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I. PRODUCT

1.1 PM Motor Nameplate

<b>EURa</b> Three-Phase PM Motor <small>DRIVES</small>			
Model: EVPM-751IN4Y071D15A03		IEC60034	
380~460V±15%	3~Mot	4 Pole	0.75 kW
1500 rpm	eff. 85.6%	1.7 A	4.8 N•m
Tmax. 9.6 N•m	16.5Ω		227.3mH
Ke 120 V/krpm	Y-connecting		S1
No.*****	Date:*****		5.4kg
<b>CE EURA DRIVES ELECTRIC CO.,LTD</b>			

Fig 1-1 PM Motor nameplate

1.2 PM Motor naming rule

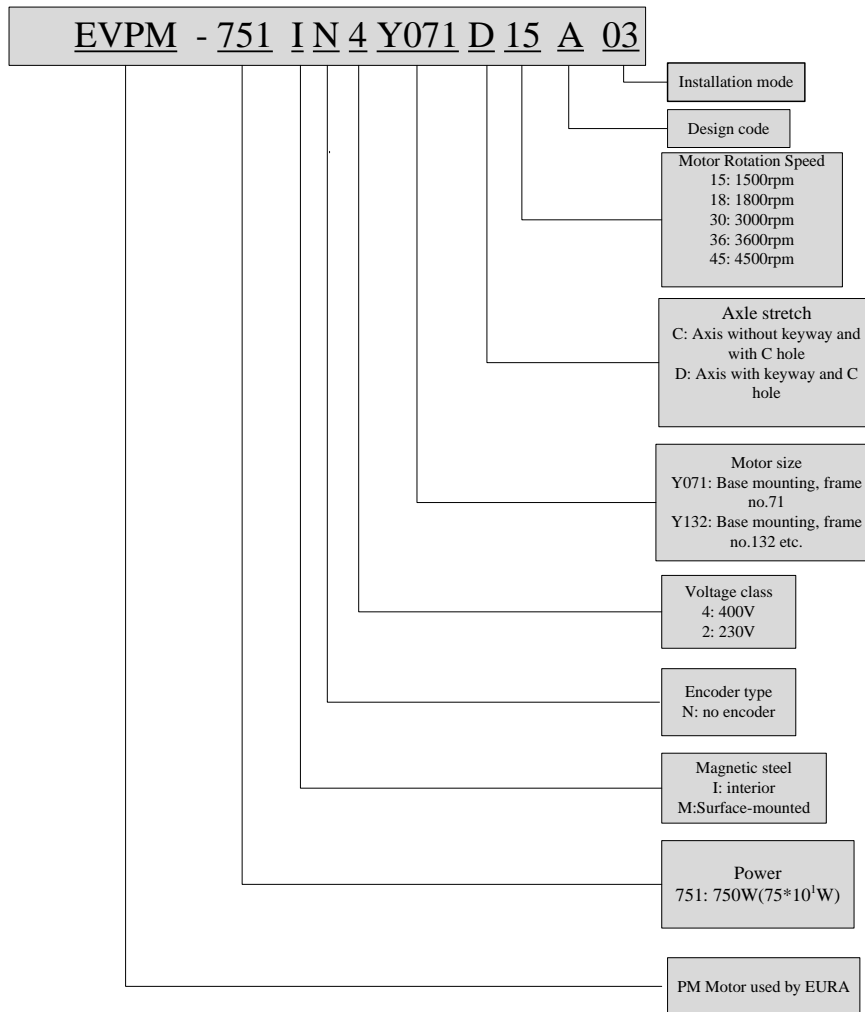


Fig 1-2 PM Motor naming rule

## II. SPECIFICATIONS

Motor model	PM Motor(Permanent-magnet )	
Magnetic material	Highest intrinsic coercivity rare earth permanent materials	
Motor power	0.75~30KW	0.4~2.2kW
Rated voltage	400V	230V
Rotor magnet steel	Interior(Significant difference for Inductance of DQ axis)	
Magnetic steel	Demagnetization temperature $\geq 130^{\circ}\text{C}$	
Cooling fan	Rotate with motor shaft in same speed, called coaxial fan	
Installation type	Standard IMB3, meanwhile satisfy with IMB5, 35 and 14	
Protection grade	IP55	
Temperature rise	Surface temperature rise $\leq 50^{\circ}$ when motor runs continuously at rated load	
Certification	CE Certification(IEC60034)	
Motor efficiency	Meet the standard of IE4	
Environment Temperature	$-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$	
Transport and Store Temperature	$-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$	
Environment Humidity	Below 90% (no water-bead coagulation)	
Vibration Strength	Below 0.5g (acceleration)	
Height above sea level	1000m or below(Derate above 1000m)	
