CTC-080

IO-Link Servo-Actuator

Datasheet CTC-080

Control type	-DIO	-IOL	-MUL
Control / Parameterization **Setting force & speed** **Control functions**	**Digital I/O** • Movements controlled by IO signal • Teach-in distances (teach run) • Teached-in distances can be called up • Speed adjustable for both directions via potentiometer • Maximum force adjustable via potentiometer	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	IO-Link • **Multiturn-Encoder** (keeps track of movements when powered off) • Higher positioning accuracy • ***Available from Q4/24***

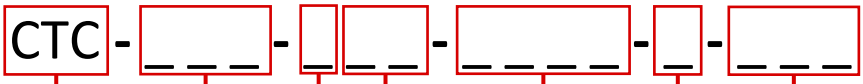
Stroke	[mm]	100, 150, 200, 250, 300, 400, 500, 600, 800, 1000		
Spindle pitch	[mm/rev]	5	10	20
Max. Feed force (peak)	[N]	1500	750	375
Max. Feed force (continuous operation)	[N]	1000	500	280
Max. Speed **In 24V operation** **In 48V operation**	[mm/s]	 150 300	 300 600	 600 1200
Max. Acceleration	[m/s^2]	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		
Piston rod thread		-A&-B: M16 x 1.5 male / -I&-J: M10 x 1.5 female		
Ambient temperature	[°C]	0…+40		
Ambient temperature note		At ambient temperatures above 25° C a reduction in performance must be expected.		
Storage temperature	[°C]	-20…+60		
Protection class		IP65 / IP67 according to EN 60529		
Relative humidity	[%]	0…90 (non-condensing)		
Motor type		Synchronous-Servomotor		
Rotor position encoder		Absolute, single turn, 12bit		
Anti-torsion mechanism of the push rod		Sliding guide (no external torque)		
CE mark (see Declaration of Conformity)		According to **EU-RoHS-RL**		
		According to **EU-EMC-Directive**		

Connectors, signals, control		
Status display		3x LED
Rated voltage power circuit	[V DC]	24 - 48
Max. current consumption	[A]	7 (continuous load operation)
	[A]	12 (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, for inputs and outputs
Switching logic outputs		push-pull
Switching logic inputs		positive switching
Reference		External fixed stop (-DIO) External fixed stop / manually by IO-Link (-IOL) Optional: manually by IO-Link (-MUL)

Weight (+/- 10%)		
For 100 mm stroke (without holding brake)	[g]	2800
For 100 mm stroke (with holding bracket)	[g]	3530
Per 10mm stroke additionally	[g]	74
moving mass / 10 mm stroke	[g]	5.85

Materials	
Housing, cover	Aluminium colorless anodized
Thrust tube	Aluminium, hard anodized
Seals	NBR / PUR / EPDM
Thread attachment	Stainless steel
Screws	Steel Galvanized
Spindle	heat-treated steel
Spindle nut	Roller bearing steel
Covers knobs	Stainless steel
Grease nipple	Steel Galvanized
Connector fittings	Zinc nickel plated
RoHS Information	Conform according to declaration
REACH Information	All Variants: contains > 0,1% of 7439-92-1 Variant -MUL: contains > 0,1% of: D4 556-67-2

Configuration key



Control type

- DIO: via digital IO-signals
- IOL: via IO-Link Interface*
- MUL: IO-Link Interface + Multiturn Encoder*

* Can also be operated via digital IO-Signals

Thread type thrust tube

- A: male thread
- I: female thread
- V: rod guided device
- B: male thread & brake
- J: female thread & brake
- W: rod guided device & brake

Stroke length [mm]

- 0100, 0150, 0200, 0250, 0300, 0400, 0500, 0600, 0800, 1000

Spindle pitch [mm]

- 5
- 10
- 20

Spindel type

- K: ball screw

Size

- 080, …

Type

- CTC: Electric cylinder

Example: CTC-080-K10-0100-A-IOL

Dimensions

The basic dimensions are based on ISO 15552.

The connection and accessory dimensions comply with ISO 15552.

