

风扇	注意	<ul style="list-style-type: none"> 带风扇的电机，在安装前请确认风道畅通，请在进风侧预留 200mm 以上的空隙。 风道需定期清理，以免影响电机散热，影响电机使用寿命。 带风扇的电机，请正确连接温度传感器线缆。 在风扇接线后，产品使用前，请务必确认风扇正常运转、旋转方向正确。 					
	禁止	严禁带电连接动力线缆与编码器线缆。					
线缆	注意	<ul style="list-style-type: none"> 请在线缆额定电压范围内使用。 应使用本公司指定的接头，并且正确地连接。 线缆与端子之间需要正确连接，否则会影响伺服电机的防护等级。 连接线缆若需要高柔线缆（拖链线缆），需在标准线缆型号后增加“-T”后缀。 移动、运输、接线时，请勿对线缆及接头过度用力、拉伸、拖拽。不能用线缆来固定电机。线缆的最小弯曲半径应满足下表： <table border="1" style="margin-left: 20px;"> <tr> <td>普通线缆</td> <td>R = 5 × 线缆直径</td> </tr> <tr> <td>拖链线缆</td> <td>R = 10 × 线缆直径</td> </tr> </table> <ul style="list-style-type: none"> 电源线线和信号线缆布线至少分30cm。 	普通线缆	R = 5 × 线缆直径	拖链线缆	R = 10 × 线缆直径	
	普通线缆	R = 5 × 线缆直径					
拖链线缆	R = 10 × 线缆直径						
联轴器	注意	<ul style="list-style-type: none"> 请使用专用的挠性联轴器。推荐使用允许一定偏心角的双板簧联轴器。 请选择满足使用条件且尺寸大小合适的联轴器，过大或过小都会导致故障。 联轴器的定心虽然因使用的转速及联轴器的型号而异，但请确保联轴器两端负载的向轴度 < 0.03mm。 请根据伺服电机的允许径向负载以及电机的输出功率选择合适传动带。 安装传动带时，应使传动带给轴的拉力低于规定的允许径向负载值。传动带的详细安装注意事项请参考传动带厂家的使用说明。 					
传动带	注意						

检查和维修

日常检查对电机的维护非常重要，表格所列检查和维护的频率仅作参考，请根据实际运行状态和环境，适当增加或减少检查频率。

项目	频率	步骤	备注
抖动和噪音	每日	观察和听	抖动和噪音应小于正常水平
外部	根据脏污情况	用布或者压缩空气清洗	-
检修	至少每隔 20,000 小时或者 5 年一次	联系 汇川销售代表	-

报废

- 产品废弃时，请按工业废物处理。

INOVANCE 保修协议

- 产品保修期为十八个月（以机身条形码信息为准），保修期内按照使用说明正常使用情况下，产品发生故障或损坏，我公司免费维修服务；
- 保修期内，因以下原因导致损坏，将收取一定的维修费用：
 - 因使用上的错误及自行擅自拆卸、修理、改造而导致的机器损坏；
 - 由于火灾、水灾、电压异常、其它火灾二次灾害等造成的机器损坏；
 - 购买后由于人为摔落及运输导致的硬件损坏；
 - 不按我司提供的用户手册操作导致的机器损坏；
 - 因机器以外的障碍（如外部设备因素）而导致的故障及损坏。
- 产品发生故障或损坏时，请您正确、详细的填写《产品保修卡》中的各项内容。
- 维修费用的收取，一律按照我公司最新调整的《维修价目表》为准。
- 本保修卡在任何情况下不予补发，请您务必保留此卡，并在保修时出示给维修人员。
- 在服务过程中如有问题，请及时与我司代理商或我公司联系。
- 客户购买本产品，则说明同意了本保修协议。本协议解释权归苏州汇川技术有限公司。

INOVANCE 产品保修卡

客户信息	单位地址：	
	单位名称： 邮政编码：	联系人： 联系电话：
产品信息	产品型号：	
	机身条码（粘贴在此处）：	
代理商名称：		
故障信息（维修时间与内容）：		
维修人：		

苏州汇川技术有限公司
Suzhou Inovance Technology Co., Ltd
地址：苏州市吴中区天鹅荡路52号
全国统一服务热线：4000-300124 邮编：215104
网址：<http://www.inovance.com>

Safety Instructions for High-Response Servo Motors

The energy certification of high-response servo motors is compliant with standard GB 30253-2013. Scan the QR code of the China Energy Label on the motor for details. Read through this document to ensure a proper use of the product and keep it for reference during future inspection and maintenance. Deliver this document to end users.



