SMS-start

SOFT STARTER TRIFASE
3 PHASE SOFT STARTER
ARRANCADOR SUAVE TRIFÁSICO
DREIPHASEN SOFTSTARTER

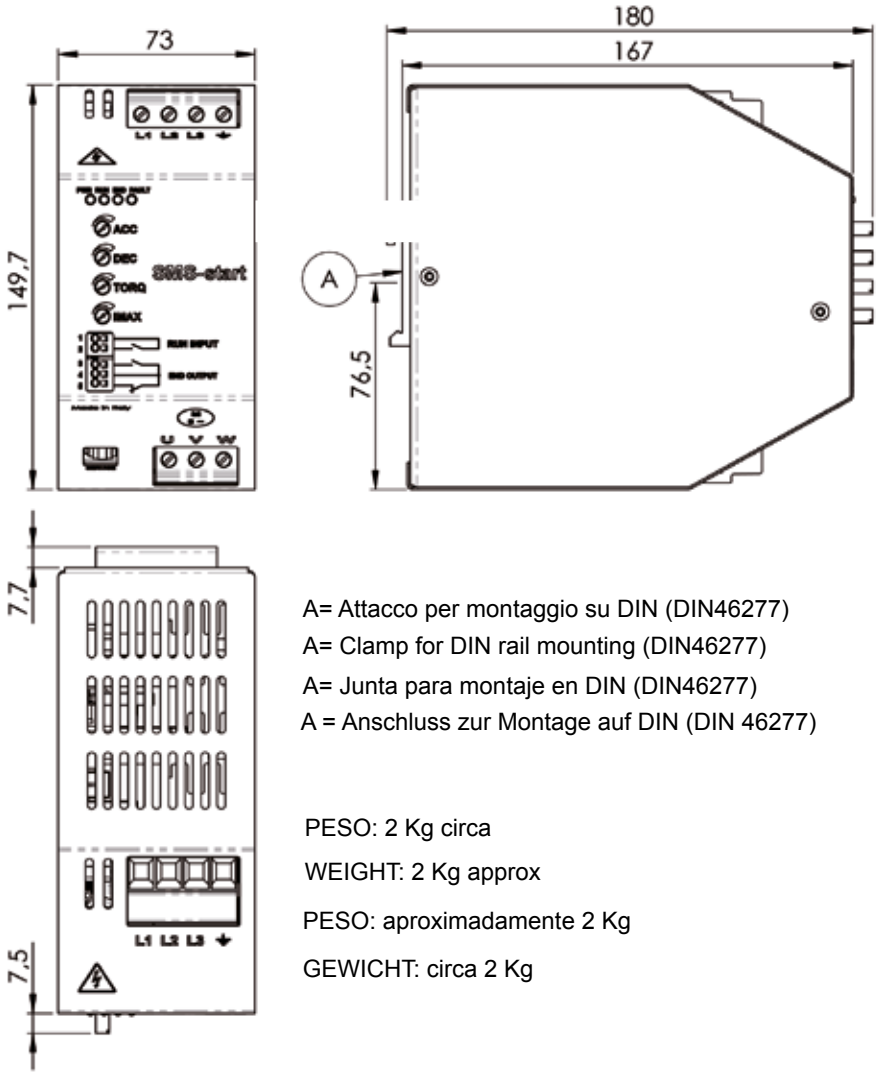
MANUALE D'USO
USER MANUAL
MANUAL DE USO
BEDIENUNGSANLEITUNG

MADE IN ITALY

ITALIANO
ENGLISH
ESPAÑOL
DEUTSCHE

REV 1 PRINTED 10/2015

DIMENSIONI / WEIGHT/ DIMENSIONES / MAßE



A= Attacco per montaggio su DIN (DIN46277)

A= Clamp for DIN rail mounting (DIN46277)

A= Junta para montaje en DIN (DIN46277)

A = Anschluss zur Montage auf DIN (DIN 46277)

PESO: 2 Kg circa

WEIGHT: 2 Kg approx

PESO: aproximadamente 2 Kg

GEWICHT: circa 2 Kg

NOTICE

Please read the manual before using and installing the device.
Read carefully the following paragraphs and pay attention to the instructions. Our warranty does not cover any damage resulting from failure to follow instructions contained therein.

