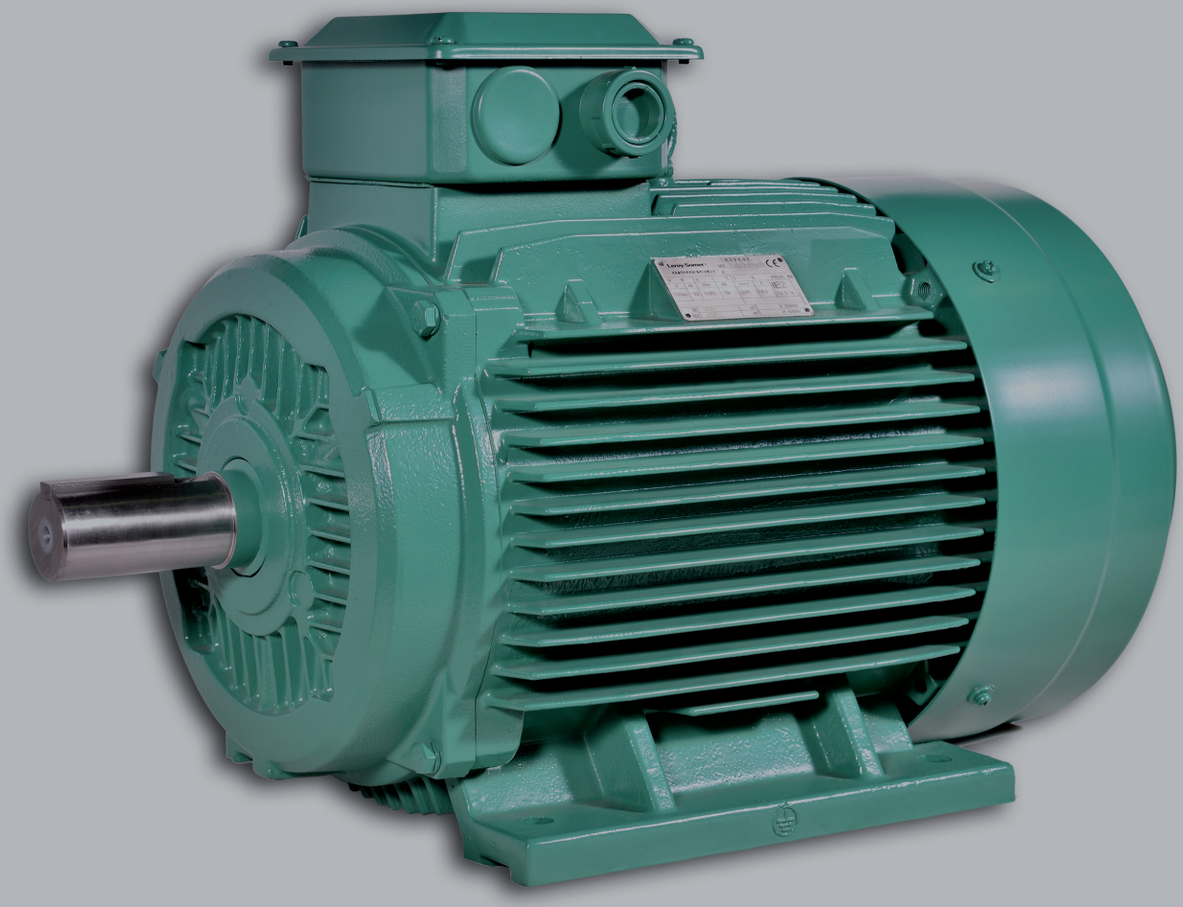


OptIMity 3-phase induction motors

IE2&IE3

Frame Size 80-355

Power Rating 0.37-355Kw

LEROY-SOMER™

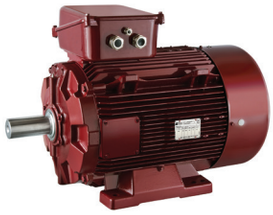
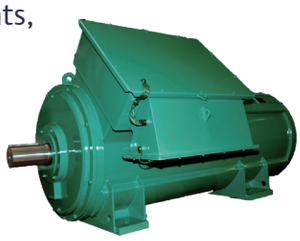
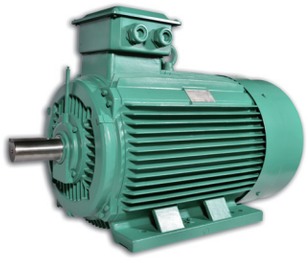
Drives & Motors Technology

Core Offering in Asia Pacific

Drives

Process	Construction & Infrastructure
AC Drives Powerdrive MD2 & F300	**AC & Servo Drives** Unidrive M
Flexible and energy efficiency drive family 1.1kW – 2.8MW	Drive models to optimize productivity, across multitude of automation applications 0.25kW – 2.8MW
	

Motors and Brakes

Process	Construction & Infrastructure
Permanent Magnet Motors Dyneo range	**Liquid Cooled Motors** IMfinity LC
Premium Efficiency Permanent Magnet Synchronous Motor with drive IP23/55 0.75 – 500kW	Liquid-Cooled Induction Motors for extreme environments, compactness and noise reduction 150 - 1500 kW IP 56
	
Normal Duty Motors OptIMity	**Open Type Motors** PLS
3 phase motors IP55, Cast Iron & Aluminum For General Industry 0.37 to 355 kW	3 phase motors IP23, with Aluminum or Steel housing 55 to 900 kW
	

Manufacturing

Servo Drives
Digitax STM

Intelligent, compact and dynamic servo drive range

0.72– 19.3 Nm
200V, 400V

DC Drives
Mentor MP

High performance DC drive

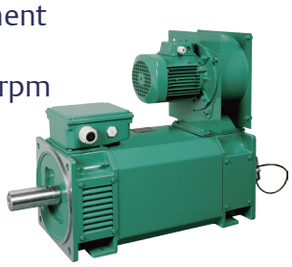
25 -7,400A

Manufacturing

High Speed Motors
CPLS

High Speed Induction Motors
DC replacement

Up to 10000rpm
7.5-550kW



Servo Motors
Unimotor fm and hd

Dynamic performance AC brushless

0.72-136 Nm
(408 Nm peak)

Heavy Duty Motors + Brakes
FLSMV + FCPL

3-phase motors IP55/65
Optimized for VS applications with optional encoder and High performance Brake

11- 400kW
75 - 1500 Nm

Contents

OptIMity 3-phase induction motors

Overview

General Information

Leroy Somer OptIMity series general industries TEFC 3 phase asynchronous motors with efficiency level IE2&IE3. These motors have been designed to incorporate the latest IEC and European standards, and can satisfy most of industry's demands.

OptIMity is designed for DOL operation with continuous duty (S1).

OptIMity Standard Features

- Aluminum frame(SH<=160)and cast iron frame
- Standard painting color reference RAL6000
- Supply voltage 400V,frequency 50Hz
- The permitted tolerance of the voltage is ±5%
- Efficiency level IE2&IE3
- Standard mounting construction according to IEC 60034-7: IMB3, IM B5, IM B35 and etc
- Top position of main terminal
- Regreasing device (SH>=250 as standard, SH160-225 as option)
- Cooling method IC411
- Enclosure protection IP55
- Insulation/Thermal class F/B
- Vibration A
- Plastic cable gland

OptIMity Options

- Space heater
- Special painting color
- Special voltage
- Insulation class H
- Thermal protection PTC and PT100
- Double shaft end/Special shaft end
- SKF/FAG bearing
- Regreasing device
- Metal fan
- Drip cover
- Main terminal box position(RH or LH)
- External earthing bolt
- Type test
- Cable glands
  - Brass
  - Stainless steel

Environmental

- Ambient temperature:-15℃~ 40℃
- Altitude less than 1000 m
- Humidity ≤90%

For higher ambient temperatures and / or site altitudes higher than 1000 m above sea level, the motor should be derated. Please consult Leroy-Somer.

OptIMity 3-phase induction motors

Overview

International and National Standard Equivalents

OptIMity range motor comply with following IEC standards

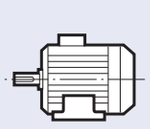
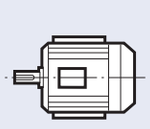
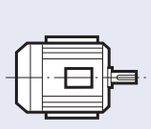
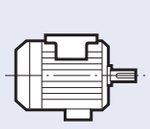
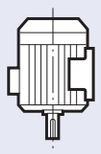
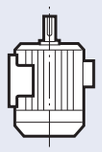
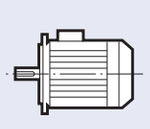
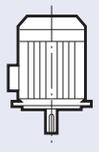
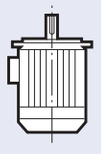
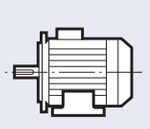
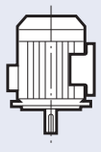
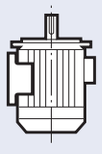
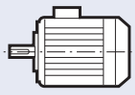
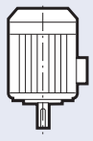
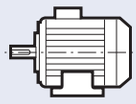
IEC standards	Title
IEC 60034-1	Ratings and operating characteristics
IEC 60034-5	Classification of degrees of protection
IEC 60034-6	Cooling methods
IEC 60034-7	Mounting arrangements and assembly layouts
IEC 60034-8	Terminal markings and direction of rotation
IEC 60034-9	Noise limits
IEC 60034-14	Mechanical vibrations of machines with frame size ≥56 mm
IEC 60072-1	Dimensions and output powers for machines of between 56 and 400 frame size and flanges of between 55 and 1080.
IEC 60085	Evaluation and thermal classification of electrical insulation
IEC 60721-2-1	Environmental conditions appearing in nature Temperature and humidity

OptIMity 3-phase induction motors

Overview

Construction

Mountings and Positions

Construction Type	Foot mounted motors					
Mounting Type	IMB3	IMB6	IMB7	IMB8	IMV5	IMV6
Diagram						
Construction Type	**(FF) Flange mounted motors**					
Mounting Type	IMB5	IMV1	IMV3	IMB35	IMV15	IMV36
Diagram						
Construction Type	**(FT) Face mounted motors**					
Mounting Type	IMB14		IMB18		IMB34	
Diagram						

Frame Size	Foot mounted motors			Secondary Mounting											
	B3	B5	B35	V1	V3	V5	V6	B6	B7	B8	V15	V36	B14	B34	V18
80-112	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
132-160	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
180-280	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-
315-355	✓	-	✓	✓	-	-	-	-	-	-	-	-	-	-	-

✓ available, -not available

Overview

Construction

Cooling

Standard cooling method is self-ventilation motors with radial-flow fans (IC411 according to IEC 60034-6).

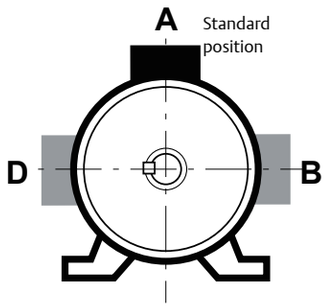
Terminal Box

Placed as standard on the top of the motor near the drive end, it is IP 55 protection and fitted with plastic cable glands.

Frame Size	Cable Gland Size	Cable Gland Qty.
80	M24x1.5	1
90		
100		
112	M30x2	2
132		
160	M36x2	2
180		
200	M48x2	2
225		
250	M64x2	2
280		
315		
355	M72x2	2

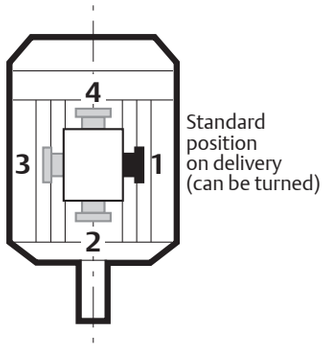
If required, the terminal box may be fitted right or left side of the motor（seen from the drive end）.

Positions of the terminal box in relation to the drive end (motor in IM 1001 position)



The standard position of cable entry is on the right, seen from the drive end but, owing to the symmetrical construction of the box, it can usually be placed in any of the 4 directions as below picture:

Positions of cable entry in relation to the drive end



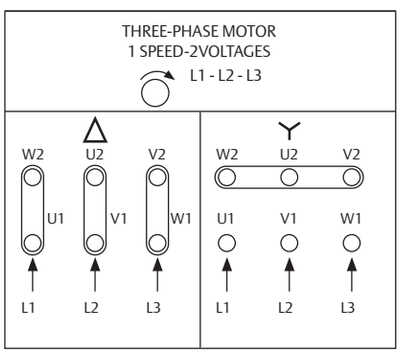
Positions 2 not recommended (impossible on standard(FF) flange mounted motor)

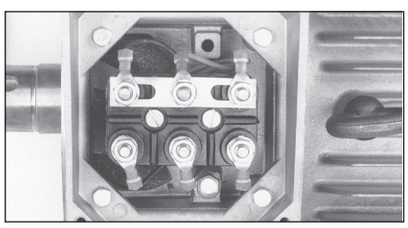
Wiring Diagram

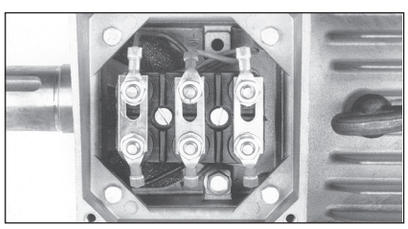
All standard motors are supplied with a wiring diagram in the terminal box.

