



**Parameter list for the initial operation of EMOD PM motors 1500 rpm
from 0,37 to 55 kW with DANFOSS frequency converter Automation
Drive FC302**

	EMOD PM motor	entity	0.37 KW	0.55 KW	0.75 KW
Type			HEF PM 71/62-35PT	HEF PM 71/62-35PT	HEF PM 71/62-70ET
Motor Number					
EMOD - Number					
IEC installation size			71	71	71
Coolant temperature	°C		40	40	40
Protection type			IP 55	IP55	IP55
Insulation class			F	F	F
Rated voltage	V		400	400	400
Connection			Y	Y	Y
Nominal output	kW		0,37	0,55	0,75
Nominal current	A		0,7	1,03	1,25
Frequency	Hz		75	75	75
Nominal speed	UPM		1500	1500	1500
Nominal torque	Nm		2,35	3,5	4,77
Efficiency factor	cos Phi		0,91	0,97	0,98
Efficiency	%		83,1	80,4	88
Mode of operation			S1	S1	S1
Maximum torque for two minutes	Nm		3,76	5,6	7,63
Maximum speed	rpm		1875	1875	1875
Line resistance U1-U2	Ohm		32,38	27,98	12,25
Open-circuit voltage for 1000 rpm	V		229	222	259
Main reactance	Ohm		37,951	35,752	23,703
Stator leakage reactance	Ohm		27,903	26,284	14,055
Main inductance	mH		80,535	75,868	50,299
Leakage inductance	mH		59,212	55,776	29,826
Iron loss resistance	Ohm		8357	8357	4455
Design	IM		B5/V1	B5/V1	B5/V1
Flange I flanQes 0	mm		200	200	200
Shaft end	mm				
Mass moment of inertia	kgm ²		0,0004	0,0004	0,0008



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter		0.37	0.55	0.75	
	VLT FC - 302					
	Article Number					
	Serial number					
	Power in kW		0.37	0.55	0.75	
00-01	Language		English	English	English	
00-02	Hz/rpm changeover		rpm	rpm	rpm	
01-22	Motor voltage	V	440	440	440	
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole	
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor	
01-24	Nominal current motor	A	0,7	1,03	1,25	
01-25	Nominal speed motor	rpm	1500	1500	1500	
01-26	Nominal torque motor	Nm	2,35	3,5	4,77	
01-30	Line resistance/ Stator resistance	Ohm	32,38	27,98	12,25	
01-37	Main inductance/ Inductance D-axis	mH	80,535	75,868	50,299	
01-39	Number of poles		6	6	6	
01-40	Nominal voltage for speed-1000 rpm/ G-EMK	V	229	222	259	
01-69	Inertia max	kgm ²	0,004	0,004	0,008	
01-68	Inertia min	kgm ²	0,0004	0,0004	0,0008	
01-90	Thermal motor protection		Thermistor Disconnection	Thermistor Disconnection	Thermistor Disconnection	
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54	Connection Thermistor contacts to connector box 50
04-19	Max. output frequency	Hz	90	90	90	
04-13	Max. speed	rpm	1500	1500	1500	
04-14	Max. frequency	Hz	75	75	75	
04-18	Max. current limit of nominal current	%	120	120	120	
04-16	max. torque limit mot.	%	120	120	120	
04-17	max. torque limit gen.	%	120	120	120	
03-41	Ramp up time	sek	10	10	10	
03-42	Ramp down time	sek	10	10	10	
03-03	Max. nominal value	rpm	1500	1500	1500	
03-03	Max. nominal value	Hz	75	75	75	
07-02	P amplification		0,01	0,01	0,01	
07-03	I time	msek	300	300	300	
07-06	T-filter	msek	5	5	5	
14-01	Pulse frequency	kHz	7	7	7	
04-10	Direction of rotation		both directions	both directions	both directions	
05-11	Connector block 19		Revising	Revising	Revising	
05-12	Conector block 27		no operation	no operation	no operation	



