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VEM type series product range

	Type of cooling	Power range	Duty type	Sizes	Available in efficiency class DIN EN 60034-30 (IEC 60034-30) 0,75 - 375 kW 2-, 4- and 6-pole: Standard efficiency	High efficiency	Premium efficiency	Mandatory minimum efficiency acc. to regulation (EC) no. 640/2009: Step 1 from 16th June 2011	Step 2 from 1st January 2015	Step 3 from 1st January 2017
					IE1	IE2	IE3	0,75 - 375 kW	7,5 - 375 kW	0,75 - 375 kW
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor,	IC 411	0,06 - 500 kW	S1, continuous duty	IEC 56 to 355	X	X	o.r.	IE2	IE3 or IE2 + FU	
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor, 2-, 3- and 4x pole-changing designs	IC 411	0,06 - 200 kW	S1, continuous duty	IEC 63 to 315	-	-	-	without	without	without
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor,	IC 411	0,06 - 500 kW	Intermittend periodic duty S3-80%/1	IEC 56 to 355	X	X	o.r.	IE2	IE3 or IE2 + FU	
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor,	IC 411	0,06 - 600 kW	S2, short-time operation	IEC 56 to 355	-	-	-	without	without	without
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor,	IC 411	0,06 - 600 kW	Intermittend periodic duty S3-25/40/	IEC 56 to 355	-	-	-	without	without	without
Three-phase brake motors, brake INTORQUE	IC 411	0,12 - 90 kW	S1, continuous duty	IEC 63 to 280	X	X	o.r.	without	without	without
Three-phase brake motors, brake STROMAG	IC 411	0,12 - 315 kW	S1, continuous duty	IEC 63 to 315	X	X	o.r.	without	without	without
Three-phase brake motors, brake MAYER	IC 411	0,12 - 90 kW	S1, continuous duty	IEC 71 to 280	X	X	o.r.	without	without	without
Three-phase brake motors, brake KEB	IC 411	0,12 - 30 kW	S1, continuous duty	IEC 63 to 200	X	X	o.r.	without	without	without
Three-phase brake motors, brake PINTSCH BAMAG	IC 411	1,1 - 315 kW	S1, continuous duty	IEC 71 to 355	X	X	o.r.	without	without	without
Three-phase brake motors, brake PRECIMA	IC 411	0,12 - 7,5 kW	S1, continuous duty	IEC 63 to 132	X	X	o.r.	without	without	without
Three-phase brake motors, brake BINDER	IC 411	0,12 - 7,5 kW	S1, continuous duty	IEC 63 to 132	X	X	o.r.	without	without	without
Three-phase brake motors, brake TEMPORITTI	IC 411	0,12 - 7,5 kW	S1, continuous duty	IEC 63 to 132	X	X	o.r.	without	without	without
Three-phase motors, forced ventilation, IC 416	IC 416	0,25 - 500 kW	S1, continuous duty	IEC 63 to 355	X	X	o.r.	IE2	IE3 or IE2 + FU	
Three-phase fan motors, forced ventilation, IC 418	IC 418	0,06 - 500 kW	S1, continuous duty	IEC 63 to 355	X	o.r.	-	without	without	without
Three-phase motors, non-ventilated, IC 410	IC 410	0,04 - 230 kW	S1, continuous duty	IEC 63 to 355	-	-	-	without	without	without
Three-phase motors, water-cooled, IC 31W	IC 31W	37 - 110 kW	S1, continuous duty	IEC 225 to 280	X	X	o.r.	IE2	IE3 or IE2 + FU	
Three-phase roller table motors in heavy duty design for mains operation, non-ventilated	IC 410	0,6 - 5,5 kW	S4, S5, S7	TN 125 to 200	-	-	-	without	without	without
Three-phase roller table motors in heavy duty design for inverter operation, non-ventilated	IC 410	0,37 - 290 kW	S8, S9	IEC 112 to 400	-	-	-	without	without	without
Three-phase roller table motors in light duty design for inverter operation, non-ventilated	IC 410	0,37 - 175 kW	S8, S9	IEC 63 to 355	-	-	-	without	without	without
Three-phase roller table motors in light duty design for inverter operation, ventilated	IC 411	0,09 - 500 kW	S8, S9	IEC 112 to 355	-	-	-	without	without	without
Three-phase roller table motors in light duty design for inverter operation, forced ventilation	IC 416	0,18 - 500 kW	S8, S9	IEC 112 to 355	-	-	-	without	without	without
Three-phase motors for marine applications complying with the rules of the international classification societies	IC 411	0,09 - 450 KW	S1, continuous duty	IEC 63 to 355	X	X	o.r.	without	without	without