Earth Terminal

This is situated inside the terminal box. Consisting of a threaded stud with a hexagonal nut, it is used to connect cables with cross-sections at least as large as the cross-section of the phase conductors.
It is indicated by the sign: (⏚) in the terminal box. On request, a second earth terminal can be fitted on one or both of the feet.







Overview

Construction

Bearing

OptIMity series motors are equipped with the ball bearing as standard (sealed type or regreasable type).

For frame size 80-225mm sealed bearing as standard. For frame size 250-355mm regreasable bearing as standard, with regrease devise.

If required, frame size 160-225mm regreasable bearing and regrease device as option.

Bearing assignment as below table:

Type	DE	NDE
OPT/OPTA-80	6204-2RZ	6204-2RZ
OPT/OPTA-90	6205-2RZ	6205-2RZ
OPT/OPTA-100	6206-2RZ	6206-2RZ
OPT/OPTA-112	6206-2RZ	6206-2RZ
OPTA-132	6308-2RZ	6308-2RZ
OPTA-160	6309-2RZ	6209-2RZ
OPT-132	6208-2RZ	6208-2RZ
OPT-160	6309-2RZ	6309-2RZ
OPT-180	6311-2RZ	6311-2RZ
OPT-200	6312-2RZ	6312-2RZ
OPT-225	6313-2RZ	6312-2RZ
OPT-250-2	6313	6313
OPT-250-4,6	6314	6313
OPT-280-2	6314	6314
OPT-280-4,6	6317	6314
OPT-315-2	6317	6317
OPT-315-4,6	NU319	6319
OPT-355-2	6318	6316
OPT-355-4,6	6322	6316

Bearing Re-greasing

Re-greasing interval and quantity of grease as below table:

Frame Size	Quantity of Grease(g)	Re-greasing Interval(h)		
		3000(r/min)	1500(r/min)	1000(r/min)
160,180	20	4200	7000	9000
200,225	25	3100	6500	8500
250,280	35	2000	6000	8000
315	50	2000	5500	7500
355	60	3700(35g)	8300	13800

Overview

Operation

Supply Voltage

The standard design of OptIMity motor is based on 400V 50Hz three-phase.

The tolerances usually permitted for power supply sources are indicated below:

• Maximum line drop between customer delivery point and customer usage point: 7%.

• Variation in frequency around the rated frequency:

- continuous operation: ±1%

- transient state: ±2%

• Three-phase mains phase voltage imbalance:

- Zero-sequence component and/or negative phase sequence component compared to positive phase sequence component: < 2%

The characteristics of motors will of course vary with a corresponding variation in voltage of ± 10% around the rated value.

An approximation of these variations is given in the table below.

	Voltage variation as a(%)				
	UN-10%	UN-5%	0UN	UN+5%	UN+10%
Torque curve	0.81	0.90	1	1.10	1.21
Slip	1.23	1.11	1	0.91	0.83
Rated current	1.10	1.05	1	0.98	0.98
Rated efficiency	0.97	0.98	1	1.00	0.98
Rated power factor (cos φ)	1.03	1.02	1	0.97	0.94
Starting current	0.90	0.95	1	1.05	1.10
Nominal temperature rise	1.18	1.05*	1	1*	1.10
P(Wall)no-load	0.85	0.92	1	1.12	1.25
Q(reactive V A)no-load	0.81	0.9	1	1.1	1.21

* According to standard IEC 60034-1,the additional temperature rise must not exceed 10 K within ±5% of $U_{N.}$

Overload Capacity

According to IEC60034, OptIMity series motors are designed to withstand overload capacity of 1.5 times rated current for 2 minutes at rated voltage and frequency.

Insulation System

The machines in this catalogue have been designed with a class F insulation system for the windings. Class F allows for temperature rises of 105 K (measured by the resistance variation method) and maximum temperatures at the hot spots in the machine of 155°C (Ref. IEC 60085 and IEC 60034-1).

The insulation of the windings is monitored in two ways:

a - Dielectric inspection which involves checking the leakage current, at an applied voltage of (2U + 1000) V, in conditions complying with standard IEC 60034-1 (systematic test).

b - Monitoring the insulation resistance between the windings and between the windings and the earth (sampling test) at a D.C. voltage of 500 V or 1000 V.

Overview

Operation

Vibration

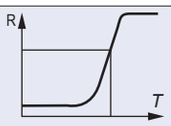
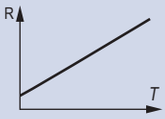
OptIMity rotors are balanced to severity grade A with half key. The effective vibration values for unloaded motors as table below(Free suspension).

Vibration Level	Frame Size H(mm)								
	56 ⩽ H ⩽ 132			*132 < H ⩽ 280*			*H > 280*		
	Displacement μm	Speed mm/s	Acceleration m/s^2	Displacement μm	Speed mm/s	Acceleration m/s^2	Displacement μm	Speed mm/s	Acceleration m/s^2
A	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4

Thermal Protection

Motors are protected by a manual or automatic overcurrent relay, placed between the isolating switch and the motor. This relay may in turn be protected by fuses. These protection devices provide total protection of the motor against non-transient overloads. If a shorter reaction time is required, if you want to detect transient overloads, or if you wish to monitor temperature rises at "hot spots" in the motor or at strategic points in the installation for maintenance purposes, it would be advisable to install heat sensors at sensitive points. The various types are shown in the table below, with a description of each. It must be emphasized that under no circumstances can these sensors be used to carry out direct regulation of the motor operating cycles.

Buit-in Indirect Thermal Protection

Type	Operating principle	Operating curve	Breaking capacity(A)	Protection provided	Mounting Number of devices *
Positive temperature coeffcient thermistor PTC	Non-linear variable resistor,infdirectly heated 		0	General monitoring for transient overloads	Mounted with associated relay in control circuit 3 in series
Platinum temperature seneor PT 100	Linear variable resistor indirectly heated		0	High accuracy continuous surveillance of key hot spots	Mounted in control boards with associated reading equipment (or recorder) 1 per hot spot

- NRT:nominal running temperature
- The NRTs are chosen according to the position of the sensor in the motor and the temperature rise class.

* The number of devices relates to the winding protection.

Fitting Thermal Protection

- PTC,with relay, in the control circuits
- PT 100,with reading equipment or recorder, in the installation control panel for continuous surveillance

Alarm and Early Warning

All protective equipment can be backed up by another type of protection (with different NRTs): the first device will then act as an early warning (light or sound signals given without shutting down the power circuits), and the second device will be the alarm (shutting down the power circuits)

Bearing Protection

OptIMity motors bearing has no protection as standard. The bearing is recommended to be protected for some severe application. The bearing is protected through thermometers screwed into the bearing plates of motor driven end (DE) and non-drive-end (NDE). The wires are routed through the main connection box.

Anti-condensation Protection

Motors whose windings are at risk of condensation due to the climatic conditions, e.g. inactive motors in humid atmospheres or motors that are subjected to widely fluctuating temperatures can be equipped with anti-condensation heaters.

OptIMity 3-phase induction motors

Overview

Operation

Starting Method

The two essential parameters for starting cage induction motors are:
- starting torque
- starting current

These two parameters and the resistive torque determine the starting time.
These three characteristics arise from the construction of cage induction motors. Depending on the driven load, it may be necessary to adjust these values to avoid torque surges on the load or current surges in the supply. There are essentially five different types of supply, which are:
- D.O.L. starting
- star/delta starting
- soft starting with auto-transformer
- soft starting with resistors
- electronic starting

The tables on the next few pages give the electrical outline diagrams, the effect on the characteristic curves, and a comparison of the respective advantages of each mode.

Motors with Associated Electronics

Electronic starting modes control the voltage at the motor terminals throughout the entire starting phase, giving very gradual smooth starting.

DIGISTART D2 Electronic Starter

This simple, compact electronic starter enables three-phase induction motors to be started smoothly by controlling their acceleration. It incorporates motor protection.

- **18 to 200 A Range**
- **Integrated by-pass:** ease of wiring

Simplicity and speed of setup
All settings configured with just seven selector switches

- **Flexibility**

- Mains supply voltages 200-440 VAC & 200-575 VAC

- **Starting and Stopping Modes:**
- Current limit
- Current ramp
- Deceleration control
- Communication
- Modbus, DeviceNet, Profibus, USB, display console
- Management of pumping functions

DIGISTART D3 Electronic Starter

Using the latest electronic control technologies to manage transient phases, the DIGISTART D3 range combines simplicity and user-friendliness while offering the user a high-performance, communicating electronic starter, and can achieve substantial energy savings.

- Range from 23 to 1600 A/400 V or 690 V
- Integrated bypass up to 1000 A:
- Compact design Up to 60% space saving.
- Energy saving.
- Reduced installation costs.

- **Advanced Control**
- Starting and stopping adapt to the load automatically.
- Automatic parameter optimisation by gradually learning the types of start.
- Special deceleration curve for pumping applications which derives from more than 15 years of Leroy-Somer's experience and expertise.

- **High Availability**
- Able to operate with only two power components operational.
- Protection devices can be disabled to implement forced run mode (smoke extraction, fire pump, etc).

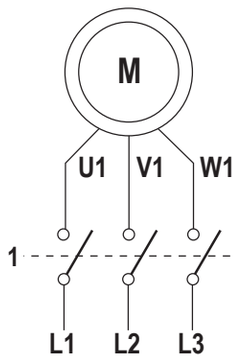
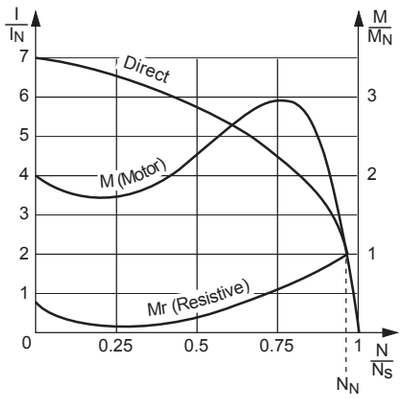
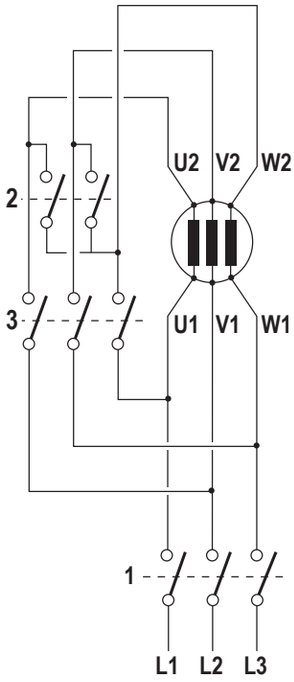
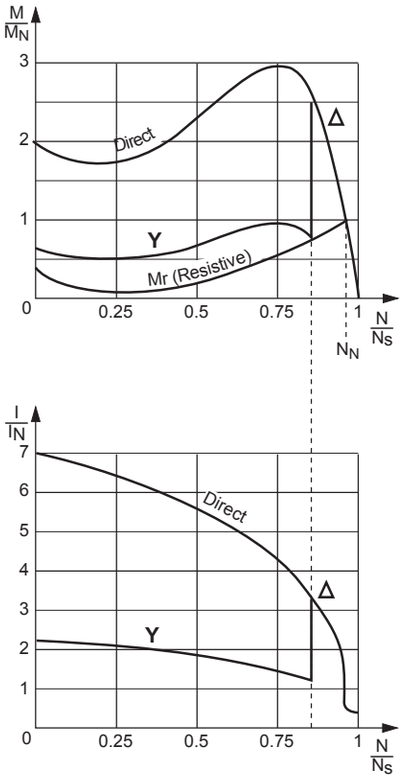
- **Total Protection**
- Continuous thermal modelling for maximum motor protection (even in the event of a power cut).
- Trips on configurable power thresholds.
- Control of phase current imbalance.
- Monitoring of motor temperatures and the environment with PTC or PT 100.

