S series

Rossi

Heavy duty roller table motors

rossi.com

Contents

Rossi for You

Innovation
Rossi offers a wide range of solutions for an evolving industry, flexible and innovative gearboxes and gearmotors for customer tailored solutions to maximize performance and minimize the total cost of ownership.

High quality, 3 years warranty
Our drive is to innovate and boost operations by manufacturing performing, precise, reliable and high-quality products all over the world. We are always one step forward in offering and developing solutions that can satisfy an unlimited number of application needs, even in the most demanding conditions.

Reliability
We are a reliable company with the right flexibility and know-how to respond to worldwide market requests, in all application fields, without leaving aside our commitment for the environment and value on human safety, to protect everyone's future.

Tools and processes
We continue to invest in new tools and processes, so our highly skilled specialist team in different fields are supporting you to find the best solution suitable for your demands, always by your side on every step of the project.

After-sale service
Highly trained mechanics and support teams can ensure a fast and efficient after-sale service providing support worldwide.

Digital support
Alongside our 24/7 Rossi for You support portal you have a suite of digital support tools enabling real time access to your order tracking, invoices, spare part tables download and contact to our service.

Experience
70 YEARS

Shaped by over 70 years of history Rossi meets your unique needs whether you need a standard design or a customized solution.


ROSSI

Global presence local service

Local support
Sales, customer service,
technical support, spare parts

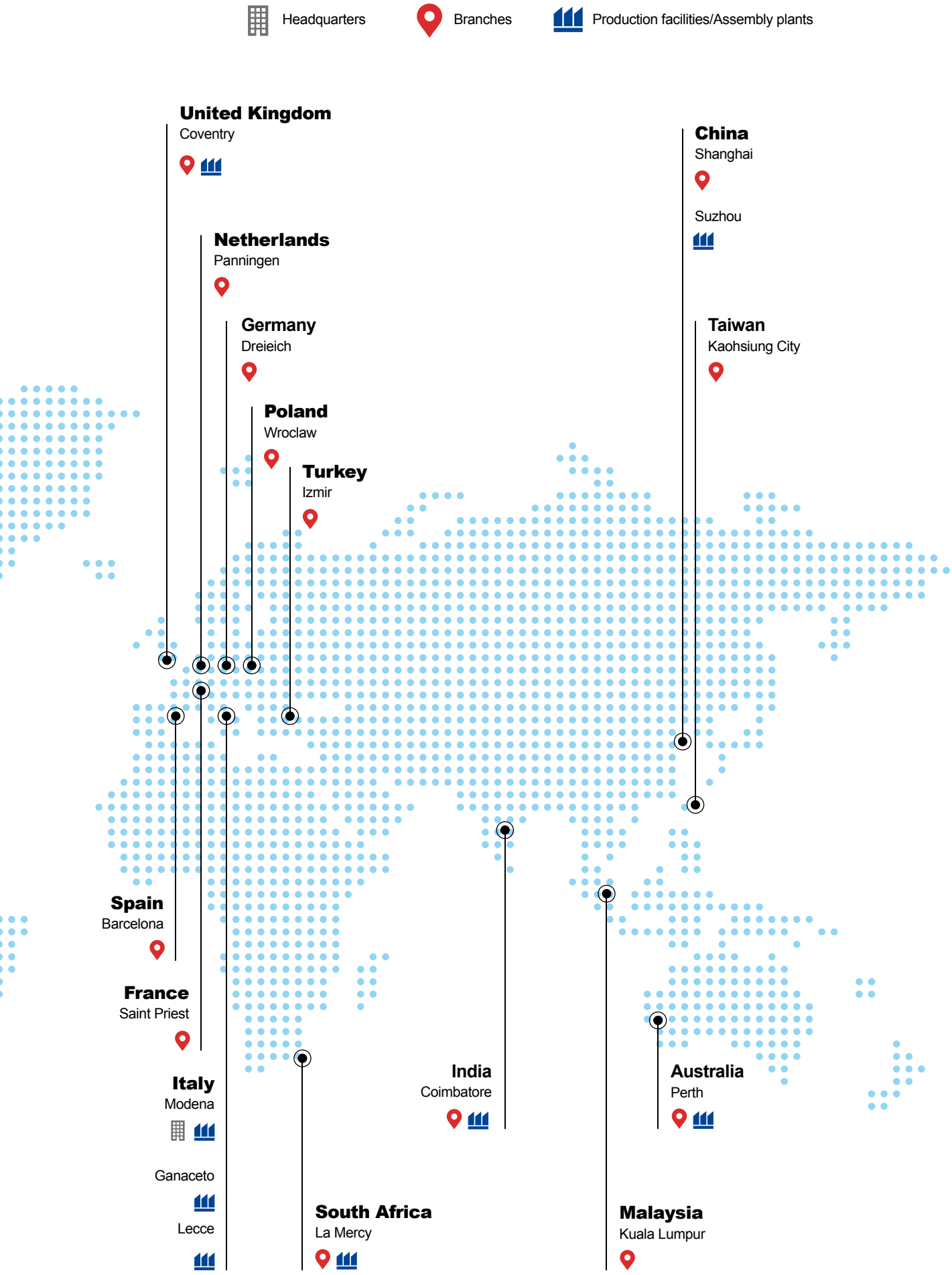
15 branches*

Worldwide distribution network*

A widespread sales network of subsidiaries and dealers in nearly all industrialized countries. By your side from the design to after-sale phase, Rossi is a flexible and dependable partner throughout the world.

Rossi for You, our customer web portal, provides a 24/7 global coordination of the ordering, supply and service processes.

*All contacts available on **www.rossi.com**

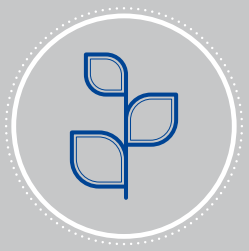

Headquarters
Branches
Production facilities/Assembly plants
United Kingdom
Coventry
Netherlands
Panningen
Germany
Dreieich
Poland
Wroclaw
Turkey
Izmir
China
Shanghai
Suzhou
Taiwan
Kaohsiung City
Spain
Barcelona
France
Saint Priest
Italy
Modena
Ganaceto
Lecce
India
Coimbatore
South Africa
La Mercy
Malaysia
Kuala Lumpur
Australia
Perth

III

Features & benefits

Maximum performance

We drive the heaviest applications worldwide



Sustainability

Compliance with the latest energy efficiency regulations

Modular system

Maximum flexibility and cost efficiency

Innovation

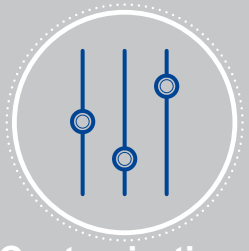
We are constantly thinking forward, solutions for an evolving industry

Digitalization

Rossi for You is always at your disposal for any info

Know-how

We support you through interdisciplinary know-how



Customization

Cost-effeciency starting from standard solutions

Features & Benefits

- IEC Roller table motors coupled with Rossi gear reducers, especially designed for heavy duty applications

➔ **High performance and reliability in long term services under heavy duty conditions**

- Cast iron housing with strong construction on all areas of design

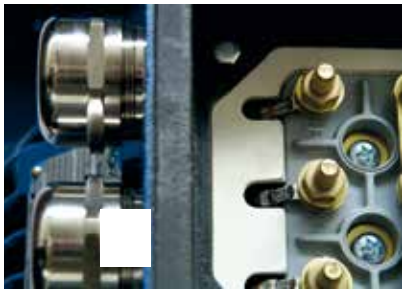
➔ **Maximum resistance to mechanical and electrical stresses**

- Cooling by natural convection (IC 410) provided by specialized motor frame with ring fins

➔ **Designed to maximize cooling, even at zero speed, and to reduce dust accumulation**

Features & Benefits

- Wide terminal box in cast iron with metal cable glands



➔ **Easy wiring operations for fast commissioning**

Designation 1

5RES 160S 4 230.400 - 50 B5

MOUNTING POSITION:	**B5**
SUPPLY: [V]	**Δ 230 Y 400 - 50** **Δ 265 Y 460 - 60**
NUMBERS OF POLES:	**4, 6**
MOTOR SIZE:	**112S ... 250LX**
MOTOR TYPE:	**5RES, 5REF**[1)]

The designation is to be completed stating power P_N [kW], and duty service (eg.: S1, S3 25% etc.), plus non-standard designs, if any.

ES.: 5RES 160L 4 230.400 - 50 B5 $\boldsymbol{P_N}$ **= 11kW S3 75%** H insulation class

1) Motor with brake; see ch. 6.

Specifications 2

IEC standard asynchronous three-phase **4** and **6** poles motors with cage rotor, totally **enclosed**, **without fan** (IC 410), especially designed and manufactured for inverter feeding in the iron and steel industries, in particular heavy duty and transport roller tables.
The motors combined with coaxial, helical and bevel helical gear reducers from the manufacturing program of Rossi (**wide**, **modular** and **high performance**) enable to obtain compact and reliable drive systems.
See E and G catalogs for details about train of gears, structural features and specific standards. Referring to light duty roller tables, please consult the catalog TX.

Specifications:

- motor cooled by **natural convection** over a large radiating surface area and obtained by ring fins, for maximum cooling and minimum dust accumulation;
- endshields, housing and terminal box made of cast iron; **supported** endshields and flanges;
- full metal construction in order to withstand high temperatures and / or radiation;
- **particularly strong** mechanical construction ensuring high reliability;
- electrical specifications and insulation system designed for inverter feeding;
- constant nominal torque throughout the speed range for frequency ≤ rated frequency;
- high thermal inertia.

Main structural features

- Sizes **112 ... 250**;
- 4, 6 poles, Δ Y connection with standard or customized voltage and frequency;
- **IP 55** protection (higher on request);
- **insulation class F** (class H on request); materials and impregnation type allow use in tropical climates without further treatments; overtemperature class F; **additional winding impregnation** cycle after stator winding assembly;
- three **thermistors** PTC 150° C type (DIN 44081) **wired in series** as standard: terminals onto dedicated block in terminal box;
- ring fins for a large radiating surface and constant cooling in dusty environment; no derating in torque is needed for continuous duty at low frequencies;
- mounting position **B5**;
- **IEC standardised** mating dimensions under **accuracy rating**;
- motor shaft made of steel C40 UNI 7845;
- endshields and housing made of G20 UNI 5007 **cast iron, supported endshields and flanges**;
- ball bearings lubricated **«for life»** assuming pollution-free surrounding;
- cast iron (light alloy for 5REF) terminal box with 2 metal cable glands; position 90° apart;
- additional earth terminal outside the housing identified by proper plate;
- dynamically balanced rotor, vibration speed to class N;
- paint: blue RAL 5010 DIN 1843 double-compound synthetic paint, weatherproof, with excellent resistance to industrial environments and suitable for the application of further coats of synthetic paints;
- wide range of accessories available (brake, encoder, etc., see ch. 6).