General Instructions

- Drawings in this document are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- Drawings in this document are shown for description only and may not match the product you purchased.
- The instructions are subject to change without notice due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the document.
- Contact the regional agent or customer service center of Inovance if you lost this document.
- Inovance assumes no liability or responsibility for any injury or loss caused by unauthorized retrofit on the product.

Safety Symbols

- The following symbols indicate the safety precautions for operations on the servo motor. Improper operations may lead to death, severe personal injuries, major losses, and damage to related equipment and systems.

- Indicates failure to comply can result in death or severe personal injuries.
- Indicates failure to comply can result in danger, minor injuries, poisoning, or damage to the device.
- Indicates operations that are strictly forbidden. For example, indicates a safe distance from the fire must be kept.
- Indicates actions that must be taken. For example, indicates proper grounding is a must.

Operation Instructions

警告

- Installation, operation, maintenance, and inspection must be performed only by professionals. Failure to comply can result in the risk of electric shock and personal injury.
- Given the strong magnetism of the motor, personnel implanted with cardiac pacemaker or metal implants are not allowed to operate or disassemble the motor. Keep magnetic/metalizable objects such as watches, magnetic disks, and credit cards away from the motor.
- Before wiring or inspection, wait for at least five minutes after disconnecting the power supply. Failure to comply can result in the risk of electric shock caused by residual voltage.
- Use grounding cables with specifications compliant with electrical device standards and connect the motor grounding terminal properly according to electrical standards.
- Do not touch the heatsink, braking resistor, motor body, or other peripheral devices with power ON or during operation of the motor or immediately after power-off. Failure to comply can result in burns.
- Do not touch the rotary parts of the motor during operation. Failure to comply can result in personal injury.
- Do not touch the keyway of the motor shaft. Failure to comply can result in the risk of personal injury.
- Do not restart or come close to the machine when an unexpected alarm occurs on the machine. Take related measures to ensure safety first, and then restart the machine. Failure to comply can result in the risk of personal injury.

Safety Instructions for Components

Output shaft	禁止	<ul style="list-style-type: none"> Do not assemble or retrofit the product. Failure to comply can result in personal injury or product damage. Do not connect an industrial power supply to the motor directly. Do not step on or place heavy objects on the motor.
	注意	<ul style="list-style-type: none"> Do not strike the output shaft during installation. Use the shaft key delivered along with the motor or a shaft key compliant with the specifications described in the Motor Selection Guide.
Encoder	禁止	<ul style="list-style-type: none"> Do not place devices that generate strong magnetic field near the servo motor. The magnetic field surrounding the rear end cover of the encoder must be lower than 0.005 T or 50 Gs. Do not strike the encoder when installing the servo motor.
Coupling		<ul style="list-style-type: none"> Use a dedicated flexible coupling. It is recommended to use a twin leaf-spring coupling that allows eccentric angles. Use a coupling that complies with the operation conditions and dimension requirements. Failure to comply can result in faults. Although the alignment of the coupling varies with the speed and coupling model, the axiality of the loads on both ends of the coupling is lower than or equal to 0.03 mm.
	注意	<ul style="list-style-type: none"> Select a proper transmission conveyor based on the allowable radial load and output power of the servo motor. Ensure the tension of the transmission conveyor is lower than the allowable radial load value when installing the transmission conveyor. See the user guide for the transmission conveyor for detailed installation instructions.
Transmission conveyor		