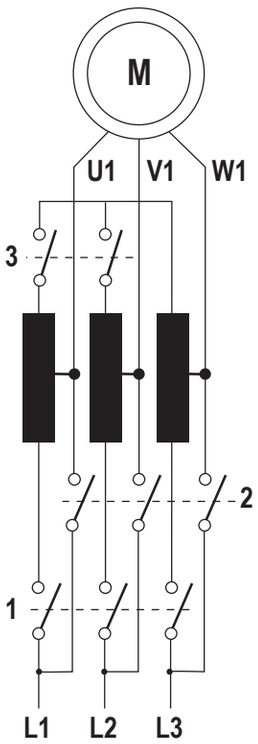
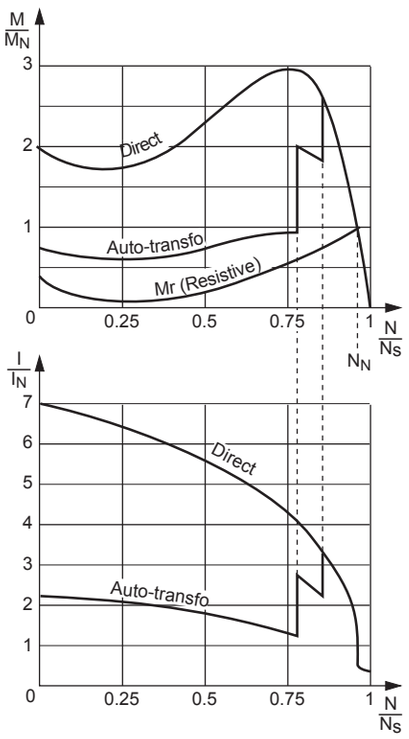
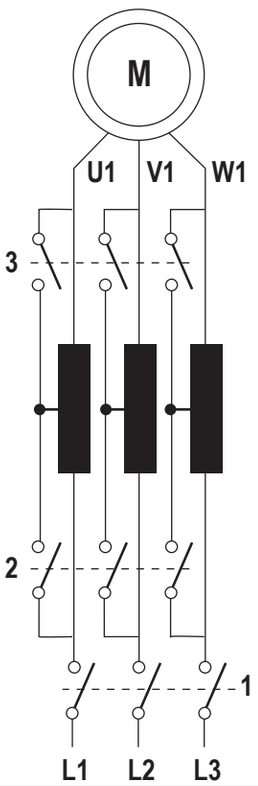
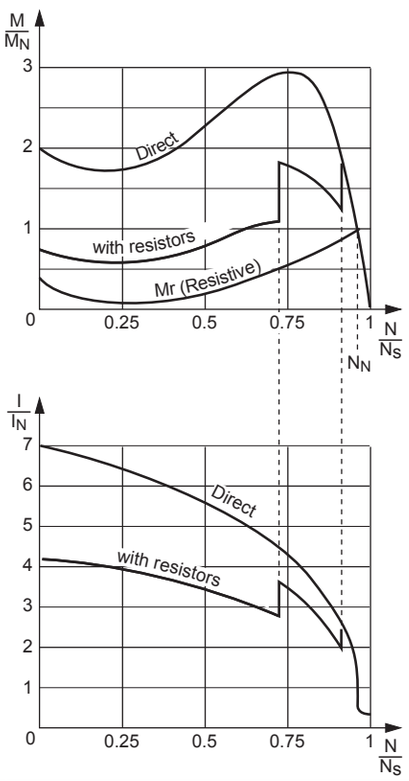
- **As an Option**
- Installation trips in the event of an earth fault
- Protection against mains over- and undervoltages
- Connection to "Δ" motor (6-wire)
- Starter size at least one rating lower
- Automatic detection of motor connection
- Ideal for replacing Y/Δ starters

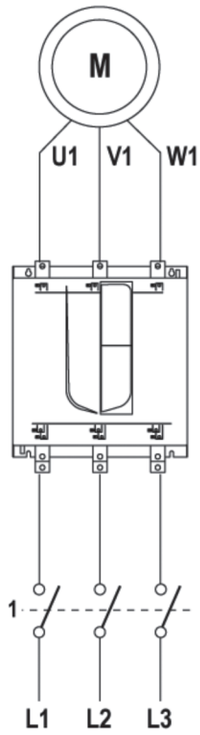
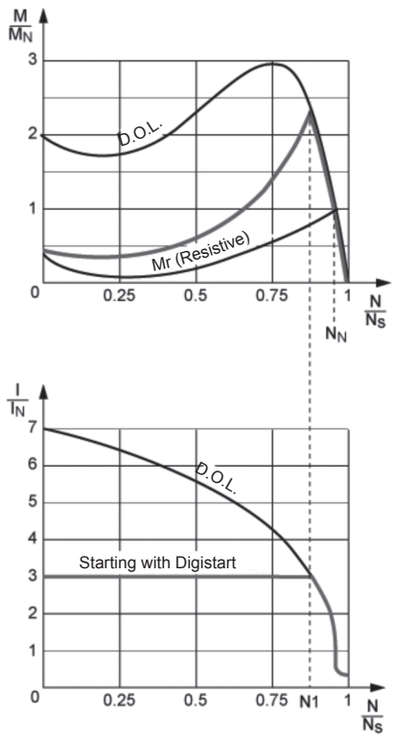
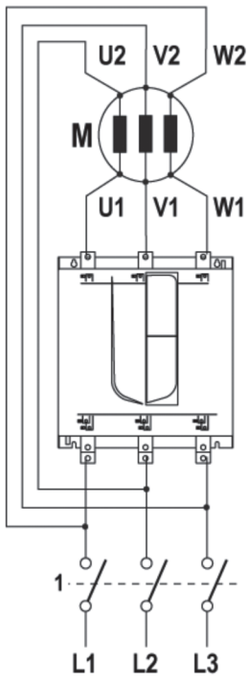
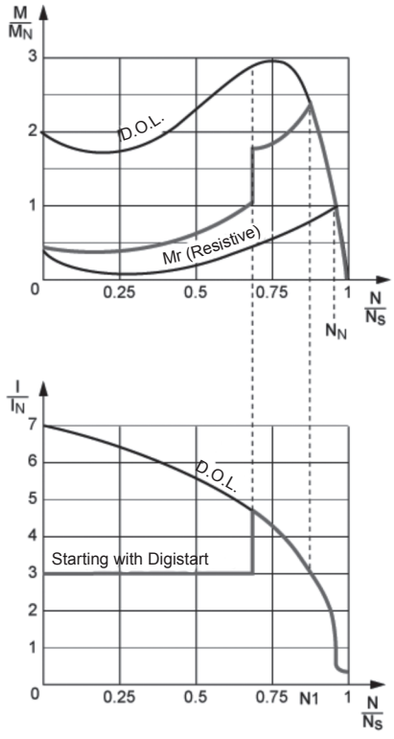
- **Communication**

Modbus RTU, DeviceNet, Profibus, USB

- **Simplicity of Setup**
- 3 parameter-setting levels
- Preset configurations for pumps, fans, compressors, etc
- Standard: access to the main parameters
- Advanced menu: access to all data
- Storage
- Time-stamped log of trips
- Energy consumption and operating conditions
- Latest modifications
- Simulate operation by forcing control
- Display the state of the inputs/outputs
- Counters: running time, number of starts, etc.

Mode	Outline diagram	Characteristic curves	Number of steps	Starting torque	Starting current	Advantages
D.O.L.			1	M_D	I_D	Simplicity of the equipment High torque Minimum starting time
Star-Delta			2	$M_D / 3$	$I_D / 3$	Starting current divided by 3 Simple equipment 3 contactors including 1 two-pole

Mode	Outline diagram	Characteristic curves	Number of steps	Starting torque	Starting current	Advantages
Soft starting with autotrans-former			n ≥ 3	$K^2.M_D$ $K = \frac{U_{starting}}{U_n}$	$K^2.I_D$	Can be used to select the torque Current reduction proportional to that for the torque No power cut-off
Soft starting with resistors			n	$K^2.M_D$ $K = \frac{U_{starting}}{U_n}$	$K.I_D$	Can be used to select the torque or the current No power cut-off Modest additional cost (1 contactor per step)

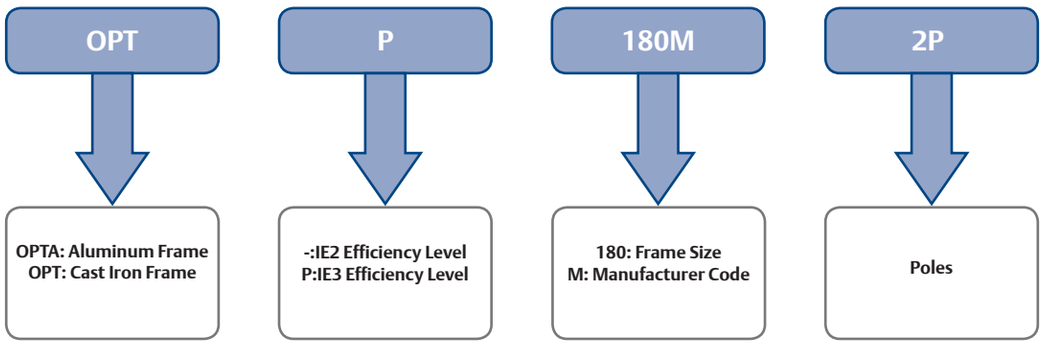
Mode	Outline diagram	Characteristic curves	Number of steps	Starting torque	Starting current	Advantages
DIGISTART D2 & D3				K^2M_D $K = \frac{U_{starting}}{U_n}$	KI_D	Adjustable on site Choice of torque and current No power cut-off Smooth starting Compact size No maintenance High number of starts Digital Integrated motor and machine protection Serial link
DIGISTART D3 mode "6-wire"				K^2M_D $K = \frac{U_{starting}}{U_n}$	KI_D	Same advantages as the above DIGISTART Current reduced by 35% Suitable for retrofitting on installations Y-D With or without bypass

OptIMity 3-phase induction motors

Overview

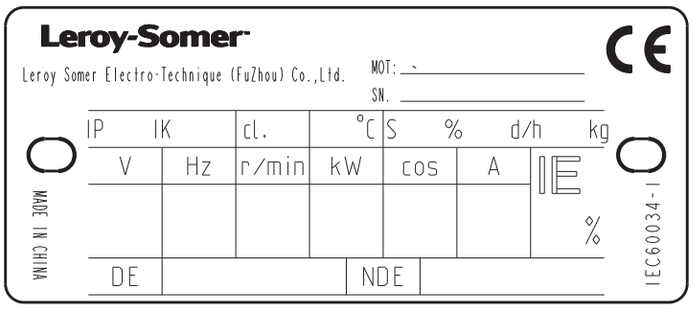
Description

Product Code

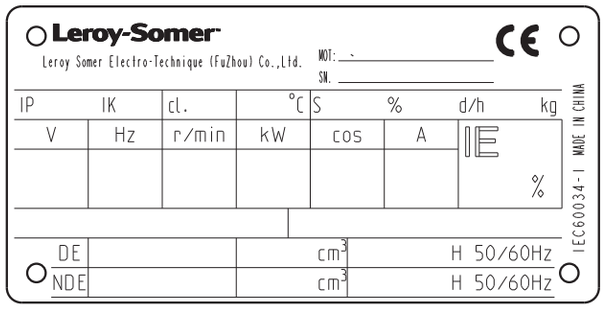


Nameplate

OPTA



OPT



MOT: Code No.
SN: Serial No.
IP&IK: Protection Level
cl: Insulation Class
°C: Ambient operating temperature
S: Duty-Duty factor
V: Supply Voltage
Hz: Supply frequency
r/min: Rated Speed
kW: Rated Power
cos: Power Factor
A: Rated Current
IE: Efficiency Level
%: Efficiency Value
DE: Drive End Bearing
NDE: Non Drive End Bearing
cm3: Quantity of Grease at Each Regreasing (g)
H: Regreasing Interval(hours)

CE Legal mark of conformity of product to the requirements of European Directives

