PRODUCT DATA SHEET

ACTUATOR LA12/LA12 PLC

Features:
- *12/24 V DC permanent magnetic motor*
- *Max. thrust 750 N*
- *Reinforced glass fibre piston rod*
- *Compact design*
- *Protection class: IPX1*
- *Colour: black*
- *Straight cable's without plug*
- *Back fixture available in 2 different variants: 01 or 02 (factory mounted)*
- *Built-in limit switches (not adjustable)*
- *High-strength plastic housing protects motor and gear*

Options:
- *Reed-switch*
- *Potentiometer (max. 100 mm stroke length)*
- *Hall-sensor for (PLC-option)*
- *Long life absolute feedback (HALL - Potentiometer)*
- *Easy to use interface – with integrated power electronics for direct PLC connection*
- *Stainless steel inner tube and piston rod eye*
- *Back fixtures in aluminum or stainless steel*
- *Protection class: IP66 for the types 12xx00-xxxxxxxx*
- *Protection class: IP66 for outdoor use (dynamic), furthermore the actuator can be washed down by a high pressure cleaner (IP69K – static) for the types 12xx/02/03-xxxxxxxx*

Usage:
- *Duty cycle up to 20 % or max. 12 min./hour at 0 - 20°C ambient temperature*
- *Ambient temperatures: -20° to + 40°C*
- *Typical noise level dB (A) 55-57, measuring method DS/EN ISO 3746, actuator not loaded*

Thanks to the small size and outstanding performance, the LA12 actuator provides a practical and cost-effective alternative to traditional pneumatic systems and gear motors.

The LA12 is a member of the TECHLINE™ Family it is characterized by its robust design allowing the actuator to be used in harsh conditions. The LA12 is designed to meet the challenge, based on the philosophy that it must be able to operate under extreme conditions.

The actuator is ideal for mobile "off-highway" equipment such as agricultural, forestry and construction machines.

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Technical specifications:

New Type	Old Type	Spindle Pitch (mm)	Thrust max. Push/Pull (N)	Self-lock max. (Push) (N)	Self-lock max. (Pull) (N)	Typical speed 0/full load (mm/s)		Stroke length (in steps of 30 mm)			Typical Amp. at full load (A) 24V - 12V	
12XX00-1XXX12XX	12.1	2	750	750	375	14	5	40	-	130	-	4.6
12XX00-1XXX24XX	12.1	2	750	750	375	14	6	40	-	130	2.2	-
12XX00-2XXX12XX	12.2	4	300	300	150	27	16	40	-	130	-	2.5
12XX00-2XXX24XX	12.2	4	300	300	150	27	16	40	-	130	1.5	-
12XX00-3XXX12XA	12.3	6	200	200	100	40	28	40	-	130	-	2.2
12XX00-3XXX24XA	12.3	6	200	200	100	40	28	40	-	130	1.0	-

The Piston Rod Eye is only allowed to turn 0-90 degrees

Safety for the PLC connection
Integrated safety – The Integrated Electronic Overload Protection (EOP) circuit ensures that the actuator and machinery will not be damaged due to an unforeseen overload situation.
Furthermore the motor temperature is monitored, if the actuator is used with a higher duty cycle than recommended, the actuator will stop before it is overheated and damaged.
In all situations where the actuator stops because of safety reasons it gives a signal that can be used for error messages etc.

End-stop monitoring for the PLC connection
The built-in end-stop switch ensures that the actuator stops when reaching end of stroke, individual signals for both end-stops are available to the user.

Relative or absolute positioning for the PLC connection
Relative positioning – By means of a magnetic disc and a hall sensor in the PLC-actuator, it is possible to have encoder pulses with an accuracy down to 0.5 mm per pulse. This signal can be connected directly to the PLC's standard digital input.
Absolute positioning – As an alternative the user can have a 0–10 V analogue signal from a potentiometer integrated in the PLC-actuator (max. stroke 100 mm). This signal can be connected directly to an analogue PLC input.

Low energy consumption
During recent years energy consumption has been more and more important to the end users of production equipment. Compared to pneumatic systems the energy consumption is considerably lower.

