

Motors for use on a frequency converter

VEM  DRIVE
drive systems

SENSE EXPERIENCE
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Motors for use on a frequency converter

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Introduction

VEMoDRIVE Single is the name for a family of drive systems with variable-speed motor. This product information provides a brief overview of these systems. Since the pulse withstand voltage of the insulation is of particular importance for the motors of variable-speed drive systems, information is also given on the electric strength of VEM

Motors with standard insulation

VEM energy-saving motors are always suitable for operation on a frequency converter, irrespective of their efficiency classification. Assuming that the service life of the winding insulation on converter-fed motors can be equated to that on mains-fed motors, the pulse voltages at the terminals must not exceed 1,350 V on motors with standard insulation, in accordance with IEC/TS 60034-17 (VDE 0530 Part 17):2007-12. In case of pulse voltage rise times of less than

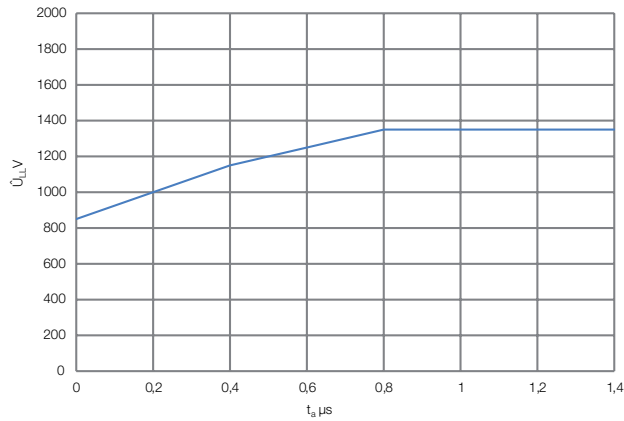


Fig. 1: Limit characteristic curve of the permissible pulse voltage \hat{U}_{LL} at the motor terminals, as dependent on the rise time t_a [IEC/TS 60034-17 (VDE 0530 Part 17):2004]

0.8 μ s at the motor terminals, the permissible pulse voltage is reduced as shown in Fig. 1.

If short rise times lead to exceeding of the permissible pulse voltages, filters must be incorporated at the converter output to extend the rise times and thus to reduce the rate

Motors with reinforced winding insulation

Drive systems which are operated on mains voltages above 420 V may necessitate motors with reinforced winding insulation. Insulation with an enhanced pulse withstand voltage is required especially where motors are connected to a converter without filter by way of a long cable or else operate frequently in generator mode. For such applications, VEM has developed motors with particularly high electric strength. These motors must always be chosen where motors are fed via a converter with an input voltage above 420 V and where the level of the pulse voltages to be expected at the motor terminals is unknown.

insulation systems. As examples for the countless possible applications of VEMoDRIVE Single, drive systems with 2- to 6-pole motors in standard versions for square-law and constant torque characteristics have been summarised in tables, together with corresponding cable recommendations.

of voltage rise du/dt . Otherwise, the service life of the motor insulation will be shortened in line with the pulse voltage overshoot.

The technical data of the VEM motors can be taken from the main or basic catalogue. An electronic catalogue is available online at our website www.vem-group.com.

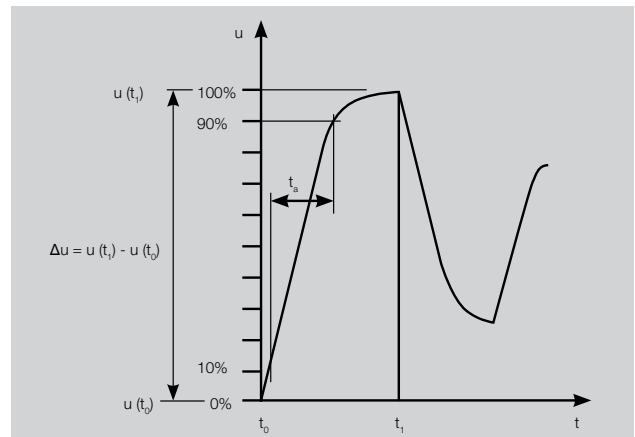


Fig. 2: Definition of the rise time t_a of the voltage at the motor terminals

VEM recommends the appointment of a responsible system manager when planning electric drive systems for mains voltages > 420 V or for outputs from approx. 100 kW. Only an experienced drive specialist is able to guarantee optimum system configuration.

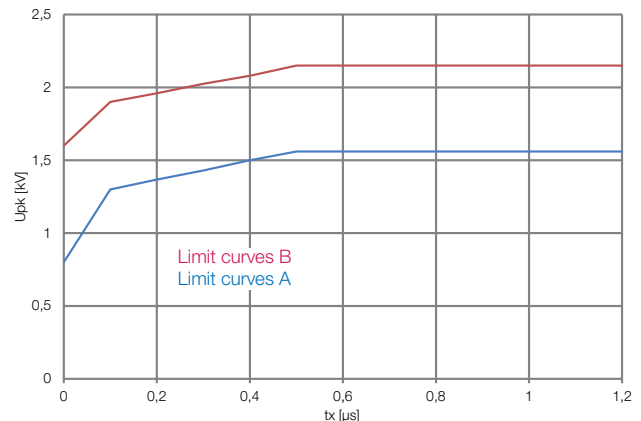


Fig. 3: Limit curves for the pulse voltage \hat{U}_{pk} at the motor terminals, as dependent on the rise time t_a

Motors for use on a frequency converter without filter up to 500 V

Limit curve A

Motors of the design series IE1-KU.R and IE2-WU.R are provided with reinforced winding insulation, which enables the motors to be operated on converters for mains voltages up to 500 V without filter. From IEC size 315, insulated bearings are used on the non-drive side as standard.

The KU.R series is well proven after many years of worldwide use. It is based on an insulation system in which the main components – e.g. slot insulation, grade 2/class 200 winding wire and high-quality impregnation resin – are carefully matched. The windings are double vacuum-impregnated. The PTC thermistors are similarly matched to the higher electric strength of the motors.

Provided the pulse voltages are limited to the maximum permissible values according to limit curve A (see Fig. 3), the motors of the design series IE1-KU.R and IE2-WU.R are also very well suited to operation on 690 V converters.

The benefits include:

- Favourable cost
- Motor size = Standard size
- Motor output = Standard output
- Reduction of
 - harmonic loads on motor cables
 - EMI emissions and
 - bearing currents.

Motors of the IE1-KU.R series are designed for operation on a converter. The series is based on motors which comply with efficiency class IE1 in mains operation. The IE2-WU.R series is based on motors which comply with efficiency class IE2 in mains operation. These motors are especially suitable also for applications where an increased thermal reserve is desirable.

Upon request, it is possible to supply motors for efficiency class IE3 with reinforced winding insulation.

Motors for use on a frequency converter without filter up to 690 V

Limit curve B

For motors of the design series KV.R, VEM uses insulation materials of very high quality to enable operation on converters for output voltages up to 690 V without additional output circuitry. This insulation system is designed to withstand pulse voltages in accordance with limit curve B (Fig. 3) at the motor terminals.

The basis of the insulation system is a mica-insulated winding wire. The greater volume of the insulation material, however, reduces the active slot space. In the versions KV1R, KV0R and KV2R, the output is thus lower than that of a motor of the same size from the basic series. With the KV4R version, on the other hand, the IEC/DIN output assignments are observed. The motors are designed to thermal class 155 [F]. From IEC size 315, they are provided with insulated bearings on the non-drive side as standard.

The motors are available from size 132 S as standard. Motors for efficiency classes IE2 and IE3 can be supplied upon request.



Fig. 4: Stator of the KV.R series, before impregnation

Draft IEC 60034-18-41/FDIS

In the foreseeable future, motor insulation systems are to be assigned to stress categories.

Draft standard IEC 60034-18-41/FDIS plans the introduction of a so-called “Impulse Voltage Insulation Class” (IVIC). The phase-to-phase insulation, phase-to-earth insulation and turn-to-turn insulation of an insulation system must be classified individually according to the following stress categories:

- A Low stress
- B Medium stress
- C High stress
- D Extreme stress

The stress categories are to be specified in the motor documentation and indicated on the rating plate.

The IVIC classification could be given as follows, for example: IVIC C/D/C

- Phase-to-phase insulation: C (high stress)
- Phase-to-earth insulation: D (extreme stress)
- Turn-to-turn insulation: C (high stress)

VEM will provide information on the classifications of its insulation systems as soon as the corresponding standards become effective.

Mechanical limit speeds

In case of operation at frequencies above 60 Hz, the permissible limit speeds (see main catalogue) must be observed. The “high-speed” option is available specifically for standard motors which are to be operated at high speeds. As the relubrication interval for the bearings is

shortened with increasing speed, VEM recommends the incorporation of a relubrication systems from IEC size 160, depending on the duration of operation. A separate cooling fan may be expedient to reduce running noise.

