25723.40011	25723.40015

Please observe supplementary sheet with dimensioning rules.

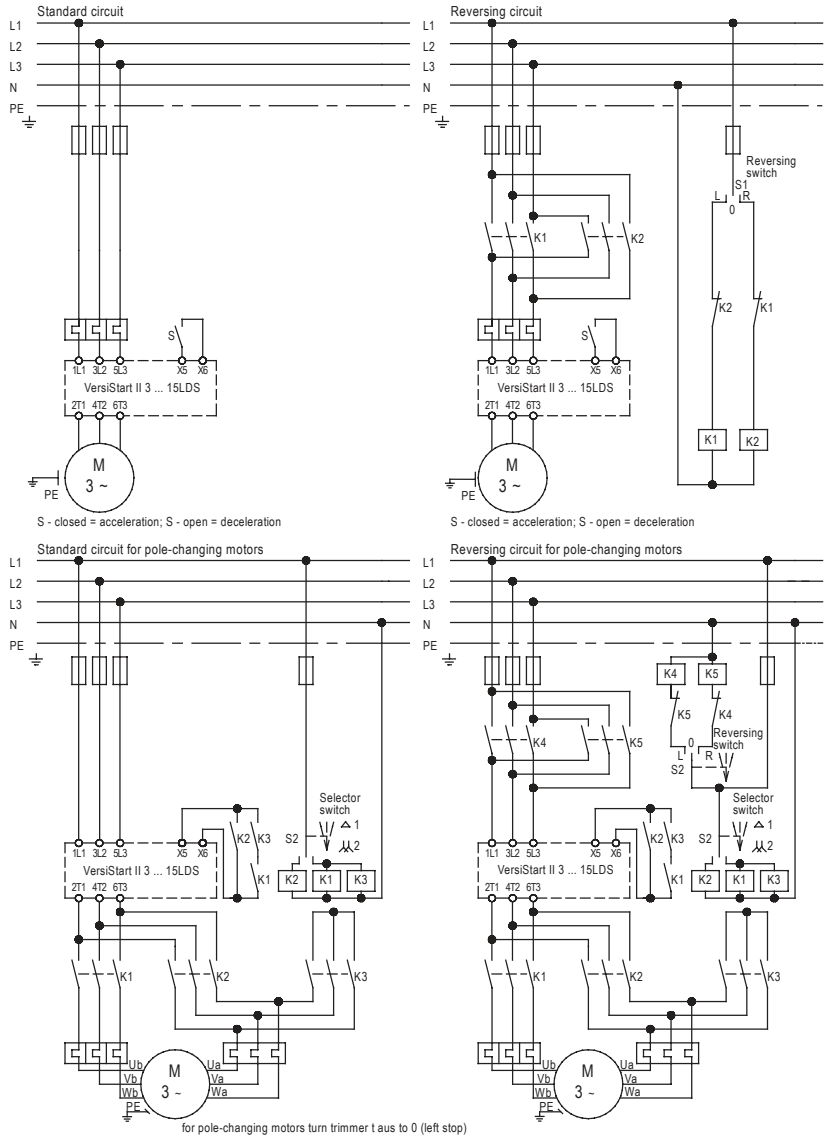
Dimensions:



Mounting dimensions	a	b	c	d	e	f	g	h
VS II 3 ... 5.5LDS	102,5	108,5	98,5	92,5	82,5	5,0	55,0	40
VS II 7.5 ... 15LDS	102,5	139,0	129,0	92,5	82,5	5,0	55,0	40

All dimensions indicated in mm.

Connection Diagrams:



EMC

The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible devices within a radius of 10m are subjected to interference.
If such interference, which is definitely attributable to the operation of the soft starters "VersiStart II...LDS", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
To connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0.15µF) in parallel to the supply voltage terminals.

Subject to change without notice.

PETER electronic

Soft Starters VersiStart II ...-50...75 1.09

Features:

- two-phase controlled soft starter
- controlled by microcontroller
- optimized soft start
- heatsink temperature detection
- connection in the motor delta winding (cost saving via smaller rating)
- current and torque reduction during acceleration
- easy mounting, also for retrofitting into existing plants
- integrated bypass relay
- parameterization by means of four potentiometers
- no additional control voltage required
- no mains neutral conductor (N) required
- economically priced substitute for star-delta starters
- control outputs with spring-loaded terminals
- compact design, 103mm width
- degree of protection IP20

Soft Starters
VS II …-50…75
CE

Function:

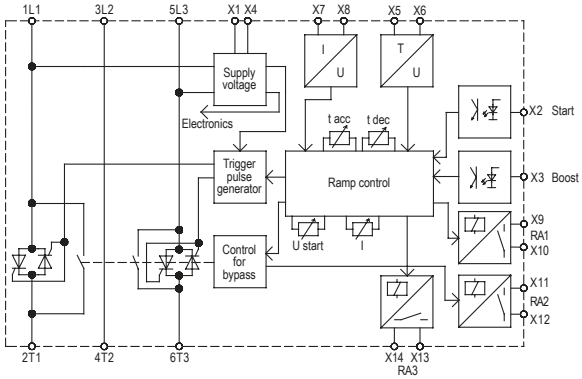
- soft acceleration and deceleration
- potential-free control input for soft acceleration and deceleration
- 4 separately adjustable parameters accel. time, start voltage, decel. time, max. start current
- boost-start selectable
- Motor PTC
- current controlled start-up with external transformer (transformer is included in delivery)
- potential-free control output for operating state – unit bypassed – and failure

Options: (upon request)

- special voltages 230V and 480V
- wide voltage range 200-400V or 400-600V with external control supply voltage U_S 24VDC (option B)

Typical Applications:

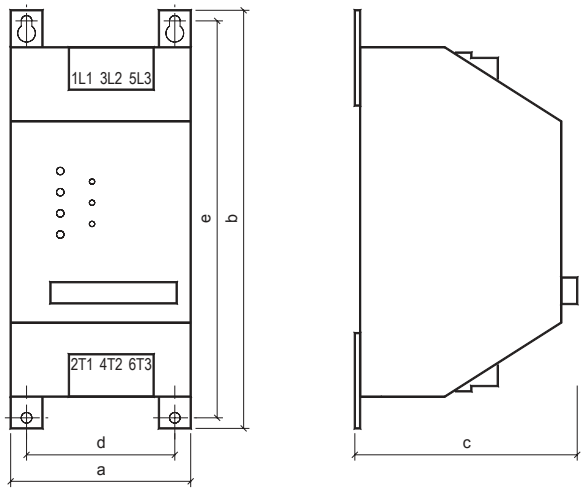
door and gate drives
pumps, ventilators, fans
conveying systems
packaging machines
transport systems, assembly lines
machine applications



Technical Data (standard)	VS II 400-50	VS II 400-65	VS II 400-75
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ±10% 50/60Hz		
Rated device current	50A	65A	75A
Motor rating at 400V mains voltage	25kW	30kW	37kW
max. Power dissipation - in operation - in standby	30W 10W		
min. motor current	20% of the device rated current		
Acceleration time	0,5 … 10s		
Start voltage	40 … 80%		
Deceleration time	0,5 ... 10s		
max. Start current	200% - 500% of the device rated current		
Restart time	200ms		
max. Switching frequency at 3x I_e and 10s t_{an}	35/h	25/h	30/h
I^2t - Power semiconductor in A^2s	6600	11200	25300
Cross-sectional area: Control terminals Power terminals	0,2 - 2,5mm²/24 – 12 AWG solid 1 - 35mm², 18 – 2 AWG / stranded 1 – 25mm², 18 – 3 AWG		
Tightening torque (power terminals)	25mm² = 2,5 Nm 25mm² = 22 lbs in		35mm² = 4,5 Nm 35mm² = 40 lbs in
Input resistance Control inputs	10kΩ		
Switching rating of relay output RA1/RA2/RA3	3A/250VAC; 3A/30VDC		
Overvoltage category / Pollution degree	III (TT / TN systems) / 2		
Installation class	3		
Surge strength	4kV		
Ambient / Storage temperature	0°C... 45°C up to an altitude of 1000m / -25°C ... 70°C		
Weight / kg	1,5	1,5	2,2
Special voltages (optional)	230V / 480V /wide voltage range 200-400V or 400-600V with external control supply voltage U_S 24VDC±10%/150mA		
Order number	25700.40050	25700.40065	25700.40075

Please observe supplementary sheet with dimensioning rules.

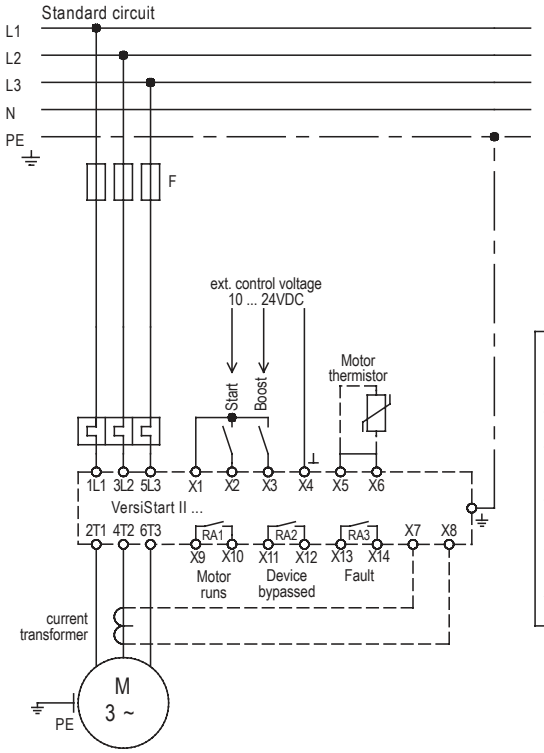
Dimensions:



Mounting dimensions	a	b	c	d	e
VS II ...- 50…65	103	230	125	86	220
VS II ...- 75	103	230	140	80	220

All dimensions indicated in mm.

Connenction Diagramm:



EMC

The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, which is definitely attributable to the operation of the soft starters "VersiStart II … ", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
To connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0.15µF) in parallel to the supply voltage terminals.