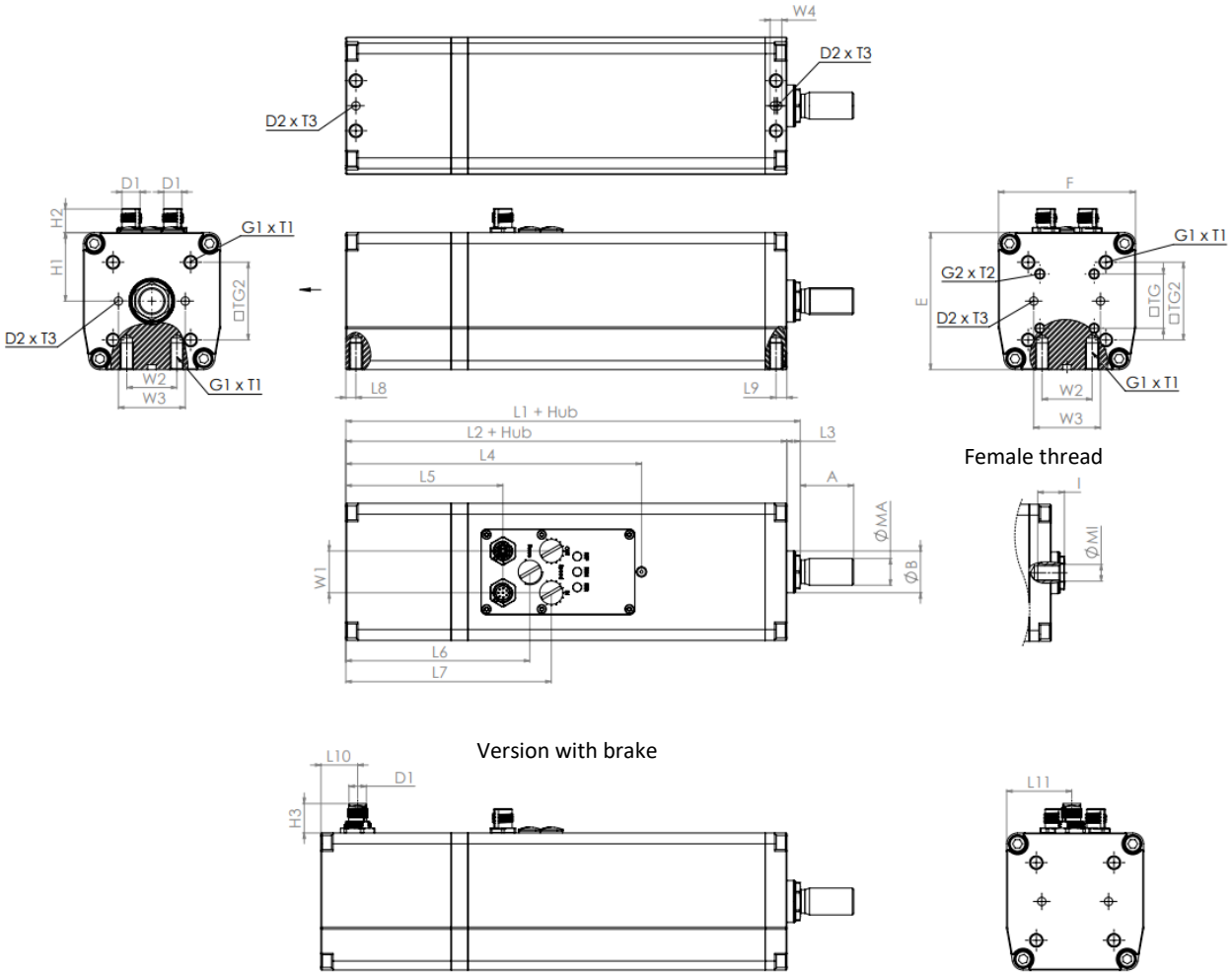


FIGURE 1: DIMENSIONS

CTC-080	L1*	L2*	L3	L4	L5	L6	L7	L8	L9	L10	L11	H1	H2	H3
Standard	172	164	8	177	94	110	123	6	6.5			41	14.3	
With brake	187	179	8	192	109	125	138	6	6.5	22	39	41	14.3	17.6