Motor size	Bearing D-E	Bearing N-D-E	Housing	Flange D-E	Endshield N-D-E	Terminal box cover	Seal dimensions	Terminal block	Cable gland
112	6306 2Z C3	6206 2Z C3	G	G	G	G-LL[1)]	30 / 47 / 7	M5	2x M32 x 1,5
132	6308 2Z C3	6208 2Z C3	G	G	G	G-LL[1)]	40 / 55 / 7	M6	2x M32 x 1,5
160	6309 2Z C3	6309 2Z C3	G	G	G	G-LL[1)]	45 / 60 / 8	M8	2x M40 x 1,5
180	6310 2Z C3	6310 2Z C3	G	G	G	G-LL[1)]	50 / 65 / 8	M8	2x M40 x 1,5
200	6312 2Z C3	6312 2Z C3	G	G	G	G-LL[1)]	60 / 85 / 8	M8	2x M40 x 1,5
250	6314 C3 *	6314 C3 *	G	G	G	G-LL[1)]	70 / 100 / 10	M10	2x M40 x 1,5

LL = light alloy
G = cast iron
1) LL for 5REF
* greaser as standard for size 250

Selection tables 3

Data are valid for nominal voltage and frequency **400 V 50 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S1[1)]

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**4**	1,8	1445	**11,9**	4,0	2,4	0,79	83,3	3,9	**46**	22	850	0,82	0,097	44
112M	**4**	2,2	1445	**14,5**	4,7	2,8	0,80	84,3	3,9	**56**	26	865	0,81	0,012	50
112L	**4**	2,6	1445	**17,2**	5,5	3,3	0,79	85,3	4,1	**70**	33	840	0,80	0,015	55
132S	**4**	3	1460	**19,6**	6,4	3,8	0,77	87,1	3,3	**65**	30	1150	0,76	0,025	70
132M	**4**	3,7	1455	**24,3**	7,8	4,6	0,78	87,8	3,5	**86**	39	1080	0,77	0,031	75
132L	**4**	4,5	1460	**29,4**	9,5	5,8	0,77	88,2	3,8	**113**	50	1065	0,77	0,036	81
160S	**4**	6,5	1475	**42,1**	14,2	9,0	0,75	88,7	3,7	**156**	68	1250	0,74	0,068	127
160M	**4**	8	1475	**51,8**	16,7	10,4	0,76	90,8	4,1	**212**	90	1255	0,75	0,087	143
160L	**4**	9,5	1475	**61,5**	19,5	11,6	0,77	91,0	4,0	**246**	107	1235	0,74	0,099	152
180S	**4**	11	1470	**71,5**	21,2	10,5	0,82	91,4	3,1	**222**	95	1280	0,71	0,163	190
180M	**4**	12,5	1470	**81,2**	23,9	11,8	0,83	91,3	3,3	**270**	115	1265	0,73	0,188	205
200S	**4**	14,5	1475	**93,9**	28,1	14,6	0,82	91,1	3,7	**346**	147	1270	0,74	0,207	230
200M	**4**	17,5	1480	**112,9**	32,5	15,9	0,84	92,6	3,9	**445**	183	1285	0,74	0,247	252
200L	**4**	19,5	1475	**126,2**	35,8	16,7	0,85	92,6	3,9	**490**	200	1280	0,74	0,295	275
250S	**4**	26	1485	**167,2**	47,6	21,5	0,85	92,8	3,5	**578**	235	1380	0,73	0,528	421
250M	**4**	31	1485	**199,3**	55,5	23,6	0,86	93,2	3,5	**706**	290	1365	0,72	0,653	464
250L	**4**	37	1485	**237,9**	65,3	26,3	0,87	93,4	3,5	**835**	336	1365	0,73	0,778	507
250LX	**4**	42	1485	**270,1**	76,0	35,2	0,85	94,1	3,8	**1030**	417	1375	0,72	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**6**	1,3	955	**13,0**	3,1	3,1	0,75	81,3	2,8	**36**	12	690	0,79	0,017	47
112M	**6**	1,6	960	**15,9**	3,9	2,6	0,72	82,0	3,0	**48**	15	685	0,78	0,019	50
112L	**6**	1,9	960	**18,9**	4,6	3,0	0,73	82,7	3,1	**58**	18	675	0,77	0,023	55
132S	**6**	2,4	960	**23,9**	5,4	3,1	0,78	82,4	2,6	**61**	19	745	0,77	0,034	67
132M	**6**	3	960	**29,8**	6,7	4	0,77	83,5	2,8	**84**	26	735	0,77	0,042	73
132L	**6**	3,6	965	**35,6**	7,9	4,7	0,77	84,9	2,9	**105**	32	725	0,76	0,049	80
160S	**6**	5,5	965	**54,4**	12,3	7,8	0,75	86,9	3,4	**185**	56	700	0,76	0,098	128
160M	**6**	6,5	970	**64,0**	14,7	9,7	0,73	88,2	3,9	**250**	73	725	0,74	0,127	142
160L	**6**	8	970	**78,8**	17,8	11,7	0,73	88,5	3,9	**305**	89	730	0,74	0,155	159
180L	**6**	9	970	**88,6**	17,9	9,5	0,81	89,3	3,4	**300**	90	755	0,75	0,224	196
180S	**6**	10	970	**98,4**	19,7	10,5	0,81	90,0	3,6	**350**	100	755	0,75	0,264	219
200S	**6**	10	980	**97,4**	20,8	12,3	0,78	89,4	3,5	**340**	97	825	0,75	0,351	236
200M	**6**	12,5	980	**121,8**	25,6	14,7	0,78	89,8	3,4	**419**	119	830	0,75	0,440	262
200L	**6**	14	980	**136,4**	17,6	17,6	0,77	149,4	3,7	**506**	144	830	0,74	0,495	287
250S	**6**	18	985	**174,5**	35,3	17,8	0,80	92,2	2,7	**467**	132	916	0,69	0,858	445
250M	**6**	21	985	**203,6**	40,3	19,4	0,81	92,4	2,7	**550**	155	915	0,70	1,031	488
250L	**6**	24	990	**231,5**	47,7	25,6	0,79	92,0	3,1	**712**	198	935	0,70	1,239	532
250LX	**6**	27	990	**260,4**	52,3	26,1	0,81	92,2	2,9	**755**	210	935	0,70	1,845	567

1) Duty type S1

Continuous duty; operation at constant load for a time long enough to reach the thermal equilibrium.

Data are valid for nominal voltage and frequency **400 V 50 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 75%

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**4**	2,1	1450	**13,8**	4,7	3,0	0,76	83,8	3,9	**54**	26	895	0,81	0,097	44
112M	**4**	2,6	1450	**17,1**	5,7	3,6	0,77	84,8	4,1	**70**	33	865	0,80	0,012	50
112L	**4**	3,3	1450	**21,7**	7,1	4,4	0,78	85,8	4,2	**91**	43	845	0,79	0,015	55
132S	**4**	3,5	1465	**22,8**	7,6	4,6	0,76	87,3	3,3	**76**	35	1160	0,76	0,025	70
132M	**4**	4,3	1460	**28,1**	9,3	5,9	0,75	88,1	3,7	**104**	47	1090	0,76	0,031	75
132L	**4**	5,2	1460	**34,0**	11,0	6,7	0,77	88,4	3,7	**126**	57	1075	0,76	0,036	81
160S	**4**	7,5	1470	**48,7**	15,5	8,8	0,78	89,0	3,2	**157**	69	1250	0,73	0,068	127
160M	**4**	9,2	1475	**59,6**	19,2	11,7	0,76	90,9	3,9	**230**	99	1250	0,74	0,087	143
160L	**4**	11	1475	**71,2**	22,5	13,4	0,77	91,1	3,8	**270**	117	1245	0,73	0,099	152
180S	**4**	12,5	1470	**81,2**	24,0	11,6	0,82	91,6	3,0	**245**	105	1285	0,70	0,163	190
180M	**4**	14,5	1470	**94,2**	27,5	13,2	0,83	91,4	3,2	**300**	125	1265	0,73	0,188	205
200S	**4**	18	1470	**116,9**	34,5	17,2	0,83	91,2	3,3	**388**	164	1275	0,74	0,207	230
200M	**4**	21	1475	**136,0**	39,1	19,1	0,84	92,8	3,8	**513**	213	1285	0,73	0,247	252
200L	**4**	24	1475	**155,4**	43,8	20,1	0,85	92,8	3,7	**576**	237	1280	0,73	0,295	275
250S	**4**	32	1485	**205,8**	58,8	26,8	0,84	93,0	3,3	**678**	276	1380	0,72	0,528	421
250M	**4**	38	1485	**244,4**	68,5	30	0,86	93,4	3,5	**855**	352	1370	0,72	0,653	464
250L	**4**	45	1485	**289,4**	80,2	34,3	0,86	93,7	3,6	**1042**	426	1365	0,72	0,778	507
250LX	**4**	50	1485	**321,5**	90,8	42,4	0,84	94,2	3,7	**1182**	483	1380	0,71	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**6**	1,6	960	**15,9**	3,9	2,7	0,72	81,2	2,9	**46**	15	695	0,79	0,017	47
112M	**6**	1,9	960	**18,9**	4,9	3,5	0,68	82,0	3,1	**59**	19	685	0,77	0,019	50
112L	**6**	2,2	960	**21,9**	5,5	3,8	0,70	82,7	3,1	**68**	22	680	0,77	0,023	55
132S	**6**	3	960	**29,8**	7,0	4,2	0,76	82,4	2,6	**77**	25	745	0,76	0,034	67
132M	**6**	3,8	960	**37,8**	8,6	5,1	0,76	83,7	2,8	**104**	32	735	0,76	0,042	73
132L	**6**	4,6	965	**45,5**	10,3	6,3	0,76	84,8	2,9	**133**	41	725	0,76	0,049	80
160S	**6**	6,4	965	**63,3**	14,3	9,1	0,74	87,3	3,4	**214**	65	705	0,75	0,098	128
160M	**6**	7,5	975	**73,5**	16,9	11,2	0,72	88,5	3,8	**282**	84	730	0,74	0,127	142
160L	**6**	9,2	975	**90,1**	20,8	13,9	0,72	88,9	4,0	**358**	106	735	0,73	0,155	159
180S	**6**	10	970	**98,4**	19,7	10,2	0,82	89,4	3,3	**322**	95	770	0,75	0,224	196
180M	**6**	11	975	**107,7**	21,6	11,4	0,81	90,2	3,5	**381**	109	765	0,75	0,264	219
200S	**6**	11,5	980	**112,1**	23,9	14,1	0,77	89,5	3,5	**388**	113	830	0,74	0,351	236
200M	**6**	14,5	980	**141,3**	29,9	17,5	0,78	90,1	3,5	**493**	143	825	0,73	0,440	262
200L	**6**	17	980	**165,7**	34,5	19,4	0,79	90,3	3,4	**557**	160	830	0,73	0,495	287
250S	**6**	23	985	**223,0**	44,7	21,6	0,80	92,3	2,5	**560**	160	915	0,69	0,858	445
250M	**6**	27	985	**261,8**	51,6	24,3	0,82	92,6	2,6	**680**	190	915	0,69	1,031	488
250L	**6**	31	990	**299,0**	60,3	30	0,80	92,3	2,7	**820**	230	930	0,69	1,239	532
250LX	**6**	34	990	**328,0**	65,0	31	0,82	92,5	2,7	**878**	243	935	0,70	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period. Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % $= \frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

Data are valid for nominal voltage and frequency **400 V 50 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 50%

