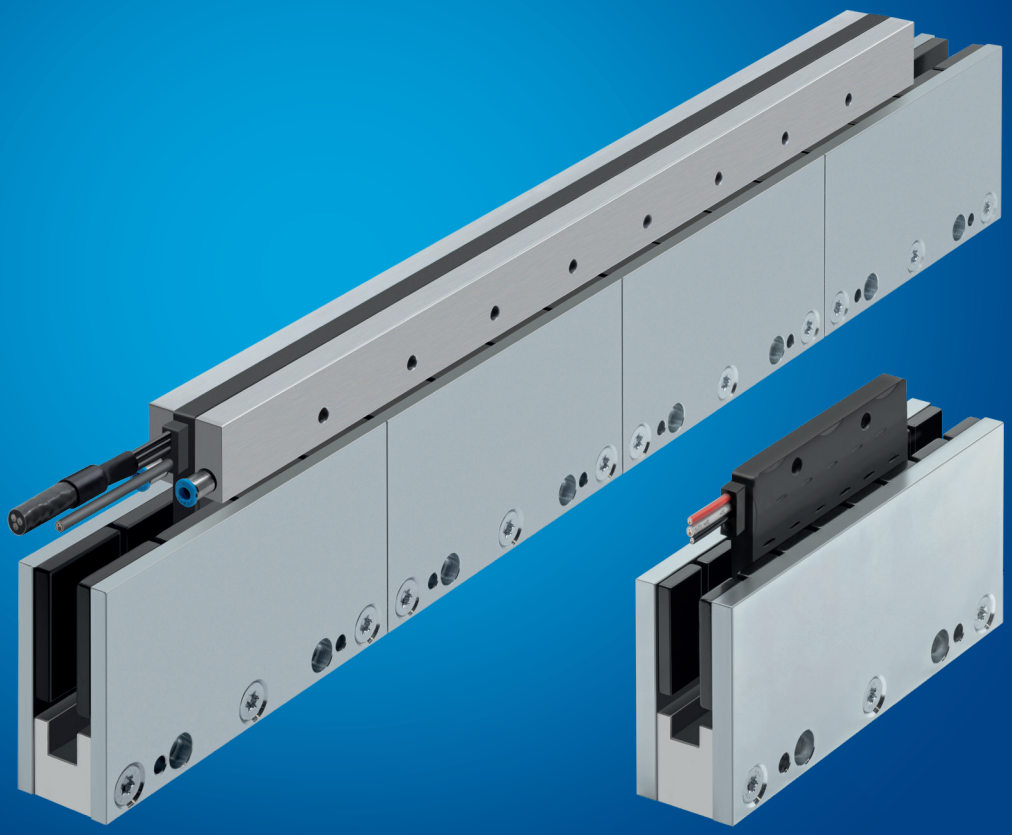

Linear Motors

ILM+ DATA SHEETS

ETEL

IRONLESS LINEAR MOTOR

ILM+03-040

		Winding codes	RA	RA	UA	UA
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	494	494	474	474
Fc	Continuous force	N	87.5	105	84.4	102
Fs	Standstill force	N	66.0	79.0	63.7	76.3
Ip	Peak current	Arms	17.5	17.5	36.4	36.4
Ic	Continuous current	Arms	3.04	3.65	6.35	7.63
Is	Standstill current	Arms	2.30	2.74	4.79	5.72
vs	Rated low speed	mm/s	0.92	2.5	0.95	2.6
Pc	Power dissipation @ Ic	W	79.4	112	78.5	111
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	12.0	12.0	11.6	11.6
R20	Electrical resistance at 20°C (*)	Ohm	4.04	4.04	0.918	0.918
L	Electrical inductance (*)	mH	7.40	7.41	1.58	1.58
τth	Thermal time constant	s	698	252	674	245
Rth	Thermal resistance	K/W	1.38	0.970	1.40	0.979
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	0.385	0.539	0.373	0.527
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.07	0.07	0.07	0.07
x	Assumed stroke	m	0.38	0.38	0.38	0.38
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

Caution: Any use of the motor beyond speed/force limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

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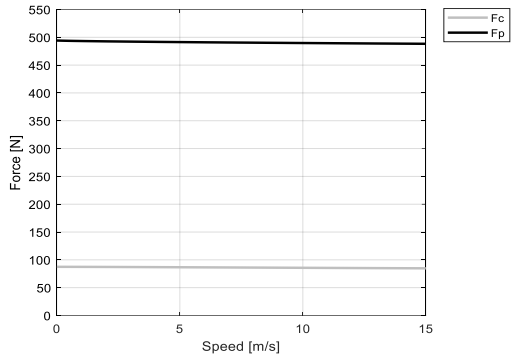
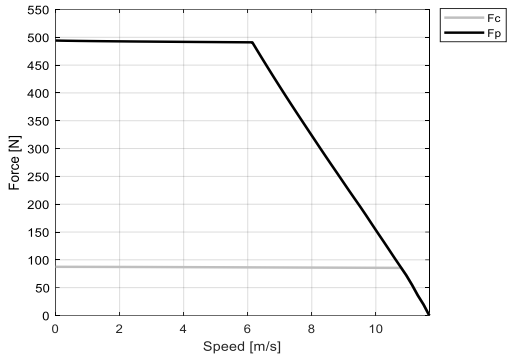
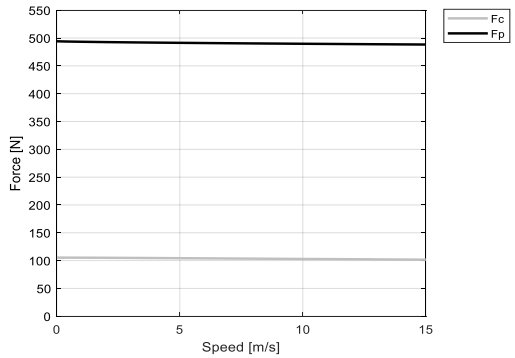
RA - FREE AIR COOLING - 600V



RA - FREE AIR COOLING - 300V



RA - FORCED AIR COOLING - 600V



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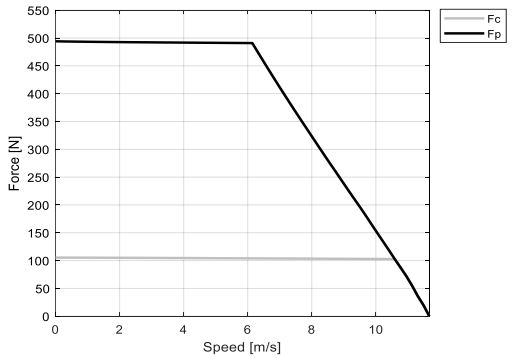
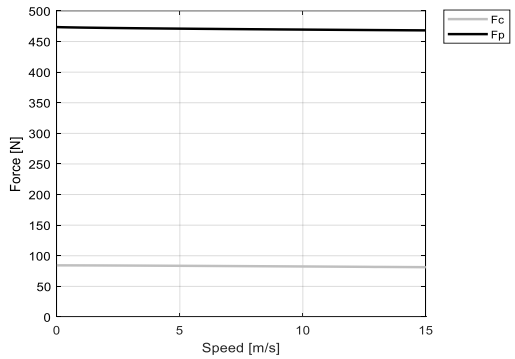
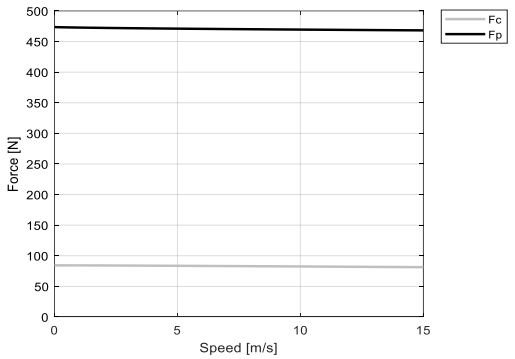


