CTL-060

IO-Link Servo-Actuator

Datasheet CTL-060

Control type		-IOL		
Control / Parameterization **Setting force & speed** **Control functions**		IO-Link • **Singleturn-Encoder** • Target position setting in real time • Adjustable speed, force and acceleration settings in real time • Real-time feedback of position, speed and force • Pre-programmable travel sets • Press-in mode • Extensive diagnostic options • Many more features		
Stroke	[mm]	100, 200, 300, 500, 600, 800, 1000		
Spindle pitch	[mm/rev]	5	10	20*
Max. Feed force (peak)	[N]	800	400	200*
Max. Feed force (continuous operation)	[N]	400	200	100*
Max. Speed **In 24V operation** **In 48V operation**	[mm/s]	 150 300	 300 600	 600* 1200*
Max. Acceleration	[m/s^2]	10	20	20*
Positioning accuracy	[mm]	+/- 0.1	+/- 0.1	+/- 0.2
Positioning precision (repeatability)	[mm]	+/- 0.02	+/- 0.02	+/- 0.04
Spindle type		Ball screw		
Mounting position		any		
Integrated linear guide		15mm profile rail guide with ball carriage		
Ambient temperature	[°C]	0…+40 (-20…+60 on request)		
Storage temperature	[°C]	-20…+60		
Protection class		IP40 according to EN 60529		
Relative humidity	[%]	0…90 (non-condensing)		
Motor type		Synchronous-Servomotor		
Rotor position encoder		Absolute, single turn, 12bit		
CE mark (see Declaration of Conformity)		According to **EU-RoHS-RL**		
		According to **EU-EMC-Directive**		

*Spindle Pitch 20mm available on request.

Connectors, signals, control

Status display		3x LED
Rated voltage power circuit	[V DC]	24 - 48
Max. current consumption	[A]	3.5 (continuous load operation)
	[A]	5 (consumption peak load operation)
Operating range signal input	[V DC]	24
Permissible voltage variations	%	+/- 15
Max. current consumption logic	[mA]	50
Max. current digital signal outputs	[mA]	100 / output
Number of digital signal inputs	3	extend, retract, teach
Number of digital signal outputs	3	extended, retracted, ready
Features signal input		galvanically isolated from power circuit not galvanically isolated between signals
Max. cable length	[m]	20
Switching logic outputs		push-pull
Switching logic inputs		positive switching
Reference		End stop / manually by IO-Link

