

MINING MOTORS, SERIES 4KTCR AND 4KTCP

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Explosion protection

Marking	I M2 Ex de I Mb
	I M2 Ex d I Mb
	PB Ex d I Mb

Technical data

Frame sizes	71-80-90-100-112-132-160-180-200-225-250-280-315
Power	0.18 kW to 200 kW
Voltage	380 V to 1140 V
Operating duty	S1 to S10, ready for operating with frequency inverters
Frequency	50 Hz and 60 Hz
Single speed	2, 4, 6, 8 pole
Pole changing	4/2, 8/4, 6/4, 8/6, other versions on request

Insulation class	F and H
Protection class	IP 55, possible up to IP 65
Ambient temperature	-20 °C to +40 °C
Thermal protection in winding	3 x PTC, possible also PTO or Pt100
Thermal protection in bearings	PTC, PTO or Pt100
Anticondensation protection	Heaters in winding AC 220 V
Additional regreasing	grease nipples
Cooling	air, TEFC
Material of enclosure	Cast iron
Cable glands	1 x for power supply, 1 x for protection, Ex e or Ex d

Certifications

Type	ATEX			IECEX			CU TR certificate Russia, Belarussia, Kazakhstan RU-C-SI-ГБ08.B.00309
	BVS 16 ATEX E 129 X	BVS 15 ATEX E 037 X	FTZU 14 ATEX 0060X	IECEX BVS 16.0095X	IECEX BVS 15.0031X	IECEX FTZU 15.0006X	
4KTCR 71		●			●		●
4KTCR 80		●			●		●
4KTCR 90		●			●		●
4KTCR 100		●			●		●
4KTCR 112		●			●		●
4KTCR 132		●			●		●
4KTCR 160		●			●		●
4KTCR 180		●			●		●
4KTCR 200		●			●		●
4KTCR 225		●			●		●
5KTCR 250	●			●			●
5KTCR 280			●			●	●
5KTCR 315							●



Technical data for 2 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
4 KTCR 71 A-2	0.37	2800	1.06	0.83	0.38	0.37	4.2	2.8	59.5	0.86
4 KTCR 71 B-2	0.55	2805	1.32	1.05	0.48	0.46	5.5	3.1	70.0	0.86
4 KTCR 80 A-2	0.75	2790	1.70	1.35	0.61	0.59	5.4	2.6	72.0	0.89
4 KTCR 80 B-2	1.1	2790	2.35	1.90	0.86	0.82	6.1	2.9	77.0	0.87
4 KTCR 90 S-2	1.5	2830	3.25	2.59	1.18	1.14	6.3	2.8	77.0	0.87
4 KTCR 90 L-2	2.2	2845	4.40	3.52	1.60	1.54	6.9	2.65	82.0	0.88
4 KTCR 100 L-2	3	2865	6.00	4.77	2.17	2.10	7.1	2.9	83.5	0.87
4 KTCR 112 M-2	4	2890	7.80	6.21	2.82	2.74	7.6	2.95	84.5	0.88
4 KTCR 132 SA-2	5.5	2910	10.8	8.50	3.90	3.79	6.6	2.8	84.5	0.88
4 KTCR 132 SB-2	7.5	2925	14.5	11.4	5.20	5.09	7.9	3.1	85.5	0.89
4 KTCR 160 MA-2	11	2840	22.3	17.9	8.10	7.82	6.9	3.0	80.6	0.88
4 KTCR 160 MB-2	15	2940	28.5	22.7	10.3	10.0	7.7	3.2	83.0	0.92
4 KTCR 160 L-2	18	2945	32.4	26.1	11.8	11.4	8.0	3.0	90.1	0.91
4 KTCR 180 M-2	22	2930	39.0	31.0	14.1	13.7	7.2	2.9	92.0	0.89
4 KTCR 200 LA-2	30	2930	53.0	42.3	19.2	18.6	7.3	2.8	93.0	0.88
4 KTCR 200 LB-2	37	2930	64.0	51.3	23.3	22.5	7.3	2.9	93.5	0.89
4 KTCR 225 M-2	45	2945	79.0	63.2	28.7	27.7	7.2	2.6	93.5	0.88
5 KTCR 250 M-2	55	2970	95.0	75.6	34.4	33.3	7.5	3.2	94.4	0.89
5 KTCR 280 S-2	75	2980	131.0	104.0	47.3	46.0	8.0	3.0	94.5	0.88
5 KTCR 280 M-2	90	2980	152.0	122.0	55.3	53.3	8.0	2.9	95.0	0.90
5 KTCR 315 S-2	110	2970	194.0	155.0	70.3	68.0	6.0	2.4	95.5	0.86
5 KTCR 315 MA-2	132	2970	228.0	181.0	82.4	80.0	6.5	2.8	95.5	0.88
5 KTCR 315 MB-2	160	2975	270.0	215.0	97.5	94.7	6.9	2.4	95.7	0.90
5 KTCR 315 MC-2	200	2980	335.0	270.0	121.7	117.5	6.9	2.3	95.8	0.90



Technical data for 4 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
4 KTCR 71 A-4	0.25	1355	0.75	0.61	0.30	0.26	3.8	2.5	59.5	0.80
4 KTCR 71 B-4	0.37	1350	1.05	0.84	0.42	0.37	3.8	2.9	63.0	0.81
4 KTCR 80 A-4	0.55	1410	1.38	1.09	0.55	0.48	4.6	2.7	72.0	0.81
4 KTCR 80 B-4	0.75	1400	1.80	1.43	0.71	0.63	5.0	2.6	76.0	0.80
4 KTCR 90 S-4	1.1	1410	2.40	1.92	0.96	0.84	5.4	2.4	79.0	0.84
4 KTCR 90 L-4	1.5	1405	3.25	2.61	1.31	1.14	5.8	2.6	79.0	0.84
4 KTCR 100 LA-4	2.2	1405	4.80	3.83	1.92	1.68	5.1	2.2	79.0	0.84
4 KTCR 100 LB-4	3	1400	6.40	5.10	2.55	2.24	5.3	2.3	81.0	0.84
4 KTCR 112 M-4	4	1430	8.20	6.48	3.24	2.88	6.6	2.8	85.0	0.84
4 KTCR 132 S-4	5.5	1435	10.9	8.75	4.37	3.82	5.5	2.7	84.5	0.86
4 KTCR 132 M-4	7.5	1445	14.8	11.7	5.86	5.19	6.5	2.9	87.0	0.85
4 KTCR 160 M-4	11	1470	22.0	17.6	8.81	7.72	6.7	2.8	87.0	0.83
4 KTCR 160 L-4	15	1460	29.0	23.3	11.7	10.2	6.3	2.7	87.5	0.85
4 KTCR 180 M-4	18.5	1460	35.0	27.7	13.8	12.3	6.5	2.3	92.0	0.84
4 KTCR 180 L-4	22	1455	40.0	31.9	16.0	14.0	6.4	2.3	92.5	0.86
4 KTCR 200 L-4	30	1460	56.0	44.9	22.5	19.6	6.2	3.0	93.0	0.83
4 KTCR 225 S-4	37	1465	68.0	54.8	27.4	23.8	6.3	2.8	93.5	0.84
4 KTCR 225 M-4	45	1470	83.0	66.2	33.1	29.1	6.2	2.8	94.0	0.83
5 KTCR 250 M-4	55	1475	98.0	78.2	39.1	34.4	6.1	2.5	94.5	0.86
5 KTCR 280 S-4	75	1475	135.0	106.1	53.1	47.4	6.1	2.8	95.0	0.86
5 KTCR 280 M-4	90	1475	158.0	125.9	62.9	55.4	6.5	2.9	95.0	0.87
5 KTCR 315 S-4	110	1485	193.0	153.1	76.5	67.7	6.0	2.4	95.5	0.87
5 KTCR 315 MA-4	132	1485	232.0	183.1	91.6	81.4	6.5	2.6	95.8	0.87
5 KTCR 315 MB-4	160	1480	282.0	224.0	112.0	98.9	7.0	2.6	96.0	0.86
5 KTCR 315 MC-4	200	1485	345.0	275.0	126.0	121.0	6.9	2.6	95.8	0.87