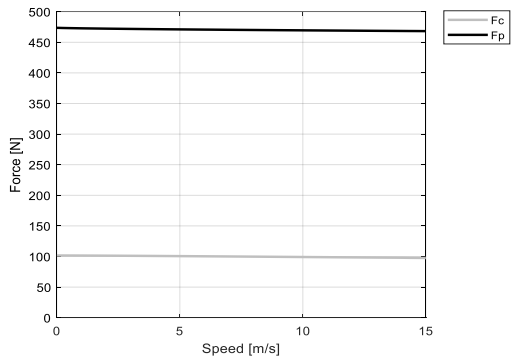
UA - FREE AIR COOLING - 600V



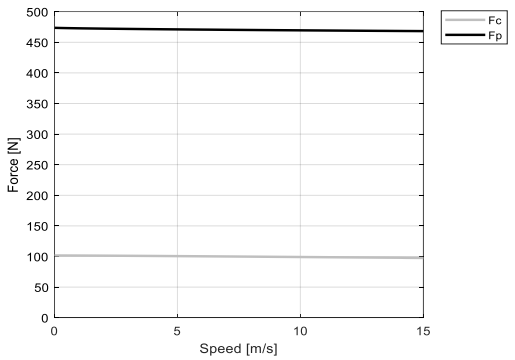
UA - FREE AIR COOLING - 300V



UA - FORCED AIR COOLING - 600V



UA - FORCED AIR COOLING - 300V



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IRONLESS LINEAR MOTOR

ILM+03-060

		Winding codes	RA	RA	UA	UA
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	788	788	755	755
Fc	Continuous force	N	129	159	124	154
Fs	Standstill force	N	97.0	119	93.5	115
Ip	Peak current	Arms	17.5	17.5	36.2	36.2
Ic	Continuous current	Arms	2.80	3.46	5.85	7.23
Is	Standstill current	Arms	2.11	2.59	4.41	5.42
vs	Rated low speed	mm/s	0.88	2.6	0.91	2.7
Pc	Power dissipation @ Ic	W	92.1	137	91.3	136
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	16.4	16.4	15.9	15.9
R20	Electrical resistance at 20°C (*)	Ohm	5.53	5.53	1.26	1.26
L	Electrical inductance (*)	mH	12.0	12.0	2.55	2.56
τth	Thermal time constant	s	731	246	705	239
Rth	Thermal resistance	K/W	1.19	0.791	1.20	0.798
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	0.509	0.662	0.491	0.645
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.08	0.08	0.08	0.08
x	Assumed stroke	m	0.38	0.38	0.38	0.38
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

Caution: Any use of the motor beyond speed/force limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

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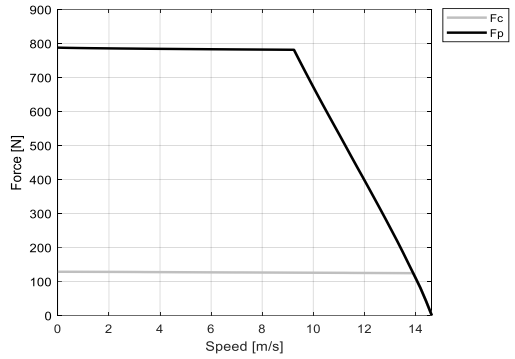
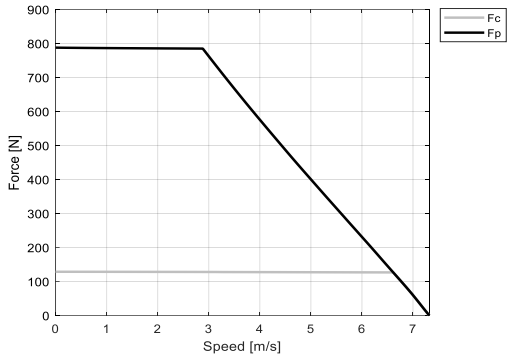
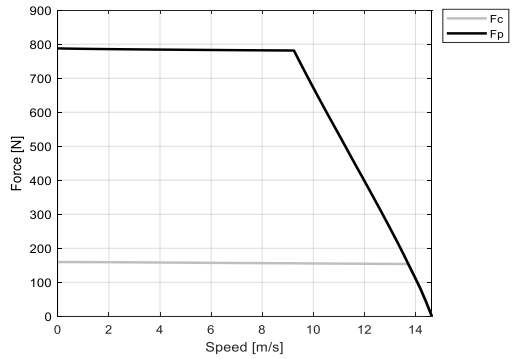
RA - FREE AIR COOLING - 600V