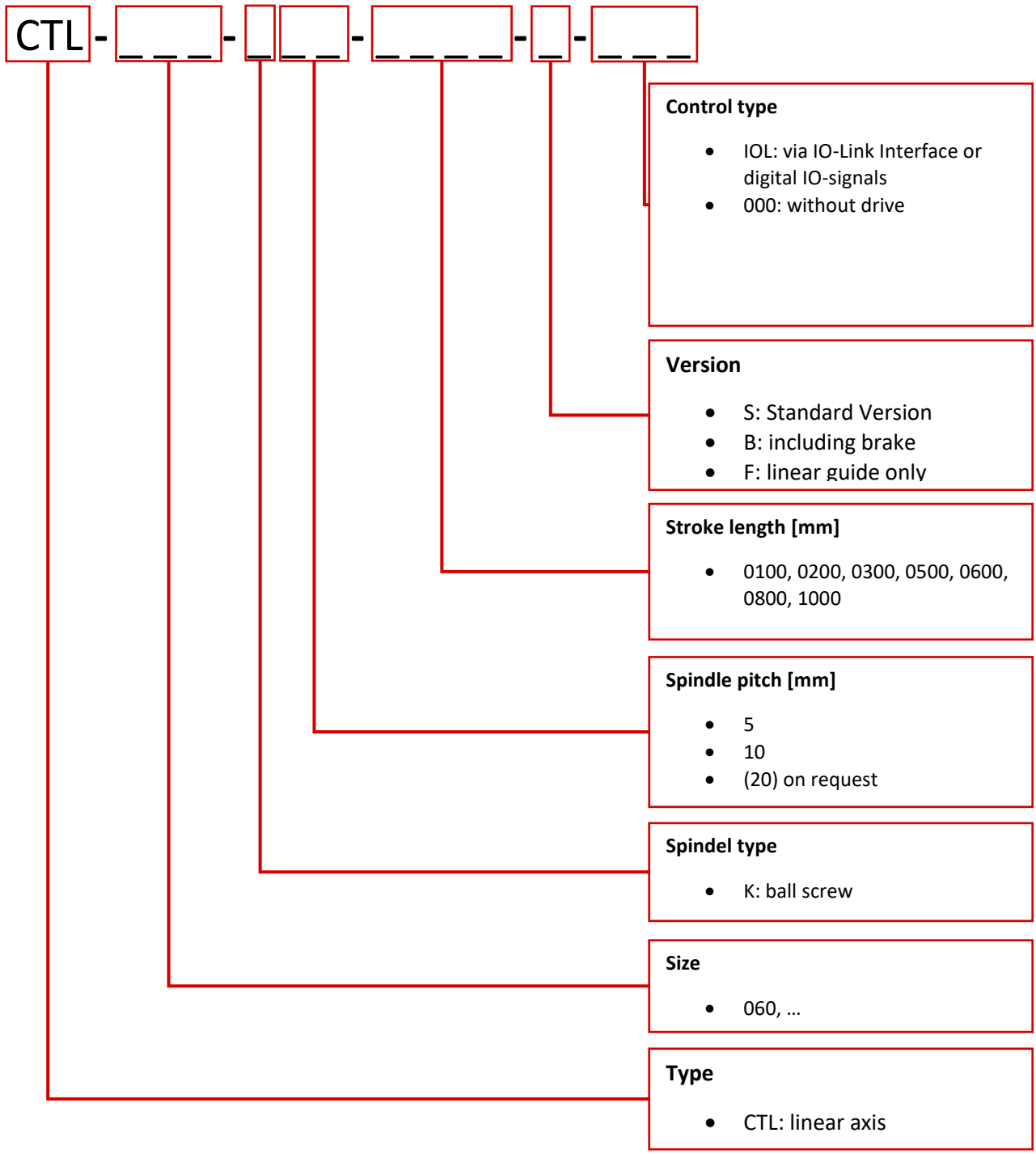
Weight (+/- 10%)

For 100 mm stroke	[g]	CTL-060-__-S: CTL-060-__-B: CTL-060-__-F:	2871 3624 2220
Per 10mm stroke additionally	[g]	CTL-060-__-S / -B: CTL-060-__-F:	58 48
moving mass	[g]	CTL-060-__-S / -B: CTL-060-__-F:	588 487

