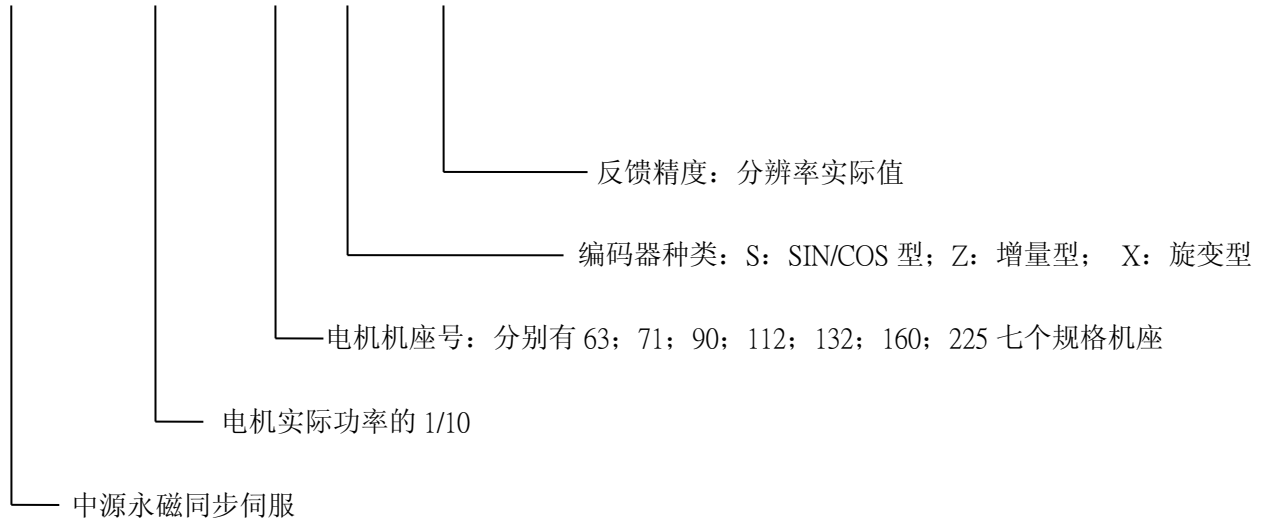


交流同步伺服电机使用说明书

一、 型号说明

TYSZ — 100 — 90 — S — 2500



二、 特点与用途

TYSZ 伺服系列电动机, 采用高性能稀土永磁体, 科学的安装工艺, 性能优越。它具有以下特点:

- ◆ 高性能稀土永磁材料, 转矩系数高
- ◆ 转子惯量小、响应速度快
- ◆ 低速转矩脉动小, 低、高速运行平稳
- ◆ 转子磁场位置检测, 零速输出额定转矩
- ◆ 损耗低、效率高
- ◆ 结构紧凑、体积小
- ◆ 噪音低、振动小、寿命长
- ◆ 性价比高

配合伺服驱动器能够完成高精度复杂变速运动及高精度定位功能, 现已广泛应用于数控机床、纺织、包装、印刷、塑料、冶金、军工等行业

三、 工作条件

主要技术数据请参见铭牌

环境温度: $-15^{\circ}\text{C} \sim +40^{\circ}\text{C}$

海 拔: 不超过 1000m

湿 度: 环境相对湿度不超过 90%

防护等级: IP54

绝缘等级: F 级

接 法: Y

工 作 制: 连续 (S_1)

注: 如电机在海拔超过 1000m 或环境空气温度高于 $+40^{\circ}\text{C}$ (或低于 -15°C) 的条件下使用, 应按 GB/T755 的规定

四、 使用前注意事项

- 1) 开箱前请先检查包装是否完整、有无损坏，开箱后根据装箱清单来核对箱内物品是否与装箱清单一致，电机是否受损、有无受潮等现象
- 2) 详细核对电机铭牌参数，是否符合选用要求
- 3) 电机的使用场所应保持良好的通风和冷却条件