INTRODUCTION

SMS-start is a three-phase asynchronous motor starter, designed to reduce starting current.
In hydraulic lift systems (1-second starting time), the starting current is reduced to less than half of the direct starting current. In traditional rope lift systems (3-second acceleration time), a starting current of approximately 0.7 times the direct starting current can be obtained.
SMS-start has two sizes with the same mechanical outfit but different electrical properties (see Chapter 3). Both include an internal Bypass function for the soft starter SCRs during runtime.

IMPORTANT SAFETY WARNINGS

Please read this manual carefully before proceeding with installation or maintenance.
The safety warnings do not cover all causes of device failure, but do identify the most common causes.
The following symbols appear in this document or on the equipment to warn of potential hazards, and they require special attention.


RISK OF ELECTRIC SHOCK


YOU MUST PAY PARTICULAR ATTENTION


If the device is visibly damaged or missing components, or if the size of the device is not suitable for the motor, DO NOT proceed with installation.


When the device is connected to the mains it is subject to hazardous voltages.Installation, inspection and maintenance of the device must be performed by authorised and appropriately trained personnel, and should be performed only when it is disconnected from the electric network.Incorrect installation can cause equipment malfunction, injury or even death. Carefully follow the safety regulations in force..


The device must be connected to GROUND and the circuits adequately protected, in accordance with current standards.


To ensure correct device operation and in order to avoid the risk of fire, use cables with a suitable cross section, depending on the current and the length of the connection.


Ensure that no type of external object enters the device, as it can lead to failure of the product or hazardous conditions, when connecting to the electric network. Make sure that there is no voltage on the device control terminals which could link to the electric network.The control and power conductors must be correctly isolated from each other.


Any static power factor correction unit must be connected upstream of the device (Terminals L1-L2-L3) and never downstream (Terminals U, V, W). Incorrect connection may cause hazardous conditions and/or device breakage.

The examples and diagrams in this manual are included solely for demonstration purposes.
The content of this manual is subject to change without notice.
In no event shall liability be accepted for damage, indirect or consequential, resulting from the use or application of the device.

TECNICAL FEATURES

Rated current for light load Application for LIFTS - INTERMITTENT duty (*)	40A	70A
Rated current for heavy load INDUSTRIAL application - CONTINUOUS duty	25A	40A
Maximum starting current	120A	210A
Maximum instantaneous current	180A	270A
Ramp maximun time: for acceleration (ACC) and Deceleration (DEC)	7 sec	3 sec

Ambient temperature 0 ÷ 50°C . Degree of protection IP20

(*)Duty is considered intermittent where the motor drive starts for a duration below or equal to 60" each 120".

NUMBER OF STARTS/HOUR

SMS-start is designed to be able to carry out an increased number of starts per hour, even in critical conditions.The maximum number of starts per hour depends on the acceleration duration, as shown in the Table below:

Acceleration time	MAX No. Starts/Hour	
1 sec	75 starts/h	
2 sec	40 starts/h	
3 sec	25 starts/h	
4 sec	18 starts/h	n.a for 70A
5 sec	15 starts/h	n.a for 70A

The Table shows the maximum number of starts per hour which can be obtained at an ambient temperature of 50°C and at starting currents equal to the maximum current supported by the device.

PROTECTION FUSES

In order to protect the power component (SCR) and to avoid dangerous conditions in the event of a short circuit, you are advised to install, upstream of the power line (L1-L2-L3), 3 fuses with an I^2t the the one is supported by the SCR.

The fuses shown in the Table ensure Type 2 protection.