Shaft heights and output assignments

Series	IE1-KU1R, IE1-KU2R (suitable for converter-fed operation according to Fig. 3, curve A)	KV1R and KV2R (suitable for converter-fed operation according to Fig. 3, curve B)
Sizes	56 to 355	132 to 355
Output range	0.09 – 430 kW	4 – 410 kW
Efficiency class	IE1 acc. to IEC 60034-30, valid for mains operation and continuous duty S1	none

Duty types, degrees of protection, types of cooling, design types and options correspond to those of standard motors.

Shaft height	Rated output P (kW)				Rated output P (kW)			
	Series KU.R, compliant with curve A				Series KV.R, compliant with curve B			
	Types of cooling IC 411 and IC 416, without filter up to 500 V				Types of cooling IC 411 and IC 416, without filter up to 690 V			
	2-pole 3000 rpm	4-pole 1500 rpm	6-pole 1000 rpm	8-pole 750 rpm	2-pole 3000 rpm	4-pole 1500 rpm	6-pole 1000 rpm	8-pole 750 rpm
56 G	0.12	0.09	-	-				
63 K	0.18	0.12	0.09	-				
63 G	0.25	0.18	0.12	-				
71 K	0.55	0.25	0.18	0.09				
71 G	0.55	0.37	0.25	0.12				
80 K	0.75	0.55	0.37	0.18				
80 G	1.1	0.75	0.55	0.25				
90 S	1.5	1.1	0.75	0.37				
90 L	2.2	1.5	1.1	0.55				
100 L	3	2.2	1.5	0.75				
100 LX	-	3	-	1.1				
112 M	4	4	2.2	1.5				
132 S.T	5.5	5.5	3	2.2				
132 S	-	-	-	-	4	4	-	-
132 SX	7.5	-	-	-	5.5	-	-	-
132 M	-	7.5	4	3	-	5.5	2.2	1.5
132 MX	-	-	5.5	-	-	-	3 + 4	-
160 M	10.5	11	7.5	4	7.5	7.5	5.5	2.2 + 3
160 MX	15	-	-	5.5	11	-	-	4
160 L	18.5	15	11	7.5	15	11	7.5	5.5
180 M	22	18	-	-	18.5	15	-	-
180 L	-	22	15	11	-	18.5	11	7.5
200 L	30	29	18.5	15	22	22	15	11
200 LX	37	-	22	-	30	-	18.5	-
225 S	-	37	-	18.5	-	30	-	-
225 M	45	45	30	22	37	37	22	18.5
250 M	55	55	37	30	45	45	30	22
280 S	74	75	45	37	55	55	37	30
280 M	87	90	55	45	75	75	45	37
315 S	110	110	75	55	90	90	55	45
315 M	132	132	90	75	110	110	75	55
315 MX	160	160	110	90	132	132	90	75
315 MY	192	200	132	110	160	160	110	90
315 L	220	250	160	132	200	200	132	110
315 LX	270	285	185	145	250	250	160	132
355 MY	315	315	200	160	280	280	180	145
355 M	330	355	250	200	300	300	200	160
355 MX	355	390	300	215	340	340	250	190
355 LY	380	430	315	230	370	370	300	210
355 L	425	-	-	-	410	410	-	-

Table 1: Shaft heights and output assignments for motors of the design series IE1-KU.R and KV.R

Shaft heights and output assignments

Series	IE2-WU1R, IE2-WU2R (suitable for converter-fed operation according to Fig. 3, curve A)
Sizes	80 to 355
Output range	0.75 – 355 kW
Efficiency class	IE2 acc. to IEC 60034-30, valid for mains operation and continuous duty S1
Duty types, degrees of protection, types of cooling, design types and options correspond to those of standard motors.	

Shaft height	Rated output P (kW)			
	Series IE2-WU... compliant with curve A			
	Types of cooling IC 411 and IC 416, without filter up to 500 V			
	2-pole 3000 rpm	4-pole 1500 rpm	6-pole 1000 rpm	8-pole *) 750 rpm
80 K	0.75	-	-	-
80 G	1.1	0.75	-	-
90 S	1.5	1.1	0.75	-
90 L	2.2	1.5	1.1	-
100 L	3	2.2	-	0.75
100 LX	-	3	1.5	1.1
112 M	4	4	2.2	1.5
132 ST	5.5	-	-	-
132 S	5.5	5.5	3	2.2
132 SX	7.5	-	-	-
132 M	-	7.5	4	3
132 MX	-	-	5.5	-
160 M	11	11	7.5	4
160 MX	15	-	-	5.5
160 L	18.5	15	11	7.5
180 M	22	18.5	-	-
180 L	-	22	15	11
200 L	25	30	18.5	15
200 LX	37	-	22	-
225 S	-	37	-	18.5
225 M	45	45	30	22
250 M	55	55	37	30
280 S	74	75	45	37
280 M	87	90	55	45
315 S	110	110	75	55
315 M	132	132	90	75
315 MX	160	160	110	90
315 MY	192	200	132	110
315 L	220	250	160	132
315 LX	270	285	185	145
355 MY	315	315	200	160
355 M	330	355	250	200
355 MX	-	-	300	215
355 LY	-	-	315	230