Materials

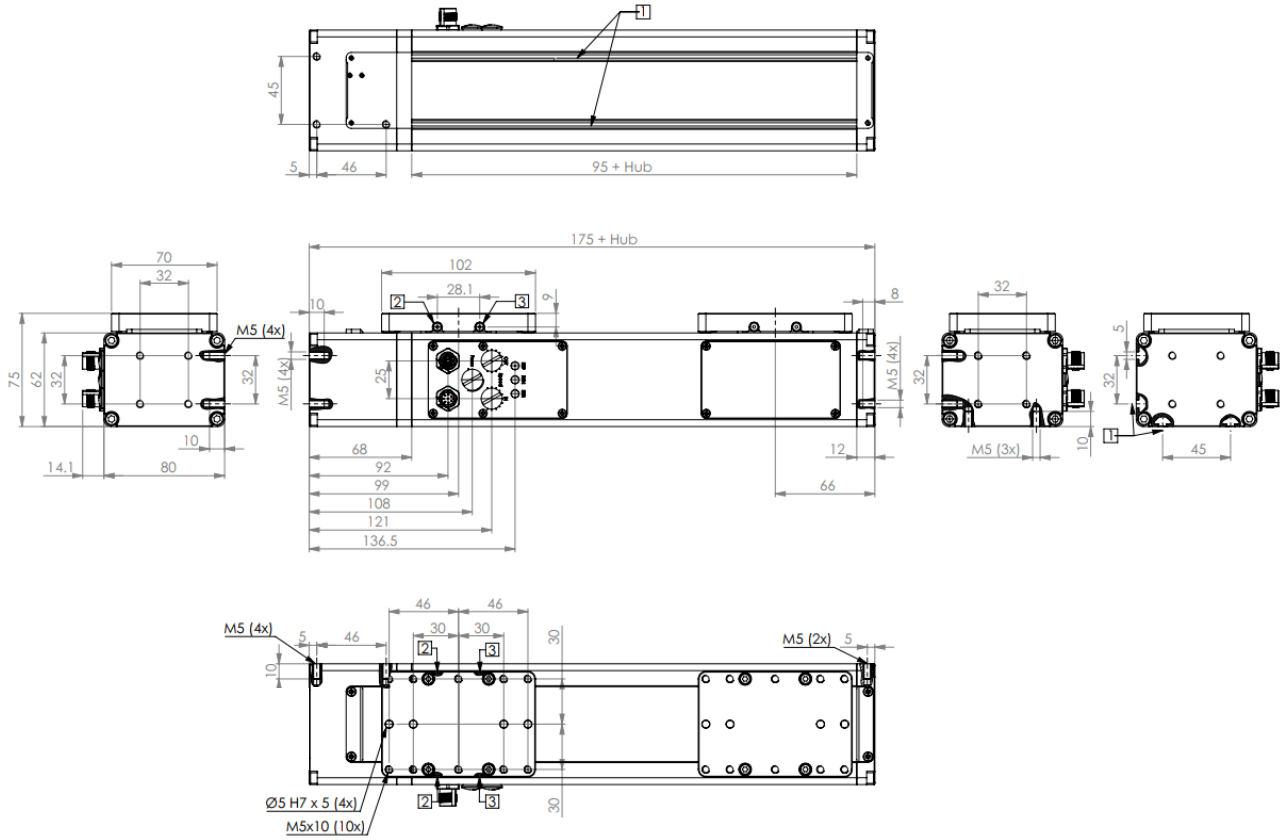
Housing, cover, slide	Aluminium colourless anodized
Connecting piece	Aluminium, red anodized
Cover plate	Stainless steel hardened
Screws, Grease nipple	Steel Galvanized
Spindle	heat-treated steel
Spindle nut	Roller bearing steel
Guide rail	heat-treated steel
Guide carriage	steel, Plastic
Covers knobs	Stainless steel
Connector fittings	Zinc nickel plated
RoHS Information	Conform according to declaration
REACH Information	All Variants: contains > 0,1% of 7439-92-1

