

YVF2 系列变频调速专用三相异步电动机
YVF2 Series Variable Speed Motor

产 品 说 明 书

INSTRUCTIONS

西门子电机（中国）有限公司
Siemens Standard Motors Ltd.

1 概述 General Introduction

YVF2 系列变频调速专用三相异步电动机是一种交流、变频、高效节能的调速电动机，与变频器配合使用，是机电一体化调速新产品。具有以下优点。

YVF2 Series Variable Speed Motor is an AC high-efficiency and economy energy motor. It is a new product for adjustable-speed applications and designed to be used together with converters. It has following advantages.

1.1 效率高，节能效果明显

High efficiency, obvious energy saving effects

1.2 调速范围广，能在 3~100Hz 甚至更宽的范围内平滑无级调速

Wide speed ranges, can be adjusted stepless between 3~100Hz or more

1.3 噪声低、振动小

Low noise and small vibration

1.4 起动力矩大，低频启动时负载冲击小

High starting torque and low impact loads when starting at low frequency

1.5 结构简单，运行稳定，使用可靠，维护方便

Neat design, steady operation, high reliability, and easy maintenance

1.6 体积小，重量轻，除电机比 1TLO 系列异步电机稍长外，其它外形和安装尺寸与 1TLO 系列电机一致，便于安装

Compact construction and light weight. The outline and mounting dimensions are same as 1TLO series motors, except longer frames

1.7 单独装有轴流风机，在不同转速下均有较好的冷却效果

Equipped with separate driven axial fan. Ensures best cooling performance at any speed

1.8 应用范围广，可以作恒功率（50Hz 以上）、恒转矩（50Hz 以下）或递减转矩负载机械无级调速之用，基本可以取代任何一种调速产品（特别适用于水泵、风机、压缩机等）

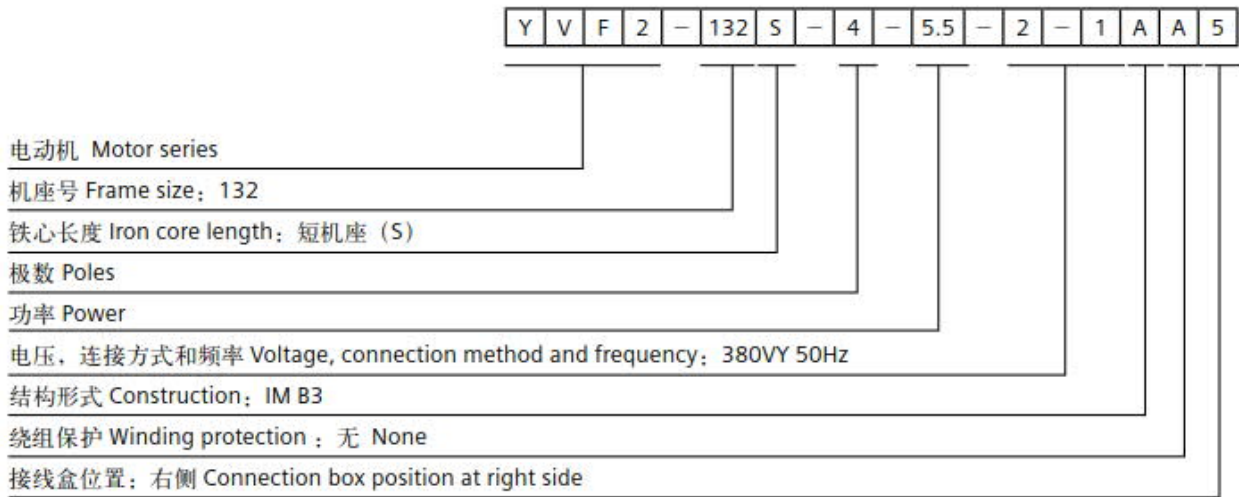
Wide range application, can be used at constant power (50Hz and above), constant torque (50Hz and lower) or torque-decreasing stepless variable speed applications. It is especially suitable for pumps, fans, and compressors.

