AROS

ASBIS ROBOTIC SOLUTIONS

ROBOTIC ACTUATORS

Specifications



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ACTUATOR STRUCTURE ELEMENTS

Motor – high-torque brushless motor

Gear – strain wave harmonic reducer

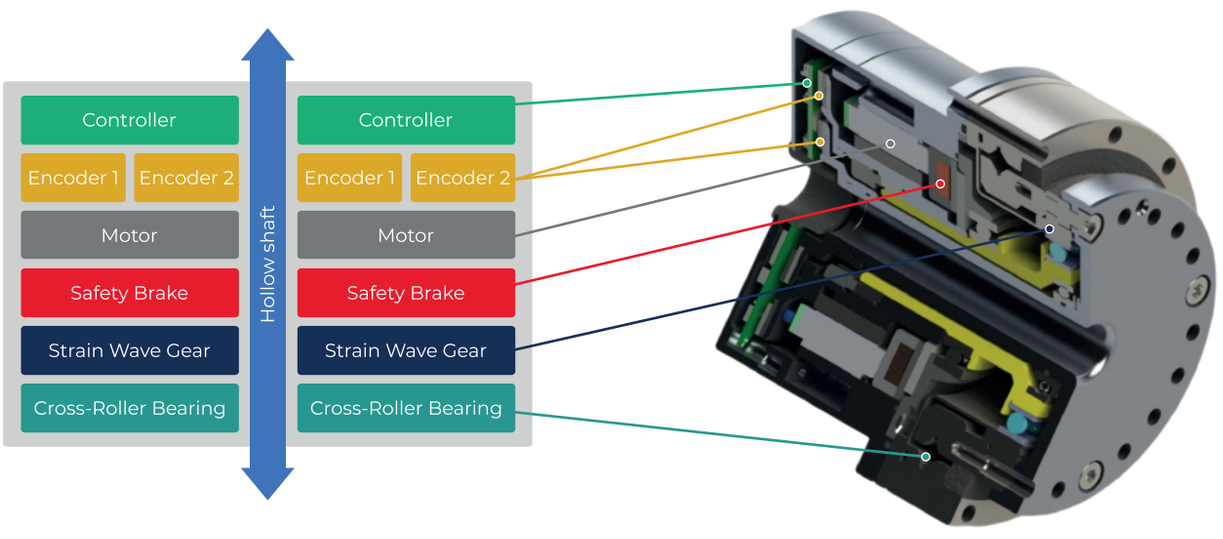
Brakes – electromagnetic clutch tailored to motor torque

EtherCAT Controller - drive unit to run the servomotor

Encoders – 19-bit absolute multiturn magnetic encoders

Cross-roller bearing – handles high load moments

Hollow shaft – runs wires or media through servomotor



APPLICATIONS TO LEVERAGE ACTUATORS

Humanoid robots	Robotic arms	Surgery robotics	UAV Drones
Active exoskeletons	Harvesting robotic platforms	Inspection and rescue robots	Robotic engineering companies

HOW IS IT DIFFERENT FROM OTHERS?

Considering the structure with clutch brakes, EtherCAT controller, and hollow shaft, there are no actuators with such a high torque density on the market. Moreover, actuator length and diameter have a ratio close to 1:1, which provides design, footprint, and weight advantages for your robotic product.

PHYSICAL PROPERTIES	D50 CM.1.6.1-G100	D70 CM.1.1.12-G101	D80 CM.1.2.3-G101	D90 CM.1.3.6-G101	D110 CM.1.4.2-G101	D142 CM.1.5.1-G101
Mass, kg	0.38	0.78	1.12	1.68	2.56	5.1
Outer diameter, mm	50	70	80	90	110	142
Length, mm	53.6	65.7	73.2	85	82.4	101.2
Hollow shaft diameter, mm	5	8.5	9.5	12	12.4	15.5
Rated torque, Nm	7.7	16	49	62	137	273
Peak torque, Nm	19	37	66	108	205	439
Dynamic load rating, N	2850	5800	10400	14600	21800	38200
Static load rating, N	4250	8600	16300	22000	35800	65400
Gear ratio options	50|80|100	30|50|80|100	50|80|100|120	30|50|80|100|120|160	50|80|100|120	50|80|100|120|160
Gear ratio	100:1	101:1	101:1	101:1	101:1	101:1
Max speed @peak-torque, RPM	60	45	38	36	28	14
Max speed @average-torque, RPM	85	55	43	40	33	22
Brakes holding torque, Nm	20	40	70	100	200	450
Fast rotating parts inertia (If), kg·m²	4.00E-06	3.20E-05	5.70E-05	1.10E-04	2.30E-04	3.84E-04
Slow rotating parts inertia (Is), kg·m²	8.84E-06	7.60E-05	1.50E-04	3.10E-04	7.50E-04	7.32E-04

