

High-Load Linear Stage

High Performance and Cost Efficiency, Drive Screw



L-412

- Width 116 mm, travel range to 610 mm
- Precision ball screw
- Incremental and absolute rotary encoders
- Additional linear encoder options
- Precision recirculating ball bearings, load capacity to 400 N
- Covering strip on the side for protection against particles

Reference-class linear stage

A new linear stage family with precision balls screws expands PIs product portfolio for industrial solutions. High-performance synchronous servo motors, heavy-duty recirculating ball bearings, and precision rotary and linear encoders are used. The optional holding brake allows use as Z axis. The ball screw can be relubricated from the outside without disassembling to ensure high reliability and long lifetimes. It is also possible to integrate into a customer's central lubrication system. The covering strip on the side and the purge air connection prevent contamination by particles.

Pioneering design

Compared to the competition, the recirculating ball bearings of the L-412 series offer a higher load capacity and allow higher dynamics. The high resolution of the motors allow improved tracking performance, smaller tracking error, and improved settling times.

Options

- Holding brake (L-412.xxxxxxB)
- Various rotary and linear encoders, absolute and incremental
- Versions with linear encoder with optional drag chain and connection box (L-412.xxxxxxE1) or without drag chain (L-412.xxxxxxE0). L-412.xxx212 is only available in conjunction with drag chain option E1.
- On request: Folded drivetrain with belt drive. This modification reduces the overall length.
- On request: Calibration and certification

Synchronous servo motor

These motors have high positioning accuracy and high overload capacity over a large rotation speed range. High torque and low inertia ensure the high dynamics of the drives. The long lifetime, high performance, and robustness of these motors allow excellent results in industrial automation applications.

Application fields

Laser cutting, Electronics production, AOI (Automatic Optical Inspection), Automation. Applications with high demands on dynamics, precision, smooth motion, short settling times, and low tracking error.

Specifications

Motion	L-412.03	L-412.05	L-412.09	L-412.13	Unit	Tolerance
Active axes	X	X	X	X		
Travel range	52	102	204	305	mm	
Pitch / yaw	±9	±14	±19	±29	μrad	max.
Straightness / flatness	±1.5	±2.5	±4	±6	μm	max.
Velocity, unloaded	300	300	300	300	mm/s	max.
Positioning accuracy, uncalibrated	±5	±6	±8	±10	μm	max.

Motion	L-412.17	L-412.21	L-412.25	Unit	Tolerance
Active axes	X	X	X		
Travel range	407	508	610	mm	
Pitch / yaw	±39	±48	±58	μrad	max.
Straightness / flatness	±8	±9	±10	μm	max.
Velocity, unloaded	300	300	300	mm/s	max.
Positioning accuracy, uncalibrated	±12	±14	±16	μm	max.

Encoder options	L-412.xxx232 basic option	L-412.xxx244	L-412.xxx054	Unit	Tolerance
Integrated sensor	Incremental rotary encoder	Absolute rotary encoder, single turn	Absolute rotary encoder, multi-turn		
Sensor signal	A/B quadrature, RS-422	EnDat 2.1	EnDat 2.1		
Sensor resolution	20000	8192	8192	Cts./rev.	
Design resolution	0.25	0.6	0.6	μm	
Minimum incremental motion	1	2	2	μm	
Bidirectional repeatability	±1	±3	±3	μm	max.
Limit switches	Hall effect, N/C contact, 5 V, NPN	Hall effect, N/C contact, 5 V, NPN	–		
Sensor connection	M23	M23	M23		

Encoder options	L-412.xxx212E1	L-412.xxx211Ex	L-412.xxx025Ex	Unit	Tolerance
Integrated sensor	Incremental linear encoder For additional rotary encoder, see basic option	Incremental linear encoder For additional rotary encoder, see basic option	Absolute-measuring linear encoder For additional rotary encoder, see basic option		
Sensor signal	A/B quadrature, RS-422	Sin/cos, 1 V peak-peak, 20 µm signal period	EnDat 2.2		
Design resolution	0.05	–	0.001	µm	
Minimum incremental motion	300	50	50	nm	typ.
Bidirectional repeatability	±0.5	±0.5	±0.5	µm	max.
Limit switches	Hall effect, N/C contact, 5 V, NPN	Hall effect, N/C contact, 5 V, NPN	–		
Sensor connection	Sub-D 15 (m)	M17	M17		
Available drag chain options	E1	E0 E1	E0 E1		