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	$cos\varphi_k$	J_0 kg m^2	m kg
112S	**4**	2,4	1450	**15,8**	5,3	3,3	0,77	84,4	3,7	**59**	28	930	0,80	0,097	44
112M	**4**	3	1450	**19,8**	6,5	4	0,78	85,4	3,9	**77**	36	920	0,79	0,012	50
112L	**4**	3,8	1450	**25,0**	8,2	5	0,78	86,4	4,1	**102**	47	900	0,78	0,015	55
132S	**4**	4,5	1460	**29,4**	10,7	7,4	0,70	86,4	3,3	**96**	45	1155	0,75	0,025	70
132M	**4**	5,5	1455	**36,1**	11,6	6,8	0,78	87,8	3,2	**115**	52	1110	0,76	0,031	75
132L	**4**	6,5	1455	**42,7**	13,7	8	0,78	88,3	3,3	**142**	64	1085	0,75	0,036	81
160S	**4**	8,5	1475	**55,0**	21,2	15,5	0,66	88,0	3,6	**200**	90	1250	0,72	0,068	127
160M	**4**	10,6	1475	**68,6**	22,2	13,6	0,76	91,0	3,7	**251**	108	1265	0,73	0,087	143
160L	**4**	12	1475	**77,7**	25,4	16	0,75	91,2	3,8	**298**	128	1260	0,73	0,099	152
180S	**4**	14,5	1470	**94,2**	27,6	12,9	0,83	91,9	2,9	**270**	115	1295	0,70	0,163	190
180M	**4**	18	1470	**116,9**	34,9	17,9	0,81	91,6	3,2	**375**	160	1275	0,72	0,188	205
200S	**4**	22	1470	**142,9**	42,7	21,5	0,82	91,2	3,1	**440**	189	1275	0,72	0,207	230
200M	**4**	27	1475	**174,8**	50,7	24,7	0,83	92,7	3,4	**595**	250	1280	0,72	0,247	252
200L	**4**	32	1470	**207,9**	58,4	25,9	0,85	92,7	3,3	**685**	282	1280	0,73	0,295	275
250S	**4**	40	1480	**258,1**	72,6	30,5	0,85	93,2	2,9	**740**	306	1380	0,71	0,528	421
250M	**4**	48	1485	**308,7**	85,6	34,7	0,87	93,6	3,1	**950**	390	1375	0,71	0,653	464
250L	**4**	55	1485	**353,7**	97,8	40,8	0,86	93,9	3,3	**1180**	485	1370	0,71	0,778	507
250LX	**4**	65	1485	**418,0**	118,2	53,8	0,84	94,2	3,3	**1365**	560	1380	0,71	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	$cos\varphi_k$	J_0 kg m^2	m kg
112S	**6**	1,9	950	**19,1**	4,7	3,3	0,79	73,5	2,3	**44**	15	705	0,77	0,017	47
112M	**6**	2,3	965	**22,8**	5,9	4,1	0,69	81,4	2,8	**64**	21	690	0,77	0,019	50
112L	**6**	2,6	960	**25,9**	6,6	4,6	0,69	82,6	3,0	**77**	24	690	0,76	0,023	55
132S	**6**	3,6	970	**35,4**	10,0	7,5	0,64	82,0	2,9	**102**	33	775	0,73	0,034	67
132M	**6**	4,2	965	**41,6**	10,7	7,7	0,68	83,4	3,1	**130**	41	740	0,74	0,042	73
132L	**6**	5,1	970	**50,2**	12,5	8,8	0,69	84,8	3,2	**161**	50	740	0,75	0,049	80
160S	**6**	6,8	975	**66,6**	16,0	11,1	0,70	87,8	3,8	**253**	76	730	0,74	0,098	128
160M	**6**	9,3	970	**91,6**	20,7	13,3	0,73	88,6	3,5	**322**	96	745	0,73	0,127	142
160L	**6**	12	970	**118,1**	26,7	17,4	0,73	88,8	3,5	**417**	122	745	0,73	0,155	159
180S	**6**	13	975	**127,3**	26,1	14,3	0,80	89,7	3,4	**439**	128	775	0,75	0,224	196
180M	**6**	15	970	**147,7**	29,3	15,2	0,82	90,4	3,4	**500**	142	770	0,74	0,264	219
200S	**6**	16	975	**156,7**	32,6	16,4	0,79	89,6	3,1	**480**	140	830	0,74	0,351	236
200M	**6**	18,5	980	**180,3**	37,8	21,4	0,78	90,2	3,3	**587**	169	835	0,73	0,440	262
200L	**6**	21	980	**204,6**	42,8	24,5	0,78	90,5	3,3	**685**	197	835	0,73	0,495	287
250S	**6**	30	985	**290,8**	58,7	28,3	0,80	92,4	2,4	**686**	196	915	0,68	0,858	445
250M	**6**	38	985	**368,4**	72,5	32,6	0,82	92,6	2,3	**860**	240	915	0,70	1,031	488
250L	**6**	42	985	**407,2**	80,5	36,3	0,82	92,4	2,3	**950**	267	930	0,69	1,239	532
250LX	**6**	48	985	**465,3**	96,3	37	0,83	86,5	2,2	**1030**	286	930	0,70	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period.

Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % $= \frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

Data are valid for nominal voltage and frequency **400 V 50 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 25%

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**4**	2,8	1450	**18,4**	6,4	4,2	0,75	84,5	3,7	**68**	32	965	0,79	0,097	44
112M	**4**	3,5	1450	**23,1**	8,0	5,4	0,74	85,5	3,9	**90**	42	960	0,78	0,012	50
112L	**4**	4,5	1455	**29,5**	10,6	7,4	0,77	79,6	4,2	**123**	57	950	0,77	0,015	55
132S	**4**	6	1455	**39,4**	15,6	11,4	0,65	85,2	2,9	**115**	55	1155	0,72	0,025	70
132M	**4**	7,2	1450	**47,4**	16,6	11	0,72	87,1	3,0	**142**	65	1130	0,74	0,031	75
132L	**4**	9,2	1445	**60,8**	19,8	11,7	0,76	87,7	2,8	**172**	77	1115	0,74	0,036	81
160S	**4**	12	1465	**78,2**	27,5	17,7	0,71	88,6	2,8	**216**	98	1265	0,7	0,068	127
160M	**4**	15	1470	**97,4**	32,2	19,7	0,74	90,6	3,1	**298**	131	1266	0,71	0,087	143
160L	**4**	17	1470	**110,4**	38,2	25,3	0,71	90,6	3,3	**363**	159	1265	0,71	0,099	152
180S	**4**	20,5	1470	**133,2**	41,3	22	0,78	91,9	2,7	**365**	155	1305	0,68	0,163	190
180M	**4**	24	1470	**155,9**	46,2	22,2	0,82	91,6	2,7	**425**	180	1290	0,71	0,188	205
200S	**4**	28	1470	**181,9**	55,7	29	0,80	91,3	2,8	**505**	217	1290	0,71	0,207	230
200M	**4**	32	1475	**207,2**	64,0	36,3	0,78	92,7	3,4	**700**	297	1305	0,71	0,247	252
200L	**4**	36	1475	**233,1**	70,8	39,3	0,79	92,9	3,6	**828**	350	1300	0,71	0,295	275
250S	**4**	65	1475	**420,8**	117,9	41,6	0,86	92,7	2,1	**887**	366	1380	0,71	0,528	421
250M	**4**	78	1475	**505,0**	136,3	39,6	0,89	93,1	2,1	**1065**	428	1375	0,72	0,653	464
250L	**4**	90	1475	**582,7**	156,7	48,9	0,89	93,5	2,3	**1350**	546	1370	0,71	0,778	507
250LX	**4**	110	1475	**712,2**	196,9	71,2	0,86	93,8	2,3	**1610**	660	1380	0,70	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**6**	2,2	955	**22,0**	5,5	4,3	0,78	73,7	2,3	**50**	18	720	0,76	0,017	47
112M	**6**	2,8	955	**28,0**	7,3	5,1	0,68	81,4	2,6	**73**	24	715	0,75	0,019	50
112L	**6**	3,1	960	**30,8**	7,6	5,2	0,70	83,5	2,8	**85**	27	725	0,74	0,023	55
132S	**6**	4,2	965	**41,6**	11,7	8,6	0,64	81,1	2,6	**108**	35	765	0,72	0,034	67
132M	**6**	6	960	**59,7**	15,4	10,7	0,68	82,6	2,6	**153**	49	745	0,73	0,042	73
132L	**6**	7,2	965	**71,2**	18,5	13,1	0,67	83,7	2,8	**196**	63	745	0,73	0,049	80
160S	**6**	9,6	970	**94,5**	21,8	14,2	0,72	87,7	3,1	**297**	90	745	0,73	0,098	128
160M	**6**	13,2	970	**129,9**	29,8	19,2	0,72	88,2	3,0	**396**	118	765	0,72	0,127	142
160L	**6**	16,8	695	**230,8**	37,5	23,6	0,73	88,6	2,2	**500**	150	760	0,71	0,155	159
180S	**6**	18	970	**177,2**	35,3	17,8	0,82	89,9	3,0	**531**	153	790	0,74	0,224	196
180M	**6**	21	970	**206,7**	40,2	19,2	0,83	90,5	3,0	**617**	175	785	0,74	0,264	219
200S	**6**	22,5	975	**220,4**	47,1	26,9	0,77	89,6	2,8	**613**	181	835	0,72	0,351	236
200M	**6**	25	980	**243,6**	51,1	28,5	0,78	90,4	2,9	**718**	208	845	0,72	0,440	262
200L	**6**	28	980	**272,8**	58,4	34,5	0,76	90,8	3,2	**863**	249	850	0,72	0,495	287
250S	**6**	45	980	**438,5**	90,0	41,5	0,78	91,9	1,9	**850**	247	920	0,67	0,858	445
250M	**6**	55	980	**535,9**	110,3	53,4	0,78	92,3	2,1	**1115**	322	915	0,67	1,031	488
250L	**6**	70	985	**678,6**	143,3	69	0,77	91,7	1,9	**1305**	357	925	0,66	1,239	532
250LX	**6**	78	985	**756,2**	156,9	73	0,78	92,1	1,9	**1465**	420	925	0,67	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period.

Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % $= \frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

Selection tables 3

Data are valid for nominal voltage and frequency **460 V 60 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S1[1)]

4 poles

Motor		P_N	n_N	M_N	I_N	I_0	cosφ	η	$\frac{M_K}{M_N}$	M_K	I_K	n_K	cosφ$_k$	J_0	m
		kW	min^{-1}	N m	A	A		%		N m	A	min^{-1}		kg m^2	kg
112S	**4**	1,8	1725	**10,0**	3,4	1,8	0,81	82,3	3,1	**31**	15	1210	0,76	0,097	44
112M	**4**	2,2	1730	**12,1**	4,1	2,2	0,81	83,8	3,3	**40**	19	1215	0,76	0,012	50
112L	**4**	2,8	1730	**15,5**	5,1	2,7	0,81	85,0	3,2	**50**	23	1230	0,75	0,015	55
132S	**4**	3	1755	**16,3**	5,3	2,8	0,81	87,6	3,0	**49**	23	1445	0,75	0,025	70
132M	**4**	3,7	1755	**20,1**	6,5	3,5	0,81	88,2	3,3	**67**	31	1430	0,76	0,031	75
132L	**4**	4,5	1760	**24,4**	7,9	4,2	0,81	88,7	3,4	**84**	39	1415	0,76	0,036	81
160S	**4**	7	1765	**37,9**	12,0	6,1	0,81	90,2	2,9	**108**	49	1560	0,73	0,068	127
160M	**4**	9	1765	**48,7**	15,3	7,8	0,81	90,7	3,0	**148**	65	1555	0,74	0,087	143
160L	**4**	10,5	1765	**56,8**	17,9	9,3	0,81	90,8	3,2	**181**	80	1550	0,73	0,099	152
180S	**4**	11	1770	**59,3**	17,9	7,6	0,84	91,7	2,6	**155**	70	1600	0,70	0,163	190
180M	**4**	12,5	1765	**67,6**	19,7	7,8	0,86	92,4	2,7	**182**	80	1595	0,71	0,188	205
200S	**4**	14,5	1775	**78,0**	23,0	10	0,86	91,6	3,6	**280**	119	1565	0,73	0,207	230
200M	**4**	17,5	1775	**94,1**	28,9	14,5	0,83	91,8	3,8	**354**	155	1550	0,72	0,247	252
200L	**4**	19,5	1770	**105,2**	31,3	14,8	0,85	92,6	3,9	**413**	170	1520	0,72	0,295	275
250S	**4**	26	1785	**139,1**	42,3	21,5	0,82	94,2	3,7	**510**	220	1680	0,70	0,528	421
250M	**4**	31	1785	**165,8**	50,6	26,6	0,82	94,3	4,1	**682**	288	1675	0,71	0,653	464
250L	**4**	37	1785	**197,9**	62,3	34,2	0,80	93,7	3,9	**764**	328	1675	0,70	0,778	507
250LX	**4**	45	1785	**240,7**	72,9	35,9	0,82	93,9	3,6	**860**	367	1690	0,69	0,931	559