Soft Starters VersiStart i II 18 ... 200

Features:

- two-phase controlled soft starter
- controlled by microcontroller
- integrated bypass relay
- current and torque reduction during acceleration
- integrated motor overload protection
- motor PTC connection
- voltage range 200 - 440V or 200 - 575V
- degree of protection: IP20 (up to 100A), IP00 (from 140A up)

Soft Starters
VS i II 18 … 200

Function:

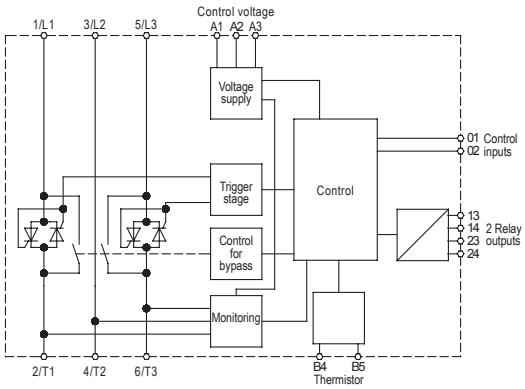
- 2 relay outputs
- acceleration time monitoring
- Adjustable parameters:
  - rated motor current
  - current ramp
  - current limit
  - soft stop – ramp time
  - motor protection class
  - output relay function
  - phase rotation protection

Accessories:

- ext. operating panel and interface (29000.25901)
- USB module (29000.25910)
- DeviceNet module (29000.25903)
- Modbus module (29000.25904)
- Profibus module (29000.25905)
- Finger protection (29000.25907)

Typical Applications:

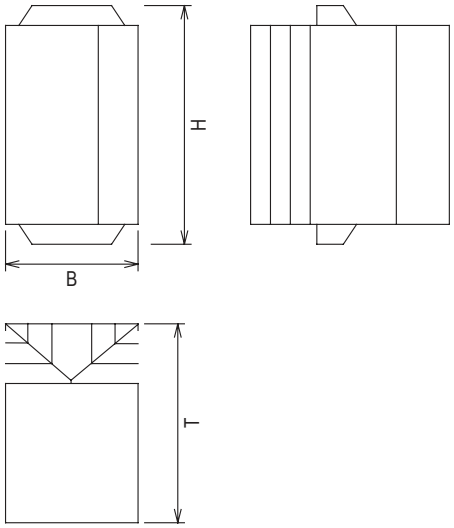
pumps, ventilators
compressors
mills, crushers, presses
conveying systems
drives with high-inertia starting



Technical Data											
	VS i II 440 -										
	18C1	34C1	42C1	48C1	60C1	75C1	85C1	100C1	140C1	170C1	200C1
	18C2	34C2	42C2	48C2	60C2	75C2	85C2	100C2	140C2	170C2	200C2
Mains voltage according to DIN EN 50160 (IEC 38)	200-440V 45-66Hz										
	VS i II 575-										
	18C1	34C1	42C1	48C1	60C1	75C1	85C1	100C1	140C1	170C1	200C1
	18C2	34C2	42C2	48C2	60C2	75C2	85C2	100C2	140C2	170C2	200C2
Mains voltage according to DIN EN 50160 (IEC 38)	200-575V 45-66Hz										
Rated device current in A	18A	34A	42A	48A	60A	75A	85A	100A	140A	170A	200A
Motor rating at 400V in kW	7,5	15	18,5	22	30	37	45	55	75	90	110
Current ramp	2s, 5s, 15s with 150%, 200% and 250% In										
Current limit	250%, 275%, 300%, 325%, 350%, 375%, 400%, 425%, 450% In										
Motor protection class	adjustable										
Deceleration time	2s – 20s										
Switching frequency 4x Ie and 6s	AC 53b 10/h					AC 53b 6/h					
Techn. parameter of relay outputs	6A/30VDC; 2A/400VAC										
Ambient temperature	-10°C…+40°C (+60°C Derating)										
Control voltage	C1: 110-240VAC -15%/+10% 380-440VAC -15%/+10%; C2: 24VDC/24 VAC ±20%										
Weight / kg	2,4					4,3			6,8		
Order number:											
440V/C1 25900.44…	018	034	042	048	060	075	085	100	140	170	200
440V/C2 25901.44…	018	034	042	048	060	075	085	100	140	170	200
575V/C1* 25900.57…	018	034	042	048	060	075	085	100	140	170	200
575V/C2* 25901.57…	018	034	042	048	060	075	085	100	140	170	200

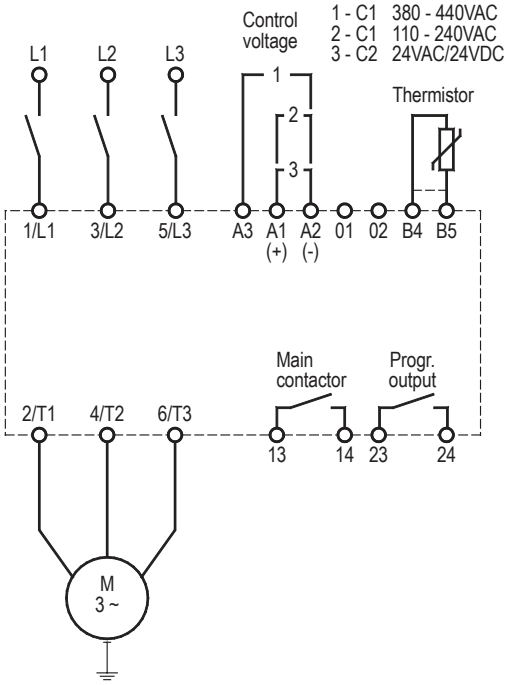
* units with 575V are not available ex stock, upon request

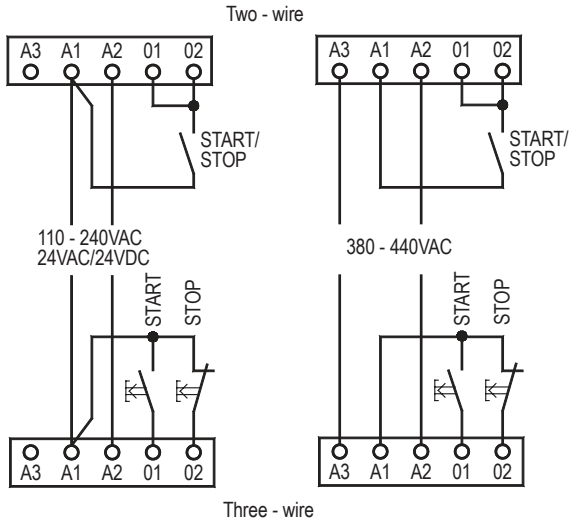
Dimensions:



	B (mm)	H (mm)	T (mm)
VS i II…-18	98	203	165
VS i II…-34	98	203	165
VS i II…-42	98	203	165
VS i II…-48	98	203	165
VS i II…-60	98	203	165
VS i II…-75	145	215	193
VS i II…-85	145	215	193
VS i II…-100	145	215	193
VS i II…-140	202	240	214
VS i II…-170	202	240	214
VS i II…-200	202	240	214

Connection Diagram:





PETER electronic

Soft Starters MICROSTART 1,5 / 3 — 1.13

Features:

- three-phase controlled soft starter
- easy mounting, also for retrofitting into existing plants
- terminal arrangement suitable for switchgear connection
- for snap-mounting on 35mm standard rail
- integrated bypass relay
- no mains neutral conductor (N) required
- functional peak current reduction
- degree of protection IP 20

Soft Starters
MICROSTART 1,5 / 3

CE

Function:

- soft acceleration and deceleration
- 4 separately adjustable parameters
  starting torque, acceleration time,
  soft stop torque, deceleration time
- soft start and soft stop via control
  contact possible

Upon Request:

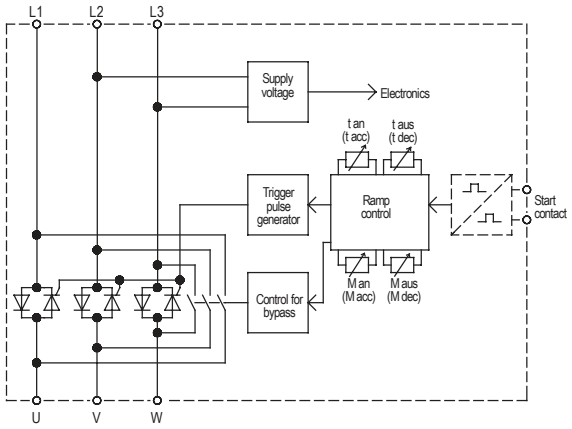
- potential-free input
  -control voltage 10 ... 30VDC

Option: (upon request)

- „SST“ - pluggable

Typical Applications:

pumps, ventilators
belt drives, driving pulleys / coil winders
conveying machinery
compressors

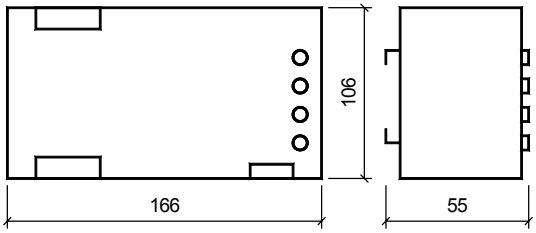


Technical Data	MICROSTART	
	1,5	3
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ± 15% 50/60Hz	
Device nominal current	4A	6.5A
Motor rating	1,5kW	3kW
min. motor current	10% of the device rated current	
Adjustment range of starting torque	0 ... 80%	
Adjustment range of acceleration time	1 ... 15s	
Adjustment range of soft stop torque	20 ... 80%	
Adjustment range of deceleration time	0 ... 15s	
Reset time	200ms	
max. Switching cycle at 3x Ie and 10s t_{an}	120/h	60/h
max. Cross-sectional area	2,5mm²	
I²t-Value Power semiconductor in A²s	40	450
Ambient / Storage temperature	0°C ... 45°C / -25°C ... 75°C	
Weight / kg	0,75	0,75
Order number Option „SST“	21300.38001 21304.38001	21300.38003 21304.38003

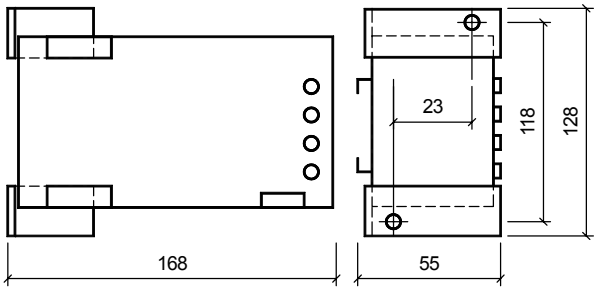
Please observe supplementary sheet with dimensioning rules.

Dimensions:

MICROSTART 1,5/3

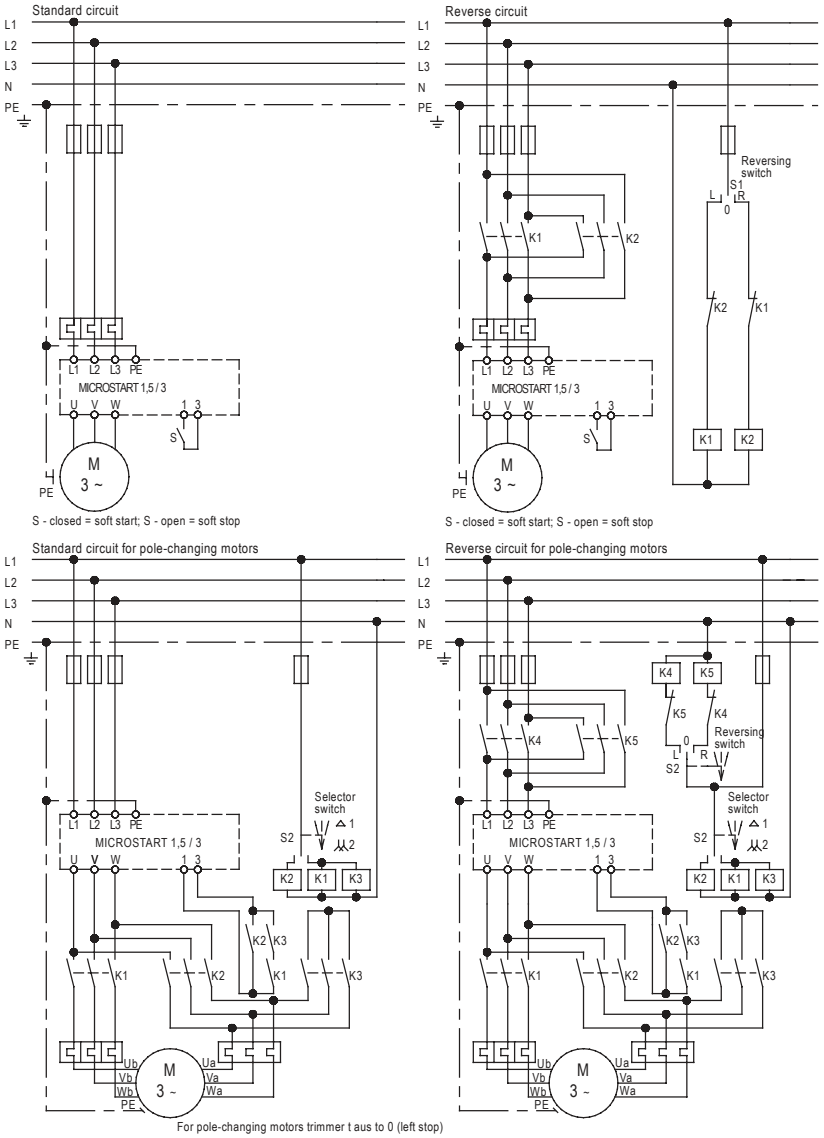


Option "SST"



All dimensions in mm!