Configuration key



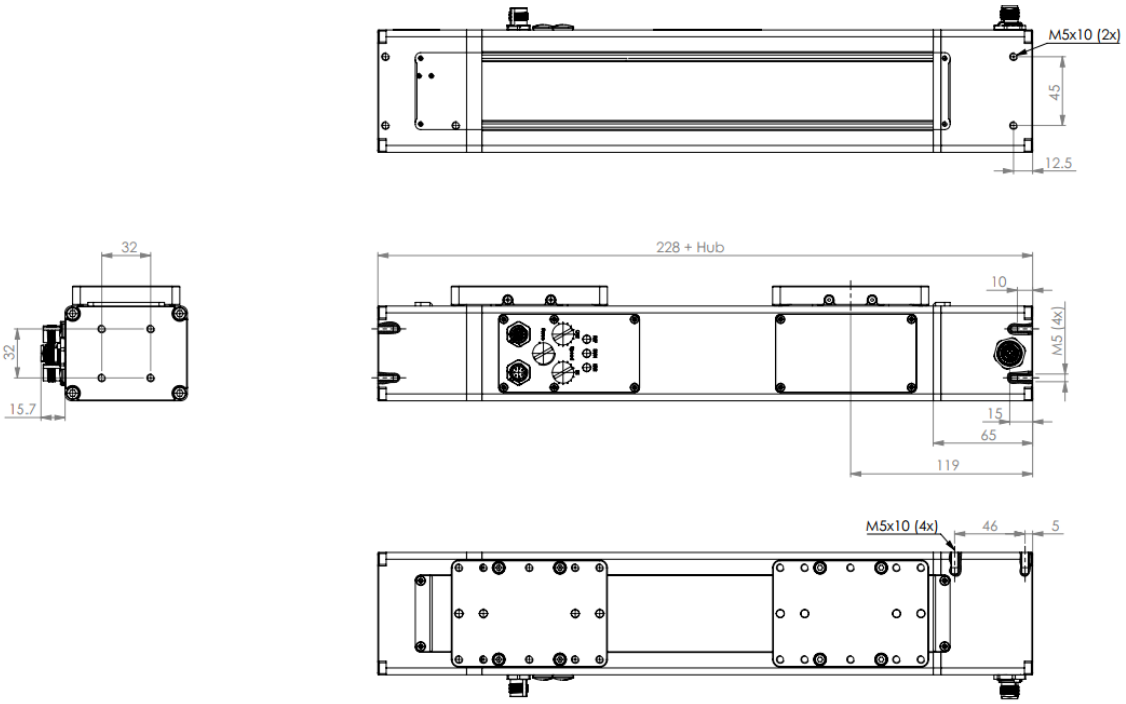
Example: CTL-060-K10-0100-S-IOL

Dimensions



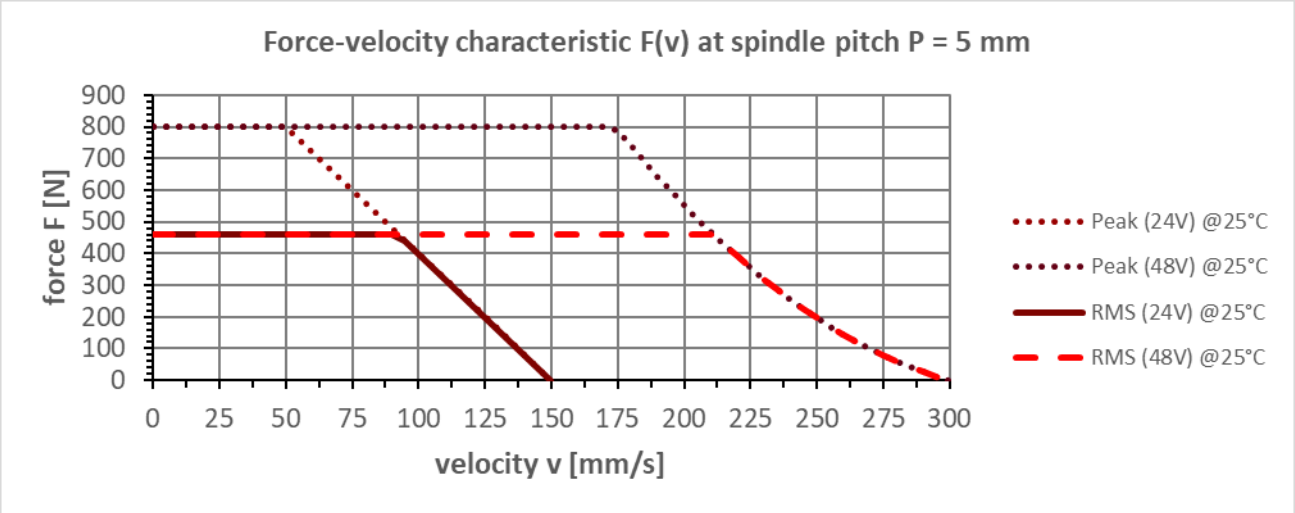
[1] Mounting grooves for sliding block
[2] Tapered grease nipple for lubricating the guide
[3] Conical grease nipple for lubrication of the spindle