Technical data for 6 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
4 KTCR 71 A-6	0.18	930	0.67	0.54	0.24	0.24	3.1	2.3	60.0	0.65
4 KTCR 71 B-6	0.25	940	0.85	0.68	0.31	0.30	3.7	2.5	64.0	0.67
4 KTCR 80 A-6	0.37	925	1.1	0.88	0.40	0.39	3.6	2.5	67.0	0.72
4 KTCR 80 B-6	0.55	915	1.5	1.20	0.55	0.53	4.1	2.5	72.0	0.74
4 KTCR 90 S-6	0.75	915	2.1	1.68	0.76	0.74	3.7	2.1	70.0	0.74
4 KTCR 90 L-6	1.1	915	3.0	2.40	1.09	1.05	4.1	2.3	73.0	0.73
4 KTCR 100 L-6	1.5	930	3.7	2.96	1.35	1.30	4.7	2.3	76.0	0.77
4 KTCR 112 M-6	2.2	960	5.0	4.00	1.82	1.75	6.1	2.7	82.0	0.78
4 KTCR 132 S-6	3	975	6.6	5.28	2.40	2.32	6.3	2.5	83.5	0.79
4 KTCR 132 MA-6	4	960	8.8	7.04	3.20	3.09	6.3	2.9	83.0	0.80
4 KTCR 132 MB-6	5.5	955	11.8	9.44	4.29	4.14	6.1	2.9	83.5	0.81
4 KTCR 160 M-6	7.5	970	15.8	12.6	5.75	5.54	6.7	2.4	86.0	0.80
4 KTCR 160 L-6	11	965	23.5	18.8	8.55	8.25	6.0	2.3	88.5	0.77
4 KTCR 180 L-6	15	965	31.0	24.8	11.3	10.9	5.2	2.3	89.5	0.78
4 KTCR 200 LA-6	18.5	965	36.0	28.8	13.1	12.6	6.0	2.4	91.0	0.81
4 KTCR 200 LB-6	22	965	43.0	34.4	15.6	15.1	6.0	2.4	91.5	0.81
4 KTCR 225 M-6	30	975	56.0	44.8	20.4	19.6	5.8	2.5	92.5	0.83
5 KTCR 250 M-6	37	985	69.0	55.2	25.1	24.2	6.0	2.6	93.5	0.83
5 KTCR 280 S-6	45	985	82.0	65.6	29.8	28.8	6.3	2.7	94.5	0.84
5 KTCR 280 M-6	55	985	101.0	80.8	36.7	35.4	6.0	2.8	94.5	0.84
5 KTCR 315 S-6	75	980	140.0	112.0	50.9	49.1	5.9	2.8	95.0	0.82
5 KTCR 315 MA-6	90	985	163.0	130.4	59.3	57.2	5.1	2.9	95.5	0.84
5 KTCR 315 MB-6	110	990	198.0	158.4	72.0	69.5	6.5	2.4	91.5	0.88
5 KTCR 315 L-6	132	990	238.0	190.4	86.5	83.5	6.8	2.4	90.5	0.88



Technical data for 8 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficency %	Power factor cos φ
4 KTCR 71 A-8	0.09	680	0.74	0.59	0.27	0.26	2.0	2.1	38.0	0.51
4 KTCR 71 B-8	0.12	655	0.59	0.48	0.22	0.21	2.4	2.1	45.0	0.71
4 KTCR 80 A-8	0.18	680	0.73	0.58	0.26	0.25	2.9	2.2	61.0	0.65
4 KTCR 80 B-8	0.25	680	1.01	0.81	0.37	0.36	3.1	2.3	58.0	0.68
4 KTCR 90 S-8	0.37	685	1.38	1.10	0.50	0.48	3.0	2.0	66.0	0.65
4 KTCR 90 L-8	0.55	685	1.93	1.54	0.70	0.68	3.1	2.1	69.0	0.66
4 KTCR 100 LA-8	0.75	690	2.53	2.02	0.92	0.89	3.5	2.1	69.0	0.69
4 KTCR 100 LB-8	1.1	695	3.58	2.86	1.30	1.25	3.8	2.2	70.0	0.70
4 KTCR 112 M-8	1.5	710	4.57	3.65	1.66	1.60	4.3	2.5	78.0	0.67
4 KTCR 132 S-8	2.2	710	6.05	4.84	2.20	2.12	4.3	2.2	79.0	0.74
4 KTCR 132 M-8	3.0	710	7.92	6.34	2.88	2.78	4.8	2.3	80.0	0.76
4 KTCR 160 MA-8	4.0	720	11.0	8.80	4.00	3.86	4.8	2.3	82.6	0.71
4 KTCR 160 MB-8	5.5	715	14.7	11.8	5.36	5.17	4.8	2.1	84.0	0.71
4 KTCR 160 L-8	7.5	725	18.4	14.7	6.68	6.45	5.8	2.1	86.5	0.75
4 KTCR 180 L-8	11.0	715	27.5	22.0	10.0	9.65	4.2	2.5	86.7	0.74
4 KTCR 200 L-8	15.0	720	31.9	25.5	11.6	11.2	4.5	2.5	91.0	0.82
4 KTCR 225 S-8	18.5	710	40.7	32.6	14.8	14.3	4.6	2.6	91.0	0.79
4 KTCR 225 M-8	22.0	715	49.5	39.6	18.0	17.4	4.6	2.6	91.5	0.77
5 KTCR 250 M-8	30.0	730	64.9	51.9	23.6	22.8	5.4	2.4	92.8	0.79
5 KTCR 280 S-8	37.0	730	81.4	65.1	29.6	28.6	6.0	2.3	93.0	0.78
5 KTCR 280 M-8	45.0	735	99.0	79.2	36.0	34.7	6.4	2.7	93.5	0.78
5 KTCR 315 S-8	55.0	735	114.4	91.5	41.6	40.1	6.2	2.3	94.5	0.81
5 KTCR 315 MA-8	75.0	740	154.0	123.2	56.0	54.0	6.3	2.1	94.5	0.82
5 KTCR 315 MB-8	90.0	740	190.3	152.2	69.2	66.8	6.7	2.5	91.1	0.83
5 KTCR 315 L-8	110.0	740	234.3	187.4	85.2	82.2	6.9	2.5	90.0	0.83



Explosion protection

Marking	I M2 Ex de I Mb, I M2 Ex dbe I Mb
	I M2 Ex d I Mb, I M2 Ex db I Mb
	PB Ex d I Mb

Technical data

Frame sizes	180-200-225-250-280-315-355
Power	22 kW to 400 kW
Voltage	380 V to 1140 V
Operating duty	S1 to S10, ready for operating with frequency inverters
Frequency	50 Hz and 60 Hz
Single speed	2, 4, 6, 8 pole
Pole changing	4/2, 8/4, 6/4, 8/6, other versions on request
Insulation class	F and H

Protection class	IP 55, possible up to IP 65
Ambient temperature	-20 °C to +40 °C
Thermal protection in winding	3 x PTC, possible also PTO or Pt100
Thermal protection in bearings	PTC, PTO or Pt100
Anticondensation protection	Heaters in winding AC 220 V
Additional regreasing	grease nipples
Cooling	air, TEFC
Material of enclosure	welded steel plates
Cable glands	1 x for power supply, 1 x for protection, Ex e or Ex d