Equipment Location	Suitable for usage occasion of any general induction motor. Add external protection according to related standard if there is any special environment with tangy caustic gases or flammable gases etc.	

## 2.1 PM Motor Model

Motor Model	Pole number	Rotate speed (rpm)	Rated current (A)	Rated torque (Nm)	Momentary overload capacity (Nm)
EVPM-751N4Y071D15A	4	1500	1.7	4.8	9.6
EVPM-112N4Y071D15A	4	1500	2.45	7	14
EVPM-152N4Y090D15A	4	1500	3.3	9.6	19.2
EVPM-222N4Y090D15A	4	1500	4.7	14	28
EVPM-302N4Y090D15A	4	1500	6.4	19.1	38.2
EVPM-402N4Y112D15A	4	1500	8.6	25.5	51.2
EVPM-552N4Y112D15A	4	1500	11.6	35	70
EVPM-752N4Y112D15A	4	1500	16	47.8	95.6
EVPM-113N4Y132D15A	4	1500	22	70	140
EVPM-153N4Y132D15A	4	1500	30.9	95.5	191
EVPM-183N4Y160D15A	4	1500	37.8	117.8	235.6
EVPM-223N4Y160D15A	4	1500	45	140	280
EVPM-303N4Y160D15A	4	1500	61	191	382
EVPM-401N2Y063D15A03	4	1500	2.4	2.54	5.08
EVPM-751N2Y071D15A03	4	1500	3.4	4.8	9.6
EVPM-112N2Y071D15A03	4	1500	4.9	7	14
EVPM-152N2Y090D15A03	4	1500	6.6	9.6	19.2
EVPM-222N2Y090D15A03	4	1500	9.4	14	28
EVPM-751N4Y071D30A	4	3000	1.7	2.4	4.8
EVPM-112N4Y071D30A	4	3000	2.45	3.5	7
EVPM-152N4Y090D30A	4	3000	3.3	4.8	9.6
EVPM-222N4Y090D30A	4	3000	4.7	7	14
EVPM-302N4Y090D30A	4	3000	6.4	9.55	19.2
EVPM-402N4Y112D30A	4	3000	8.6	12.8	25.6
EVPM-552N4Y112D30A	4	3000	11.6	17.5	35
EVPM-752N4Y112D30A	4	3000	16	24	48
EVPM-113N4Y132D30A	4	3000	22	35	70
EVPM-153N4Y132D30A	4	3000	30.9	47.75	95.5
EVPM-183N4Y160D30A	4	3000	37.8	59	118
EVPM-223N4Y160D30A	4	3000	45	70	140
EVPM-303N4Y160D30A	4	3000	61	95.5	191
EVPM-401N2Y063D30A03	4	3000	2.4	1.27	2.54
EVPM-751N2Y071D30A03	4	3000	3.4	2.4	4.8
EVPM-112N2Y071D30A03	4	3000	4.9	3.5	7
EVPM-152N2Y090D30A03	4	3000	6.6	4.8	9.6
EVPM-222N2Y090D30A03	4	3000	9.4	7	14