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

EMOD PM motor	Entity	1.1 kW	1.5 kW	2.2 kW
Type		HEF PM 71/62- 70ET	HEF PM 90/62-70ET	HEF PM 90/62-105ET
Motor Number				
EMOD - Number				
IEC installation size		71	90	90
Coolant temperature	°C	40	40	40
Protection type		IP 55	IP55	IP55
Insulation class		F	F	F
Rated voltage	V	400	400	400
Connection		Y	Y	Y
Nominal output	kW	1,1	1,5	2,2
Nominal current	A	1,88	2,58	3,75
Frequency	Hz	75	75	75
Nominal speed	rpm	1500	1500	1500
Nominal torque	Nm	7	9,55	14
Efficiency factor	cos Phi	0,98	0,95	0,96
Efficiency	%	85,7	88,6	90
Mode of operation		S1	S1	S1
Maximum torque for two minutes	Nm	11,2	15,28	22,4
Maximum speed	rpm	1875	1875	1875
Line resistance U1-U2	Ohm	11,71	5,677	3,09
Open-circuit voltage for 1000 rpm	V	249	238	245
Main reactance	Ohm	21,749	15,958	11,255
Stator leakage reactance	Ohm	12,896	8,248	5,29
Main inductance	mH	46,153	33,864	23,884
Leakage inductance	mH	27,366	17,503	11,226
Iron loss resistance	Ohm	4568	3389	2624
Design	IM	B5/V1	B5/V1	B5/V1
Flange I flanQes 0	mm	200	200	250
Shaft end	mm			
Mass moment of inertia	kgm ²	0,0008	0,00212	0,003



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter				
	VLT FC - 302				
	Article Number				
	Serial number				
	Power in kW		1.1	1.5	2.2
00-01	Language		English	English	English
00-02	Hz/rpm changeover		rpm	rpm	rpm
01-22	Motor voltage		440	440	440
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor
01-24	Nominal current motor		1,88	2,58	3,75
01-25	Nominal speed motor		1500	1500	1500
01-26	Nominal torque motor		7	9,55	14
01-30	Line resistance/ Stator resistance		11,71	5,677	3,09
01-37	Main inductance/ Inductance D-axis		46,153	33,864	23,884
01-39	Number of poles		6	6	6
01-40	Nominal voltage for speed-1000 rpm/ G-EMK		249	238	245
01-69	Inertia max		0,008	0,0212	0,03
01-68	Inertia min		0,0008	0,00212	0,003
01-90	Thermal motor protection		Thermistor disconnectios	Thermistor Disconnection	Thermistor disconnection
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54
04-19	Max. output frequency		90	90	90
04-13	Max. speed		1500	1500	1500
04-14	Max. frequency		75	75	75
04-18	Max. current limit of nominal current		120	120	120
04-16	max. torque limit mot.		120	120	120
04-17	max. torque limit gen.		120	120	120
03-41	Ramp-up time		10	10	10
03-42	Ramp-down time		10	10	10
03-03	Max. nominal value		1500	1500	1500
03-03	Max. nominal value		75	75	75
07-02	P amplification		0,01	0,01	0,01
07-03	I time		300	300	300
07-06	T-filter		5	5	5
14-01	Pulse frequency	kHz	7	7	7
04-10	Direction of rotation		both directions	both directions	both directions
05-11	Connector block 19		Revising	Revising	Revising
05-12	Conector block 27		no operation	no operation	no operation