INTERFACE	
Communication	EtherCAT, CoE, FoE

POWER	
Nominal voltage	48 V
Under-voltage limit	35 V
Over-voltage limit	60 V

OUTPUT POSITION SENSOR	
Motor shaft 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° (Calibrated against external encoder)

OTHER		
Brakes type	Magnetic clutch	
PWM frequency	20 kHz	
Loop frequency	20 kHz	
Working modes	Synchronous cyclic torque/synchronous cyclic velocity with feed-forward/cyclic synchronous position	
Protection features	Comm. cycle time/over-current/over-voltage/under-voltage/motor over-temperature/switches over-temperature	
Safety functions	STO and FSoE (in process)	
Rated lifetime	7000 hours |	10000 hours (at nominal torque)

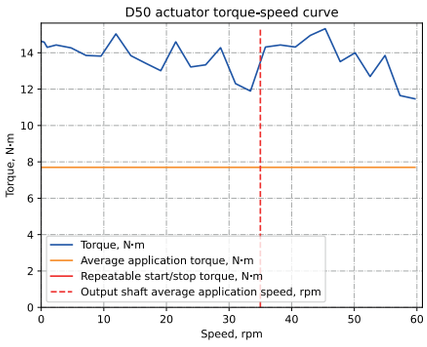
SOFTWARE	
Controller features	Cogging torque compensation, output position calibration map, dynamic current limits, current feed-forward, redundant output position feedback, output encoder eccentricity compensation, hardware torque-off during undervoltage
Control software	Tunning utility/GUI (Windows/Linux), C/C++/python examples using open-source SOEM EtherCAT master

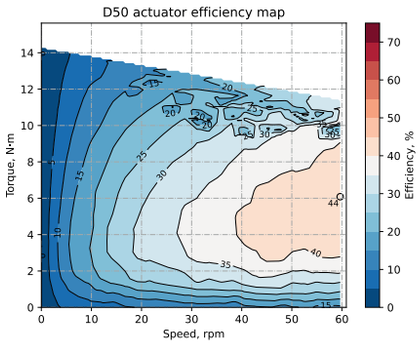
CONNECTORS			
Power terminals	M3 standoffs (suitable for M3 O-type terminals)		
EtherCAT connectors	JST GH 1.25mm pitch connector		
Battery connector	JST GH 1.25mm pitch connector		
Load mounting	Axially oriented M3 bolts |	Axial and Radial options, M3 bolts |	Axially oriented M3 bolts

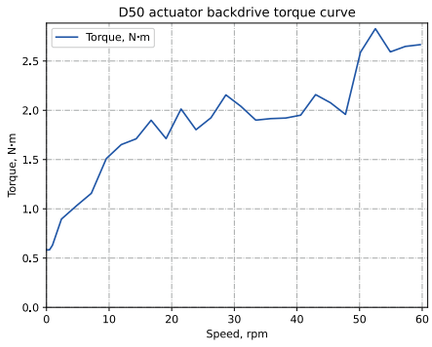
ENVIRONMENT	
Operating temp (environment)	0–50°C (with heatsink > 400 cm²)
Operating temp (case)	0–80°C
IP rating	IP30

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

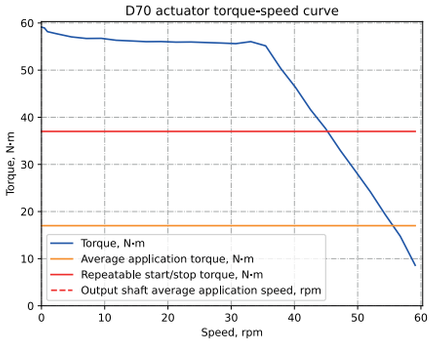
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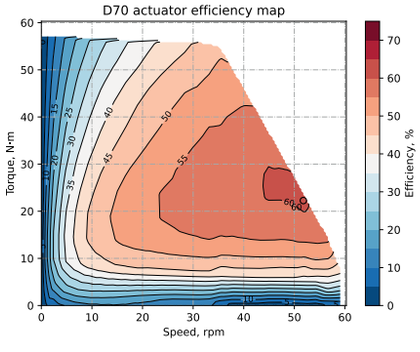


