EWELLIX

A Schaeffler Company

Servo actuator SEMC

- Compactness
- Lightweight
- High power density
- Roller screw technology

Servo actuator SEMC

Features

- High performance roller screw for high speed (up to 600 mm/s) and acceleration (up to 9,5 m/s^2) requests
- High dynamic servomotor for high speed and acceleration requests
- Optional anti-rotation device
- Adjustable external proximity switches
- Optional lubricant for food grease compatibility
- Optional fail safe brake, absolute encoder on servomotor
- Recirculation roller screw with low lead (up to 1 mm) available on demand

Benefits

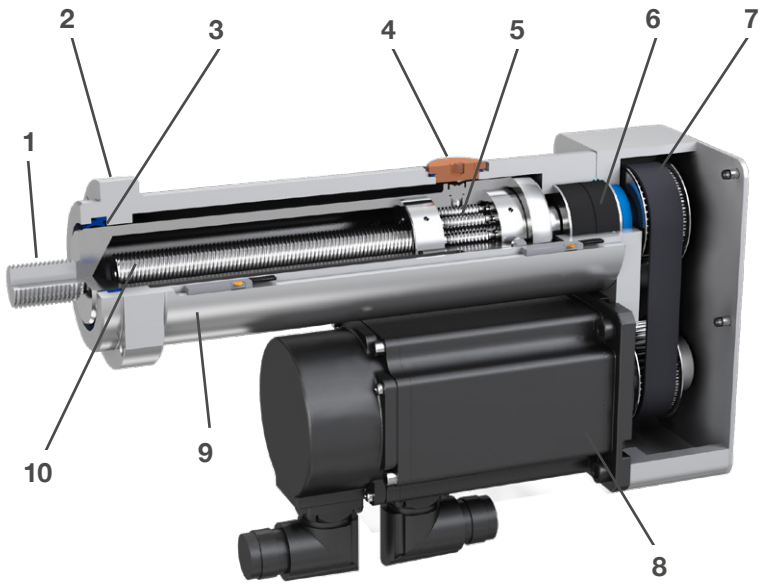
- Long lifetime, thanks to roller screw technology
- Aluminium body to save kg and limit total weight of the actuator
- Customized motor adapter for highest flexibility (max motor section 90 mm)
- Compact solution with high power density

Product description

In addition to standard electrical cylinder product range, Ewellix offers an extensive customization program that is able to fulfill specific application needs. This is important for Ewellix recognition as a knowledge engineering company and solution provider.

The SEMC actuator is one of the customized solutions designed by Ewellix. The application requirements consisted of a dimensionally compact and lightweight actuator with a long lifetime, high speed and high acceleration.

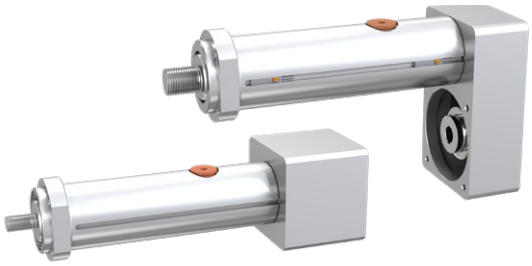
The Ewellix solution is based on a BRC15 × 5 or 8 roller screw, with a full aluminium body, resulting in a very compact solution weighing less than 7 kg including the motor, but robust thanks to the roller screw technology used inside.



1. Male thread on push rod (customization upon request)
2. Front mount
3. Scraper on the front to keep out contaminants
4. Plug for direct grease access on roller screw nut body
5. High quality Ewellix planetary roller screw with backlash elimination
6. High quality SKF bearings
7. Pulleys/belt transmission (ratio 1:1)
8. Servomotor
9. Aluminium body
10. Steel push rod