6 poles

Motor		P_N	n_N	M_N	I_N	I_0	cosφ	η	$\frac{M_K}{M_N}$	M_K	I_K	n_K	cosφ$_k$	J_0	m
		kW	min^{-1}	N m	A	A		%		N m	A	min^{-1}		kg m^2	kg
112S	**6**	1,4	1155	**11,6**	2,8	1,7	0,76	82,8	2,8	**32**	11	880	0,77	0,017	47
112M	**6**	1,7	1155	**14,1**	3,4	2,1	0,76	83,0	2,8	**39**	13	875	0,77	0,019	50
112L	**6**	2,1	1155	**17,4**	4,3	2,8	0,73	83,6	3,0	**52**	17	860	0,76	0,023	55
132S	**6**	2,4	1160	**19,8**	4,6	2,6	0,78	84,3	2,9	**58**	18	895	0,77	0,034	67
132M	**6**	3	1160	**24,7**	5,7	3,3	0,78	85,1	3,0	**74**	24	900	0,77	0,042	73
132L	**6**	3,6	1160	**29,6**	6,8	3,9	0,78	85,6	3,0	**89**	28	900	0,76	0,049	80
160S	**6**	5,2	1165	**42,6**	9,7	5,8	0,78	86,3	3,6	**152**	48	855	0,77	0,098	128
160M	**6**	6,5	1165	**53,3**	16,9	7,5	0,77	62,8	3,8	**202**	62	870	0,77	0,127	142
160L	**6**	8	1170	**65,3**	14,7	8,9	0,78	87,9	4,0	**263**	81	865	0,78	0,155	159
180S	**6**	9	1170	**73,5**	15,1	7,4	0,82	91,0	3,1	**231**	70	990	0,72	0,224	196
180M	**6**	10	1170	**81,6**	16,8	8,6	0,82	90,9	3,4	**278**	82	970	0,73	0,264	219
200S	**6**	10	1180	**80,9**	17,9	10,4	0,78	89,8	3,5	**286**	86	1025	0,73	0,351	236
200M	**6**	12,5	1180	**101,2**	22,4	13	0,78	90,3	3,6	**367**	109	1025	0,73	0,440	262
200L	**6**	14	1180	**113,3**	24,8	14,1	0,78	90,5	3,5	**400**	118	1025	0,73	0,495	287
250S	**6**	19	1185	**153,1**	32,7	15,8	0,79	91,6	2,4	**360**	107	1120	0,66	0,858	445
250M	**6**	22	1185	**177,3**	37,9	19	0,79	91,9	2,6	**458**	136	1115	0,68	1,031	488
250L	**6**	25	1185	**201,5**	42,0	19,4	0,81	92,7	2,4	**480**	141	1115	0,67	1,239	532
250LX	**6**	28	1185	**225,6**	47,1	22,1	0,81	92,7	2,5	**560**	161	1115	0,68	1,845	567

1) Duty type S1

Continuous duty; operation at constant load for a time long enough to reach the thermal equilibrium.

Data are valid for nominal voltage and frequency **460 V 60 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 75%

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**4**	2,1	1730	**11,6**	4,0	2,2	0,80	83,0	3,2	**37**	18	1230	0,76	0,097	44
112M	**4**	2,6	1735	**14,3**	4,8	2,7	0,80	84,6	3,4	**48**	23	1235	0,76	0,012	50
112L	**4**	3,3	1725	**18,3**	5,8	2,8	0,83	85,4	3,0	**54**	25	1250	0,75	0,015	55
132S	**4**	4	1755	**21,8**	7,1	3,8	0,81	87,8	3,0	**65**	30	1460	0,76	0,025	70
132M	**4**	4,7	1760	**25,5**	8,4	4,7	0,79	88,7	3,4	**87**	40	1440	0,75	0,031	75
132L	**4**	5,7	1755	**31,0**	9,9	5,3	0,81	88,9	3,3	**103**	47	1425	0,76	0,036	81
160S	**4**	8,5	1765	**46,0**	14,6	7,4	0,81	90,5	2,8	**129**	58	1560	0,72	0,068	127
160M	**4**	10,5	1765	**56,8**	17,9	9,1	0,81	90,9	3,0	**171**	77	1555	0,73	0,087	143
160L	**4**	12,5	1770	**67,4**	21,4	11,3	0,81	91,0	3,2	**215**	96	1545	0,75	0,099	152
180S	**4**	12,5	1765	**67,6**	20,2	8,2	0,85	91,8	2,5	**170**	75	1600	0,70	0,163	190
180M	**4**	14,5	1770	**78,2**	23,1	9,6	0,85	92,6	2,7	**215**	95	1590	0,71	0,188	205
200S	**4**	18,5	1770	**99,8**	29,8	14	0,85	92,0	3,9	**387**	166	1570	0,73	0,207	230
200M	**4**	22,5	1770	**121,4**	36,3	16,6	0,85	92,0	3,3	**404**	176	1550	0,72	0,247	252
200L	**4**	26	1770	**140,3**	41,8	20,3	0,84	92,9	4,0	**562**	242	1520	0,72	0,295	275
250S	**4**	32	1785	**171,2**	52,3	52,3	0,81	94,3	3,5	**600**	256	1680	0,71	0,528	421
250M	**4**	38	1785	**203,3**	63,6	35,3	0,79	94,4	4,1	**832**	353	1675	0,71	0,653	464
250L	**4**	45	1785	**240,7**	75,4	40,5	0,80	93,9	3,6	**862**	366	1680	0,70	0,778	507
250LX	**4**	55	1785	**294,2**	88,5	42,3	0,83	94,2	3,4	**986**	418	1690	0,70	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**6**	1,7	1155	**14,1**	3,4	2,1	0,75	83,4	2,8	**39**	13	880	0,76	0,017	47
112M	**6**	2,1	1155	**17,4**	4,3	2,7	0,74	83,3	2,8	**49**	16	880	0,77	0,019	50
112L	**6**	2,5	1155	**20,7**	5,1	3,3	0,73	84,3	3,0	**63**	20	865	0,75	0,023	55
132S	**6**	3	1160	**24,7**	5,7	3,3	0,78	84,8	2,9	**71**	23	895	0,77	0,034	67
132M	**6**	3,8	1160	**31,3**	7,1	4,1	0,78	85,4	2,9	**90**	29	900	0,76	0,042	73
132L	**6**	4,6	1165	**37,7**	8,9	5,5	0,76	86,0	3,2	**121**	39	895	0,76	0,049	80
160S	**6**	6,5	1165	**53,3**	12,4	7,9	0,76	86,6	3,7	**196**	62	855	0,77	0,098	128
160M	**6**	8,5	1165	**69,7**	16,0	10	0,76	87,4	3,8	**264**	81	870	0,77	0,127	142
160L	**6**	10	1170	**81,6**	18,2	10,9	0,78	88,2	4,0	**323**	99	870	0,78	0,155	159
180S	**6**	10	1170	**81,6**	16,6	7,9	0,83	91,0	3,0	**246**	72	990	0,72	0,224	196
180M	**6**	11	1170	**89,8**	18,2	8,5	0,84	91,0	3,1	**279**	82	975	0,72	0,264	219
200S	**6**	13	1180	**105,2**	23,2	13,5	0,78	90,2	3,5	**367**	110	1030	0,73	0,351	236
200M	**6**	16	1180	**129,5**	27,9	15,3	0,79	90,7	3,3	**430**	128	1030	0,72	0,440	262
200L	**6**	18	1180	**145,7**	32,0	18,6	0,78	90,9	3,6	**525**	155	1035	0,73	0,495	287
250S	**6**	25	1185	**201,5**	43,0	20,8	0,79	92,0	2,3	**470**	140	1120	0,67	0,858	445
250M	**6**	30	1185	**241,8**	51,9	26,7	0,79	92,3	2,6	**634**	187	1115	0,68	1,031	488
250L	**6**	35	1185	**282,0**	59,2	28,5	0,80	93,0	2,4	**690**	200	1120	0,67	1,239	532
250LX	**6**	40	1185	**322,3**	68,3	34,4	0,79	93,1	2,6	**846**	245	1115	0,67	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period.

Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % = $\frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

Data are valid for nominal voltage and frequency **460 V 60 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 50%

4 poles

Motor		P_N	n_N	M_N	I_N	I_0	$\cos\varphi$	η	$\frac{M_K}{M_N}$	M_K	I_K	n_K	$\cos\varphi_k$	J_0	m
		kW	min^{-1}	N m	A	A		%		N m	A	min^{-1}		kg m^2	kg
112S	**4**	2,4	1735	**13,2**	4,5	2,4	0,80	83,8	3,2	**42**	20	1270	0,76	0,097	44
112M	**4**	3	1735	**16,5**	5,5	3,1	0,80	85,3	3,3	**55**	25	1285	0,75	0,012	50
112L	**4**	3,8	1740	**20,9**	7,0	4	0,79	86,4	3,5	**74**	34	1280	0,75	0,015	55
132S	**4**	5	1760	**27,1**	9,8	6,3	0,73	87,7	3,3	**89**	42	1450	0,74	0,025	70
132M	**4**	6,5	1755	**35,4**	12,1	7,4	0,76	88,4	3,3	**115**	54	1425	0,75	0,031	75
132L	**4**	8	1755	**43,5**	14,8	8,9	0,77	88,9	3,4	**146**	68	1415	0,74	0,036	81
160S	**4**	10	1770	**54,0**	17,6	9,6	0,79	90,6	2,9	**155**	70	1575	0,71	0,068	127
160M	**4**	12	1770	**64,7**	21,6	12,7	0,77	91,1	3,4	**217**	98	1565	0,72	0,087	143
160L	**4**	14	1770	**75,5**	25,1	14,8	0,77	91,1	3,4	**258**	117	1560	0,72	0,099	152
180S	**4**	14,5	1770	**78,2**	23,4	9,8	0,84	92,2	2,6	**200**	85	1620	0,70	0,163	190
180M	**4**	18	1765	**97,4**	28,3	10,5	0,86	92,6	2,5	**240**	105	1590	0,70	0,188	205
200S	**4**	22,5	1775	**121,0**	35,7	15,8	0,86	92,2	3,6	**437**	187	1580	0,73	0,207	230
200M	**4**	28	1775	**150,6**	47,3	25,3	0,80	92,3	3,6	**541**	238	1560	0,71	0,247	252
200L	**4**	34	1775	**182,9**	57,5	32,2	0,80	93,0	4,4	**809**	349	1525	0,72	0,295	275
250S	**4**	40	1785	**214,0**	67,5	36,8	0,79	94,3	3,3	**710**	310	1680	0,69	0,528	421
250M	**4**	48	1785	**256,8**	79,8	42,8	0,80	94,5	3,6	**926**	392	1680	0,71	0,653	464
250L	**4**	55	1785	**294,2**	93,3	50,8	0,79	94,1	3,3	**982**	425	1680	0,68	0,778	507
250LX	**4**	65	1785	**347,7**	106,2	53	0,81	94,4	3,3	**1145**	490	1695	0,69	0,931	559