Certifications

Type	ATEX		IECEx		CU TR certificate Russia, Belarussia, Kazakhstan RU-C-SI-Г508.B.00309
	BVS 15 ATEX E 075 X	FTZU 13 ATEX 0111X	IECEx BVS 15.0066X	IECEx FTZU 14.0006X	
3KTCR 180	●		●		●
3KTCR 200	●		●		●
3KTCR 225	●		●		●
4KTCR 250	●		●		●
4KTCR 280	●		●		●
4KTCR 315	●		●		●
5KTCR 355		●		●	●



Technical data for 2 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
3 KTCR 180 M-2	22	2930	39.0	31.0	14.1	13.7	7.2	2.9	92.0	0.89
3 KTCR 200 LA-2	30	2930	53.0	42.3	19.2	18.6	7.3	2.8	93.0	0.88
3 KTCR 200 LB-2	37	2930	64.0	51.3	23.3	22.5	7.3	2.9	93.5	0.89
3 KTCR 225 M-2	45	2945	79.0	63.2	28.7	27.7	7.2	2.6	93.5	0.88
4 KTCR 250 M-2	55	2970	95.0	75.6	34.4	33.3	7.5	3.2	94.4	0.89
4 KTCR 280 S-2	75	2980	131.0	104.0	47.3	46.0	8.0	3.0	94.5	0.88
4 KTCR 280 M-2	90	2980	152.0	122.0	55.3	53.3	8.0	2.9	95.0	0.90
4 KTCR 315 S-2	110	2970	194.0	155.0	70.3	68.0	6.0	2.4	95.5	0.86
4 KTCR 315 MA-2	132	2970	228.0	181.0	82.4	80.0	6.5	2.8	95.5	0.88
4 KTCR 315 MB-2	160	2975	270.0	215.0	97.5	94.7	6.9	2.4	95.7	0.90
4 KTCR 315 MC-2	200	2980	335.0	270.0	121.7	117.5	6.9	2.3	95.8	0.90
5 KTCR 355 SA-2	200	2980	330.0	264.0	120.0	115.8	7.2	2.5	95.6	0.92
5 KTCR 355 SB-2	250	2985	414	331.2	150.5	145.3	7.4	2.5	95.2	0.92
5 KTCR 355 LA-2	280	2985	463.7	371	168.6	162.7	7.3	2.4	95.4	0.91
5 KTCR 355 LB-2	315	2985	517	413.6	188	181.4	7.4	2.5	95.5	0.92

Technical data for 4 pole motors

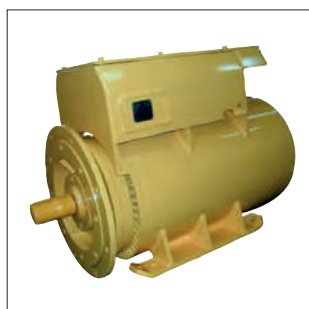
Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
3 KTCR 180 M-4	18.5	1460	35.0	27.7	13.8	12.3	6.5	2.3	92.0	0.84
3 KTCR 180 L-4	22	1455	40.0	31.9	16.0	14.0	6.4	2.3	92.5	0.86
3 KTCR 200 L-4	30	1460	56.0	44.9	22.5	19.6	6.2	3.0	93.0	0.83
3 KTCR 225 S-4	37	1465	68.0	54.8	27.4	23.8	6.3	2.8	93.5	0.84
3 KTCR 225 M-4	45	1470	83.0	66.2	33.1	29.1	6.2	2.8	94.0	0.83
4 KTCR 250 M-4	55	1475	98.0	78.2	39.1	34.4	6.1	2.5	94.5	0.86
4 KTCR 280 S-4	75	1475	135.0	106.1	53.1	47.4	6.1	2.8	95.0	0.86
4 KTCR 280 M-4	90	1475	158.0	125.9	62.9	55.4	6.5	2.9	95.0	0.87
4 KTCR 315 S-4	110	1485	193.0	153.1	76.5	67.7	6.0	2.4	95.5	0.87
4 KTCR 315 MA-4	132	1485	232.0	183.1	91.6	81.4	6.5	2.6	95.8	0.87
4 KTCR 315 MB-4	160	1480	282.0	224.0	112.0	98.9	7.0	2.6	96.0	0.86
4 KTCR 315 MC-4	200	1485	345.0	275.0	126.0	121.0	6.9	2.6	95.8	0.87
4 KTCR 315 MD-4	250	1487	433	347	158	152	7.2	3.0	95.2	0.88
5 KTCR 355 SA-4	200	1485	353	282.4	128.4	123.9	7.3	2.3	95.2	0.86
5 KTCR 355 SB-4	250	1490	459	367.2	166.7	161.1	7.2	2.4	94.6	0.83
5 KTCR 355 S(L)-4	315	1490	555	444	202	195	7.2	2.4	94.6	0.87
5 KTCR 355 M-4	400	1490	660	528	240	232	7.5	2.5	95.8	0.91

Technical data for 6 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
3 KTCR 180 L-6	15	965	31.0	24.8	11.3	10.9	5.2	2.3	89.5	0.78
3 KTCR 200 LA-6	18.5	965	36.0	28.8	13.1	12.6	6.0	2.4	91.0	0.81
3 KTCR 200 LB-6	22	965	43.0	34.4	15.6	15.1	6.0	2.4	91.5	0.81
3 KTCR 225 M-6	30	975	56.0	44.8	20.4	19.6	5.8	2.5	92.5	0.83
4 KTCR 250 M-6	37	985	69.0	55.2	25.1	24.2	6.0	2.6	93.5	0.83
4 KTCR 280 S-6	45	985	82.0	65.6	29.8	28.8	6.3	2.7	94.5	0.84
4 KTCR 280 M-6	55	985	101.0	80.8	36.7	35.4	6.0	2.8	94.5	0.84
4 KTCR 315 S-6	75	980	140.0	112.0	50.9	49.1	5.9	2.8	95.0	0.82
4 KTCR 315 MA-6	90	985	163.0	130.4	59.3	57.2	5.1	2.9	95.5	0.84
4 KTCR 315 MB-6	110	990	198.0	158.4	72.0	69.5	6.5	2.4	91.5	0.88
4 KTCR 315 L-6	132	990	238.0	190.4	86.5	83.5	6.8	2.4	90.5	0.88
5 KTCR 355 SA-6	160	990	293	235	107	103	7.0	2.1	93.9	0.84
5 KTCR 355 SB-6	200	990	348	278	127	122	7.0	2.1	93.7	0.88
5 KTCR 355 LA-6	250	on request								

Technical data for 8 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
4 KTCR 160 L-8	7.5	725	18.4	14.7	6.68	6.45	5.8	2.1	86.5	0.75
3 KTCR 180 L-8	11.0	715	27.5	22.0	10.0	9.65	4.2	2.5	86.7	0.74
3 KTCR 200 L-8	15.0	720	31.9	25.5	11.6	11.2	4.5	2.5	91.0	0.82
3 KTCR 225 S-8	18.5	710	40.7	32.6	14.8	14.3	4.6	2.6	91.0	0.79
3 KTCR 225 M-8	22.0	715	49.5	39.6	18.0	17.4	4.6	2.6	91.5	0.77
4 KTCR 250 M-8	30.0	730	64.9	51.9	23.6	22.8	5.4	2.4	92.8	0.79
4 KTCR 280 S-8	37.0	730	81.4	65.1	29.6	28.6	6.0	2.3	93.0	0.78
4 KTCR 280 M-8	45.0	735	99.0	79.2	36.0	34.7	6.4	2.7	93.5	0.78
4 KTCR 315 S-8	55.0	735	114.4	91.5	41.6	40.1	6.2	2.3	94.5	0.81
4 KTCR 315 MA-8	75.0	740	154.0	123.2	56.0	54.0	6.3	2.1	94.5	0.82
4 KTCR 315 MB-8	90.0	740	190.3	152.2	69.2	66.8	6.7	2.5	91.1	0.83
4 KTCR 315 L-8	110.0	740	234.3	187.4	85.2	82.2	6.9	2.5	90.0	0.83
5 KTCR 355 SA-8	132	740	256	205	93.1	89.8	6.9	2.2	93.2	0.80
5 KTCR 355 SB-8	160	740	323	258	118	113	6.9	2.2	93.8	0.76
5 KTCR 355 LA-8	200	on request								
5 KTCR 355 LB-8	250									