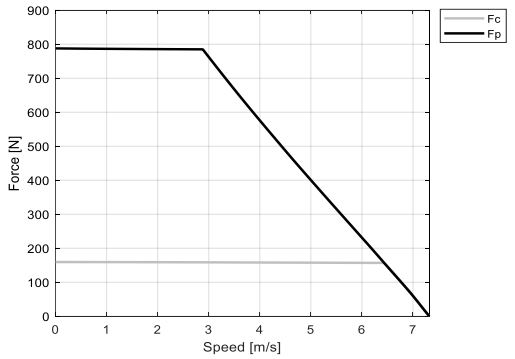
RA - FREE AIR COOLING - 300V



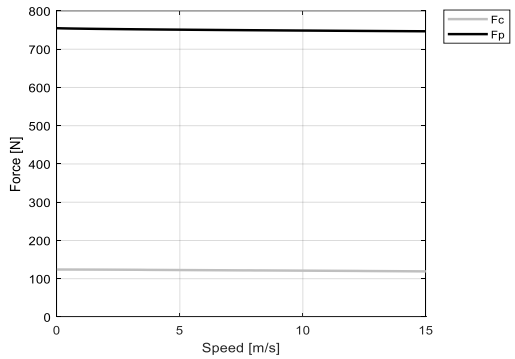
RA - FORCED AIR COOLING - 600V



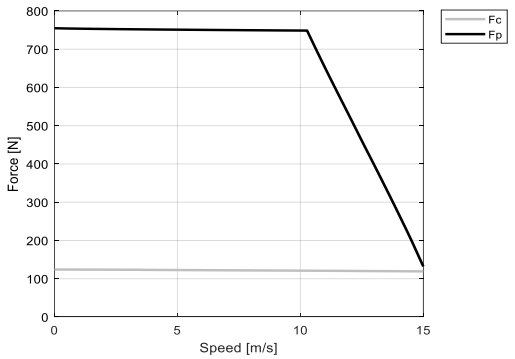
RA - FORCED AIR COOLING - 300V



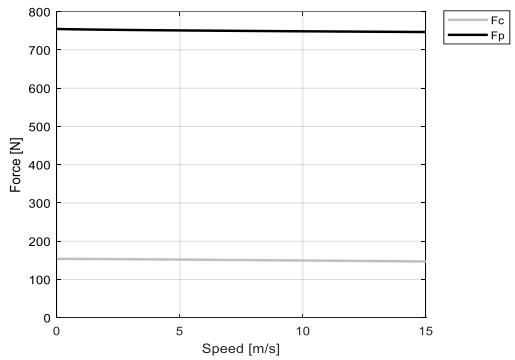
UA - FREE AIR COOLING - 600V



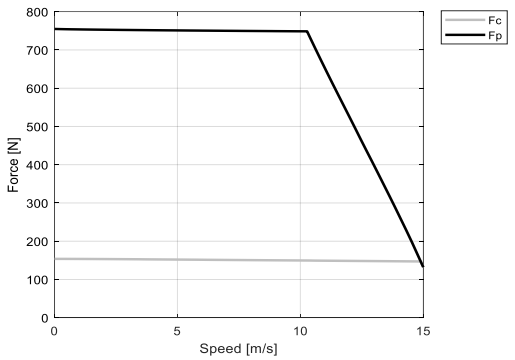
UA - FREE AIR COOLING - 300V



UA - FORCED AIR COOLING - 600V



UA - FORCED AIR COOLING - 300V



ETEL

IRONLESS LINEAR MOTOR

ILM+ Standard

ILM+06-040

		Winding codes	RB	RB	UB	UB
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	988	988	947	947
Fc	Continuous force	N	166	181	160	175
Fs	Standstill force	N	126	136	121	132
Ip	Peak current	Arms	35.1	35.1	72.7	72.7
Ic	Continuous current	Arms	5.79	6.30	12.1	13.2
Is	Standstill current	Arms	4.38	4.75	9.15	9.93
vs	Rated low speed	mm/s	0.70	1.3	0.72	1.4
Pc	Power dissipation @ Ic	W	145	169	143	168
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	17.0	17.0	16.5	16.5
R20	Electrical resistance at 20°C (*)	Ohm	2.02	2.02	0.459	0.459
L	Electrical inductance (*)	mH	3.70	3.70	0.789	0.790
τth	Thermal time constant	s	911	477	884	460
Rth	Thermal resistance	K/W	0.759	0.646	0.766	0.650
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	0.762	1.06	0.738	1.04
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.13	0.13	0.13	0.13
x	Assumed stroke	m	0.63	0.63	0.63	0.63
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

Caution: Any use of the motor beyond speed/force limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

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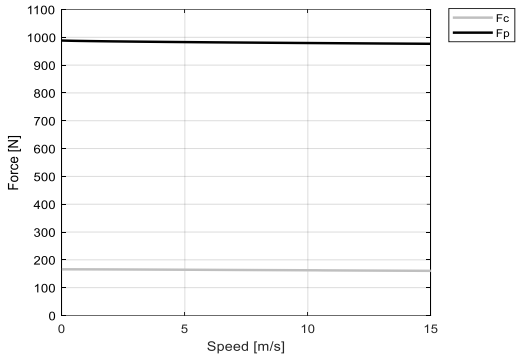
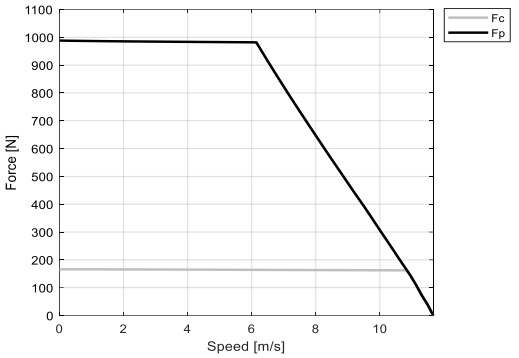
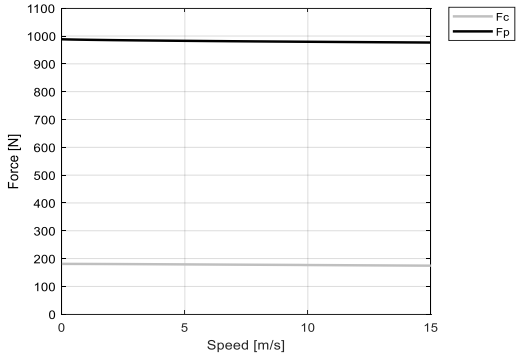
RB - FREE AIR COOLING - 600V