LA12

Ordering example:

12 X X XX - X XXX XX X X

Cable

No positioning
0 = Black straight 0.75 m
1 = Black straight 2.3 m Jack

With reed
2 = 3 core stereo jack black straight 2.3 m
3 = 3 core black straight 0.75 m
4 = 4 core black straight 0.75 m

With analog feedback (Potentiometer)
0 = 5-core black straight 0.93 m

With PLC
8 = Black straight 2300 mm (8-core)
X = Special cable

IP version
0 = IPX1
2 = IP66

Motor
12 = 12VDC Motor
24 = 24VDC Motor (only option for PLC)

Stroke
040 =
070 =
100 = Standard stroke length
130 = Max

Spindle type
1 = 2 mm
2 = 4 mm
3 = 6 mm

Material
00 = Plastic inner tube
02 = Stainless steel inner tube and Stainless steel eye (AISI 303)/0301118 w. bushes
03 = Stainless steel inner tube and Stainless steel eye (AISI 304)/0301244 w. bushes
0X = Special

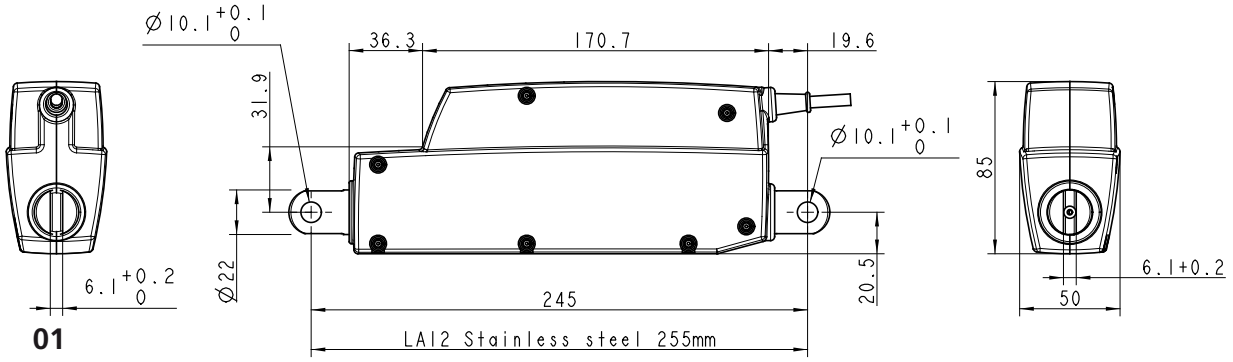
Memory positioning

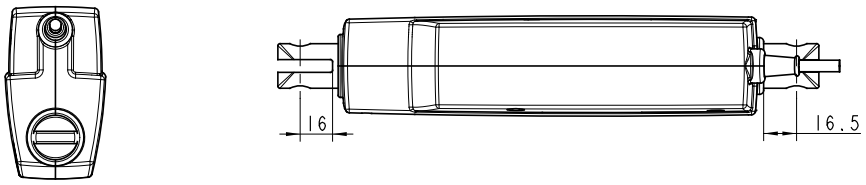
	Necessary cable type
0 = None	0 or 1
A = Potentiometer 0 -10 volt / max 100 mm stroke 8 for PLC	(8 Core)
B = Analog feedback 0 - 10V	0 (5 Core)
C = Analog feedback 0.5 - 4.5V	0 (5 Core)
E = Reed switch 10 pulses/spindle revolution	4 (4 Core)
G = Hall Sensor 2 pulses/spindle revolution	8 for PLC (8 Core)
H = Hall Sensor 4 pulses/spindle revolution	8 for PLC (8 Core)
M = Reed switch 4 pulses/spindle revolution	4 (4 Core)
P = Potentiometer max 100 mm stroke	0 (5 Core)
R = Reed switch 4 pulses/spindle revolution	2 or 3 (3 Core)

Back fixture type and position
1 = 01
2 = 02
3 = Like 01, but in aluminum / 012095
4 = Like 02, but in aluminum
5 = Like 01, but in stainless steel (AISI 304) / 012114
6 = Like 02, but in stainless steel (AISI 304)