Explosion protection

Marking	I M2 Ex de I Mb, I M2 Ex dbe I Mb
	I M2 Ex d I Mb, I M2 Ex db I Mb
	PB Ex d I Mb

Technical data

Frame sizes	180-200-225-250-280-315-355
Power	22 kW to 400 kW
Voltage	380 V to 1140 V
Operating duty	S1 to S10, ready for operating with frequency inverters
Frequency	50 Hz and 60 Hz
Single speed	2, 4, 6, 8 pole
Pole changing	4/2, 8/4, 6/4, 8/6, other versions on request
Insulation class	F and H

Insulation class	F and H
Protection class	IP 55, possible up to IP 65
Ambient temperature	-20 °C to +40 °C
Thermal protection in winding	3 x PTC, possible also PTO or Pt100
Thermal protection in bearings	PTC, PTO or Pt100
Anticondensation protection	Heaters in winding AC 220 V
Additional regreasing	grease nipples
Cooling	air, TEFC
Material of enclosure	welded steel plates
Cable glands	1 x for power supply, 1 x for protection, Ex e or Ex d

Certifications

Type	ATEX		IECEX		CU TR certificate Russia, Belarussia, Kazakhstan RU-C-SI-Г508.B.00309
	BVS 15 ATEX E 075 X	FTZU 13 ATEX 0111X	IECEX BVS 15.0066X	IECEX FTZU 14.0006X	
3KTCR 180	●		●		●
3KTCR 200	●		●		●
3KTCR 225	●		●		●
4KTCR 250	●		●		●
4KTCR 280	●		●		●
4KTCR 315	●		●		●
5KTCR 355		●		●	●



Technical data for 4 pole motors

Type	Power kW	Speed Min ⁻¹	In 400 V A	In 500 V A	In 1100 V A	In 1140 V A	Ia/In Starting current	Mm/Mn Starting torque	Efficiency %	Power factor cos φ
3 KTCP 180 L-4	22	1455	44	34.5	15.3	15.3	5.0	2.2	89	0.84
3 KTCP 200 L-4	30	1460	54	45	20.2	19.0	4.7	2.3	90	0.85
3 KTCP 225 M-4	45	1465	81	65	29.2	28.5	4.8	2.5	91	0.86
3 KTCP 225 S-4	37	1470	68	54	24.3	23.7	4.8	2.5	92	0.86
4 KTCP 250 M-4	55	1475	103	82	38.2	36.0	4.8	2.5	92.5	0.86
4 KTCP 280 S-4	75	1475	134	108	48.6	47.0	4.9	2.4	93	0.87
4 KTCP 280 M-4	90	1475	162	129	58.5	56.7	4.8	2.4	92.5	0.88
4 KTCP 315 S-4	110	1485	201	161	72	70.7	5.0	2.4	93	0.88
4 KTCP 315 MA-4	132	1485	240	184	82.8	84.3	5.0	2.4	93	0.88
4 KTCP 315 MB-4	160	1480	280	224	100.8	98.3	5.5	2.4	93.5	0.89
4 KTCP 315 MC-4	200	1485	328	275	126.0	115.0	6.9	2.6	95.8	0.87
4 KTCP 315 MD-4	250	1487	433	347	158	152	7.2	3.0	95.2	0.88
5 KTCP 355 SA-4	200	1485	353	282.4	128.4	123.9	7.3	2.3	95.2	0.86
5 KTCP 355 SB-4	250	1490	459	367.2	166.7	161.1	7.2	2.4	94.6	0.83
5 KTCP 355 S(L)-4	315	1490	555	444	202	195	7.2	2.4	94.6	0.87
5 KTCP 355 M-4	400	1490	660	528	240	232	7.5	2.5	95.8	0.91

Data for 2, 6 and 8 pole motors on request



Explosion protection

Marking	I M2 Ex de I Mb
	I M2 Ex d I Mb

Technical data

Frame sizes	71-80-90-100-112-132-160-180-200-225-250-280
Power	0.18 kW to 90 kW
Voltage	Motors 380 V to 1140 V Brake AC 230 V or 400 V
Brake torque	8 to 2000 Nm
Operating duty	S1 to S10, ready for operating with frequency inverters
Frequency	50 Hz and 60 Hz
Single speed	2, 4, 6, 8 pole
Pole changing	4/2, 8/4, 6/4, 8/6, other on request

Insulation class	F and H
Protection class	IP 55, possible up to IP 65
Ambient temperature	-20 °C to +40 °C
Thermal protection in winding	3 x PTC, possible also PTO or Pt100
Thermal protection in bearings	PTC, PTO or Pt100
Anticondensation protection	Heaters in winding AC 220 V
Additional regreasing	grease nipples
Cooling	air, TEFC
Material of enclosure	Cast iron
Cable glands	1 x for power supply, 1 x for protection, Ex e or Ex d

Certifications

Type	Motor				Brake
	ATEX		IECEX		ATEX
	BVS 15 ATEX E 037 X	FTZU 14 ATEX 0060X	IECEX BVS 15.0031X	IECEX FTZU 15.0006X	INERSIS 06 ATEX 0047X/03
4KTCR 71	●		●		●
4KTCR 80	●		●		●
4KTCR 90	●		●		●
4KTCR 100	●		●		●
4KTCR 112	●		●		●
4KTCR 132	●		●		●
4KTCR 160	●		●		●
4KTCR 180	●		●		●
4KTCR 200	●		●		●
4KTCR 225	●		●		●
5KTCR 250					●
5KTCR 280		●		●	●



When the motor is driven with frequency inverter additional motor for forced cooling is necessary. Technical data for main motors as well as for forced cooling motors see above. The motor can be equipped also with flame proof encoders.

Explosion protection

Marking	I M2 Ex de I Mb, I M2 Ex dbe I Mb I M2 Ex d I Mb, I M2 Ex db I Mb PB Ex d I Mb
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Technical data

Frame sizes	71-80-90-100-112-132-160-180-200-225-250-280-315-355
Power	0.18 kW to 400 kW
Voltage	380 V to 1140 V

Main motor

Motor for forced cooling

4KTCR 71	4KTCR 71 A2	0.37 kW
4KTCR 80	4KTCR 71 A2	0.37 kW
4KTCR 90	4KTCR 71 A2	0.37 kW
4KTCR 100	4KTCR 71 A2	0.37 kW
4KTCR 112	4KTCR 71 A2	0.37 kW
4KTCR 132	4KTCR 71 A2	0.37 kW
4KTCR 160	4KTCR 71 A2	0.37 kW
4KTCR 180, 3KTCR 180, 3KTCP 180	4KTCR 80 A4	0.55 kW
4KTCR 200, 3KTCR 200, 3KTCP 200	4KTCR 80 A4	0.55 kW
4KTCR 225, 3KTCR 225, 3KTCP 225	4KTCR 80 A4	0.55 kW
5KTCR 250, 4KTCR 250, 4KTCP 250	4KTCR 90 L4	1.5 kW
5KTCR 280, 4KTCR 280, 4KTCP 280	4KTCR 90 L4	1.5 kW
5KTCR 315, 4KTCR 315, 4KTCP 315	4KTCR 90 L4	1.5 kW
5KTCR 355, 5KTCP 355	4KTCR 100 LB4	3 kW



For fast connection our electric motors can be equipped with flame proof restrained socket.