Brake	禁止	<ul style="list-style-type: none"> The brake cannot be used for emergency braking purpose in normal state. Set a protection circuit (surge suppression device) between the brake power supply and the servo motor. The action time of the brake varies with the protection circuit type. When multiple brakes are connected in parallel, the action time of the brake is also different. Check the actual action time of the brake before operating the servo motor. See detailed action time in the Motor Selection Guide. 			
	注意				
Cable	禁止	<ul style="list-style-type: none"> Do not connect the power cable or encoder cable with power ON. 			
	注意	<ul style="list-style-type: none"> Use the cable within rated voltage range. Use the connector designated by Inovance and connect the cable properly. Connect the wire harness to the terminals properly. Improper connection can affect the IP rating of the servo motor. If highly flexible cables (fit for cable carriers) are needed, add a suffix "-T" to the end of the standard cable model. Do not drag or pull cables and connectors with excessive force during moving, handling, and wiring. Do not fix the motor with cables. The minimum bending radius (R) of the cable must comply with values listed in the following table. <table border="1" style="margin-left: 20px;"> <tr> <td>Regular cable</td> <td>R = 5 x Cross sectional area of the cable</td> </tr> <tr> <td>Flexible cable</td> <td>R = 10 x Cross sectional area of the cable</td> </tr> </table> <ul style="list-style-type: none"> The power cable and signal cable must be routed through different routes at a distance of at least 30 cm. Do not submerge the oil seal below the oil surface during use. Failure to comply can result in motor faults. The oil seal used must be properly lubricated with grease. Select the heatsink according to the Motor Selection Guide to ensure a proper heat dissipation of the motor. Do not use insulators such as a gasket between the servo motor and the heatsink. Failure to comply can lead to motor overtemperature and faults. For the motor equipped with a fan, ensure the air duct is unblocked before installation and reserve a clearance higher than 200 mm on the air inlet side. Clean the air duct at a regular interval. Failure to comply may affect the cooling effect and shorten the service life of the motor. For the motor equipped with a fan, connect the temperature sensor cable properly. After connecting the fan, ensure the fan rotates properly in the correct direction before use. 		Regular cable	R = 5 x Cross sectional area of the cable
Regular cable	R = 5 x Cross sectional area of the cable				
Flexible cable	R = 10 x Cross sectional area of the cable				
Oil seal	禁止				
	注意				
Heatsink	注意				
Fan	注意				
	注意				

- A slight backlash is present in the rotation direction of the motor output shaft even if the brake is de-energized. The α value of the backlash is below 1.5°.
- A servo motor in the OFF state can heat up if the brake is energized (released).
- The brake can generate clicking sound during operation, which is normal and does not affect the function.

Inspection and Maintenance

Routine inspection on the motor is of great importance. Items and intervals listed in the following table are for reference only. You can shorten or prolong the interval based on actual operating state and ambient environment.

Item	Interval	Measure	Remarks
Jitter and noise	Daily	Check the jitter and noise with eyes and ears.	The jitter and noise must be lower than the normal level.
Exterior	Based on the cleanliness state	Remove the dirt with a piece of cloth or air gun.	
	Every 20,000 hours or every five years at least	Contact Inovance sales agent.	

Disposal

Dispose of the product as industrial waste.

INOVANCE Warranty Agreement

- Inovance provides an 18-month free warranty to the equipment itself from the date of manufacturing for the failure or damage under normal use conditions.
 - Within the warranty period, maintenance will be charged for the damage caused by the following reasons:
 - Improper use or repair/modification without prior permission
 - Fire, flood, abnormal voltage, natural disasters and secondary disasters
 - Hardware damage caused by dropping or transportation after procurement
 - Operations not following the use instructions
 - Damage out of the equipment (for example, external device factors)
 - The maintenance fee is charged according to the latest Maintenance Price List of Inovance.
 - If there is any problem during the service, contact Inovance's agent or Inovance directly.
 - Inovance reserves the rights for explanation of this agreement.
- Suzhou Inovance Technology Co., Ltd.
Address: No.52, Tian E Dang Road, Wuzhong District, 215104, Suzhou City, Jiangsu Province, P.R. China
Website: <http://www.inovance.com>