Type of SMS-start	I^2t SCR @ 45°C	Type ITALWEBER	Code ITALWEBER	I^2t Fuse
SSV040	2120	CH14 50A aR	1461050	1800
SSV070	6810	CH22 80A aR	1462080	6600

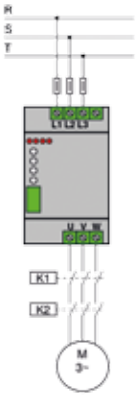
CONNECTIONS

The electrical connections to the SMS-start device must be carried out in accordance with the isolations and maximum temperatures allowed by the cables.
The Table shows the minimum cross sections, where H07V-K type cables are used.

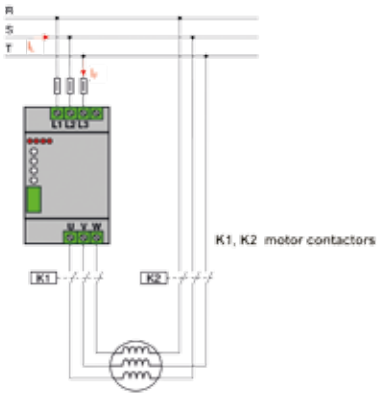
	SSV040	SSV070
Power terminals L1-L2-L3-U-V-W	10mm²	16mm²
Command terminals 1-2-3-4-5	1mm²	1mm²

CONNECTIONS MOTOR

SMS-start can be connected either on the line that powers the motor (Fig. 1), or inside the delta of the motor (Fig. 2), if you are using a motor with the windings connected in delta when powered by mains voltage (i.e. 400/690 motor with 400V mains power or 230/400 motor with 230V mains power).
When SMS-start is connected to the delta, the current passing through it (IF) is 1.6 times lower than the line current (IL). It can therefore be used for motors with a rated current 1.6 times greater rated current.



PICTURE. 1-CONNECTION ON LINE



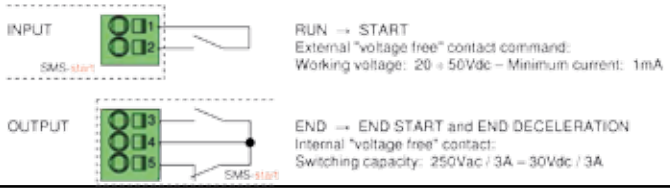
PICTURE. 2-INSIDE CONNECTION IN DELTA

TYPESMS-start	MAX Motor Current	
	Connection on line (Picture 1)	Connection on delta (Picture 2)
SSV040	40	65
SSV070	70	115

We suggest the connection of SMS-start upstream of the contactors; (this is) because once that power supply is removed the thermal memory, that allows different operating time according to the absorbed current, is reset (see operating paragraph).
Without thermal memory the device is not able to be protected by any overload.
SMS-start adapts automatically to the connection implemented and to the network phase sequence. In the event that it is necessary to reverse the motor rotation, it is sufficient to reverse two supply phases between them (e.g. R with S), and consequently modify the connection of the eventual PHASE CONTROL device, so that it keeps working fine.

IMPORTANT!
In the case of internal delta connection, it is necessary to reverse R with S and not 1 with L2!