五、 伺服电机安装

- 1) 伺服电机转矩系数高的特点使得电机有机座号小出轴大的特点，所以在选型安装上要特别注意
- 2) 在搬运和安装时，必须小心轻放，有吊环的电机应将吊环旋紧后利用吊环进行安装
- 3) 电机出轴在与减速机、连轴器等连接器连接时严禁对电机出轴进行敲击
- 4) 电机应安装在稳定、牢固的基础上

六、 伺服电机接线

- 1) 电机使用时必须可靠接地
- 2) 伺服电机的电源线采用四芯屏蔽电缆（见表 1），地线与屏蔽线接法严格按国家或国际标准连接，三相电源线也严格按照伺服控制器相序（U，V，W）与电机相序（U，V，W）对应连接(除装箱附件中有特殊说明外)。90 机座以下电源引出为航插，112 机座（含 112 机座）以上为接线盒。

四芯航插（表 1，90 机座以下电机电源）：

管脚	1	2	3	4
定义	屏蔽及地	电机 U 相	电机 V 相	电机 W 相
颜色	绿(黄/绿)+屏蔽层	红	黄	蓝

- 3) 伺服电机的反馈线通常由我方提供(选购件)，以保证反馈信号正常传输。以下为我公司编码器反馈信号引出到航插管脚定义（见表 2-1、2-2、2-3）：

七芯航插（表 2-1，旋转变压器）：

管脚	1	2	3	4	5	6	7
定义	屏蔽	SIN θ	SIN- θ	COS θ	COS- θ	AC7V	0V
颜色	屏蔽层	黄	蓝	红	黑	黄/白(黑/白)	红/白

十五芯航插（表 2-2，SIN/COS 编码器）：

管脚	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
定义	屏蔽	DC+5V	GND	A	A-	B	B-	空	C	C-	D	空	D-	R	R-
颜色	屏蔽层	灰/粉	白/绿	绿	黄	蓝	红		白	棕	黑		紫	灰	粉

十五芯航插（表 2-3，增量编码器）：

管脚	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
定义	屏蔽	DC+5V	GND	A	A-	B	B-	Z	Z-	U	U-	V	V-	W	W-
颜色	屏蔽层	红	黑	蓝	蓝/黑	绿	绿/黑	黄	黄/黑	茶	茶/黑	灰	灰/黑	白	白/黑

- 4) 电机风机电源引出采用四芯航插，接线定义如下（见表 3-1、3-2）：

四芯航插（表 3-1，单相 220V 电源）

管脚	1	2	3	4
定义	屏蔽及地	L	N	空

四芯航插（表 3-2，三相 380V 电源）：

管脚	1	2	3	4
定义	屏蔽及地	L1	L2	L3

5) 电源线与反馈线在现场布线时应尽量保持有 20 厘米以上的间隔或分别穿管布线。以减小信号的相互干扰

七、 伺服电机的初次现场调试

- 1) 电机初次现场调试必须由经过专业培训合格的电气工程师来调试使用(除出厂前已调试完整的成熟项目)
- 2) 确认电机的电源线，反馈线，地线等电源回路及控制回路的接线正常无误
- 3) 伺服电机在正常使用前应先进行空载运行，经检查无异常情况后方可进行负载运行
- 4) 在负载运行时，应先从低性能要求逐渐到高性能要求试验，并同时监视电机的电流、转矩、振动、噪声等数据，到完全满足客户工艺要求
- 5) 在监视一个完整的工艺过程无异常后，确认调试完成

八、 维护检修

- 1) 电机使用环境应保持良好的，电机表面应保持清洁，进出风口不应被尘土、杂物堵塞
- 2) 电机在运行中，如发生异常时，应立即停机检查，未经查明及消除故障前，不得再行起动
- 3) 轴承磨损加大，电机将产生振动及噪声，为此应保持其良好润滑，如需更换请先与我公司联系