Motor for axial fans can have shaft on DE and NDE side. Installation into the fan can be with one or with two flanges as well as on the foot.

Explosion protection

Marking	I M2 Ex de I Mb
	I M2 Ex d I Mb
	PB Ex d I Mb

Explosion protection

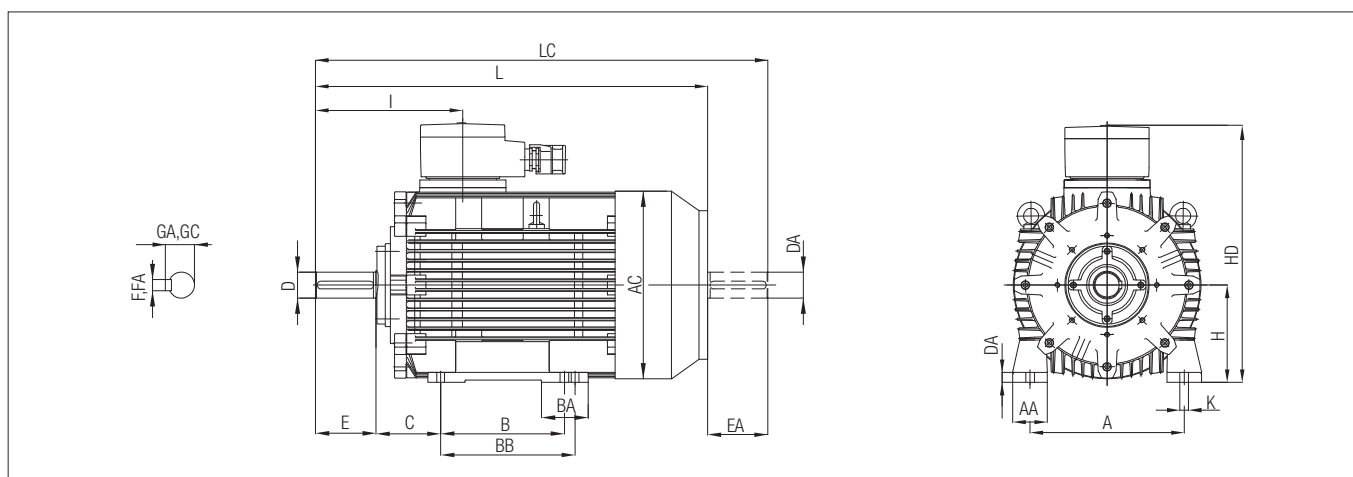
Marking	I M2 Ex de I Mb
	I M2 Ex d I Mb
	PB Ex d I Mb

Technical data

Frame sizes	80-90-100-112-132-160-180-200-225-250-280-315-355
Power	0.55 kW to 400 kW
Voltage	380 V to 1140 V
Flameproof restrained socket	250 A or 350 A; 1300 V

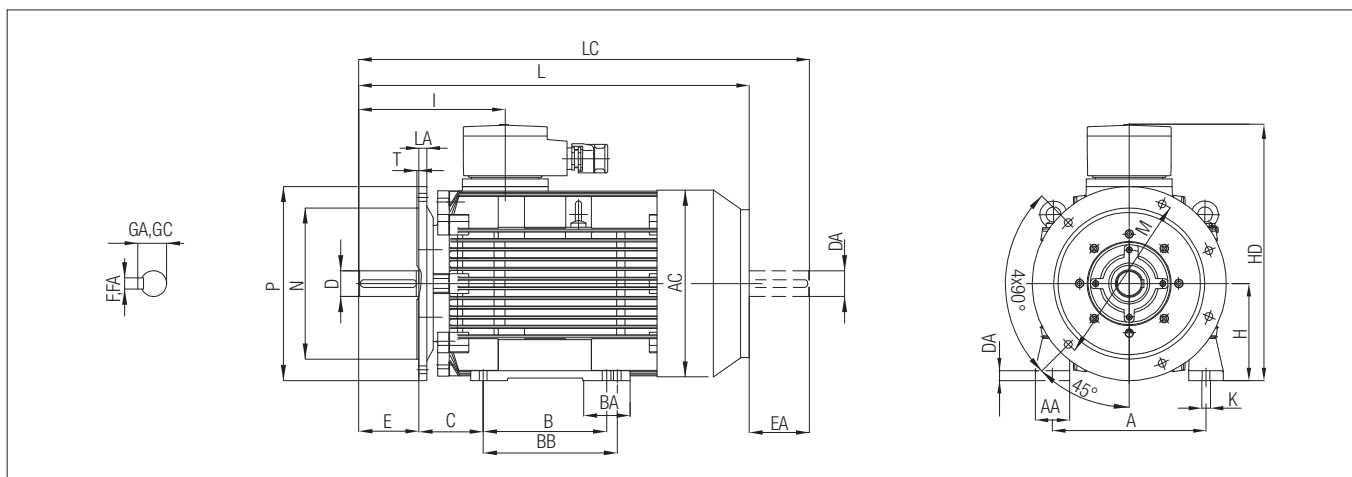
Technical data

Frame sizes	80-90-100-112-132-160-180-200-225-250-280-315-355
Power	0.55 kW to 400 kW
Voltage	380 V to 1140 V
With extention of connection box	Lenght of extention tube by demand



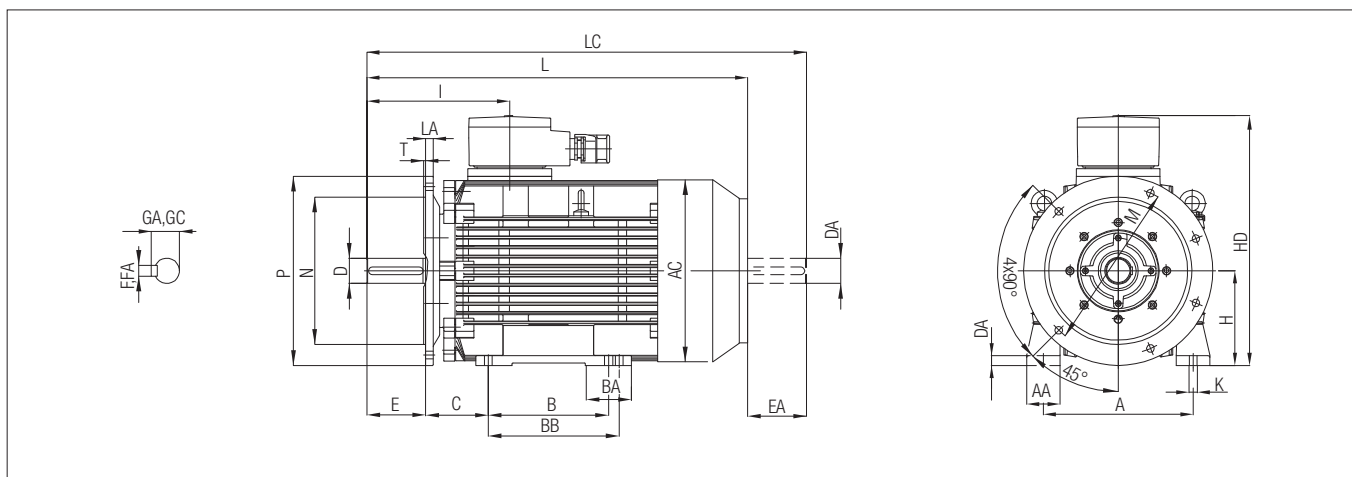
Dimensions (mm)

