## DATASHEET - DS7-340SX012N0-L



Soft starter, 12 A, 200 - 480 V AC, 24 V AC/DC, Frame size FS1, Ambient temperature Operation -40 - +40  $^{\circ}\text{C}$ 



Part no. DS7-340SX012N0-L Catalog No. 171743

**Alternate Catalog** 

ntalog DS7-340SX012N0-L

No.

**EL-Nummer** 4110407

(Norway)

#### **Delivery program**

Description			With internal bypass contacts
Function			Soft starters for three-phase loads
Mains supply voltage (50/60 Hz)	$U_{LN}$	V AC	200 - 480
Supply voltage	$U_s$		24 V AC/DC
Control voltage	U <sub>C</sub>		24 V AC 24 V DC
Assigned motor rating (Standard connection, In-Line)			
at 400 V, 50 Hz	P	kW	5.5
at 460 V, 60 Hz	P	HP	10
Rated operational current			
AC-53	I <sub>e</sub>	Α	12
Rated operational voltage	U <sub>e</sub>		200 V 230 V 400 V 480 V
Connection to SmartWire-DT			no
Frame size			FS1

## **Technical data**

#### General

General			
Standards			IEC/EN 60947-4-2 UL 508 CSA22.2-14
Approvals			CE
Approvals			UL CSA C-Tick UkrSEPRO
Climatic proofing			Damp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 Cold to EN 60068-2-1
Ambient temperature			
Operation	9	°C	-40 - +40 up to 60 at 2% derating per Kelvin temperature rise
Storage	9	°C	-40 - +60
Altitude		m	0 - 1000 m, above that 1 $\%$ derating per 100 m , up to 2000 m
Mounting position			Vertical
Degree of protection			
Degree of Protection			IP20
Protection against direct contact			Finger- and back-of-hand proof
Overvoltage category/pollution degree			11/2
Shock resistance			8 g/11 ms
Vibration resistance to EN 60721-3-2			2M2
Radio interference level (IEC/EN 55011)			В
Static heat dissipation, non-current-dependent	$P_{vs}$	W	0.6
Weight		kg	0.44
Main conducting paths			
Rated operating voltage	U <sub>e</sub>	V AC	200 - 480

