



ROBOTIC ACTUATORS

D90 (CM.1.3.1.1)

Specifications



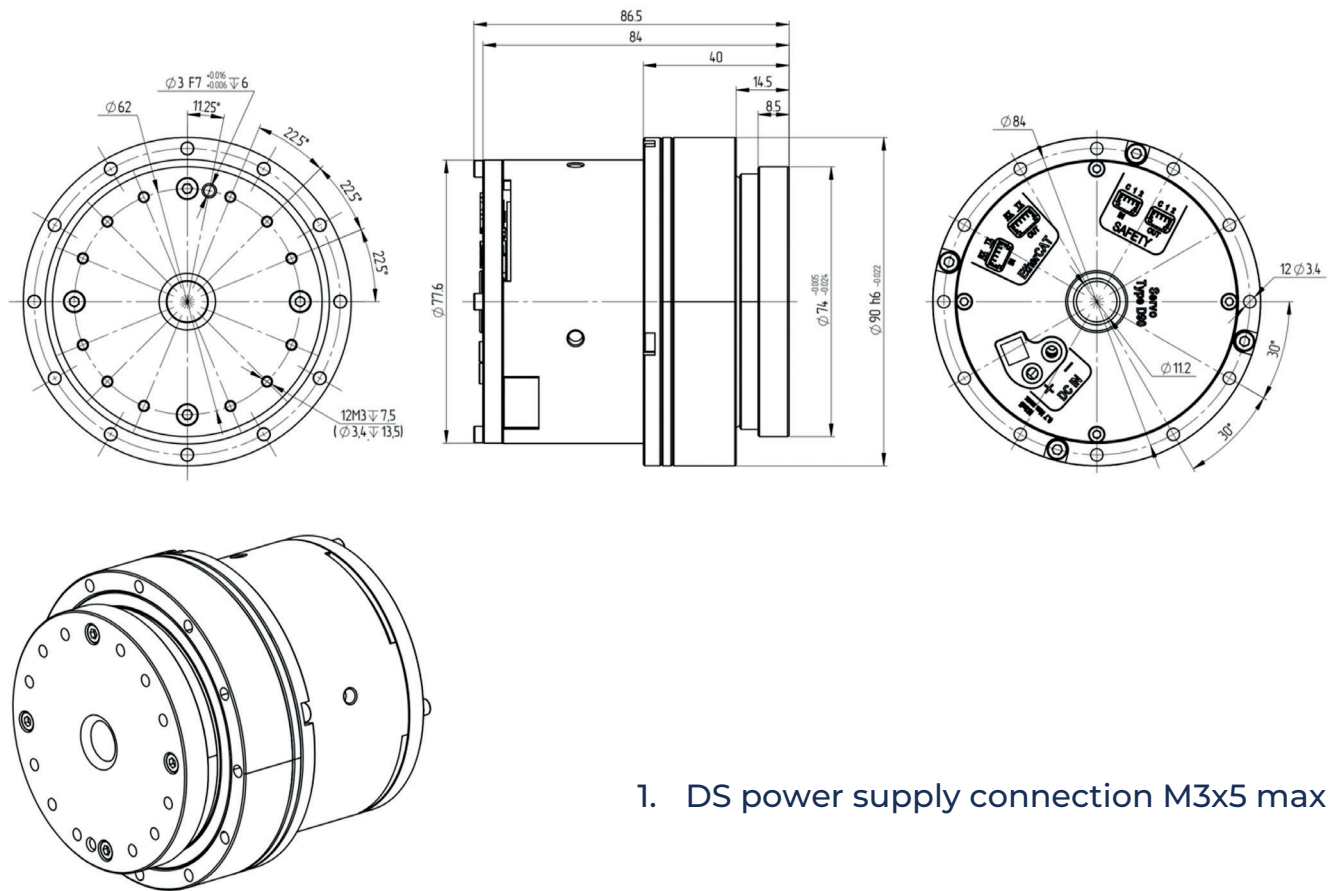
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		D90 CM.1.3.1.1
PHYSICAL PROPERTIES		
Mass		1.68 kg
Hollow shaft diam.		11.5 mm
Rated torque		62 Nm
Peak torque		108 Nm
Permissible static tilting moment		515 Nm
Permissible dynamic tilting moment		187 Nm
Gear ratio		101:1
Gear pitch diameter		2.0 inch (51 mm)
Max speed		35 RPM
Brakes holding torque		100 Nm
Fast rotating parts Inertia, If		1.10E-04 kg*m²
Slow rotating parts Inertia, Is		3.10E-04 kg*m²
INTERFACE		
Communication		EtherCAT, CoE, FoE
POWER		
Nominal voltage		48 V
Under-voltage limit		20 V
Over-voltage limit		60 V
OUTPUT POSITION SENSOR		
Fast (motor) shaft position sensor		Absolute magnetic encoder
Output position sensor		Dual absolute multi-turn magnetic encoder with backup battery input (3.7V lithium)
Output position resolution		19 bit
Position accuracy		0.005 deg (Calibrated against external encoder)
OTHER		
Brakes		Magnetic clutch
PWM frequency		20 kHz
Current/velocity loop frequency		20 kHz
Working modes		Synchronous cyclic torque/synchronous cyclic velocity with feed-forward
Protection		Comm. cycle time/over-current/over-voltage/under-voltage/motor over-temperature/switches over-temperature
Standard safety functions		STO and FSoE
Lifetime (rated), h		10000 (At nominal torque)
SOFTWARE		
Controller features		Cogging torque compensation, output position calibration map, dynamic current limits, current feed-forward, redundant output position feedback, output encoder eccentricity compensation, hardware torque-off during undervoltage
Control software		Tunning utility/GUI (Windows/Linux), C/C++/python examples using open-source SOEM EtherCAT master
CONNECTORS		
Power terminals		M3 standoffs (suitable for M3 O-type terminals)
EtherCAT connectors		Molex PicoBlade 4-pin 1.25mm pitch
Multiturn battery connector		Molex PicoBlade 2-pin 1.25mm pitch
Load mounting		Axially oriented M3 bolts
ENVIRONMENT		
Operating temperature (environment)		0-50 deg C (When mounted on the heatsink > 400 cm²)
Operating temperature (case)		0-80 deg C
Operating ambient humidity (no condensation)		
Storage Temperature (no condensation)		
IP rating		IP30
Output shaft and bearings are sealed. IP could be improved up to IP65 by external housing		

