Motorized Lens Turret User's Manual

Ⅰ. Summary

- Motorized turret has better accuracy and durability than traditional turrets due to elimination of mechanical detents.
- Includes 5-phase micro stepping motor and can achieve a resolution of less than a micron at the tip of objective lens.
- When used with the GIP-101 series controller, objectives can be switched quickly and accurately either manually, using the push buttons on the controller, or automatically, using the computer interface.

※ GIP-101 series controller is not included, so please purchase separately.

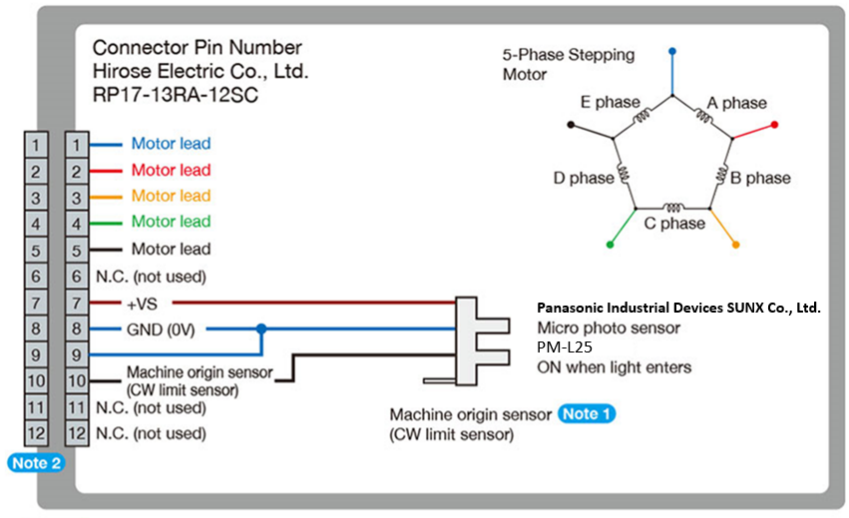
■Specifications

Part Number	LACR-4H ※1
Number of switched lens	4 holes (90deg×4) (1hole: datum hole, 3holes: one-directional center core adjustment)
Travel	∞ for both of clockwise and counterclockwise directions
Motor	5-phase stepping motor (0.75A/phase)
Travel per 1 pulse	0.01deg (FULL) / 0.0002deg (1/50 DIV)
Total pulse per table rotation	36,000 pulse (FULL)
Positional repeatability	≦ 0.02deg
Switching reproducibility	≦ +/−3μm (at the tip of objective lens)
Maximum travel speed (switch)	60deg/sec (A⇒B , about 2.0sec)
Objective lens size	φ26×0.706 ※2
Load capacity	2.0 kg
Weight	0.85 kg

※1 An adapter (AOR-M26.0) for connecting this product to an observation unit with coaxial illumination is available separately.

※2 Four adapters to convert to RMS (φ20.32 x 0.706) are included.

■Connection diagram



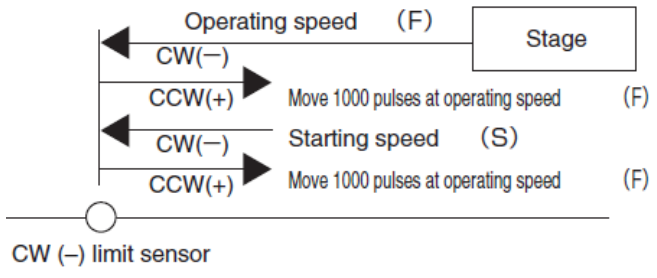
Note 1 When a travel command in the "+" direction is issued, the mounting table rotates to ∞ in the CCW (counterclockwise) direction viewed from the top surface, but it is stopped by the machine origin sensor (CW limit sensor) in the CW (clockwise) direction.
Detect the machine origin using the method (MINI system) that detects the origin with a machine origin sensor (CW limit sensor).