Marchand desertional convention	Supply frequency	$f_{LN}$	Hz	50/60
Abots a				
Assigned motor rating (Standard connection, in Lina)         P         IVD         3           at 20 V 30 Fix         P         IVD         3           at 40 V 30 Fix         P         IVD         3           at 20 V 30 Fix         P         IPD         3           at 20 V 30 Fix         P         IPD         3           at 30 V 30 Fix         P         IPD         3           at 30 V 30 Fix         P         IPD         3           AC 528         Bernard System (SISS) 4-2         AC 528         AC 528           feature record rations         Bernard System (SISS) 4-2         AC 7000 (SIZE) 4-C P PCRII           feature record ration         PS 2 Fix and deviction (sadditional with the fuses for examination types, r11)         AC 7000 (SIZE) 4-C P PCRII           State benefith         Bernard System (SIZE) 4-C P PCRII         AC 7000 (SIZE) 4-C P PCRII           State benefith         Bernard System (SIZE) 4-C P PCRII         AC 7000 (SIZE) 4-C P PCRII           State standard System (SIZE) 4-C P PCRII         AC 7000 (SIZE) 4-C P PCRII         AC 7000 (SIZE) 4-C P PCRII           State of the standard System (SIZE) 4-C PCRII         AC 7000 (SIZE) 4-C P PCRII         AC 7000 (SIZE) 4-C P PCRII           State of the standard System (SIZE) 4-C PCRIII 4-C PCRII         AC 7000 (SIZE) 4-C P PCRIII 4-C PCRI	·			12
1		1 <sub>e</sub>	А	12
1		D	134/	
## 1200 V.00 Hz ## 1200 V.00 H				
in #301 ( 00 No				
Marian   Paris   Marian   Paris   Marian   Paris   Marian   Paris   Marian   Paris				
Content   Cont				
Acc   Sale		•	""	
Store-terror training				12 A: AC-53a: 3 - 5: 75 - 10
Short extract mining				
Prope "1" coardination   Prope 2" coardination (yellational with the fuses for coardination type 2"   3x 170M1302   Fisse base founder x part no.)   3x 170M1302   Fisse base founder x part no.)   3x 170M1302   Fisse base founder x part no.]   3x 170M1302				
Type _2" coordination (additional with the fases for coordination type _1")   Fisial base (aumber x part no.)	-			PKM0-12 (+ CL-PKZ0)
Terminal capacities				
Cable lengths	, , , , , , , , , , , , , , , , , , , ,			
Cable lengths	Fuse base (number x part no.)			3 x 170H1007
Cable lengths         mm²         1x (0.75 - 4) 2x (0.75 - 2.5)           Sold         mm²         1x (0.75 - 2.5)           Ensible with ferule         m²         1x (0.75 - 2.5)           Sold or stranded         AWG         19 10           Tightenig torque         Nm         12 22, 1x 6 mm           Corrot clables         mm²         2x (0.75 - 2.5)           Sold         mm²         1x (0.75 - 4)           Besible with ferrule         mm²         1x (0.75 - 4)           Sold or stranded         AWG         18 - 10           Tightening torque         1 x (0.75 - 4)         1 x (0.75 - 2)           Solid or stranded         AWG         18 - 10           Tight inputs         1 x (0.75 - 4)         1 x (0.75 - 2)           Solid or stranded         AWG         18 - 10           Solid or stranded         AWG         18 - 10           Tight inputs         1 x (0.75 - 4)         1 x (0.75 - 2)           Solid or stranded         V.D.         2 x (0.75 - 2)         2 x (0.75 - 2)           Control calzine         2 x (0.75 - 2)         2 x (0.75 - 2) </td <td>Terminal capacities</td> <td></td> <td></td> <td></td>	Terminal capacities			
Flexible with ferrule	Cable lengths			
Flickbloth with furnulo	Solid		$mm^2$	
Solid or stranded	Flavible with farrule		2	
Name	riexible with letture		mm²	
Scrowdriver (PZ: Pozidiniy)         mm         PZ: 1 x 6 mm           Control cables         mm²         2 x (0.75 - 4)           Solid         mm²         2 x (0.75 - 25)           Flexible with feurule         mm²         2 x (0.75 - 25)           Solid or strandod         AWG         18 - 10           Tightening torque         Mm         1.2           Screwdriver         mm         0.04 x 5.           Ugital inputs         Mm         1.2           Control voltage         VDC         24 VDC +10 % -15 %           OC-operated         VDC         24 VDC +10 % -15 %           Current consumption 24 V         mA         1.6           Extranal 24 V         mA         1.6           Pick-up voltage         VDC         17.3 -27           DC-operated         VDC         17.3 -27           DC-operated         VDC         0 - 3           AC operated         VDC         0 - 3           DC-operated         VDC         0 - 3           AC operated         MB         250           DC-operated         MB         250           DC-operated         MB         250           DC-operated         MB         250	Solid or stranded		AWG	18 - 10
Control cables         mm²         1 × (0.75 - 2.5)           Solid         mm²         1 × (0.75 - 2.5)           Hexible with ferrule         mm²         1 × (0.75 - 2.5)           Solid or stranded         y Mg         10           Solid or stranded         y Mg         10           Screwdriver         mm²         0,8 x 5.5           Control circuit         y VDC         24 y DC + 10 % - 15 %           Control voltage         y VDC         24 y DC + 10 % - 15 %           Control voltage         mA         1.6           External 24 y         mA         1.6           Pick-up voltage         y VDC         1.3 - 2.7           DC-operated         y VDC         1.3 - 2.7           DC-operated         y VDC         0 - 3           A Coperated         y VDC         0 - 3           Pick-up time         y VDC         0 - 3           Pick-up time         y VDC         0 - 3           DC operated         mB         25           A Coperated         mB         25           DC operated         mB         25           A Coperated         mB         25           DC operated         mB         25	Tightening torque		Nm	1.2
	Screwdriver (PZ: Pozidriv)		mm	PZ2; 1 x 6 mm
Flexible with ferrule	Control cables			
Solid or stranded	Solid		mm <sup>2</sup>	
Name	Flexible with ferrule		mm <sup>2</sup>	
Control circuit         mm         0,8 x 5,5 1 x 6           Control voltage         V DC         24 V DC +10 %/- 15 %           Corrent consumption 24 V         mA         1.6           External 24 V         mA         1.6           Pick-up voltage         V DC         17.3 - 27           DC-operated         V DC         17.3 - 27           AC operated         V DC         0 - 3           DC operated         V DC         0 - 3           AC operated         V AC         0 - 3           Pick-up time         W DC         0 - 3           Pick-up time         ms         250           AC operated         ms         250           AC operated         ms         250           AC operated         ms         250           AC operated         ms         250           DC operated         ms         350           Regulator supply         V <t< td=""><td>Solid or stranded</td><td></td><td>AWG</td><td>18 - 10</td></t<>	Solid or stranded		AWG	18 - 10