SEMC

Linear unit

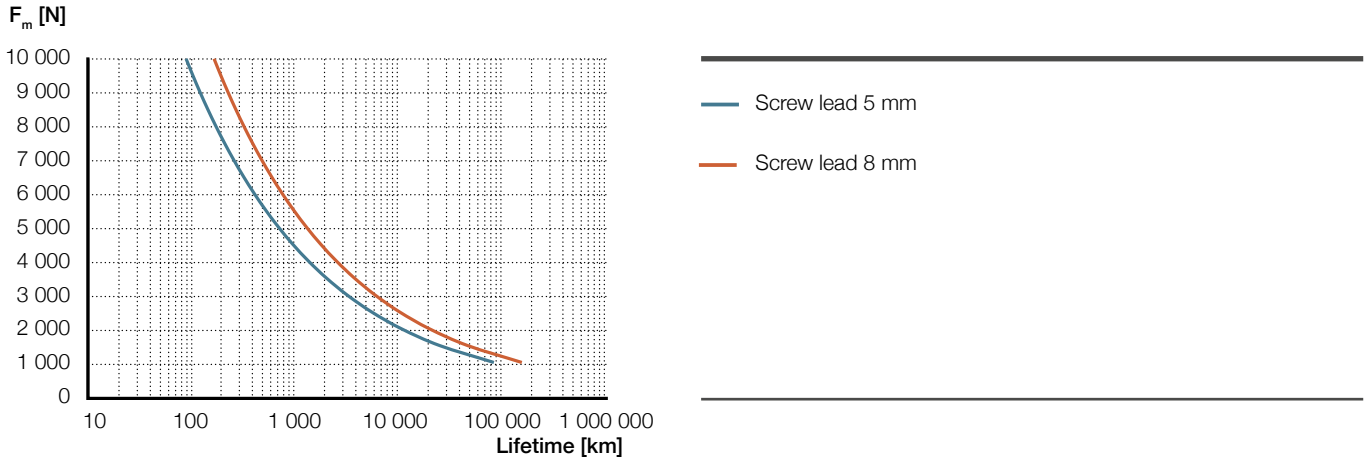


Technical data

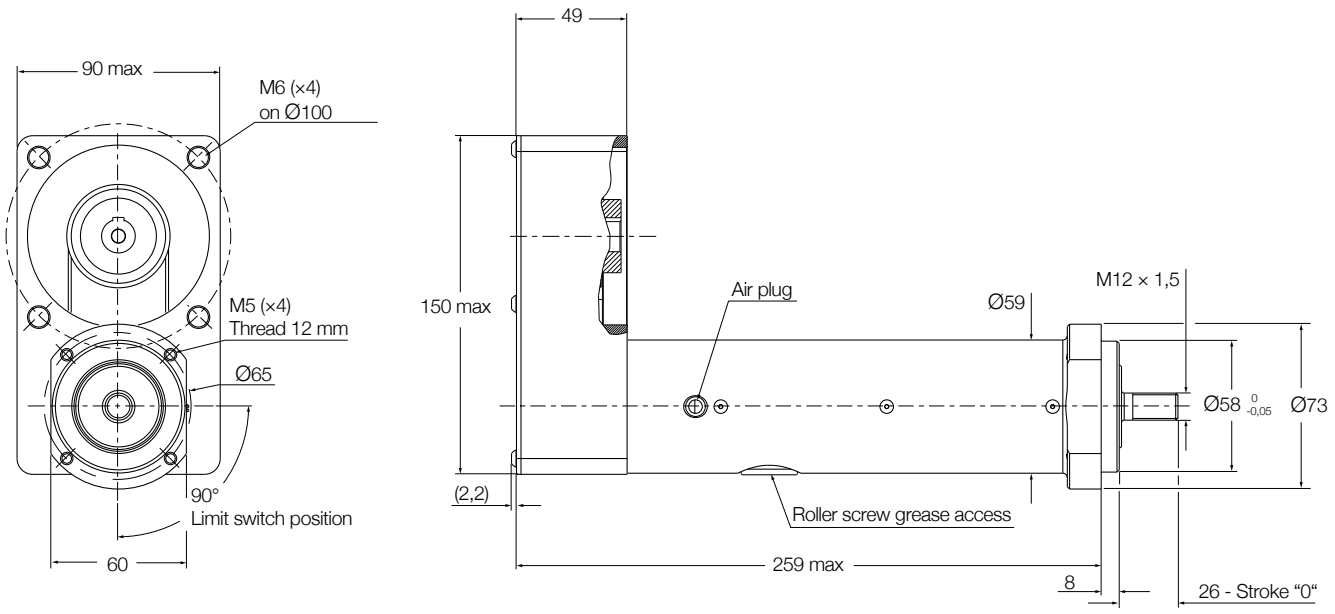
Designation	Symbol	Unit	SEMC1505 w/o motor		SEMC1508 w/o motor	
			P10 interface	L10 interface	P10 interface	L10 interface
Performance data						
Max. dynamic axial force	F_{max}	kN	7,4	10	4,5	6,2
Max. dynamic axial force L10[1)]	F_{L10}	kN	7,4	9	4,5	6,2
Max. static axial force	F_{0max}	kN	7,4	10	4,5	6,2
Dynamic load capacity	C	kN	26	26	27,4	27,4
Maximum torque to reach F_{max}	M_{max}	Nm	7,5	10	7,5	10
Max. linear speed	V_{max}	mm/s	375	375	600	600
Max. rotational speed	n_{max}	1/min	4 500	4 500	4 500	4 500
Max. acceleration	a_{max}	m/s^2	6	6	9,5	9,5
Duty cycle	D_{unit}	%	100	100	100	100
Mechanical Data						
Screw type	–	–	Roller screw	Roller screw	Roller screw	Roller screw
Screw diameter	d_{screw}	mm	15	15	15	15
Screw lead	p_{screw}	mm	5	5	8	8
Lead accuracy	–	–	G5	G5	G5	G5
Stroke	s	mm	up to 125	up to 125	up to 125	up to 125
Internal overstroke each side	s_0	mm	2	2	2	2
Backlash	$s_{backlash}$	mm	0	0	0	0
Efficiency	η_{lu}	%	78	80	77	79
Gear reduction	ι	–	1	1	1	1
Weight @ 0 mm stroke	m_{lu}	kg	3,7	3,7	3,7	3,7
Δ Weight per 50 mm stroke	Δm	kg	0,4	0,4	0,4	0,4
Environment						
Ambient temperature	$T_{ambient}$	°C	0…+40	0…+40	0…+40	0…+40
Degree of protection	IP	–	54S	54S	54S	54S

