

Press Release

Heading: New series / Electronics / Vacuum motor / Linear actuator

Precise operation in extreme cold

New linear actuator series for UHV and cryogenics



Gröbenzell, May 2017. Research, development and manufacturing processes are increasingly taking place in a vacuum and sometimes in extremely cold conditions. For this, drive components are required that will function precisely and reliably in these extreme conditions, such as the new linear actuator from Phytron GmbH.

The new linear actuator (LA) marks the dawn of a new era for low temperatures down to -269°C . Previously, drive units were shielded from these extreme environments by placing them outside the chamber and using mechanical feedthroughs. Through intensive research and with new approaches to analysis and measurement the actuators can now reliably operate within an ultra-high vacuum (UHV) or in a cryogenic environment.

Inside, the LA lies the knowledge gained from over 30 years of developing in-vacuum and cryogenic stepper motors. "Our newly developed linear actuator delivers reliability, power and precision in extreme environmental

conditions and greatly simplifies customer mechanisms because there is no need to operate in cryo-vacuum chambers", explains Henning Brunke, Technical Manager at Phytron, summarizing the development.

Partly made from Titanium, the dry-lubricated actuator can also be operated near sensitive optics without contaminating them by outgassing.

The first version of the 25mm size provides a linear stroke of 13mm. With a positioning precision to <0.01 mm, a load of 10N can be moved. In combination with an integrated planetary gear, this can actually be increased to 30N.

During the course of the year, the linear actuator will be scaled up to sizes 32mm and 42mm, thus specifically expanding Phytron's portfolio of automation solutions for extreme environmental conditions.

Press photo: The first linear actuator developed by Phytron GmbH for cryogenic conditions.

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Background information

Phytron GmbH was founded in 1947 as the manufacturer of the first physical measuring instruments. Since then, Phytron has concentrated on **physical**, **electronic** and mechatronic solutions that meet extreme requirements in terms of precision, durability and reliability. The company consistently realigned its focus to become the future-oriented high-tech company that it is today. At the beginning of 2016, following its successful certification under DIN EN 9100, it became one of the 400 or so approved suppliers worldwide to be listed in the OASIS aerospace database. Phytron's products are in use in every application where there are stringent requirements for materials, manufacturing processes and particular care in documentation. These include, for example, positioning motors for ultra-precise mechanisms on board research satellites and space vehicles. Phytron is also the supplier of high-performance control electronics inside particle accelerators and other research equipment. The

company is constantly opening up new opportunities for the manufacturers of cutting-edge analysis equipment and production systems, such as the drives for multi-axle systems in ultra-high vacuum applications and robust actuators for high and ultra-low temperature ranges. For 2017, the company's 90-strong workforce has resolved to pave the way for new process technologies with its new linear actuators for cryogenic use.