OptIMity 3-phase induction motors

Electrical and Mechanical Characteristics

Electrical and Mechanical Data IE2

Type	400V 50Hz											380V/50Hz		415V/50Hz	
	Rated Power	Rated Current	Rated Speed	Rated Torque	Starting Torque/ Rated Torque	Starting Current/ Rated Current	Max. Torque/ Rated Torque	Noise	Efficiency	Power Factor	Weight	Rated Current	Rated Speed	Rated Current	Rated Speed
	Pn kW	In A	r/min	Mn N.m	Md/Mn	Id/In	Mm/Mn	L_{WA} db(A)	%	cosφ	IM B3 kg	In A	r/min	In A	r/min
2P															
OPTA 80M-2P	0.75	1.7	2860	2.5	2.2	7.0	2.3	62	77.4	0.82	11	1.8	2855	1.6	2860
OPTA 80M1-2P	1.1	2.4	2870	3.7	2.2	7.3	2.3	62	79.6	0.83	12	2.5	2870	2.3	2865
OPTA 90S-2P	1.5	3.2	2865	5.0	2.2	7.6	2.3	67	81.3	0.84	16	3.3	2865	3.1	2870
OPTA 90L-2P	2.2	4.5	2865	7.3	2.2	7.6	2.3	67	83.2	0.85	20	4.7	2870	4.3	2860
OPTA 100L-2P	3	5.9	2875	10.0	2.2	7.8	2.3	74	84.6	0.87	23	6.2	2875	5.7	2875
OPTA 112M-2P	4	7.6	2910	13.1	2.2	8.3	2.3	77	85.8	0.88	31	8	2910	7.3	2910
OPTA 132S1-2P	5.5	10.4	2935	2.5	2.2	7.0	2.3	79	87.0	0.88	46	10.9	2935	10	2935
OPTA 132S2-2P	7.5	13.8	2930	3.7	2.2	7.3	2.3	79	88.1	0.89	54	14.5	2930	13.3	2930
OPTA 160M1-2P	11	20	2950	35.6	2	8.1	2.3	81	89.4	0.89	88	21	2950	19.2	2950
OPTA 160M2-2P	15	27	2945	48.6	2	8.1	2.3	81	90.3	0.89	101	28.4	2945	26	2945
OPTA 160L-2P	18.5	33	2945	60	2	8.2	2.3	81	90.9	0.89	115	34.7	2945	31.8	2945
OPT 80M1-2P	0.75	1.7	2860	2.5	2.2	7	2.3	62	77.4	0.82	15	1.8	2855	1.6	2860
OPT 80M2-2P	1.1	2.4	2870	3.7	2.2	7.3	2.3	62	79.6	0.83	16	2.5	2870	2.3	2865
OPT 90S-2P	1.5	3.2	2865	5	2.2	7.6	2.3	67	81.3	0.84	20	3.3	2865	3.1	2870
OPT 90L-2P	2.2	4.5	2865	7.3	2.2	7.6	2.3	67	83.2	0.85	24	4.7	2870	4.3	2860
OPT 100L-2P	3	5.9	2875	10	2.2	7.8	2.3	74	84.6	0.87	32	6.2	2875	5.7	2875
OPT 112M-2P	4	7.6	2910	13.1	2.2	8.3	2.3	77	85.8	0.88	39	8	2910	7.3	2910
OPT 132S1-2P	5.5	10.4	2935	17.9	2	8.3	2.3	79	87	0.88	58	10.9	2935	10	2935
OPT 132S2-2P	7.5	13.8	2930	24.4	2	7.9	2.3	79	88.1	0.89	66	14.5	2930	13.3	2930
OPT 160M1-2P	11	20	2950	35.6	2	8.1	2.3	81	89.4	0.89	107	21	2950	19.2	2950
OPT 160M2-2P	15	27	2945	48.6	2	8.1	2.3	81	90.3	0.89	112	28.4	2945	26	2945
OPT 160L-2P	18.5	33	2945	60	2	8.2	2.3	81	90.9	0.89	132	34.7	2945	31.8	2945
OPT 180M-2P	22	39.1	2950	71.2	2	8.2	2.3	83	91.3	0.89	162	41.1	2950	37.7	2950
OPT 200L1-2P	30	52.9	2965	96.8	2	7.6	2.3	84	92	0.89	225	55.7	2960	51	2965
OPT 200L2-2P	37	64.9	2960	119	2	7.6	2.3	84	92.5	0.89	245	68.3	2960	62.5	2965
OPT 225M-2P	45	78.6	2965	145	2	7.7	2.3	86	92.9	0.89	294	82.7	2965	75.7	2965
OPT 250M-2P	55	95.7	2970	177	2	7.1	2.3	89	93.2	0.89	367	101	2970	92.2	2970
OPT 280S-2P	75	130	2975	241	1.8	7.1	2.3	91	93.8	0.89	495	137	2975	125	2975
OPT 280M-2P	90	155	2970	289	1.8	7.1	2.3	91	94.1	0.89	541	163	2970	150	2970
OPT 315S-2P	110	187	2975	353	1.8	7.1	2.3	92	94.3	0.90	880	197	2975	180	2975
OPT 315M-2P	132	224	2975	424	1.8	7.1	2.3	92	94.6	0.90	1000	236	2975	216	2975
OPT 315L1-2P	160	268	2975	514	1.8	7.2	2.3	92	94.8	0.91	1080	282	2975	258	2975
OPT 315L2-2P	200	334	2975	642	1.8	7.2	2.2	92	95	0.91	1130	352	2975	322	2975
OPT 355M1-2P	250	417	2982	801	2.5	7.2	2.8	84	95	0.91	1577	436	2980	405	2984
OPT 355M-2P	315	524	2981	1011	2.5	7.1	3	84	95	0.91	1750	549	2979	508	2983
OPT 355L1-2P	355	600	2981	1139	2.9	7.9	2.8	84	95	0.89	1787	623	2978	589	2983
4P															
OPTA 80M-4P	0.55	1.3	1425	3.7	2.3	6.0	2.3	56	79	0.75	12	1.4	1430	1.3	1430
OPTA 80M1-4P	0.75	1.8	1430	5	2.3	6.6	2.3	56	79.6	0.76	13	1.9	1425	1.7	1425
OPTA 90S-4P	1.1	2.5	1415	7.4	2.3	6.8	2.3	59	81.4	0.77	17	2.7	1420	2.4	1420
OPTA 90L-4P	1.5	3.4	1415	10.1	2.3	7	2.3	59	82.8	0.78	21	3.5	1420	3	1415
OPTA 100L1-4P	2.2	4.7	1430	14.7	2.3	7.6	2.3	64	84.3	0.80	24	5	1430	4.5	1430
OPTA 100L2-4P	3	6.3	1430	20	2.3	7.6	2.3	64	85.5	0.81	29	6.6	1430	6	1430
OPTA 112M-4P	4	8.3	1450	26.3	2.2	7.8	2.3	65	86.6	0.81	36	8.7	1450	8	1450
OPTA 132S-4P	5.5	11	1465	35.9	2	7.9	2.3	71	87.7	0.82	48	11.6	1465	11	1465
OPTA 132M-4P	7.5	14.7	1465	48.9	2	7.5	2.3	71	88.7	0.83	58	15.5	1465	14.2	1465
OPTA 160M-4P	11	21.3	1470	71.5	2	7.7	2.3	73	89.8	0.83	95	22.4	1470	20.5	1470
OPTA 160L-4P	15	28.4	1470	97.4	2	7.8	2.3	73	90.6	0.84	109	29.9	1470	27	1470
OPT 80M1-4P	0.55	1.3	1425	3.7	2.3	6.0	2.3	56	79	0.75	15	1.4	1430	1.3	1430
OPT 80M2-4P	0.75	1.8	1430	5	2.3	6.6	2.3	56	79.6	0.76	16	1.9	1425	1.7	1425
OPT 90S-4P	1.1	2.5	1415	7.4	2.3	6.8	2.3	59	81.4	0.77	20	2.7	1420	2	1420
OPT 90L-4P	1.5	3.4	1415	10.1	2.3	7	2.3	59	82.8	0.78	24	3.5	1420	3.2	1415
OPT 100L1-4P	2.2	4.7	1430	14.7	2.3	7.6	2.3	64	84.3	0.80	31	5	1430	4.5	1430
OPT 100L2-4P	3	6.3	1430	20	2.3	7.6	2.3	64	85.5	0.81	35	6.6	1430	6	1430
OPT 112M-4P	4	8.3	1450	26.3	2.2	7.8	2.3	65	86.6	0.81	41	8.7	1450	8	1450
OPT 132S-4P	5.5	11	1465	35.9	2	7.9	2.3	71	87.7	0.82	60	11.6	1465	10.6	1465
OPT 132M-4P	7.5	14.7	1465	48.9	2	7.5	2.3	71	88.7	0.83	74	15.5	1465	14.2	1465
OPT 160M-4P	11	21.3	1470	71.5	2	7.7	2.3	73	89.8	0.83	108	22.4	1470	20.5	1470
OPT 160L-4P	15	28.4	1470	97.4	2	7.8	2.3	73	90.6	0.84	128	29.9	1470	27	1470
OPT 180M-4P	18.5	34.4	1470	120	2	7.8	2.3	76	91.2	0.85	158	36.3	1470	33.2	1470
OPT 180L-4P	22	40.8	1465	143	2	7.8	2.3	76	91.6	0.85	172	42.9	1465	39.3	1465
OPT 200L-4P	30	55.2	1475	194	2	7.3	2.3	76	92.3	0.85	241	58.1	1475	53.2	1475
OPT 225S-4P	37	67	1480	239	2	7.4	2.3	78	92.7	0.86	285	70.5	1480	65	1480
OPT 225M-4P	45	81.1	1480	290	2.0	7.4	2.3	78	93.1	0.86	310	85.4	1480	78.2	1480
OPT 250M-4P	55	98.7	1485	354	2	7.4	2.3	79	93.5	0.86	375	104	1480	95.2	1485
OPT 280S-4P	75	132	1490	481	2	6.9	2.3	80	94	0.87	507	139	1485	128	1490
OPT 280M-4P	90	157	1490	579	2	6.9	2.3	80	94.2	0.88	572	165	1490	151	1490
OPT 315S-4P	110	189	1485	707	2	7	2.2	88	94.5	0.89	930	199	1485	182	1485
OPT 315M-4P	132	226	1485	849	2	7	2.2	88	94.7	0.89	1050	238	1485	218	1485
OPT 315L1-4P	160	270	1485	1029	2	7.1	2.2	88	94.9	0.90	1110	285	1485	261	1485
OPT 315L2-4P	200	337	1485	1286	2	7.1	2.2	88	95.1	0.90	1180	355	1485	325	1485
OPT 355M1-4P	250	424	1492	1600	2.4	8.9	3.49	80	95.4	0.90	1600	439	1489	418	1492
OPT 355M-4P	315	580	1493	2015	2.9	10	4.2	80	95.3	0.90	1670	573	1492	572	1493
OPT 355L1-4P	355	646	1492	2271	2.8	9.7	4	80	95.4	0.90	1710	635	1491	637	1492

OptIMity 3-phase induction motors

Electrical and Mechanical Characteristics

Electrical and Mechanical Data IE2

Type	400V 50Hz											380V/50Hz		415V/50Hz	
	Rated Power	Rated Current	Rated Speed	Rated Torque	Starting Torque/ Rated Torque	Starting Current/ Rated Current	Max. Torque/ Rated Torque	Noise	Efficiency	Power Factor	Weight	Rated Current	Rated Speed	Rated Current	Rated Speed
	Pn kW	In A	r/min	Mn N.m	Md/Mn	Id/In	Mm/Mn	L_{WA} db(A)	%	cosφ	IM B3 kg	In A	r/min	In A	r/min
6P															
OPTA 80M-6P	0.37	1.1	920	3.9	1.9	5.5	2.1	54	67	0.70	10	1.2	910	1.1	915
OPTA 80M1-6P	0.55	1.6	920	5.8	1.9	5.5	2.1	54	70	0.71	12	1.7	910	1.5	915
OPTA 90S-6P	0.75	2	935	7.7	2	6	2.1	57	75.9	0.71	15	2.1	935	1.9	935
OPTA 90L-6P	1.1	2.8	935	11.2	2	6	2.1	57	78.1	0.72	19	3	935	3	935
OPTA 100L-6P	1.5	3.8	945	15.2	2	6.5	2.1	61	79.8	0.72	23	4	945	3.6	945
OPTA 112M-6P	2.2	5.4	965	21.8	2	6.6	2.1	65	81.8	0.72	30	5.7	965	5.2	965
OPTA 132S-6P	3	7.2	975	29.4	1.9	6.8	2.1	69	83.3	0.72	40	7.6	975	7	975
OPTA 132M1-6P	4	9.2	975	39.2	1.9	6.8	2.1	69	84.6	0.74	48	9.7	975	9	975
OPTA 132M2-6P	5.5	12.4	975	53.9	1.9	7	2.1	69	86	0.75	55	13	975	11.9	975
OPTA 160M-6P	7.5	16	975	73.5	2	7	2.1	70	87.2	0.78	86	16.8	975	15.4	975
OPTA 160L-6P	11	22.7	975	108	2	7.2	2.1	70	88.7	0.79	106	23.9	975	22	975
OPT 80M1-6P	0.37	1.1	920	3.9	1.9	5.5	2.1	54	67	0.70	15	1.2	910	1.1	915
OPT 80M2-6P	0.55	1.6	920	5.8	1.9	5.5	2.1	54	70	0.71	16	1.7	910	1.5	915
OPT 90S-6P	0.75	2	935	7.7	2	6	2.1	57	75.9	0.71	20	2.1	935	2	935
OPT 90L-6P	1.1	2.8	935	11.2	2	6	2.1	57	78.1	0.72	24	3	935	2.7	935
OPT 100L-6P	1.5	3.8	945	15.2	2	6.5	2.1	61	79.8	0.72	30	4	945	3.6	945
OPT 112M-6P	2.2	5.4	965	21.8	2	6.6	2.1	65	81.8	0.72	39	5.7	965	5.2	965
OPT 132S-6P	3	7.2	975	29.4	1.9	6.8	2.1	69	83.3	0.72	55	7.6	975	7	975
OPT 132M1-6P	4	9.2	975	39.2	1.9	6.8	2.1	69	84.6	0.74	68	9.7	975	8.9	975
OPT 132M2-6P	5.5	12.4	975	53.9	1.9	7	2.1	69	86	0.75	73	13	975	11.9	975
OPT 160M-6P	7.5	16	975	73.5	2	7	2.1	70	87.2	0.78	104	16.8	975	15.4	975
OPT 160L-6P	11	22.7	975	108	2	7.2	2.1	70	88.7	0.79	126	23.9	975	22	975
OPT 180L-6P	15	30.2	980	146	1.9	7.3	2.1	73	89.7	0.80	163	31.8	980	29.1	980
OPT 200L1-6P	18.5	36.9	985	180	1.9	7.3	2.1	73	90.4	0.80	215	38.9	980	35.6	985
OPT 200L2-6P	22	43.1	980	214	1.9	7.4	2.1	73	90.9	0.81	238	45.4	980	41.6	980
OPT 225M-6P	30	57.6	985	291	1.9	6.9	2.1	74	91.7	0.82	288	60.6	985	56	985
OPT 250M-6P	37	69.8	985	359	1.9	7.1	2.1	76	92.2	0.83	354	73.5	985	67.3	985
OPT 280S-6P	45	82.4	990	434	1.9	7.3	2	78	92.7	0.85	463	86.8	990	79.5	990
OPT 280M-6P	55	99.2	990	531	1.9	7.3	2	78	93.1	0.86	507	104	990	95.6	990
OPT 315S-6P	75	138	990	723	1.9	6.6	2	83	93.7	0.84	860	145	990	133	990
OPT 315M-6P	90	163	990	868	1.9	6.7	2	83	94	0.85	980	171	990	157	990
OPT 315L1-6P	110	198	990	1061	1.9	6.7	2	83	94.3	0.85	1010	209	990	191	990
OPT 315L2-6P	132	234	990	1273	1.9	6.8	2	83	94.6	0.86	1135	247	990	226	990
OPT 355S-6P	160	283	993	1540	1.54	6.32	2.67	78	94.9	0.87	1511	292	992	281	993
OPT 355M-6P	200	360	994	1924	1.78	6.8	2.95	78	95.1	0.86	1628	369	992	355	994
OPT 355L-6P	250	434	993	2404	1.48	6	2.5	78	95.1	0.88	1700	454	991	428	993