*) without IE classification

VEMoDRIVE Single

Variable-speed drives with self-ventilated 2-pole energy-saving motors for applications with square-law torque characteristic (overload 110%) IE2 motors (in mains operation) for output range from 0.75 kW to 355 kW Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable *)
	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque				
$\hat{U}_{LL} \leq 1350 \text{ V}$	P/kW	n/rpm	M/Nm	A	P/kW	M/Nm	rpm	Type	A	mm ²
W21R 71 K2	0.37	2860	1.24	0.76	0.37	1.24	6000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25
W21R 71 G2	0.55	2870	1.83	1.13	0.55	1.83	6000	FC302PK55T5	1.8	3 x 1.5 + 3G0.25
IE2-W21R 80 K2	0.75	2880	2.49	1.46	0.75	2.49	6000	FC302PK75T5	2.4	3 x 1.5 + 3G0.25
IE2-WE1R 80 G2	1.1	2885	3.64	2.15	1.1	3.64	6000	FC302P1K1T5	3	3 x 1.5 + 3G0.25
IE2-WE1R 90 S2	1.5	2910	4.92	2.9	1.5	4.92	6000	FC302P1K5T5	4.1	3 x 1.5 + 3G0.25
IE2-WE1R 90 L2	2.2	2880	7.30	4.25	2.2	7.30	6000	FC302P2K2T5	5.6	3 x 1.5 + 3G0.25
IE2-WE1R 100 L2	3	2910	9.85	5.8	3	9.85	6000	FC302P3K0T5	7.2	3 x 1.5 + 3G0.25
IE2-WE1R 112 MX2	4	2910	13.1	7.5	4	13.1	6000	FC302P4K0T5	10	3 x 1.5 + 3G0.25
IE2-WE1R 132 S2	5.5	2915	18	10.5	5.5	18	6000	FC302P5K5T5	13	3 x 2.5 + 3G0.5
IE2-WE1R 132 SX2	7.5	2925	24.5	13.5	7.5	24.5	6000	FC302P7K5T5	16	3 x 4 + 3G0.75
IE2-WE1R 160 M2	11	2950	36	19.5	11	36	6000	FC302P11KT5	24	3 x 6 + 3G1
IE2-WE1R 160 MX2	15	2940	49	26	15	49	6000	FC302P11KT5	32	3 x 10 + 3G1.5
IE2-WE1R 160 L2	18.5	2935	60	32	18.5	60	6000	FC302P15KT5	37.5	3 x 10 + 3G1.5
IE2-WE1R 180 M2	22	2935	72	38.5	22	72	5400	FC302P18KT5	44	3 x 16 + 3G2.5
IE2-WE1R 200 L2	30	2945	97	51.5	30	97	6000	FC302P22KT5	61	3 x 25 + 3G4
IE2-WE1R 200 LX2	37	2940	120	63	37	120	6000	FC302P30KT5	73	3 x 35 + 3G6
IE2-WE1R 225 M2	45	2950	146	80.5	45	146	5000	FC302P37KT5	90	3 x 50 + 3G10
IE2-WE1R 250 M2	55	2955	178	97	55	178	4500	FC302P45KT5	106	3 x 70 + 3G10
IE2-WE1R 280 S2	75	2972	241	128	75	241	4300	FC302P55KT5	147	2 x (3 x 35 + 3G6)
IE2-WE1R 280 M2	90	2970	289	151	90	289	4300	FC302P75KT5	177	2 x (3 x 50 + 3G10)
IE2-W21R 315 S2	110	2975	353	191	110	353	3800	FC302N90KT5	212	2 x (3 x 70 + 3G10)
IE2-W21R 315 M2	132	2975	424	225	132	424	3800	FC302N110T5	260	2 x (3 x 95 + 3G16)
IE2-W21R 315 MX2	160	2973	514	270	160	514	3600	FC302N132T5	315	2 x (3 x 95 + 3G16)
IE2-W21R 315 MY2	200	2983	640	344	200	640	3600	FC302N160T5	395	2 x (3 x 150 + 3G25)
IE2-W21R 315 L2	250	2984	800	411	225	720	3600	FC302N200T5	480	2 x (3 x 185 + 3G35)
IE2-W21R 315 LX2	315	2985	1010	502	270	864	3600	FC302N250T5	588	2 x (3 x 185 + 3G35)
IE2-W22R 355 MY2	315	2988	1008	534	315	1008	3600	FC302N250T5	588	2 x (3 x 185 + 3G35)
IE2-W22R 355 M2	355	2980	1138	592	330	1058	3600	FC302P315T5	658	4 x (3 x 120 + 3G16)
W42R 355 MX2	400	2990	1278	665	355	1278	3600	FC302P355T5	745	4 x (3 x 150 + 3G25)
W42R 355 L2	500	2990	1597	840	425	1437	3600	FC302P450T5	880	6 x (3 x 95 + 3G16)
W42R 400 M2	560	2988	1790	965			3600	FC302P500T5	990	8 x (3 x 70 + 3G10)
W42R 400 MX2	630	2988	2014	1070			3600	FC302P560T5	1120	8 x (3 x 95 + 3G16)
W42R 400 L2	710	2988	2269	1195			3600	FC302P630T5	1260	8 x (3 x 120 + 3G16)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 2-pole energy-saving motors
for applications with constant torque characteristic (overload 160%)
IE2 motors (in mains operation) for output range from 0.75 kW to 355 kW
Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed	Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable *)	
	Control range		Speed range		1:2.5		1:5		1:10							
		Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque	Motor output	Motor torque	Motor output	Motor torque	rpm	rpm	Type	A	mm ²
$\hat{U}_L \leq 1350$ V	P/kW	n/rpm	M/Nm	A	P/kW	M/Nm	P/kW	M/Nm	P/kW	M/Nm	rpm	rpm	Type	A	mm ²	
W21R 71 K2	0.37	2860	1.24	0.76	0.37	1.24	0.37	1.24	0.3	1.00	14000	6000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25	
W21R 71 G2	0.55	2870	1.83	1.13	0.55	1.83	0.55	1.83	0.44	1.46	14000	6000	FC302PK55T5	1.8	3 x 1.5 + 3G0.25	
IE2-W21R 80 K2	0.75	2880	2.49	1.46	0.75	2.49	0.75	2.49	0.6	1.99	13000	6000	FC302PK75T5	2.4	3 x 1.5 + 3G0.25	
IE2-WE1R 80 G2	1.1	2885	3.64	2.15	1.1	3.64	1.1	3.64	0.9	2.98	13000	6000	FC302P1K1T5	3.0	3 x 1.5 + 3G0.25	
IE2-WE1R 90 S2	1.5	2910	4.92	2.9	1.5	4.92	1.5	4.92	1.2	3.94	11000	6000	FC302P1K5T5	4.1	3 x 1.5 + 3G0.25	
IE2-WE1R 90 L2	2.2	2880	7.30	4.25	2.2	7.30	2.2	7.30	1.8	5.97	11000	6000	FC302P2K2T5	5.6	3 x 1.5 + 3G0.25	
IE2-WE1R 100 L2	3	2910	9.85	5.8	3	9.85	3	9.85	2.4	7.88	10000	6000	FC302P3K0T5	7.2	3 x 1.5 + 3G0.25	
IE2-WE1R 112 MX2	4	2910	13.1	7.5	4	13.1	4	13.1	3.2	10.5	7000	6000	FC302P4K0T5	10	3 x 1.5 + 3G0.25	
IE2-WE1R 132 S2	5.5	2915	18	10.5	5.5	18	5.5	18	5.5	18	7000	6000	FC302P5K5T5	13	3 x 2.5 + 3G0.5	
IE2-WE1R 132 SX2	7.5	2925	24.5	13.5	7.5	24.5	7.5	24.5	7.5	24.5	7000	6000	FC302P7K5T5	16	3 x 4 + 3G0.75	
IE2-WE1R 160 M2	11	2950	36	19.5	11	36	11	36	11	36	7000	6000	FC302P11KT5	24	3 x 6 + 3G1	
IE2-WE1R 160 MX2	15	2940	49	26	15	49	15	49	14	46	6000	6000	FC302P15KT5	32	3 x 10 + 3G1.5	
IE2-WE1R 160 L2	18.5	2935	60	32	18.5	60	18.5	60	16.5	54	6000	6000	FC302P18KT5	37.5	3 x 10 + 3G1.5	
IE2-WE1R 180 M2	22	2935	72	38.5	22	72	22	72	20	65	6000	5400	FC302P22KT5	44	3 x 16 + 3G2.5	
IE2-WE1R 200 L2	30	2945	97	51.5	30	97	30	97	27	88	6000	6000	FC302P30KT5	61	3 x 25 + 3G4	
IE2-WE1R 200 LX2	37	2940	120	63	37	120	37	120	33	108	6000	6000	FC302P37KT5	73	3 x 35 + 3G6	
IE2-WE1R 225 M2	45	2950	146	80.5	45	146	45	146	40	130	5000	5000	FC302P45KT5	90	3 x 50 + 3G10	
IE2-WE1R 250 M2	55	2955	178	97	55	178	55	178	50	160	4500	4500	FC302P55KT5	106	3 x 70 + 3G10	
IE2-WE1R 280 S2	75	2972	241	128	75	241	75	241	68	220	4300	4300	FC302P75KT5	147	2 x (3 x 35 + 3G6)	
IE2-WE1R 280 M2	90	2970	289	151	90	289	90	289	81	260	4300	4300	FC302N90KT5	177	2 x (3 x 50 + 3G10)	
IE2-W21R 315 S2	110	2975	353	191	110	353	110	353	100	320	3800	3800	FC302N110T5	212	2 x (3 x 70 + 3G10)	
IE2-W21R 315 M2	132	2975	424	225	132	424	132	424	120	385	3800	3800	FC302N132T5	260	2 x (3 x 95 + 3G16)	
IE2-W21R 315 MX2	160	2973	514	270	160	514	160	514	155	499	3600	3600	FC302N160T5	315	2 x (3 x 95 + 3G16)	
IE2-W21R 315 MY2	200	2983	640	344	200	640	200	640	190	608	3600	3600	FC302N200T5	395	2 x (3 x 150 + 3G25)	
IE2-W21R 315 L2	250	2984	800	411	225	720	225	720	200	640	3600	3600	FC302N250T5	480	2 x (3 x 185 + 3G35)	
IE2-W21R 315 LX2	315	2985	1010	502	270	864	270	864	250	800	3600	3600	FC302P315T5	600	4 x (3 x 95 + 3G16)	
IE2-W22R 355 MY2	315	2988	1008	534	315	1008	315	1008	280	895	3600	3600	FC302P315T5	600	4 x (3 x 95 + 3G16)	
IE2-W22R 355 M2	355	2980	1138	592	330	1058	330	1058	310	995	3600	3600	FC302P355T5	658	4 x (3 x 120 + 3G16)	
W42R 355 MX2	400	2990	1278	665	355	1134					3600	3600	FC302P400T5	695	4 x (3 x 120 + 3G16)	
W42R 355 L2	500	2990	1597	840	425	1357					3600	3600	FC302P500T5	880	6 x (3 x 95 + 3G16)	
W42R 400 M2	560	2988	1790	965							3600	3600	FC302P560T5	990	8 x (3 x 70 + 3G10)	
W42R 400 MX2	630	2988	2014	1070							3600	3600	FC302P630T5	1120	8 x (3 x 95 + 3G16)	
W42R 400 L2	710	2988	2269	1195							3600	3600	FC302P710T5	1260	8 x (3 x 120 + 3G16)	

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.
The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.
The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