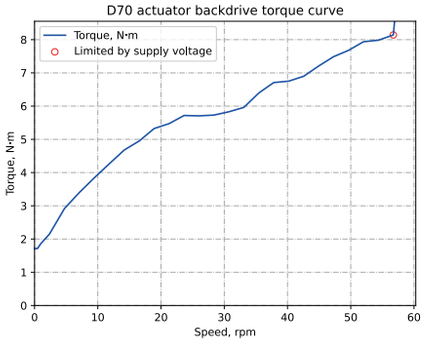




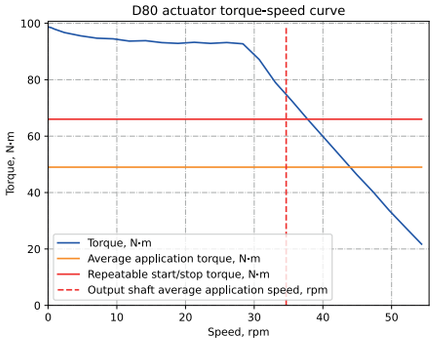
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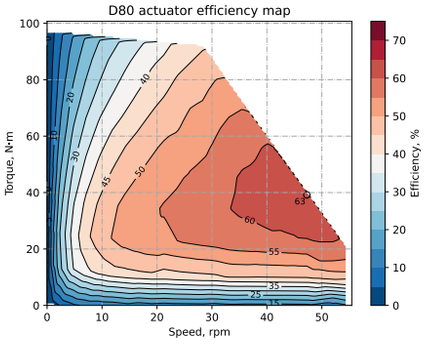


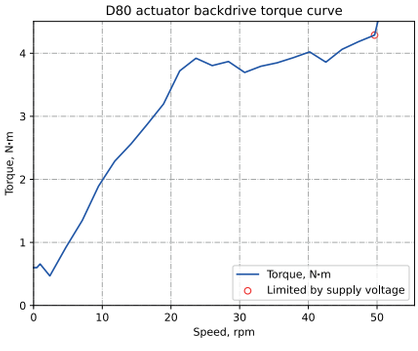




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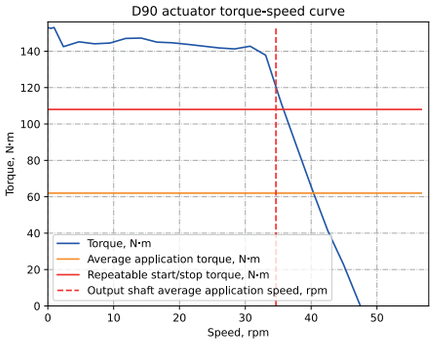


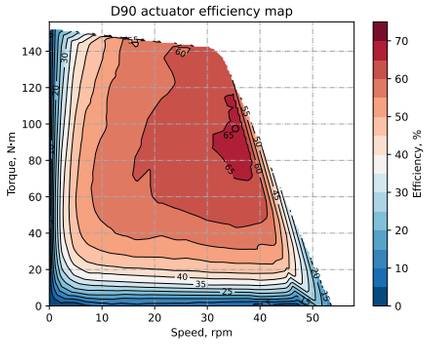


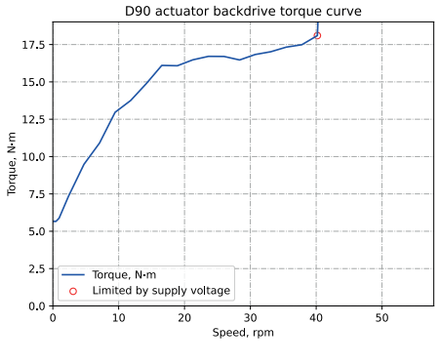


*values may slightly very from actuator to actuator

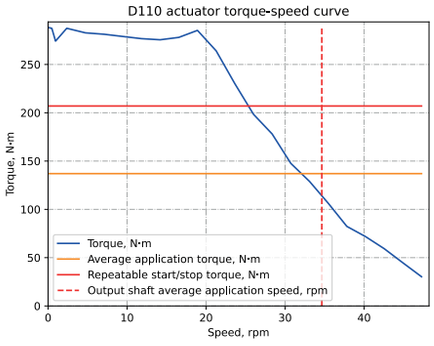
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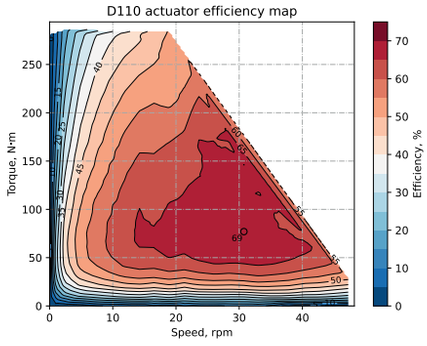