Frame size	A	AA	AC	B	BA	BB	C	D	DA	E	EA	F	GC	GA	H	HA	HD	I	K	L	LA	LC
4KTCR 71 A, B	112	30	142	90	30	114	45	14	30	5	16	71	10	218	114	9	289	10	325			
4KTCR 80 A, B	125	32	160	100	35	130	50	19	40	6	21.5	80	10	249	131	10	341	10	386			
4KTCR 90 S, L	140	35	180	125	60	155	56	24	50	8	27	90	10	271	140	10	382	10	437			
4KTCR 100 L	160	45	198	140	45	175	63	28	60	8	31	100	17	288	158	12	447	11	512			
4KTCR 112 M	190	50	222	140	45	180	70	28	60	8	31	112	15	311	159	12	470	11	536			
4KTCR 132 S M	216	55	261	178 210	75	218	89	38	80	10	41	132	18	350	181	12	562	16	647			
4KTCR 160 L	254	60	313	254	90	300	108	42	110	12	45	160	21	436	255	14	694	19	812			
4KTCR 180 M L	279	70	352	241 279	118	333	121	48	110	14	51	180	21	492	297	14	727	15	881			
4KTCR 200 L	318	80	392	305	95	365	133	55	110	16	59	200	21	543	308	18	808	18	937			
4KTCR 225 S M-2 M	356	80	438	286 311 311	110	371	149	60 55 60	140 110 140	18 16 18	64 59 64	225	21	593	340 310 340	18	906 876 906	18	973 973 1033			
5KTCR 250 M-2 M	406	100	491	349	90	429	158	60 65	140	18	64 69	250	23	687	380	24	997	18	1152			
5KTCR 280 S-2 S M-2 M	457	110	537	368 368 419 419	100	505 505	190	65 75 65 75	140	18 20 18 20	69 79.5 69 79.5	280	23	744	382	24	1036 1036 1096 1096	18	1191 1191 1224 1224			
5KTCR 315 S-2 S M-2 M MC-2 MC	508	110	617	406 406 457 457 457	115	577 577 577 577	216	65 80 65 80	140 170 140 170	18 22 18 22	69 85 69 85	315	25	859	454 484 454 484	28	1050 1080 1220 1250 1300 1330	18	1210 1270 1380 1440 1460 1520			



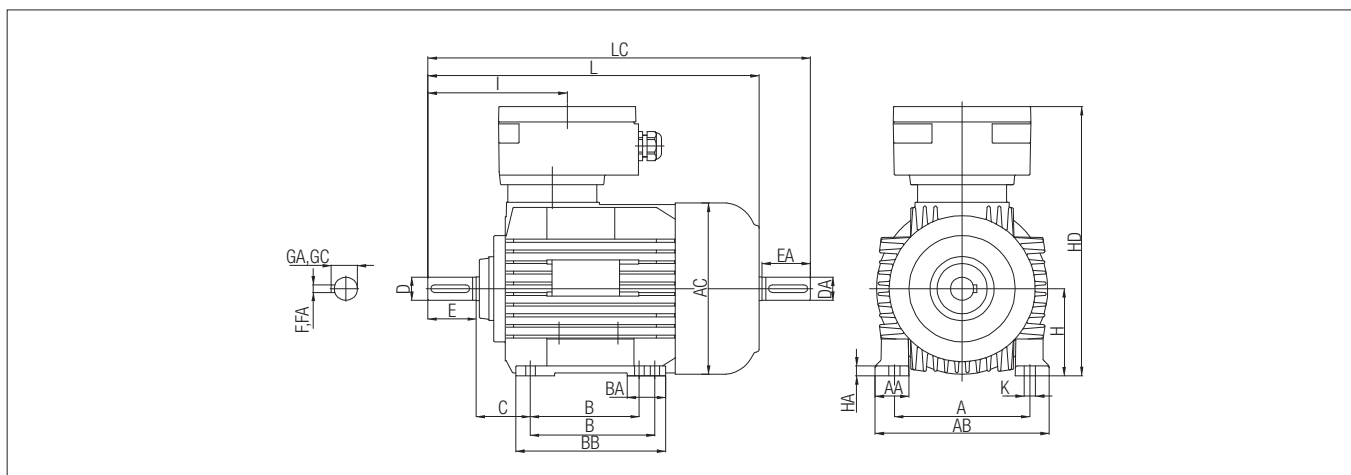
Dimensions (mm)

Frame size	Flange	AC	D DA	E EA	F FA	GC GA	H	HB	I	K	L	LA	LC	M	N	P	S	No. of fixing holes	
4KTCR 71	A, B	F 130-I	142	14	30	5	16	71	147	114	9	289	10	325	130	110	160	9	4
4KTCR 80	A, B	F 165-I	160	19	40	6	21.5	80	169	131	10	341	10	386	165	130	200	12	4
4KTCR 90	S, L	F 165-I	180	24	50	8	27	90	181	140	10	382	10	437	165	130	200	12	4
4KTCR 100	L	F 215-I	198	28	60	8	31	100	188	158	12	447	11	512	215	180	250	14	4
4KTCR 112	M	F 215-I	222	28	60	8	31	112	199	159	12	470	11	536	215	180	250	14	4
4KTCR 132	S, M	F 265-I	261	38	80	10	41	132	218	181	12	562	16	647	265	230	300	14	4
4KTCR 160	M, L	F 300-I	313	42	110	12	45	160	276	255	14	694	19	812	300	250	350	18	4
4KTCR 180	M	F 300-I										727		841					
	L	F 300-I	352	48	110	14	51	180	312	297	14		15	881	300	250	350	18	4
4KTCR 200	L	F 350-I	392	55	110	16	59	200	343	308	18	808	18	937	350	300	400	18	4
4KTCR 225	S	F 400-I		60	140	18	64			340		906		973					
	M-2	F 400-I	438	55	110	16	59	225	368	310	18	876	18	973	400	350	450	18	8
	M	F 400-I		60	140	18	64			340		906		1033					
5KTCR 250	M-2	F 500-I		60	140	18	64												
	M	F 500-I	491	65	140	18	69	250	437	380	24	997	18	1152	500	450	550	19	8
5KTCR 280	S-2	F 500-I		65		18	69					1036		1191					
	S	F 500-I		75		20	79.5					1036		1191					
	M-2	F 500-I	537	65	140	18	69	280	464	382	24	1096	18	1224	500	450	550	19	8
	M	F 500-I		75		20	79.5					1096		1224					
5KTCR 315	S-2	F 600-I		65	140	18	69			454		1050		1210					
	S	F 600-I		80	170	22	85			484		1080		1270					
	M-2	F 600-I	617	65	140	18	69	315	544	454	28	1220	18	1380	600	550	660	24	8
	M	F 600-I		80	170	22	85			484		1250		1440					
	MC-2	F 600-I		65	140	18	69			454		1300		1460					
	MC	F 600-I		80	170	22	85			484		1330		1520					



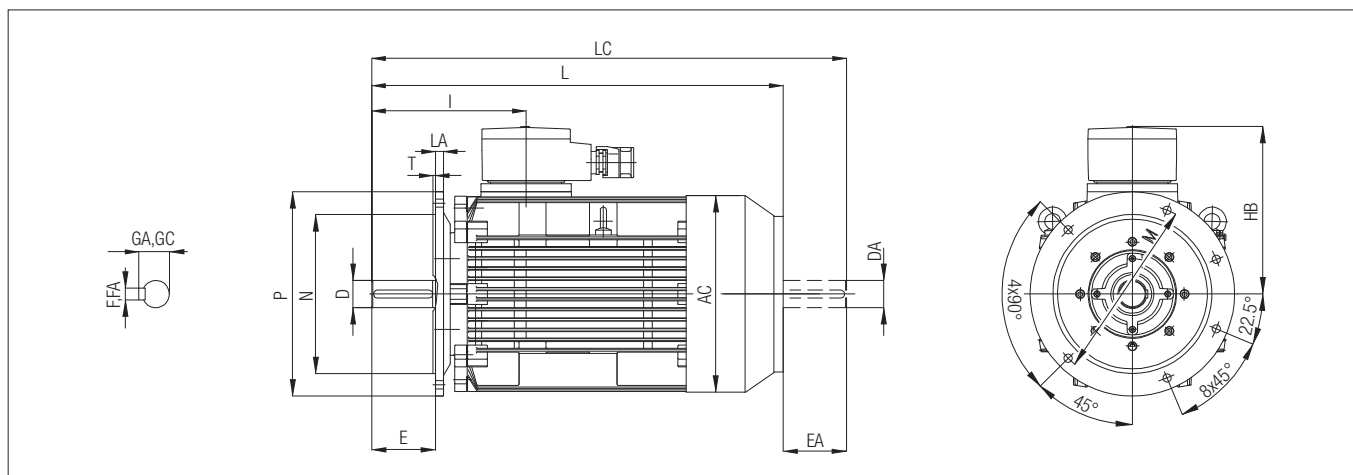
Dimensions (mm)