## 2.2 PM Motor installation size

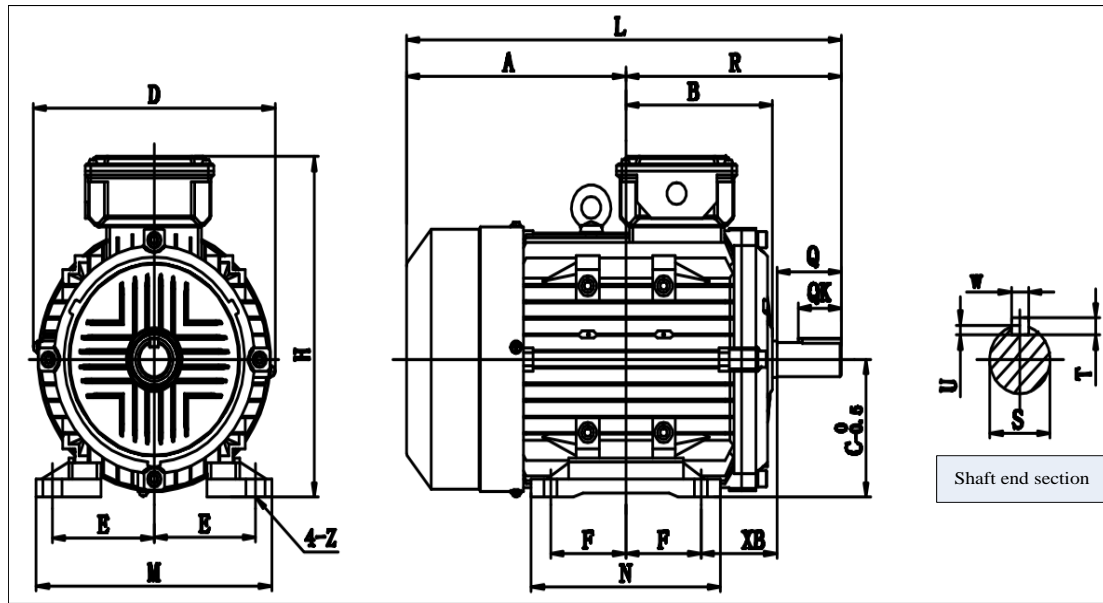


Fig 2-1 PM Motor IMB3 Installation Structure

PM Motor IMB3 dimension size (mm)

Frame no.	Installation dimension										Dimension			
	E	F	XB	S	Q	U	T	W	C	Z	L	D	H	M
63	50	40	40	11	23	3	5	4	63	7	230	130	180	135
71	56	45	45	14	30	3	5	5	71	7	255	145	195	150
90S	70	50	56	24	50	4	7	8	90	10	320	195	250	180
90L	70	62.5	56	24	50	4	7	8	90	10	345	195	250	180
112	95	70	70	28	60	4	7	8	112	12	404	240	300	230
132S	108	70	89	38	80	5	8	10	132	12	470	275	345	270
132M	108	89	89	38	80	5	8	10	132	12	510	275	345	270
160M	127	105	108	42	110	5	8	12	160	15	615	330	420	330
160L	127	127	108	42	110	5	8	12	160	15	670	330	420	330