VEMoDRIVE Single

Variable-speed drives with self-ventilated 4-pole energy-saving motors for applications with square-law torque characteristic (overload 110%) IE2 motors (in mains operation) for output range from 0.75 kW to 355 kW Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable ^{*)}
	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque				
$\hat{U}_{LL} \leq 1350 \text{ V}$	P/kW	n/rpm	M/Nm	A	P/kW	M/Nm	rpm	Type	A	mm ²
W21R 71 K4	0.25	1430	1.67	0.66	0.25	1.67	3000	FC302 PK37 T5		3 x 1.5 + 3G0.25
W21R 71 G4	0.37	1430	2.47	0.98	0.37	2.47	3000	FC302 PK37 T5	1.3	3 x 1.5 + 3G0.25
W21R 80 K4	0.55	1430	3.67	1.23	0.55	3.67	3000	FC302 PK55 T5	1.8	3 x 1.5 + 3G0.25
IE2-WE1R 80 G4	0.75	1430	5.01	1.65	0.75	5.01	3000	FC302 PK75 T5	2.4	3 x 1.5 + 3G0.25
IE2-WE1R 90 S4	1.1	1435	7.32	2.4	1.1	7.32	3000	FC302 P1K1 T5	3.0	3 x 1.5 + 3G0.25
IE2-WE1R 90 LV4	1.5	1445	9.91	3.3	1.5	9.91	3000	FC302 P1K5 T5	4.1	3 x 1.5 + 3G0.25
IE2-WE1R 100 L4	2.2	1455	14.4	4.8	2.2	14.4	3000	FC302 P2K2 T5	5.6	3 x 1.5 + 3G0.25
IE2-WE1R 100 LX4	3	1455	19.7	6.5	3	19.7	3000	FC302 P3K0 T5	7.2	3 x 1.5 + 3G0.25
IE2-WE1R 112 M4	4	1445	26.4	8.3	4	26.4	3000	FC302 P4K0 T5	10	3 x 1.5 + 3G0.25
IE2-WE1R 132 S4	5.5	1470	36	10	5.5	36	3000	FC302 P5K5 T5	13	3 x 2.5 + 3G0.5
IE2-WE1R 132 M4	7.5	1470	49	14.5	7.5	49	3000	FC302 P7K5 T5	16	3 x 4 + 3G0.75
IE2-WE1R 160 M4	11	1475	71	21.5	11	71	3000	FC302 P11K T5	24	3 x 6 + 3G1
IE2-WE1R 160 L4	15	1470	97	27.5	15	97	3000	FC302 P11K T5	32	3 x 10 + 3G1.5
IE2-WE1R 180 M4	18.5	1475	120	34	18.5	120	3000	FC302 P15K T5	37.5	3 x 10 + 3G1.5
IE2-WE1R 180 L4	22	1475	142	42	22	142	3000	FC302 P18K T5	44	3 x 16 + 3G2.5
IE2-WE1R 200 L4	30	1480	194	58.5	30	194	3000	FC302 P22K T5	61	3 x 25 + 3G4
IE2-WE1R 225 S4	37	1475	240	68.5	37	240	3000	FC302 P30K T5	73	3 x 35 + 3G6
IE2-WE1R 225 M4	45	1483	290	83	45	290	2600	FC302 P37K T5	90	3 x 50 + 3G10
IE2-WE1R 250 M4	55	1482	354	99.5	55	354	2600	FC302 P45K T5	106	3 x 70 + 3G10
IE2-WE1R 280 S4	75	1485	482	138	75	482	2400	FC302 P55K T5	147	2 x (3 x 35 + 3G6)
IE2-WE1R 280 M4	90	1482	580	164	90	580	2600	FC302 P75K T5	177	2 x (3 x 50 + 3G10)
IE2-W21R 315 S4	110	1485	708	206	110	708	3000	FC302 N90K T5	212	2 x (3 x 70 + 3G10)
IE2-W21R 315 M4	132	1484	849	242	132	849	2600	FC302 N110 T5	260	2 x (3 x 95 + 3G16)
IE2-W21R 315 MX4	160	1482	1031	288	160	1031	2500	FC302 N132 T5	315	2 x (3 x 95 + 3G16)
IE2-W21R 315 MY4	200	1490	1282	349	200	1282	2800	FC302 N160 T5	395	2 x (3 x 150 + 3G25)
IE2-W21R 315 L4	250	1490	1603	438	250	1603	3000	FC302 N200 T5	480	2 x (3 x 185 + 3G35)
IE2-W21R 315 LX4	315	1490	2019	548	280	1797	3000	FC302 N250 T5	588	2 x (3 x 185 + 3G35)
IE2-W22R 355 MY4	315	1491	2019	560	315	2019	3000	FC302 N250 T5	588	2 x (3 x 185 + 3G35)
IE2-W22R 355 M4	355	1493	2271	640	355	2271	3000	FC302 P315 T5	658	4 x (3 x 120 + 3G16)
W42R 355 MX4	400	1494	2557	719	390	2490	3000	FC302 P355 T5	745	4 x (3 x 150 + 3G25)
W42R 355 L4	500	1490	3205	899	500	3205	3000	FC302 P500 T5	990	8 x (3 x 70 + 3G10)
W42R 400 M4	560	1493	3582	1006			3000	FC302 P560 T5	1120	8 x (3 x 95 + 3G16)
W42R 400 MX4	630	1493	4030	1119			3000	FC302 P630 T5	1260	8 x (3 x 120 + 3G16)
W42R 400 L4	710	1493	4542	1261			3000	FC302 P710 T5	1460	8 x (3 x 150 + 3G25)

^{*)} Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 4-pole energy-saving motors
for applications with constant torque characteristic (overload 160%)
IE2 motors (in mains operation) for output range from 0.75 kW to 355 kW
Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed	Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable *)
	Control range		Speed range		1:2.5	1:5	1:10		600 – 1500 rpm	300 – 1500 rpm					
$\hat{U}_{LL} \leq 1350 \text{ V}$	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque	Motor output	Motor torque	Motor output	Motor torque	rpm	rpm	Type	A	mm ²
	P/kW	n/ rpm	M/ Nm	A	P/kW	M/ Nm	P/ kW	M/ Nm	P/kW	M/ Nm					
W21R 71 K4	0.25	1430	1.67	0.66	0.25	1.67	0.25	1.67	0.2	1.34	11000	3000	FC302PK37T5		3 x 1.5 + 3G0.25
W21R 71 G4	0.37	1430	2.47	0.98	0.37	2.47	0.37	3.47	0.3	2.00	11000	3000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25
W21R 80 K4	0.55	1430	3.67	1.23	0.55	3.67	0.55	3.67	0.4	2.94	11000	3000	FC302PK55T5	1.8	3 x 1.5 + 3G0.25
IE2-WE1R 80 G4	0.75	1430	5.01	1.65	0.75	5.01	0.75	5.01	0.6	4.01	11000	3000	FC302PK75T5	2.4	3 x 1.5 + 3G0.25
IE2-WE1R 90 S4	1.1	1435	7.32	2.4	1.1	7.32	1.1	7.32	0.9	5.99	9000	3000	FC302P1K1T5	3.0	3 x 1.5 + 3G0.25
IE2-WE1R 90 LV4	1.5	1445	9.91	3.3	1.5	9.91	1.5	9.91	1.2	7.93	9000	3000	FC302P1K5T5	4.1	3 x 1.5 + 3G0.25
IE2-WE1R 100 L4	2.2	1455	14.4	4.8	2.2	14.4	2.2	14.4	1.8	11.8	8000	3000	FC302P2K2T5	5.6	3 x 1.5 + 3G0.25
IE2-WE1R 100 LX4	3	1455	19.7	6.5	3	19.7	3.0	19.7	2.4	15.8	6000	3000	FC302P3K0T5	7.2	3 x 1.5 + 3G0.25
IE2-WE1R 112 M4	4	1445	26.4	8.3	4	26.4	3.7	24.5	2.9	19.2	6000	3000	FC302P4K0T5	10	3 x 1.5 + 3G0.25
IE2-WE1R 132 S4	5.5	1470	36	10	5.5	36	5.5	36	5.5	36	3600	3000	FC302P5K5T5	13	3 x 2.5 + 3G0.5
IE2-WE1R 132 M4	7.5	1470	49	14.5	7.5	49	7.5	49	7.5	49	3600	3000	FC302P7K5T5	16	3 x 4 + 3G0.75
IE2-WE1R 160 M4	11	1475	71	21.5	11	71	11	71	11	71	3600	3000	FC302P11K1T5	24	3 x 6 + 3G1
IE2-WE1R 160 L4	15	1470	97	27.5	15	97	15	97	15	97	3600	3000	FC302P15K1T5	32	3 x 10 + 3G1.5
IE2-WE1R 180 M4	18.5	1475	120	34	18.5	120	18.5	120	18.5	120	3000	3000	FC302P18K1T5	37.5	3 x 10 + 3G1.5
IE2-WE1R 180 L4	22	1475	142	42	22	142	22	142	22	142	3000	3000	FC302P22K1T5	44	3 x 16 + 3G2.5
IE2-WE1R 200 L4	30	1480	194	58.5	30	194	30	194	30	194	3000	3000	FC302P30K1T5	61	3 x 25 + 3G4
IE2-WE1R 225 S4	37	1475	240	68.5	37	240	37	240	36	230	3000	3000	FC302P37K1T5	73	3 x 35 + 3G6
IE2-WE1R 225 M4	45	1483	290	83	45	290	45	290	45	290	3000	2600	FC302P45K1T5	90	3 x 50 + 3G10
IE2-WE1R 250 M4	55	1482	354	99.5	55	354	55	354	55	354	3000	2600	FC302P55K1T5	106	3 x 70 + 3G10
IE2-WE1R 280 S4	75	1485	482	138	75	482	75	482	68	440	3000	2400	FC302P75K1T5	147	2 x (3 x 35 + 3G6)
IE2-WE1R 280 M4	90	1482	580	164	90	580	90	580	81	522	3000	2600	FC302N90K1T5	177	2 x (3 x 50 + 3G10)
IE2-W21R 315 S4	110	1485	708	206	110	708	110	708	100	642	3000	3000	FC302N110T5	212	2 x (3 x 70 + 3G10)
IE2-W21R 315 M4	132	1484	849	242	132	849	132	849	125	802	3000	2600	FC302N132T5	260	2 x (3 x 95 + 3G16)
IE2-W21R 315 MX4	160	1482	1031	288	160	1031	160	1031	145	933	3000	2500	FC302N160T5	315	2 x (3 x 95 + 3G16)
IE2-W21R 315 MY4	200	1490	1282	349	200	1282	200	1282	190	1218	3000	2800	FC302N200T5	395	2 x (3 x 150 + 3G25)
IE2-W21R 315 L4	250	1490	1603	438	250	1603	250	1603	240	1539	3000	3000	FC302N250T5	480	2 x (3 x 185 + 3G35)
IE2-W21R 315 LX4	315	1490	2019	548	280	1797	270	1728	255	1635	3000	3000	FC302P315T5	600	4 x (3 x 95 + 3G16)
IE2-W22R 355 MY4	315	1491	2019	560	315	2019	315	2019	292	1868	3000	3000	FC302P315T5	600	4 x (3 x 95 + 3G16)
IE2-W22R 355 M4	355	1493	2271	640	355	2271	355	2271	328	2100	3000	3000	FC302P355T5	658	4 x (3 x 120 + 3G16)
W42R 355 MX4	400	1494	2557	719	390	2490					3000	3000	FC302P450T5	800	6 x (3 x 95 + 3G16)
W42R 355 L4	500	1490	3205	899	500	3205	468	3000	390	2500	3000	3000	FC302P560T5	990	8 x (3 x 70 + 3G10)
W42R 400 M4	560	1493	3582	1006							3000	3000	FC302P630T5	1120	8 x (3 x 95 + 3G16)
W42R 400 MX4	630	1493	4030	1119							3000	3000	FC302P630T5	1120	8 x (3 x 95 + 3G16)
W42R 400 L4	710	1493	4542	1261							3000	3000	FC302P710T5	1260	8 x (3 x 120 + 3G16)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.