九、 存储及运输

- 1) 电机存储应保持清洁、干燥，不宜过高堆积，以免损坏部件
- 2) 运输时平取平放，不应随意倾倒、倒置、磕碰、撞击

十、 质量保证

产品因质量问题一年内免费保修；终身成本价维修。终身免费咨询。

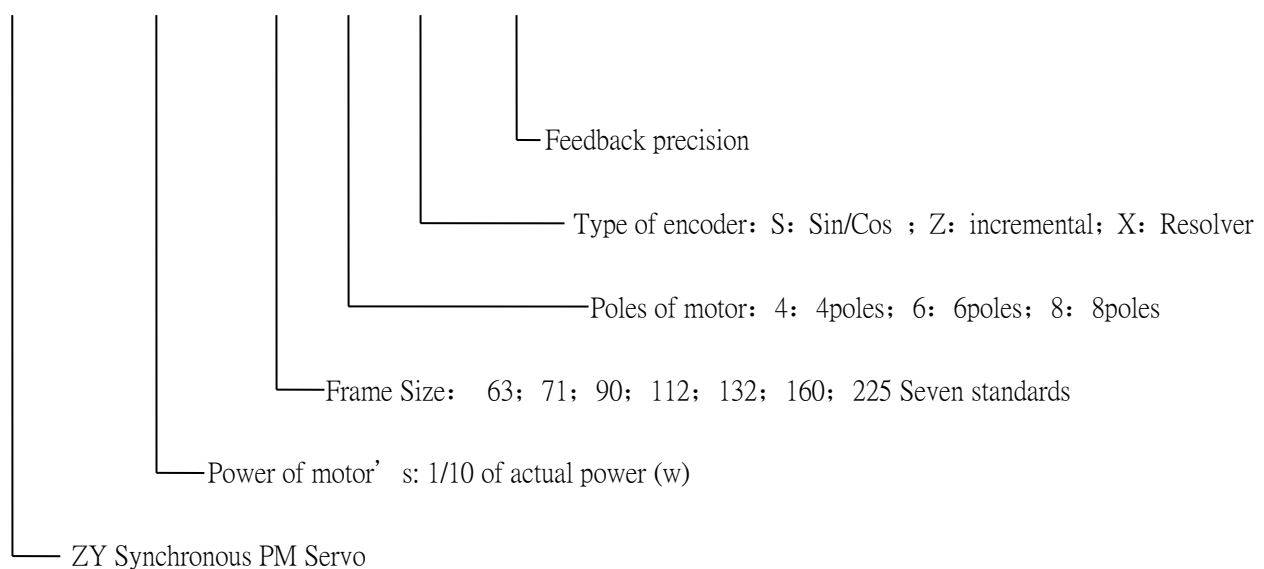
十一、 订货须知

订货时请根据选型样本上的电气参数和机械安装尺寸进行选型，如有特殊要求可协商定制

Instruction Manual of AC Synchronous Servo Motors

1. Type description

TYSZ — 100 — 90 — 6 — S — 2500



2. Features and applications

1) TYSZ series servo motors adopt high performance rare earth permanent magnet, with following excellent performance:

- ◆ High performance rare earth permanent magnet, high torque ratio;
- ◆ Small rotor inertia; Fast dynamic response;
- ◆ Small torque in low and high speed;

- ◆ More than rating torque at zero speed;
- ◆ Low energy loss and high efficiency;
- ◆ small size, light weight;
- ◆ Low noise, low vibration and long durability;
- ◆ High capability/price

With TYSZ PM AC Servo Motor and Servo Driver, we can complete motion control, such as precise positioning, motion tracking, fast response, angle and speed synchronization etc., therefore TYSZ PM AC Servo Motors are widely used in the following areas: CNC machine, Textile and chemical fiber, Packaging machinery, Printing machinery, Plastic machinery, Steel metallurgy, War industry etc.

3. Operating conditions

Servo motor data refer to the nameplate please.

- ◆ Ambient temperature:-15°C-+40°C
- ◆ Altitude not exceeding 1000m
- ◆ Relative humidity not exceeding 90%
- ◆ Protection grade: IP54
- ◆ Insulation class: F
- ◆ Connection:Y
- ◆ Operation mode: Continuous(S1)

Note: The operating conditions should be in accordance with the Chinese national standard GB/T755 if the motors are installed and operated at the height of more than 1000m **Altitude** or when the maximum ambient temperature reaches more than 40°C.