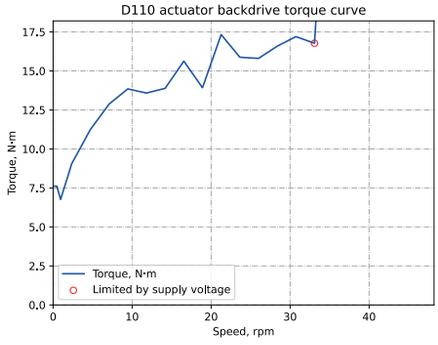




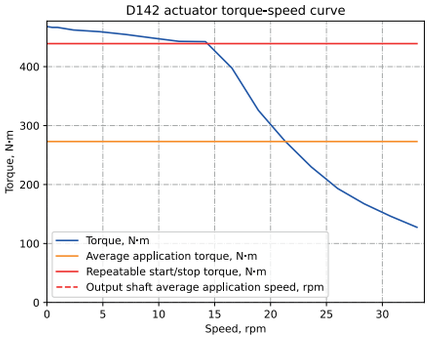
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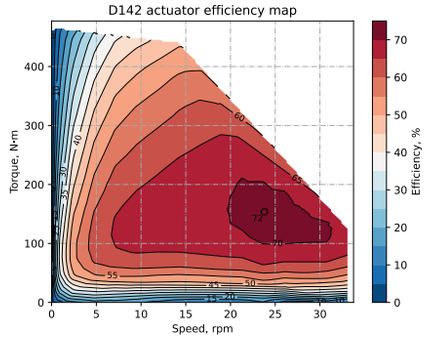


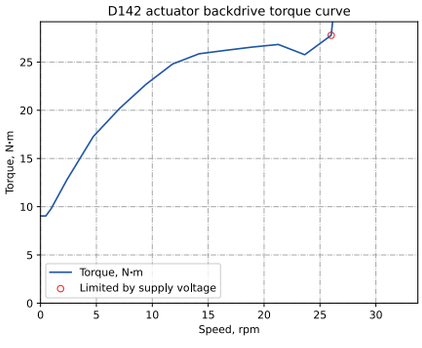




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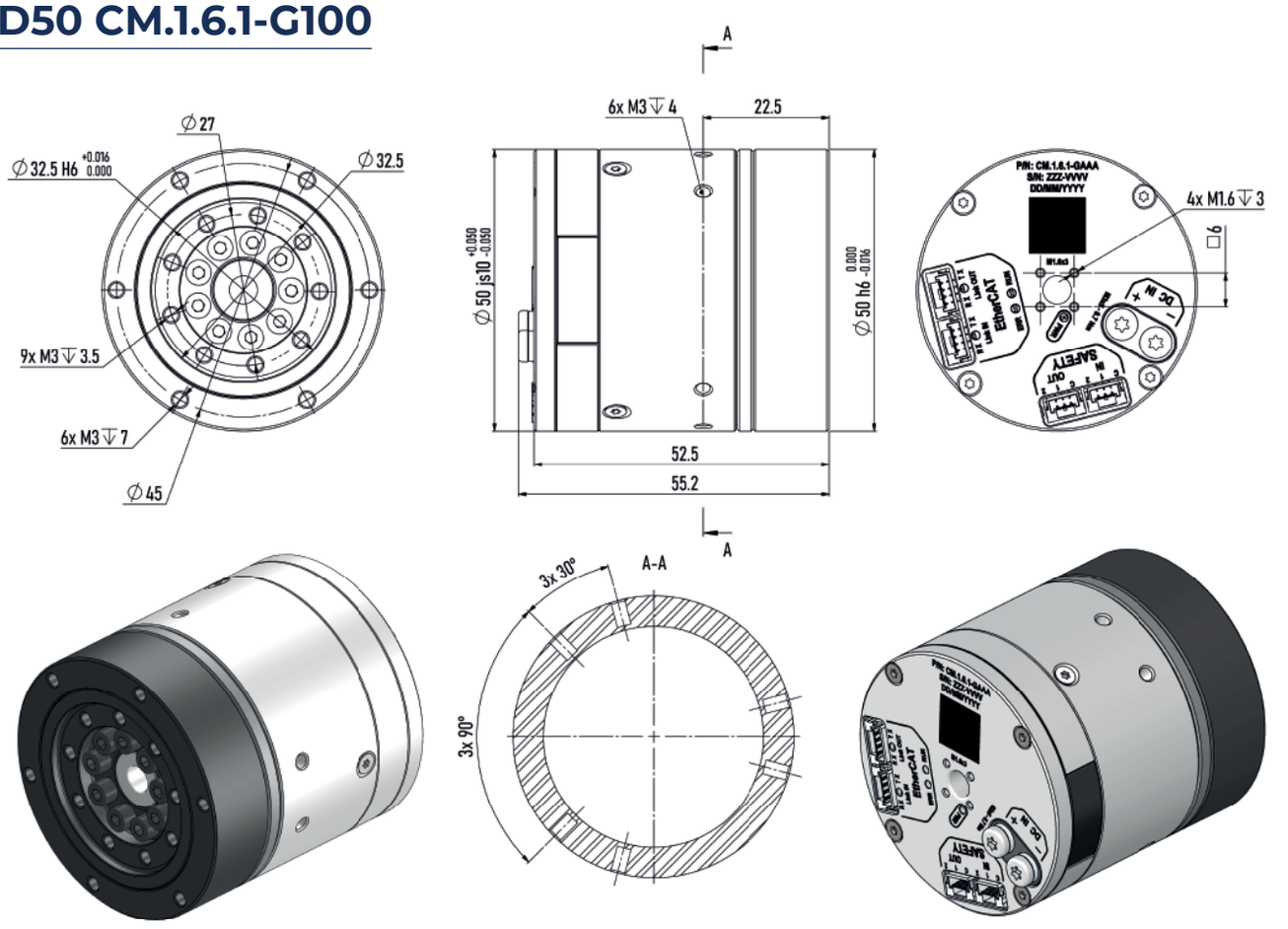