The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.

The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

VEMoDRIVE Single

Variable-speed drives with self-ventilated 6-pole energy-saving motors
for applications with square-law torque characteristic (overload 110%)
IE2 motors (in mains operation) for output range from 0.75 kW to 315 kW (355 kW: IE3)
Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable *)
	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque				
$\hat{U}_{LL} \leq 1350$ V	P/kW	n/rpm	M/Nm	A	P/kW	M/Nm	rpm	Type	A	mm ²
W21R 71 K6	0.18	930	1.8	0.54	0.18	1.8	2000	FC302PK37T5		3 x 1.5 + 3G0.25
W21R 71 G6	0.25	935	2.5	0.75	0.25	2.5	2000	FC302PK37T5		3 x 1.5 + 3G0.25
W21R 80 K6	0.37	945	3.7	1.01	0.37	3.7	2000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25
W21R 80 G6	0.55	945	5.6	1.49	0.55	5.6	2000	FC302PK55T5	1.8	3 x 1.5 + 3G0.25
IE2-W21R 90 S6	0.75	955	7.5	1.98	0.75	7.5	2000	FC302PK75T5	2.4	3 x 1.5 + 3G0.25
IE2-W21R 90 LV6	1.1	950	11	2.78	1.1	11	2000	FC302P1K1T5	3.0	3 x 1.5 + 3G0.25
IE2-W21R 100 LX6	1.5	955	15	3.44	1.5	15	2000	FC302P1K5T5	4.1	3 x 1.5 + 3G0.25
IE2-W21R 112 MV6	2.2	955	22	5	2.2	22	2000	FC302P2K2T5	5.6	3 x 1.5 + 3G0.25
IE2-W21R 132 S6	3	960	30	7	3	30	2000	FC302P3K0T5	7.2	3 x 1.5 + 3G0.25
IE2-WE2R 132 M6	4	965	40	9	4	40	1800	FC302P4K0T5	10	3 x 1.5 + 3G0.25
IE2-W21R 132 MX6	5.5	970	54	12	5.5	54	2000	FC302P5K5T5	13	3 x 2.5 + 3G0.5
IE2-WE2R 160 M6	7.5	975	73.5	15.5	7.5	73.5	2000	FC302P7K5T5	16	3 x 4 + 3G0.75
IE2-W21R 160 L6	11	970	108	21	11	108	2000	FC302P11KT5	24	3 x 6 + 3G1
IE2-WE2R 180 L6	15	975	147	28.5	15	147	2000	FC302P11KT5	32	3 x 10 + 3G1.5
IE2-W21R 200 L6	18.5	980	180	35	18.5	180	2000	FC302P15KT5	37.5	3 x 10 + 3G1.5
IE2-WE2R 200 LX6	22	980	214	40.5	22	214	2000	FC302P18KT5	44	3 x 16 + 3G2.5
IE2-WE2R 225 M6	30	985	291	54.5	30	291	2000	FC302P22KT5	61	3 x 25 + 3G4
IE2-WE2R 250 M6	37	985	359	68	37	359	1800	FC302P30KT5	73	3 x 35 + 3G6
IE2-W21R 280 S6	45	983	437	80.5	45	437	1800	FC302P37KT5	90	3 x 50 + 3G10
IE2-W21R 280 M6	55	990	531	100	55	531	1900	FC302P45KT5	106	3 x 70 + 3G10
IE2-W21R 315 S6	75	990	724	133	75	724	1900	FC302P55KT5	147	2 x (3 x 35 + 3G6)
IE2-W21R 315 M6	90	990	868	157	90	868	1900	FC302P75KT5	177	2 x (3 x 50 + 3G10)
IE2-W21R 315 MX6	110	990	1061	194	110	1061	1700	FC302N90KT5	212	2 x (3 x 70 + 3G10)
IE2-W21R 315 MY6	132	990	1273	231	132	1273	1600	FC302N110T5	260	2 x (3 x 95 + 3G16)
IE2-W21R 315 L6	160	990	1543	277	160	1543	1800	FC302N132T5	315	2 x (3 x 95 + 3G16)
IE2-W21R 315 LX6	200	990	1929	353	185	1784	1800	FC302N160T5	395	2 x (3 x 150 + 3G25)
IE2-W21R 355 MY6	200	990	1929	362	200	1929	1600	FC302N160T5	395	2 x (3 x 150 + 3G25)
IE2-W22R 355 M6	250	994	2402	452	250	2402	1600	FC302N200T5	480	2 x (3 x 185 + 3G35)
IE2-W22R 355 MX6	315	995	3023	555	300	2880	1600	FC302N250T5	588	2 x (3 x 185 + 3G35)
IE3-W42R 400 MY6	355	995	3407	632				FC302P315T5	658	4 x (3 x 120 + 3G16)
W42R 400 M6	400	993	3847	696				FC302P355T5	745	4 x (3 x 150 + 3G25)
W42R 400 MX6	450	993	4327	821				FC302P450T5	880	6 x (3 x 95 + 3G16)
W42R 400 L6	500	993	4808	911				FC302P500T5	990	6 x (3 x 120 + 3G16)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 6-pole energy-saving motors
for applications with constant torque characteristic (overload 160%)
IE2 motors (in mains operation) for output range from 0.75 kW to 315 kW (355 kW: IE3)
Mains voltage: 400 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed rpm	Maximum speed for P = constant rpm	Frequency converter Type	Current A	Recommended cross-sections for motor connection cable *) mm ²	
	Control range	Speed range	1:2.5	1:5	1:10	400 – 1000 rpm	200 – 1000 rpm	100 – 1000 rpm	Motor output P/kW	Motor torque M/Nm						Motor output P/kW
Rated motor output P/kW	Rated motor speed n/ rpm	Rated motor torque M/Nm	Rated motor current A	Motor output P/ kW	Motor torque M/ Nm	Motor output P/ kW	Motor torque M/ Nm	Motor output P/kW	Motor torque M/ Nm	Motor output P/kW	Motor torque M/ Nm	rpm	rpm	Type	A	mm ²
W21R 71 K6	0.18	930	1.8	0.54	0.18	1.8	0.18	1.8	0.10	1.1	11000	2000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25	
W21R 71 G6	0.25	935	2.5	0.75	0.25	2.5	0.25	2.5	0.15	1.5	11000	2000	FC302 PK37T5	1.3	3 x 1.5 + 3G0.25	
W21R 80 K6	0.37	945	3.7	1.01	0.37	3.7	0.37	3.7	0.24	2.4	10000	2000	FC302PK37T5	1.3	3 x 1.5 + 3G0.25	
W21R 80 G6	0.55	945	5.6	1.49	0.55	5.6	0.55	5.6	0.36	3.6	10000	2000	FC302PK55T5	1.8	3 x 1.5 + 3G0.25	
IE2-W21R 90 S6	0.75	955	7.5	1.98	0.75	7.5	0.75	7.5	0.51	5.1	9000	2000	FC302PK75T5	2.4	3 x 1.5 + 3G0.25	
IE2-W21R 90 LV6	1.1	950	11	2.78	1.1	11	1.1	11	0.76	7.6	9000	2000	FC302P1K1T5	3.0	3 x 1.5 + 3G0.25	
IE2-W21R 100 LX6	1.5	955	15	3.44	1.5	15	1.5	15	1.3	12.5	6000	2000	FC302P1K5T5	4.1	3 x 1.5 + 3G0.25	
IE2-W21R 112 MV6	2.2	955	22	5	2.2	22	2.2	22	1.9	18.5	6000	2000	FC302P2K2T5	5.6	3 x 1.5 + 3G0.25	
IE2-W21R 132 S6	3	960	30	7	3	30	3	30	3	30	2400	2000	FC302P3K0T5	7.2	3 x 1.5 + 3G0.25	
IE2-WE2R 132 M6	4	965	40	9	4	40	4	40	4	40	2400	1800	FC302P4K0T5	10	3 x 1.5 + 3G0.25	
IE2-W21R 132 MX6	5.5	970	54	12	5.5	54	5.5	54	5.5	54	2400	2000	FC302P5K5T5	13	3 x 2.5 + 3G0.5	
IE2-WE2R 160 M6	7.5	975	73.5	15.5	7.5	73.5	8	73.5	7.5	73.5	2400	2000	FC302P7K5T5	16	3 x 4 + 3G0.75	
IE2-W21R 160 L6	11	970	108	21	11	108	11	108	11	108	2000	2000	FC302P11K1T5	24	3 x 6 + 3G1	
IE2-WE2R 180 L6	15	975	147	28.5	15	147	15	147	15	147	2000	2000	FC302P15K1T5	32	3 x 10 + 3G1.5	
IE2-W21R 200 L6	18.5	980	180	35	18.5	180	18.5	180	18.5	180	2000	2000	FC302P18K1T5	37.5	3 x 10 + 3G1.5	
IE2-WE2R 200 LX6	22	980	214	40.5	22	214	22	214	22	214	2000	2000	FC302P22K1T5	44	3 x 16 + 3G2.5	
IE2-WE2R 225 M6	30	985	291	54.5	30	291	30	291	30	291	2000	2000	FC302P30K1T5	61	3 x 25 + 3G4	
IE2-WE2R 250 M6	37	985	359	68	37	359	37	359	37	359	2000	1800	FC302P37K1T5	73	3 x 35 + 3G6	
IE2-W21R 280 S6	45	983	437	80.5	45	437	45	437	45	437	2000	1800	FC302P45K1T5	90	3 x 50 + 3G10	
IE2-W21R 280 M6	55	990	531	100	55	531	55	531	55	531	2000	1900	FC302P55K1T5	106	3 x 70 + 3G10	
IE2-W21R 315 S6	75	990	724	133	75	724	75	724	75	724	2000	1900	FC302P75K1T5	147	2 x (3 x 35 + 3G6)	
IE2-W21R 315 M6	90	990	868	157	90	868	90	868	90	868	2000	1900	FC302N90K1T5	177	2 x (3 x 50 + 3G10)	
IE2-W21R 315 MX6	110	990	1061	194	110	1061	110	1061	100	960	2000	1700	FC302N110T5	212	2 x (3 x 70 + 3G10)	
IE2-W21R 315 MY6	132	990	1273	231	132	1273	132	1273	125	1209	2000	1600	FC302N132T5	260	2 x (3 x 95 + 3G16)	
IE2-W21R 315 L6	160	990	1543	277	160	1543	160	1543	150	1450	2000	1800	FC302N160T5	315	2 x (3 x 95 + 3G16)	
IE2-W21R 315 LX6	200	990	1929	353	185	1784	185	1784	170	1640	2000	1800	FC302N200T5	395	2 x (3 x 150 + 3G25)	
IE2-W21R 355 MY6	200	990	1929	362	200	1929	200	1929	185	1784	2000	1600	FC302N200T5	395	2 x (3 x 150 + 3G25)	
IE2-W21R 355 M6	250	994	2402	452	250	2402	250	2402	235	2258	2000	1600	FC302N250T5	480	2 x (3 x 185 + 3G35)	
IE2-W22R 355 MX6	315	995	3023	555	300	2880	300	2880	290	2781	2000	1600	FC302P315T5	600	4 x (3 x 95 + 3G16)	
IE3-W42R 400 MY6	355	995	3407	632							2000		FC302P355T5	658	4 x (3 x 120 + 3G16)	
W42R 400 M6	400	993	3847	696							2000		FC302P450T5	800	4 x (3 x 150 + 3G25)	
W42R 400 MX6	450	993	4327	821							2000		FC302P500T5	880	6 x (3 x 95 + 3G16)	
W42R 400 L6	500	993	4808	911							2000		FC302P560T5	990	6 x (3 x 120 + 3G16)	