OptIMity 3-phase induction motors

Electrical and Mechanical Characteristics

Electrical and Mechanical Data IE3

Type	400V 50Hz											380V/50Hz		415V/50Hz	
	Rated Power	Rated Current	Rated Speed	Rated Torque	Starting Torque/ Rated Torque	Starting Current/ Rated Current	Max. Torque/ Rated Torque	Noise	Efficiency	Power Factor	Weight	Rated Current	Rated Speed	Rated Current	Rated Speed
	Pn kW	In A	r/min	Mn N.m	Md/Mn	Id/In	Mm/Mn	L_{WA} db(A)	%	cosφ	IM B3 kg	In A	r/min	In A	r/min
2P															
OPTA-P 80M1-2P	0.75	1.6	2870	2.5	2.2	7	2.3	62	80.7	0.82	11	1.7	2870	1.6	2870
OPTA-P 80M2-2P	1.1	2.3	2875	3.65	2.2	7.3	2.3	62	82.7	0.83	13	2.4	2875	2.2	2875
OPTA-P 90S-2P	1.5	3.1	2880	4.97	2.2	7.6	2.3	67	84.2	0.84	18	3.2	2880	3	2880
OPTA-P 90L-2P	2.2	4.3	2880	7.3	2.2	7.6	2.3	67	85.9	0.85	21	4.6	2880	4.2	2880
OPTA-P 100L-2P	3	5.7	2890	9.95	2.2	7.8	2.3	74	87.1	0.87	25	6	2880	5.5	2890
OPTA-P 112M-2P	4	7.4	2915	13.1	2.2	8.3	2.3	77	88.1	0.88	33	7.8	2915	7.2	2915
OPTA-P132S1-2P	5.5	10.1	2940	17.9	2	8.3	2.3	79	89.2	0.88	51	10.6	2935	9.7	2940
OPTA-P132S2-2P	7.5	13.7	2935	24.4	2	7.9	2.3	79	90.1	0.88	62	14.4	2930	13.2	2935
OPTA-P160M2-2P	11	19.6	2945	35.6	2	8.1	2.3	81	91.2	0.89	97	20.6	2950	18.9	2945
OPTA-P 160M-2P	15	26.5	2945	48.6	2	8.1	2.3	81	91.9	0.89	110	27.9	2945	25.5	2945
OPTA-P 160L-2P	18.5	32.5	2945	60	2	8.2	2.3	81	92.4	0.89	124	34.2	2945	31.3	2945
OPT-P 80M1-2P	0.75	1.6	2870	2.5	2.2	7	2.3	62	80.7	0.82	15	1.7	2870	1.6	2870
OPT-P 80M2-2P	1.1	2.3	2875	3.65	2.2	7.3	2.3	62	82.7	0.83	16	2.4	2875	2.2	2875
OPT-P 90S-2P	1.5	3.1	2880	4.97	2.2	7.6	2.3	67	84.2	0.84	21	3.2	2880	3	2880
OPT-P 90L-2P	2.2	4.3	2880	7.3	2.2	7.6	2.3	67	85.9	0.85	24	4.6	2880	4.2	2880
OPT-P 100L-2P	3	5.7	2890	9.95	2.2	7.8	2.3	74	87.1	0.87	35	6	2880	5.5	2890
OPT-P 112M-2P	4	7.4	2915	13.1	2.2	8.3	2.3	77	88.1	0.88	40	7.8	2915	7.2	2915
OPT-P 132S1-2P	5.5	10.1	2940	17.9	2	8.3	2.3	79	89.2	0.88	59	10.6	2935	9.7	2940
OPT-P 132S2-2P	7.5	13.7	2935	24.4	2	7.9	2.3	79	90.1	0.88	62	14.4	2930	13.2	2935
OPT-P 160M2-2P	11	19.6	2945	35.6	2	8.1	2.3	81	91.2	0.89	117	20.6	2950	18.9	2945
OPT-P 160M-2P	15	26.5	2945	48.6	2	8.1	2.3	81	91.9	0.89	127	27.9	2945	25.5	2945
OPT-P 160L-2P	18.5	32.5	2945	60	2	8.2	2.3	81	92.4	0.89	141	34.2	2945	31.3	2945
OPT-P 180M-2P	22	38.5	2950	71.2	2	8.2	2.3	83	92.7	0.89	166	40.5	2950	37.1	2950
OPT-P 200L1-2P	30	52.1	2965	96.6	2	7.6	2.3	84	93.3	0.89	242	54.9	2965	50.3	2965
OPT-P 200L2-2P	37	64	2965	119	2	7.6	2.3	84	93.7	0.89	261	67.4	2965	61.7	2965
OPT-P 225M-2P	45	76.8	2965	145	2	7.7	2.3	86	94	0.90	313	80.8	2965	74	2965
OPT-P 250M-2P	55	93.5	2975	177	2	7.7	2.3	89	94.3	0.90	392	98.5	2975	90.2	2975
OPT-P 280S-2P	75	127	2975	241	1.8	7.1	2.3	91	94.7	0.90	552	134	2975	122	2975
OPT-P 280M-2P	90	152	2975	289	1.8	7.1	2.3	91	95	0.90	559	160	2975	146	2975
OPT-P 315S-2P	110	185	2985	352	1.8	7.1	2.3	92	95.2	0.90	945	195	2985	179	2985
OPT-P 315M-2P	132	222	2985	422	1.8	7.1	2.3	92	95.4	0.90	980	234	2985	214	2985
OPT-P 315L1-2P	160	265	2985	512	1.8	7.2	2.3	92	95.6	0.91	1040	279	2985	256	2985
OPT-P 315L2-2P	200	331	2985	640	1.8	7.2	2.2	92	95.8	0.91	1135	349	2985	319	2985
OPT-P 355M1-2P	250	417	2982	802	2.2	6.5	2.53	84	95.8	0.91	1577	436	2980	405	2984
OPT-P 355M-2P	315	524	2981	1011	2.3	6.4	2.66	84	95.8	0.91	1750	549	2980	508	2983
OPT-P 355L1-2P	355	600	2981	1139	2.6	7.2	2.55	84	95.8	0.9	1787	623	2978	589	2983
4P															
OPTA-P 80M1-4P	0.55	1.3	1430	3.67	2.3	6.5	2.3	56	80.6	0.75	13	1.4	1430	1.3	1450
OPTA-P 80M2-4P	0.75	1.7	1430	5.01	2.3	6.6	2.3	56	82.5	0.75	14	1.8	1430	1.7	1445
OPTA-P 90S-4P	1.1	2.5	1430	7.35	2.3	6.8	2.3	59	84.1	0.76	20	2.6	1430	2.4	1430
OPTA-P 90L-4P	1.5	3.3	1430	10	2.3	7	2.3	59	85.3	0.77	24	3.5	1430	3	1430
OPTA-P 100L1-4P	2.2	4.5	1450	14.6	2.3	7.6	2.3	64	86.7	0.81	27	4.8	1440	4.4	1430
OPTA-P 100L2-4P	3	6	1445	19.9	2.3	7.6	2.3	64	87.7	0.82	33	6.3	1440	5.8	1430
OPTA-P 112M-4P	4	7.9	1455	26.3	2.2	7.8	2.3	65	88.6	0.82	43	8.4	1455	7.7	1455
OPTA-P 132S-4P	5.5	10.7	1465	35.9	2	7.9	2.3	71	89.6	0.83	54	11.2	1465	10	1465
OPTA-P 132M-4P	7.5	14.3	1460	48.9	2	7.5	2.3	71	90.4	0.84	63	15	1465	13.7	1460
OPTA-P 160M-4P	11	20.4	1470	71.5	2	7.7	2.3	73	91.4	0.85	104	21.5	1470	19.7	1470
OPTA-P 160L-4P	15	27.3	1470	97.4	2	7.8	2.3	73	92.1	0.86	118	28.8	1470	26	1470
OPT-P 80M1-4P	0.55	1.3	1430	3.67	2.3	6.5	2.3	56	80.6	0.75	16	1.4	1430	1.3	1450
OPT-P 80M2-4P	0.75	1.7	1430	5.01	2.3	6.6	2.3	56	82.5	0.75	17	1.8	1430	1.7	1445
OPT-P 90S-4P	1.1	2.5	1430	7.35	2.3	6.8	2.3	59	84.1	0.76	22	2.6	1430	2	1430
OPT-P 90L-4P	1.5	3.3	1430	10	2.3	7	2.3	59	85.3	0.77	25	3.5	1430	3.2	1430
OPT-P 100L1-4P	2.2	4.5	1450	14.6	2.3	7.6	2.3	64	86.7	0.81	34	4.8	1440	4.4	1430
OPT-P 100L2-4P	3	6	1445	19.9	2.3	7.6	2.3	64	87.7	0.82	34	6.3	1440	5.8	1430
OPT-P 112M-4P	4	7.9	1455	26.3	2.2	7.8	2.3	65	88.6	0.82	45	8.4	1455	8	1455
OPT-P 132S-4P	5.5	10.7	1465	35.9	2	7.9	2.3	71	89.6	0.83	60	11.2	1465	10.3	1465
OPT-P 132M-4P	7.5	14.3	1460	48.9	2	7.5	2.3	71	90.4	0.84	74	15	1465	13.7	1460
OPT-P 160M-4P	11	20.4	1470	71.5	2	7.7	2.3	73	91.4	0.85	121	21.5	1470	19.7	1470
OPT-P 160L-4P	15	27.3	1470	97.4	2	7.8	2.3	73	92.1	0.86	135	28.8	1470	26	1470
OPT-P 180M-4P	18.5	33.5	1470	120	2	7.8	2.3	76	92.6	0.86	163	35.3	1470	32.3	1470
OPT-P 180L-4P	22	39.7	1470	143	2	7.8	2.3	76	93	0.86	182	41.8	1470	38.3	1470
OPT-P 200L-4P	30	53.8	1475	194	2	7.3	2.3	76	93.6	0.86	253	56.6	1475	51.9	1475
OPT-P 225S-4P	37	66.1	1485	239	2	7.4	2.3	78	93.9	0.86	283	69.6	1480	64	1485
OPT-P 225M-4P	45	80.2	1480	290	2	7.4	2.3	78	94.2	0.86	313	84.4	1480	77.3	1480
OPT-P 250M-4P	55	97.6	1480	354	2	7.4	2.3	79	94.6	0.86	403	103	1485	94.1	1480
OPT-P 280S-4P	75	129	1490	481	2	6.7	2.3	80	95	0.88	582	136	1490	125	1490
OPT-P 280M-4P	90	155	1490	577	2	6.9	2.3	80	95.2	0.88	595	163	1490	149	1490
OPT-P 315S-4P	110	187	1490	705	2	7	2.2	88	95.4	0.89	930	197	1490	180	1490
OPT-P 315M-4P	132	224	1490	846	2	7	2.2	88	95.6	0.89	970	236	1490	216	1490
OPT-P 315L1-4P	160	271	1490	1026	2	7.1	2.2	88	95.8	0.89	1090	285	1490	261	1490
OPT-P 315L2-4P	200	334	1490	1282	2	7.1	2.2	88	96	0.90	1155	352	1490	322	1490
OPT-P 355M1-4P	250	460	1492	1602	2.29	8.49	3.5	80	96	0.87	1527	455	1491	465	1493
OPT-P 355M-4P	315	574	1493	2017	2.69	9.47	3.78	80	96	0.87	1670	578	1492	597	1493
OPT-P 355L1-4P	355	628	1491	2276	2.32	8.31	3.24	80	96	0.89	1710	661	1491	627	1492