Connection Diagram:



EMC
The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, that is definitely attributable to the operation of the soft starters "MICROSTART", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
to connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0,15µF) in parallel to the supply voltage terminals.

PETER electronic

Soft Starters MINISTART 1,5 ... 11 — 1.15

Features:

- three-phase controlled soft starter
- easy mounting, also for retrofitting into existing plants
- terminal arrangement suitable for switchgear connection
- for snap-mounting on 35mm standard rail
- integrated bypass relay
- extensive monitoring functions
- robust metal housing
- no mains neutral conductor (N) required
- special voltages up to 600V
- functional peak current reduction
- degree of protection IP 20

Soft Starters
MINISTART 1,5 ... 11
CE

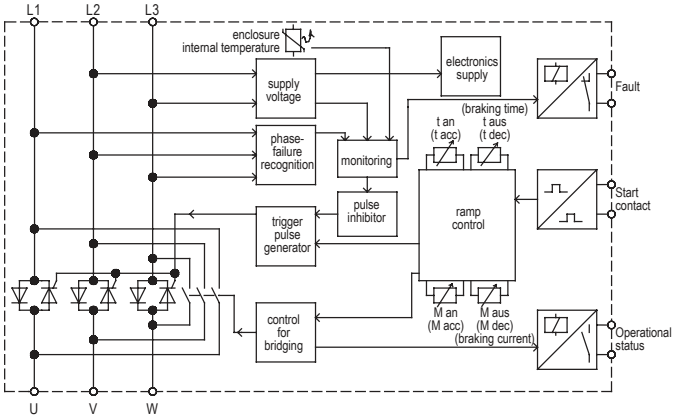
Function:

- soft acceleration and deceleration
- 4 separately adjustable parameters
  starting torque, acceleration time,
  soft stop torque, deceleration time
- potential-free input for soft start or soft stop
  -control voltage 10 ... 30VDC
- potential-free output for fault indication
- potential-free output for operational status *
  -loadable with 250V/8A each
- temperature monitoring
- phase-failure monitoring during ramp-up

*
- with standard devices closed, when power semiconductors are bridged
- with option “S” closed from start of acceleration to end of deceleration

Typical Applications:

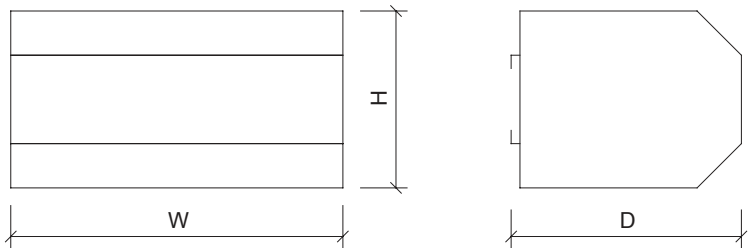
pumps, ventilators
cranes
travelling and rotary operating mechanisms
conveying machinery
washing machines, linen dryers



Technical Data	MINISTART				
	1,5	3	5,5	7,5	11
Mains / Motor voltage according to DIN EN 50160 (IEC 38)	400V ± 15% 50/60Hz				
Device nominal current	4A	6,5A	12A	16A	25A
Motor rating	1,5kW	3kW	5,5kW	7,5kW	11kW
min. motor current	10% of the device rated current				
Starting torque	0 ... 80%				
Acceleration time	1 ... 20s				
Soft stop torque	20 ... 80%				
Deceleration time	0 ... 20s				
Reset time	200ms				
max. Switching cycle at 3x Ie and 10s t_{an}	120/h			60/h	20/h
max. Cross-sectional area Control terminals Power terminals	1,5mm² 4,0mm²				
I²t-Value Power semiconductor in A²s	40	450	550	9100	9100
Ambient / Storage temperature	0°C .... 45°C / -25°C ... 75°C				
Weight / kg	1,2	1,2	1,35	1,5	1,5
Order number	21200.38001	21200.38003	21200.38005	21200.38007	21200.38011

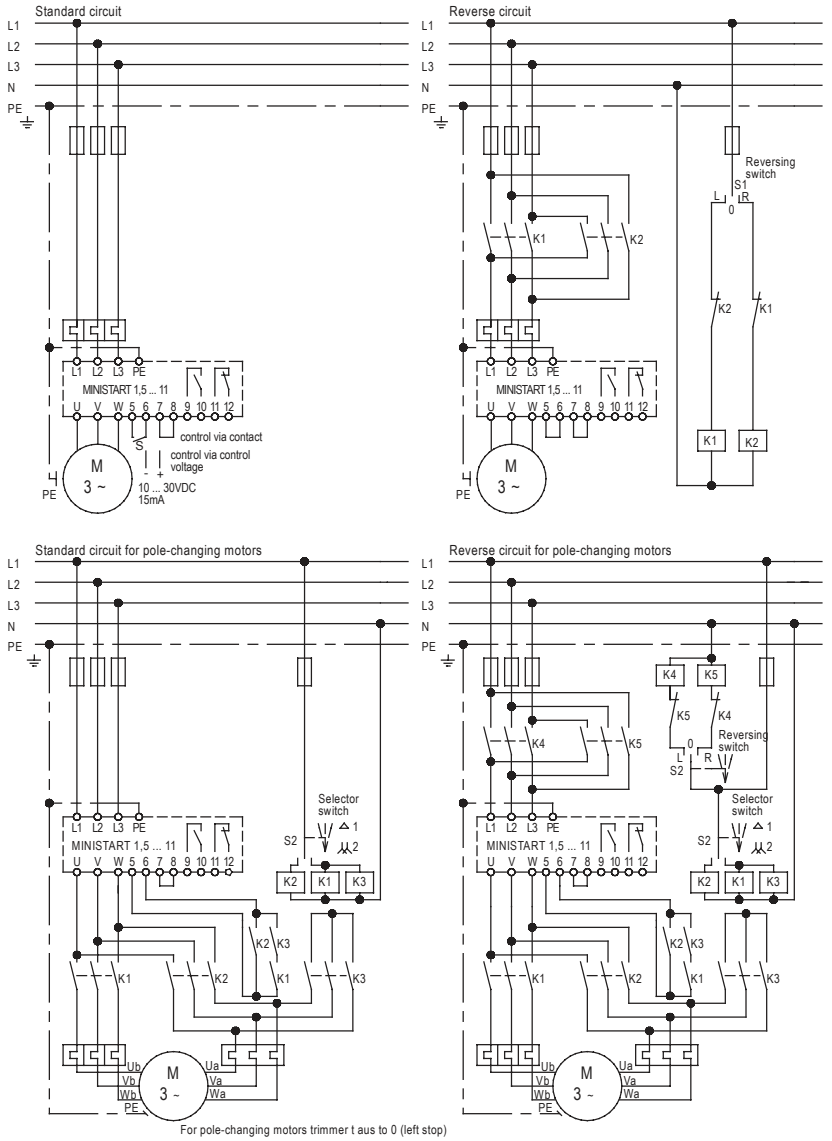
Please observe supplementary sheet with dimensioning rules.

Dimensions:



	W	H	D
Mounting dimensions	166mm	106mm	117mm

Connection Diagram:



EMC
The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference.
If such interference, that is definitely attributable to the operation of the soft starters "MINISTART", occurs, the emitted interference can be reduced by taking appropriate measures.
Such measures are, e.g.:
to connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0,15µF) in parallel to the supply voltage terminals.

PETER electronic

Soft Starters DAS-T 7,5 ... 55 — 1.17

Features:

- three-phase controlled soft starter
- easy mounting, also for retrofitting into existing systems
- terminal arrangement suitable for switchgear connection
- integrated bypass contactor
- no mains neutral conductor (N) required
- functional peak current reduction
- monitoring of heat sink temperature
- monitoring of motor temperature via motor thermistor
- potential-free control inputs and outputs
- special voltages up to 690V
- robust metal enclosure
- degree of protection IP 20

Soft Starters
DAS-T 7,5 ... 55
CE

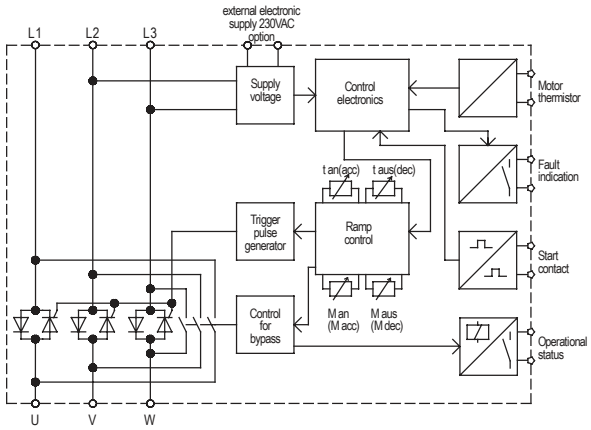
Function:

- soft acceleration and deceleration
- acceleration/deceleration via control contact or control voltage 10 ... 42VDC (selectable)
- 4 separately adjustable parameters starting torque, acceleration time, soft stop torque, deceleration time
- potential-free output for operational status* 250VAC/8A
- fault signalling contact (250VAC/8A)
- input for motor thermistor
- for special voltages higher than 500V an external electronic supply (230VAC) is necessary.