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.
The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.
The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

VEMoDRIVE Single

Variable-speed drives with self-ventilated 2-pole squirrel-cage motors with special insulation for applications with square-law torque characteristic (overload 110%)
 No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
 Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable ^{*)}
	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque				
	P/kW	n/rpm	M/Nm	A	P/kW	M/Nm	rpm	Typ	A	mm ²
KV1R 132 S2	4	2860	13.4	4.6	4	13.4	5100	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 132 SX2	5.5	2900	18.1	6.2	5.5	18.1	5700	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 M2	7.5	2900	25	7.9	8	25	6000	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 160 MX2	11	2930	36	12	11	36	6000	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 160 L2	15	2920	49	15	15	49	6000	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 180 M2	18.5	2935	60	19	18.5	60	5900	FC302P15KT7	22	3 x 6 + 3G1
KV1R 200 L2	22	2940	72	22	22	72	6000	FC302P18KT7	27	3 x 6 + 3G1
KV1R 200 LX2	30	2940	97	30	30	97	5400	FC302P22KT7	34	3 x 10 + 3G1.5
KV1R 225 M2	37	2940	120	37	37	120	5000	FC302P30KT7	41	3 x 16 + 3G2.5
KV1R 250 M2	45	2955	145	45	45	145	4500	FC302P37KT7	52	3 x 25 + 3G4
KV1R 280 S2	55	2970	177	53	55	177	4300	FC302P45KT7	62	3 x 25 + 3G4
KV1R 280 M2	75	2970	241	73	75	241	4300	FC302N55KT7	86	3 x 50 + 3G10
KV1R 315 S2	90	2975	289	87	90	289	3800	FC302N75KT7	108	3 x 70 + 3G10
KV1R 315 M2	110	2975	353	106	110	353	3800	FC302N75KT7	108	3 x 70 + 3G10
KV1R 315 MX2	132	2975	424	124	132	424	3600	FC302N90KT7	131	2 x (3 x 25 + 3G4)
KV1R 315 MY2	160	2970	515	152	160	515	3600	FC302N110T7	155	2 x (3 x 35 + 3G6)
KV1R 315 L2	200	2973	642	187	200	642	3600	FC302N132T7	192	2 x (3 x 50 + 3G10)
KV1R 315 LX2	250	2975	803	236	250	803	3600	FC302N160T7	242	2 x (3 x 70 + 3G10)
KV2R 355 MY2	280	2980	897	265	280	897	3600	FC302N200T7	290	2 x (3 x 95 + 3G16)
KV2R 355 M2	300	2980	961	286	300	961	3600	FC302N200T7	290	2 x (3 x 95 + 3G16)
KV2R 355 MX2	340	2985	1088	327	340	1088	3600	FC302N250T7	344	2 x (3 x 120 + 3G16)
KV2R 355 LY2	370	2983	1185	357	370	1185	3600	FC302N315T7	400	2 x (3 x 150 + 3G25)
KV2R 355 L2	410	2985	1312	394	410	1312	3600	FC302N315T7	400	2 x (3 x 150 + 3G25)