4. Important notice

- 1) Please check the packing carefully before unpacking. Check the goods against the packing list after unpacking. To insure the motor with no any damage.
- 2) Check the data on the nameplate if they conform to the order requirements.
- 3) Keep the motor operating environment in good ventilation and in proper cooling.

5. Installation

- 1) Please note that the servo motors are smaller than normal motors in size.
- 2) Handle motor carefully, if motors with lift hook, please use the hook when handling.
- 3) Don't strike the motor's axes while connecting the motor to the reducer or the coupling connector.
- 4) Motor must be installed on the firm base.

6. Wiring

1) The motor must be earthed reliably

2) Four core shield cables(Form 1) must be used for power line, earth and shield line connection should accord with the national standard or international standard. Phase sequence of motors and servo drivers must be accordant.

Four cores coupling connector(Form1,motor power line):

Pin	1	2	3	4
Definiens	Shield and earth	Motor U phase	Motor V phase	Motor W phase
Color	Green(Green/yellow)+shield	Red	Yellow	Blue

3) Normally we supply the shield cables (optional) for sensor feedback to ensure right feedback signal. Connection refers to form 2.

Seven cores coupling connector (Form2-1, resolver):

Pin	1	2	3	4	5	6	7
Definiens	Shield	SIN θ	SIN- θ	COS θ	COS- θ	AC7V	0V
Color	Shield	Yellow	Blue	Red	Black	Yellow/White(Black/White)	Red/White

Fifteen cores coupling connector (Form2-2, Sin/Cos encoder):

Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Definiens	Shield	DC+5V	GND	A	A-	B	B-	empty	C	C-	D	empty	D-	R	R-
Color	Shield	Grey/Pink	White/Green	Green	Yellow	Blue	Red		White	Brown	Black		Violent	Grey	Pink

Fifteen cores coupling connector (Form2-3, incremental encoder):

Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Definiens	Shield	DC+5V	GND	A	A-	B	B-	Z	Z-	U	U-	V	V-	W	W-
Color	Shield	Red	Black	Blue	Blue/Black	Green	Green/Black	Yellow	Yellow/Black	Brown	Brown/Black	Grey	Grey/Black	White	White/Black

4) Power line of cooling fan adopts four cores coupling connector, refer to form 3.

Four cores coupling connector(Form3-1,singal phase 220v):

Pin	1	2	3	4
Definiens	Shield and earth	L	N	empty

Four cores coupling connector(Form3-2,three phases 380v):

Pin	1	2	3	4
Definiens	Shield and earth	L1	L2	L3

5) Cables of power line and feedback line should keep distance in 20cm, or lay the cables through metal pipe to reduce interfere.

7. First commissioning

1) The first commissioning work must be done by authorized engineers.

2) Check and confirm the connection of power line, shield line, earth line and control line are all right connected.

3) No-load testing first; then load testing.

4) When testing with load, it is recommended to do the test from low performance to the high performance according to customer's process requirement, carefully watch the current, torque, vibration and noise etc..

5) Watch and confirm a complete process action in right function.

8. Maintenance

1) Keep environment in good condition; keep surface of the motor clean. The inlet and outlet ventilation should not be blocked.

2) If something wrong with the motor, do not restart the motor before finding out the reason and resetting the fault.

3) Keep bearings in good lubrication. Inform us before changing the bearings.

9. Storage and transport

1) Store the motors in clean and dry room. Do not put heavy goods on the motors.

2) Do not incline, upside down, hit the motors during transport.

10. Quality warranty

It is free to be repaired for the quality problem in one year, and later you can only pay the cost price for the repair life long. We also offer the free consults life long.

11. Order notice

When ordering our motors, please refer to our catalog to confirm electric parameters and machine parameters. Feel free to contact us should you have any special requirements.