



ROBOTIC ACTUATORS

D70 (CM.1.1.6.1)

Specifications



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PHYSICAL PROPERTIES

Mass	0.8 kg
Hollow shaft diam.	7.5 mm
Rated torque	16 Nm
Peak torque	37 Nm
Permissible static tilting moment	144 Nm
Permissible dynamic tilting moment	74 Nm
Gear ratio	101:1
Gear pitch diameter	1.4 inch (35 mm)
Max speed	50 RPM
Brakes holding torque	40 Nm
Fast rotating parts Inertia, I _f	3.20E-05 kg*m ²
Slow rotating parts Inertia, I _s	7.60E-05 kg*m ²

INTERFACE

Communication	EtherCAT, CoE, FoE
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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

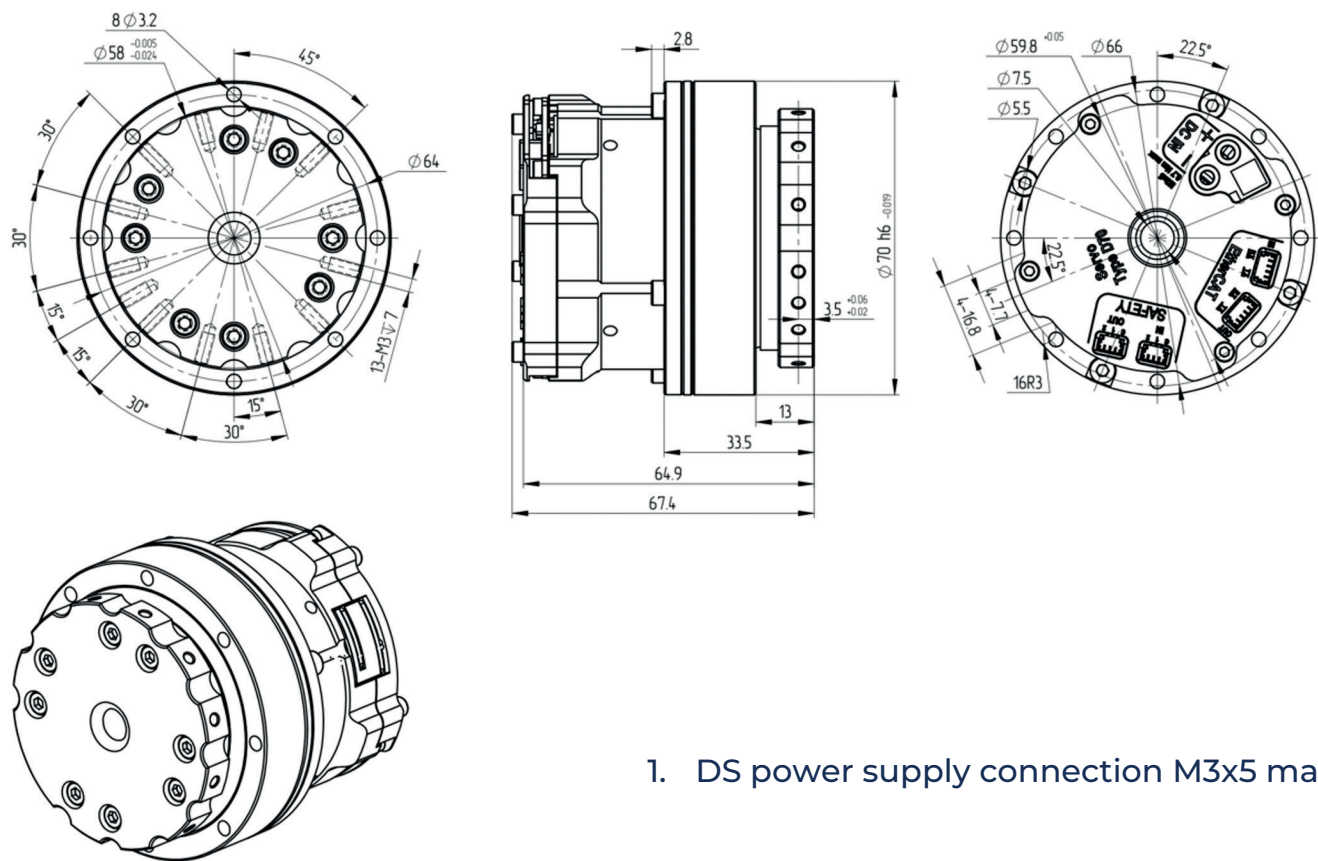
Power terminals	M3 standoffs (suitable for M3 O-type terminals)
EtherCAT connectors	Molex PicoBlade 4-pin 1.25mm pitch
Multiturn battery connector	Molex PicoBlade 2-pin 1.25mm pitch
Load mounting	Radially oriented M3 bolts

ENVIRONMENT

Operating temperature (environment)	0-50 deg C (When mounted on the heatsink > 400 cm ²)
Operating temperature (case)	0-80 deg C
Operating ambient humidity (no condensation)	
Storage Temperature (no condensation)	
IP rating	IP20

Output shaft and bearings are sealed. IP could be improved up to IP65 by external housing

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1. DS power supply connection M3x5 max



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