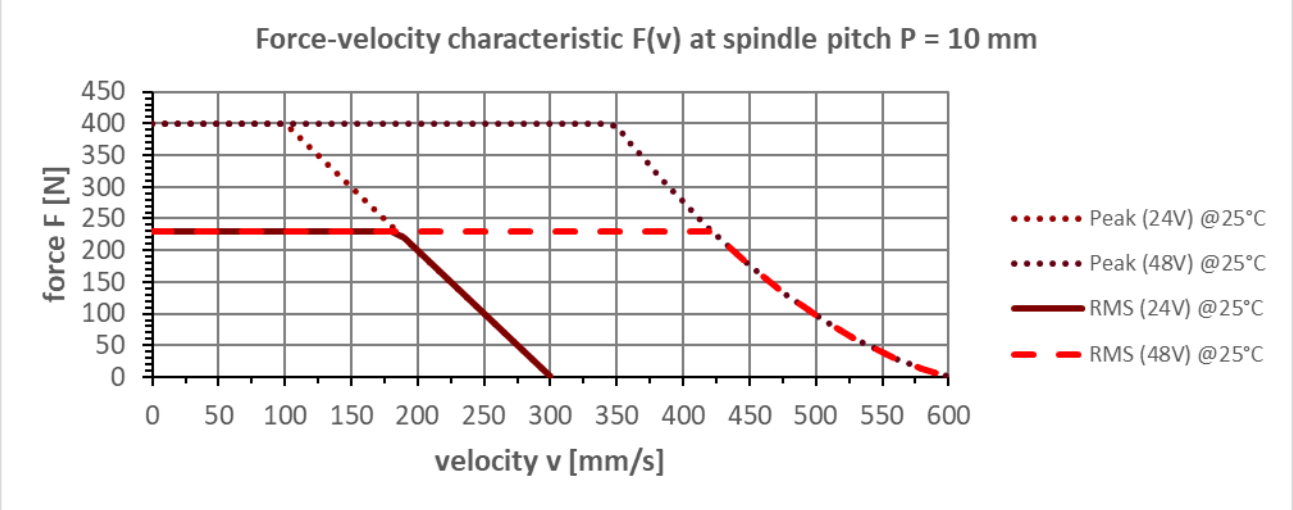
1.1.1 Supplementary dimensions for brake