OptIMity 3-phase induction motors

Electrical and Mechanical Characteristics

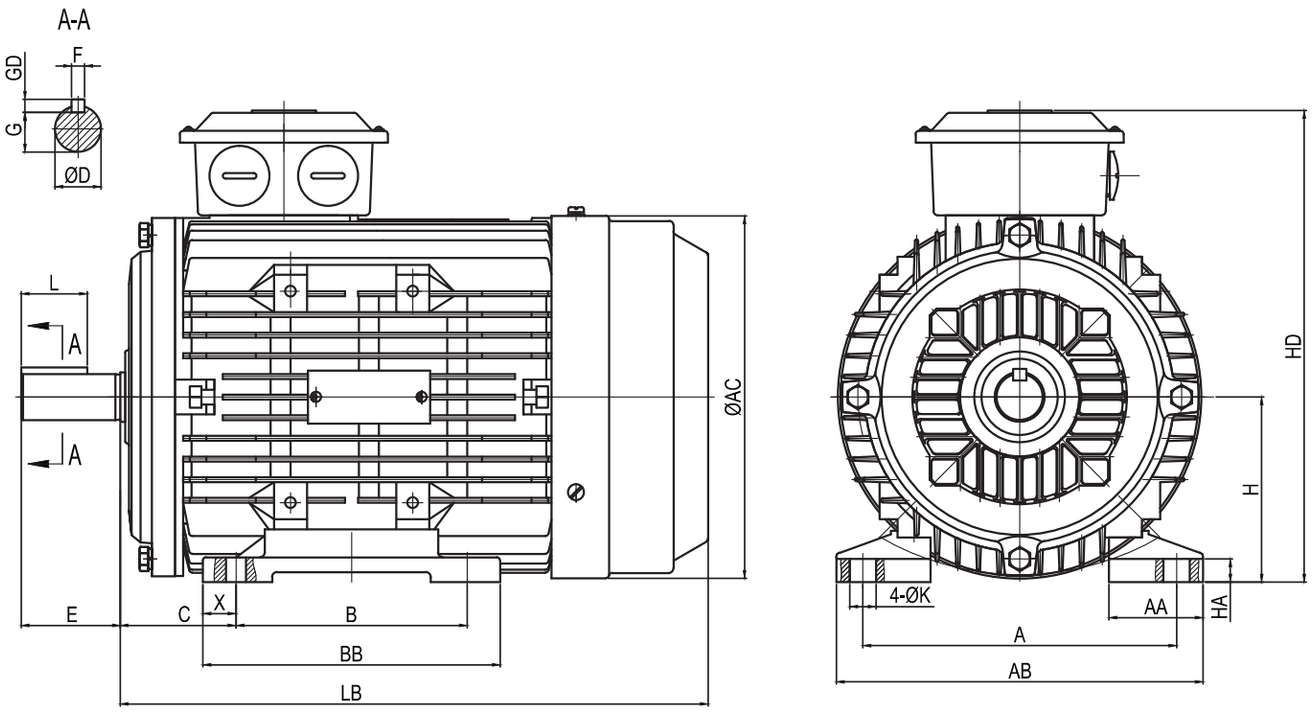
Electrical and Mechanical Data IE3

Type	400V 50Hz											380V/50Hz		415V/50Hz	
	Rated Power	Rated Current	Rated Speed	Rated Torque	Starting Torque/ Rated Torque	Starting Current/ Rated Current	Max. Torque/ Rated Torque	Noise	Efficiency	Power Factor	Weight	Rated Current	Rated Speed	Rated Current	Rated Speed
	Pn kW	In A	r/min	Mn N.m	Md/Mn	Id/In	Mm/Mn	L_{WA} db(A)	%	cosφ	IM B3 kg	In A	r/min	In A	r/min
6P															
OPTA-P 80M1-6P	0.37	1.1	920	3.88	1.9	5.5	2	54	68	0.70	10	1.2	910	1.1	915
OPTA-P 80M2-6P	0.55	1.5	925	5.68	1.9	5.8	2.1	54	72	0.71	13	1.6	925	1.5	925
OPTA-P 90S-6P	0.75	1.9	945	7.58	2	6	2.1	57	78.9	0.71	16	2	945	1.9	955
OPTA-P 90L-6P	1.1	2.7	950	11.1	2	6	2.1	57	81	0.73	22	2.8	950	3	945
OPTA-P 100L-6P	1.5	3.6	955	15.1	2	6.5	2.1	61	82.5	0.73	25	3.8	950	3.5	950
OPTA-P 112M-6P	2.2	5.1	965	21.8	2	6.6	2.1	65	84.3	0.74	34	5.4	965	4.9	965
OPTA-P 132S-6P	3	6.8	980	29.4	1.9	6.8	2.1	69	85.6	0.74	45	7.2	975	6.6	980
OPTA-P132M1-6P	4	9	980	39.2	1.9	6.8	2.1	69	86.8	0.74	54	9.5	975	9	980
OPTA-P132M2-6P	5.5	12	980	53.9	1.9	7	2.1	69	88	0.75	61	12.7	975	11.6	980
OPTA-P 160M-6P	7.5	15.4	980	73.1	1.9	7	2.1	70	89.1	0.79	95	16.2	980	14.8	980
OPTA-P 160L-6P	11	22	980	107	1.9	7.2	2.1	70	90.3	0.80	115	23.1	980	21	980
OPT-P 80M1-6P	0.37	1.1	920	3.88	1.9	5.5	2	54	68	0.70	15	1.2	910	1.1	915
OPT-P 80M2-6P	0.55	1.5	925	5.68	1.9	5.8	2.1	54	72	0.71	16	1.6	925	1.5	925
OPT-P 90S-6P	0.75	1.9	945	7.58	2	6	2.1	57	78.9	0.71	20	2	945	2	955
OPT-P 90L-6P	1.1	2.7	950	11.1	2	6	2.1	57	81	0.73	24	2.8	950	2.6	945
OPT-P 100L-6P	1.5	3.6	955	15.1	2	6.5	2.1	61	82.5	0.73	33	3.8	950	3.5	950
OPT-P 112M-6P	2.2	5.1	965	21.8	2	6.6	2.1	65	84.3	0.74	40	5.4	965	4.9	965
OPT-P 132S-6P	3	6.8	980	29.4	1.9	6.8	2.1	69	85.6	0.74	56	7.2	975	7	980
OPT-P 132M1-6P	4	9	980	39.2	1.9	6.8	2.1	69	86.8	0.74	63	9.5	975	8.7	980
OPT-P 132M2-6P	5.5	12	980	53.9	1.9	7	2.1	69	88	0.75	71	12.7	975	11.6	980
OPT-P 160M-6P	7.5	15.4	980	73.1	1.9	7	2.1	70	89.1	0.79	112	16.2	980	14.8	980
OPT-P 160L-6P	11	22	980	107	1.9	7.2	2.1	70	90.3	0.80	132	23.1	980	21	980
OPT-P 180L-6P	15	29.3	980	146	1.9	7.3	2.1	73	91.2	0.81	172	30.9	980	28.2	980
OPT-P 200L1-6P	18.5	36	985	179	1.9	7.3	2.1	73	91.7	0.81	215	37.8	985	34.7	985
OPT-P 200L2-6P	22	42.5	985	213	1.9	7.4	2.1	73	92.2	0.81	221	44.8	985	41	985
OPT-P 225M-6P	30	56.2	985	291	1.9	6.9	2.1	74	92.9	0.83	292	59.1	985	54	985
OPT-P 250M-6P	37	68.1	985	359	1.9	7.1	2.1	76	93.3	0.84	375	71.7	985	65.7	985
OPT-P 280S-6P	45	81.6	990	434	1.9	7.3	2	78	93.7	0.85	497	85.8	990	78.6	990
OPT-P 280M-6P	55	98.1	990	531	1.9	7.3	2	78	94.1	0.86	537	103	990	94.6	990
OPT-P 315S-6P	75	136	990	723	1.9	6.6	2	83	94.6	0.84	830	143	990	131	990
OPT-P 315M-6P	90	161	990	868	1.9	6.7	2	83	94.9	0.85	910	170	990	155	990
OPT-P 315L1-6P	110	196	990	1061	1.9	6.7	2	83	95.1	0.85	1035	207	990	189	990
OPT-P 315L2-6P	132	232	990	1273	1.9	6.8	2	83	95.4	0.86	1120	244	990	224	990
OPT-P 355S-6P	160	290	995	1538	1.7	6.8	2.9	78	95.6	0.86	1628	296	994	290	995
OPT-P 355M1-6P	200	355	994	1923	1.7	6.7	3	78	95.8	0.87	1800	365	994	352	995
OPT-P 355L-6P	250	467	994	2404	1.7	6.63	2.82	78	95.8	0.86	1878	464	994	472	995

Dimension

OPTA

IM 1001 (IM B3)

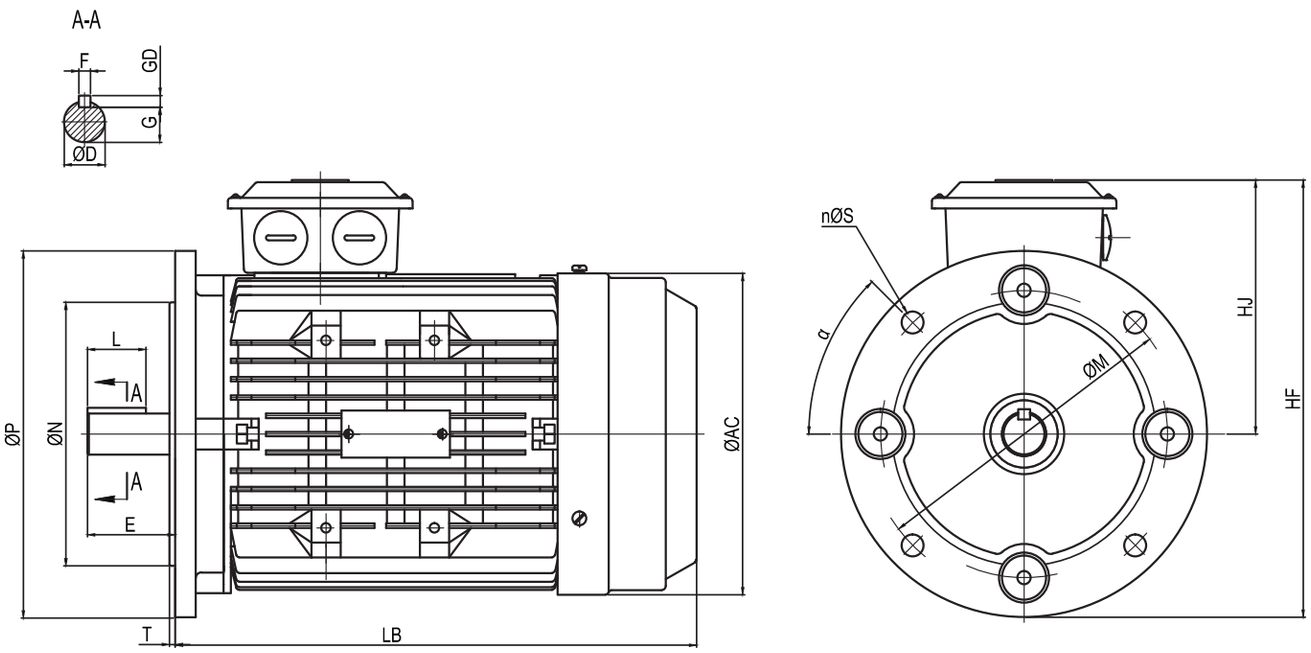


Frame Size	Pole	Main Dimension(mm)																		
		A	B	C	D	E	F	G	H	K	GD	L	AA	X	BB	HA	AB	AC	HD	LB
80M	2,4,6	125	100	50	19	40	6	15.5	80	10	6	22	32	15	130	10	160	165	215	255
90S	2,4,6	140	100	56	24	50	8	20	90	10	7	32	35	15	130	12	180	180	235	270
90L			125												155					295/IE2 300/IE3
100L	2,4,6	160	140	63	28	60	8	24	100	12	7	40	39	18	176	14	200	205	255	330
112M	2,4,6	190	140	70	28	60	8	24	112	12	7	40	45	20	180	14	230	225	290	360
132S	2,4,6	216	140	89	38	80	10	33	132	12	8	56	55	23	190	16	265	270	335	385
132M			178												230					425
160M	2,4,6	254	210	108	42	110	12	37	160	15	8	80	65	25	260	20	309	320	400	535
160L			254												304					

Dimension

OPTA

IM 3001 (IM B5)