Three-phase motors in type of protection increased safety "e"	IC 411	0,12 - 315 kW	S1, continuous duty	IEC 63 to 355	X	o.r.	o.r.	without	without	without
Three-phase motors in type of protection flameproof enclosure "d/de"	IC 411	0,12 - 690 kW	S1, continuous duty	IEC 63 to 450	X	X	o.r.	without	without	without
Three-phase motors in type of protection "n" (non-sparking)	IC 411	0,06 - 450 kW	S1, continuous duty	IEC 63 to 355	X	X	o.r.	without	without	without
Three-phase motors in type of protection "protection by enclosure, tD A21"	IC 411	0,06 - 315 kW	S1, continuous duty	IEC 63 to 355	X	X	o.r.	without	without	without
Three-phase motors in type of protection "protection by enclosure, tD A22"	IC 411	0,06 - 355 kW	S1, continuous duty	IEC 63 to 355	X	X	o.r.	without	without	without
Variable speed three-phase drives for inverter output voltage up to 420 V, ventilated	IC 411	0,09 - 430 kW	S8, S9	IEC 56 to 355	X	X	o.r.	without	without	without
Variable speed three-phase drives for inverter output voltage up to 420 V, forced ventilation	IC 416	0,09 - 430 kW	S8, S9	IEC 56 to 355	X	X	o.r.	without	without	without
Variable speed three-phase drives for inverter output voltage up to 500 V, ventilated [2]	IC 411	0,09 - 430 kW	S8, S9	IEC 56 to 355	o.r.	o.r.	-	without	without	without
Variable speed three-phase drives for inverter output voltage up to 500 V, forced ventilation [2]	IC 416	0,09 - 430 kW	S8, S9	IEC 56 to 355	o.r.	o.r.	-	without	without	without
Variable speed three-phase drives for inverter output voltage > 500 V up to 690 V [2]	IC 411	0,09 - 420 kW	S8, S9	IEC 56 to 355	-	-	-	without	without	without
Variable speed three-phase drives for inverter output voltage > 500 V up to 690 V, forced ventilation [2]	IC 416	0,09 - 420 kW	S8, S9	IEC 56 to 355	-	-	-	without	without	without
Three-phase compact drive, ventilated	IC 411	0,55 - 22 kW	S8, S9	IEC 71 to 180	X	X	o.r.	without	without	without
Three-phase compact drive, forced ventilation	IC 416	0,55 - 22 kW	S8, S9	IEC 71 to 180	X	X	o.r.	without	without	without
Motors for use in mechanical smoke and heat exhaust ventilators F200	IC 418	0,12 - 500 kW	S1, continuous duty / S2-120 min	IEC 74 to 355	X	o.r.	-	without	without	without
Motors for use in mechanical smoke and heat exhaust ventilators F300	IC 418	0,12 - 420 kW	S1, continuous duty / S2-60 min	IEC 71 to 355	X	o.r.	-	without	without	without
Motors for use in mechanical smoke and heat exhaust ventilators F400	IC 418	0,12 - 380 kW	S1, continuous duty / S2-120 min	IEC 71 to 355	X	o.r.	-	without	without	without
Build-in motors	-	0,06 - 500 kW	depending on design	IEC 56 to 355	(X) [1]	(X) [1]	-	without	without	without
Three-phase motors acc. to IEC/DIN, squirrel-cage rotor without winding	-	0,06 - 500 kW	depending on design	IEC 56 to 355	(X) [1]	(X) [1]	-	without	without	without
Single-phase motors	IC 411	0,09 - 2,2 kW	S1, continuous duty	IEC 63 to 100	-	-	-	without	without	without
Permanent magnet synchronous motors, ventilated	IC 411	0,18 - 45 kW	S9	IEC 63 to 200	-	-	-	without	without	without
Permanent magnet synchronous motors, forced ventilation	IC 416	0,18 - 45 kW	S9	IEC 63 to 200	-	-	-	without	without	without
Permanent magnet synchronous motors, water-cooled	IC 31W	45 - 94 KW	S9	IEC 225 to 280	-	-	-	without	without	without
Three-phase asynchronous generators	IC 411	0,75 - 500 kVA	S1, continuous duty	IEC 80 to 355	(X) [3]	(X) [3]	-	without	without	without
Permanent magnet synchronous generators, type of cooling IC 411	IC 411	0,18 - 45 kVA	S1, continuous duty	IEC 63 to 200	-	-	-	without	without	without
Three-phase motors, slip-ring rotor, ventilated	IC 411	2,2 - 250 kW	S1, continuous duty	IEC 132 to 315	-	-	-	without	without	without
Three-phase motors, slip-ring rotor for crane and smelter applications, ventilated	IC 411	2,2 - 315 kW,	Intermittend duty S3	IEC 132 to 315	-	-	-	without	without	without