CTC-080	D1	D2	TG	TG2	G1	G2	T1	T2	T3	B	E	F
Standard	M12	5 E8	32.5	46.5	M8	M6	16	12	3	25	82	82
With brake	M12	5 E8		46.5	M8		16		3	25	82	82

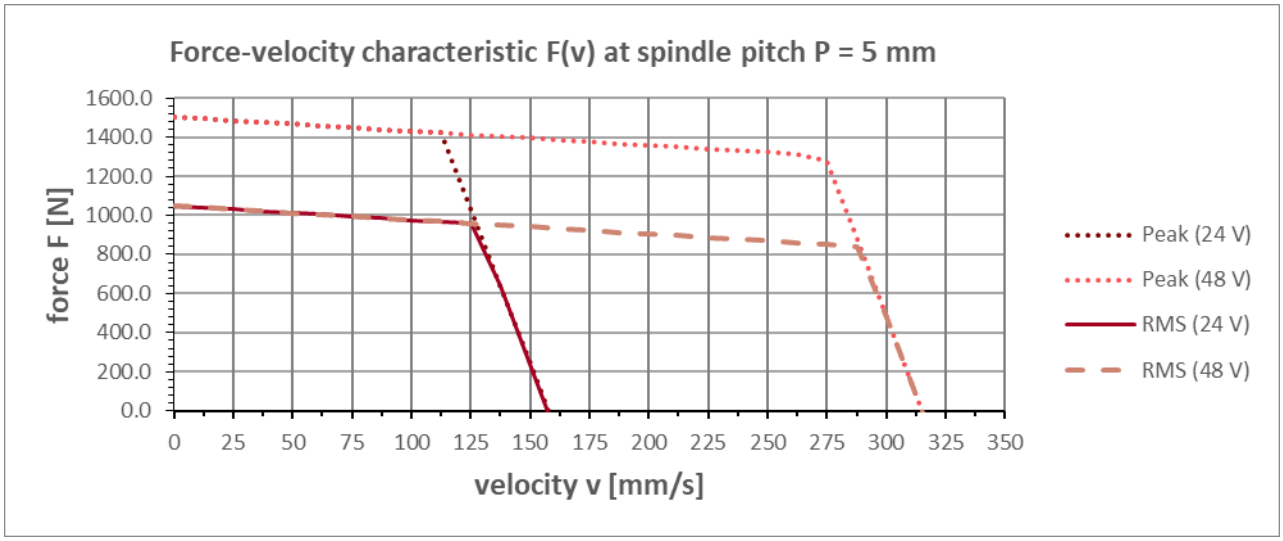
CTC-080	A	MA	I	MI	W1	W2	W3	W4			
Standard	32	M16x1.5	16	M10	25	30	40 ±0.01	7			
With brake	32	M16x1.5	16	M10	25	30	40 ±0.01	7			

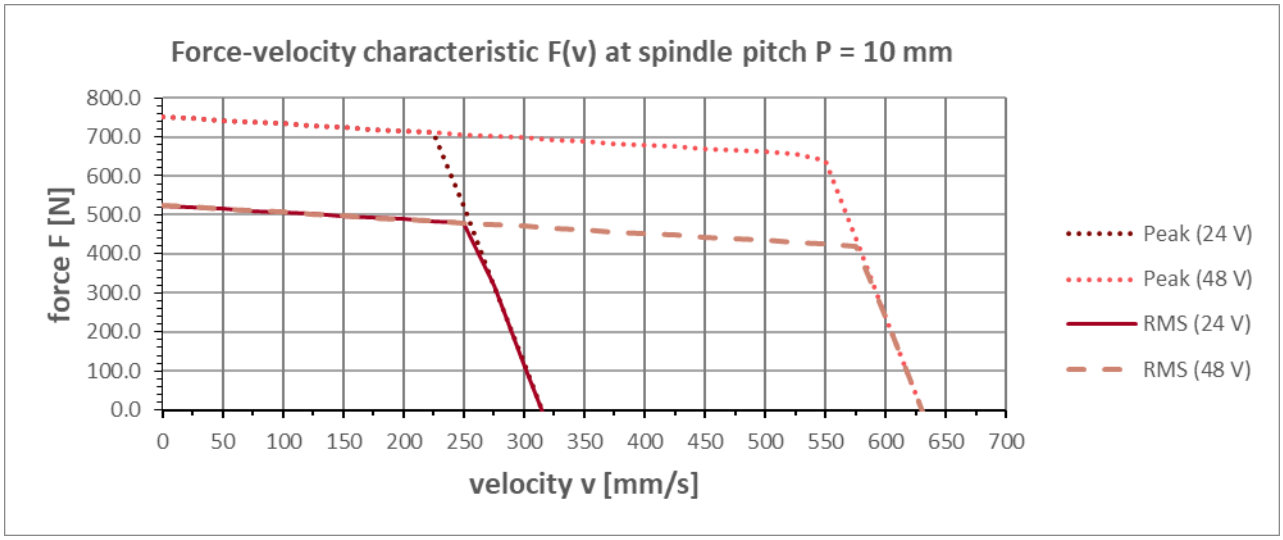
All dimensions in mm.