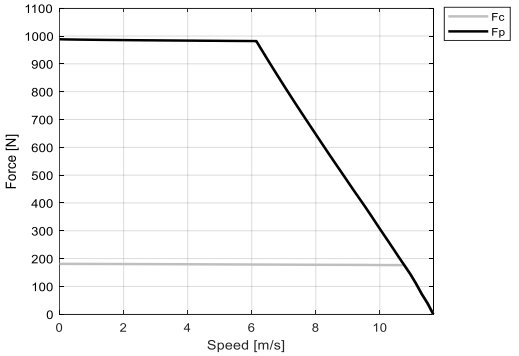
RB - FREE AIR COOLING - 300V



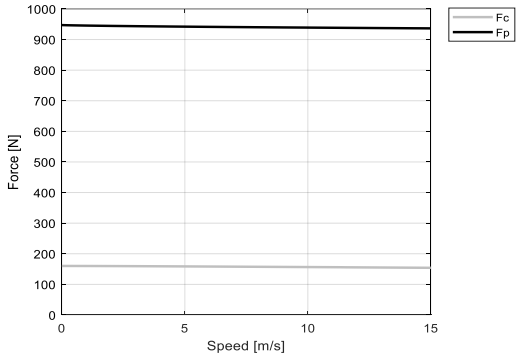
RB - FORCED AIR COOLING - 600V



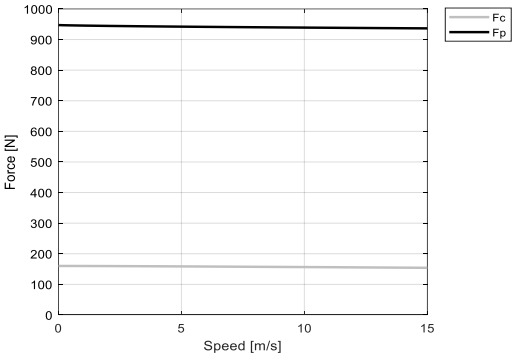
RB - FORCED AIR COOLING - 300V



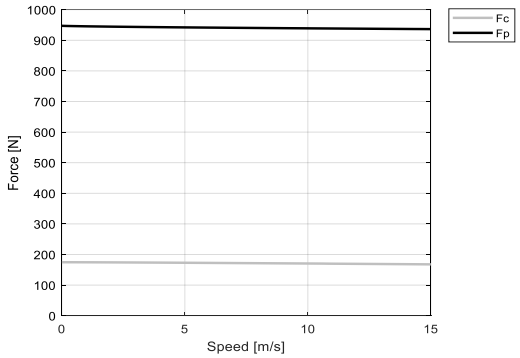
UB - FREE AIR COOLING - 600V



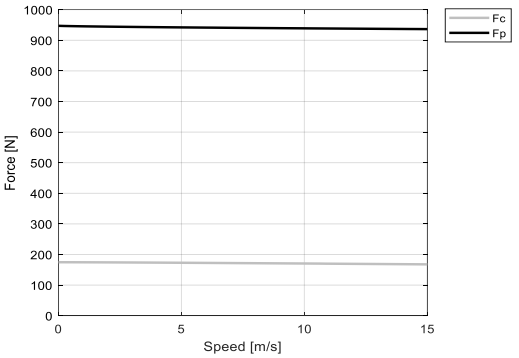
UB - FREE AIR COOLING - 300V



UB - FORCED AIR COOLING - 600V



UB - FORCED AIR COOLING - 300V



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ETEL

IRONLESS LINEAR MOTOR

ILM+ Standard

ILM+06-060

		Winding codes	RB	RB	UB	UB
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1580	1580	1510	1510
Fc	Continuous force	N	244	272	235	263
Fs	Standstill force	N	184	205	178	198
Ip	Peak current	Arms	34.9	34.9	72.5	72.5
Ic	Continuous current	Arms	5.34	5.95	11.2	12.4
Is	Standstill current	Arms	4.03	4.48	8.43	9.36
vs	Rated low speed	mm/s	0.67	1.4	0.69	1.5
Pc	Power dissipation @ Ic	W	168	206	167	204
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	23.2	23.2	22.5	22.5
R20	Electrical resistance at 20°C (*)	Ohm	2.76	2.76	0.628	0.628
L	Electrical inductance (*)	mH	5.98	5.99	1.28	1.28
τth	Thermal time constant	s	955	451	925	435
Rth	Thermal resistance	K/W	0.654	0.531	0.659	0.535
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.01	1.31	0.972	1.27
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.16	0.16	0.16	0.16
x	Assumed stroke	m	0.63	0.63	0.63	0.63
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
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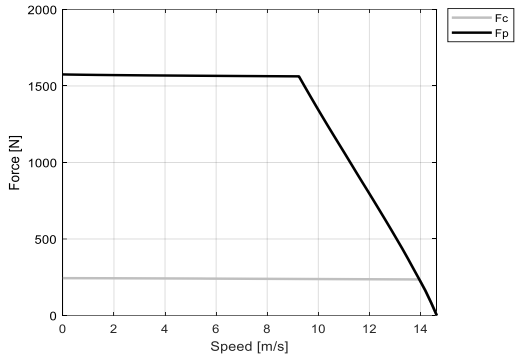
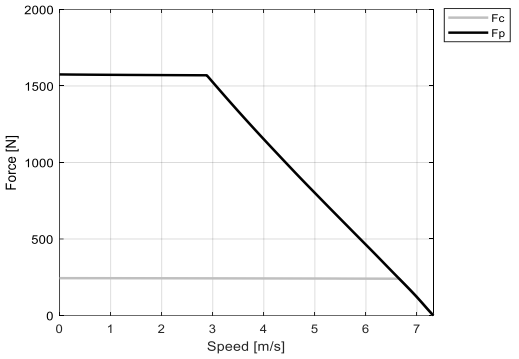
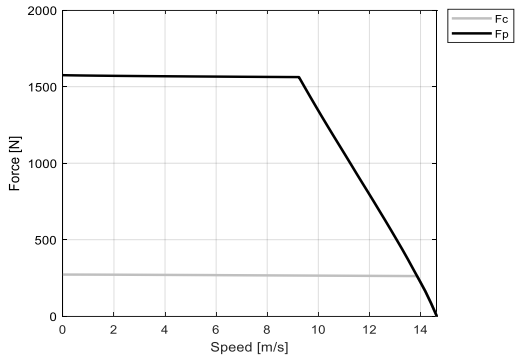
RB - FREE AIR COOLING - 600V