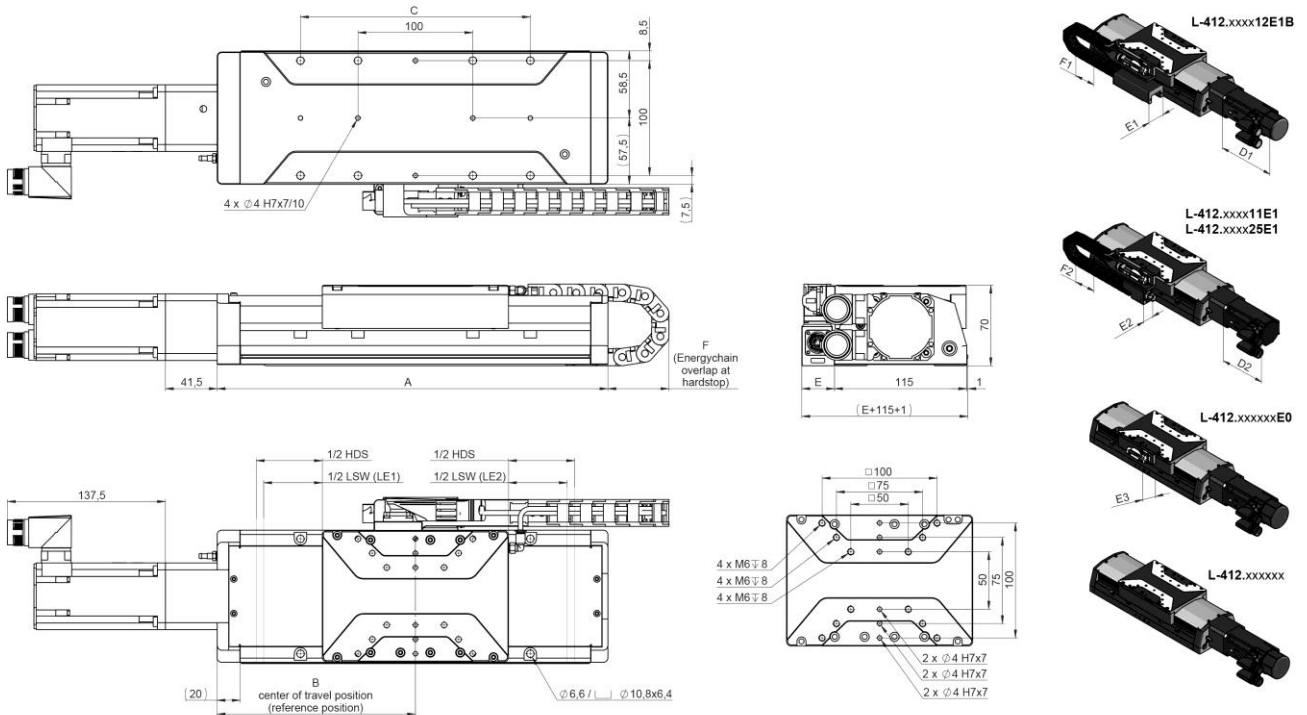
Mechanical properties	L-412.xxxxxx	L-412.xxxxxxB	Unit	Tolerance
Guide type	Recirculating ball bearing	Recirculating ball bearing		
Drive screw type	Ball screw	Ball screw		
Holding brake	–	Electromagnetic safety brake		
Drive screw pitch	5	5	mm	
Push/pull force, power on	700	700	N	max.
Holding force, power off	–	500	N	typ.
Load capacity in Z	400	400	N	max.
Permissible lateral force	200	200	N	max.
Permissible torque in θ_x	20	20	N·m	max.
Permissible torque in θ_y	15	15	N·m	max.
Permissible torque in θ_z	20	20	N·m	max.

Drive properties	L-412.xx9	Unit	Tolerance
Drive type	Synchronous servo motor		
Intermediate circuit voltage, effective	320	V DC	max.
Peak torque	2.76	N·m	typ.
Nominal torque	0.7	N·m	typ.
Peak current, RMS	10.9	A	typ.
Nominal current, RMS	2.73	A	typ.
Torque constant, RMS	0.32	N·m/A	typ.
Resistance phase-phase	5.22	Ω	typ.
Inductance phase-phase	9.7	mH	typ.
Back EMF phase-phase	20.4	V/kRPM	max.
Number of pole pairs	3		

Miscellaneous	L-412	Unit	Tolerance
Material	Aluminum, black anodized stainless steel		
Overall mass	L-412.03 (52 mm travel range): 6.4 L-412.05 (102 mm travel range): 6.9 L-412.09 (204 mm travel range): 7.9 L-412.13 (305 mm travel range): 8.9 L-412.17 (407 mm travel range): 9.8 L-412.21 (508 mm travel range): 10.8 L-412.25 (610 mm travel range): 11.8	kg	±5 %
Moved mass	1.4	kg	±5 %
MTBF	20000	h	
Connection	M23 (motor) M23 (rotary encoder) Optional connection for linear encoder Fitting for purge air hose with outside diameter 4 mm Funnel-type grease nipple for spindle lubrication		
Limit switch connection	M8 8-pin		
Recommended controllers	ACS modular controller		

Connecting cables are not in the scope of delivery and must be ordered separately.