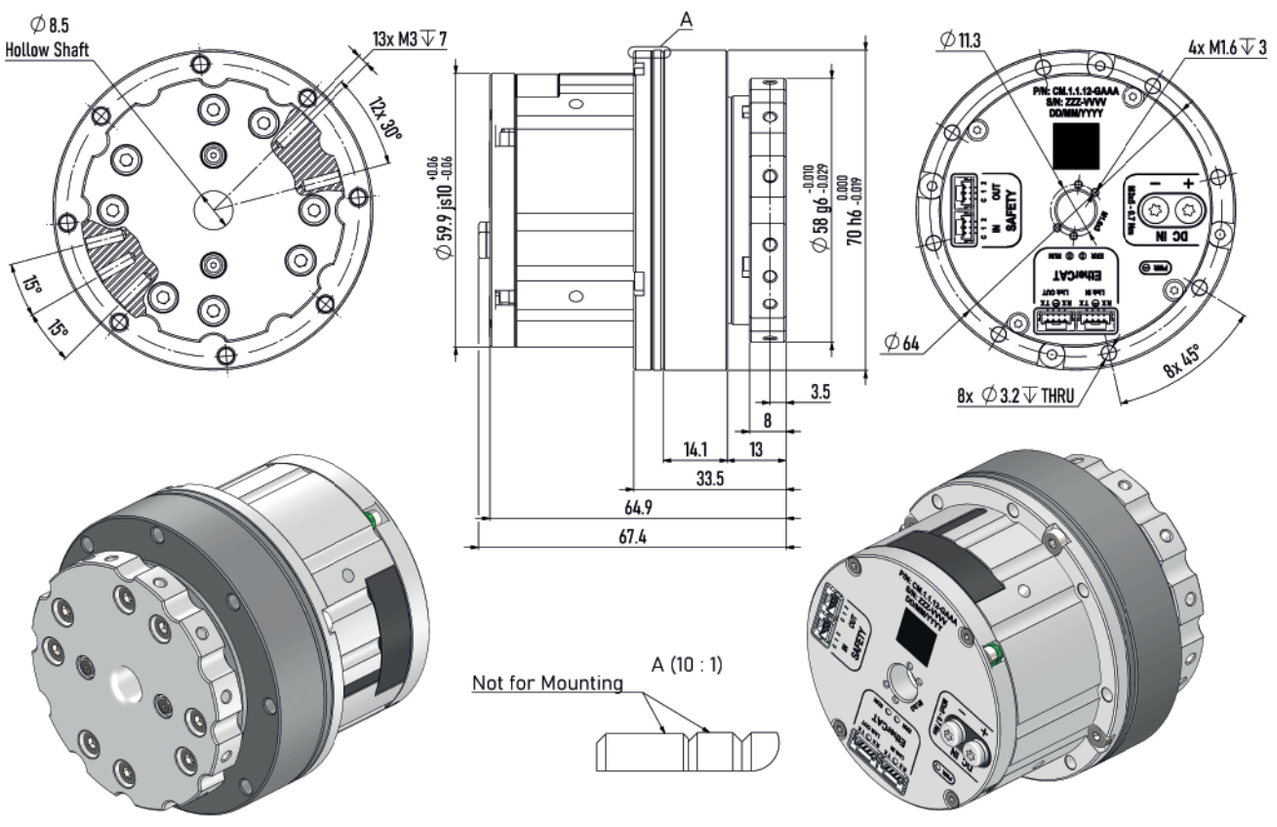
*values may slightly very from actuator to actuator