* closed when power semiconductors are bridged, or closed from start of acceleration to end of deceleration

Typical Applications:

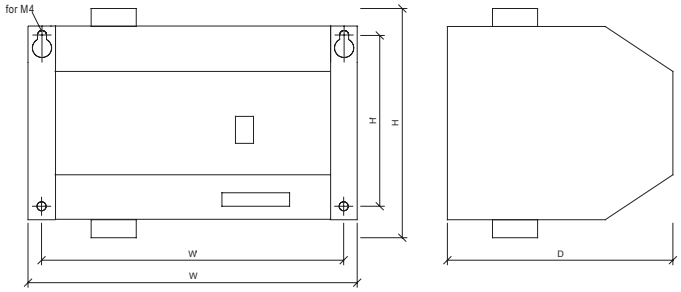
pumps
ventilators
conveying machinery
dryers, washing machines
compressors
cranes, trolleys



Technical Data	DAS-T						
	7,5	11	15	22	30	37	55
Mains / Motor voltage (Standard) according to DIN EN 50160 (IEC 38)	400V ±15% 50/60Hz (up to 690V upon request)						
Device rated current	17A	25A	32A	48A	63A	75A	105A
Motor rating	7,5kW	11kW	15kW	22kW	30kW	37kW	55kW
min. motor current	10% of the device rated current						
Starting torque	0 ... 80%						
Acceleration time	0,5 ... 25s						
Soft stop torque	20 ... 80%						
Deceleration time	0 ... 15s						
Reset time	200ms						
max. Switching cycle at 3x Ie and 10s t_{an}	120/h	100/h	80/h	60/h	40/h	40/h	20/h
Cross-sectional area of connecting cable — Control terminals	1,5mm²						
Cross-sectional area of connecting cable — Power terminals	16mm²				35mm²		
I^2t-Value Power semiconductor in A^2s	3600	3600	8000	10500	18000	51200	125000
Ambient / Storage temperature	0°C ... 45°C / -25°C ... 75°C						
Weight / kg	3,8	3,8	4	4	7,8	8	8,2
Order number	20900. 40007	20900. 40011	20900. 40015	20900. 40022	20900. 40030	20900. 40037	20900. 40055

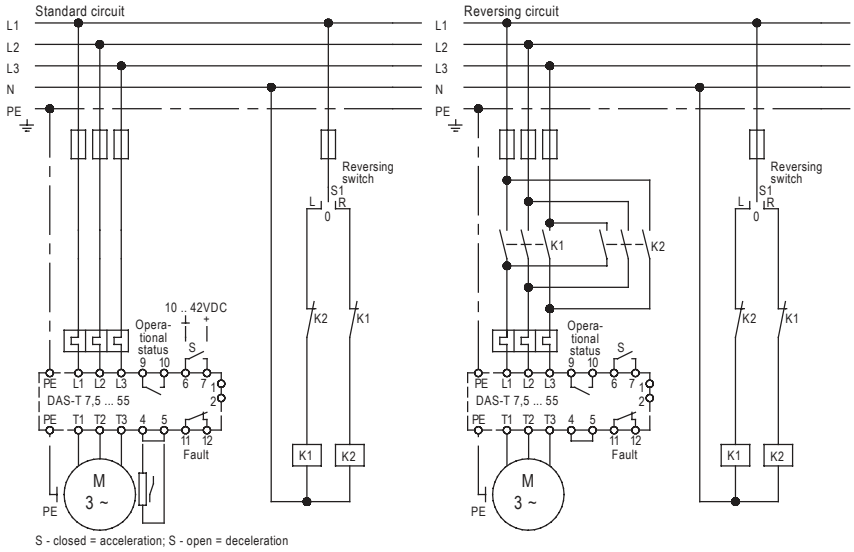
Please observe supplementary sheet with dimensioning rules.

Dimensions:



	W [mm]	W' [mm]	H [mm]	H' [mm]	D [mm]
DAS-T 7,5	235	218	245	170	140
DAS-T 11	235	218	245	170	140
DAS-T 15	235	218	245	170	140
DAS-T 22	235	218	245	170	140
DAS-T 30	335	318	245	170	170
DAS-T 37	335	318	245	170	170
DAS-T 55	335	318	245	170	170

Connection Diagramms:



EMC

The limit values for emitted interference according to the applicable device standards do not rule out the possibility that receivers and susceptible electronic devices within a radius of 10m are subjected to interference. If such interference, that is definitely attributable to the operation of the soft starters "DAS", occurs, the emitted interference can be reduced by taking appropriate measures. Such measures are, e.g.:
To connect reactors (3mH) or a suitable mains filter in series before the soft starter, or to connect X-capacitors (0.15µF) in parallel to the supply voltage terminals.

Soft Starters VersiStart i III ...-23 ... 220 1.19

Features:

- three-phase controlled digital-soft starter (7,5-800kW)
- integrated Bypass up to 110kW (up to 500kW by end year 2011)
- current and torque reduction during acceleration
- Comprehensive and customizable motor protection
- DC Braking - Contactorless
- Display graphical LCD - Real time graphs of motor operating performance
- Inside Delta (6-wire) connection
- degree of protection: IP20 (up to 100A), IP00 (from 140A up)
- motor PTC connection

Soft Starters
VS i III ...-23 … 220

Function:

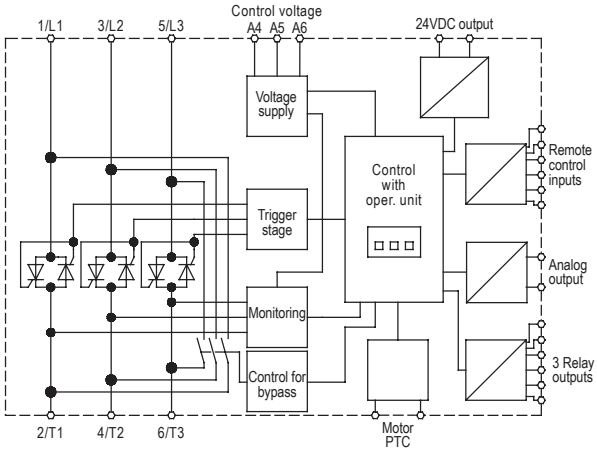
- Emergency run
- Forward or reverse jog direction.
- Remote control inputs (3x fixed, 1x programmable)
- Relay outputs (3x programmable)
- 24VDC output
- Analog output
- divers Soft Start/Stop control types
- units with 690V upon request

Typical Applications:

pumps, ventilators
compressors
mills, crushers, presses,
conveying systems
drives with high-inertia starting
machines with gear units, belt or chain drives

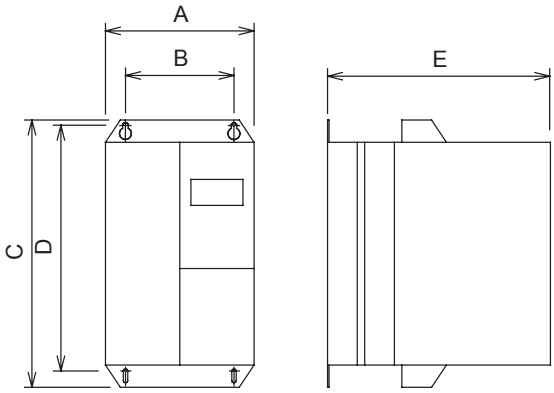
Accessories:

- Control Software
- DeviceNet module (29000.25903)
- Modbus module (29000.25904)
- Profibus module (29000.25905)
- USB module (29000.25910)
- Finger protection (from 145A up, 29000.25909)



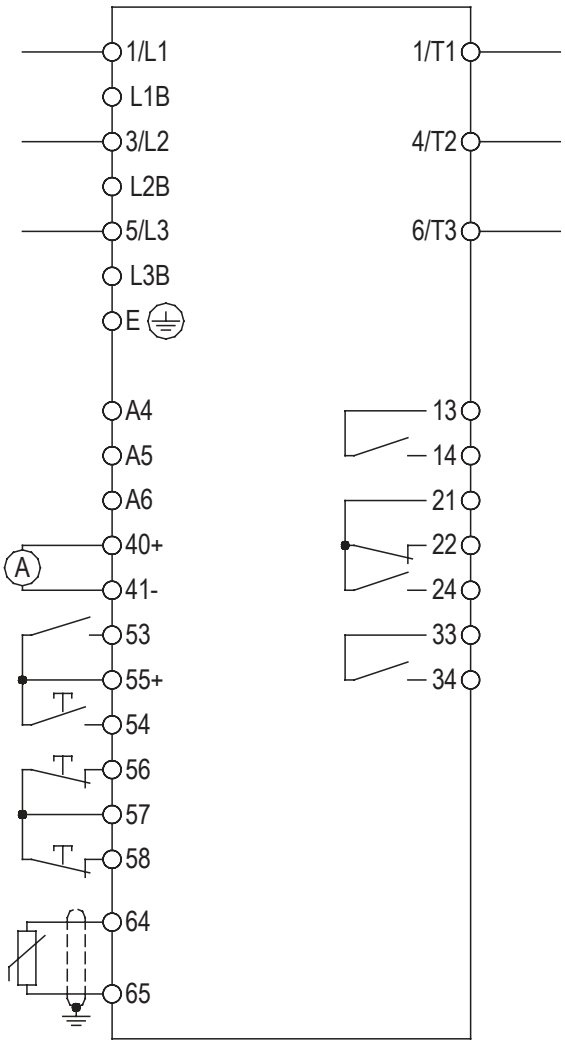
Technical Data	VS i III 525 -							
	23C1	43C1	53C1	76C1	105C1	145C1	170C1	220C1
	23C2	43C2	53C2	76C2	105C2	145C2	170C2	220C2
Mains voltage according to DIN EN 50160 (IEC 38)	200-525V 45-66Hz							
	VS i III 690-							
	23C1	43C1	53C1	76C1	105C1	145C1	170C1	220C1
	23C2	43C2	53C2	76C2	105C2	145C2	170C2	220C2
Mains voltage according to DIN EN 50160 (IEC 38)	380-690V 45-66Hz							
Rated device current in A	23A	43A	53A	76A	105A	145A	170A	220A
Motor rating at 400V in kW	-7,5	-15	-22	-30	-55	-60	-75	-110
I²t-Value Power semiconductor in kA²s	1,15	8	15	15	125	125	320	320
Acceleration	Constant current, Current ramp, “Adaptive Acceleration Control”, Torque Control							
Deceleration	Timed voltage ramp soft Stopp, Brake							
Switching frequency 3x Ie and 10s	AC53b 3.0 - 10:350 10/h			AC53b 3.0 – 10:590 10/h				
Techn. parameter of relay outputs	10A/250VAC resistive; 5A/250VAC AC15							
Ambient temperature	-10°C…+40°C (+60°C Derating)							
Control voltage	C1: 110VAC; 220VAC; -15%/+10%; C2: 24VDC/24VAC ±20%							
Weight / kg	3,2			3,5	4,8	16		
Order number: 525V/C1 2S000.50..*	023	043	053	076	105	145	170	220
525V/C2 2S001.50..*	023	043	053	076	105	145	170	220

Dimensions:



Model	A mm	B mm	C mm	D mm	E mm	Weight kg
VS i III -23	156.5	124	294.5	278	192	3.2
VS i III -43						
VS i III -53						
VS i III -76					223	3.5
VS i III -105						4.8
VS i III -145	282	250	438	380	250	16
VS i III -170						
VS i III - 220						

Connection Diagram:



PETER electronic

Soft Starters VersiStart i III ...-255 ... 1600 1.21

Features:

- three-phase controlled digital-soft starter (7,5-800kW)
- integrated Bypass up to 110kW (up to 500kW by end year 2011)
- current and torque reduction during acceleration
- Comprehensive and customizable motor protection
- DC Braking - Contactorless
- Display graphical LCD - Real time graphs of motor operating performance
- Inside Delta (6-wire) connection
- degree of protection: IP20 (up to 100A), IP00 (from 140A up)
- motor PTC connection

Soft Starters
VS i III ...-255 … 1600

Function:

- Emergency run
- Forward or reverse jog direction.
- Remote control inputs (3x fixed, 1x programmable)
- Relay outputs (3x programmable)
- 24VDC output
- Analog output
- divers Soft Start/Stop control types
- units with 690V upon request

Typical Applications:

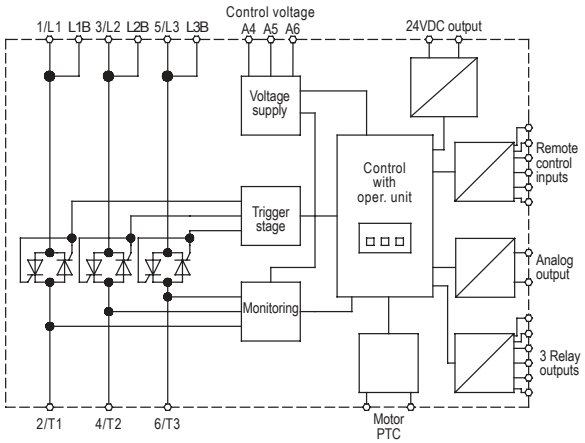
pumps, ventilators
compressors
mills, crushers, presses,
conveying systems
drives with high-inertia starting
machines with gear units, belt or chain drives

Accessories:

- Control Software
- DeviceNet module (29000.25903)
- Modbus module (29000.25904)
- Profibus module (29000.25905)
- USB module (29000.25910)
- Finger protection (29000.25909)

Upon request:

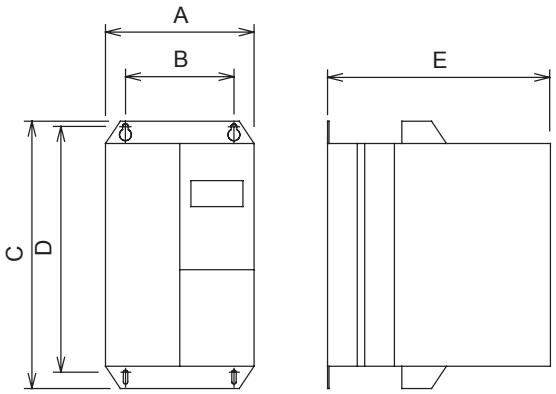
- units up to 500kW



Technical Data		VS i III 525 -					
		255N C1	380N C1	430N C1	650N C1	790N C1	930N C1
		255N C2	380N C2	430N C2	650N C2	790N C2	930N C2
Mains voltage according to DIN EN 50160 (IEC 38)		200-525V 45-66Hz					
		VS i III 690-					
		255N C1	380N C1	430N C1	650N C1	790N C1	930N C1
		255N C2	380N C2	430N C2	650N C2	790N C2	930N C2
Mains voltage according to DIN EN 50160 (IEC 38)		380-690V 45-66Hz					
Rated device current in A		255A	380A	430A	650A	790A	930A
Motor rating at 400V in kW		-132	-185	-220	-315	-400	-500
I^2t-Value Power semiconductor in kA^2s		320	320	320	1200	2530	4500
Acceleration		Constant current, Current ramp, “Adaptive Acceleration Control”, Torque Control					
Deceleration		Timed voltage ramp soft Stopp, Brake					
Switching frequency 3x Ie and 10s		AC53b 3.0 – 10:590 10/h					
Techn. parameter of relay outputs		10A/250VAC resistive; 5A/250VAC AC15					
Ambient temperature		-10°C…+40°C (+60°C Derating)					
Control voltage		C1: 110VAC; 220VAC -15%/+10%; C2: 24VDC/24 VAC ±20%					
Weight / kg		25	50,5		53,5		
Order number:							
525V/C1	2S010.50..*[1]	255	380	430	650	790	930
525V/C2	2S011.50..*[1]	255	380	430	650	790	930

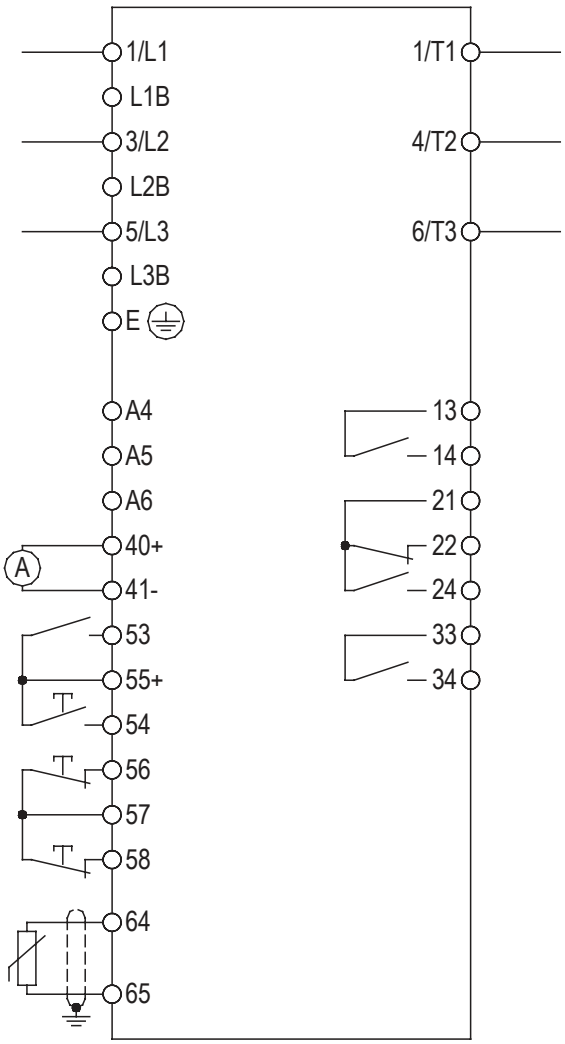
N = without bypass (integrated Bypass by end year 2011)

Dimensions:



Model	A mm	B mm	C mm	D mm	E mm	Weight kg
VS i III -255N	390	320	417	400	281	25
VS i III -380N	430	320	545	522	299	50.5
VS i III -430N						
VS i III -650N						53.5
VS i III -790N						
VS i III -930N						

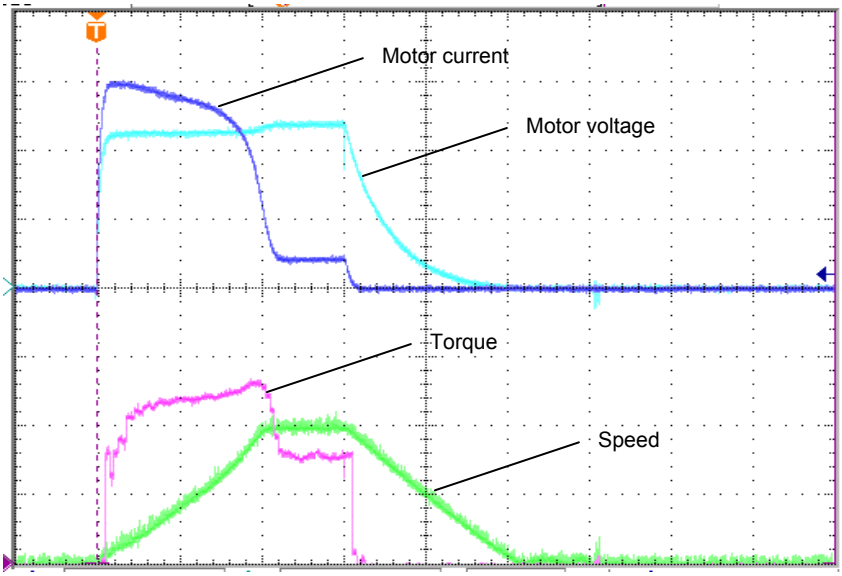
Connection Diagram:



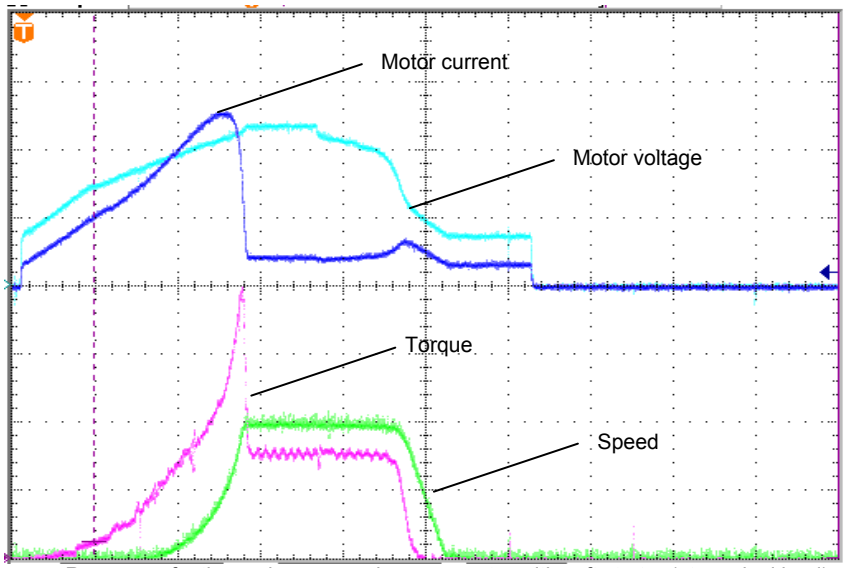
All data sheets and commissioning instructions are available on our homepage at:
www.peter-electronic.com.

Configuration instructions

The two following diagrams for an 11kW-drive operated at nominal load show the waveforms of electrical and mechanical quantities of the drive during the ramp-up phase, both with and without soft starter:



Ramp-up of a three-phase asynchronous motor directly connected to the mains (at nominal load)



Ramp-up of a three-phase asynchronous motor with soft starter (at nominal load)

Both groups of curves show the complete acceleration and deceleration phase.

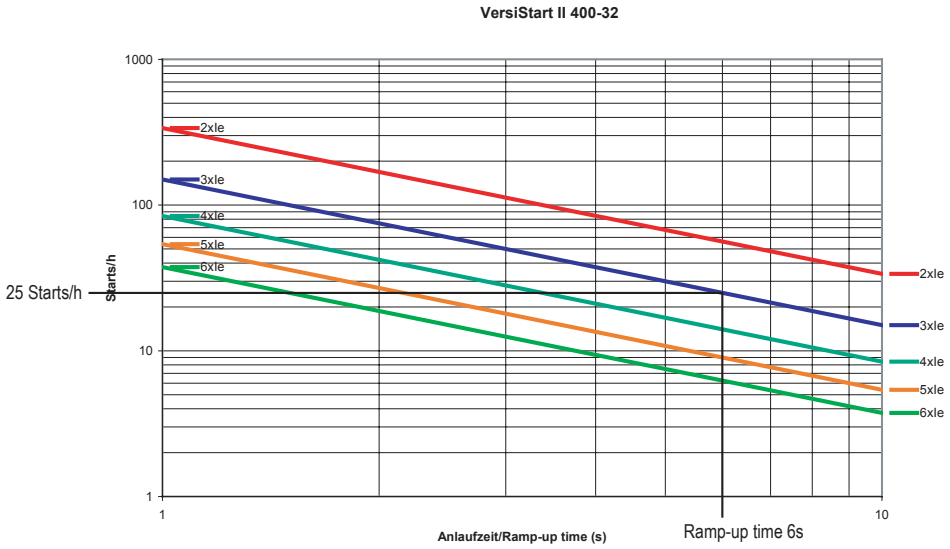
In this connection, especially the waveform of the current during ramp-up with a soft starter is of interest. Depending on the adjusted starting voltage (boost), this current increases more or less steeply until nominal speed is reached. For the following load diagrams (thermal load), the mean value of that current is to be used which is formed by the current flowing at the starting point and the current flowing when nominal speed is reached (see example).

