

**MASZYNY ELEKTRYCZNE  
CELMA SA**



ISO 9001: 2000    ISO 14001

**THREE-PHASE SQUIRREL-CAGE INDUCTION MOTORS  
EXPLOSION-PROOF FRAME 80 ÷ 132**

*Type: ECS(K,L,1)g,  
CS(K,L,1)g,*

*ECS(K,L,1)gb  
CS(K,L,1)gb*

**GENERAL INFORMATION**

- Motors are devoted to equipment installed in rooms and areas, in which explosive mixtures of combustible gas and vapour with air, classified as group II, temperature class T5 or lower, may appear
- Motors can be operated in zones 1 and 2

**Standard version**

- Duty S1
- Voltage 400 V
- Frequency 50 Hz
- Insulation class F
- Degree of protection IP 54
- Ambient temperature from -20°C to +50 °C (class T5)
- Increased safety terminal box
- Terminal box with one cable inlet
- Cable inlet and terminals adapted for cable with copper wires
- Three terminals
- Closed type bearings (...2Z)
- According to standards: PN-EN 60034-1, PN-EN 60079-0, PN-EN 60079-1, PN-EN 60079-7
- Classified to category 2G acc. to Directive 94/9/WE (ATEX)

**Execution for request**

- Voltage up to 750V
- Frequency 60 Hz
- Degree of protection IP66
- Ambient temperature from -20°C to +60 °C (class T4)
- Flame-proof enclosure terminal box
- With thermal protection of winding
- With thermal protection of driver end side bearing
- With heaters in winding
- Terminal box with two cable inlets
- With parking rubber (of cable inlet) for other diameter
- With EMV gland for screen cable
- Adapter for frequency converter supply ( motor marked „-f” e.g CSg112M2-f)
- Special execution for low temperatures: to -35°C ...-ELT
- With GOST-R certification



## Operating parameters

Frame	Rated output		Rated speed	Data of rated output				Ratio of			Moment of inertia	Wright IM B3
	P <sub>N</sub>		n <sub>N</sub>	efficiency	Power factor	current	torque	Starting torque	Maximal torque	Starting current		
	[kW]	[HP]	[min <sup>-1</sup> ]	η <sub>N</sub>	cos φ	I <sub>N</sub>	T <sub>N</sub>	T <sub>L</sub> /T <sub>N</sub>	T <sub>b</sub> /T <sub>N</sub>	I <sub>L</sub> /I <sub>N</sub>	J	M
<b>2p=2 3000 rpm</b>												
802A	0,75	1,0	2770	75,0	0,86	1,7	2,6	2,4	3,0	4,9	0,0008	25
802B	1,1	1,5	2785	79,0	0,86	2,3	3,8	3,2	3,2	6,2	0,0010	26,5
90S2	1,5	2,0	2845	79,1	0,82	3,3	5,0	2,9	3,1	5,5	0,0013	34,5
90L2	2,2	3,0	2865	83,3	0,82	4,6	7,3	3,4	3,5	6,5	0,0020	36,5
100L2	3,0	4,0	2905	83,4	0,86	6,0	9,9	2,7	2,8	7,5	0,0048	48
112M2	4,0	5,5	2875	85,4	0,90	7,5	13,3	2,1	2,3	6,2	0,0079	70
132S2A	5,5	7,5	2920	87,0	0,88	10,4	18,0	2,4	3,2	7,0	0,0150	96
132S2B	7,5	10	2925	87,5	0,88	14,1	24,5	2,5	3,2	7,5	0,0180	102
<b>2p=4 1500 rpm</b>												
804A	0,55	0,75	1400	72,0	0,62	1,8	3,8	3,0	3,0	4,6	0,0016	25
804B	0,75	1,0	1405	74,0	0,64	2,3	5,1	3,2	3,3	5,0	0,0019	26,5
90S4	1,1	1,5	1405	75,0	0,80	2,6	7,5	2,1	2,6	4,5	0,0023	34,5
90L4	1,5	2,0	1410	78,0	0,79	3,5	10,2	2,5	2,8	4,9	0,0028	36,5
100L4A	2,2	3,0	1425	81,0	0,81	4,8	14,7	2,5	2,8	5,9	0,0058	47
100L4B	3,0	4,0	1415	81,0	0,81	6,6	20,2	2,6	2,7	5,8	0,0065	50
112M4	4,0	5,5	1435	85,1	0,84	8,1	26,6	2,6	3,0	6,3	0,0118	70
132S4	5,5	7,5	1450	85,8	0,84	11,0	36,2	2,2	3,1	6,9	0,0290	97
132M4	7,5	10	1450	87,0	0,85	14,6	49,4	2,2	3,1	6,7	0,0350	105
<b>2p=6 1000 rpm</b>												
100L6	1,5	2,0	962	81,4	0,74	3,6	14,9	1,9	2,3	4,6	0,009	47