6 poles

Motor		P_N	n_N	M_N	I_N	I_0	$\cos\varphi$	η	$\frac{M_K}{M_N}$	M_K	I_K	n_K	$\cos\varphi_k$	J_0	m
		kW	min^{-1}	N m	A	A		%		N m	A	min^{-1}		kg m^2	kg
112S	**6**	2,1	1160	**17,3**	4,4	2,9	0,72	83,6	3,0	**51**	16	895	0,76	0,017	47
112M	**6**	2,5	1155	**20,7**	5,2	3,5	0,71	83,8	2,9	**60**	20	890	0,75	0,019	50
112L	**6**	3	1155	**24,8**	6,1	3,9	0,73	84,6	2,9	**71**	23	885	0,74	0,023	55
132S	**6**	4	1160	**32,9**	7,8	4,7	0,76	84,8	2,9	**95**	31	900	0,76	0,034	67
132M	**6**	4,5	1160	**37,0**	8,4	4,8	0,78	85,9	2,8	**105**	33	915	0,75	0,042	73
132L	**6**	5,5	1165	**45,1**	10,9	7	0,74	86,2	3,2	**145**	46	920	0,76	0,049	80
160S	**6**	8	1165	**65,6**	14,9	9,0	0,77	86,9	3,5	**228**	71	885	0,77	0,098	128
160M	**6**	10,5	1165	**86,1**	19,8	11,9	0,76	87,5	3,7	**317**	100	870	0,76	0,127	142
160L	**6**	13	1170	**106,1**	23,6	14	0,78	88,4	3,8	**405**	125	875	0,77	0,155	159
180S	**6**	13	1170	**106,1**	21,6	10,5	0,83	91,5	3,1	**326**	95	1000	0,72	0,224	196
180M	**6**	15	1170	**122,4**	24,8	11,9	0,83	91,3	3,1	**384**	112	985	0,73	0,264	219
200S	**6**	17	1180	**137,6**	30,1	17,1	0,78	90,6	3,3	**457**	137	1040	0,72	0,351	236
200M	**6**	20	1180	**161,9**	35,4	20,3	0,78	91,0	3,4	**557**	166	1040	0,72	0,440	262
200L	**6**	23	1180	**186,1**	40,5	23,2	0,78	91,3	3,5	**646**	190	1045	0,72	0,495	287
250S	**6**	33	1185	**265,9**	58,0	30	0,77	92,3	2,4	**637**	191	1120	0,67	0,858	445
250M	**6**	40	1185	**322,3**	69,6	36,1	0,78	92,5	2,5	**814**	242	1120	0,67	1,031	488
250L	**6**	47	1185	**378,7**	80,3	42,3	0,79	93,2	2,4	**917**	267	1120	0,67	1,239	532
250LX	**6**	55	1185	**443,2**	97,0	52,9	0,76	93,2	2,7	**1175**	344	1115	0,67	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period.

Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % $= \frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

Data are valid for nominal voltage and frequency **460 V 60 Hz**, maximum ambient temperature 40 °C and maximum altitude 1 000 m.

Duty S3[1] 25%

4 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**4**	2,8	1735	**15,4**	5,1	2,7	0,81	84,6	3,0	**47**	22	1320	0,75	0,097	44
112M	**4**	3,5	1740	**19,2**	6,4	3,5	0,80	86,0	3,3	**63**	29	1305	0,74	0,012	50
112L	**4**	4,5	1745	**24,6**	8,3	4,9	0,78	87,2	3,6	**89**	41	1300	0,73	0,015	55
132S	**4**	7	1750	**38,2**	14,3	9,5	0,70	87,1	2,8	**107**	52	1455	0,72	0,025	70
132M	**4**	8,1	1770	**43,7**	15,3	9,3	0,75	88,5	3,0	**130**	60	1465	0,74	0,031	75
132L	**4**	10	1755	**54,4**	19,0	11,8	0,74	88,7	3,1	**167**	78	1440	0,73	0,036	81
160S	**4**	14	1765	**75,7**	25,3	13,9	0,77	90,5	2,5	**190**	87	1590	0,70	0,068	127
160M	**4**	17	1770	**91,7**	30,6	17,5	0,76	91,1	2,8	**259**	118	1580	0,70	0,087	143
160L	**4**	19,5	1765	**105,5**	33,6	17,3	0,80	91,4	2,7	**287**	129	1580	0,71	0,099	152
180S	**4**	20,5	1770	**110,6**	32,9	13,2	0,84	92,6	2,4	**265**	115	1625	0,69	0,163	190
180M	**4**	24	1770	**129,5**	38,0	15,3	0,85	93,1	2,7	**355**	145	1610	0,70	0,188	205
200S	**4**	27	1780	**144,8**	44,1	22	0,83	92,5	4,0	**576**	248	1600	0,72	0,207	230
200M	**4**	33	1775	**177,5**	59,7	36,3	0,75	92,3	3,6	**631**	281	1580	0,70	0,247	252
200L	**4**	40	1780	**214,6**	73,6	48	0,73	93,0	4,7	**1000**	435	1545	0,70	0,295	275
250S	**4**	65	1775	**349,7**	103,9	42	0,84	94,0	2,2	**780**	332	1685	0,70	0,528	421
250M	**4**	78	1780	**418,5**	123,9	52,1	0,84	94,4	2,5	**1040**	442	1680	0,70	0,653	464
250L	**4**	93	1775	**500,3**	150,9	64,3	0,82	94,1	2,3	**1126**	484	1690	0,68	0,778	507
250LX	**4**	110	1780	**590,1**	174,1	68,6	0,84	94,4	2,3	**1343**	578	1695	0,68	0,931	559

6 poles

Motor		P_N kW	n_N min^{-1}	M_N N m	I_N A	I_0 A	cosφ	η %	$\frac{M_K}{M_N}$	M_K N m	I_K A	n_K min^{-1}	cosφ$_k$	J_0 kg m^2	m kg
112S	**6**	2,5	1155	**20,7**	5,1	3,3	0,73	83,8	2,7	**55**	18	910	0,75	0,017	47
112M	**6**	3	1155	**24,8**	6,3	4,2	0,71	84,3	2,7	**68**	22	910	0,74	0,019	50
112L	**6**	3,5	1160	**28,8**	7,6	5,4	0,68	84,4	3,0	**85**	28	905	0,73	0,023	55
132S	**6**	5	1160	**41,2**	10,3	6,8	0,72	85,0	2,8	**117**	38	935	0,75	0,034	67
132M	**6**	6,5	1160	**53,5**	13,8	9,4	0,70	85,2	2,9	**155**	50	925	0,74	0,042	73
132L	**6**	7,5	1160	**61,7**	15,1	9,7	0,73	86,1	2,9	**177**	57	925	0,74	0,049	80
160S	**6**	10	1170	**81,6**	19,9	13,3	0,72	87,1	3,7	**300**	95	900	0,75	0,098	128
160M	**6**	15	1165	**123,0**	29,5	19,3	0,73	87,4	3,4	**424**	134	890	0,75	0,127	142
160L	**6**	18	1170	**146,9**	35,8	24,4	0,72	88,1	3,9	**571**	179	890	0,76	0,155	159
180S	**6**	18	1175	**146,3**	29,9	14,6	0,82	91,9	3,1	**451**	131	1010	0,71	0,224	196
180M	**6**	21	1170	**171,4**	34,4	16	0,84	91,7	3,0	**513**	150	990	0,72	0,264	219
200S	**6**	23	1180	**186,1**	44,5	29,2	0,72	90,6	3,4	**633**	192	1050	0,71	0,351	236
200M	**6**	27	1180	**218,5**	50,3	31,5	0,74	91,2	3,4	**752**	223	1055	0,71	0,440	262
200L	**6**	31	1185	**249,8**	59,3	39	0,72	91,3	3,7	**915**	272	1055	0,71	0,495	287
250S	**6**	48	1185	**386,8**	85,8	43,7	0,76	92,4	2,1	**802**	245	1125	0,65	0,858	445
250M	**6**	60	1185	**483,5**	108,9	58,9	0,75	92,4	2,2	**1073**	327	1120	0,66	1,031	488
250L	**6**	75	1185	**604,4**	134,0	68,8	0,75	93,2	2,1	**1262**	379	1120	0,65	1,239	532
250LX	**6**	90	1180	**728,3**	155,6	71,4	0,78	93,2	1,9	**1412**	415	1120	0,66	1,845	567

1) Duty type S3

Intermittent periodic duty cycle without starting effects: succession of identical work cycles consisting of a period of running at constant load and a rest period.

Current peaks on starting are not to be of an order that will influence motor heat to any significant extent; the cycle duration must be ≤ 10 min.

Cyclic duration factor % $= \frac{N}{N+R} \cdot 100$

N being running time at constant load,

R the rest period and $N + R \leq 10$ min.