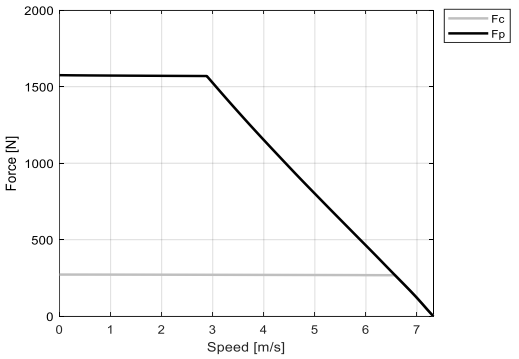
RB - FREE AIR COOLING - 300V



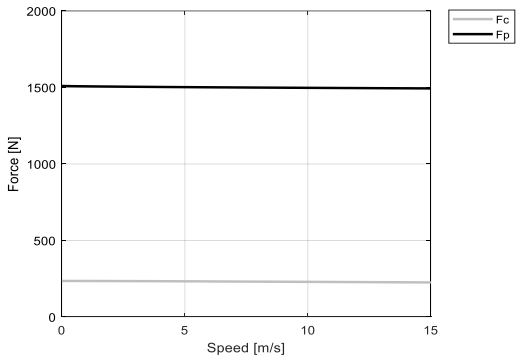
RB - FORCED AIR COOLING - 600V



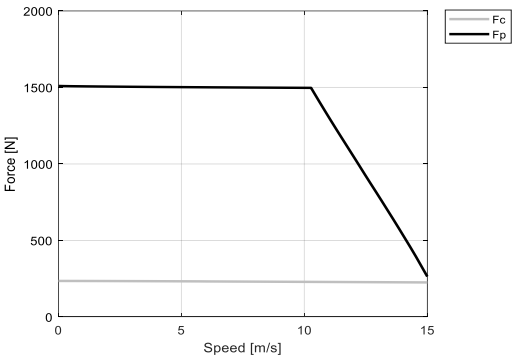
RB - FORCED AIR COOLING - 300V



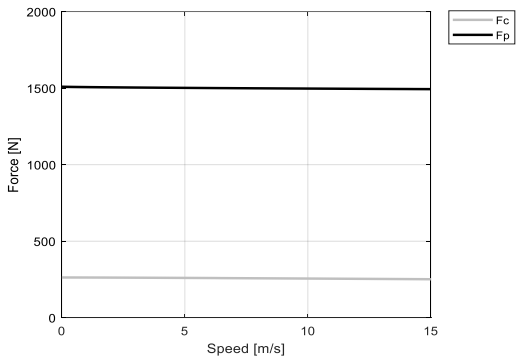
UB - FREE AIR COOLING - 600V



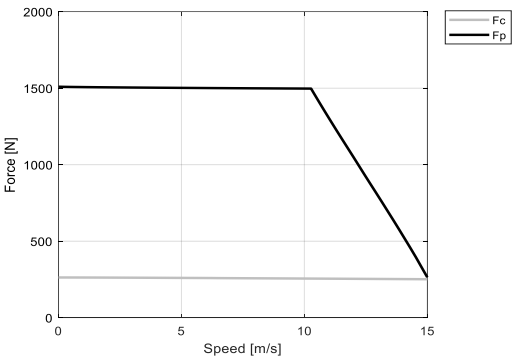
UB - FREE AIR COOLING - 300V



UB - FORCED AIR COOLING - 600V



UB - FORCED AIR COOLING - 300V



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ETEL

IRONLESS LINEAR MOTOR

ILM+ Standard

ILM+09-040

		Winding codes	RC	RC	UC	UC
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1480	1480	1420	1420
Fc	Continuous force	N	236	253	228	244
Fs	Standstill force	N	178	191	172	184
Ip	Peak current	Arms	52.6	52.6	109	109
Ic	Continuous current	Arms	8.26	8.83	17.3	18.5
Is	Standstill current	Arms	6.25	6.67	13.1	13.9
vs	Rated low speed	mm/s	0.52	0.99	0.54	1.0
Pc	Power dissipation @ Ic	W	196	223	195	221
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	20.8	20.8	20.2	20.2
R20	Electrical resistance at 20°C (*)	Ohm	1.35	1.35	0.306	0.306
L	Electrical inductance (*)	mH	2.46	2.47	0.526	0.526
τth	Thermal time constant	s	1220	648	1200	626
Rth	Thermal resistance	K/W	0.559	0.491	0.564	0.495
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	1.14	1.59	1.10	1.55
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.19	0.19	0.19	0.19
x	Assumed stroke	m	0.89	0.89	0.89	0.89
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.9	N/A	0.9

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

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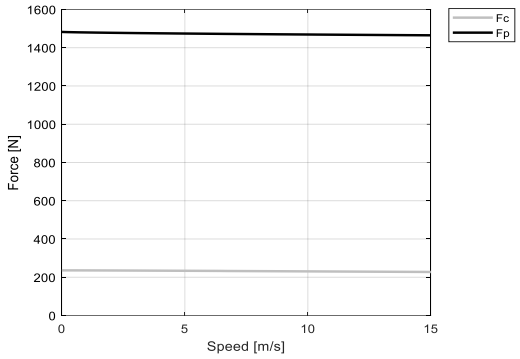
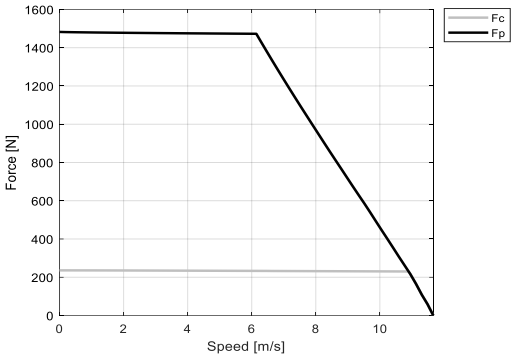
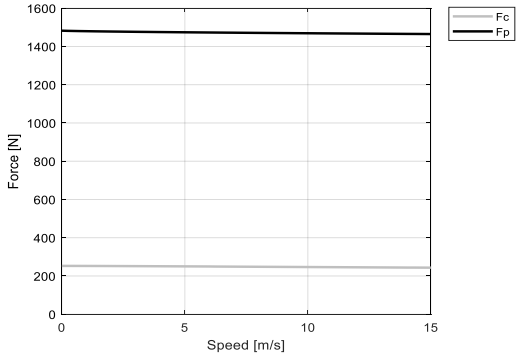
RC - FREE AIR COOLING - 600V