^{*)} Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 2-pole squirrel-cage motors
with special insulation for applications with constant torque characteristic (overload 150%)
No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed	Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable *)
	Control range	Speed range	1:2.5	1:5	1:10	1200 – 3000 rpm	600 – 3000 rpm	300 – 3000 rpm	Motor output	Motor torque					
$\hat{U}_{LL} \leq 1350$ V	Rated motor output P/kW	Rated motor speed n/ rpm	Rated motor torque M/Nm	Rated motor current A	Motor output P/ kW	Motor torque M/ Nm	Motor output P/ kW	Motor torque M/ Nm	Motor output P/kW	Motor torque M/ Nm	rpm	rpm	Type	A	mm ²
KV1R 132 S2	4	2860	13.4	4.6	4	13.4	3.9	13.1	3.6	12.1	7000	5100	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 132 SX2	5.5	2900	18.1	6.2	5.5	18.1	5.4	17.7	4.9	16.3	7000	5700	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 M2	7.5	2900	25	7.9	8	25	7	24	6.8	22	7000	6000	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 160 MX2	11	2930	36	12	11	36	11	35	9.9	32	6000	6000	FC302P11KT7	13	3 x 2.5 + 3G0.5
KV1R 160 L2	15	2920	49	15	15	49	15	48	13.5	44	6000	6000	FC302P15KT7	18	3 x 4 + 3G0.75
KV1R 180 M2	18.5	2935	60	19	18.5	60	18.1	59	17	54	6000	5900	FC302P18KT7	22	3 x 6 + 3G1
KV1R 200 L2	22	2940	72	22	22	72	22	70	20	65	6000	6000	FC302P22KT7	27	3 x 6 + 3G1
KV1R 200 LX2	30	2940	97	30	30	97	29	95	27	88	6000	5400	FC302P30KT7	34	3 x 10 + 3G1.5
KV1R 225 M2	37	2940	120	37	37	120	36	118	33	107	5000	5000	FC302P37KT7	41	3 x 16 + 3G2.5
KV1R 250 M2	45	2955	145	45	45	145	44	142	40	131	4500	4500	FC302P45KT7	52	3 x 25 + 3G4
KV1R 280 S2	55	2970	177	53	55	177	54	173	50	161	4300	4300	FC302N55KT7	73	3 x 35 + 3G6
KV1R 280 M2	75	2970	241	73	75	241	74	236	68	217	4300	4300	FC302N75KT7	86	3 x 50 + 3G10
KV1R 315 S2	90	2975	289	87	90	289	88	283	82	262	3800	3800	FC302N90KT7	108	3 x 70 + 3G10
KV1R 315 M2	110	2975	353	106	110	353	108	346	100	321	3800	3800	FC302N90KT7	108	3 x 70 + 3G10
KV1R 315 MX2	132	2975	424	124	132	424	129	415	120	386	3600	3600	FC302N110T7	131	2 x (3 x 25 + 3G4)
KV1R 315 MY2	160	2970	515	152	160	515	157	504	150	481	3600	3600	FC302N132T7	155	2 x (3 x 35 + 3G6)
KV1R 315 L2	200	2973	642	187	200	642	196	630	180	578	3600	3600	FC302N160T7	192	2 x (3 x 50 + 3G10)
KV1R 315 LX2	250	2975	803	236	250	803	245	786	225	722	3600	3600	FC302N200T7	242	2 x (3 x 70 + 3G10)
KV2R 355 MY2	280	2980	897	283	280	897	274	879	252	808	3600	3600	FC302N250T7	290	2 x (3 x 95 + 3G16)
KV2R 355 M2	300	2980	961	286	300	961	294	942	270	865	3600	3600	FC302N250T7	290	2 x (3 x 95 + 3G16)
KV2R 355 MX2	340	2985	1088	327	340	1088	333	1066	305	977	3600	3600	FC302N315T7	344	2 x (3 x 120 + 3G16)
KV2R 355 LY2	370	2983	1185	357	370	1185	363	1161	331	1060	3600	3600	FC302P355T7	380	4 x (3 x 50 + 3G10)
KV2R 355 L2	410	2985	1312	394	410	1312	402	1285	371	1187	3600	3600	FC302P400T7	410	4 x (3 x 70 + 3G10)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.

The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.

The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

VEMoDRIVE Single

Variable-speed drives with self-ventilated 4-pole squirrel-cage motors with special insulation for applications with square-law torque characteristic (overload 110%)
 No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
 Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant rpm	Frequency converter Type	Current A	Recommended cross-sections for motor connection cable *) mm ²
	Rated motor output P/kW	Rated motor speed n/rpm	Rated motor torque M/Nm	Rated motor current A	Motor output P/kW	Motor torque M/Nm				
KV1R 132 S4	4	1440	26.5	4.4	4.0	26.5	3000	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 132 M4	5.5	1450	36.2	6.3	5.5	36.2	3000	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 M4	7.5	1450	49.4	8.4	7.5	49.4	3000	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 160 L4	11	1470	71.5	12	11	71.5	3000	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 180 M4	15	1460	98.1	16	15	98.1	3000	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 180 L4	18.5	1465	121	20.5	18.5	121	3000	FC302P15KT7	22	3 x 6 + 3G1
KV1R 200 L4	22	1470	143	23.5	22	143	2700	FC302P18KT7	27	3 x 10 + 3G1.5
KV1R 225 S4	30	1470	195	31.5	30	195	2800	FC302P22KT7	34	3 x 10 + 3G1.5
KV1R 225 M4	37	1470	240	38.5	37	240	2800	FC302P30KT7	41	3 x 16 + 3G2.5
KV1R 250 M4	45	1475	291	47	45	291	2500	FC302P37KT7	52	3 x 25 + 3G4
KV1R 280 S4	55	1480	355	57	55	355	2400	FC302P45KT7	62	3 x 25 + 3G4
KV1R 280 M4	75	1480	484	77	75	484	2400	FC302N55KT7	86	3 x 50 + 3G10
KV1R 315 S4	90	1485	579	92	90	579	2400	FC302N75KT7	108	3 x 70 + 3G10
KV1R 315 M4	110	1485	707	113	110	707	2400	FC302N90KT7	131	2 x (3 x 25 + 3G4)
KV1R 315 MX4	132	1480	852	134	132	852	2200	FC302N110T7	155	2 x (3 x 35 + 3G6)
KV1R 315 MY4	160	1485	1029	158	160	1029	2700	FC302N132T7	192	2 x (3 x 50 + 3G10)
KV1R 315 L4	200	1485	1286	193	200	1286	2500	FC302N160T7	242	2 x (3 x 70 + 3G10)
KV1R 315 LX4	250	1490	1602	246	250	1602	2800	FC302N200T7	290	2 x (3 x 95 + 3G16)
KV2R 355 MY4	280	1490	1795	290	280	1795	3000	FC302N200T7	290	2 x (3 x 95 + 3G16)
KV2R 355 M4	300	1490	1923	310	300	1923	3000	FC302N250T7	344	2 x (3 x 120 + 3G16)
KV2R 355 MX4	340	1494	2173	350	340	2173	3000	FC302N315T7	400	2 x (3 x 150 + 3G25)
KV2R 355 LY4	370	1490	2371	385	370	2371	3000	FC302N315T7	400	2 x (3 x 150 + 3G25)
KV2R 355 L4	410	1490	2628	450	410	2628	3000	FC302P355T7	450	4 x (3 x 70 + 3G10)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 4-pole squirrel-cage motors
with special insulation for applications with constant torque characteristic (overload 150%)
No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed rpm	Maximum speed for P = constant rpm	Frequency converter	Current A	Recommended cross-sections for motor connection cable *) mm ²
	Control range	Speed range	1:2.5	1:5	1:10	600 – 1500 rpm	300 – 1500 rpm	150 – 1500 rpm	Motor output P/kW	Motor torque M/Nm					
	Rated motor output P/kW	Rated motor speed n/ rpm	Rated motor torque M/Nm	Rated motor current A	Motor output P/kW	Motor torque M/Nm	Motor output P/kW	Motor torque M/Nm	Motor output P/kW	Motor torque M/Nm	rpm	rpm		A	mm ²
KV1R 132 S4	4	1440	26.5	4.4	4.0	26.5	3.9	26	3.6	23.9	3600	3000	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 132 M4	5.5	1450	36.2	6.3	5.5	36.2	5.4	35	4.9	32.6	3600	3000	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 M4	7.5	1450	49.4	8.4	7.5	49.4	7.4	48	6.8	44	3600	3000	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 160 L4	11	1470	71.5	12	11	71.5	11	70	10	64	3000	3000	FC302P11KT7	13	3 x 2.5 + 3G0.5
KV1R 180 M4	15	1460	98.1	16	15	98.1	15	96	14	88	3000	3000	FC302P15KT7	18	3 x 4 + 3G0.75
KV1R 180 L4	18.5	1465	121	20.5	18.5	121	18.1	118	16.7	109	3000	3000	FC302P18KT7	22	3 x 6 + 3G1
KV1R 200 L4	22	1470	143	23.5	22	143	22	140	20	129	3000	2700	FC302P22KT7	27	3 x 10 + 3G1.5
KV1R 225 S4	30	1470	195	31.5	30	195	29	191	27	176	3000	2800	FC302P30KT7	34	3 x 10 + 3G1.5
KV1R 225 M4	37	1470	240	38.5	37	240	36	235	33	214	3000	2800	FC302P37KT7	41	3 x 16 + 3G2.5
KV1R 250 M4	45	1475	291	47	45	291	44	285	40	262	3000	2500	FC302P45KT7	52	3 x 25 + 3G4
KV1R 280 S4	55	1480	355	57	55	355	54	348	50	324	3000	2400	FC302N55KT7	73	3 x 35 + 3G6
KV1R 280 M4	75	1480	484	77	75	484	74	474	68	436	3000	2400	FC302N75KT7	86	3 x 50 + 3G10
KV1R 315 S4	90	1485	579	92	90	579	88	567	82	525	3000	2400	FC302P90KT7	108	3 x 70 + 3G10
KV1R 315 M4	110	1485	707	113	110	707	108	693	100	643	3000	2400	FC302N110KT7	131	2 x (3 x 25 + 3G4)
KV1R 315 MX4	132	1480	852	134	132	852	129	835	120	775	3000	2200	FC302N132T7	155	2 x (3 x 35 + 3G6)
KV1R 315 MY4	160	1485	1029	158	160	1029	157	1008	150	962	3000	2700	FC302N160T7	192	2 x (3 x 50 + 3G10)
KV1R 315 L4	200	1485	1286	193	200	1286	196	1260	180	1157	3000	2500	FC302N200T7	242	2 x (3 x 70 + 3G10)
KV1R 315 LX4	250	1490	1602	246	250	1602	245	1570	225	1442	3000	2800	FC302N250T7	290	2 x (3 x 95 + 3G16)
KV2R 355 MY4	280	1490	1795	290	280	1795	274	1759	252	1616	3000	3000	FC302N250T7	290	2 x (3 x 95 + 3G16)
KV2R 355 M4	300	1490	1923	310	300	1923	294	1885	270	1731	3000	3000	FC302N315T7	344	2 x (3 x 120 + 3G16)
KV2R 355 MX4	340	1494	2173	350	340	2173	333	2130	305	1951	3000	3000	FC302P355T7	380	4 x (3 x 50 + 3G10)
KV2R 355 LY4	370	1490	2371	385	370	2371	363	2324	331	2122	3000	3000	FC302P400T7	410	4 x (3 x 50 + 3G10)
KV2R 355 L4	410	1490	2628	450	410	2628	402	2575	371	2378	3000	3000	FC302P500T7	500	4 x (3 x 70 + 3G10)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.