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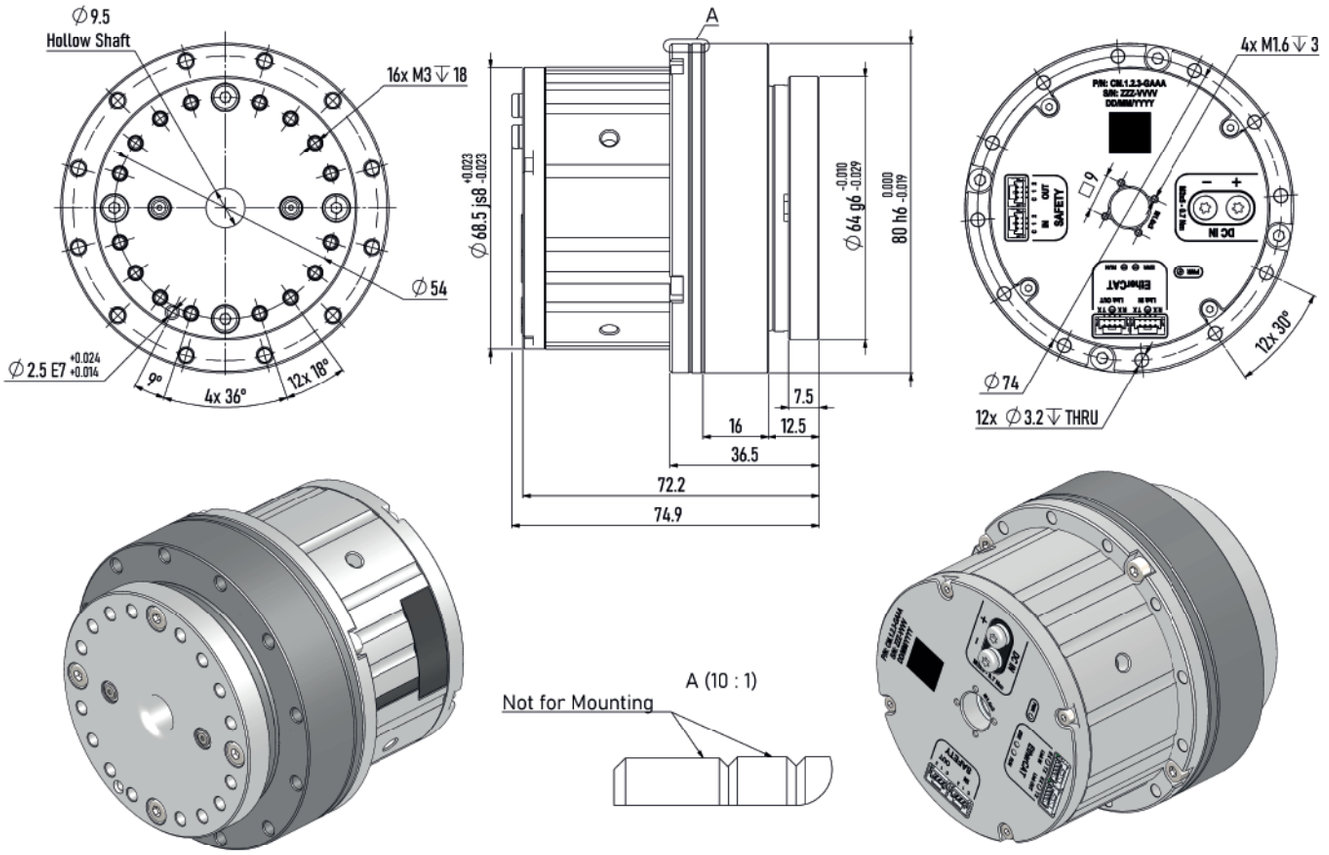
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There is also a Radial mount version