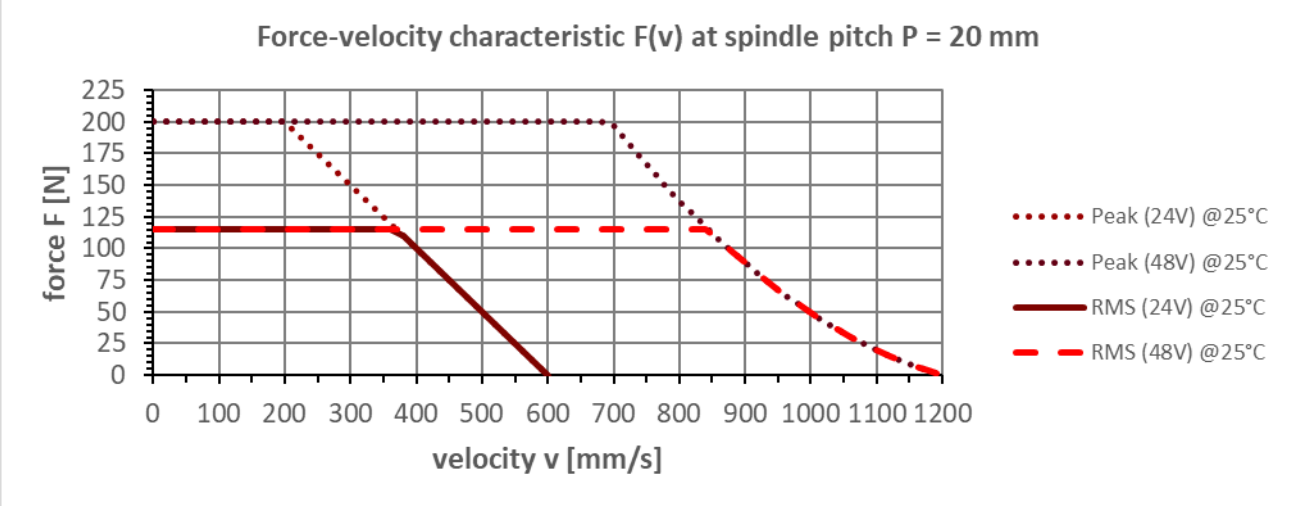


Characteristics

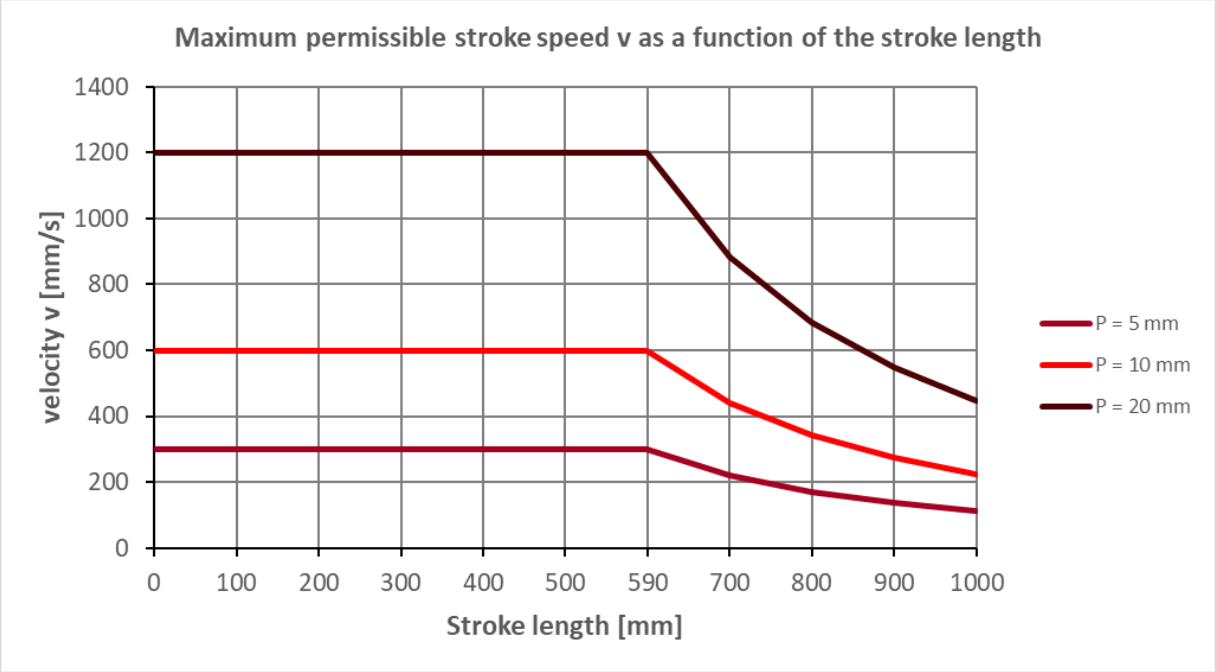
Force-velocity characteristic



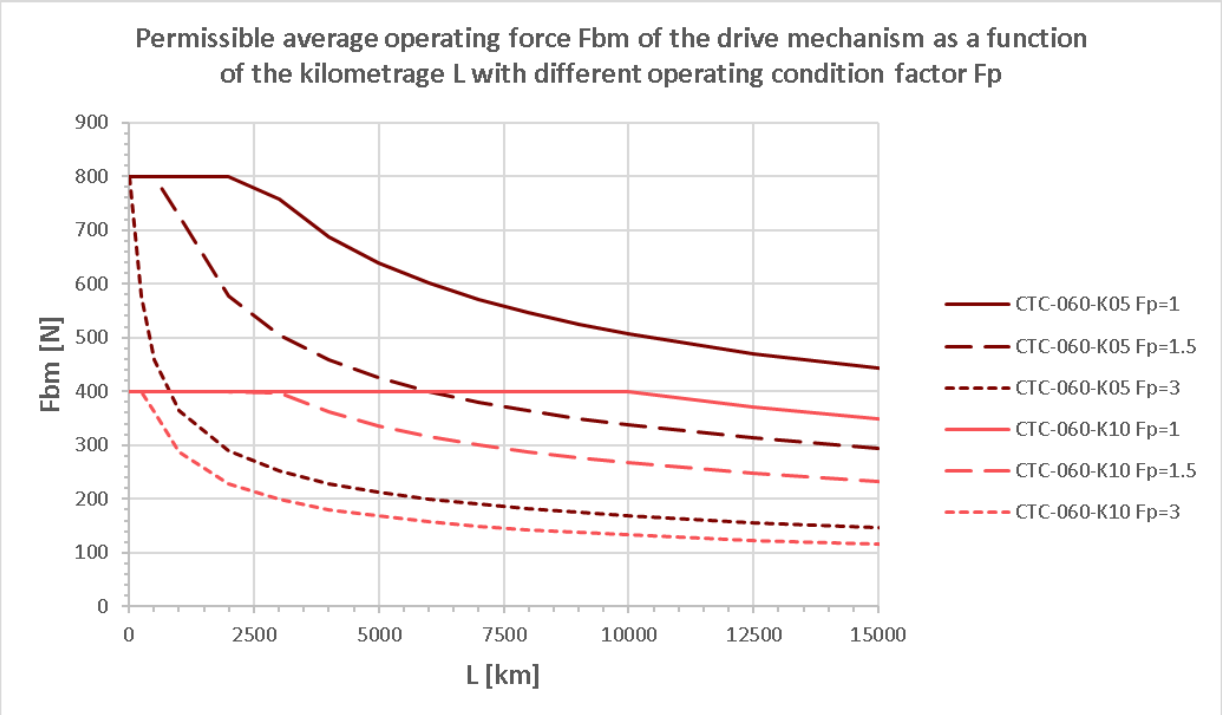




Stroke speed



Lifetime characteristic * of the drive mechanism **



Operating condition factor Fp:

Fp = 1	Operation under ideal conditions
Fp = 1.5	Operation under normal conditions
Fp = 3	Operation with high impact and vibration or short stroke application (stroke < 100 mm)

* Failure probability 10%

** Ball screw and its bearing

Holding brake

Size		CTL-060		
Functionality of the holding brake		Spring-loaded, currentless braked		
Spindle pitch	[mm/U]	5	10	20
Maximum holding force	[N]	800	400	200
Nominal voltage	[V DC]	24 +/-10%		
Coil Power (@20 °C)	[W]	11.5 +/-10%		

Relubrication interval

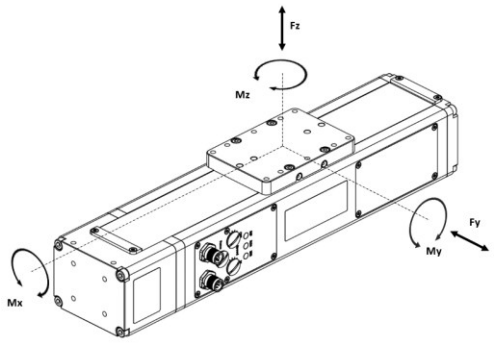
Type			Relubrication interval + lubricant quantity according to application							
Size	Nominal stroke [mm]	Spindle pitch	Continuous operation (> 3600 strokes / h)	Medium mileage (10 - 3600 strokes / h)	Low mileage (< 10 strokes / h)	short-stroke applications (< 20mm travel)	lubricant quantity spindle [3] [cm³]	Distance Lubrication position spindle [mm]	lubricant quantity linear guide [2] [cm³]	Distance Lubrication position linear guide [mm]
CTL-060	100 - 300	K05	250 km	3 months	1 x / year	Lubrication run after1 million motion cycles (= 4x stroke over entire nominal stroke range required) Relubrication interval: 2 months	1.2	150	0.2	300
		K10	500 km							
	400 - 600	K05	250 km	3 months	1 x / year		0.6	150	0.2	300
		K10	500 km							
	600 - 1000	K05	250 km	3 months	1 x / year		0.6	150	0.2	300
		K10	500 km							