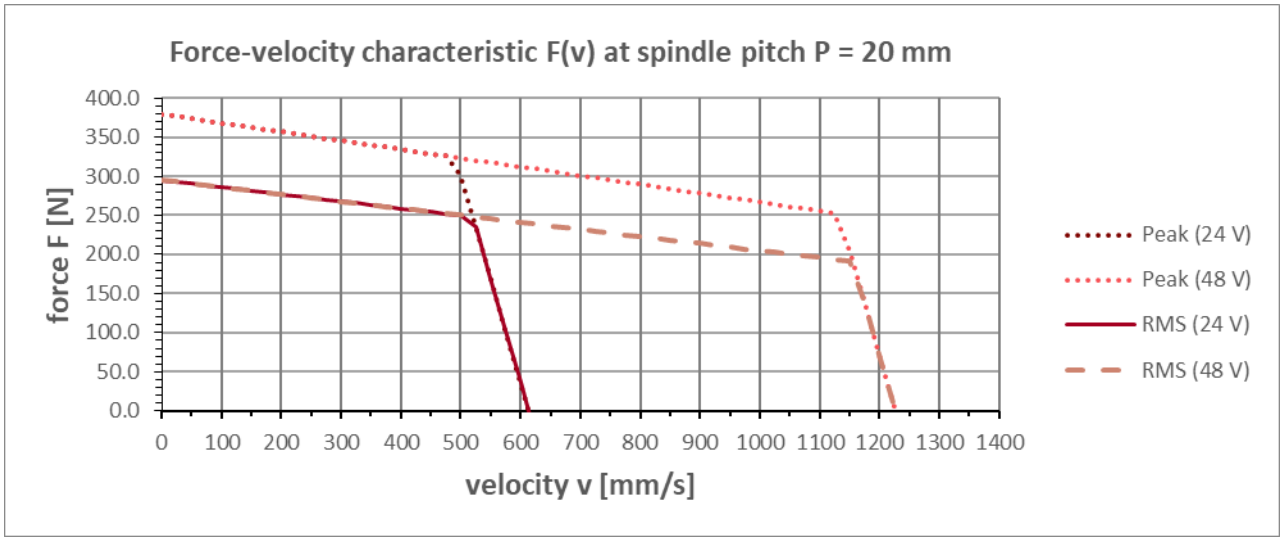
* Stroke-dependent dimensions

Characteristics

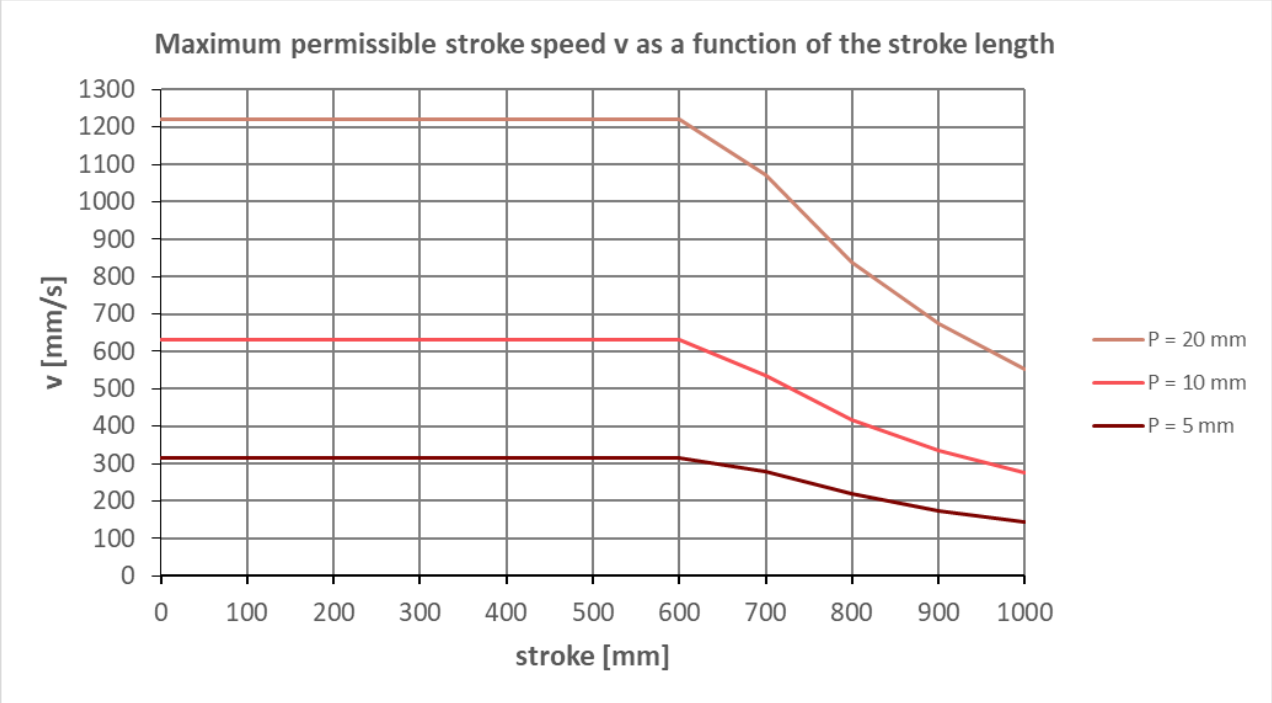
Force-velocity characteristic



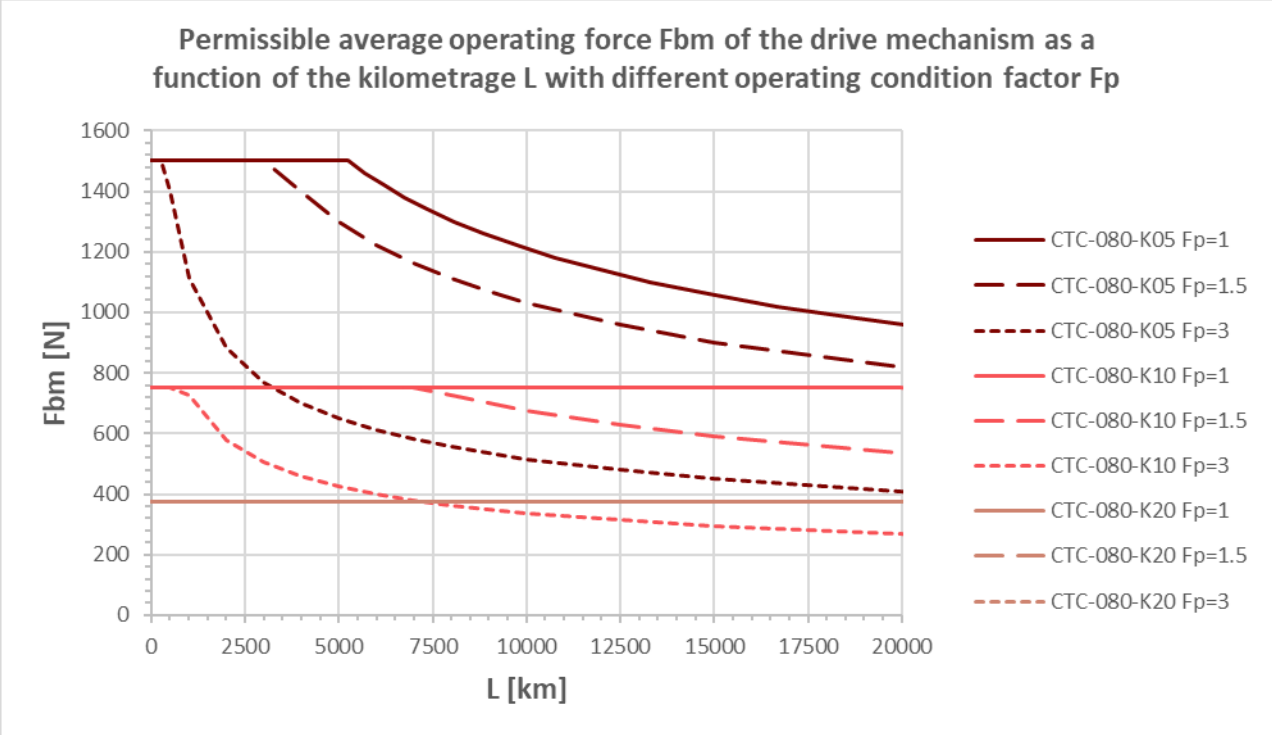




Stroke speed



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		CTC-080		
Functionality of the holding brake		Spring-loaded, currentless braked		
Spindle pitch	[mm/rev]	5	10	20
Maximum holding force	[N]	1600	800	400
Nominal voltage	[V DC]	24 +5/-10%		
Coil Power (@20 °C)	[W]	7.0 max.		
Release Voltage (@20 °C)	[V DC]	18 max.		
Voltage to maintain open brake (@20 °C)	[V DC]	10 max.		
Brake re-engage voltage (@20 °C)	[V DC]	6.5 max		
Brake release (current rise) time	[ms]	<30		
Brake engage (current decay) time	[ms]	<85		