CONTROL CIRCUITS CONNECTION



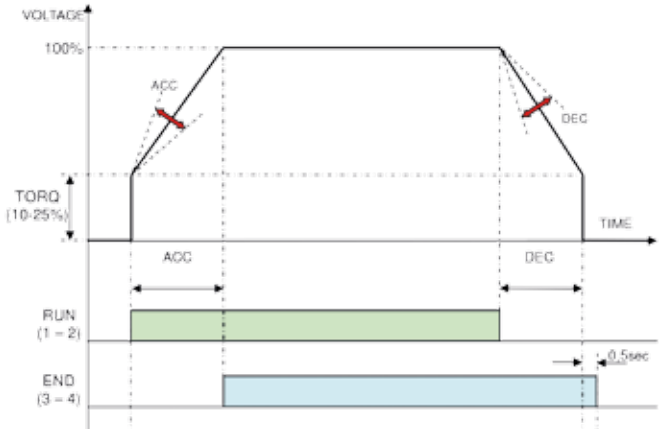
ENGLISH

OPERATION

SMS-start is able of limiting both the inrush current absorbed from the network, and the mechanical torque transferred to the load.
During start-up, there is a gradual increase in voltage and torque supplied to the motor, with constant monitoring of current consumption.
At the end of start-up, there is a power components bypass. This reduces power dissipation and ensure a high number of starts per hour.
Once powered up and turned on the power components by-pass, a thermal protection of the device is activate.

SSV040		SSV070	
By pass current	Operation time	By pass	operation time
40A	continuos	45A	continuos
40A<50A	2 minute 30 sec	50A<60A	8 minute
		60A<70A	4 minute
		70A<80A	2 minute

It allows different operating time according to the absorbed current, as shown in the chart below.
Exeeding the given data will shut down the device.
The deceleration function ensures a gradual reduction in torque, for a “soft” stop.
Starting of the motor takes place following closure of the external run contact (terminals 1-2).
SMS-start starts the motor by initially providing the starting torque set by the TORQ trimmer, and increasing it up to the maximum torque, in the time set by the ACC trimmer.
Motor deceleration begins on opening of the run command, moving the voltage from the maximum value to the minimum value, within the time set by the DEC trimmer.
During the starting phase the output current is monitored. On reaching the current limit set by the IMAX trimmer, the “slowdown” of the acceleration ramp takes place, allowing the motor to rev without using additional power.



ADJUSTMENT

ACC Acceleration time:
Adjustment from 1 to 7 seconds (SMS-start 40A).
1 to 3 seconds (SMS-start 70A).
This is the time during which the output voltage reaches 100%, following a run command.
DEC Deceleration time:
Adjustment from 0 to 7 seconds (SMS-start 40A)
0 to 3 seconds (SMS-start 70A)
This is the time during which the output voltage passes from 100% to 0, on opening of the run command.
If the trimmer is turned fully clockwise (time = 0), deceleration is disabled.
TORQ Starting torque: Adjustment from 10% to 25% of maximum torque. This is the torque with which the motor will begin acceleration.
IMAX Current limit: Adjustment from 50% to 300% of rated current.This is the maximum current value admit during acceleration.When the set value is reached, the acceleration ramp locks, thereby increasing its duration.
If the time exceeds 7 seconds, operation locks and FAULT is indicated.

THE TRIMMERS ARE EQUIPPED WITH PINS IN ORDER TO FACILITATE ADJUSTMENT, WITHOUT THE USE OF TOOLS. AT THE END OF THE START-UP OF THE DEVICE, YOU CAN REMOVE THEM TO AVOID LATER INAPPROPIATE CHANGES.

INDICATORS

PWR FLASHING = Logic board power supply present.
RUN ON= RUN command active.
END ON= Start complete, remains active during the run and goes off 0.5 seconds after deceleration is complete: contact 3-4 closed and contact 4-5 open.
FAULT ON= Generic Lock or Fault state. To restore operation, you must stop the run command.

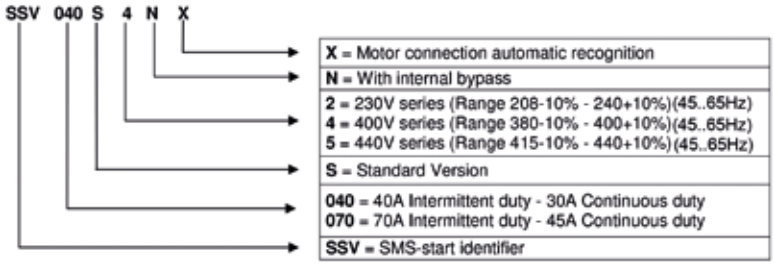
SAFEGUARDS

- Checking for the presence of input phases before carrying out start-up.
- Checking for the presence of the motor before carrying out start-up.
- Heat checking of the power components.
- Checking of correct operation of the bypass relays.
- Checking of correct operation of the SCRs.
- Checking the maximum current during start-up.

