CMMISSIONING INSTRUCTIONS
FOR 3-PHASE SOFT-STARTER TYPE HSG /DST

Mains Connection:	L1, L2, L3	
Motor Connection:	U, V, W	
Start/Stop with switch:	Terminal 3-4:	3-4 (K1-K1)closed → Ramp Up 3-4 open → Ramp Down
Start/Stop with SPC-signal:	Terminal 5: positive pole SPC	24 V DC → Ramp Up 0VDC → Ramp Down
	Terminal 6: negative pole SPC	

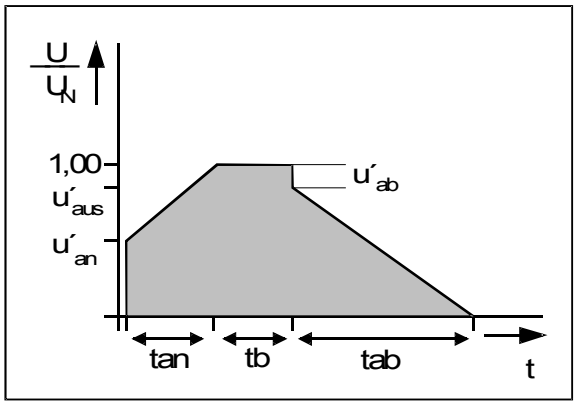
Parameters:	Trimmer	Range
	Initial torque	0 - 100%
	Ramp up	0 - 10s (depending on load)
	Lower voltage	0 - 100%
	Ramp down	0 - 10s (depending on load)
	13 14 15	**10 K**

Connection
Connect the unit according to the diagram overleaf. If the unit is connected with a self-braking motor, take care that the voltage for the brakes is not taken from the section between the soft starter and the motor, because the brake will not trip due to under-voltage. The ensuing increase in motor current could damage the soft-starter. Before starting to work at the output (U,V,W) switch off voltage. From 7.5 kW and upwards an external bypass-contacter (AC3/rated output motor) has be connected to the bypass-contacts. The internal bypass-contactors are not build inside these units.

Start/Stop
The contact 3 - 4 must be potential-free and the cable connection must be twisted and shielded. For starting a switch as to be connected to terminal 3 - 4 and kept closed. If the switch is opened after ramp up, a soft ramp down is effected. During this the mains must not be disconnected. If no soft ramp down is wanted, the terminal 3 - 4 can be bypassed and the motor with the softstarter can be switched over the motor contactor. Instead to start the ramp up with 3 - 4 the SPC-terminal (terminal 5 - 6) can also be used for starting. Ramp up → +24V, ramp down → 0V.

Setting of Trimmers
The trimmer "initial torque" has to be set to the right until the motor only just starts. The "ramp up" must be adapted to the requirements. **Caution:** "Initial torque" and "lower voltage" are independent from each other. If an operation mode is used which requires an ramp down and it may happen that the ramp up will be switched to ramp down before reaching U_N, please consider the following: It the adjusted "lower voltage" is bigger than the momentary "initial torque" at the switching point, there will a voltage jump into positive direction. As this jump is mostly not desired, the "lower voltage" has to be reduced accordingly.

Figure 1: Voltage-pass HSG



tan ramp up
tab ramp down
tb operation-time with bypass-contactor
u´an initial torque, standardized for main voltage
u´aus lower voltage, standardized for main voltage, voltage reduction u´ab=1-u´aus

We recommend the following reference values:
→ for soft ramp up: "initial torque" set to 1/3,

"ramp up" set to 1/2 of left-hand stop.
The settings have to be adapted to the requirements of the relevant load and motor. In order to avoid a high current at switching on and to reduce the thermic strain on the motor the "initial torque" should be set at bigger than zero.

We recommend the following reference values for **DST-mode**:

"ramp up" → ¼ range
"ramp down" → min. range
"initial torque" → min. range
"lower voltage" → max. range

The motor-softstarter system is depending from the motor load !

Technical Data:

Type/Size	HSG
Measurements in mm (WxHxD)	150x75x134
Rated frequency	50 / 60 Hz
Power input for electronic	2.8VA
Operating Temperature	-15°C-+40°C
Stock temperature	-25°C- +75°C
Relative humidity	0 % - 90 %, non-condensating
Protection	chassis IP 40, terminals IP 20 guaranteed only for switch gear cabinet installation
Connection Diameter	2,5 mm² (flexible), 4 mm² (fixed)
Fixing: standard busbar 35 mm	

HSG-Connection diagram