	Tightening torque		Nm	1.2
Control circuit         Image: I	Screwdriver		mm	
Digital inputs         Control voltage         V DC         24 V DC +10 %/- 15 %           DC-operated         V DC         24 V DC +10 %/- 15 %           Current consumption 24 V         mA         1.6           External 24 V         mA         1.6           Pick-up voltage         v UC         17.3 - 27           AC operated         v AC         17.3 - 27           DCo-poetated         v UC         0 - 3           AC operated         v AC         0 - 3           AC operated         v AC         0 - 3           Pick-up time         mS         250           DCo-porated         mS         250           AC operated         mS         250           AC operated         mS         250           DC operated         mS         350           Regulator supply         v AC         24 V AC/DC +10 %/-15 %           Voltage         V         24 V AC/DC +10 %/-15 %           Current consumption         I <sub>e</sub> mA         5           Notes         External supply voltage	Control circuit			1.00
DC-operated         V DC         24 V DC + 10 %/- 15 %           Current consumption 24 V         mA         1.6           External 24 V         mA         1.6           Pick-up voltage         x U <sub>s</sub> 17.3 - 27           DC-operated         V DC         17.3 - 27           Drop-out voltage         x U <sub>s</sub> V DC           DC operated         V DC         0 - 3           AC operated         V DC         0 - 3           Pick-up time         ms         250           AC operated         ms         250           AC operated         ms         250           AC operated         ms         350           DC operated         ms         350           Begulator supply         V         24 V AC/DC + 10 %/- 15 %           Voltage         V         24 V AC/DC + 10 %/- 15 %           Current consumption         I <sub>e</sub> mA         50           Notes         External supply voltage         External supply voltage	Digital inputs			
Current consumption 24 V         mA         1.6           External 24 V         mA         1.6           Pick-up voltage         x U <sub>s</sub> V DC           DC-operated         V DC         17.3 - 27           AC operated         x U <sub>s</sub> V DC           DC operated         V DC         0 - 3           AC operated         V AC         0 - 3           Pick-up time         ms         250           DC operated         ms         250           AC operated         ms         250           Drop-out time         ms         350           DC operated         ms         350           Regulator supply         Voltage         V A AC/DC + 10 % - 15 %           Voltage         V A C MAC/DC + 10 % - 15 %         50           Current consumption         I <sub>e</sub> mA         50           External supply voltage         External supply voltage         External supply voltage	Control voltage			
External 24 V         mA         1.6           Pick-up voltage         x U <sub>s</sub> 17.3 - 27           DC-operated         v U <sub>S</sub> 17.3 - 27           Drop-out voltage         x U <sub>s</sub> v DC           DC operated         v DC         0 - 3           AC operated         v AC         0 - 3           Pick-up time         ms         250           DC operated         ms         250           AC operated         ms         250           AC operated         ms         250           DC operated         ms         350           DC operated         ms         350           Regulator supply         v         24 V AC/DC + 10 %/- 15 %           Voltage         v         24 V AC/DC + 10 %/- 15 %           Current consumption         I <sub>e</sub> mA         50           Notes         50         24 V AC/DC + 10 %/- 15 %	DC-operated		V DC	24 V DC +10 %/- 15 %
Pick-up voltage         x U <sub>s</sub> DC-operated         V DC         17.3 - 27           AC operated         x U <sub>s</sub> 17.3 - 27           Drop-out voltage         x U <sub>s</sub> V DC         0 - 3           AC operated         V AC         0 - 3           Pick-up time         V AC         0 - 3           DC operated         ms         250           AC operated         ms         250           Drop-out time         ms         250           DC operated         ms         350           Regulator supply         ws         350           Voltage         V AC/DC + 10 % - 15 %           Current consumption         I <sub>e</sub> mA         50           Notes         External supply voltage	Current consumption 24 V		mA	
DC-operated	External 24 V		mA	1.6
Notes  Note	Pick-up voltage		$x U_s$	
Drop-out voltage  DC operated  AC operated  Pick-up time  DC operated  AC operated  DC operated  DC operated  DC operated  AC operated  AC operated  Drop-out time  DC operated  DC operate	DC-operated		V DC	17.3 - 27
DC operated VDC 0-3 AC operated VAC 0-3 Pick-up time VDC operated ms 250 AC operated ms 250 Drop-out time ms 250 Drop-out time DC operated ms 350 Regulator supply Voltage Us VAC/DC +10 %/- 15 % Current consumption le mAC bC External supply voltage External supply voltage External supply voltage External supply voltage	AC operated		V AC	17.3 - 27
AC operated Pick-up time  DC operated MS 250  AC operated MS 250  Drop-out time  DC operated MS 350  Regulator supply  Voltage Us VAC 0-3  ***  ***  ***  ***  ***  ***  ***	Drop-out voltage	$x U_s$		
Pick-up time  DC operated AC operated AC operated Drop-out time DC operated DC operated  DC operated  DC operated  DC operated  Us ws 350  Regulator supply Voltage	DC operated		V DC	0 - 3
DC operated ms 250 AC operated ms 250 Drop-out time	AC operated		V AC	0 - 3
MS 250 Drop-out time	Pick-up time			
Drop-out time DC operated Regulator supply  Voltage Current consumption Notes  W  SD  SD	DC operated		ms	250
DC operated ms 350 Regulator supply Voltage Us V4 V AC/DC +10 %/- 15 % Current consumption Ie mA 50 Notes External supply voltage	AC operated		ms	250
Regulator supply Voltage Us Voltage Us Voltage Regulator supply Us Voltage Us VV 24 V AC/DC +10 %/- 15 %  Current consumption Ue MA 50 External supply voltage	Drop-out time			
Voltage	DC operated		ms	350
Current consumption I <sub>e</sub> mA 50  Notes External supply voltage	Regulator supply			
Notes External supply voltage	Voltage	$U_s$	V	24 V AC/DC +10 %/- 15 %
	Current consumption	l <sub>e</sub>	mA	50
Relay outputs	Notes			External supply voltage
nou, output	Relay outputs			