[1)] Maximum dynamic axial force usable to apply the theoretical lifetime calculation (L_{10})

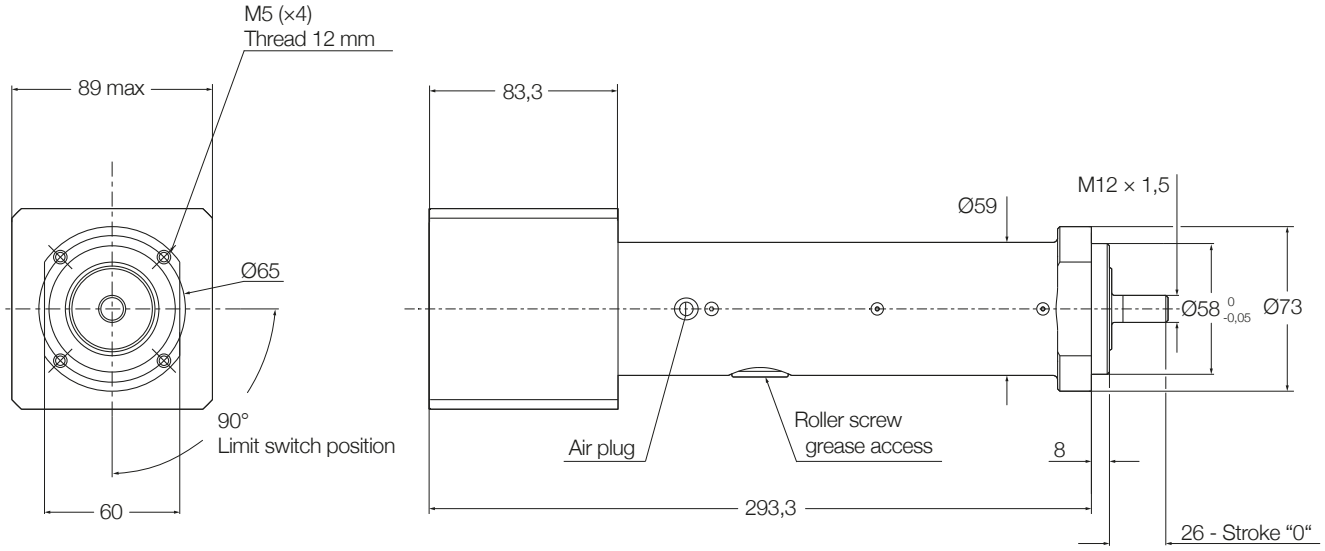
Lifetime diagram



Dimensional drawing parallel configuration



Dimensional drawing inline configuration

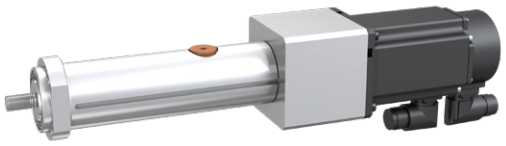


Ordering key

See **page 10**

SEMC

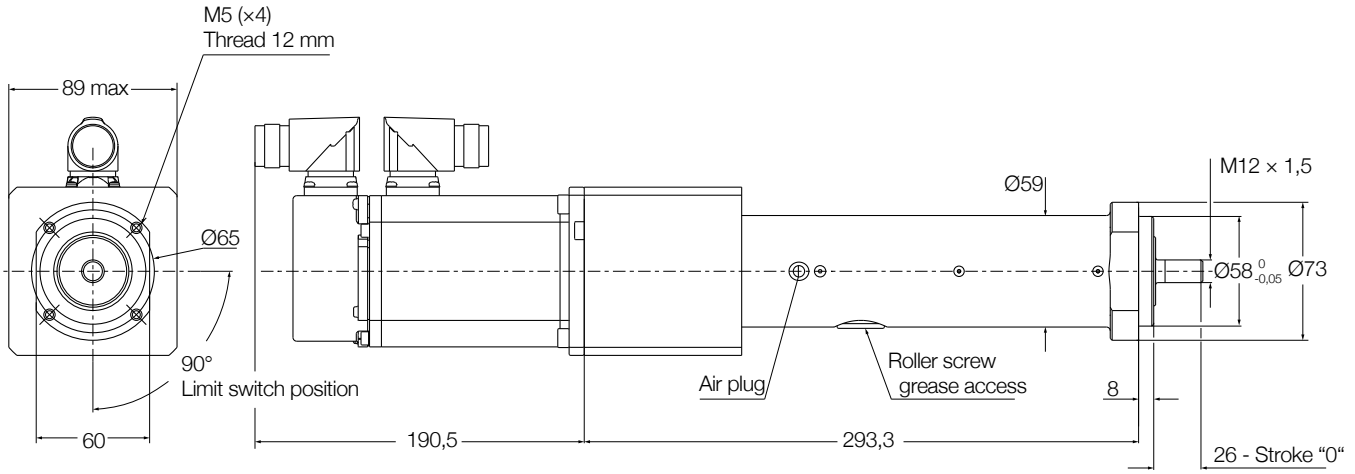
Servomotor, inline configuration



Technical data

Designation	Symbol	Unit	SEMC1505 Lenze MCS L10 interface	SEMC1508 Lenze MCS L10 interface
Performance data				
Continuous force @ zero speed	F_{c0}	kN	3,2	2,0
Continuous force @ max speed	F_{c}	kN	2,4	1,5
Peak force @ zero speed	F_{p0}	kN	7,9	4,8
Peak force @ max speed	F_{p}	kN	4,7	2,9
Dynamic load capacity	C	kN	26	27,4
Holding force (motorbrake option)	F_{hold}	kN	10	7,1
Max. linear speed	v_{max}	mm/s	300	480