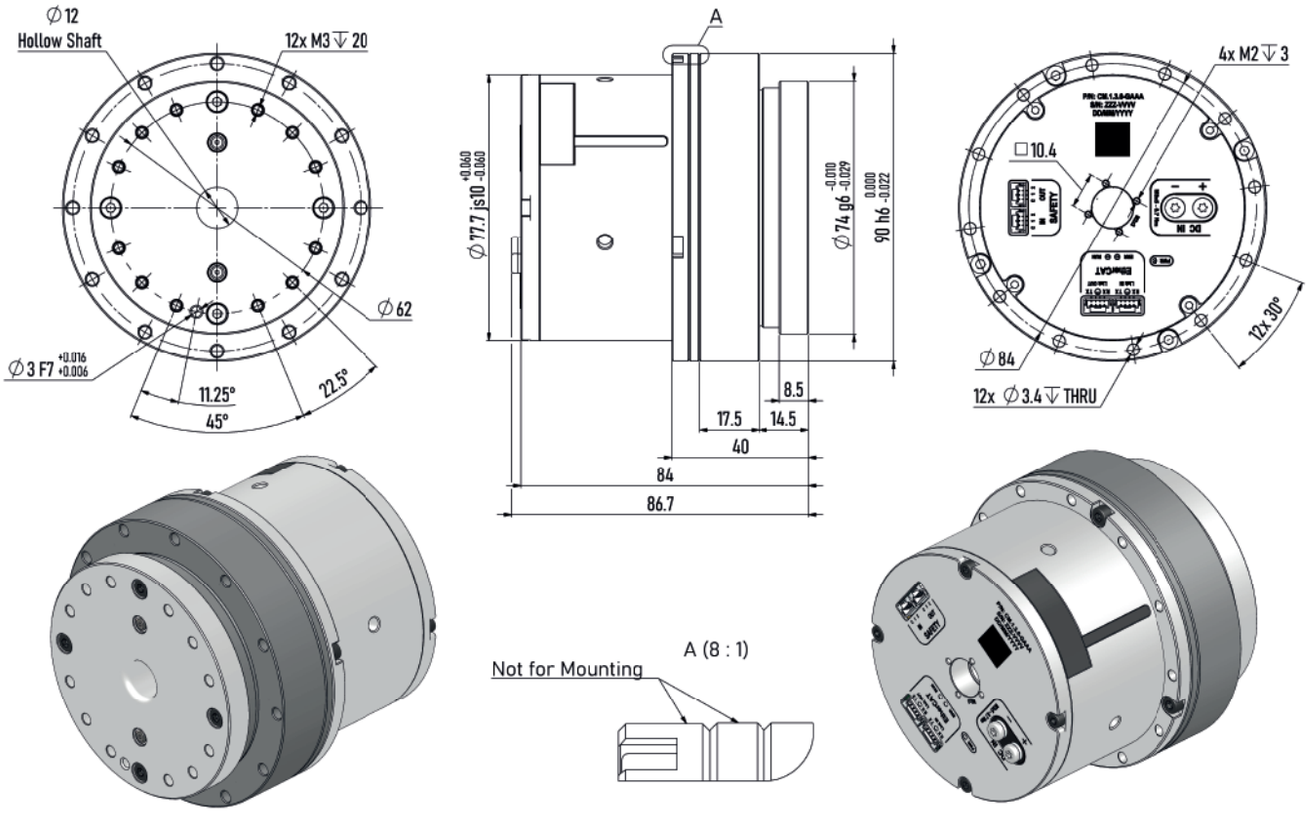


*All dimensions are in mm

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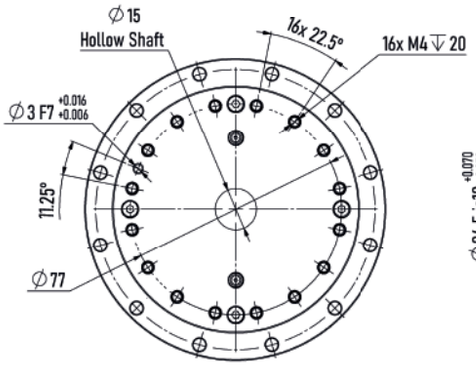