The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.

The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

VEMoDRIVE Single

Variable-speed drives with self-ventilated 6-pole squirrel-cage motors with special insulation for applications with square-law torque characteristic (overload 110%)
 No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
 Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation 50 Hz		Maximum speed for P = constant	Frequency converter	Current	Recommended cross-sections for motor connection cable ^{*)}
	Rated motor output	Rated motor speed	Rated motor torque	Rated motor current	Motor output	Motor torque				
					P/kW	M/Nm				
KV1R 132 M6	2.2	955	22	2.9	2.2	22	2000	FC302P2K2T7	4.5	3 x 1.5 + 3G0.25
KV1R 132 MX6	3	955	30	3.9	3	30	2000	FC302P3K0T7	4.5	3 x 1.5 + 3G0.25
KV1R 132 MX6	4	955	40	4.9	4	40	1700	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 160 M6	5.5	960	55	6.6	5.5	55.0	1700	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 L6	7.5	965	74	8.6	7	74	1700	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 180 L6	11	965	109	13	11	109	2000	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 200 L6	15	970	148	16.5	15	148	1800	FC302P11KT7	18	3 x 4 + 3G0.75
KV1R 200 LX6	18.5	970	182	20	18.5	182	1800	FC302P15KT7	22	3 x 6 + 3G1
KV1R 225 M6	22	973	216	23	22	216	1800	FC302P18KT7	27	3 x 10 + 3G1.5
KV1R 250 M6	30	975	294	31	30	294	1700	FC302P22KT7	34	3 x 10 + 3G1.5
KV1R 280 S6	37	980	361	38.5	37	361	1500	FC302P30KT7	41	3 x 16 + 3G2.5
KV1R 280 M6	45	980	439	46.5	45	439	1800	FC302P37KT7	52	3 x 25 + 3G4
KV1R 315 S6	55	985	533	56.5	55	533	1800	FC302P45KT7	62	3 x 25 + 3G4
KV1R 315 M6	75	990	724	75.5	75	724	1800	FC302N55KT7	86	3 x 50 + 3G10
KV1R 315 MX6	90	990	868	91	90	868	1800	FC302P75KT7	108	3 x 70 + 3G10
KV1R 315 MY6	110	990	1061	110	110	1061	1800	FC302N90KT7	131	2 x (3 x 25 + 3G4)
KV1R 315 L6	132	985	1280	130	132	1280	1800	FC302N110KT7	155	2 x (3 x 35 + 3G6)
KV1R 315 LX6	160	990	1543	162	160	1543	2000	FC302N132T7	192	2 x (3 x 50 + 3G10)
KV2R 355 MY6	180	994	1729	188	180	1729	1600	FC302N132T7	192	2 x (3 x 50 + 3G10)
KV2R 355 M6	200	994	1922	216	200	1922	1700	FC302N160T7	242	2 x (3 x 70 + 3G10)
KV2R 355 MX6	250	995	2400	261	250	2400	1800	FC302N200T7	290	2 x (3 x 95 + 3G16)
KV2R 355 LY6	300	995	2879	336	300	2879	1900	FC302N250T7	344	2 x (3 x 120 + 3G16)

^{*)} Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW : 100 m

VEMoDRIVE Single

Variable-speed drives with self-ventilated 6-pole squirrel-cage motors
with special insulation for applications with constant torque characteristic (overload 150%)
No filter at the frequency converter output (maximum phase-to-phase pulse voltage: 2.5 kV)
Mains voltage: 690 V

Type designation	Mains operation 50 Hz				Converter-fed operation						Limit speed rpm	Maximum speed for P = constant rpm	Frequency converter Type	Current A	Recommended cross- sections for motor connection cable *) mm ²
	Control range	Speed range	Control range	Speed range	1:2.5	1:5	1:10	Control range	Speed range	Control range					
	Rated motor output P/kW	Rated motor speed n/ rpm	Rated motor torque M/Nm	Rated motor current A	Motor output P/ kW	Motor torque M/ Nm	Motor output P/ kW	Motor torque M/ Nm	Motor output P/kW	Motor torque M/ Nm	rpm	rpm	Type	A	mm ²
KV1R 132 M6	2.2	955	22	2.9	2.2	22	2.2	22	2	20	2400	2000	FC302P2K2T7	3.2	3 x 1.5 + 3G0.25
KV1R 132 MX6	3	955	30	3.9	3	30	2.9	29	3	27	2400	2000	FC302P3K0T7	4.5	3 x 1.5 + 3G0.25
KV1R 132 LX6	4	955	40	4.9	4	40	3.9	39	3.6	36	2400	1700	FC302P4K0T7	5.5	3 x 1.5 + 3G0.25
KV1R 160 M6	5.5	960	55	6.6	5.5	55.0	5.0	54	5	50	2000	1700	FC302P5K5T7	7.5	3 x 1.5 + 3G0.25
KV1R 160 L6	7.5	965	74	8.6	7	74	7.0	73	7	67	2000	1700	FC302P7K5T7	10	3 x 1.5 + 3G0.25
KV1R 180 L6	11	965	109	13	11	109	11.0	107	9.9	98	2000	2000	FC302P11KT7	13	3 x 2.5 + 3G0.5
KV1R 200 L6	15	970	148	16.5	15	148	14.7	145	13.5	133	2000	1800	FC302P15KT7	18	3 x 4 + 3G0.75
KV1R 200 LX6	18.5	970	182	20	18.5	182	18.0	178	16.6	164	2000	1800	FC302P18KT7	22	3 x 6 + 3G1
KV1R 225 M6	22	973	216	23	22	216	22	212	20	194	2000	1800	FC302P22KT7	27	3 x 10 + 3G1.5
KV1R 250 M6	30	975	294	31	30	294	29	288	27	265	2000	1700	FC302P30KT7	34	3 x 10 + 3G1.5
KV1R 280 S6	37	980	361	38.5	37	361	36	354	33	325	2000	1500	FC302P37KT7	41	3 x 16 + 3G2.5
KV1R 280 M6	45	980	439	46.5	45	439	44	430	41	395	2000	1800	FC302P45KT7	52	3 x 25 + 3G4
KV1R 315 S6	55	985	533	56.5	55	533	54	522	49	480	2000	1800	FC302N55KT7	73	3 x 35 + 3G6
KV1R 315 M6	75	990	724	75.5	75	724	74	710	68	652	2000	1800	FC302N75KT7	86	3 x 50 + 3G10
KV1R 315 MX6	90	990	868	91	90	868	88	851	81	781	2000	1800	FC302N90KT7	108	3 x 70 + 3G10
KV1R 315 MY6	110	990	1061	110	110	1061	108	1040	99	955	2000	1800	FC302N110T7	131	2 x (3 x 25 + 3G4)
KV1R 315 L6	132	985	1280	130	132	1280	129	1254	119	1152	2000	1800	FC302N132T7	155	2 x (3 x 35 + 3G6)
KV1R 315 LX6	160	990	1543	162	160	1543	157	1512	144	1389	2000	2000	FC302N160T7	192	2 x (3 x 50 + 3G10)
KV2R 355 MY6	180	994	1729	188	180	1729	176	1694	162	1556	2000	1600	FC302N160T7	192	2 x (3 x 50 + 3G10)
KV2R 355 M6	200	994	1922	216	200	1922	196	1884	180	1730	2000	1700	FC302N200T7	242	2 x (3 x 70 + 3G10)
KV2R 355 MX6	250	995	2400	261	250	2400	245	2352	225	2160	2000	1800	FC302N250T7	290	2 x (3 x 95 + 3G16)
KV2R 355 LY6	300	995	2879	336	300	2879	294	2821	270	2591	2000	1900	FC302N315T7	344	2 x (3 x 120 + 3G16)

*) Reduction factor 0.6; voltage drop less than 3%; cable length: P < 7.5 kW: 50 m; P ≥ 7.5 kW: 100 m

All motors also available in optional versions with separate cooling fan at additional charge.

The limit torques specified for the speed control range 1:5 are available down to motor standstill with separate fan.

The „R“ in the type designation (rib-cooled with self-ventilation) must be replaced by an „F“ (with built-on separate fan).

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