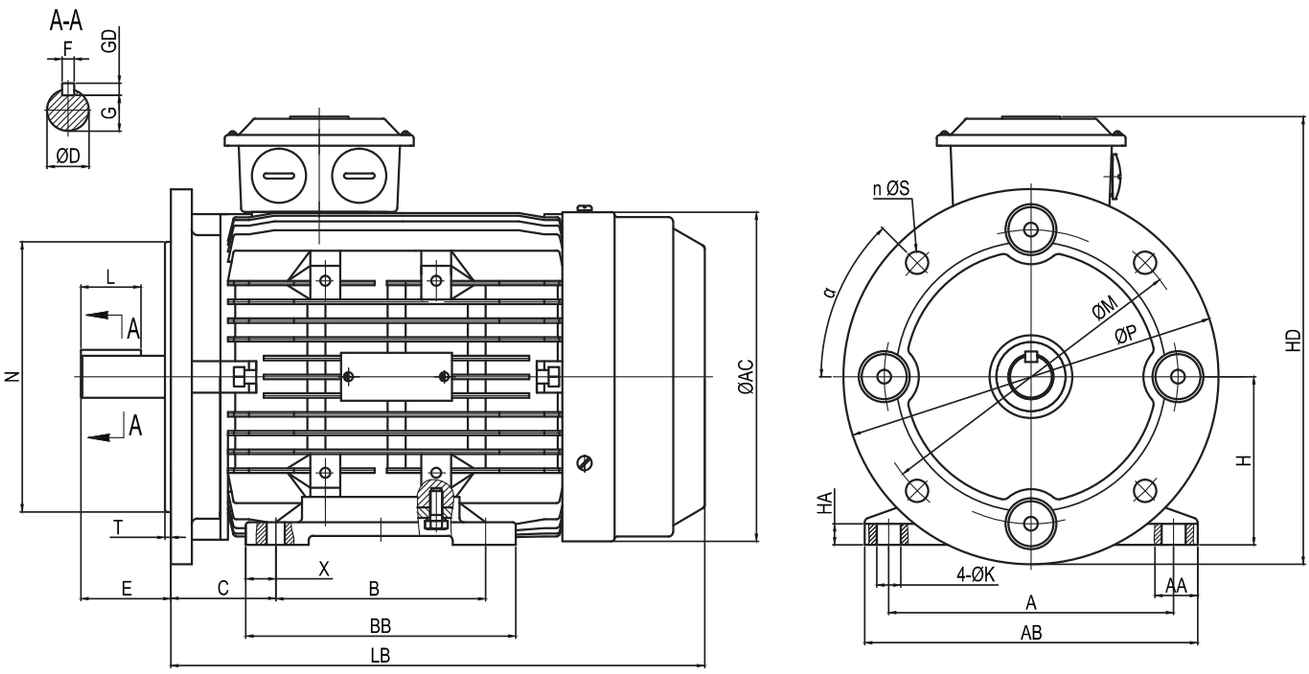


Frame Size	Pole	Main Dimension(mm)															
		D	E	F	G	GD	L	M	N	P	S	T	AC	HF	HJ	α	LB
80M	2,4,6	19	40	6	15.5	6	22	165	130	200	4-Φ12	3.5	165	245	145	45°	255
90S	2,4,6	24	50	8	20	7	32	165	130	200	4-Φ12	3.5	180	265	165		270
90L																	295/IE2 300/IE3
100L	2,4,6	28	60	8	24	7	40	215	180	250	4-Φ15	4	205	300	175		330
112M	2,4,6	28	60	8	24	7	40	215	180	250	4-Φ15	4	225	315	190		360
132S	2,4,6	38	80	10	33	8	56	265	230	300	4-Φ15	4	270	370	220		385
132M																	425
160M	2,4,6	42	110	12	37	8	80	300	250	350	4-Φ19	5	320	435	260		535
160L																	

Dimension

OPTA

IM 2001 (IM B35)



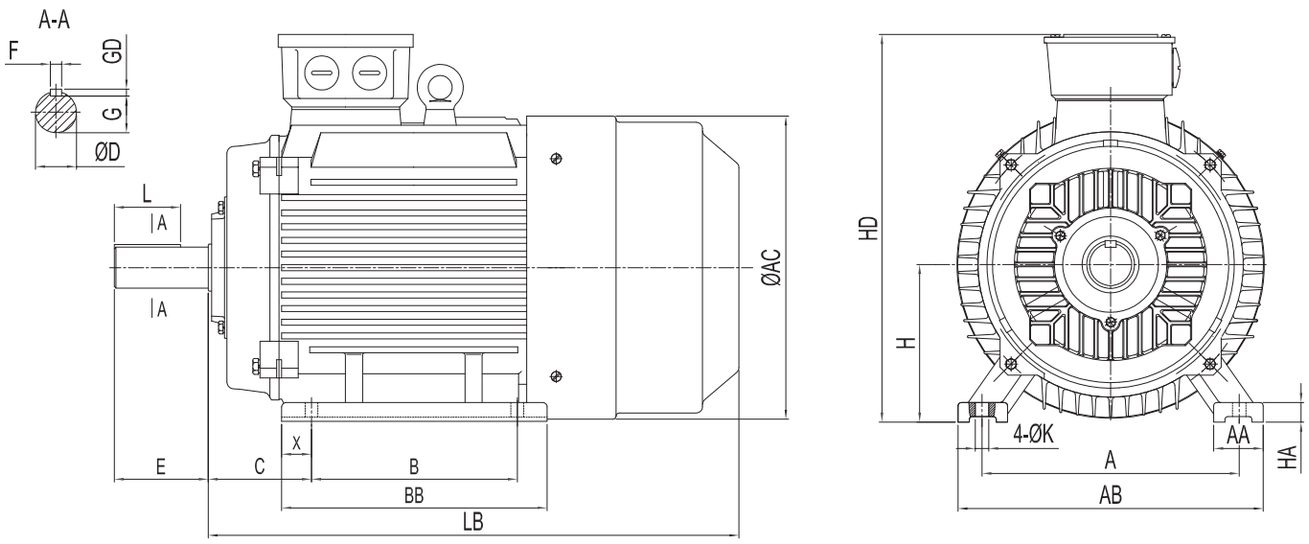
Frame Size	Pole	Main Dimension(mm)																								
		A	B	C	D	E	F	G	GD	L	X	H	K	M	N	P	S	T	AA	BB	HA	AB	AC	HD	α	LB
80M	2,4,6	125	100	50	19	40	6	15.5	6	22	15	80	10	165	130	200	4-Φ12	3.5	32	135	10	160	165	215	45°	255
90S	2,4,6	140	100	56	24	50	8	20	7	32	15	90	10	165	130	200	4-Φ12	3.5	34	145	12	180	180	235	45°	270
90L			125																	170					45°	295/IE2 300/IE3
100L	2,4,6	160	140	63	28	60	8	24	7	40	18	100	12	215	180	250	4-Φ15	4	39	186	14	200	205	255	45°	330
112M	2,4,6	190	140	70	28	60	8	24	7	40	20	112	12	215	180	250	4-Φ15	4	45	200	14	230	225	290	45°	360
132S	2,4,6	216	140	89	38	80	10	33	8	56	23	132	12	265	230	300	4-Φ15	4	55	190	16	265	270	335	45°	385
132M			178																	230					45°	425
160M	2,4,6	254	210	108	42	110	12	37	8	80	25	160	15	300	250	350	4-Φ19	5	65	260	20	309	320	400	45°	535
160L			254																	304					45°	

OptIMity 3-phase induction motors

Dimension

OPT

IM 1001 (IM B3)

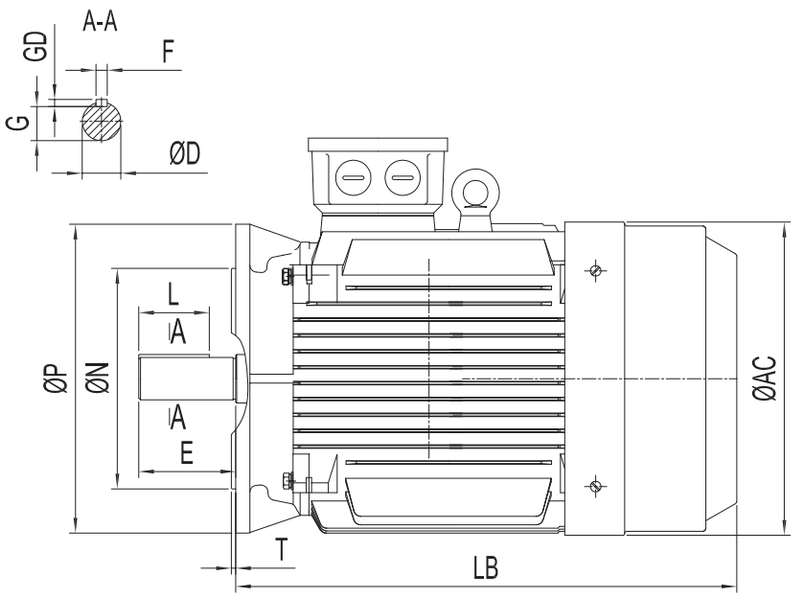


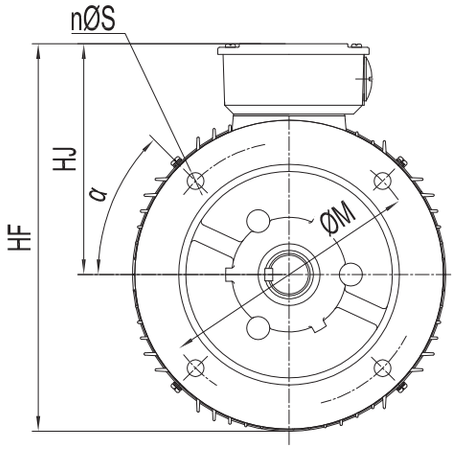
Frame Size	Pole	Main Dimension(mm)																		
		A	B	C	D	E	F	G	H	K	GD	L	X	AA	BB	HA	AB	AC	HD	LB
80M	**2,4,6**	125	100	50	19	40	6	15.5	80	10	6	22	15	32	135	10	160	159	217	248
90S	**2,4,6**	140	100	56	24	50	8	20	90	10	7	32	20	34	145	12	180	176	239	265/IE2 290/IE3
90L			125								7	32	20		170					290/IE2 330/IE3
100L	**2,4,6**	160	140	63	28	60	8	24	100	12	7	40	18	39	186	14	200	202	263	326
112M	**2,4,6**	190	140	70	28	60	8	24	112	12	7	40	20	45	200	14	230	220	295	361
132S	**2,4,6**	216	140	89	38	80	10	33	132	12	8	56	23	55	190	18	265	276	343	388
132M			178								8	56	23		230					426
160M	**2,4,6**	254	210	108	42	110	12	37	160	15	8	80	25	65	260	20	315	325	410	496
160L			254								8	80	25		304					540
180M	**2,4,6**	279	241	121	48	110	14	42.5	180	15	9	80	35	70	311	22	355	358	446	563
180L			279								9	80	35		349					601
200L	**2,4,6**	318	305	133	55	110	16	49	200	19	10	80	32	74	379	26	395	400	508	654
225S	**4**	356	286	149	60	140	18	53	225	19	11	100	50	78	375	28	435	445	556	664
225M	**2**		311		55	110	16	49			10	80			400					679
	4, 6				60	140	18	53			11	100								
250M	**2**	406	349	168	60	140	18	53	250	24	11	105	67	80	445	30	490	512	630	780
	4, 6				65			58			11	105								
280S	**2**	457	368	190	65	140	18	58	280	24	11	105	85	90	485	35	545	546	677	829
	4, 6				75		20	67.5			12	105								
280M	**2**		419		65		18	58			11	105			536					880
	4, 6				75		20	67.5			12	105								
315S	**2**	508	406	216	65	140	18	58	315	28	11	100	84	120	570	45	635	630	855	1040
	4,6				80	170	22	71			14	130								1050
315M	**2**		457		65	140	18	58			11	100			610					1075
	4,6				80	170	22	71			14	130								
315L	**2**		508		65	140	18	58			11	100			680					1150
	4,6				80	170	22	71			14	130								
355L	**2**	610	630	254	80	170	22	71	355	28	14	140	76	100	756	35	710	688	930	1303
	4,6				100	210	28	90	355	28	16	180								

Dimension

OPT

IM 3001 (IM B5)





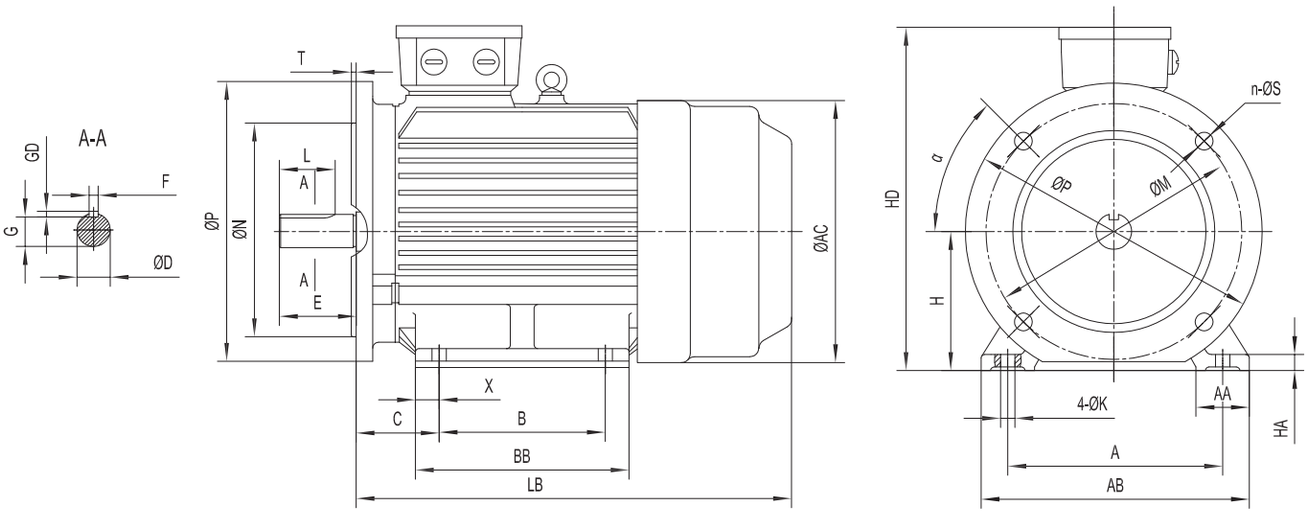
Frame Size	Pole	Main Dimension(mm)															
		D	E	F	G	GD	L	M	N	P	S	T	AC	HF	HJ	α	LB
80M	2,4,6	19	40	6	15.5	6	22	165	130	200	4-Φ12	3.5	159	237	137	45°	248
90S	2,4,6	24	50	8	20	7	32	165	130	200	4-Φ12	3.5	176	249	249		265/IE2 290/IE3
90L																	290/IE2 330/IE3
100L	2,4,6	28	60	8	24	7	40	215	180	250	4-Φ15	4	202	288	163		326
112M	2,4,6	28	60	8	24	7	40	215	180	250	4-Φ15	4	220	308	183		361
132S	2,4,6	38	80	10	33	8	56	265	230	300	4-Φ15	4	276	361	211		388
132M																	426
160M	2,4,6	42	110	12	37	8	80	300	250	350	4-Φ19	5	325	425	250		496
160L																	540
180M	2,4,6	48	110	14	42.5	9	80	300	250	350	4-Φ19	5	358	441	266		563
180L																	601
200L	2,4,6	55	110	16	49	10	80	350	300	400	4-Φ19	5	400	508	308		654
225S	4	60	140	18	53	11	100	400	350	450	8-Φ19	5	445	556	331	22.5°	664
225M	2	55	110	16	49	10	80										679
	4,6	60	140	18	53	11	100										
250M	2	60	140	18	53	11	105	500	450	550	8-Φ19	5	512	655	380		780
	4,6	65			58												
280S	2	65	140	18	58	11	105	500	450	550	8-Φ19	5	546	672	397		829
	4,6	75		20	67.5	12											
280M	2	65		18	58	11											880
	4,6	75		20	67.5	12											