Note 2 Compatible cable connector: Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

■Detecting the Mechanical Origin

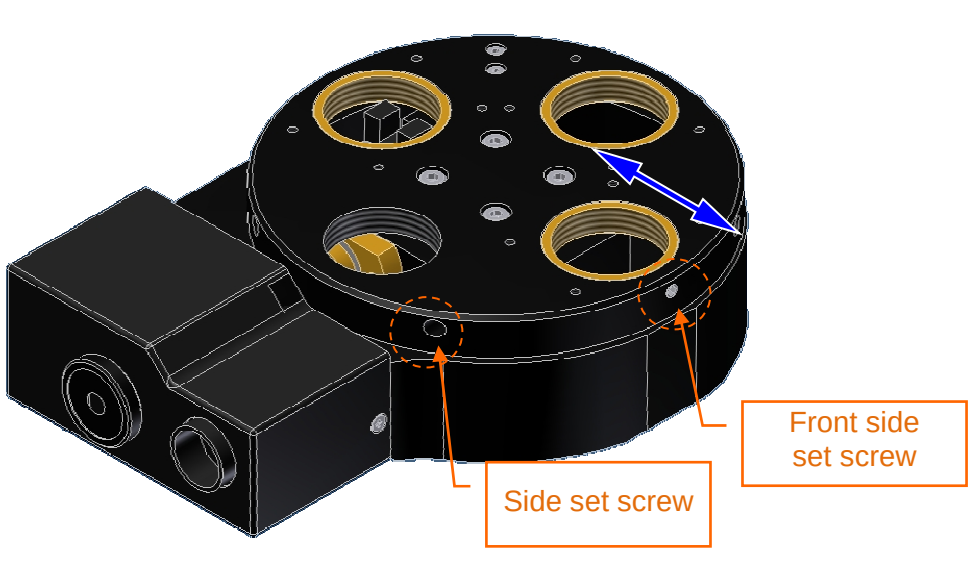
MINI system

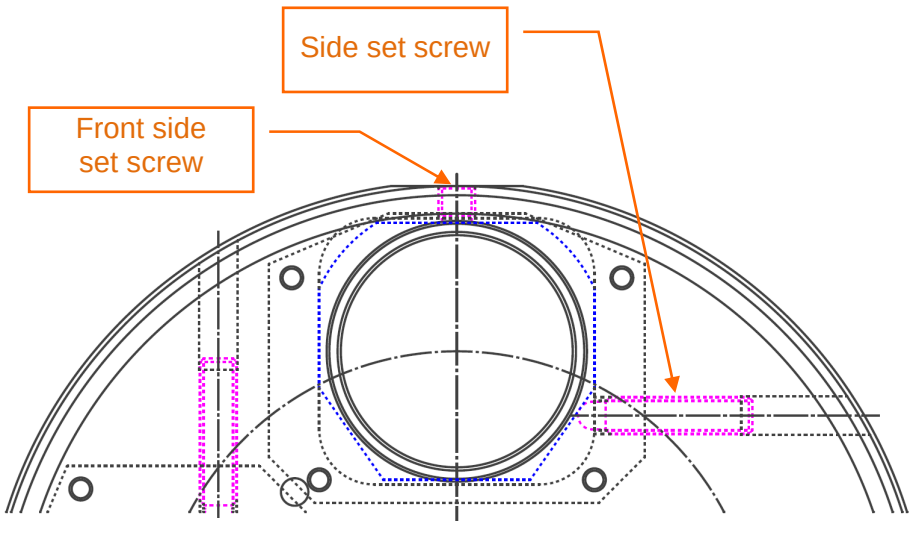
When the command is given to detect the mechanical origin, the stage begins moving clockwise (i.e., in the - direction) at the operating speed (F) specified in the memory switches, stopping when the clockwise (-) limit sensor is detected. It then moves counterclockwise (i.e., in the + direction) at the operating speed (F) for 1000 pulses. After stopping, it begins moving clockwise (i.e., in the - direction) once more at the starting speed (S), stopping when the clockwise (-) limit sensor is reached. It then moves counterclockwise (i.e., in the + direction) at the operating speed (F) for 1000 pulses. This position is taken as the mechanical origin.



Ⅱ. Operation of center core adjustment

1) Regarding the angle adjustment in the direction of rotation, please adjust with the number of pulses of the controller.
2) One-way centering adjustment (direction shown by the arrow in the figure below) can be performed as Motorized Lens Turret.
3) By pushing the M4 set screw on the front side and the M4 set screw on the side, it is possible to adjust the front and rear of about ± 0.3 mm.
4) Adjust each 3 holes with the same operation.





Ⅲ. Caution

1) Regarding the center core adjustment of the objective lens, note that it is not carried out precisely.
2) The mounting screw size of the objective lens is standardized as ϕ26×0.706. Inquire separately when using other objective lens.
3) Select mounting screws referring to the external view. Fixing with screws longer than the tap depth may damage the internal structure.
4) Be careful not to put high power and strong hit on the main part during maintenance. This may be a cause of malfunction.
5) This Lens Turret was applied by stepping motor which drive current is 0.75A/phase. Setting over the above rate value is cause of motor heating and malfunction.
6) At the main part, there is a knob attached to screw which can be manually adjusted. Note that the controller's switch power must be turned off before making manual adjustment.

