



FORCE 

RESOLUTION 

PERFORMANCE 



CLS-P DIRECT DRIVE SOLUTIONS

Your ideal Rotational Drive Solution up to FFS Level D.

The BRUNNER CLS-P Direct Drive Solution meets the highest demands of professional flight simulation. As an element of our Control Loading System portfolio we have developed a very compact and powerful Direct Drive Rotational Solution which is able to meet the high requirements of FFS Level D Simulators, but also perfectly enable smaller scale training devices like FTDs and FNPTs.

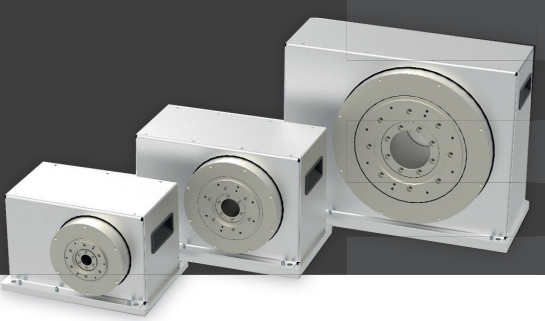
The high dynamic direct drive brushless AC Servo motor has 20 Bit resolution per rotation and offers a very smooth response with highest force in a compact design.

The BRUNNER Direct Drive Solution is supporting single as well as dual pilot applications. A unique real-time synchronization logic enables unmatched and automatic pilot/co-pilot take-over functionality.

Targeting professional applications where type specific interfaces are required, the Direct Drive Solutions comes without any linkage but is prepared for easy mounting and connection of user specific mechanics.

Additionally to the internal Force Measurement, an external Force Sensor can be connected directly via the CAN Interface.

Enabled by our CLS2Sim software-environment, the Direct Drive Solution communicates easily with commercially available simulation software such as X-Plane, M-FSX, and Prepar3D®. Any third party flight simulation solution connects via a simple TCP/IP or UDP remote interface protocol.



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Features.

- BRUNNER Drop-In: fully integrated, with built-in power and control unit, no additional aux. devices required
- High dynamic direct drive brushless motor with 20 Bit resolution per rotation
- Three versions with 27 Nm, 54 Nm and 180 Nm peak force (30 s), smooth response with compact design
- Internal high precision force measurement algorithm
- Optional external high precision force sensor can be added directly on the CAN interface
- Contactless high-resolution position feedback
- Multi-Crew-Capability (MCC) through electrical link and self-synchronization capability over CAN in real-time
- Aircraft and type-specific profiles
- Designed for standard, abnormal and emergency procedure training
- Allows easy mounting and connection of user-specific mechanics
- Plug & Play CAN for one or multiple CLS-P devices (i.e. Elevator and Aileron), connected to simulator host via BRUNNER high-speed Ethernet2CAN gateway
- Reliable, smooth and maintenance free design
- No fan, very quiet, high efficient
- Direct support for X-Plane, FSX, FSX Steam edition, Prepare-3D with BRUNNER CLS2SIM SW, X-Plane plugin for Windows, Linux and Mac
- Swiss Made, 2 Years warranty

Specification.

	Peak Force	Cont. Force	Max. Speed	Resolution Abs.	Interface	Operating Voltage
Direct Drive 27	27 Nm	9 Nm	500 Rpm	20 Bit/turn	CAN (RJ45)	90-230 VAC, 50/60 Hz
Direct Drive 54	54 Nm	18 Nm	400 Rpm	20 Bit/turn	CAN (RJ45)	90-230 VAC, 50/60 Hz
Direct Drive 180	180 Nm	60 Nm	200 Rpm	20 Bit/turn	CAN (RJ45)	90-230 VAC, 50/60 Hz

Dimensions.

	Width	Height	Depth	Weight
Direct Drive 27	270 mm 10.63 in	174 mm 6.85 in	190 mm 7.48 in	14 kg 30.8 lb
Direct Drive 54	320 mm 12.6 in	222 mm 8.74 in	190 mm 7.48 in	19.5 kg 42.9 lb
Direct Drive 180	440 mm 17.32 in	342 mm 13.46 in	190 mm 7.48 in	45 kg 99.2 lb