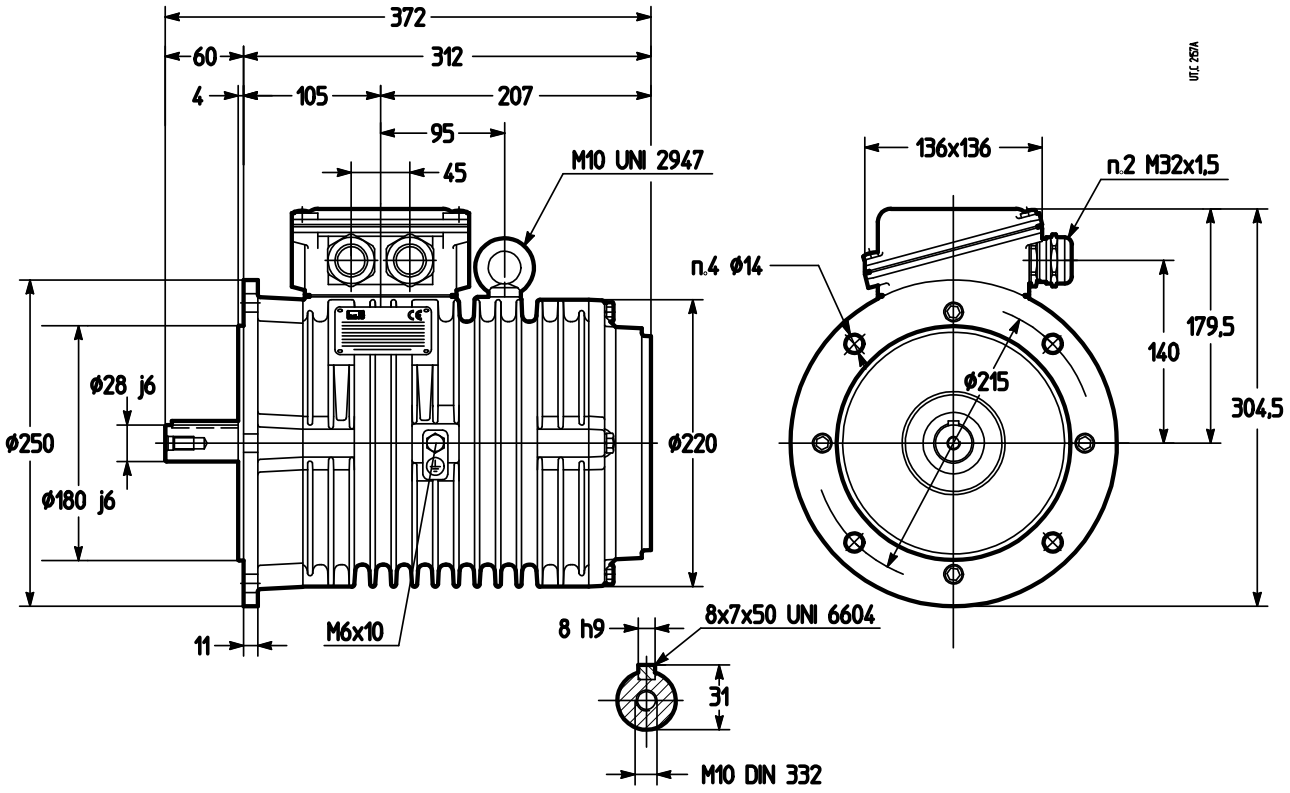
Summary table

400V 50Hz				
Size	S3 25%	S3 50%	S3 75%	S1
	P_N [kW]			
5RES 112S 4	2,8	2,4	2,1	1,8
5RES 112M 4	3,5	3	2,6	2,2
5RES 112L 4	4,5	3,8	3,3	2,6
5RES 132S 4	6	4,5	3,5	3
5RES 132M 4	7,2	5,5	4,3	3,7
5RES 132 L4	9,2	6,5	5,2	4,5
5RES 160S 4	12	8,5	7,5	6,5
5RES 160M 4	15	10,6	9,2	8
5RES 160L 4	17	12	11	9,5
5RES 180S 4	20,5	14,5	12,5	11
5RES 180M 4	24	18	14,5	12,5
5RES 200S 4	28	22	18	14,5
5RES 200M 4	32	27	21	17,5
5RES 200L 4	36	32	24	19,5
5RES 250S 4	65	40	32	26
5RES 250M 4	78	48	38	31
5RES 250L 4	90	55	45	37
5RES 250LX 4	110	65	50	42
5RES 112S 6	2,2	1,9	1,6	1,3
5RES 112M 6	2,8	2,3	1,9	1,6
5RES 112L 6	3,1	2,6	2,2	1,9
5RES 132S 6	4,2	3,6	3	2,4
5RES 132M 6	6	4,2	3,8	3
5RES 132L 6	7,2	5,1	4,6	3,6
5RES 160S 6	9,6	6,8	6,4	5,5
5RES 160M 6	13,2	9,3	7,5	6,5
5RES 160L 6	16,8	12	9,2	8
5RES 180S 6	18	13	10	9
5RES 180M 6	21	15	11	10
5RES 200S 6	22,5	16	11,5	10
5RES 200M 6	25	18,5	14,5	12,5
5RES 200L 6	28	21	17	14
5RES 250S 6	45	30	23	18
5RES 250M 6	55	38	27	21
5RES 250L 6	70	42	31	24
5RES 250LX 6	78	48	34	27

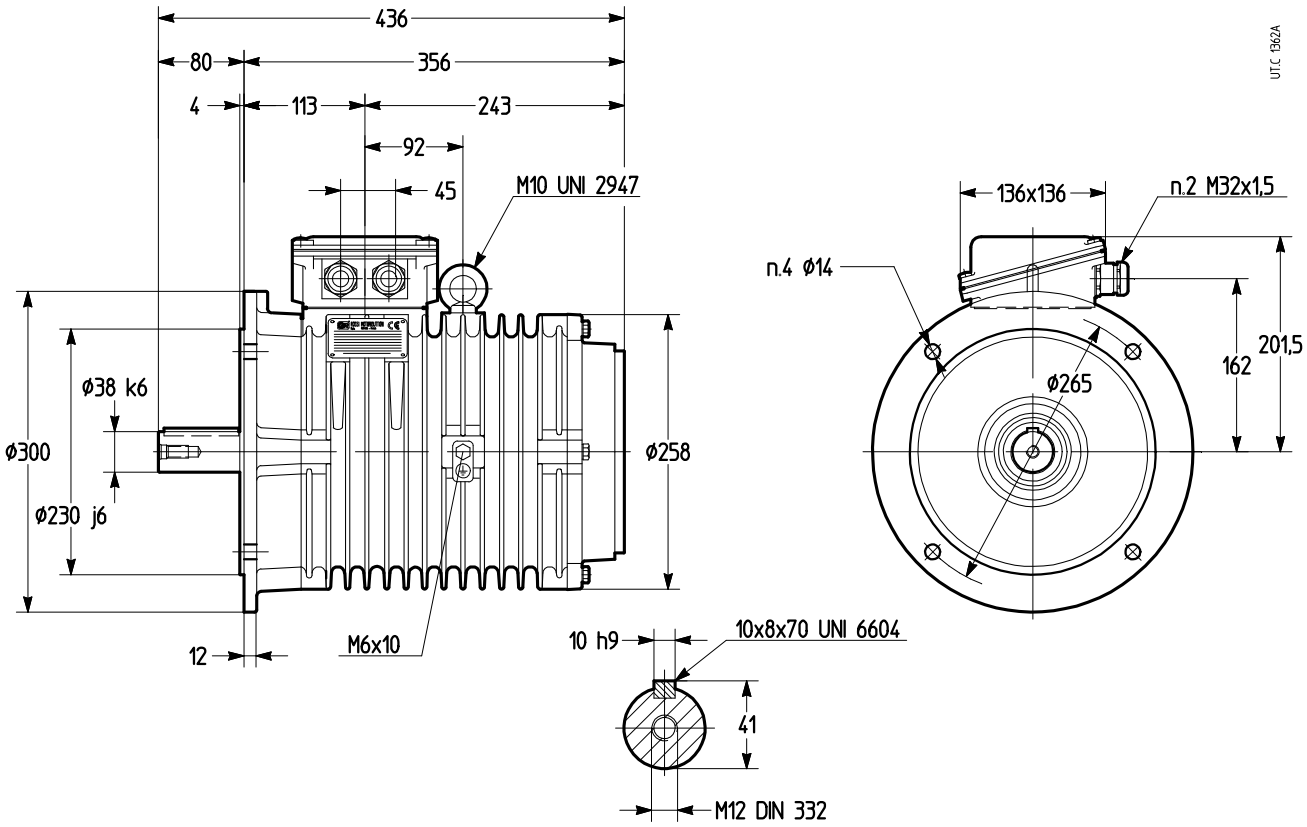
460V 60Hz				
Size	S3 25%	S3 50%	S3 75%	S1
	P_N [kW]			
5RES 112S 4	2,8	2,4	2,1	1,8
5RES 112M 4	3,5	3	2,6	2,2
5RES 112L 4	4,5	3,8	3,3	2,8
5RES 132S 4	7	5	4	3
5RES 132M 4	8,1	6,5	4,7	3,7
5RES 132L 4	10	8	5,7	4,5
5RES 160S 4	14	10	8,5	7
5RES 160M 4	17	12	10,5	9
5RES 160L 4	19,5	14	12,5	10,5
5RES 180S 4	20,5	14,5	12,5	11
5RES 180M 4	24	18	14,5	12,5
5RES 200S 4	27	22,5	18,5	14,5
5RES 200M 4	33	28	22,5	17,5
5RES 200L 4	40	34	26	19,5
5RES 250S 4	65	40	32	26
5RES 250M 4	78	48	38	31
5RES 250L 4	93	55	45	37
5RES 250LX 4	110	65	55	45
5RES 112S 6	2,5	2,1	1,7	1,4
5RES 112M 6	3	2,5	2,1	1,7
5RES 112L 6	3,5	3	2,5	2,1
5RES 132S 6	5	4	3	2,4
5RES 132M 6	6,5	4,5	3,8	3
5RES 132L 6	7,5	5,5	4,6	3,6
5RES 160S 6	10	8	6,5	5,2
5RES 160M 6	15	10,5	8,5	6,5
5RES 160L 6	18	13	10	8
5RES 180S 6	18	13	10	9
5RES 180M 6	21	15	11	10
5RES 200S 6	23	17	13	10
5RES 200M 6	27	20	16	12,5
5RES 200L 6	31	23	18	14
5RES 250S 6	48	33	25	19
5RES 250M 6	60	40	30	22
5RES 250L 6	75	47	35	25
5RES 250LX 6	90	55	40	28

Size

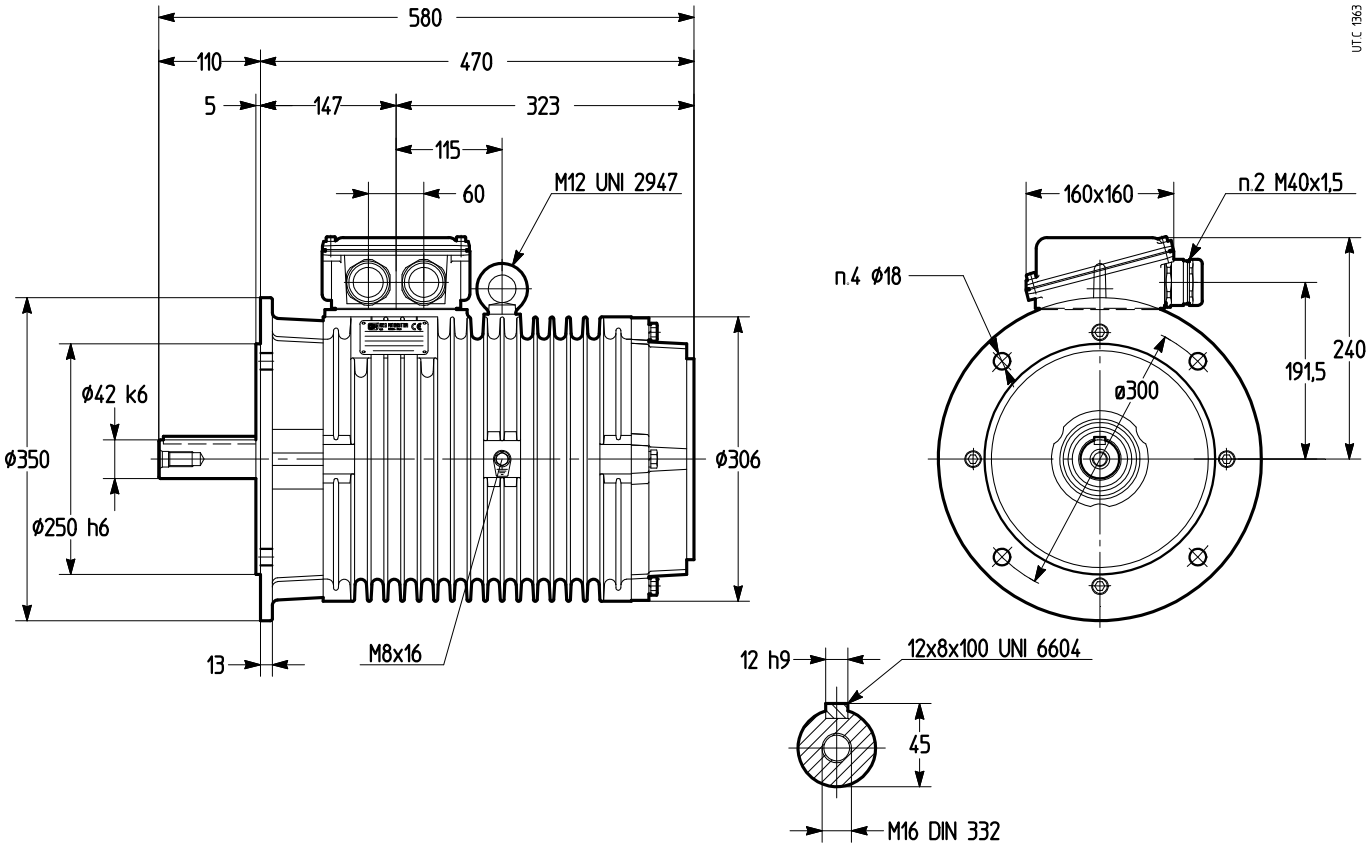
112


372
60
312
4
105
207
95
45
M10 UNI 2947
ø250
ø28 j6
ø180 j6
ø220
11
M6x10
8 h9
8x7x50 UNI 6604
31
M10 DIN 332
136x136
n.2 M32x1,5
n.4 Ø14
ø215
140
179,5
304,5