2 主要技术指标 Main Technique Parameters

2.1 使用条件 Conditions

- a. 最高环境温度不超过 40°C; Ambient temperature: not exceeding 40°C.
- b. 海拔不超过 1000m; Altitude: not over 1000m.
- c. 电机防护等级 IP55; The protection degree of enclosure is IP55.
- d. 额定电压: 380V; Rated voltage: 380V.
- e. 额定频率: 50Hz; Rated frequency: 50Hz.

2.2 型号说明 Motor type designation



2.3 主要技术参数 (见表 1) Main technique parameters (see table 1)

表 1 (Table 1)

标称功率 Rated power (kW)	型号 Type	额定转矩 Rated torque (Nm)	电流 Current (A)	型号 Type	额定转矩 Rated torque (Nm)	电流 Current (A)	匹配变频器容量 Power of suited converter (kVA)
0.55				YVF2-80M1-4	3.5	1.61	1.0
0.75	YVF2-80M1-2	2.4	1.9	YVF2-80M2-4	4.8	2.1	1.0
1.1	YVF2-80M2-2	3.5	2.7	YVF2-90S-4	7	2.9	2.0
1.5	YVF2-90S-2	4.8	3.5	YVF2-90L-4	9.5	3.8	2.0
2.2	YVF2-90L-2	7	4.95	YVF2-100L1-4	14	5.2	3.0
3	YVF2-100L-2	9.5	6.4	YVF2-100L2-4	19.1	6.9	4.0
4	YVF2-112M-2	12.7	8.3	YVF2-112M-4	25.5	9	6.0
5.5	YVF2-132S1-2	17.5	11.2	YVF2-132S-4	35	12	10
7.5	YVF2-132S2-2	23.9	14.9	YVF2-132M-4	47.7	16	10
11	YVF2-160M1-2	35	21.5	YVF2-160M-4	70	23	15
15	YVF2-160M2-2	47.7	29	YVF2-160L-4	97.8	29.5	20
18.5	YVF2-160L-2	58.9	35.5	YVF2-180M-4	118	37	30
22	YVF2-180M-2	70	42	YVF2-180L-4	140	43.5	30
30	YVF2-200L1-2	95.5	56	YVF2-200L-4	191	59	40
37	YVF2-200L2-2	118	69	YVF2-225S-4	236	72	50
45	YVF2-225M-2	143	84	YVF2-225M-4	287	87	60
55	YVF2-250M-2	175	102	YVF2-250M-4	350	106	70
75	YVF2-280S-2	239	138	YVF2-280S-4	478	141	100
90	YVF2-280M-2	287	165	YVF2-280M-4	573	167	120
110	YVF2-315S-2	350	199	YVF2-315S-4	700	205	150
132	YVF2-315M-2	420	240	YVF2-315M-4	840	245	180
160	YVF2-315L1-2	509	285	YVF2-315L1-4	1019	300	210
185	YVF2-315L-2	589	330	YVF2-315L-4	1180	345	220
200	YVF2-315L2-2	637	355	YVF2-315L2-4	1273	365	270
220	YVF2-355M1-2	390	704	YVF2-355M1-4	1401	405	280
250	YVF2-355M2-2	445	796	YVF2-355M2-4	1592	460	350
280	YVF2-355L1-2	495	896	YVF2-355L1-4	1783	510	400
315	YVF2-355L-2	560	1003	YVF2-355L2-4	2005	580	450