Max. acceleration	a_{max}	m/s²	6	9,5
Duty cycle	D_{unit}	%	100	100
Mechanical Data				
Screw type	–	–	Roller screw	Roller screw
Screw diameter	d_{screw}	mm	15	15
Screw lead	p_{screw}	mm	5	8
Lead accuracy	–	–	G5	G5
Stroke	s	mm	up to 125	up to 125
Internal overstroke each side	s_{0}	mm	2	2
Backlash	$s_{backlash}$	mm	0	0
Gear reduction	i	–	1	1
Weight @ 0 mm stroke	m_{lu}	kg	8	8
Δ Weight per 50 mm stroke	Δ m	kg	0,4	0,4
Environment				
Ambient temperature	$T_{ambient}$	°C	0…+40	0…+40
Degree of protection	IP	–	54S	54S

Dimensional drawing

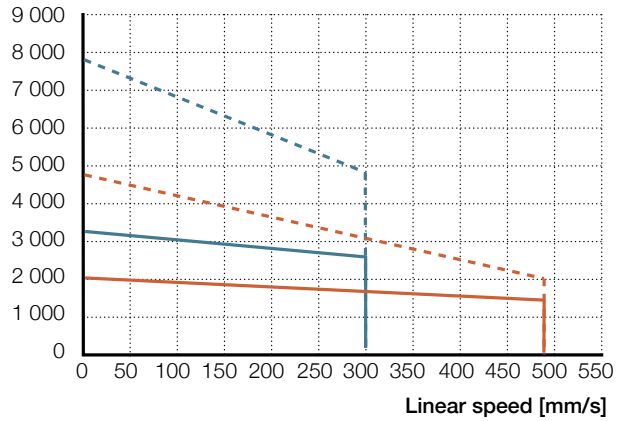


Drawing valid for a stroke of 125 mm (the maximum stroke on SEMC)
For brake option, add 20 mm on the servomotor length
For brake option, add 0,8 kg
For absolute encoder option, add 51 mm on the servomotor length
Motor plugs/connectors are orientable