## Symbols of offered motors

### Frame of motors and its marking

Motor with flame-proof enclosure and with increased safety terminal box					
Type of motor	80 <sup>*</sup>	90 <sup>*</sup>	100 <sup>*</sup>	112 <sup>*</sup>	132 <sup>*</sup>
ECS/L,K,1/g	II 2G Exde IIC T5	-	-	II 2G Exde IIC T5	II 2G Exde IIC T5
ECS/L,K,1/gb	-	II 2G Exde IIB +H <sub>2</sub> T5	II 2G Exde IIB T5	-	-
Motor and terminal box with flame-proof enclosure – for request					
CS/L,K,1/g	-	-	-	II 2G Exd IIC T5	II 2G Exd IIC T5
CS/L,K,1/gb	II 2G Exd IIB +H <sub>2</sub> T5	II 2G Exd IIB +H <sub>2</sub> T5	II 2G Exd IIB T5	-	-

<sup>(\*)</sup> KDB 04ATEX052X

## Operating with frequency converter

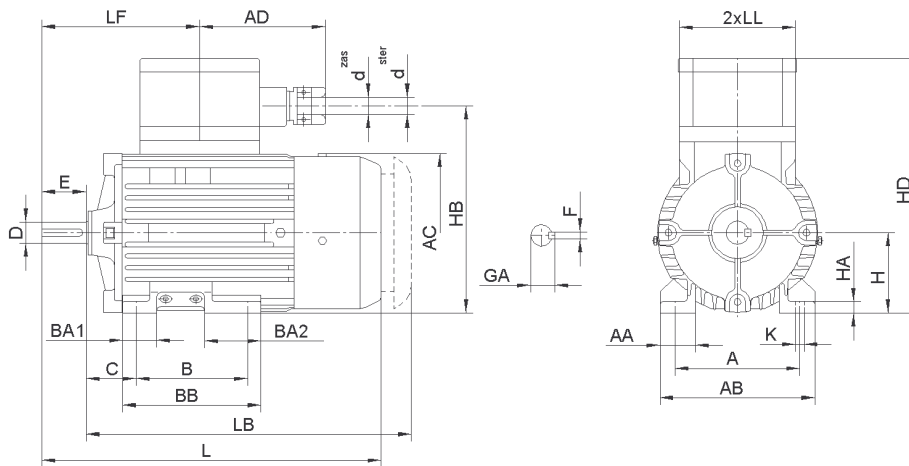
Type of driver machine	Range of speed (n <sub>N</sub> – rated speed)	Parameters of frequency converter <sup>1)</sup> for motor's type	
		ECS.g(b)...-f	CS.g(b)...-f
Ventilators, pumps $T=T_N * (n / n_N)^2$	0 ÷ n <sub>N</sub>	U <sub>peak</sub> < 0,8 kV	U <sub>peak</sub> < 1,6 kV
With torque constans T=T <sub>N</sub>	0,3 n <sub>N</sub> ÷ 1.2n <sub>N</sub> <sup>2)</sup>	d <sub>t</sub> = 0.1μs	