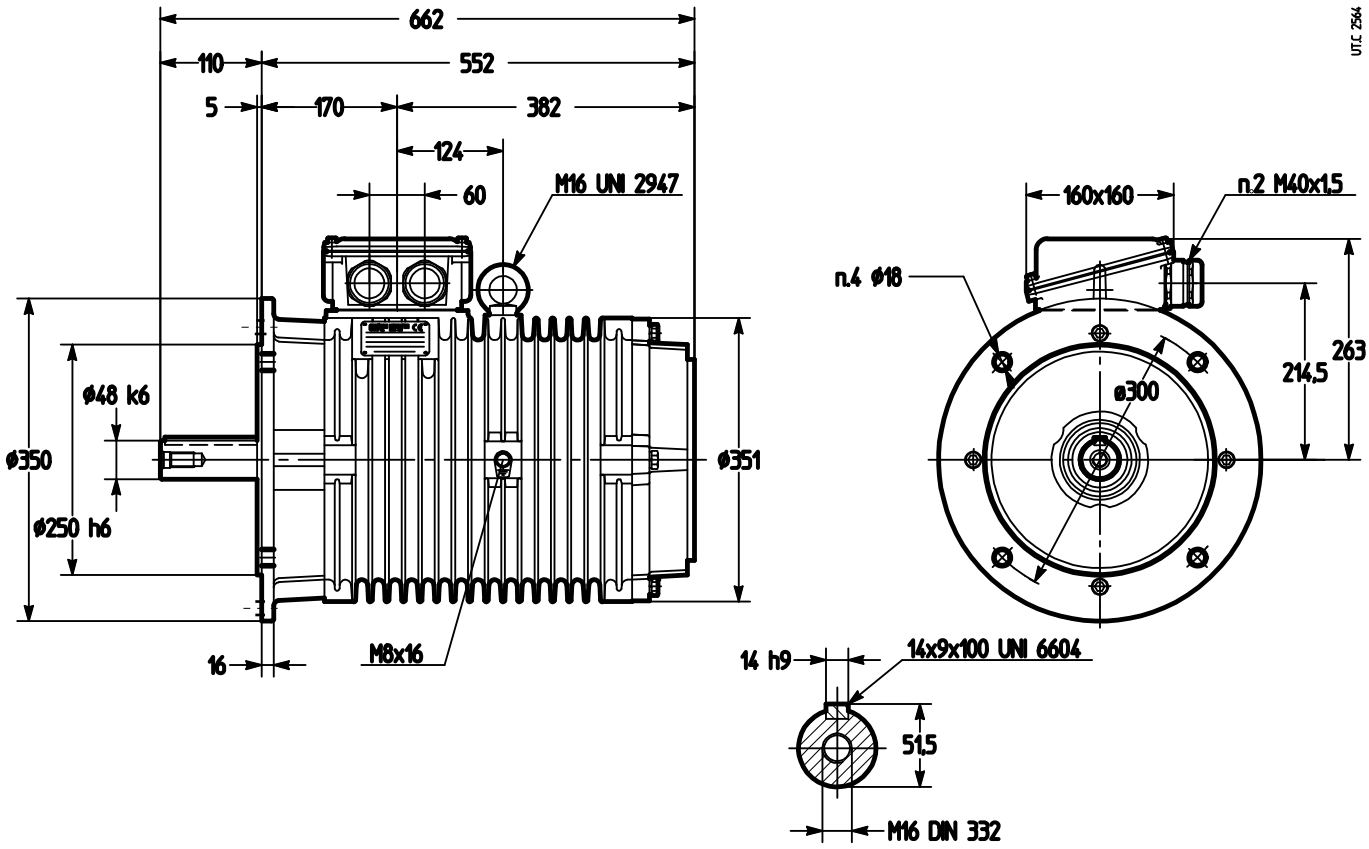
Size **132**


436
80
356
4
113
243
92
45
M10 UNI 2947
ø38 k6
ø300
ø230 j6
ø258
12
M6x10
10 h9
10x8x70 UNI 6604
41
M12 DIN 332
136x136
n.2 M32x1,5
n.4 Ø14
ø265
162
201,5
UT.C 1362A

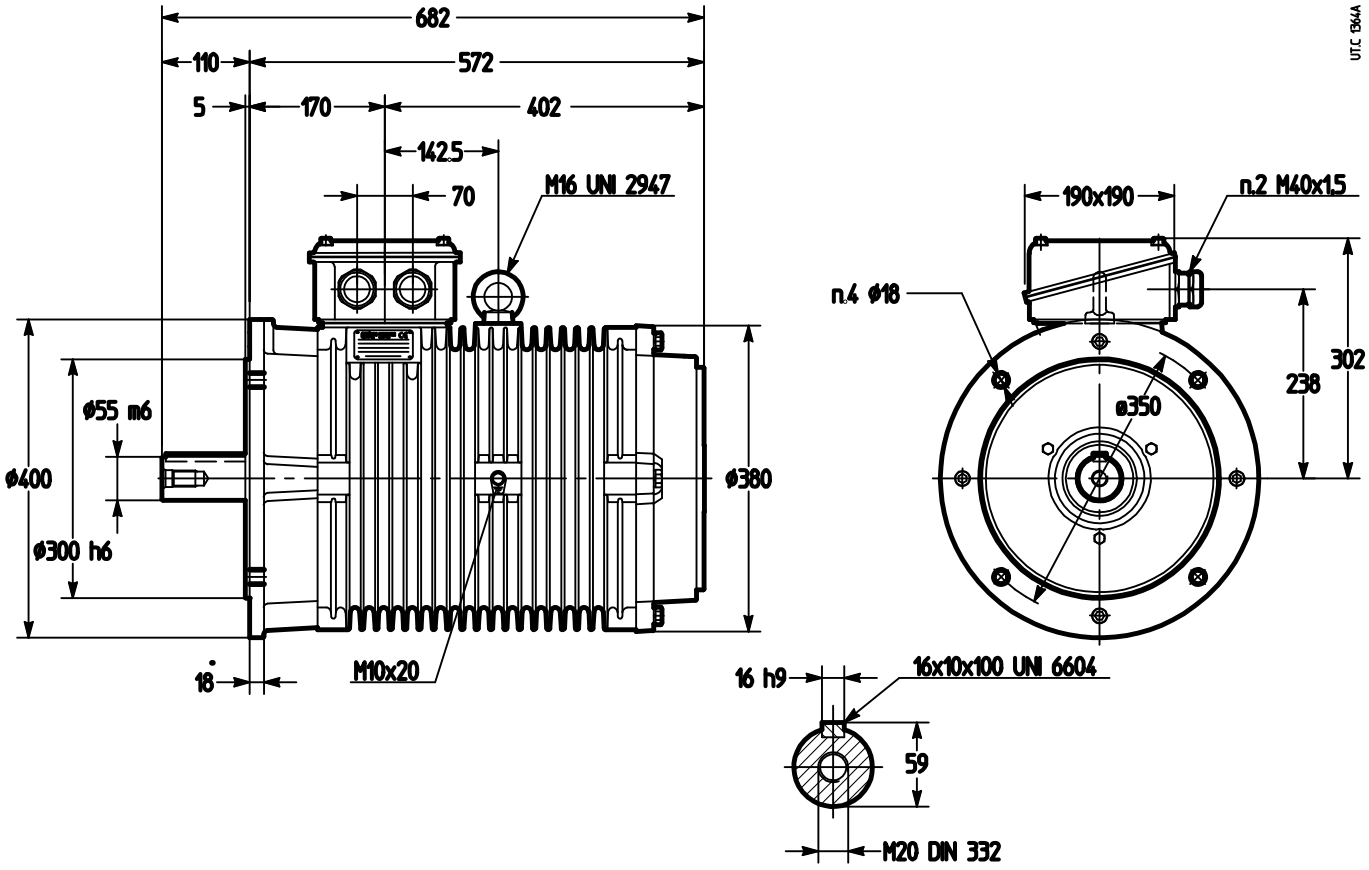
Size **160**


580
110
470
5
147
323
115
60
M12 UNI 2947
ø42 k6
ø350
ø250 h6
ø306
13
M8x16
160x160
n.2 M40x1,5
n.4 ø18
ø300
191,5
240
12 h9
12x8x100 UNI 6604
45
M16 DIN 332

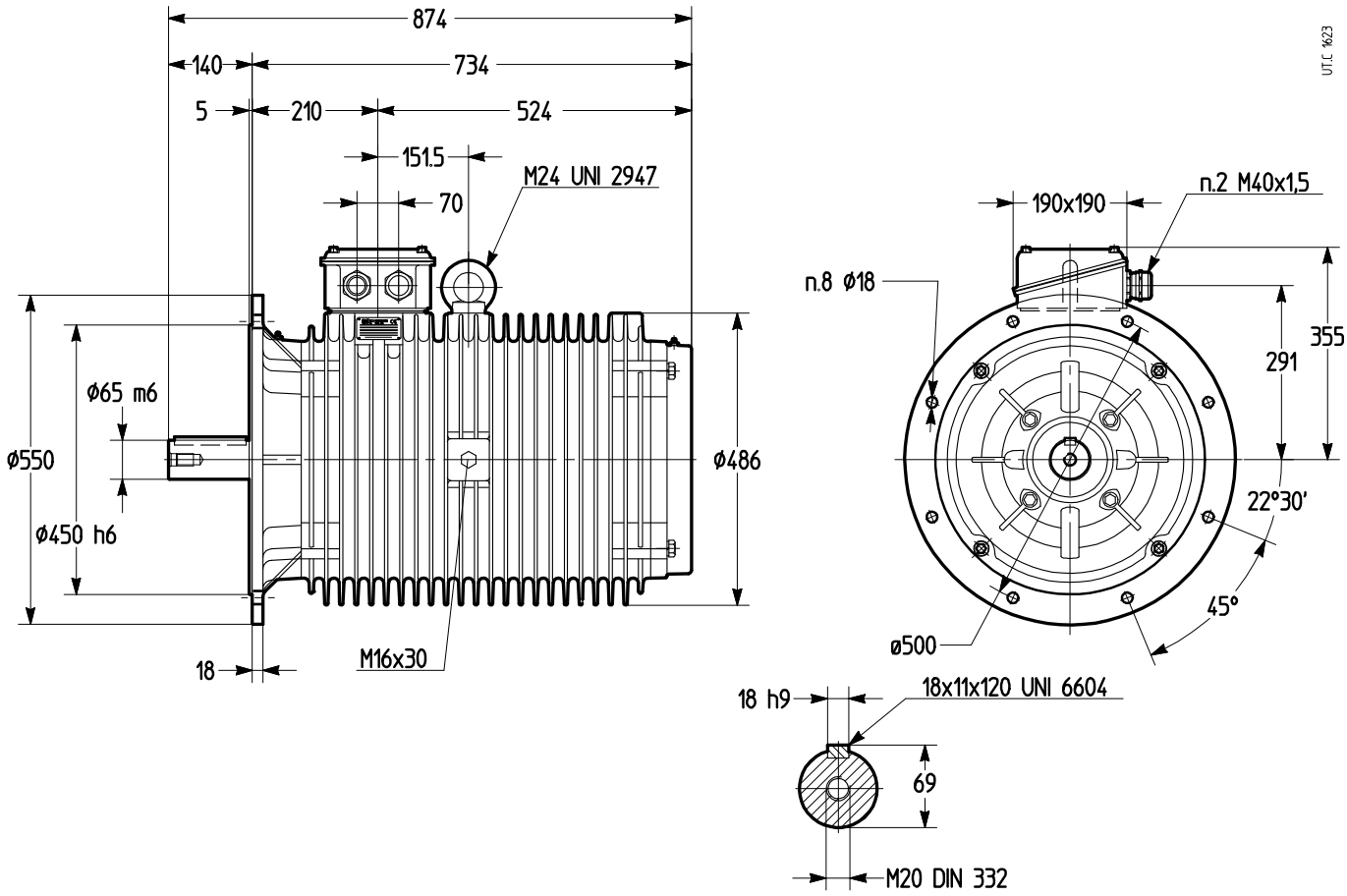
Size **180**


662
110
552
5
170
382
124
60
M16 UNI 2947
ø48 k6
ø350
ø250 h6
ø351
16
M8x16
160x160
n.2 M40x1,5
n.4 ø18
ø300
214,5
263
14 h9
14x9x100 UNI 6604
51,5
M16 DIN 332
UTC 2564