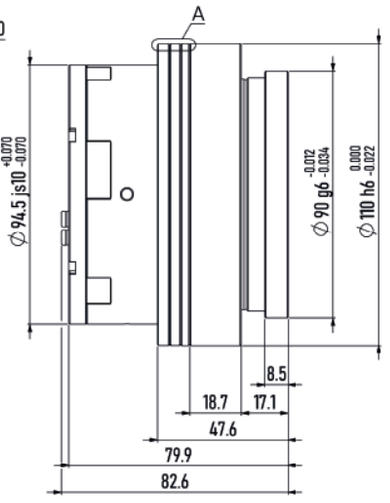
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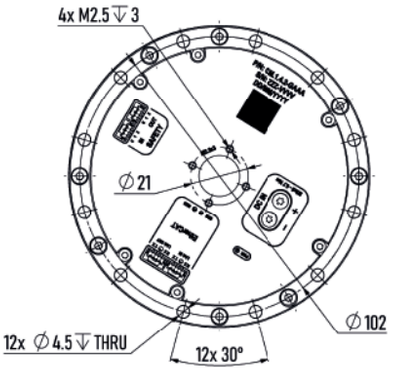


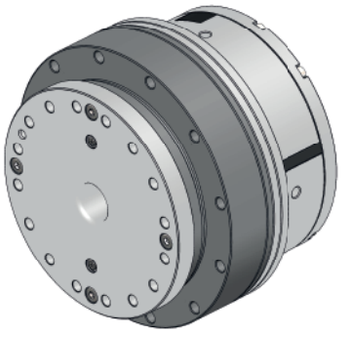
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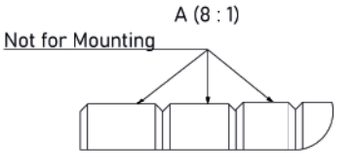
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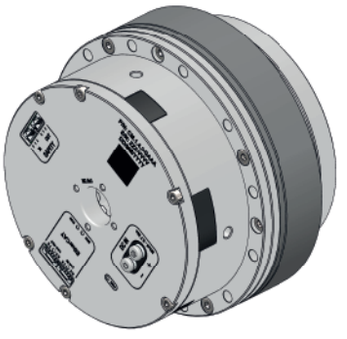




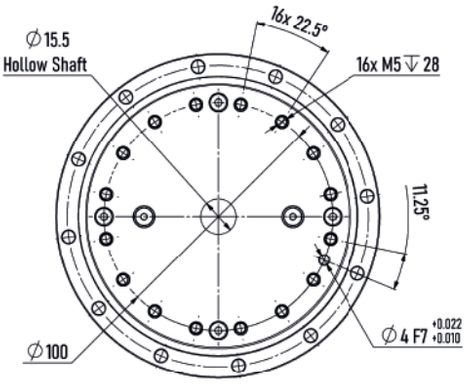


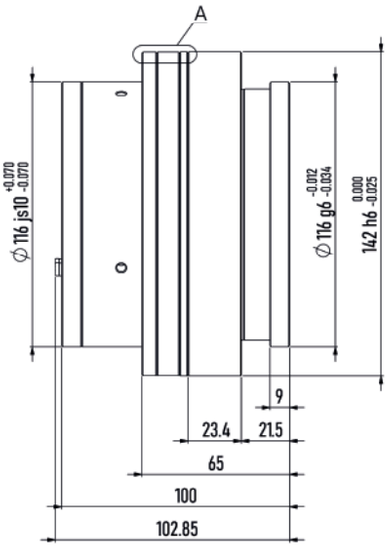


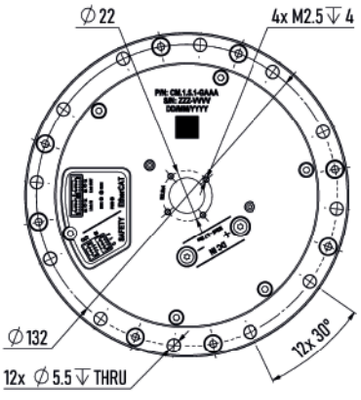


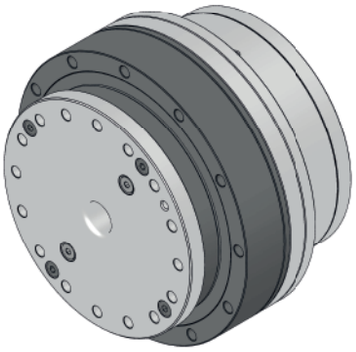


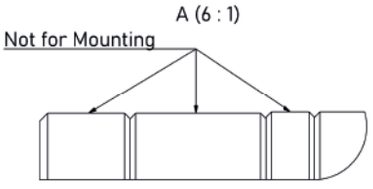
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*All dimensions are in mm

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