Frame size	Flange	A	AA	AB	AC	B	BA	BB	C	D	DA	E	EA	F	FA	GC	GA	H	HA	HD	I	K	L	LA	LC	M	N	P	S	No. of fixing holes	
4KTCR 71	A, B	F 130-I	112	30	140	142	90	30	114	45	14	30	5	16	71	10	218	114	9	289	10	325	130	110	160	9	4				
4KTCR 80	A, B	F 165-I	125	32	160	160	100	35	130	50	19	40	6	21.5	80	10	249	131	10	341	10	386	165	130	200	12	4				
4KTCR 90	S, L	F 165-I	140	35	180	180	125	60	155	56	24	50	8	27	90	10	271	140	10	382	10	437	165	130	200	12	4				
4KTCR 100	L	F 215-I	160	45	205	198	140	45	175	63	28	60	8	31	100	17	288	158	12	447	11	512	215	180	250	14	4				
4KTCR 112	M	F 215-I	190	50	235	222	140	45	180	70	28	60	8	31	112	15	311	159	12	470	11	536	215	180	250	14	4				
4KTCR 132	S, M	F 265-I	216	55	266	261	178	75	218	89	38	80	10	41	132	18	350	181	12	562	16	647	265	230	300	14	4				
4KTCR 160	M, L	F 300-I	254	60	312	313	254	90	300	108	42	110	12	45	160	21	436	255	14	694	19	812	300	250	350	18	4				
4KTCR 180	M	F 300-I				241		333														727		841							
	L	F 300-I	279	70	348	352	279	118		121	48	110	14	51	180	21	492	297	14		15	881	300	250	350	18	4				
4KTCR 200	L	F 350-I	318	80	398	392	305	95	365	133	55	110	16	59	200	21	543	308	18	808	18	937	350	300	400	18	4				
4KTCR 225	S	F 400-I				286		376		60	140	18	64									340	906	976	400	350	450	18	8		
	M-2	F 400-I	356	80	436	438	311	110	371	149	55	110	16	59	225	21	593	310	18	876	18	973	400	350	450	18	8				
	M	F 400-I				311		371		60	140	18	64									340	906	1033							
5KTCR 250	M-2	F 500-I								60				64																	
	M	F 500-I	406	100	506	491	349	90	429	158	65	140	18	69	250	23	687	380	24	997	18	1152	500	450	550	19	8				
5KTCR 280	S-2	F 500-I				368		454		65		18	69									1036		1191							
	S	F 500-I				368		454		75		20	79.5									1036		1191							
	M-2	F 500-I	457	110	557	537	419	100	505	190	65	140	18	69	280	23	744	382	24	1096	18	1224	500	450	550	19	8				
	M	F 500-I				419		505		75		20	79.5									1096		1224							
5KTCR 315	S-2	F 600-I				406		526		65	140	18	69									454	1050	1210							
	S	F 600-I				406		526		80	170	22	85									484	1080	1270							
	M-2	F 600-I	508	110	628	617	457	115	577	216	65	140	18	69	315	25	859	454	28	1220	18	1380	600	550	660	24	8				
	M	F 600-I				457		577		80	170	22	85									484	1250	1440							
	MC-2	F 600-I				457		577		65	140	18	69									454	1300	1460							
	MC	F 600-I				457		577		80	170	22	85									484	1330	1520							



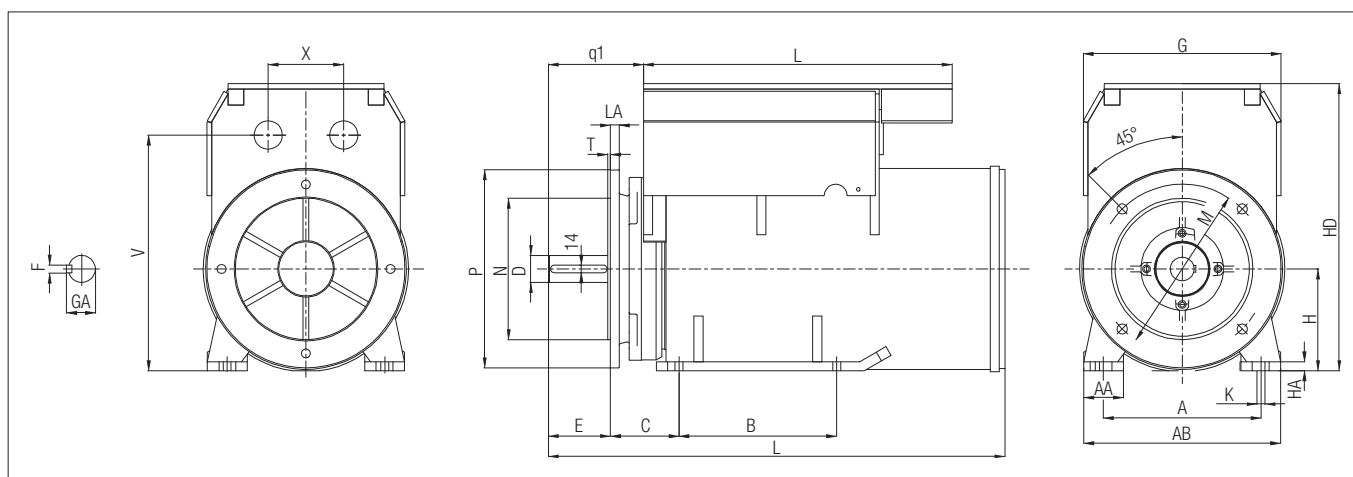
Dimensions (mm)

Frame size	A	AA	AC	B	BA	BB	C	D	E	F	GC	H	HA	HD	I	K	L	LA	LC
3KTCR 180 M	279	70	352	241	80	295	121	48	110	14	51	180	21	492	299	14	721	15	841
				279		333		881											
3KTCR 200 L	318	80	392	305	90	395	133	55	110	16	59	200	21	543	310	18	817	18	937
3KTCR 225 S	356	80	438	286	90	346	149	60	110	18	64	225	21	593	341	18	823	18	973
				311		371		973											
				311		371		1033											
4KTCR 250 M-2	406	100	491	349	90	429	158	60	140	18	64	250	23	687	380	24	997	18	1152
				65		69													
4KTCR 280 S	457	110	537	368	100	454	190	65	140	18	69	280	23	744	382	24	1036	18	1191
				368		454		1191											
				419		505		1224											
				419		505		1224											
4KTCR 315 S-2	508	110	617	406	115	526	216	65	140	18	69	315	25	859	454	28	1050	18	1210
				406		526		1270											
				457		577		1380											
				508		577		1440											
				508		577		1460											
				508		577		1520											
				503		577		1430											
5KTCR 355 SA-2	610	130	698	500	210	734	244	75	140	20	79.5	355	35	981	511	28	1587	25	1737
				500		734		1877											
				560		734		1737											
				560		734		1877											
				630		804		1737											
				630		804		1877											
				630		804		1737											
				630		804		1877											
				630		804		1877											
				630		804		1877											