标称功率 Rated power (kW)	型号 Type	额定转矩 Rated torque (Nm)	电流 Current (A)	型号 Type	额定转矩 Rated torque (Nm)	电流 Current (A)	匹配变频器容量 Power of suited converter (kVA)
0.55	YVF2-80M2-6	5.3	1.66				1.0
0.75	YVF2-90S-6	7.2	2.25				1.0
1.1	YVF2-90L-6	10.5	3.2				2.0
1.5	YVF2-100L-6	14.3	4.2				2.0
2.2	YVF2-112M-6	21	6	YVF2-132S-8	28	7.5	3.0
3	YVF2-132S-6	28.6	7.9	YVF2-132M-8	38.2	9.9	4.0
4	YVF2-132M1-6	38.2	10.1	YVF2-160M1-8	51	11.6	6.0
5.5	YVF2-132M2-6	52.5	13.4	YVF2-160M2-8	70	15.1	10
7.5	YVF2-160M-6	71.6	17.2	YVF2-160L-8	95.5	20.5	10
11	YVF2-160L-6	105	24.5	YVF2-180L-8	140	26	15
15	YVF2-180L-6	143	31.5	YVF2-200L-8	191	34	20
18.5	YVF2-200L1-6	177	39.5	YVF2-225S-8	236	42	30
22	YVF2-200L2-6	210	46.5	YVF2-225M-8	280	50	30
30	YVF2-225M-6	287	62	YVF2-250M-8	382	64	40
37	YVF2-250M-6	353	75	YVF2-280S-8	471	84	50
45	YVF2-280S-6	430	88	YVF2-280M-8	573	97	60
55	YVF2-280M-6	525	106	YVF2-315S-8	700	115	70
75	YVF2-315S-6	716	146	YVF2-315M-8	955	156	100
90	YVF2-315M-6	859	173	YVF2-315L1-8	1146	182	120
110	YVF2-315L1-6	1050	210	YVF2-315L2-8	1401	220	150
132	YVF2-315L2-6	1261	250	YVF2-355M1-8	1695	265	180
160	YVF2-355M1-6	1528	300	YVF2-355M2-8	1920	325	210
185	YVF2-355M2-6	1767	350	YVF2-355L1-8	2370	365	220
200	YVF2-355M3-6	1910	375	YVF2-355L2-8	2570	395	270
220	YVF2-355L1-6	2101	415				280
250	YVF2-355L2-6	2387	470				350

注：1、变频器 50Hz 时输出电压为三相 380V。

2、与变频电机匹配的变频器容量可用比表 1 中规定的容量大一至二档的规格。

Note: 1. Output voltage is 380V at three-phase while converter is working at 50Hz.

2. Capacity of converter can be one or two grades larger than the capacities shown in table 1.

2.4 主要性能指标（见表 2） Main performance parameters (see table 2)

表 2 (Table 2)

项目 Item	技术指标 Performance parameters
调频范围 Frequency range	3~50Hz 恒转矩、50~100 Hz 恒功率 3~50Hz constant torque, 50~100 Hz constant power
工作制 Operation type	连续 Continuous (S1)
接法 Connection	55 kW 及以下 Y 接法, 55 kW 以上 Δ 接法 Output \leq 55kW shall be connected as Y; Output $>$ 55kW shall be connected as Δ
最大转矩 Max torque	$>$ 2.8 倍额定转矩 $>$ 2.8 times of rated torque
绝缘等级 Insulation class	F 级 F class
极数 No. of poles	2、4、6、8

2.5 接线 Connection

电机接线盒内接线板上有 6 个接线柱对应电机内绕组引出线。接电源线对应相序，具体标记如表 3。

There are six terminals on the terminal board, corresponding to the winding leads from motor inside. The identifications are shown in table 3.

表 3 Table 3

相序 Phase sequence	U	V	W
头 Head of phase winding	U1	V1	W1
尾 Tail of phase winding	U2	V2	W2

按电动机铭牌规定接法，接成 Δ 或 Y 如图 1、图 2。

Connection should be made according to nameplate, in delta connection or star connection (see Figure1 and Figure2).