Size **200**


682
110
572
5
170
402
142.5
70
M16 UNI 2947
ø55 m6
ø400
ø300 h6
ø380
18
M10x20
UTC 5864A
190x190
n.2 M40x1.5
n.4 ø18
302
238
ø350
16 h9
16x10x100 UNI 6604
59
M20 DIN 332

Size **250**


874
140
734
5
210
524
151.5
70
M24 UNI 2947
ø65 m6
ø550
ø450 h6
ø486
18
M16x30
UT.C 1623
190x190
n.2 M40x1,5
n.8 ø18
355
291
22°30'
45°
ø500
18 h9
18x11x120 UNI 6604
69
M20 DIN 332

Coupling rules 5

In the following tables it is possible to check the maximum motor size to be connected with the helical and bevel helical or coaxial gear motors of cat. G and E.

Motor size

Catalog	Gear reducer size											
	80 **81**	**100** **101**	**125** **126**	**140**	**160**	**180**	**200**	**225**	**250**	**280**	**320** **321**	**360**
G	112	112	112	112	112	112	-	-	-	-	-	-
	-	132	132	132	132	132	132	132	-	-	-	-
	-	-	160	160	160	160	160	160	160	160	-	-
	-	-	180	180	180	180	180	180	180	180	-	-
	-	-	-	-	200	200	200	200	200	200	200	200
	-	-	-	-	-	-	250	250	250	250	250	250
E	112	112	112	112	-	-	-	-	-	-	-	-
	132	132	132	132	132	132	-	-	-	-	-	-
	-	-	160	160	160	160	-	-	-	-	-	-
	-	-	180	180	180	180	-	-	-	-	-	-
	-	-	-	200	200	200	-	-	-	-	-	-
	-	-	-	-	-	250	-	-	-	-	-	-

Non-standard voltage and frequency

In addition to standard voltage and frequency values indicated in this catalog, motors can be supplied with customized non-standard voltage and frequency values: possible voltage range 220 ... 690 V.

H insulation class

Insulation materials in H class (thermistors PTC 170° C).
It allows to increase nominal power about 10%.
Supplementary description when ordering by **designation**: **H insulation class**.

Double set of thermistor type thermal probes (PTC)

Double set of three thermistors wired in series (to DIN 44081) with two operation thresholds: the first one is designed for alarm, the second one for protection according to the motor insulation class.
Class F: alarm at 130° C and protection at 150° C.
Class H: alarm at 150° C and protection at 170° C.
Supplementary description when ordering by **designation**: **double set of thermistors**.

Normally-closed brake (5REF 112 ... 250)

Motors sizes 112 ... 250 can be supplied with elettromagnetic spring loaded brake (braking occurs with no power supply), with braking torque higher than motor nominal torque (S1 duty). D.C. toroidal coil with rectifier (always supplied at terminal box). Separate brake supply (d.c. side of rectifier) as per following table.

Motor size	Brake size	*Mf* [N m]	Motor wound and stated for		Rectifier	Rectifier supply [V] a.c.	Coil voltage [V] d.c.	Coil power [W]	Brake current (rectifier a.c. side) [A]
			V	Hz					
112	K06	60	Δ230 Y400	50	AP5B (100V÷500V)	400	180	55	~0,30
			Δ265 Y460	60		460	200		~0,28
132	K07	90	Δ230 Y400	50		400	180	65	~0,28
			Δ265 Y460	60		460	200		~0,26
160	K08	200	Δ230 Y400	50		400	180	70	~0,35
			Δ265 Y460	60		460	200		~0,33
180	K08	200	Δ230 Y400	50		400	180	70	~0,35
			Δ265 Y460	60		460	200		~0,33
200	K09	300	Δ230 Y400	50		400	180	90	~0,42
			Δ265 Y460	60		460	200		~0,40
250	K10	500 ÷ 800	Δ230 Y400	50		400	180	150	~0,63
			Δ265 Y460	60		460	200		~0,60

Description when ordering: **5REF**.

Encoder

Encoder data		
Encoder model		RHI 593 59 12 THS 9-30V dc 1024 HTL
Output signal		Push Pull HTL / LD HTL
Supply voltage	U_R	10 ÷ 30 V dc
Max current consumption (without load)	I_N	75 mA
Channels		A+, A-, B+, B-, 0+, 0-
Output amplitude per track		$U_l \leq 0{,}5V$ dc $U_h \geq U_B$ 1V dc
Max output current per track	I_{out}	± 40 mA
Max pulse frequency [1]	f_{max}	300 kHz
Frequency -3dB		-
No. pulse per revolution		1024
Max speed		6000 min^{-1}
Ambient temperature		-30 ÷ +70 C
Protection		IP66
Connections		free cables L = 1500 mm [2]

1) Parameter to be checked depending on the combination of max motor speed and pulse per revolution required.
2) For use with connector installed by the user,

Terminal assignment								
Signal	$+U_B$	0V	A+	A-	B+	B-	0+	0-
Cable color	Red	Blue	Yellow	Black	Green	White	Brown	Violet
Pin	-	-	-	-	-	-	-	-

Description when ordering: **,E305**.

Anti-condensation heater

Resistance embedded in the windings to prevent condensation inside the motor. Recommended for operations in environments with high humidity and / or extreme fluctuations in temperature.

Single-phase power supply as per table.

Supplementary description when ordering by **designation**: **anti-condensation heater.**

Motor size	Power [W]	
	120 [V] ± 10% 50/60 Hz	230 [V] ± 10% 50/60 Hz
112	28	28
132	28	28
160	44 ÷ 44	44 ÷ 44
180	44 ÷ 44	44 ÷ 44
200	77 ÷ 77	77 ÷ 77
250	77 ÷ 77	77 ÷ 77

Miscellaneous

– Protection IP 65, IP 66 (**,IP 65 ,IP 66**)

– Condensate drain holes (**,CD**)

– c UL us motor certified to UL (**,UL**)

– Execution for heavy duty conditions (i.e.: long cables, high voltage peaks, etc.,) (**,IR**)

On receipt, verify that motor corresponds to order and that it has not been damaged during the transport. Do not put into service any damaged motors.

Eyebolts and feets on gearmotors are suitable only for lifting the gearmotors itself and no other machines fitted to it.

In case of **storing** the environment must be clean, dry, free from vibrations ($v_{eff} \leq 0,2$ mm/s) and corrosive agents. Always protect motor from humidity.

Insulation resistance control. Before putting into service and after long stillstanding or storing periods it is necessary to measure insulation resistance between the windings and to earth by adequate d.c. instrument (500 V). **Do not touch the terminals during and just after the measurement because of live terminals.**

Insulation resistance, measured at 25 °C winding temperature, must not be lower than 10 MΩ for new winding, than 1 MΩ for winding run for a long time. Lower values usually denote the presence of humidity in the windings; in this case let them dry.

During the **installation**, position the motor so as to allow a free passage of air for cooling. Avoid: any obstruction to the airflow; heat sources near the motor that might affect the temperatures both of cooling air and of motor (for radiation); insufficient air recycle or any other factor hindering the steady heat exchange.

For full load and long lasting running or for jamming conditions, cutouts, electronic torque limiters or other similar devices should be fitted.

Where duty cycles involve a high number of on-load starts, it is advisable to utilize **thermal probes** for motor protection (fitted on the wiring); magnetothermic breaker is unsuitable since its threshold must be set higher than the motor nominal current of rating.

Before wiring up to the electrical power supply make sure that the voltage corresponds to name plate data for motor and other accessories, such as brake, ect.

Select cables of suitable section in order to avoid overheatings and/or excessive voltage drops at motor terminals.

Make sure that the connection is according to schemes as per sheet contained in the terminal box.

⏚ Metallic parts of motors which usually are not under voltage, must be firmly **connected to earth** through a cable of adequate section and by using the proper terminals inside the terminal box and outside the housing (marked for the purpose).

In order not to alter protection class shown on name plate, close the terminal box by correctly positioning the gasket and tightening all fastening screws. For installations in environments with frequent water sprays, it is advisable to seal the terminal box and the cable gland input using seal.

Motors should be protected whenever possible, and by whatever appropriate means, from rolled material radiation and water sprays.

The surface to which gearmotor is fitted must be correctly dimensioned and flattened in order to allow fastening security, alignment with driven machine and to avoid vibrations on the motor.

Symbols and units of measure 8

Symbols	Description	Unit of Measure SI
C	torque derating	-
C	brake disk wear (reduction of thickness)	[mm]
C_{max}	maximum brake disk wear allowed	[mm]
cosφ	power factor	-
$\cos\varphi_K$	power factor at maximum torque	-
η	efficiency = ratio between mechanic power available and electric power absorbed	-
f	frequency	[Hz]
f_{min}	minimum and maximum operating frequency	[Hz]
f_{max}	minimum and maximum operating frequency	[Hz]
I_0	no load current	[A]
I_N	nominal current	[A]
I_K	current at maximum torque	[A]
J_0	moment of inertia (of mass) of the motor	[kg m^2]
J_V	flywheel additional moment of inertia (of mass) in case of W design; value to be added to J_0 to obtain total motor moment of inertia	[kg m^2]
J	external moment of inertia (of mass) (couplings, transmission, gear reducer, driven machine) referred to motor shaft	[kg m^2]
m	weight	[kg]
M_N	nominal torque	[N m]
M_S	starting torque, with direct on-line start	[N m]
M_K	maximum torque, with direct on-line start	[N m]
M_a	mean acceleration torque	[N m]
M_f	braking torque	[N m]
$M_{required}$	torque absorbed by the machine through work and frictions	[N m]
n_N	nominal speed	[min^{-1}]
n_K	speed at maximum torque	[min^{-1}]
n_{min}	minimum and maximum operating speed	[min^{-1}]
n_{max}	minimum and maximum operating speed	[min^{-1}]
P_N	nominal power	[kW]
$P_{required}$	power absorbed by the machine referred to motor shaft	[kW]
R	frequency variation ratio	-
t_1	delay of anchor release	[ms]
t_2	delay of braking	[ms]
t_a	starting time	[s]
t_f	braking time	[s]
φ_a	starting rotation angle	[rad]
φ_f	braking rotation angle	[rad]
μ	friction coefficient	-
U	electric voltage	[V]
W_1	friction work generating a brake disk wear of 1 mm	[MJ/mm]
W_f	friction work dissipated for each braking	[J]
z_0	maximum number of no-load starts/h allowed by motor with cyclic duration factor 50%	[starts/h]

Solutions for an evolving industry

Rossi S.p.A.
Via Emilia Ovest 915/A
41123 Modena - Italy

info@rossi.com
www.rossi.com

2619.CAT.S-23.05-0-EN