<sup>1)</sup> „the motor - the converter” given an examination to with converters of firms: DANFOSS series VLT 5000 and 6000, SIEMENS series SIMOVERT MASTERDRIVERS also VACON series NX

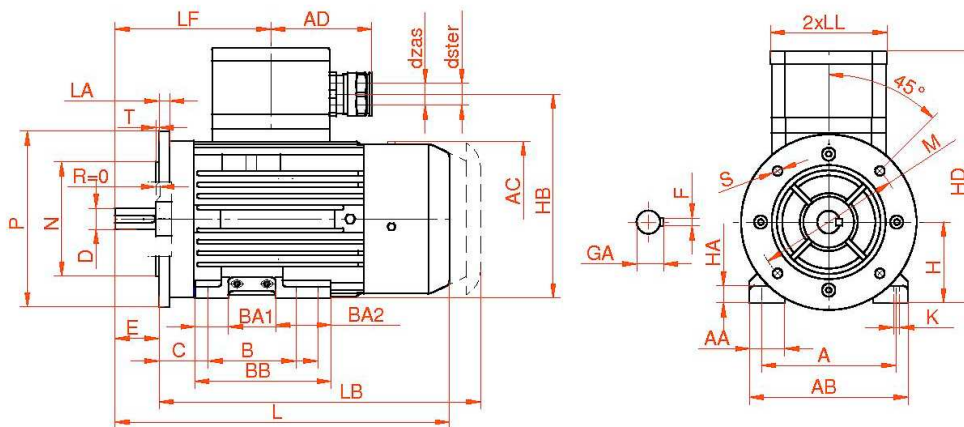
<sup>2)</sup> n<sub>N</sub> ÷ 1,2 n<sub>N</sub> – constans rated power

**Dimensions drawings**

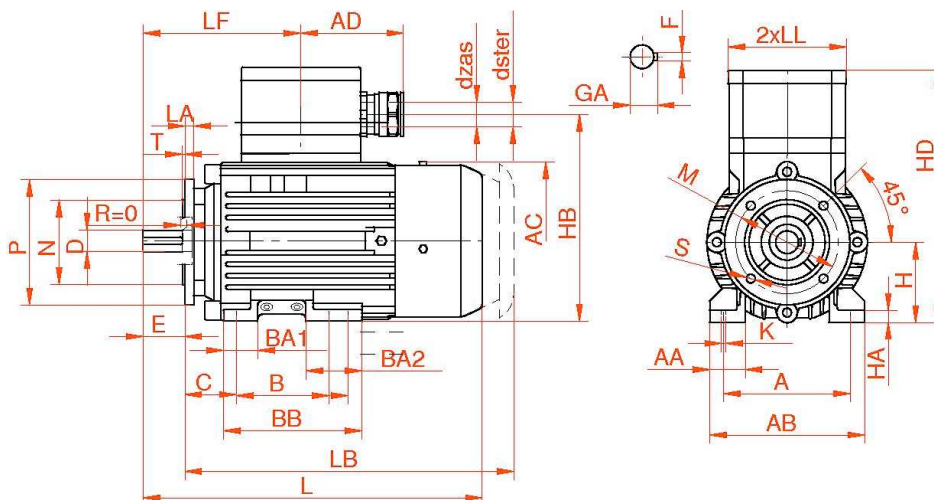
**(E)CSgb**  
IM 1001, IM 1011, IM 1031, IM 1051, IM 1061, IM 1071