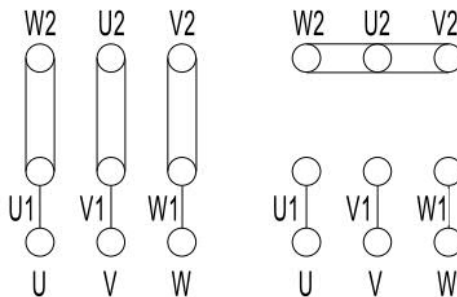


图 1 Figure 1

图 2 Figure 2

按图中相序接线时，从轴伸端视之，电动机的转向为顺时针。

If connected as shown in the pictures above, the motor will rotate clockwise (viewing from drive end).

3 系统特性 Characteristic

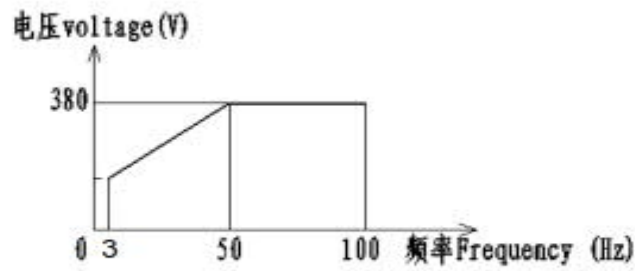


图3 变频器V-F特性

Figure 3 converter of V - F characteristic

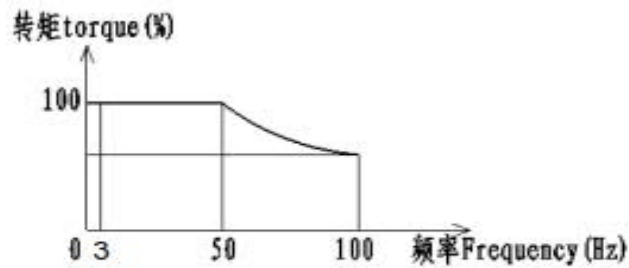


图4 变频电动机转矩特性

Figure 4 Variable Frequency motor of torque characteristic

注 Note:

- 1、额定转矩=9550×[标称功率(kW)/电动机额定功率(50Hz)下的同步转速(r/min)] (Nm)
Rated torque=9550×[Rated power (kW) / Rated speed (r/min) at 50Hz] (Nm)
- 2、系统运行时应选择比较合理的 V-F 特性
Select suitable V-F characteristics
- 3、要求>1: 10 恒转矩调频和>1: 2 恒功率调频电机请在订货时说明
If constant torque >1:10, or constant power >1:2, must consult us before ordering

4 结构型式 Construction type

有三种基本结构形式:

- B3 型 — 机座带底脚，端盖无凸缘的结构形式
- B5 型 — 机座不带底脚，端盖上带大于机座的凸缘的结构型式
- B35 型 — 机座带底脚，端盖上带大于机座的凸缘的结构型式

Three basic construction types:

- B3: with feet, without flange
- B5: without feet, with flange
- B35: with feet and flange

5 变频电动机配套冷却轴流风机主要技术参数（见表 4）

Main technique parameters of separate driven fan (see table 4)

表 4 Table 4

电机 机座号 Frame size	80	90	100	112	132	160	180	200	225	250	280	315	355-6,8; 355M-4p	355-2; 355L-4p
风机功率 Fan power (W)	30	30	52	52	45	45	120	120	120	230	300	1100	1100	2200
风机电压 频率 Fan voltage & frequency	三相 Three phase 380V/50Hz													
风机转速 Fan speed (r/min)	2800	2800	2800	2800	1400	1400	1400	1400	1400	1400	1400	1350	1350	1410
风机风量 Wind volume (m ³ /h)	120	155	250	340	345	650	770	1750	1790	1900	2800	5000	7000	11000

注：表中参数若有变化，不另行通知。

Note: Parameter may change. No separate notice will be made.