Number		1 (TOR)
Voltage range	V A	$AC = U_S$
AC-11 current range	А	1 A, AC-11
Soft start function		
Ramp times		
Acceleration	s	
Ramp time, max.	s	30
Deceleration	s	0 - 30
Start voltage (= turn-off voltage)	%	30 100
Start pedestal	%	30 - 100
Fields of application		
Fields of application		Soft starting of three-phase asynchronous motors
1-phase motors		•
3-phase motors		✓
Functions		
Fast switching (semiconductor contactor)		- (minimum ramp time 1s)
Soft start function		✓
Reversing starter		External solution required
Suppression of closing transients		✓
Suppression of DC components for motors		✓
Potential isolation between power and control sections		✓

## Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	12
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	0
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0.6
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0.6
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-40
Operating ambient temperature max.		°C	40
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.
10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
10.10 Temperature rise			The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating			Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

### **Technical data ETIM 7.0**

Low-voltage industrial components (EG000017) / Soft starter (EC000640)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecl@ss10.0.1-27-37-09-07 [AC0300011])

(eci@ss10.0.1-27-37-09-07 [AC0300011])		
Rated operation current le at 40 °C Tu	Α	12
Rated operating voltage Ue	V	230 - 460
Rated power three-phase motor, inline, at 230 V	kW	3
Rated power three-phase motor, inline, at 400 V	kW	5.5
Rated power three-phase motor, inside delta, at 230 V	kW	0
Rated power three-phase motor, inside delta, at 400 V	kW	0
Function		Single direction
Internal bypass		Yes
With display		No
Torque control		No
Rated surrounding temperature without derating	°C	40
Rated control supply voltage Us at AC 50HZ	V	24 - 24
Rated control supply voltage Us at AC 60HZ	V	24 - 24
Rated control supply voltage Us at DC	V	24 - 24
Voltage type for actuating		AC/DC
Integrated motor overload protection		No
Release class		Other
Degree of protection (IP)		IP20
Degree of protection (NEMA)		1

## **Approvals**

Product Standards	IEC/EN 60947-4-2; GB 14048.6; UL 508; CSA-C22.2 No 0-M91; CSA-C22.2 No 14-05 CE
UL File No.	E251034
CSA File No.	2511305
CSA Class No.	321106
Suitable for	Branch circuits
Max. Voltage Rating	480 V
Degree of Protection	IP20; UL/CSA Type 1

# **Dimensions** 00000 130 mm (5.12") 125 mm (4.92") 00 0 0 1 ووووو 00000 ПЖ 4 x M4 35 mm 95 mm (3.74") (1.38") 45 mm (1.77")