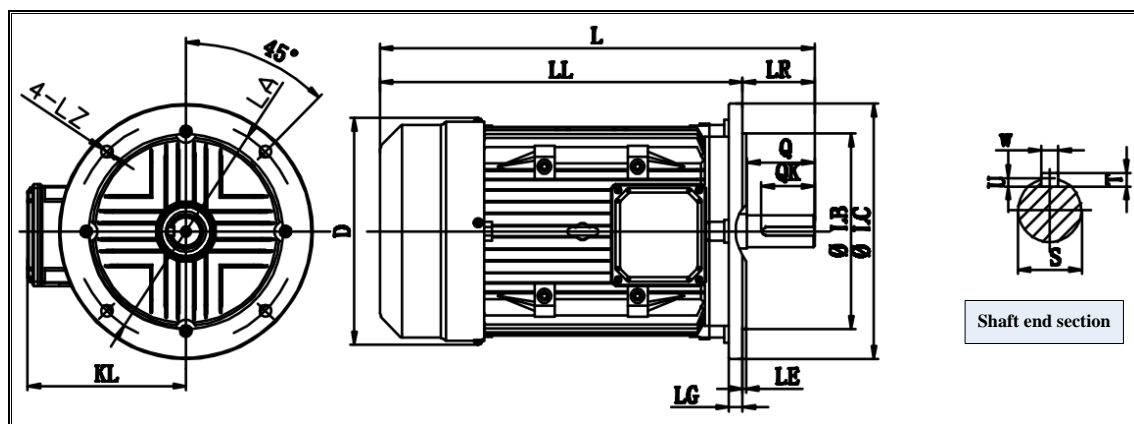


Fig 2-2 PM Motor IMB5 installation structure

PM Motor IMB5 dimension size (mm)

Frame no,	Installation dimension										Dimension		
	LA	LB	LC	LE	LZ	S	LR	U	T	W	L	D	KL
63	115	95	140	3.5	10	11	23	3	5	4	230	130	70
71	130	110	160	3.5	10	14	30	3	5	5	255	145	112
90S	165	130	200	3.5	12	24	50	4	7	8	320	195	155
90L	165	130	200	3.5	12	24	50	4	7	8	345	195	155
112	215	180	250	4	15	28	60	4	7	8	404	240	190
132S	265	230	300	4	15	38	80	5	8	10	470	275	210
132M	265	230	300	4	15	38	80	5	8	10	510	275	210
160M	300	250	350	5	18	42	110	5	8	12	615	330	255
160L	300	250	350	5	18	42	110	5	8	12	670	330	255

### III. INSTALLATION

- Check the information of nameplate if satisfy with requirement,
- Check carefully before installation: If motor has bump or deformation and fasteners have loose or dislocation during transport.
- Motor shaft cannot be dragged when transferring.
- Use spring cushion to fasten when fixing the motor.
- Try the best to avoid the vibration of bearing block.
- Motor cannot bear stronger axial and radial load.
- Motor shaft must maintain coaxial with equipment's axle.
- Measure insulation resistance  $R_i$  with megger of 500V to see if it's low. The value of insulation resistance should not lower than the calculation as below:

$$R_i \geq 0.38 \times 2^{(7.5-0.1t)} M\Omega \quad t\text{-ambient temperature}$$



Drying treatment should be introduced if the value of insulation resistance is low. Drying treatment can be used in the methods of hot air drying or ohmic heating. Avoid using direct current when ohmic heating. Make the rotor locked and energize by voltage regulator. It is better that the current is not higher than 1/2 of rated current.

### IV. OPERATION & RUNNING

- The correct connection should be checked before operation of motor.
- Follow the user manual of inverter to set the data of rated power, working voltage, working speed, working frequency, rated current and number of poles etc.



Pay attention to the voltage, display of current, vibration and noise. Power off the motor and examine if abnormal. Do not restart before trouble shooting or without guidance of professionals.

The unbalance value of 3-phase current should not higher than 5% and the unbalanced voltage should not higher than 1.5% when running.

## V. TROUBLE SHOOTING

### 5.1 Motor voice phenomena, discrimination and trouble shooting

Voice	Phenomena	Discriminating and trouble shooting
Bearing sounds	<ol style="list-style-type: none"> <li>1. Irregular metallic sounds on bearing outer ring, which is irrelevant to rotate speed.</li> <li>2. Gurgle sounds at low velocity, before shut-down or at the beginning of operation.</li> <li>3. Rustling sounds irrelevant to bearing load.</li> <li>4. Purring sounds which cycle is proportional to rotary speed or intermittent chewing sounds and bearing is too hot.</li> <li>5. Purring sounds occasionally, small and irregular noise irrelevant to rotary speed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of grease. Add more grease or change bearing.</li> <li>2. Generated by impaction of balls (or rollers). Eliminate gradually after running a while, belong to non-fault noise.</li> <li>3. Add more grease or change bearings.</li> <li>4. Scratch on the surface of balls (or rollers). Change bearings.</li> <li>5. Impurity in bearings. Clean or change bearings.</li> </ol>
Electromagnetic noise	<ol style="list-style-type: none"> <li>1. High-frequency gear whines.</li> <li>2. Droning sounds and motor cannot start.</li> <li>3. Humming sound and vibration when motor starts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Improve chopping frequency.</li> <li>2. One-phase interruption or electricity deficiency of stator winding.</li> <li>3. Stator winding interturn short-circuits or grounding at two points.</li> </ol>
Resonance	Droning sound only within the scope of a specific running speed.	Avoid running within this scope, check installation conditions or change motor.