TROUBLESHOOTING

	Diagnostics	Cause	Checks	Actions to be performed if the suggested checks are negative
1	The **POWER** led doesn't flash	The control board is not powered	Check that the correct supply is present on terminals L1/L2/L3	Probable damage on the internal supplier. Contact SMS
2	The **RUN** doesn't lit		Check that between terminals 1-2 (RUN) the contact is closed	Probable failure of the run command. Contact SMS
3	The **FAULT** led is always ON, even if the run command is OFF	The heatsink temperature exceeds 80°C.	Check that the ventilation slots are not obstructed. Wait for several minutes to allow the heatsink to reduce the temperature.	Probable failure of the temperature probe. Contact SMS.
4	The **FAULT** led lits as soon as the run command goes on.	SMS Start doesn't recognize the motor connection.	Check that the motor is correctly connected and that the contactor contacts in series to the motor are closed.	Probable damage of the power components (SCR). Contact SMS.
		SMS Start doesn't detect the 3 phases of the power supply.	Check that the correct supply is present on terminals L1/L2/L3	
		SMS Start is not synchronizing with the mains.	Check that the mains frequency is between 45Hz and 65Hz	
5	The **FAULT** led lits during the motor starting.	The starting current exceeds the maximum limit of the device.	Check the motor insulation.	Probable failure of the by-pass relay. Contact SMS.
			Check that the device size is compatible with the motor power.	
		The current delivered by SMS Start is not enough to start the motor.	Check the trimmer LIM setting and eventually try to increase it.	
6	The **FAULT** led lits during the motor run.	The motor current exceeds the maximum limit of the device.	Check that the device size is compatible with the motor power.	Replace the device with a greater size one.
7	The **END** led doesn't lit at the end of starting.	SMS Start failed to start the motor.	Perform checks as indicated in point 4 and 5.	Contact SMS.
8	The end starting relay (**END**) doesn't swich.		Check the END led lighting: if it doesn't lit, perform checks as indicated in point 4 and 5.	Probable failure of the relay. Check that the applied load complies with the relay contact specification. Contact SMS.

SMS-start CODE FORMAT



DECLARATION OF CONFORMITY

Manufacturer: **SMS SISTEMI E MICROSISTEMI s.r.l.**
Address: **Via Guido Rossa, 46/48/50 – Loc. Crespellano 40053 Valsamoggia BO**

Product: **SMS - start**

The above product complies with the following EUROPEAN DIRECTIVES:

- **95/16/CE** **LIFTS**
- **2004/108/CE** **ELECTROMAGNETIC COMPATIBILITY**

when installed as prescribed by the relative user manual.

To evaluate the product's compliance, reference was made to the following STANDARDS:

- **UNI EN 81.1: 2010**
- **UNI EN 81.2: 2010**
- **UNI EN 12015: 2014**
- **UNI EN 12016: 2013**

The product meets the requirements for Electromagnetic Compatibility on the basis of the:
TEST REPORT N° **14DLP054** dated **01-08-2014**
Issued by: **L.E.M. S.r.l. – Laboratorio**

SMS SISTEMI E MICROSISTEMI s.r.l.
Ing. CIRO ADELMO PILONE
MANAGING DIRECTOR

DATE: 01-08-2014

SMS SISTEMI E MICROSISTEMI SRL
VIA G. ROSSA 46/48/50•Loc Crespellano•40053 Valsamoggia • Bologna•Italy•
TEL +39 051 969 037 FAX +39 051 969 303 Technical assistant +39 051 672 0710
www.sms-lift.com • e-mail sms@sms.bo.it Tecnical assistant: assistenzatecnica@sms.bo.it