The following diagrams show how the maximum starting frequency (in starts per hour) depends on the ramp-up time and the mean starting current flowing during ramp-up.
The curves represent the thermal ratio of the heat generated in the power semiconductors and the possible dissipation of heat by the integrated heat sinks, i.e., a high starting frequency in combination with a large mean starting current causes intense heating by the power semiconductors. If, in addition, a long ramp-up time is required for the starting operation, the number of starts possible within a certain unit of time reduces accordingly.

The following example is to explain how to select a soft starter:

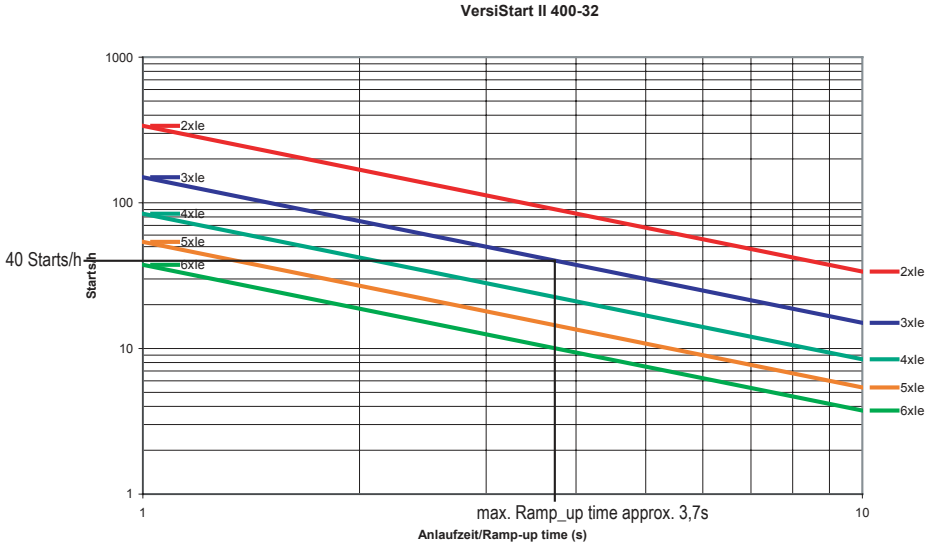
Assumption:	Motor shaft power:	15kW
	Nominal/rated motor current:	29.5A
	max. Ramp-up time:	6s
	Mean starting current to be expected:	90A (no high-inertia starting)
	max. Starting frequency:	40 starts/h

In compliance with the power rating of the motor, a **VersiStart II 400-32** soft starter is selected (acc. to the data sheet it is suitable for 15kW motors, I_e = 32A).
However, when checking the number of starts per hour possible with this device under these conditions, it turns out that this device is not suitable:



When dividing the starting current of 90A to be expected by the nominal current of 32A of the soft starter **VersiStart II 400-32**, this gives approx. **3 x I_e** (90A/32A) of the soft starter. Consequently, a maximum starting frequency of 60 starts per hour is permissible for this device, i.e., in this case **VersiStart II 400-32** would be overloaded.

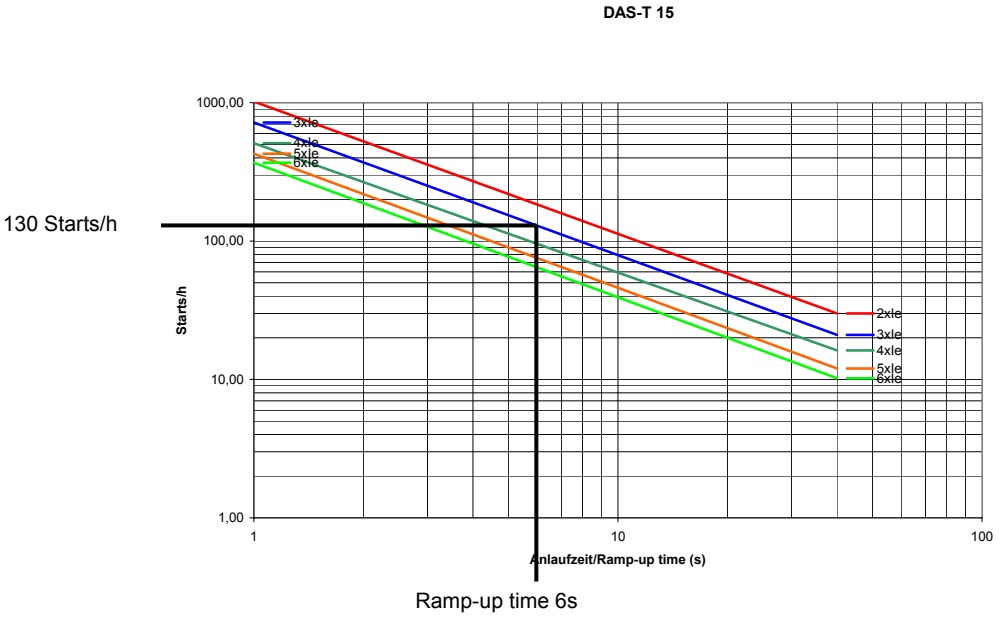
This is only possible by reducing the ramp-up time. As demonstrated by the two below diagrams, the ramp-up time maximally possible for the application of a **VersiStart II 400-32** would be approx. 3,7s.



If it is due to technological reasons not possible to go below the specified ramp-up time of 6s, a device that complies with the requested parameters has to be used.

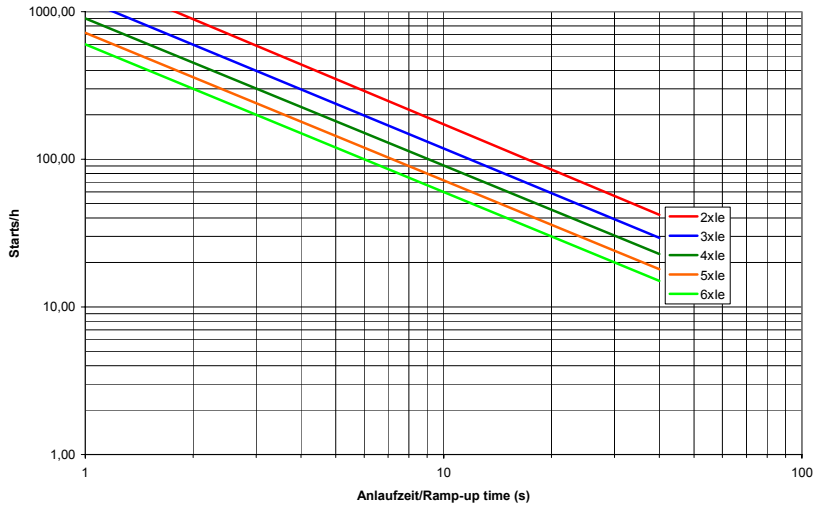
When looking at the characteristic curves, it becomes clear that, for this case of application, a **DAS-T 15** is suitable. With a threefold nominal current of the soft starter, i.e., **3 x I_e** (90A/32A), and a ramp-up time of 6s, this device has a starting frequency of approx. 130 starts/h.

Since only 40 starts/h are required, this device is optimally designed to withstand the most unfavorable thermal loading.

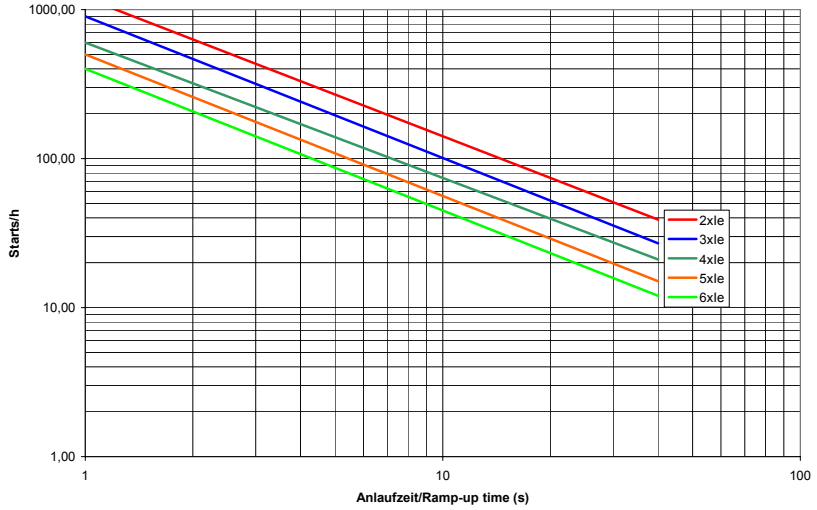


Load diagrams:

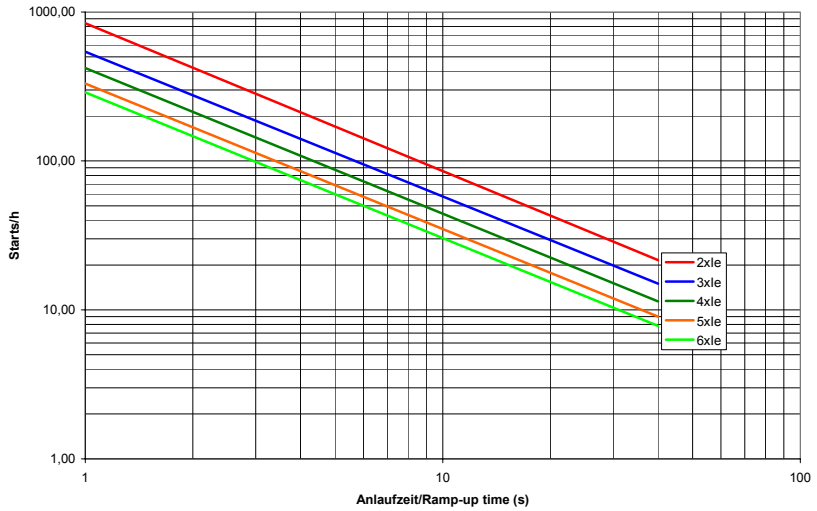
SAS3, SAS11 PUST, DAS-T 7,5, MINISTART 1,5 ... 5,5, MICROSTART 1,5



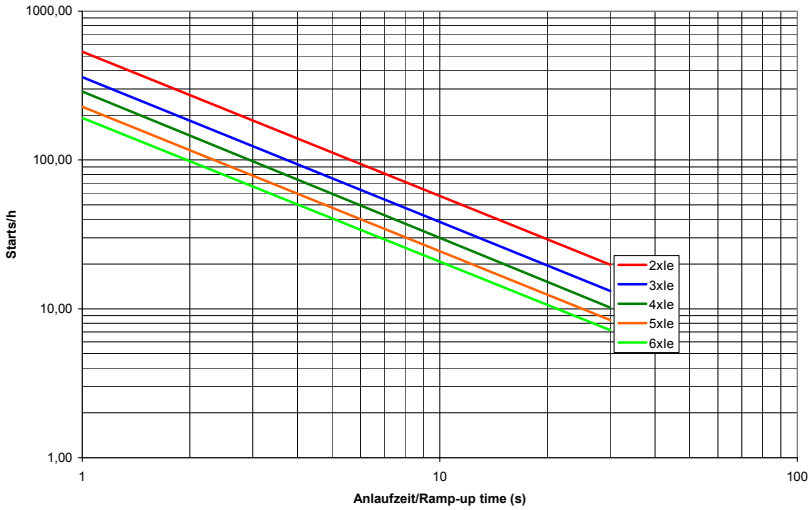
SAS 5,5, DAS-T 11, MINISTART 1,5 ... 5,5B, DUOSTART 1,5