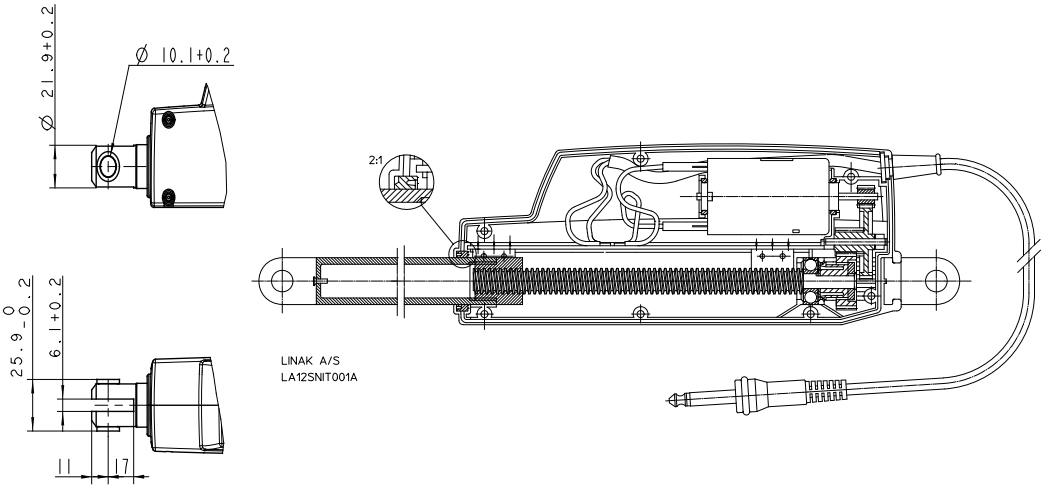
Actuatortype LA12

Dimensions:

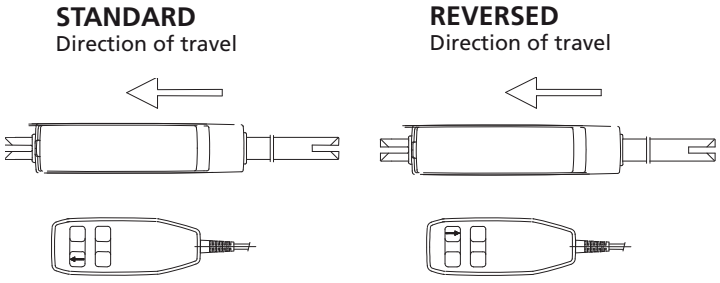




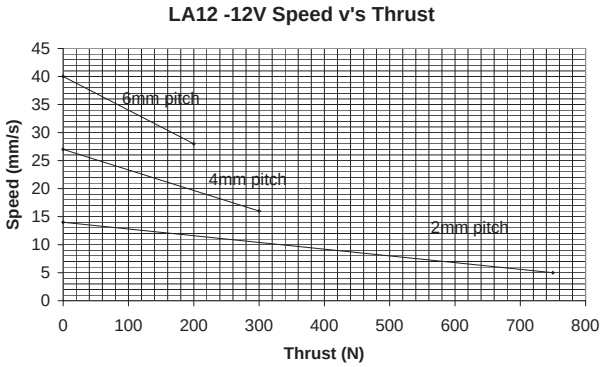
Piston rod eye:

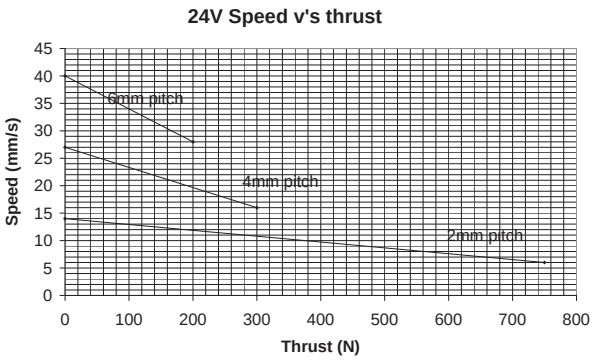


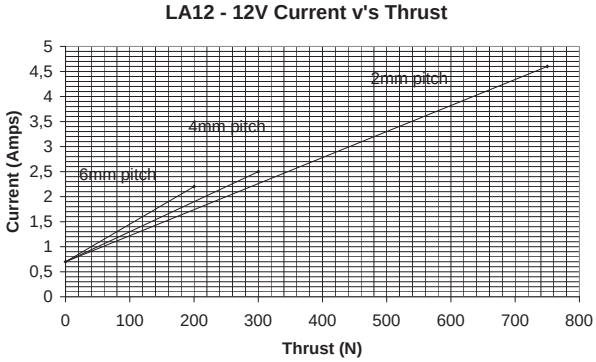
Beware of the direction of travel when ordering LA12 with Jack Plug.

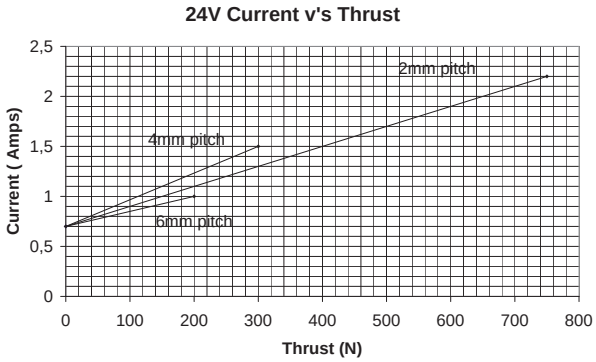


LA12 curves speed and current:









The above values are average values and made with a stable power supply and an ambient temperature of 20° C.