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

	EMOD PM motor	Entity	3 kW	4 kW	5.5 kW	
Type			HEF PM 90/62- 105PT	HEF PM 90/62-140PT	HEF PM 112162- 140ET	
Motor Number						
EMOD - Number						
IEC installation size			90	90	112	
Coolant temperature	°C		40	40	40	
Protection type			IP 55	IP 55	IP55	
Insulation class			F	F	F	
Rated voltage	V		400	400	400	
Connection			Y	Y	Y	
Nominal output	kW		3	4	5,5	
Nominal current	A		5	6,7	9,2	
Frequency	Hz		75	75	75	
Nominal speed	rpm		1500	1500	1500	
Nominal torque	Nm		19,1	25,5	35	
Efficiency factor	cos Phi		0,96	0,95	0,94	
Efficiency	%		89,5	90	92	
Mode of operation			Si	S1	S1	
Maximum torque for two minutes	Nm		30,5	40,8	56	
Maximum speed	rpm		1875	1875	1875	
Line resistance U1-U2	Ohm		3,09	1,976	0,9	
Open-circuit voltage for 1000 rpm	V		245	240	247	
Main reactance	Ohm		11,226	7,979	5,573	
Stator leakage reactance	Ohm		5,29	3,564	1,938	
Main inductance	mH		23,894	16,932	11,826	
Leakage inductance	mH		11,226	7,563	4,113	
Iron loss resistance	Ohm		2624	1853	1264	
Design	IM		B5/V1	B5/V1	B51V1	
Flange I flanQes 0	mm		250	250	300	
Shaft end	mm					
Mass moment of inertia	kgm ²		0,003	0,0042	0,0117	



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter				
	VLT FC - 302				
	Article Number				
	Serial number				
	Power in kW		3	4	5.5
00-01	Language		English	English	English
00-02	Hz/rpm changeover		rpm	rpm	rpm
01-22	Motor voltage		440	440	440
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor
01-24	Nominal current motor		5	6,7	9,2
01-25	Nominal speed motor		1500	1500	1500
01-26	Nominal torque motor		19,1	25,5	35
01-30	Line resistance/ Stator resistance		3,09	1,976	0,9
01-37	Main inductance/ Inductance D-axis		23,894	16,932	11,826
01-39	Number of poles		6	6	6
01-40	Nominal voltage for speed-1000 rpm/ G-EMK		245	240	247
01-69	Inertia max		0,03	0,042	0,117
01-68	Inertia min		0,003	0,0042	0,0117
01-90	Thermal motor protection		Thermistor disconnection	Thermistor disconnection	Thermistor disconnection
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54
					Connection Thermistor contacts to connector box 50
04-19	Max. output frequency		90	90	90
04-13	Max. speed		1500	1500	1500
04-14	Max. frequency		75	75	75
04-18	Max. current limit of nominal current		120	120	120
04-16	max. torque limit mot.		120	120	120
04-17	max. torque limit gen.		120	120	120
03-41	Ramp-up time		10	10	10
03-42	Ramp-down time		10	10	10
03-03	Max. nominal value		1500	1500	1500
03-03	Max. nominal value		75	75	75
07-02	P amplification		0,01	0,01	0,01
07-03	I time		300	300	300
07-06	T-filter		5	5	5
14-01	Pulse frequency	kHz	7	7	7
04-10	Direction of rotation		Beide Richtungen	Beide Richtungen	Beide Richtungen
05-11	Connector block 19		Reversierung ohne Funktion	Reversierung ohne Funktion	Reversierung ohne Funktion
05-12	Conector block 27				



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

EMOD PM motor	Entity	7.5 kW	11kW	15 kW
Type		HEF PM 112/62- 175ET	HEF PM 132/62- 160E	HEF PM 132/62- 200P
Motor Number				
EMOD - Number				
IEC installation size		112	132	132
Coolant temperature	°C	40	40	40
Protection type		IP55	IP55	IP55
Insulation class		F	F	F
Rated voltage	V	400	400	400
Connection		Y	Y	Y
Nominal output	kW	7,5	11	15
Nominal current	A	12,9	18,8	26,5
Frequency	Hz	75	75	75
Nominal speed	rpm	1500	1500	1500
Nominal torque	Nm	47,75	70	95,5
Efficiency factor	cos Phi	0,91	0,92	0,97
Efficiency	%	92	92,5	92
Mode of operation		S1	S1	S1
Maximum torque for two minutes	Nm	76,4	112	152,8
Maximum speed	UPM	1875	1875	1875
Line resistance U1-U2	Ohm	0,635	0,328	0,328
Open-circuit voltage for 1000 rpm	V	241	245	243
Main reactance	Ohm	4,625	2,262	1,791
Stator leakage reactance	Ohm	1,549	0,88	0,673
Main inductance	mH	9,815	4,8	3,801
Leakage inductance	mH	3,287	1,867	1,428
Iron loss resistance	Ohm	1050	632	522
Design	IM	B5/V1	B5/V1	B5/V1
Flange I flanQes 0	mm	300	300	300
Shaft end	mm			
Mass moment of inertia	kgm2	0,01455	0,037	0,0462