**(E)CSLg(b)**  
IM 2001, IM 2011, IM 2031, IM 2051, IM 2061, IM 2071



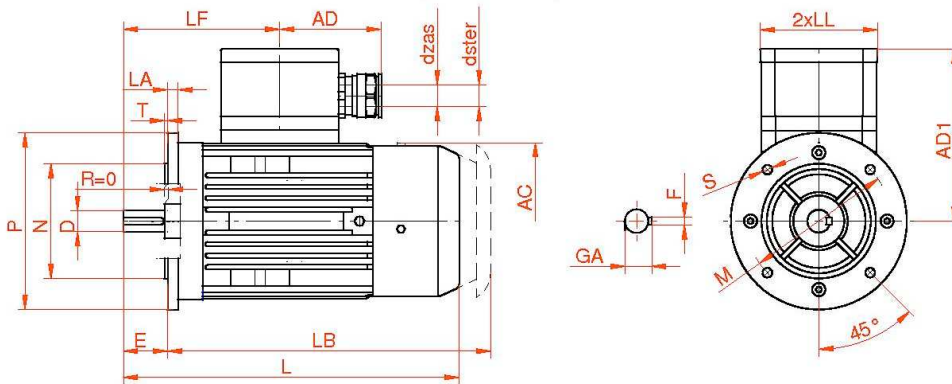
**(E)CSL1g(b)**  
IM 2101, IM 2111, IM 2131, IM 2151, IM 2161, IM 2171



**Dimensions drawings**

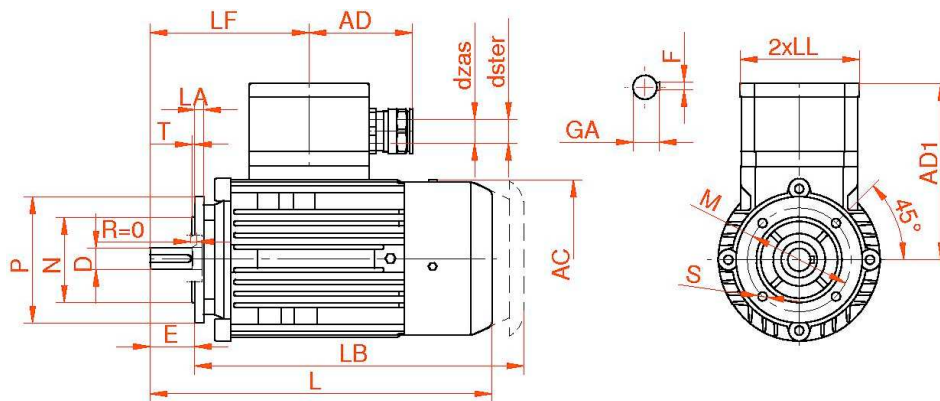
**(E)CSKg(b)**

IM 3001, IM 3011, IM 3031



**(E)CSK1g(b)**

IM 3601, IM 3611, IM 3631



NOTICE:

## Mounting dimensions [mm]

Frame	A	B	C	Shaft end				H <sub>0,5</sub>	HA	K
				D <sub>i6</sub>	E	F <sub>h9</sub>	GA			
80	125	100	50	19	40	6	21,5	80	12	10
90S	140	100	56	24	50	8	27	90	13	10
90L	140	125	56	24	50	8	27	90	13	10
100L	160	140	63	28	60	8	31	100	14	12
112M	190	140	70	28	60	8	31	112	14	12
132S	216	140	89	38 <sub>k6</sub>	80	10	41	132	16	12
132M	216	178	89	38 <sub>k6</sub>	80	10	41	132	16	12

<sup>\*</sup> only for frame 132

## Mounting dimensions [mm]

Frame	LA	Flange IMB5						Flange IMB14					
		M±0,3	N <sub>j6</sub>	P	S		T	M±0,3	N <sub>j6</sub>	P	S		T
					Ø	q-ty					Ø	q-ty	
80	15	165	130	200	12	4	3,5	100	80	120	M6	4	3
90	10	165	130	200	12	4	3,5	115	95	140	M8	4	3
100	11	215	180	250	15	4	4	130	110	160	M8	4	3,5
112	12	215	180	250	15	4	4	130	110	160	M8	4	3,5
132	15	265	230	300	14,5	4	4	165	130	200	M10	4	3,5