Relubrication interval

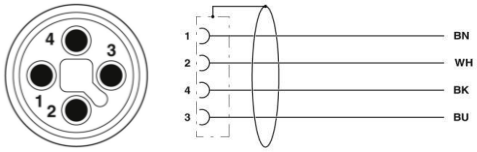
Cylinder type			Relubrication interval according to application				Lubricant quantity + number of repetitions		
	Stroke [mm]	Spindel pitch	continuous operation (> 3600 strokes / h)	Medium mileage (10 - 3600 strokes / h)	Low Mileage (< 10 strokes / h)	Short stroke Applications (< 100 mm travel)	Lubrication quantity per lubrication operation [cm3]	Lubricating strokes after each lubrication opereration	number of lubrication operations
CTC-080	100 - 300	K05	250 km	3 Months	1 x / Year	Lubrication stroke after 1 million movement cycles (= 4 movements over entire nominal stroke range required) Relubrication interval: 2 months	0.6	6	2
		K10	500 km						
		K20	1000 km						
	400 - 600	K05	250 km	3 Months	1 x / Year		1.2	6	2
		K10	500 km						
		K20	1000 km						
	600 - 800	K05	250 km	3 Months	1 x / Year		1.2	6	3
		K10	500 km						
		K20	1000 km						

Tightening torques of screws

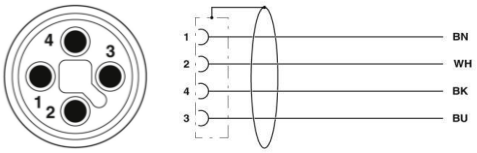
Thread	Tightening torque for mounting holes	Minimal screwing depth
M6	8.0 Nm (+/- 10%)	9.0 mm
M8	18.0 Nm (+/- 10%)	12.0 mm

Version	Tightening torque for Piston rod thread	Minimal screwing depth
-A	60.0 Nm (+/- 10%)	8.0 mm
-I	30.0 Nm (+/-10%)	10.0 mm

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 ± 15% (max. 10A) 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 ± 15% (max. 500mA)
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, identifikation
IO-Link profile		Common Profile BLOB Transfer & Firmware Update