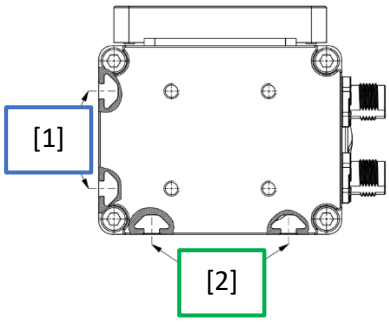
[2][3] Relubrication to be carried out according to the CTL-060 operation manual

Tightening torques of screws

Thread	Tightening torque for mounting holes	Minimal screwing depth
M5	4.8 Nm (+/- 10%)	7.5 mm
M6	8.0 Nm (+/- 10%)	9.0 mm

Permissible forces / moments on slide



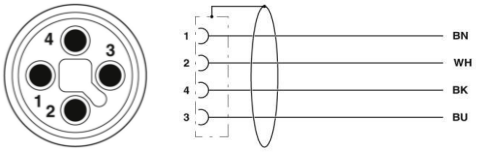
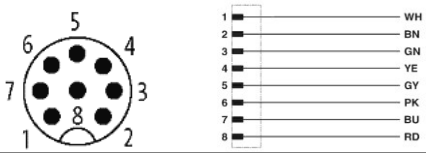


[1] Side mounting grooves

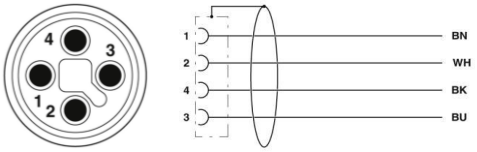
[2] Bottom mounting grooves

Baugrösse		**CTL-060**	
Permissible forces / moments on slide		[2] Bottom mounted:	[1] side mounted:
Fy	[N]	400	1500
Fz	[N]	500	1500
Mx	[Nm]	12	20
My	[Nm]	80	80
Mz	[Nm]	30	30

Electrical Connection of the Drive

Power			Signal		
Plug M12x1, 4-pole T-coded according to EN 61076-2-11			**Plug M12x1, 8-pin** A-coded according to EN 61076-2-101 (Shielded cables are recommended)		
					
Pin	Color	Function	Pin	Color	Function
1	BN	Power voltage 24V-48V At 48V the use of a brake chopper is recommended.	**1**	WH	DO Ready / IO-Link CQ
2	WH	Functional earth (FE)	**2**	BN	Logic voltage 24V
3	BU	GND 0V	**3**	GN	DO is extended
4	BK	reserved, do not connect	**4**	YE	DO is retracted
			5	GY	DI Retract*
			6	PK	DI Extend*
			7	BU	GND 0V
			8	RD	DI Teach / Reset / Powerless

Electrical connection of the holding brake

Power	Pin	Color	Function
Plug M12x1, 4-pole T-coded according to EN 61076-2-11 	**1**	BN	Release voltage 24V ± 10%
	2	WH	Reserved, do not connect
	3	BU	GND 0V
	4	BK	Reserved, do not connect

IO-Link interface

Parameter		
Transfer rate		COM3
Cycle time	ms	1.5
IO-Link specification		V1.1.3
Process data input (Slave->Master)		Status Actual Position (in mm) Actual Speed (in mm/s) Actual Force (in N)
Process data output (Master->Slave):		Motion Mode Target Position (in mm) Override 1-3 (in %)
Service data		Configuration, diagnosis, statistics, identification
IO-Link profile		Common Profile BLOB Transfer & Firmware Update