## Overall dimensions [mm]

Frame	AA	AB	AC	AD	AD1	BA <sub>1</sub>	BA <sub>2</sub>	BB	HB	HD	L	LB	LF	LL	d <sub>zas</sub> <sup>*</sup>	For request d <sub>ster</sub>
80	40	165	190	145	194	38	38	130	215	274	310	295	138	66	8 ÷ 17	5 ÷ 13
90	40	174	190	145	201	38	63	155	232	291	380	355	176	66		
100	45	200	211	145	211	48	48	170	252	311	430	415	191	66		
112	54	230	240	150	264	50	50	174	300	376	475	455	188	75		
132	56	270	286	150	277	50	88	218	333	409	570	540	207	75		

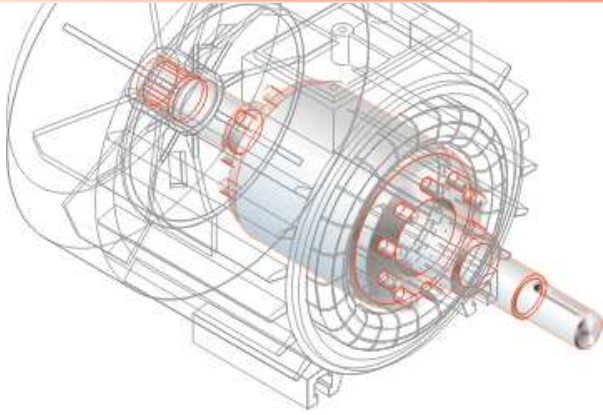
<sup>\*)</sup> possible other packing rubber of cable inlets

## Bearings

Frame	Side	
	N <sup>1</sup>	ND <sup>2</sup>
80	6204 2Z	
90	6205 2Z	
100	6206 2Z	
112	6306 2Z	
132	6308 2Z	

<sup>1)</sup> Driver end side

<sup>2)</sup> non driver end side



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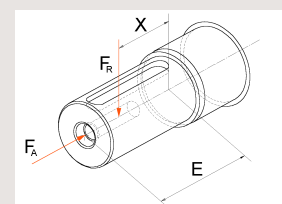
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 www.motors.celma.pl

### Permissible free shaft end load (on drive end side)

Frame	Radial load		Axial load			Weight of rotor [kg]
	x=0	x=E	horizontal [N]	Vertical		
	[N]	[N]		down [N]	up [N]	
<b>L<sub>h</sub>=30000 h</b>						
802A	500	400	400	300	400	2
802B	500	400	400	300	400	2
804A	600	500	500	500	500	2
804B	600	500	500	500	500	2
90S2	500	400	400	400	400	3
90L2	500	400	400	400	400	3
90S4	700	500	500	500	600	4
90L4	600	500	500	500	600	5
100L2	700	600	500	500	600	6
100L4A	900	700	700	700	800	7
100L4B	900	700	700	700	800	7
100L6	1000	800	900	800	900	7
112M2	1100	900	800	700	900	8
112M4	1400	1100	1100	1000	1200	10
132S2A	1600	1300	1200	1100	1300	13
132S2B	1600	1300	1200	1100	1400	15
132S4	2100	1700	1700	1500	1900	16
132M4	2000	1600	1700	1500	1900	19
<b>L<sub>h</sub>=40000 h</b>						
802A	400	300	300	300	300	2
802B	400	300	300	300	300	2
804A	500	400	500	400	500	2
804B	500	400	400	400	500	2
90S2	400	300	300	300	400	3
90L2	400	300	300	300	400	3
90S4	600	400	500	400	500	4
90L4	600	400	500	400	500	5
100L2	600	500	500	400	500	6
100L4A	800	600	600	500	700	7
100L4B	800	600	600	500	700	7
100L6	900	700	800	700	900	7
112M2	1000	800	700	700	800	8
112M4	1200	1000	1000	900	1100	10
132S2A	1500	1200	1100	1000	1200	13
132S2B	1400	1200	1100	900	1200	15
132S4	1800	1500	1400	1200	1500	16
132M4	1800	1400	1300	1200	1600	19

- 1 Permissible load as a function of X is linear in the range from X=0 to X=E.
2. L<sub>h</sub> – bearings life



The manufacturer reserve the right to introduce operating parameter and dimension changes in course of modernisation