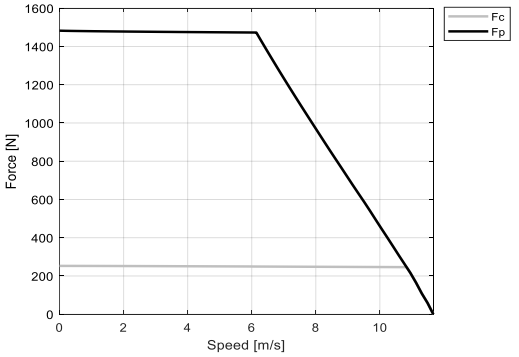
RC - FREE AIR COOLING - 300V



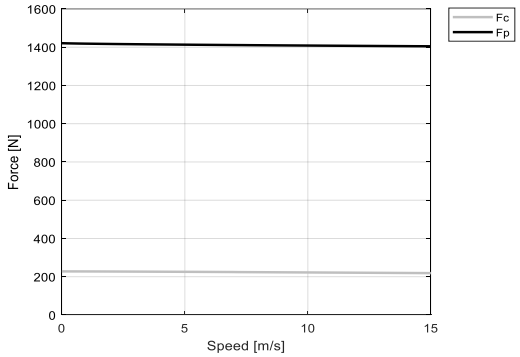
RC - FORCED AIR COOLING - 600V



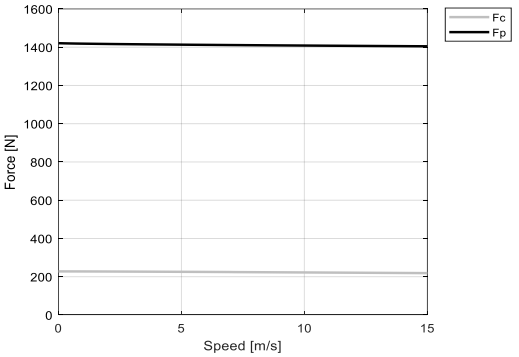
RC - FORCED AIR COOLING - 300V



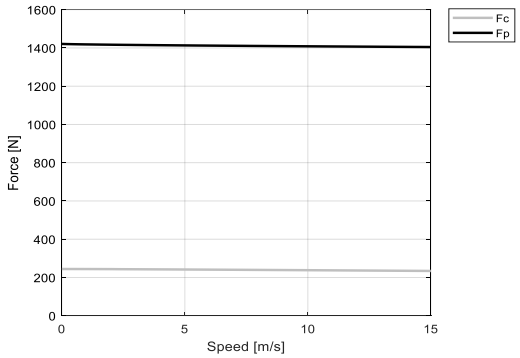
UC - FREE AIR COOLING - 600V



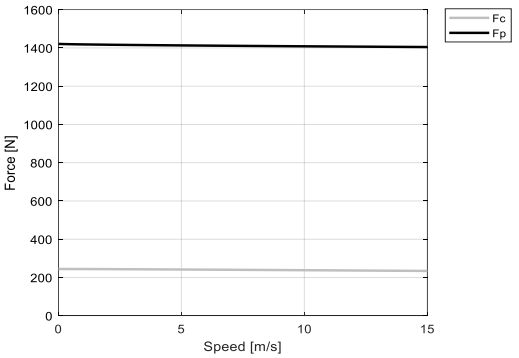
UC - FREE AIR COOLING - 300V



UC - FORCED AIR COOLING - 600V



UC - FORCED AIR COOLING - 300V



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ETEL

IRONLESS LINEAR MOTOR

ILM+ Standard

ILM+09-060

		Winding codes	RC	RC	UC	UC
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	2360	2360	2260	2260
Fc	Continuous force	N	348	376	336	363
Fs	Standstill force	N	263	284	254	274
Ip	Peak current	Arms	52.4	52.4	109	109
Ic	Continuous current	Arms	7.65	8.24	16.0	17.2
Is	Standstill current	Arms	5.78	6.22	12.1	13.0
vs	Rated low speed	mm/s	0.50	0.98	0.51	1.0
Pc	Power dissipation @ Ic	W	230	265	229	264
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	28.4	28.4	27.6	27.6
R20	Electrical resistance at 20°C (*)	Ohm	1.84	1.84	0.419	0.419
L	Electrical inductance (*)	mH	3.99	3.99	0.851	0.851
τth	Thermal time constant	s	1290	653	1260	629
Rth	Thermal resistance	K/W	0.477	0.413	0.480	0.415
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.50	1.95	1.45	1.90
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.24	0.24	0.24	0.24
x	Assumed stroke	m	0.89	0.89	0.89	0.89
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.9	N/A	0.9

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

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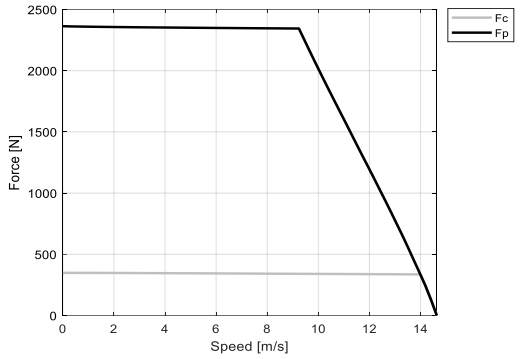
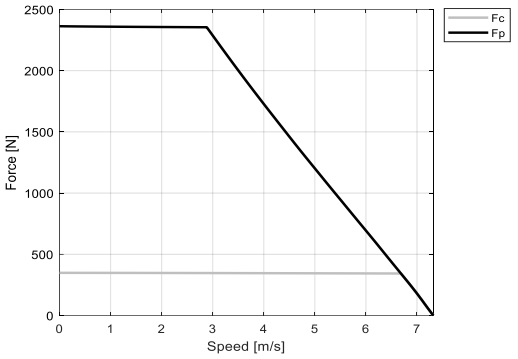
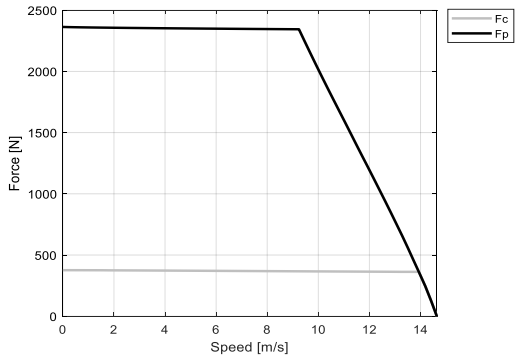
RC - FREE AIR COOLING - 600V