D90 (CM.1.3.1.1)

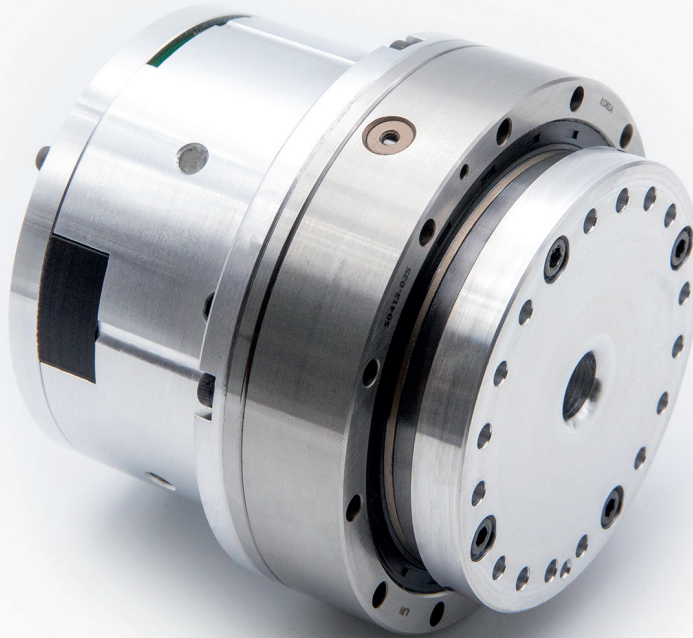




ROBOTIC ACTUATORS

D90 (CM.1.3.4.1)