Dimensions (mm)

Frame size	Flange	AC	D DA	E EA	F FA	GC GA	H	HB	I	K	L	LA	LC	M	N	P	S	No. of fixing holes		
3KTCR 180	M L	F 300-I F 300-I	352 48	110	14	51	180	312	299	14	721 761	15	841 881	300	250	350	18	4		
3KTCR 200	L	F 350-I	392 55	110	16	59	200	343	310	18	817	18	937	350	300	400	18	4		
3KTCR 225	S	F 400-I	438	60	18	64	225	368	341	18	823	18	973	400	350	450	18	8		
	M-2	F 400-I		55	16	59			853		973									
	M	F 400-I		60	18	64			883		1033									
4KTCR 250	M-2	F 500-I	491	60	18	64	250	437	380	24	997	18	1152	500	450	550	19	8		
	M	F 500-I		65	18	69													1096	1096
4KTCR 280	S-2	F 500-I	537	65	18	69	280	464	382	24	1036	18	1191	500	450	550	19	8		
	S	F 500-I		75	20	79.5													1036	1191
	M-2	F 500-I		65	18	69													1096	1224
	M	F 500-I		75	20	79.5													1096	1224
4KTCR 315	S-2	F 600-I	617	65	18	69	315	544	454	28	1050	18	1210	600	550	660	24	8		
	S	F 600-I		80	22	85													1080	1270
	M-2	F 600-I		65	18	69													1220	1380
	M	F 600-I		80	22	85													1250	1440
	MC-2	F 600-I		65	18	69													1300	1460
	MC	F 600-I		80	22	85													1330	1520
MD	F 600-I	80	22	85	1430	--														
5KTCR 355	SA-2	F 740-I	698	75	20	79.5	355	626	511	28	1587	25	1737	740	680	800	24	8		
	SA	F 740-I		100	28	106													1657	1877
	SB-2	F 740-I		75	20	79.5													1587	1737
	SB	F 740-I		100	28	106													1657	1877
	LA-2	F 740-I		75	20	79.5													1587	1737
	LA	F 740-I		100	28	106													1657	1877
	LB-2	F 740-I		75	20	79.5													1587	1737
	LB	F 740-I		100	28	106													1657	1877
	M	F 740-I		100	28	106													1657	1877



Dimensions (mm)

Frame size	A	AA	AB	B	C	D	E	F	GA	2 pole		4, 6, 8 pole		H	HA
										DA	E	F	GA		
3KTCP 180 M	279	70	348	241	121	48	110	14	51.5	48	110	14	51.5	180	16
3KTCP 180 L	279	70	348	279	121	48	110	14	51.5	48	110	14	51.5	180	16
3KTCP 200 L	318	80	398	305	133	55	110	16	58.8	55	110	16	58.8	200	16
3KTCP 225 S	356	80	436	285	149	60	140	18	64.2	60	140	18	64.2	225	16
3KTCP 225 S	356	80	436	311	149	55	110	16	58.8	60	140	18	64.2	225	16
4KTCP 250 M	406	100	506	349	168	60	140	18	64.2	65	140	18	64.2	250	20
4KTCP 280 S	457	110	568	368	190	65	140	18	69.2	75	140	20	79.6	280	20
4KTCP 280 M	457	110	568	419	190	65	140	18	69.2	75	140	20	79.6	280	20
4KTCP 315 S	508	120	628	406	216	65	140	18	69.2	80	170	22	85.5	315	25
4KTCP 315 M	508	120	628	457	216	65	140	18	69.2	80	170	22	85.5	315	25
4KTCP 315 MC	508	120	628	457	216	65	140	18	69.2	80	170	22	85.5	315	25
4KTCP 315 MD	508	120	628	457	216	65	140	18	69.2	80	170	22	85.5	315	25
5KTCP 355 S	on request														
5KTCP 355 M	on request														
5KTCP 355 L	on request														



Dimensions (mm)

Frame size	HD	K	L	q	L	q	LA	M	N	P	S	T	G	O	V	X
			2 pole		4, 6, 8 pole											
3KTCP 180 M	510	14	740	168	740	168	15	300	250	350	18	5	350	494	422	82
3KTCP 180 L	510	14	780	168	780	168	15	30	250	350	18	5	350	534	422	82
3KTCP 200 L	563	18	840	177	840	177	18	350	300	400	18	5	385	585	473	98
3KTCP 225 S	613	18	842	208	842	208	18	350	300	400	18	5	386	556	523	98
3KTCP 225 S	613	18	872	178	902	208	18	350	450	400	18	5	386	616	523	98
4KTCP 250 M	701	24	987	219	987	219	18	500	450	550	19	5	446	660	589	144
4KTCP 280 S	770	24	1012	223	1012	223	18	500	450	550	19	5	456	690	655	144
4KTCP 280 M	770	24	1072	223	1072	223	18	500	450	550	19	5	456	750	659	144
4KTCP 315 S	857	24	1051	261	1081	291	22	600	550	660	24	6	532	795	760	170
4KTCP 315 M	857	24	1176	261	1206	291	22	600	550	660	24	6	532	855	760	170
4KTCP 315 MC	857	24	1390	261	1390	291	22	600	550	660	24	6	532	855	760	170
4KTCP 315 MD	857	24	1600	261	1600	291	22	600	550	660	24	6	532	855	760	170
5KTCP 355 S	on request															
5KTCP 355 M																
5KTCP 355 L																

Note: All datas and dimensions in this catalogue are informative and will be specified during quotation.



Frame size	71	80	90	100	112	132	160	180	200	225	250	280	315	355
Special voltage up to 1140 V	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Special frequency	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Frequency inverter drive	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Special power	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Special shaft end	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Free shaft end on NDS-end of motor	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Special flange	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Flange made in R acc. to DIN 42955	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Additional greasing								●	●	●	●	●	●	●
Fixed bearing on AS								●	●	●	●	●	●	●
2RS bearings	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Labyrinth seal								●	●	●	●	●	●	●
Oil seal								●	●	●	●	●	●	●
Protection IP 56	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Protection IP 65	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Protection IP 66	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Protection cover	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Vibrations within R or S limits	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SPM placing							op	op	op	op	op	op	op	op
Special data plate	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Terminal box with Ex d cable glands	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Terminal box with socket	op	op	op	op	op	op	op	op	op	op	op	op	op	op
Thermal protection of winding	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heating of winding against condensation	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heating of winding at temp. lower -20 °C	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Insulation class H	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Special colour	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● = on request
op = option

Ordering data

- rating in kW
- voltage and frequency
- r.p.m.
- type of motor arrangement (form IM ..)
- mechanical requirements
- special requirements (i.e. H-class thermal insulation, two-shaft, radial bearing seals...).

Reservation

Technical data subject to change without notice. No claims for damages arising from alterations, errors or misprints shall be allowed. Attention is drawn to the applicable standards and regulations on safety components and systems together with the relevant operating and installation instructions.

the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2000).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that the health care system is able to meet the needs of this population. The Department of Health (2000) has identified the need to ensure that the health care system is able to meet the needs of older people, and has set out a number of key objectives for the health care system to meet the needs of older people.

The objectives of the health care system to meet the needs of older people are:

- To ensure that older people have access to the health care services that they need.
- To ensure that older people receive the highest quality of care.
- To ensure that older people are able to live independently for as long as possible.

The health care system has a number of challenges to meet the needs of older people, and these are:

- The increasing number of older people who are in need of health care services.
- The increasing number of older people who are living with long-term conditions.
- The increasing number of older people who are living in care homes.

The health care system has a number of strategies to meet the needs of older people, and these are:

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