⚠ Do not touch during operation.

⚠ Make sure that controller was turned off before connecting connector to controller.
Connecting during power on may be a cause of malfunction.

Ⅳ. Usage and storage environment

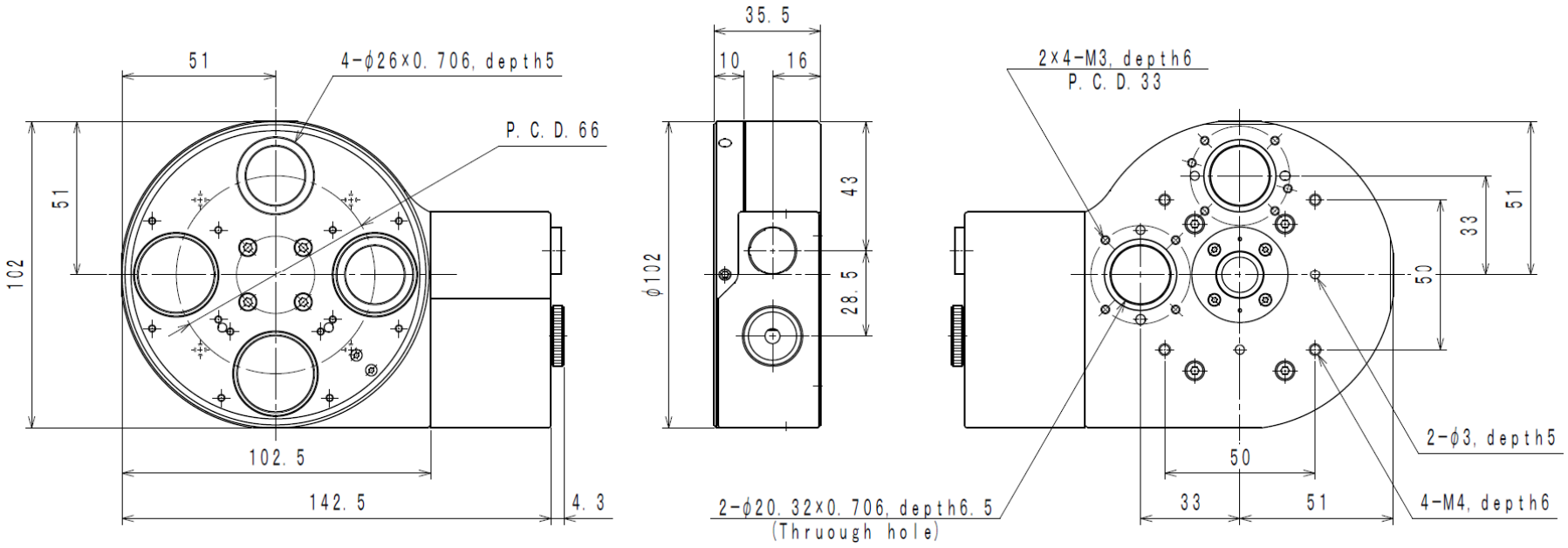
Use the stage in the following environment.

Temperature :5 to 40℃
Humidity :10 to 80% (No condensation)

For long period storage, wrap actuator main part up by using anti-rust paper or store inside vinyl bag with desiccant.

Storage site
Temperature :0 to 40℃
Humidity :10 to 85% (No condensation)

Ⅴ. Outline drawing



Ⅵ. Warranty

The warranty period for this product is one year after delivery. In the unlikely event that a failure occurs during the warranty period due to our fault, please return the product to us. The repair or Replacement parts will be provided free of charge.

However, this warranty does not cover indirect or consequential damages (including loss of profit) caused by the failure of the delivered product. For more details, please refer to our web site.

Even within the warranty period, please be aware that it will be repaid for a fee in the following cases.

A) In the case of damage that requires the replacement of consumable parts.
B) Accidents caused by moving, dropping, etc. after purchase, misuse, or products that have been modified outside the company.
C) In case of failure or damage due to fire or natural disaster (earthquake, windstorm, flood, etc.).
D) In the event of any other malfunction or damage not deemed to be the responsibility of our Company.
E) Damage due to disassembly, etc.

Ⅶ. Others

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4) In the case of combinations other than those shown in this manual, or in the case of custom specifications upon request, the contents of this manual may differ. Also, please note that
When using a product in a combination other than that described in this manual, please also read the instruction manual for the product to be used in the combination.