OptIMity 3-phase induction motors

Dimension

OPT

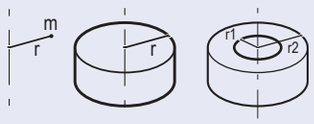
IM 2001 (IM B35)



Frame Size	Pole	Main Dimension(mm)																							
		A	B	C	D	E	F	G	GD	L	X	H	K	M	N	P	S	T	AA	BB	HA	AB	AC	HD	α	LB
80M	2,4,6	125	100	50	19	40	6	15.5	6	22	15	80	10	165	130	200	4-Φ12	3.5	32	135	10	160	159	217	45°	248
90S	2,4,6	140	100	56	24	50	8	20	7	32	20	90	10	165	130	200	4-Φ12	3.5	34	145	12	180	176	239		265/IE2 290/IE3
90L			125						7	32	20									170						290/IE2 330/IE3
100L	2,4,6	160	140	63	28	60	8	24	7	40	18	100	12	215	180	250	4-Φ15	4	39	186	14	200	202	263		326
112M	2,4,6	190	140	70	28	60	8	24	7	40	20	112	12	215	180	250	4-Φ15	4	45	200		230	220	295		361
132S	2,4,6	216	140	89	38	80	10	33	8	56	23	132	12	265	230	300	4-Φ15	4	55	190	18	265	276	343		388
132M			178						8	56	23									230						426
160M	2,4,6	254	210	108	42	110	12	37	8	80	25	160	15	300	250	350	4-Φ19	5	65	260	20	315	325	410		496
160L			254						8	80	25									304						540
180M	2,4,6	279	241	121	48	110	14	42.5	9	80	35	180	15	300	250	350	4-Φ19	5	70	311	22	355	358	446		563
180L			279						9	80	35									349						601
200L	2,4,6	318	305	133	55	110	16	49	10	80	32	200	19	350	300	400	4-Φ19	5	74	379	26	395	400	508		654
225S	4	356	286	149	60	140	18	53	11	100	50	225	19	400	350	450	8-Φ19	5	78	375	28	435	445	556	22.5°	664
225M	2		311		55	110	16	49	10	80	50									400						679
	4,6				60	140	18	53	11	100	50															
250M	2	406	349	168	60	140	18	53	11	105	67	250	24	500	450	550	8-Φ19	5	80	445	30	490	512	630		780
	4,6				65			58	11	105	67															
280S	2	457	368	190	65	140	18	58	11	105	85	280	24	500	450	550	8-Φ19	5	90	485	35	545	546	677		829
	4,6				75		20	67.5	12	105	85															
280M	2		419		65		18	58	11	105	85									536						880
	4,6				75		20	67.5	12	105	85															
315S	2	508	406	216	65	140	18	58	11	100	84	315	28	600	550	660	8-Φ24	6	120	570	45	635	630	855		1040
	4,6				80	170	22	71	14	130	84															1050
315M	2		457		65	140	18	58	11	100	84									610						1075
	4,6				80	170	22	71	14	130	84															
315L	2		508		65	140	18	58	11	100	84									680						1150
	4,6				80	170	22	71	14	130	84															
355L	2	610	630	254	80	170	22	71	14	140	76	355	28	740	680	800	8-Φ24	6	100	756	35	710	688	930		1303
	4,6				100	210	28	90	16	180																

Standard formulae used in electrical engineering

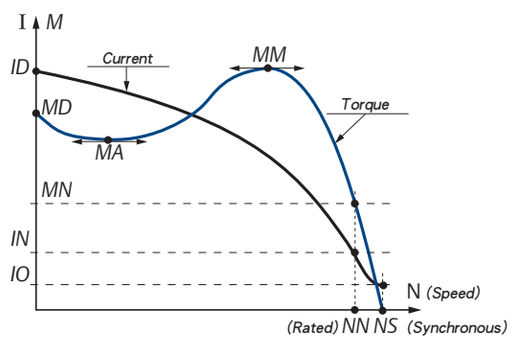
MECHANICAL FORMULAE

Title	Formula	Unit	Definitions / Notes
Force	$F = m \cdot \gamma$	F in N m in kg γ in m/s^2	A force F is the product of a mass m by an acceleration γ
Weight	$G = m \cdot g$	G in N m in kg g = 9.81 m/s^2	
Moment	$M = F \cdot r$	M in N.m F in N r in m	The torque M of a force in relation to an axis is the product of that force multiplied by the distance r of the point of application of F in relation to the axis.
Power - rotating	$P = M \cdot \omega$	P in W M in N.m ω in rad/s	Power P is the quantity of work yielded per unit of time $\omega = 2\pi N/60$ where N is the speed of rotation in min^{-1}
- linear	$P = F \cdot V$	P in W F in N V in m/s	V = linear velocity
Acceleration time	$t = J \cdot \frac{\omega}{M_a}$	t in s J in kg.m^2 ω in rad/s M_a in Nm	J is the moment of inertia of the system M_a is the moment of acceleration Note: All the calculations refer to a single rotational speed ω where the inertias at speed ω' are corrected to speed ω by the following calculation: $J_\omega = J_{\omega'} \cdot \left(\frac{\omega'}{\omega}\right)^2$
Moment of inertia Centre of gravity	$J = m \cdot r^2$		
Solid cylinder around its axis	$J = m \cdot \frac{r^2}{2}$	J in kg.m^2 m in kg r in m	
Hollow cylinder around its axis	$J = m \cdot \frac{r_1^2 + r_2^2}{2}$		
Inertia of a mass in linear motion	$J = m \cdot \left(\frac{v}{\omega}\right)^2$	J in kg.m^2 m in kg v in m/s ω in rad/s	The moment of inertia of a mass in linear motion transformed to a rotating motion.

Standard formulae used in electrical engineering

ELECTRICAL FORMULAE

Title	Formula	Unit	Definitions / Notes
Accelerating torque	$M_a = \frac{M_D + 2M_A + 2M_M + M_N}{6} - M_r$ *General formula:* $M_a = \frac{1}{N_N}\int_0^{N_N}(M_{mot} - M_r)\,dN$	*Nm*	Moment of acceleration M_a is the difference between the motor torque M_{mot} (estimated), and the resistive torque M_r. (M_D, M_A, M_M, M_N, see curve below) N = instantaneous speed N_N = rated speed
Power required by the machine	$P = \frac{M \,.\, \omega}{\eta_A}$	*P* in W *M* in N.m ω in rad/s η_A no units	η_A expresses the efficiency of the driven machine. *M* is the torque required by the driven machine.
Power drawn by the 3-phase motor	$P = \sqrt{3} \,.\, U \,.\, I \,.\, \cos\varphi$	*P* in W *U* in V *I* in A	φ phase angle by which the current lags or leads the voltage. *U* armature voltage. *I* line current.
Reactive power drawn by the motor	$Q = \sqrt{3} \,.\, U \,.\, I \,.\, \sin\varphi$	Q in VAR	
Reactive power supplied by a bank of capacitors	$Q = \sqrt{3} \,.\, U^2 \,.\, C \,.\, \omega$	*U* in V *C* in μ F ω in rad/s	*U* = voltage at the capacitor terminals *C* = capacitor capacitance ω = rotational frequency of supply phases ($\omega = 2\pi f$)
Apparent power	$S = \sqrt{3} \,.\, U \,.\, I$ $S = \sqrt{P^2 + Q^2}$	S in VA	
Power supplied by the 3-phase motor	$P = \sqrt{3} \,.\, U \,.\, I \,.\, \cos\varphi \,.\, \eta$		η expresses motor efficiency at the point of operation under consideration.
Slip	$g = \frac{N_S - N}{N_S}$		Slip is the difference between the actual motor speed *N* and the synchronous speed N_S
Synchronous speed	$N_S = \frac{120 \,.\, f}{p}$	N_S in min^{-1} *f* in Hz	*p* = number of poles *f* = frequency of the power supply

Parameters	Symbol	Unit	Torque and current curve as a function of speed
Starting current **Rated current** **No-load current**	I_D I_N I_O	A	
Starting torque* **Run up torque** **Breakdown torque** **Rated torque**	M_D M_A M_M M_N	Nm	
Rated speed **Synchronous speed**	N_N N_S	min^{-1}	

** Torque is the usual term for expressing the moment of a force.*

Tolerance on main performance parameters

TOLERANCES ON ELECTROMECHANICAL CHARACTERISTICS

IEC 60034-1 specifies standard tolerances for electromechanical characteristics.

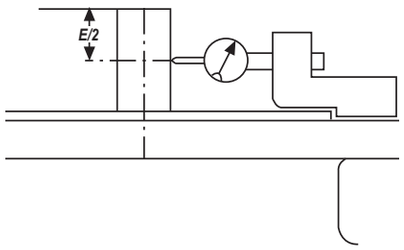
Parameters		Tolerances
Efficiency	machines P ≤ 150 kW	**– 15% of (1 – η)**
	machines P > 150 kW	**– 10% of (1 – η)**
Cos ϕ		**– 1/6 (1 – cos φ) (min 0.02 - max 0.07)**
Slip	machines P < 1 kW	**± 30%**
	machines P ≥ 1 kW	**± 20%**
Locked rotor torque		**– 15%, + 25% of rated torque**
Starting current		**+ 20%**
Run-up torque		**– 15% of rated torque**
Maximum torque		**-10% of rated torque > 1.5 M_N**
Moment of inertia		**± 10%**
Noise		**+ 3 dB (A)**
Vibration		**+ 10% of the guaranteed class**

Note: IEC 60034-1 - does not specify tolerances for current
- the tolerance is ± 10% in NEMA-MG1

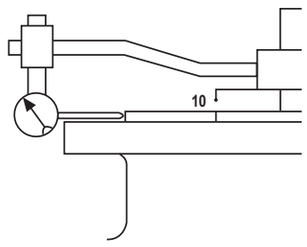
TOLERANCES AND ADJUSTMENTS

The standard tolerances shown below are applicable to the drawing dimensions given in our catalogues. They comply fully with the requirements of IEC standard 60072-1.

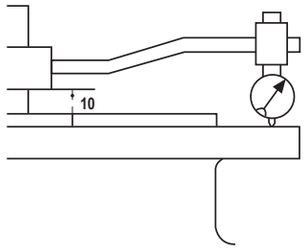
Characteristics	Tolerances
Frame size H ≤ 250	**0, — 0.5 mm**
≥ 280	**0, — 1 mm**
Diameter φ of the shaft extension:	
- 11 to 28 mm	**j6**
- 32 to 48 mm	**k6**
- 55 mm and over	**m6**
Diameter N of flange spigots	**j6 up to FF 500, js6 for FF 600 and over**
Key width	**h9**
Width of drive shaft keyway (normal keying)	**N9**
Key depth:	
- square section	**h9**
- rectangular section	**h11**
① ***Eccentricity of shaft in flanged motors*** (standard class)	
- diameter > 10 up to 18 mm	**0.035 mm**
- diameter > 18 up to 30 mm	**0.040 mm**
- diameter > 30 up to 50 mm	**0.050 mm**
- diameter > 50 up to 80 mm	**0.060 mm**
- diameter > 80 up to 120 mm	**0.070 mm**
② ***Concentricity of spigot diameter*** and ③ ***perpendicularity of mating surface of flange in relation to shaft*** (standard class)	
Flange (FF) or Faceplate (FT):	
- F 55 to F 115	**0.08 mm**
- F 130 to F 265	**0.10 mm**
- FF 300 to FF 500	**0.125 mm**
- FF 600 to FF 740	**0.16 mm**
- FF 940 to FF 1080	**0.20 mm**



① ***Eccentricity of shaft in flanged motors***



② ***Concentricity of spigot diameter***



③ ***Perpendicularity of mating surface of flange in relation to shaft***

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