Standard motor type		
Motor	**Lenze servo motor**	**Lenze 9400 Highline servoamplifier**
LE6	MCS09D41	E94ASHE0034

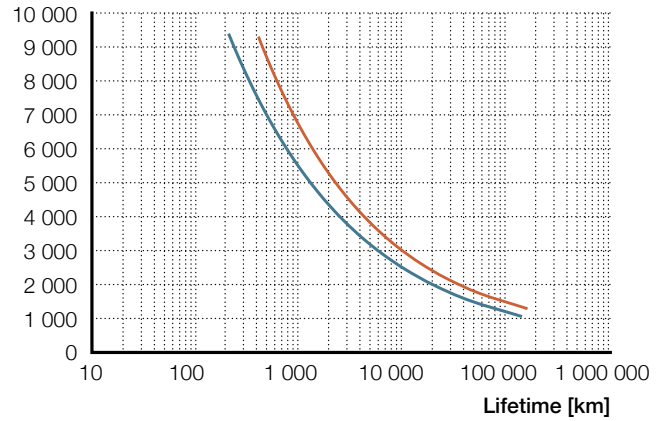
Performance diagrams

Axial force [N]



Screw lead 5 mm — Screw lead 8 mm

F_m [N]



Screw lead 5 mm — Screw lead 8 mm

Ordering key

See **page 10**

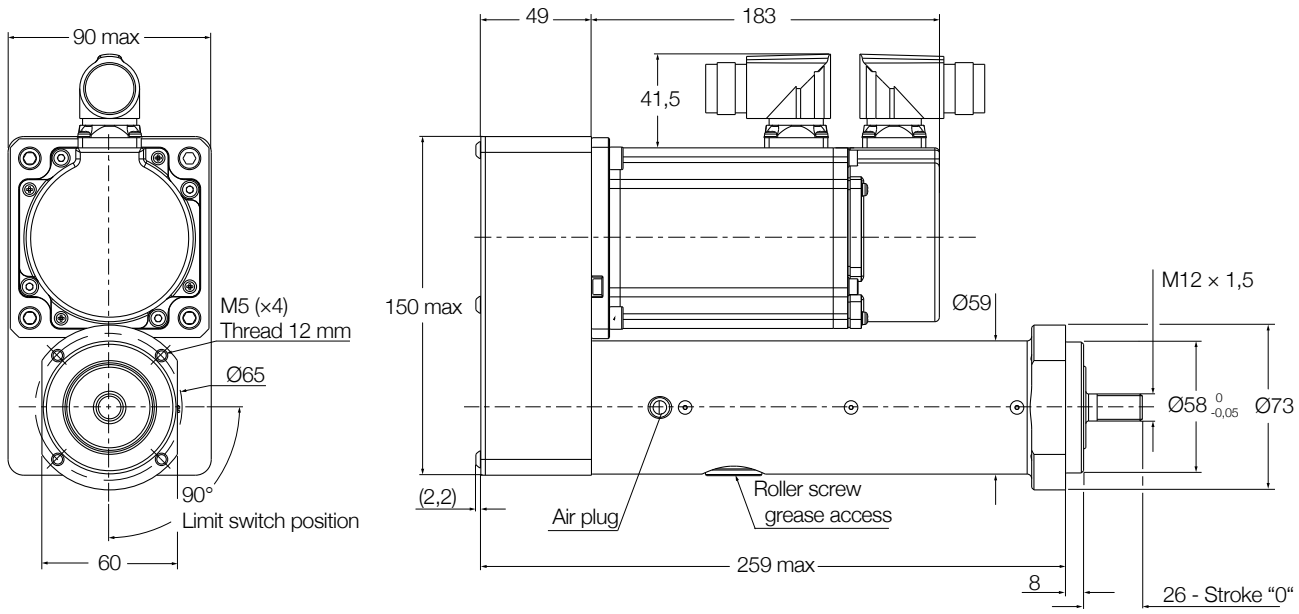
SEMC

Servomotor, parallel configuration

Technical data

Designation	Symbol	Unit	SEMC1505 Lenze MCS P10 interface	SEMC1508 Lenze MCS P10 interface
Performance data				
Continuous force @ zero speed	F_{c0}	kN	3,1	1,9
Continuous force @ max speed	F_{c}	kN	2,4	1,5
Peak force @ zero speed	F_{p0}	kN	7,4	4,5
Peak force @ max speed	F_{p}	kN	4,6	2,8
Dynamic load capacity	C	kN	26	27,4
Holding force (motorbrake option)	F_{hold}	kN	10	6,7
Max. linear speed	v_{max}	mm/s	300	480
Max. acceleration	a_{max}	m/s²	6	9,5
Duty cycle	D_{unit}	%	100	100
Mechanical Data				
Screw type	–	–	Roller screw	Roller screw
Screw diameter	d_{screw}	mm	15	15
Screw lead	p_{screw}	mm	5	8
Lead accuracy	–	–	G5	G5
Stroke	s	mm	up to 125	up to 125
Internal overstroke each side	s_{0}	mm	2	2
Backlash	$s_{backlash}$	mm	0	0
Gear reduction	i	–	1	1
Weight @ 0 mm stroke	m_{lu}	kg	8	8
Δ Weight per 50 mm stroke	Δm	kg	0,4	0,4
Environment				
Ambient temperature	$T_{ambient}$	°C	0…+40	0…+40
Degree of protection	IP	–	54S	54S

Dimensional drawing