### 5.2 Motor winding short-circuit

- Short-circuit to ground in winding

Shut down motor immediately and fix if there is obvious noise with aggravated vibration and overheat when operation. It is because the damage of winding insulation, the wire of winding is collide with shell or core, which makes short-circuit to ground in winding.

- Short-circuit in winding

It includes in-phase and three-phase winding interturn short-circuits. Their fault forms are similar with short-circuit to ground in winding, the main causes show as below:

- A. Winding, which seriously affected with damp and not dried, directly access to the power supply.
- B. With long-term overload, insulator carbonizes because of overheat.

### 5.3 Motor start-up failure cause, phenomena and treatment

Cause and phenomena	Treatment
<ol style="list-style-type: none"> <li>1. Wiring error of control equipment. Motor cannot start up.</li> <li>2. Two-phase outage of power supply circuit. There is no voice and motor cannot rotate.</li> <li>3. One-phase outage. Motor cannot start up but along with humming sound.</li> <li>4. Low-voltage power supply.</li> <li>5. Short-circuit (ground or interphase) in stator winding or open-circuit fault makes starting torque too small to start-up, and electricity makes fuse burn-out occasionally.</li> <li>6. Because static load torque is too large or there is foreign matter stuck inside motor, motor cannot start and along with humming sound.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and modify electric circuit.</li> <li>2. Check wire, connector, fuse, actuator, output and motor winding to exclude.</li> <li>3. Same as Treatment 2.</li> <li>4. Check if the setting of actuator is suitable. Reset if not suitable.</li> <li>5. Check the situation of short circuit and open circuit. Fix by themselves or ask for professionals to fix in accordance with practical situation.</li> <li>6. Check if motor can be rotated manually in the condition of no load, check if there is foreign matter in motor or change high-power motor.</li> </ol>

### 5.4 Motor overheat failure cause, phenomena and treatment

Cause and phenomena	Treatment
<ol style="list-style-type: none"> <li>1. Mismatching of power.</li> <li>2. Phase-broken of motor, high current caused by short-circuit in winding or over-current protection of inverter.</li> <li>3. Rub between Stator and rotor, rotate inflexibly or bearings run inner ring or outer ring.</li> <li>4. Ambient temperature is too high, poor ventilation or sunlight exposure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change high-power motor.</li> <li>2. Check and eliminate motor failure.</li> <li>3. Check if there is foreign matter between stator and rotor; Contact with manufacturer if running inner ring or brush coating the matching surface of bearing or end cover.</li> <li>4. Improve the environment.</li> </ol>

### 5.5 Motor excessive current failure cause, phenomena and treatment

Cause and phenomena	Treatment
<ol style="list-style-type: none"> <li>1. Core dislocation of stator and rotor.</li> <li>2. Number of turns of winding or pitch is less than the original design after fixing motor.</li> <li>3. Burn core when fixing motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust axial position of rotor.</li> <li>2. Wire wrapping and inserting winding again,</li> <li>3. Taking out coil, which is soaked with paint remover, after heated when fixing.</li> </ol>



## VI. MAINTENANCE & SERVICING

The motor should be checked and the shell needs to be cleaned regularly. High pressure air should be used for cleaning.

Each time bearing runs 2500h, inspection should be carried out at least once. Power off the motor and examine if there is abnormal (increase of noise, abnormal noise and increase of temperature etc.). Change bearings with same specifications if rotor cannot rotate smoothly because of the over-worn or ruptured bearings.



Warning: Motor is forbidden to flush by water.