6 变频调速系统的典型运行方式

Typical operation system of frequency-variable application

6.1 一般场合的调速运行(见图 5)

Speed-variable operation for general using (see figure 5)

6.2 闭环控制的定速运行(见图 6)

Close-loop constant operation (see figure 6)

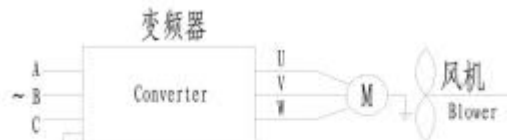


图5 Figure 5

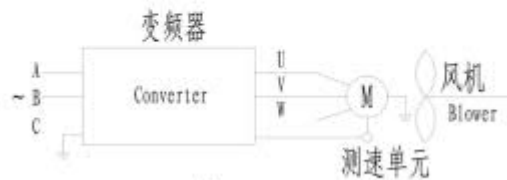


图6 Figure 6

注 Note:

- 1、由外部信号控制 Controlled by exterior signals
- 2、F-正转指令端 F-turning signal
- 3、R-反转指令端 R-reverse turning signal

7 正确使用要点 Important points

7.1 使用前应先检查电器线路是否连接正确、可靠，电气绝缘是否良好，电机的接地线是否严格按变频器要求联接。

Before operation, must check whether electrical connections are correct and stable, whether insulation is well-working, whether grounding cables are connected according to converter's requirements.

7.2 电动机运行之前必须先启动风机，冷却风应吹向轴伸方向，轴流风机的电源接入变频电机的输入端或单独接入电源，轴流风机不转时不允许开动变频电机。

Before operation, must start-up cooling fan at first. Cooling air should blow toward DE side. The separated driven fan must be connected to the input side of converter, or using separate power source. The motor must not be start-up when the fan is not running.

7.3 应避免安装时对轴伸有较大冲击，以防损坏轴承等。

When installing the motor, avoid impacts to the shaft. In case the bearing is damaged.

8 维护 Maintenance

应保证电动机在运行过程中轴承有良好的润滑，一般运行 5000 小时左右，即应更换轴承或补充润滑脂。加注油脂量和润滑周期见表 5。

Correct lubrication must be maintained during operation. Normally bearings should be replaced or bearing grease should be added after every 5000 hours operation. The quantity and interval of re-greasing is shown in table 5.

表 5 Table 5

级数 No. of poles	机座号 Frame size	持久润滑型轴承的润滑脂 Permanent lubrication	可再润滑型轴承的润滑脂 Re-greasing	再润滑周期 Re-greasing Interval(h)	加注油脂量 Re-greasing quantity(g)	
					驱动端 (DE)	非驱动端 (NDE)
2、4、6	80~112	标配 Standard	-/-	-/-	-/-	-/-
2、4、6、8	132~160	标配 Standard	-/-	-/-	-/-	-/-
2	180~225	-/-	标配 Standard	4000	20	20
4、6、8	180~225	-/-	标配 Standard	8000	20	20
2	250	-/-	标配 Standard	4000	25	20
4、6、8	250	-/-	标配 Standard	8000	25	20
2	280	-/-	标配 Standard	3000	30	25
4、6、8	280	-/-	标配 Standard	5000	30	25
2	315	-/-	标配 Standard	3000	30	30
4、6、8	315	-/-	标配 Standard	5000	40	40
2	355	-/-	标配 Standard	3000	30	30
4、6、8	355	-/-	标配 Standard	4000	60	60

9 订货须知 Information when ordering

订货时请注明电动机产品型号，调速要求，电网电压、频率等，本公司可为用户配套各种型号的变频调速电动机。

When ordering, please note motor type, speed range, line voltage, and frequency. We can provide different motors and systems.

REACH 法规第 33 条的规定 Information according to Article 33 of the REACH regulation

该产品的一个或多个组成物品中含有高关注物质候选清单中的以下物质超过 0.1%:

This product contains one or several subproducts in which the following substance – belonging to the "list of candidates" – exists in a concentration exceeding 0.1 percent by weight.

• CAS 编号 7439-92-1, 铅

CAS No. 7439-92-1, lead

基于现有信息，在规范化使用的条件下，包括废弃处理，该物质不会产生风险。

Based on the currently available information, we assume that this substance does not represent any risk when correctly used, including its disposal.

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