Actuator connections

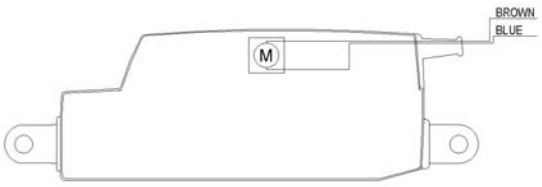


Figure 1
Basic Actuator without positioning
12xxxxxxxxxx0

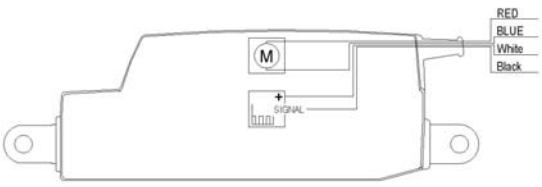


Figure 4
Actuator with Relative positioning
12xExxxxxxxxx4 & 12xMxxxxxxxxx4

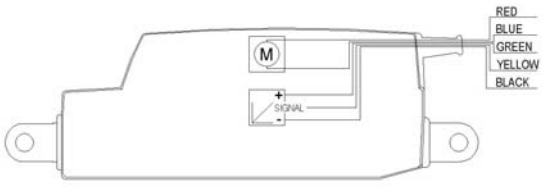


Figure 2
Actuator with absolute positioning
12xPxxxxxxxxx0

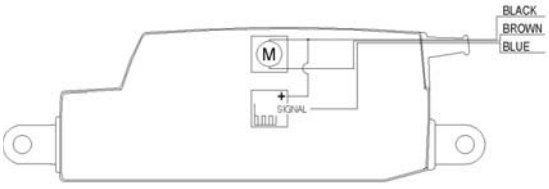


Figure 5
Actuator with Relative positioning
12xRxxxxxxxxx2/3

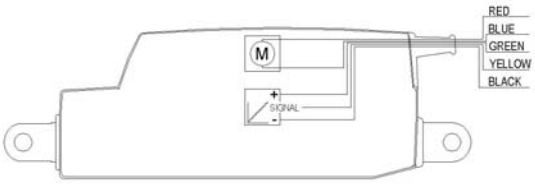


Figure 3
Actuator with absolute positioning
12xBxxxxxxxxx0 & 12xCxxxxxxxxx0

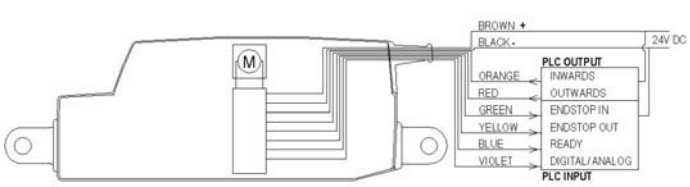


Figure 6
Actuator with built in H bridge
12x0/G/H/Axxxxxxxxx8

Environmental test – Climatic:

Test	Specification	Comment
Degrees of protection	EN60529 – IP6x	IP6X - Dust: Dust-tight, No ingress of dust. Actuator is not activated.
	EN60529 – IPx6	IPX6 – Water: Ingress of water in quantities causing harmful effects is not allowed. Duration: 100 litres pr. minute in 3 minutes Actuator is not activated.
	EN60529 – IPx6-dynamic	IPX6 –Connected actuator: Actuator is driving out and in for 3 min. 100 (l/min) jet of water is placed at the wiper ring for 3 (min).
	DIN40050 – IP69K	High pressure cleaner: Water temperature: +80°C Water pressure: 80 bar Spray angle: 45° Spray distance: 100 mm Duration: From any direction 10 seconds of spraying followed by 10 seconds rest. Actuator is not activated. Ingress of water in quantities causing harmful effects is not allowed.
Salt mist.	EN60068-2-52 (Kb)	Dynamic salt spray test Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours. Humidity storage 20 days after each. Actuator is power up connected during the test. Exposure time: 10'000 cycles

Environmental test - Mechanical:

Test	Specification	Comment
Low Temperature Soak		Unit powered and operating for 96 Hrs @ -40°C
High Temperature Soak		Unit powered and operating for 96 Hrs @ 105°C
Mechanical Shock (Handling) - Drop Test	BS2011 Part 2.1 Eb.	400 mm drop onto Hardwood bench minimum 40 mm thick. Onto all practical edges and faces
Mechanical Shock (Operational)		100 off 400 m/sec^2 6 ms shock pulses - in 3 axes.
Vibration (Random)		24 hours in each ax. Breakpoint Freq. 10 Hz @ 0.005 g2/Hz, 150 Hz @ 0.060 g2/Hz, 220 Hz @ 0.080 g2/Hz 350 Hz @ 0.040 g2/Hz
Vibration (Resonant Search)		10 Hz - 2 KHz @ 4G, Rate = 1 octave/min

Environmental test – Electrical, it does not apply for the PLC option

Test	Specification	Comment
Radiated emission 10 m distance	CISPR 22	79 dBµ V (QP), 0.15 - 0.5 MHz 66 dBµ V (AV), 0.15 - 0.5 MHz 73 dBµ V (QP), 0.5 - 30 MHz 60 dBµ V (AV), 0.5 - 30 MHz
Radiated emission 10 m distance	CISPR 22	30 dBµ V/m, 30 - 230 MHz 37 dBµ V/m, 230 - 1000 MHz
Specification for radio disturbance and immunity	EN 55016-1-2	
Electromagnetic fields	EN 61000-4-3	12 V/m, 80% AM, 1kHz 80 - 1000 Mhz 3 V/m, 80% AM, 1 kHz 1.4 - 2.0 GHz 1 V/m, 80% AM 2.0 - 2.7 GHz.
ESD	IEC 61000-4-2	± 6 kV contact discharge ± 8 kV air discharge
Burst transients	IEC 61000-4-4	± 2 kV
Surge transients	IEC 61000-4-5	± 2 kV (42Ω output)
Radio frequency common mode	IEC 61000-4-6	10 Vrms, 80% AM 0.15 - 80 MHz
Power frequency magnetic field immunity test	IEC 61000-4-8	
ESD	ISO 10605	8 kV contact discharge or 15 kV air discharge 330 pF + 2.000 Ω
Electromagnetic fields	ISO 11452-2 1 m distance	30 V/m, 80%AM, 1 kHz 80 - 2.700 Mhz
Narrow Band 1 m distance	ISO 13766	52 - 42 dBµ V/m, 30 - 75 MHz 42 - 53 dBµ V/m, 75 - 400 MHz 53 dBµ V/m, 400 - 1000 MHz
Broad Band 1 m distance	ISO 13766	62 - 52 dBµ V/m, 30 - 75 MHz 52 - 63 dBµ V/m, 75 - 400 MHz 63 dBµ V/m, 400 - 1000 MHz
Conducted transients	ISO 7637-2:2004	Pulses 1, 2, 3a, 3b, 4, 5

Complying standards, it does not apply for the PLC option

Test	Specification	Focus on
2004/104/EC	Automotive EMC Directive 2004/104/EC on electrical and electronic car components	VEHICLES AND MOBILITY
EN 12184	Electrically powered wheelchairs, scooters and their chargers. Requirements and test methods	
EN/IEC 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements	INDUSTRIAL AUTOMATION
EN/IEC 60204-32	Safety of machinery – Electrical equipment of machines – Part 32: Requirements for hoisting machines	• INDUSTRIAL AUTOMATION • PLATFORMS AND LIFTS
EN/IEC 60601-1-2	Medical electrical equipment — Part 1-2: General requirements for basic safety and essential performance — Collateral standard: Electromagnetic compatibility — Requirements and tests	
EN/IEC 61000-6-1	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	INDUSTRIAL AUTOMATION
EN/IEC 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments	INDUSTRIAL AUTOMATION
EN/IEC 61000-6-3	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments	INDUSTRIAL AUTOMATION
EN/IEC 61000-6-4	Electromagnetic compatibility (EMC) - Part 6: Generic standards - Section 4: Emission standard for industrial environments	INDUSTRIAL AUTOMATION
EN/ISO 10535	Hoists for the transfer of disabled persons -- Requirements and test methods	
EN/ISO 13766	Earth-moving machinery -- Electromagnetic compatibility	CONSTRUCTION
EN/ISO 14982	Agricultural and forestry machines - Electromagnetic compatibility	• MOBILE AGRICULTURE • OUTDOOR POWER EQUIPMENT
ISO 7176-21	Wheelchairs -- Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and scooters, and battery chargers	