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter				
	VLT FC - 302				
	Article Number				
	Serial number				
	Power in kW		7.5	11	15
00-01	Language		English	English	English
00-02	Hz/rpm changeover		rpm	rpm	rpm
01-22	Motor voltage		440	440	440
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor
01-24	Nominal current motor		12,9	18,8	26,5
01-25	Nominal speed motor		1500	1500	1500
01-26	Nominal torque motor		47,75	70	95,5
01-30	Line resistance/ Stator resistance		0,635	0,328	0,328
01-37	Main inductance/ Inductance D-axis		9,815	4,8	3,801
01-39	Number of poles		6	6	6
01-40	Nominal voltage for speed-1000 rpm/ G-EMK		241	245	243
01-69	Inertia max		0,1455	0,37	0,462
01-68	Inertia min		0,01455	0,037	0,0462
01-90	Thermal motor protection		Thermistor Disconnection	Thermistor Disconnection	Thermistor Disconnection
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54
04-19	Max. output frequency		90	90	90
04-13	Max. speed		1500	1500	1500
04-14	Max. frequency		75	75	75
04-18	Max. current limit of nominal current		120	120	120
04-16	max. torque limit mot.		120	120	120
04-17	max. torque limit gen.		120	120	120
03-41	Ramp-up time		10	10	10
03-42	Ramp-down time		10	10	10
03-03	Max. nominal value		1500	1500	1500
03-03	Max. nominal value		75	75	75
07-02	P amplification		0,01	0,01	0,01
07-03	I time		300	300	300
07-06	T-filter		5	5	5
14-01	Pulse frequency	kHz	7	7	7
04-10	Direction of rotation		both directions	both directions	both directions
05-11	Connector block 19		Revising	Revising	Revising
05-12	Conector block 27		no operation	no operation	no operation



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

EMOD PM motor	Entity	18.5 kW	22 kW	30 kW
Type		HEF PM 160/62- 200P	HEF PM 160/62- 240P	HEF PM 180/62- 240P
Motor Number				
EMOD - Number				
IEC installation size		160	160	180
Coolant temperature	°C	40	40	40
Protection type		IP55	IP 55	IP 55
Insulation class		F	F	F
Rated voltage	V	400	400	400
Connection		Y	Y	Y
Nominal output	kW	18,5	22	30
Nominal current	A	30	36	50
Frequency	Hz	75	75	75
Nominal speed	rpm	1500	1500	1500
Nominal torque	Nm	117,8	140	191
Efficiency factor	cos Phi	0,96	0,94	0,94
Efficiency	%	82,8	94	94,2
Mode of operation		S1	S1	S1
Maximum torque for two minutes	Nm	188	224	305
Maximum speed	rpm	1875	1875	1875
Line resistance U1-U2	Ohm	0,353	0,119	0,136
Open-circuit voltage for 1000 rpm	V	248	248	237
Main reactance	Ohm	1,459	1,172	0,657
Stator leakage reactance	Ohm	0,413	0,322	0,239
Main inductance	mH	3,096	2,487	1,394
Leakage inductance	mH	0,088	0,683	0,507
Iron loss resistance	Ohm	299	239	173
Design	IM	B5/V1	B5/V1	B5/V2
Flange I flanQes 0	mm	350	350	400
Shaft end	mm			
Mass moment of inertia	kgm2	0,106	0,1272	0,172