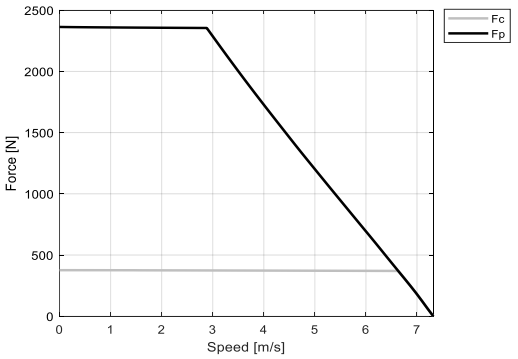
RC - FREE AIR COOLING - 300V



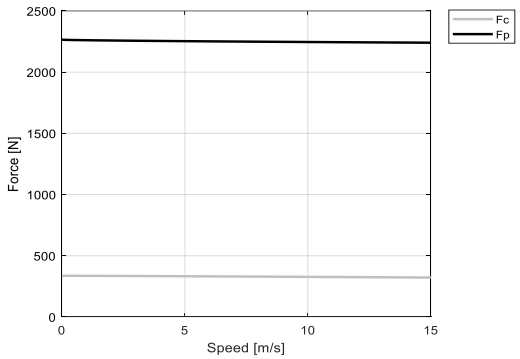
RC - FORCED AIR COOLING - 600V



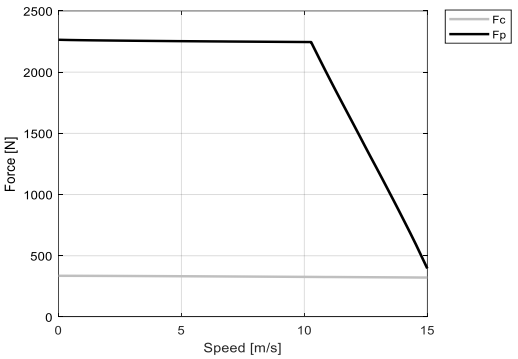
RC - FORCED AIR COOLING - 300V



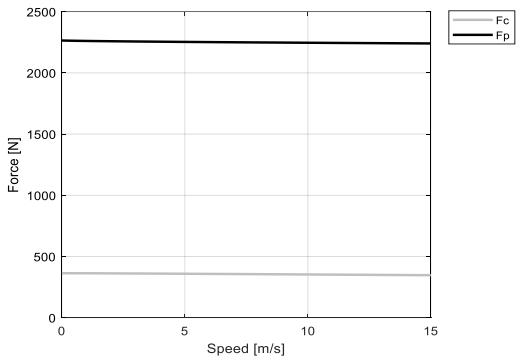
UC - FREE AIR COOLING - 600V



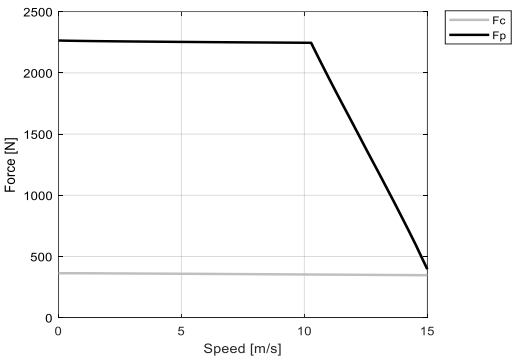
UC - FREE AIR COOLING - 300V



UC - FORCED AIR COOLING - 600V



UC - FORCED AIR COOLING - 300V



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ILM+ Standard

IRONLESS LINEAR MOTOR

ILM+12-040

		Winding codes	PD	PD	RD	RD
MOTOR PERFORMANCE		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1950	1950	1980	1980
Fc	Continuous force	N	292	311	295	315
Fs	Standstill force	N	221	235	224	238
Ip	Peak current	Arms	44.3	44.3	70.1	70.1
Ic	Continuous current	Arms	6.56	6.98	10.4	11.0
Is	Standstill current	Arms	4.96	5.27	7.85	8.34
vs	Rated low speed	mm/s	0.38	0.69	0.38	0.68
Pc	Power dissipation @ Ic	W	232	261	233	262
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	46.2	46.2	29.6	29.6
Ku	Back EMF constant (*)	Vrms/(m/s)	27.9	27.9	17.8	17.8
Km	Motor constant	N/√W	23.8	23.8	24.0	24.0
R20	Electrical resistance at 20°C (*)	Ohm	2.51	2.51	1.01	1.01
L	Electrical inductance (*)	mH	4.51	4.52	1.85	1.85
τth	Thermal time constant	s	1670	928	1680	941
Rth	Thermal resistance	K/W	0.475	0.420	0.473	0.419
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	1.50	2.09	1.52	2.11
MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.25	0.25	0.25	0.25
x	Assumed stroke	m	1.1	1.1	1.1	1.1
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.8	N/A	0.8

Notes: (*) terminal to terminal.
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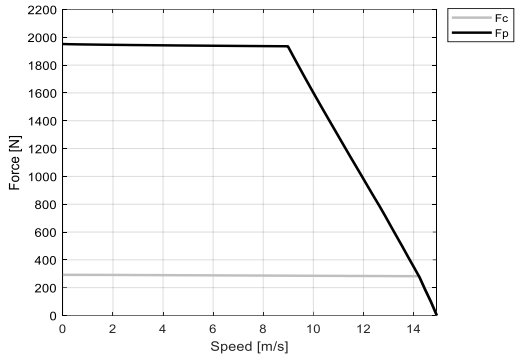
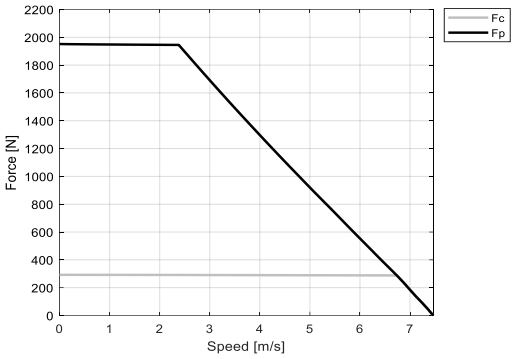
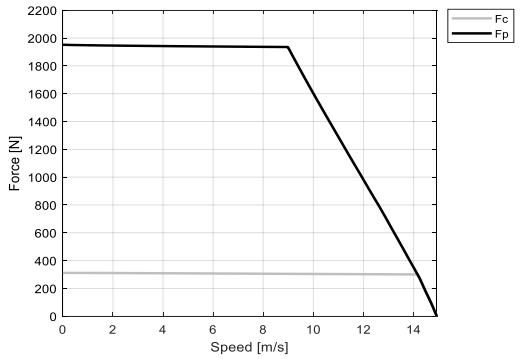
PD - FREE AIR COOLING - 600V



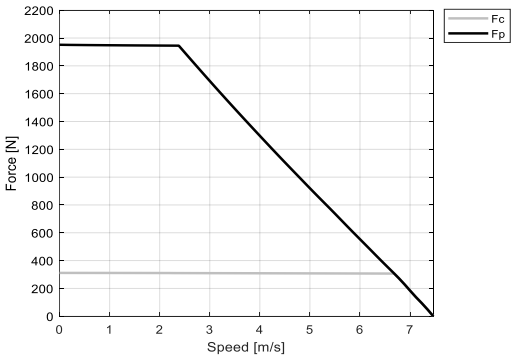
PD - FREE AIR COOLING - 300V



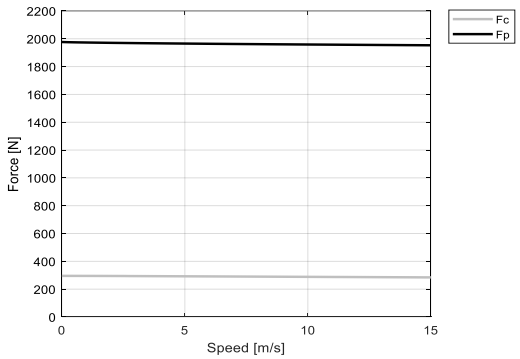
PD - FORCED AIR COOLING - 600V



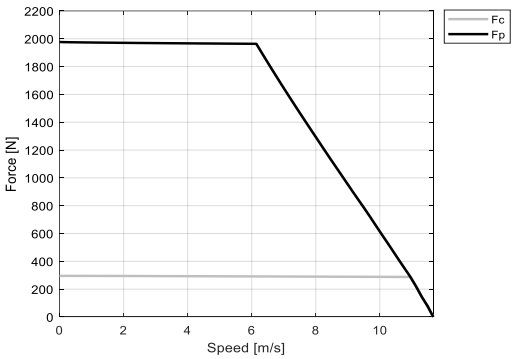
PD - FORCED AIR COOLING - 300V



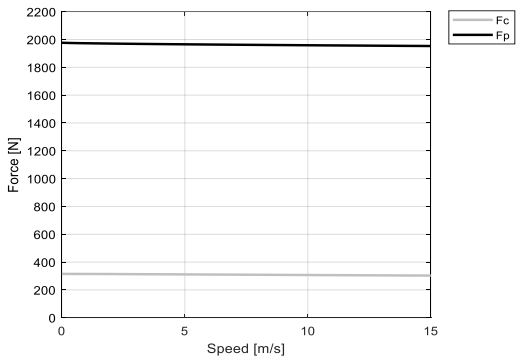
RD - FREE AIR COOLING - 600V



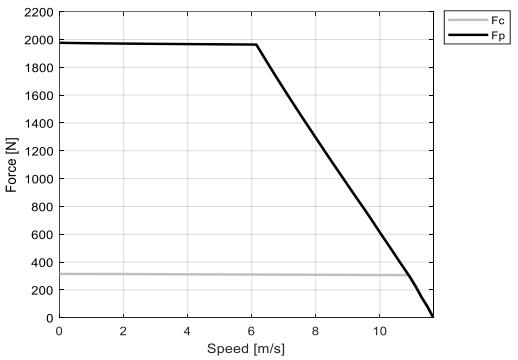
RD - FREE AIR COOLING - 300V



RD - FORCED AIR COOLING - 600V



RD - FORCED AIR COOLING - 300V



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ILM+ Standard

IRONLESS LINEAR MOTOR

ILM+12-060

MOTOR PERFORMANCE		Winding codes	PD	PD	RD	RD
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	3110	3110	3150	3150
Fc	Continuous force	N	434	464	439	469
Fs	Standstill force	N	329	351	332	354
Ip	Peak current	Arms	44.1	44.1	69.9	69.9
Ic	Continuous current	Arms	6.12	6.53	9.67	10.3
Is	Standstill current	Arms	4.63	4.93	7.32	7.80
vs	Rated low speed	mm/s	0.36	0.67	0.36	0.66
Pc	Power dissipation @ Ic	W	276	312	277	313
Fd	Max. detent force (average to peak)	N	0	0	0	0
Fa	Attraction force	N	0.0	0.0	0.0	0.0