TN transnorm design

[1]) Active material (and winding) corresponds with IE1 or IE2, real efficiency depending on final design

[2]) max. voltage load for the sizes 56 up to 132T see catalogue/price list

[3]) Active material and winding corresponds with IE1 or IE2

WWAK-Se/19.08.2009

Notes concerning the European and National legal situation:

Directive 2005/32/EC
„Ecodesign requirements for energy-using products (EuP directive)"

Implemented by:
Gesetz über die umweltgerechte Gestaltung energiebetriebener Produkte (Energy- using products Act, EBPG)

Coming into effect on 7.3.2008.

Regulation (EC) no. 640/2009 of the Commission dated 22nd July 2009 for implementation of the directive 2005/32/EC

Definition of minimum efficiencies for certain types of motors
MEPS: Minimum Energy-efficiency Performance Standards

This regulation is not valid for
(a) Motors designed for operation in total liquid immersion;
(b) Motors that are completely fitted into another product (i.e. gear, pump, ventilator or compressor) and their efficiency can not be determined independent from the product;
(c) Motors that are designed specially for the following conditions:
(i) for use in more than 1 000 meters above sea level;
(ii) for operational temperature above 40 °C;
(iii) for max. operational temperatures above 400 °C;
(iv) for ambient temperatures below −15 °C (any motor) or for ambient temperatures below 0 °C (air cooled motor);
(v) for cooling liquid temperatures at the product inlet below 5 °C or above 25 °C;
(vi) in areas with risk of explosions complying with RL 94/9/EG
(d) Brake motors,

Definition of efficiency classes
The IEC 60034-30, Edition 1.0 2008-10 (DIN EN 60034-30, August 2009) defines new efficiency classes. The labelling is done in accordance with the type of protection mark IP (International Protection) with IE (International Efficiency)

IE1 Standard efficiency (old EFF2 class)
IE2 High efficiency (old EFF1 class)
IE3 Premium efficiency

Application of the classification
The efficiency classification acc. to IEC 60034-30 must be applied to three-phase low voltage motors with squirrel-cage rotor with the following specifications:
Rated voltages up to 1000 V
suitable for mains operation
Rated outputs between 0,75 kW and 375 kW
Pole numbers 2, 4 or 6
Designed for continuous duty (S1) or nearly continuous duty (S3 with operational time of 80% or more)
suitable for ambient conditions defined in IEC 60034-1 (temperature, installation altitude).

Excluded are:
- Motors specially designed for inverter operation acc. to IEC 60034-25
- Motors that are completely fitted into another product (i.e. gear, pump, ventilator or compressor) and their efficiency can not be determined independent from the product.