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter				
	VLT FC - 302				
	Article Number				
	Serial number				
	Power in kW		18.5	22	30
00-01	Language		English	English	English
00-02	Hz/rpm changeover		rpm	rpm	rpm
01-22	Motor voltage		440	440	440
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor
01-24	Nominal current motor		30	36	50
01-25	Nominal speed motor		1500	1500	1500
01-26	Nominal torque motor		117,8	140	191
01-30	Line resistance/ Stator resistance		0,353	0,119	0,136
01-37	Main inductance/ Inductance D-axis		3,096	2,487	1,394
01-39	Number of poles		6	6	6
01-40	Nominal voltage for speed-1000 rpm/ G-EMK		248	248	237
01-69	Inertia max		1,06	1,272	1,72
01-68	Inertia min		0,106	0,1272	0,172
01-90	Thermal motor protection		Thermistor disconnection	Thermistor disconnection	Thermistor disconnection
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54
04-19	Max. output frequency		90	90	90
04-13	Max. speed		1500	1500	1500
04-14	Max. frequency		75	75	75
04-18	Max. current limit of nominal current		120	120	120
04-16	max. torque limit mot.		120	120	120
04-17	max. torque limit gen.		120	120	120
03-41	Ramp-up time		10	10	10
03-42	Ramp-down time		10	10	10
03-03	Max. nominal value		1500	1500	1500
03-03	Max. nominal value		75	75	75
07-02	P amplification		0,01	0,01	0,01
07-03	I time		300	300	300
07-06	T-filter		5	5	5
14-01	Pulse frequency	kHz	7	7	7
04-10	Direction of rotation		both directions	both directions	both directions
05-11	Connector block 19		Revising	Revising	Revising
05-12	Conector block 27		no operation	no operation	no operation



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

EMOD PM motor	Entity	37 kW	45 kW	55 kW
Type		HEF PM 180/62- 280P	HEF PM 200/62- 240P	HEF PM 200/62- 320P
Motor Number				
EMOD - Number				
IEC installation size		180	200	200
Coolant temperature	°C	40	40	40
Protection type		IP55	IP 55	IP 55
Insulation class		F	F	F
Rated voltage	V	440	440	440
Connection		Y	Y	Y
Nominal output	kW	37	45	55
Nominal current	A	63	71	94
Frequency	Hz	75	75	75
Nominal speed	rpm	1500	1500	1500
Nominal torque	Nm	235,5	286,5	350
Efficiency factor	cos Phi	0,97	0,97	0,94
Efficiency	%	94,4	94,8	94,6
Mode of operation		S1	S1	S1
Maximum torque for two minutes	Nm	377	458	560
Maximum speed	rpm	1875	1875	1875
Line resistance U1-U2	Ohm	0,117	0,0805	0,071
Open-circuit voltage for 1000 rpm	V	235	233	260
Main reactance	Ohm	0,575	0,511	0,511
Stator leakage reactance	Ohm	0,204	0,176	0,176
Main inductance	mH	1,22	1,084	1,084
Leakage inductance	mH	0,433	0,373	0,373
Iron loss resistance	Ohm	152	124	119
Design	IM	B5/V1	B5/V1	B5/V2
Flange I flanQes 0	mm	395	395	395
Shaft end	mm			
Mass moment of inertia	kgm2	0,2007	0,304	0,305



Parameter list for the initial operation of EMOD PM motors 1500 rpm from 0,37 to 55 kW with DANFOSS frequency converter Automation Drive FC302