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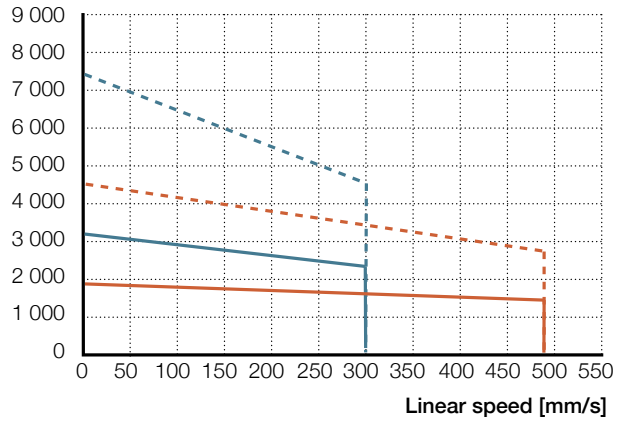
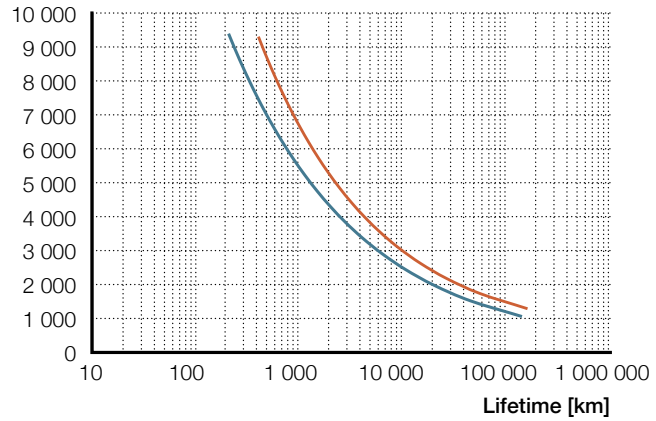
Performance diagrams

Axial force [N]



Screw lead 5 mm — Screw lead 8 mm

F_m [N]



Screw lead 5 mm — Screw lead 8 mm

Ordering key

See **page 10**

Ordering key

Linear units

Type

Design
U Linear unit only
S Servo motor

Screw diameter

Screw lead
05 5 mm
08 8 mm

Stroke (mm)

Rear attachement
F Front plate
Z Custom

Front attachement
M Male thread
N No attachement (female thread)
Z Custom

Anti-rotation
A Anti-rotation
N No anti-rotation

Limit switches[1)]
F 2 limit switches and 1 home switch
S 2 limit switches only
M 1 limit switch and 1 home switch
L 1 limit switch only
H Home switch only
N No switch

[1)] The limit switches configuration can be limited by the stroke length

SEMC - S - 1508 - 125 FMAF - P10LE61BYA1

Linear unit interface
L Inline interface
P Parallel interface

Interface and gear ratio
10 ratio 1:1

Motor code

Feedback
1 Resolver
2 Absolute encoder Hiperface

EM brake
B Brake 24 VDC
N No brake

Motor drive
Y Drive included
N No drive

Drive fieldbus
A CanOpen
B Devicenet
C Ethercat
D Ethernet
E Powerlink MN/CN
F Powerlink CN
G Profibus
H Profinet
N No fieldbus

Power and signal cables
1 5m
2 10m
3 15m
4 20m
N No cable

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