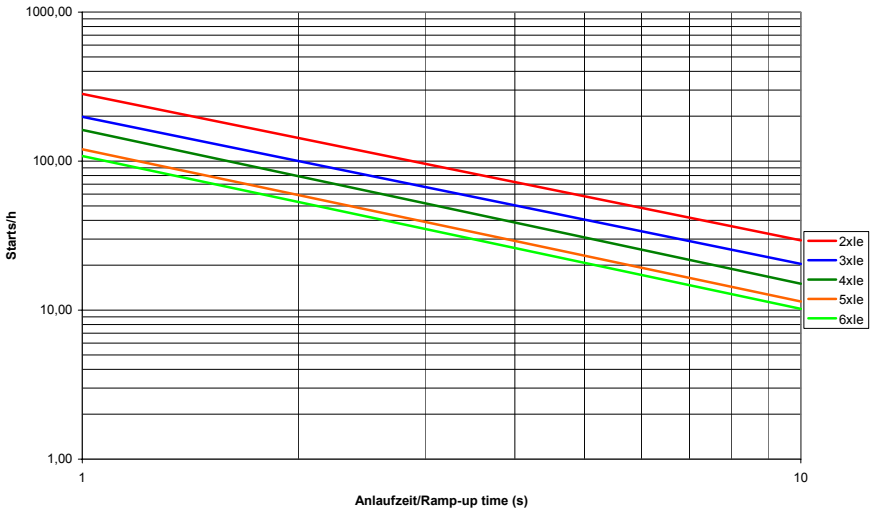
SAS 7,5, SAS 22PUST, DAS-T 22, MICROSTART 3, DUOSTART 3, MINISTART 7,5



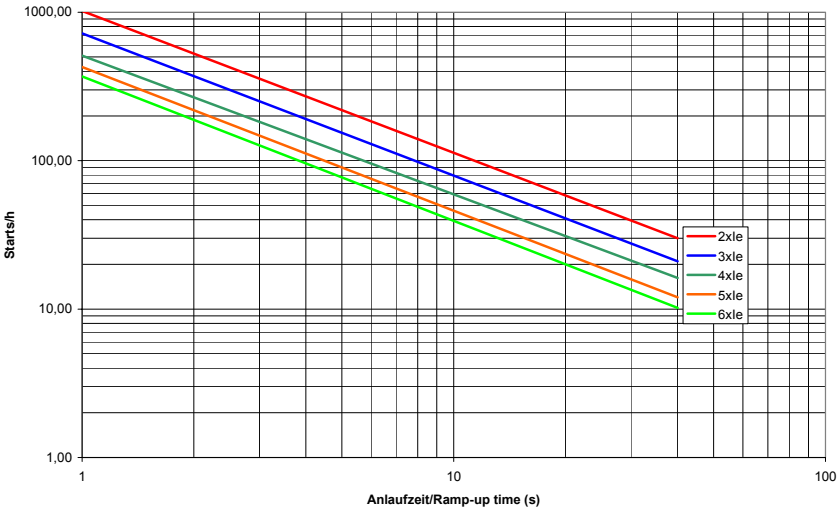
SAS 11, DAS-T 30, DAS-T 37, DUOSTART 5,5