Para Nr.	Danfoss Frequency converter					
	VLT FC - 302					
	Article Number					
	Serial number					
	Power in kW		37	45	55	
00-01	Language		English	English	English	
00-02	Hz/rpm changeover		rpm	rpm	rpm	
01-22	Motor voltage		440	440	440	
01-10	Motor type		PM, Non-salient pole	PM, Non-salient pole	PM, Non-salient pole	
01-01	Motor control principle		Flux without sensor	Flux without sensor	Flux without sensor	
01-24	Nominal current motor		63	71	94	
01-25	Nominal speed motor		1500	1500	1500	
01-26	Nominal torque motor		235,5	286,5	350	
01-30	Line resistance/ Stator resistance		0,117	0,0805	0,071	
01-37	Main inductance/ Inductance D-axis		1,22	1,084	1,084	
01-39	Number of poles		6	6	6	
01-40	Nominal voltage for speed-1000 rpm/ G-EMK		235	233	260	
01-69	Inertia max		2,007	3,04	3,05	
01-68	Inertia min		0,2007	0,304	0,305	
01-90	Thermal motor protection		Thermistor disconnection	Thermistor disconnection	Thermistor disconnection	
01-93	Thermistor connection		Connector block 54	Connector block 54	Connector block 54	Connection Thermistor contacts to connector box 50
04-19	Max. output frequency		90	90	90	
04-13	Max. speed		1500	1500	1500	
04-14	Max. frequency		75	75	75	
04-18	Max. current limit of nominal current		120	120	120	
04-16	max. torque limit mot.		120	120	120	
04-17	max. torque limit gen.		120	120	120	
03-41	Ramp-up time		10	10	10	
03-42	Ramp-down time		10	10	10	
03-03	Max. nominal value		1500	1500	1500	
03-02	Max. nominal value		75	75	75	
07-02	P amplification		0,01	0,01	0,01	
07-03	I time		300	300	300	
07-06	T-filter		5	5	5	
14-01	Pulse frequency	kHz	7	7	7	
04-10	Direction of rotation		both directions	both directions	both directions	
05-11	Connector block 19		Revising	Revising	Revising	
05-12	Conector block 27		No operation	No operation	no operation	

Information

Supplementary sheet for the initial installation of a frequency converter (DANFOSS) Type: VLT Aqua- Drive FC 300 with permanent magnet motor

This supplementary sheet is an addition to the operation manual and helps to carry out the initial operation.

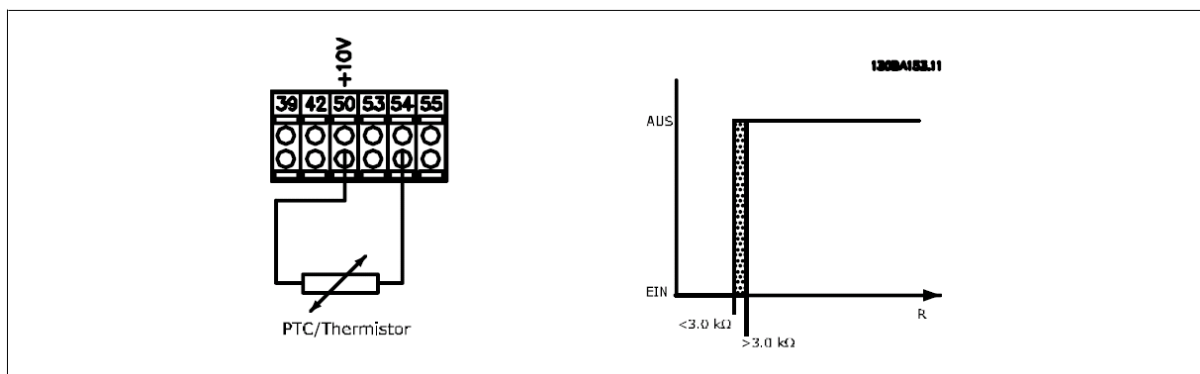
It isn't possible to adjust the permanent magnet motors automatically since the motor can be badly damaged.

For further details look at Programming guide VLT Automation Drive FC 300
(Download: www.danfoss.com)

Keyword: "Automatic motor adjustment" beginning with version MG.33.M7.03

For a safe operation you should connect the thermistor to connector box 50 and 54 (**already preprogrammed in the frequency converter**)

Connection scheme:



Look at the initialized parameter list which you will find enclosed to frequency converter DANFOSS FC 302.

You can download further parameter lists and a link to DANFOSS (→ technical literature) under www.herborner-pumps.com.