Drawings / Images



BASIS MODELL	TRAVEL NOMINAL	LIMITSWITCH TO LIMITSWITCH LSW		HARDSTOP TO HARDSTOP HDS	A	B	C	D		E			F	
		L-412.xxx2xxEx	L-412.xxx0xxEx					D1	D2	E1	E2	E3	F1	F2
L-412.03xxxx	52 (2")	52-55	-	72	290	147.5	100	L-412.xxxxxExB	L-412.xxxxxEx	L-412.xxxx12E1	L-412.xxxx11E1	L-412.xxxxxE0		
L-412.05xxxx	102 (4")	102-105	-	107	334	169.5	100, 200	L-412.xxxxxB	L-412.xxxxx		L-412.xxxx25E1			
L-412.09xxxx	204 (8")	204-207	-	211	438	221.5	100, 200, 300			44	28.5	28	78	83
L-412.13xxxx	305 (12")	305-308	-	312	539	272	100, 200, 300, 400			44	28.5	28	82	87
L-412.17xxxx	407 (16")	407-410	-	416	643	324	100, 200, 300, 400, 500			44	28.5	28	81	85
L-412.21xxxx	508 (20")	508-511	-	516	743	374	100, 200, 300, 400, 500, 600			44	28.5	28	86	81
L-412.25xxxx	610 (24")	610-613	-	615	845	425	100, 200, 300, 400, 500, 600, 700			44	28.5	28	80	85

L-412, dimensions in mm



L-412 with 610 mm travel range, linear encoder, and holding brake.



L-412 with holding brake used as Z axis. The L-412 linear stage was mounted on a V-731 precision XY stage with an L-500.AV1 adapter bracket.

Ordering Information

L-412.039025E0

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.039025E0B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.039025E1

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.039025E1B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.039054

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.039054B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.039211E0

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.039211E0B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.039211E1

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.039211E1B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.039212E1

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.039212E1B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.039232

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.039232B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.039244

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.039244B

High-load linear stage, 52 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.059025E0

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.059025E0B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.059025E1

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.059025E1B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.059054

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.059054B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.059211E0

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.059211E0B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.059211E1

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.059211E1B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.059212E1

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.059212E1B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.059232

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.059232B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.059244

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.059244B

High-load linear stage, 102 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.099025E0

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.099025E0B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.099025E1

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.099025E1B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.099054

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.099054B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.099211E0

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.099211E0B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.099211E1

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.099211E1B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.099212E1

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.099212E1B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.099232

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.099232B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.099244

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.099244B

High-load linear stage, 204 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.139025E0

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.139025E0B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.139025E1

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.139025E1B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.139054

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.139054B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.139211E0

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.139211E0B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.139211E1

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.139211E1B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.139212E1

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.139212E1B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.139232

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.139232B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.139244

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.139244B

High-load linear stage, 305 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.179025E0

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.179025E0B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.179025E1

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.179025E1B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.179054

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.179054B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.179211E0

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.179211E0B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.179211E1

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.179211E1B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.179212E1

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.179212E1B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.179232

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.179232B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.179244

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.179244B

High-load linear stage, 407 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.219025E0

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.219025E0B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.219025E1

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.219025E1B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.219054

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.219054B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.219211E0

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 μ m signal period, synchronous servo motor, to 320 V

L-412.219211E0B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 μ m signal period, holding brake, synchronous servo motor, to 320 V

L-412.219211E1

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 μ m signal period, drag chain, synchronous servo motor, to 320 V

L-412.219211E1B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.219212E1

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.219212E1B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.219232

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.219232B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.219244

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.219244B

High-load linear stage, 508 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.259025E0

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, synchronous servo motor, to 320 V

L-412.259025E0B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, holding brake, synchronous servo motor, to 320 V

L-412.259025E1

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.259025E1B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute linear encoder with EnDat 2.2 signal transmission, 1 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.259054

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.259054B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (multi-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.259211E0

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, synchronous servo motor, to 320 V

L-412.259211E0B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, holding brake, synchronous servo motor, to 320 V

L-412.259211E1

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, synchronous servo motor, to 320 V

L-412.259211E1B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with sin/cos signal transmission, 20 µm signal period, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.259212E1

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, synchronous servo motor, to 320 V

L-412.259212E1B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental linear encoder with A/B quadrature signal transmission, 50 nm sensor resolution, drag chain, holding brake, synchronous servo motor, to 320 V

L-412.259232

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., synchronous servo motor, to 320 V

L-412.259232B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, incremental rotary encoder with A/B quadrature signal transmission, 20000 counts/rev., holding brake, synchronous servo motor, to 320 V

L-412.259244

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., synchronous servo motor, to 320 V

L-412.259244B

High-load linear stage, 610 mm travel range, 116 mm width, 400 N load capacity, absolute rotary encoder (single-turn) with EnDat 2.1 signal transmission, 8192 counts/rev., holding brake, synchronous servo motor, to 320 V