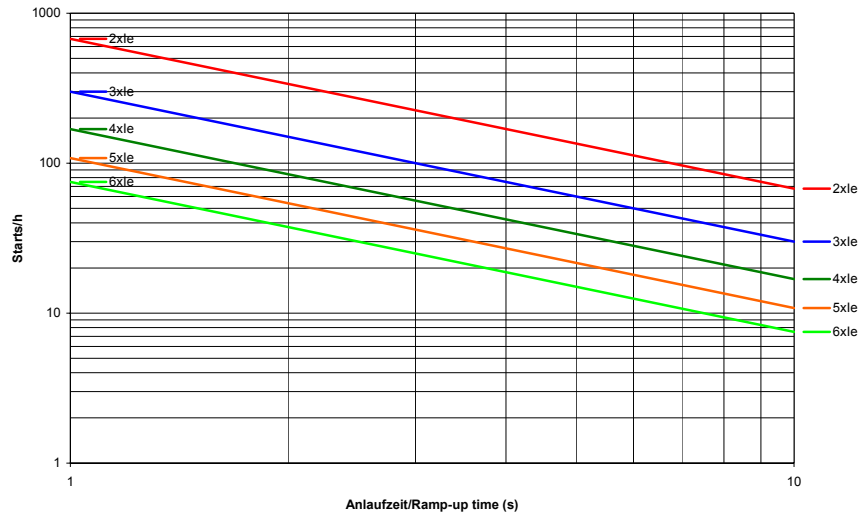
MINISTART 11, DAS-T 55



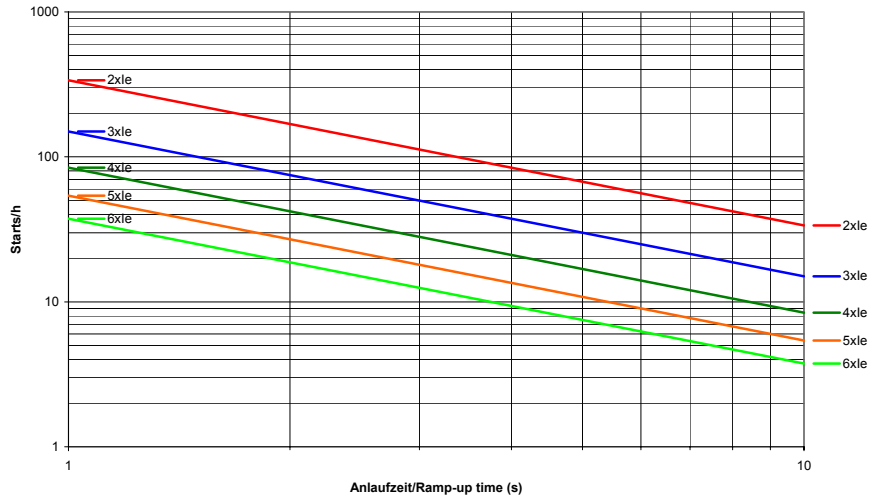
DAS-T 15



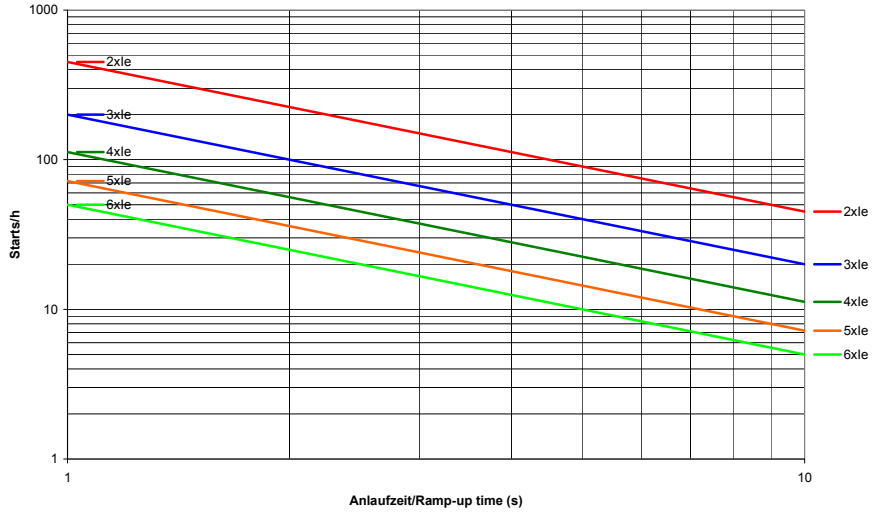
VersiStart II 3 LDS



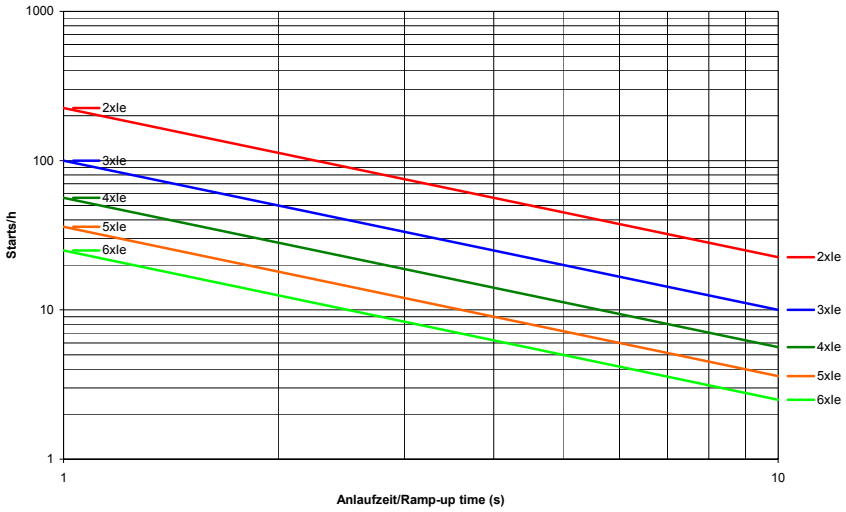
VersiStart II 5,5 / 11 LDS



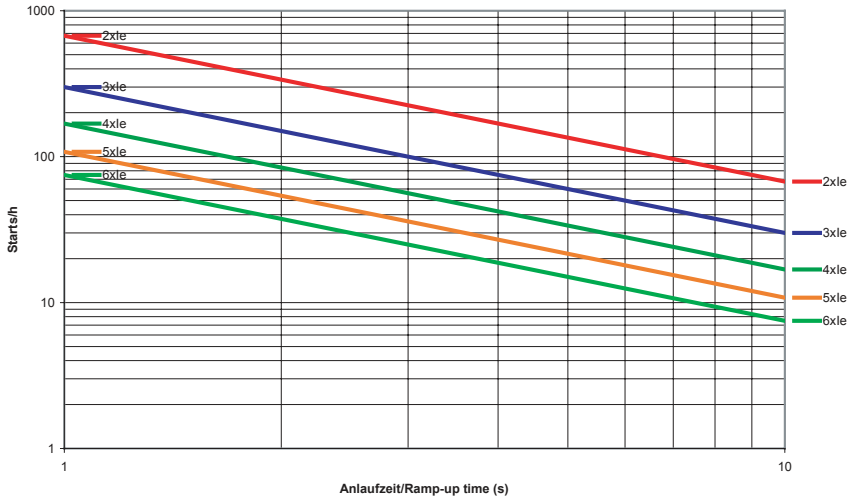
VersiStart II 7,5 LDS



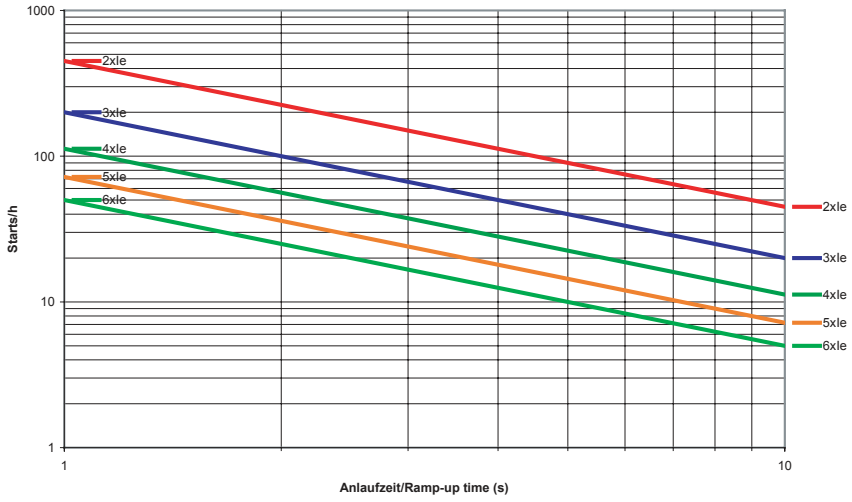
VersiStart II 15 LDS



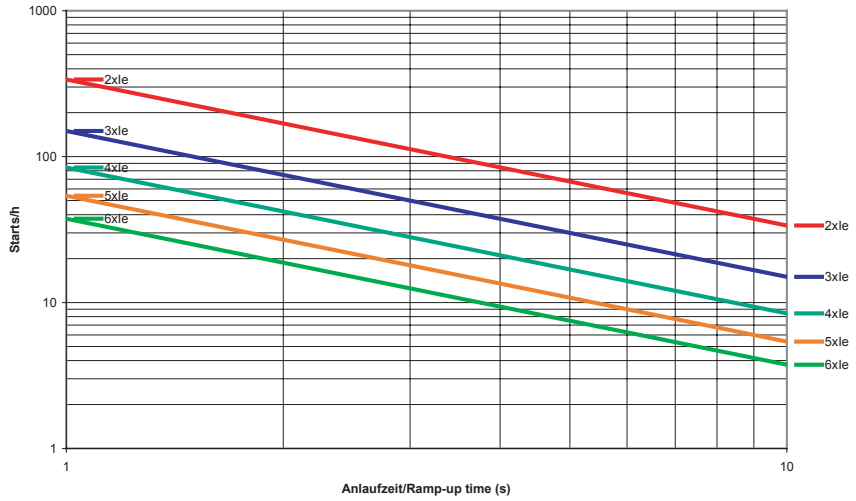
VersiStart II 400-17



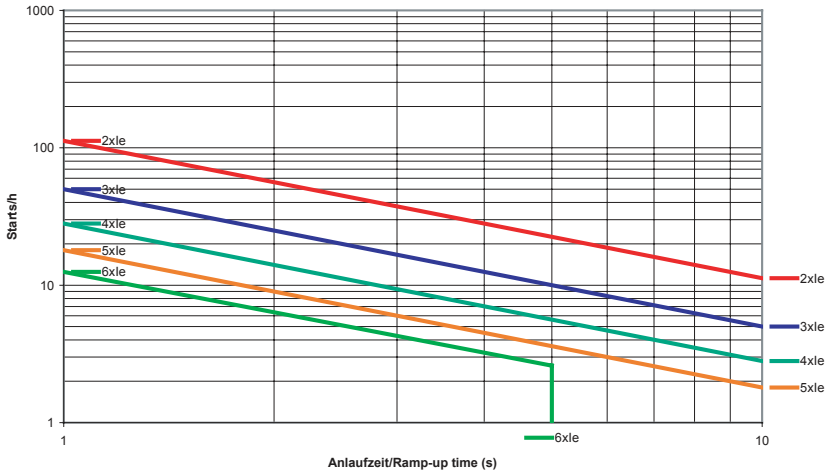
VersiStart II 400-25



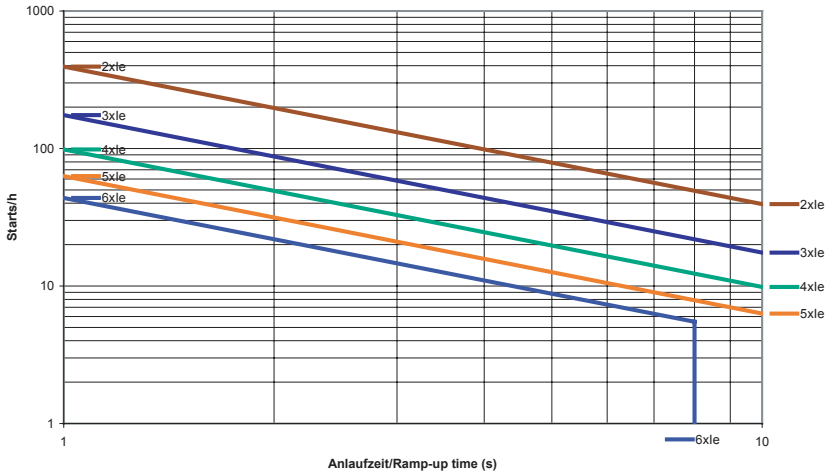
VersiStart II 400-32



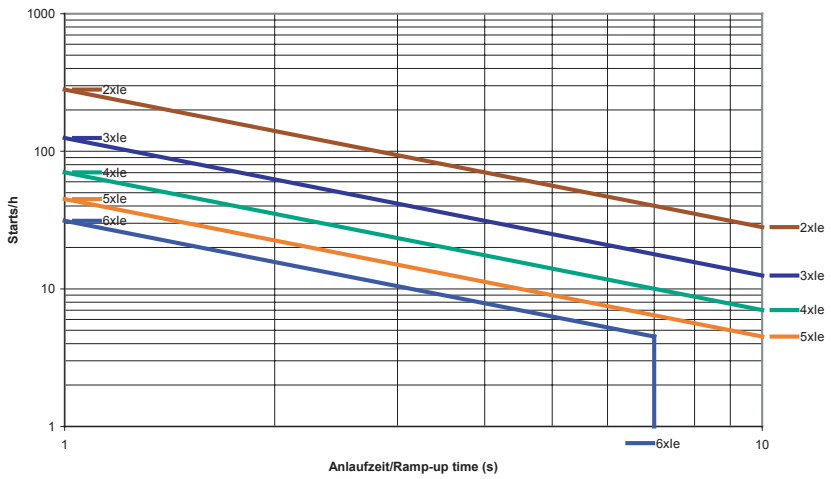
VersiStart II 400-45



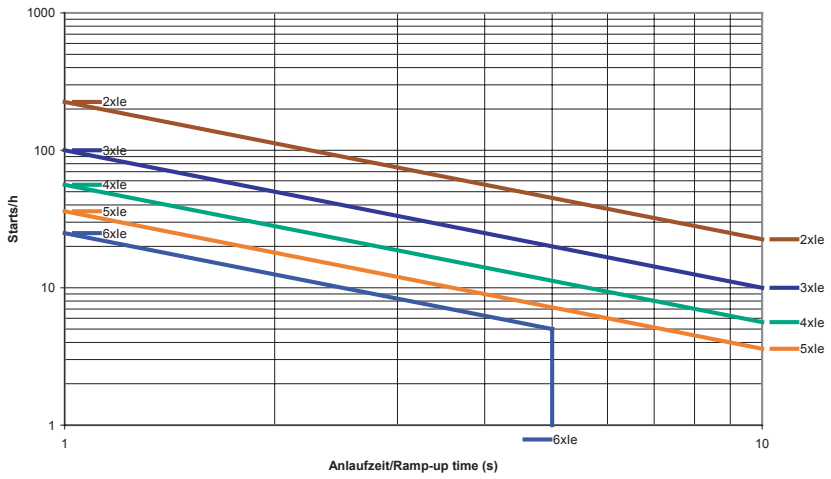
VersiStart II 400-50



VersiStart II 400-65



VersiStart II 400-75



Dimensioning of pre-fuses:

Pre-fuses F can be dimensioned according to the following instructions.

Basically, two types of fuse protection are available for the user.

1. Fusing according to allocation type „1“, DIN EN 60947-4-2.
   After a short circuit the soft starter is allowed to be inoperative and repair work is possible.
2. Fusing according to allocation type „2“, DIN EN 60947-4-2.
   After a short circuit the device must be suitable for further use. However, there is the danger that the contacts of the by-pass relays (-contactors) weld. Therefore, if possible, these contacts are to be checked prior to reconnecting the device to the supply. If this check cannot be carried out by the user, the device has to be returned to the producer in order to have it checked.

The following dimensioning information refers to the below operating conditions:

- Use of standard asynchronous motors
- Standard ramp-up and/or deceleration times

Fusing according to allocation type „1“:
As pre-fuses, we recommend to use line protection fuses (utilization category gL) or automatic circuit-breakers with type K tripping characteristic. In the case of automatic circuit-breakers the tripping characteristic of the type series is to be taken into account. With 2x I_n the tripping time should be at least 20s (I_1).
The fuse values are to be determined by taking the conductor cross-sectional area of the wiring into account. The wiring cross-sectional area is to be determined in dependence on the rated motor current, the maximally occurring starting current (normally up to the 5-fold rated device current) and the starting frequency. Table 1 shows the values for numerous applications, i.e., with a 3-fold nominal/rated current as mean starting current and a maximum ramp-up time of 10s. In the case of parameter values exceeding these values, it may be necessary to adapt the fuse value accordingly.
Note! Wiring cross-sectional area according to DIN VDE 0100-430, DIN EN 57100-430.

Fusing according to allocation type „2“:
The power semiconductors are to be protected by fuses of the utilization category gR (semiconductor fuses, high-speed fuses). However, since these fuses do not ensure line protection, it is necessary to use additionally line protection fuses (utiliz. category gL). To protect the semiconductors it is necessary to select gR-fuses featuring cutoff-I^2t-values which are approx. 10-15% below the I^2t-value of the power semiconductor (see technical data). In this connection, the current-value of the selected fuse should not be smaller than the starting current to be expected.
PETER electronic does not prescribe the use of semiconductor protection fuses. However, for some UL- or CSA-listed devices there are exceptions which are indicated in the relevant commissioning instructions.

Notes
On the basis of the I^2t-value of the power semiconductors, the ramp-up time and possibly the max. starting current, the fuse supplier is able to select a suitable type. Due to the great variety of producers, sizes and types, PETER electronic does not recommend any particular fuses.

If the value of the fuse or the cutoff-I^2t-value is selected too small, it may happen that the semiconductor fuse reacts during the starting phase or during deceleration.

In the case of special devices having increased ramp-up or deceleration times, the recommended fuse value may have to be adapted.

Table 1

Nominal/rated device current (techn. data)	Device type	Fuse value in the case of allocation type 1	Starting frequency Starts / h
3,5A / 4A	DUOSTART, MICROSTART, MINISTART	10A	90
6,5A	DUOSTART, MICROSTART, MINISTART VS II	10A	40 60
12A	DUOSTART, MINISTART VS II	20A	60 30
15A	DAS-T, VS II	25A	40
17A	VS II	25A	60
25A	MINISTART, DAS-T, VS II VS II	35/40A	30 40
32A	VS II VS II	50A	20 30
45A	VSII	63A	10
48A	DAS-T	63A	20
50A	VS II	100A	35
63A	DAS-T	80A	40
65A	VS II	125A	25
75A	DAS-T VS II	100A 125A	40 20
88A	DAS-T	100A	20
105A	DAS-T	125A	20