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	73.9	73.9	47.3	47.3
Ku	Back EMF constant (*)	Vrms/(m/s)	44.4	44.4	28.4	28.4
Km	Motor constant	N/√W	32.5	32.5	32.8	32.8
R20	Electrical resistance at 20°C (*)	Ohm	3.44	3.44	1.38	1.38
L	Electrical inductance (*)	mH	7.31	7.31	2.99	2.99
τth	Thermal time constant	s	1760	960	1770	976
Rth	Thermal resistance	K/W	0.399	0.351	0.398	0.350
2τp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.98	2.57	2.00	2.59

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.32	0.32	0.32	0.32
x	Assumed stroke	m	1.1	1.1	1.1	1.1
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.8	N/A	0.8

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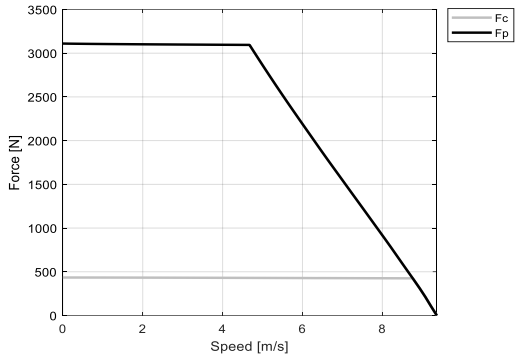
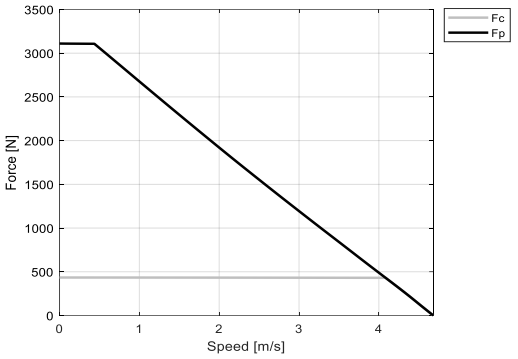
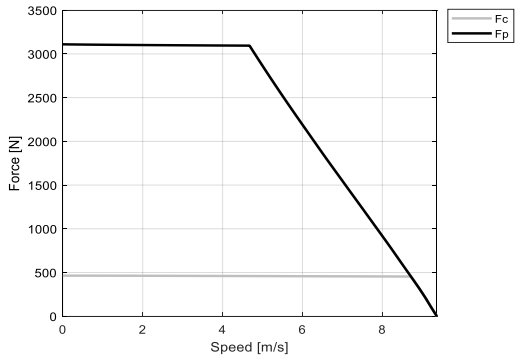
PD - FREE AIR COOLING - 600V



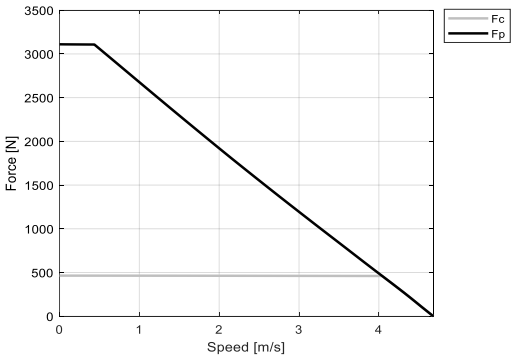
PD - FREE AIR COOLING - 300V



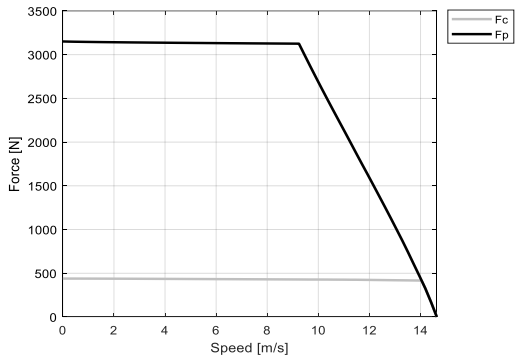
PD - FORCED AIR COOLING - 600V



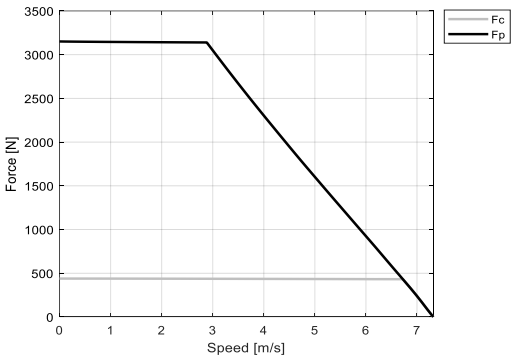
PD - FORCED AIR COOLING - 300V



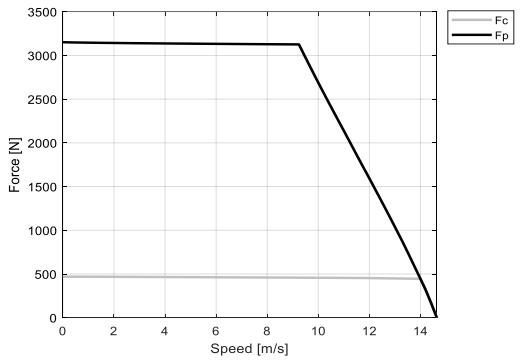
RD - FREE AIR COOLING - 600V



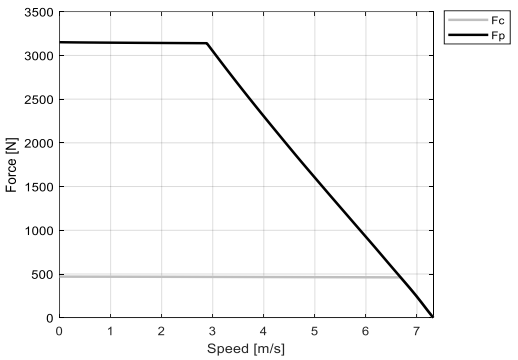
RD - FREE AIR COOLING - 300V



RD - FORCED AIR COOLING - 600V



RD - FORCED AIR COOLING - 300V



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