Specifications



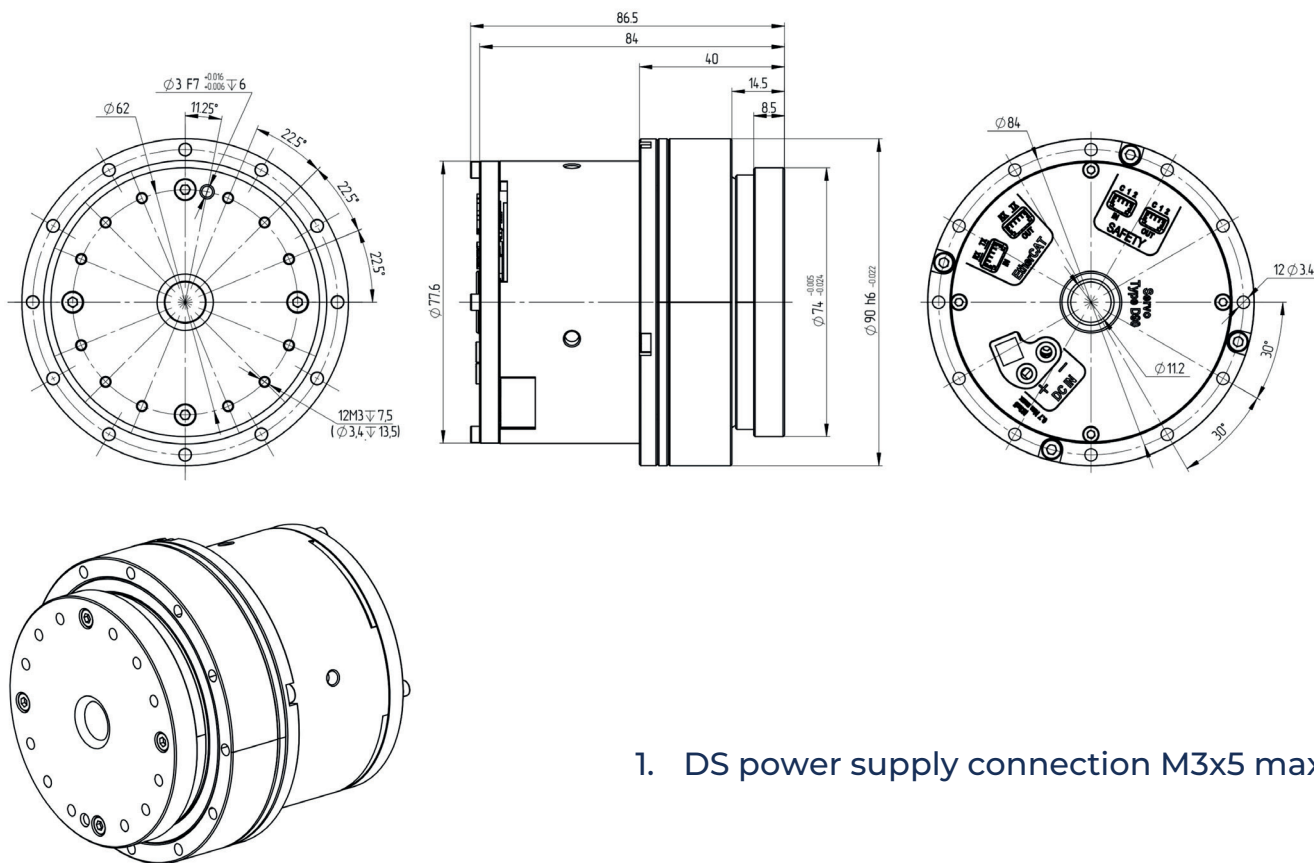
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		D90 CM.1.3.4.1
PHYSICAL PROPERTIES		
Mass		1.68 kg
Hollow shaft diam.		11.5 mm
Rated torque		20 Nm
Peak torque		27 Nm
Permissible static tilting moment		515 Nm
Permissible dynamic tilting moment		187 Nm
Gear ratio		1:30
Gear pitch diameter		2.0 inch (51 mm)
Max speed		110 RPM
Brakes holding torque		30 Nm
Fast rotating parts Inertia, If		1.10E-04 kg*m²
Slow rotating parts Inertia, Is		3.10E-04 kg*m²
INTERFACE		
Communication		EtherCAT, CoE, FoE
POWER		
Nominal voltage		48 V
Under-voltage limit		20 V
Over-voltage limit		60 V
OUTPUT POSITION SENSOR		
Fast (motor) shaft position sensor		Absolute magnetic encoder
Output position sensor	Dual absolute multi-turn magnetic encoder with backup battery input (3.7V lithium)	
Output position resolution		19 bit
Position accuracy		0.005 deg (Calibrated against external encoder)
OTHER		
Brakes		Magnetic clutch
PWM frequency		20 kHz
Current/velocity loop frequency		20 kHz
Working modes	Synchronous cyclic torque/synchronous cyclic velocity with feed-forward	
Protection	Comm. cycle time/over-current/over-voltage/under-voltage/motor over-temperature/switches over-temperature	
Standard safety functions		STO and FSoE
Lifetime (rated), h		10000 (At nominal torque)
SOFTWARE		
Controller features	Cogging torque compensation, output position calibration map, dynamic current limits, current feed-forward, redundant output position feedback, output encoder eccentricity compensation, hardware torque-off during undervoltage	
Control software	Tunning utility/GUI (Windows/Linux), C/C++/python examples using open-source SOEM EtherCAT master	
CONNECTORS		
Power terminals	M3 standoffs (suitable for M3 O-type terminals)	
EtherCAT connectors	Molex PicoBlade 4-pin 1.25mm pitch	
Multiturn battery connector	Molex PicoBlade 2-pin 1.25mm pitch	
Load mounting	Axially oriented M3 bolts	
ENVIRONMENT		
Operating temperature (environment)	0-50 deg C (When mounted on the heatsink > 400 cm²)	
Operating temperature (case)	0-80 deg C	
Operating ambient humidity (no condensation)		
Storage Temperature (no condensation)		
IP rating	IP30	
Output shaft and bearings are sealed. IP could be improved up to IP65 by external housing		

D90 (CM.1.3.4.1)



1. DS power supply connection M3x5 max



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