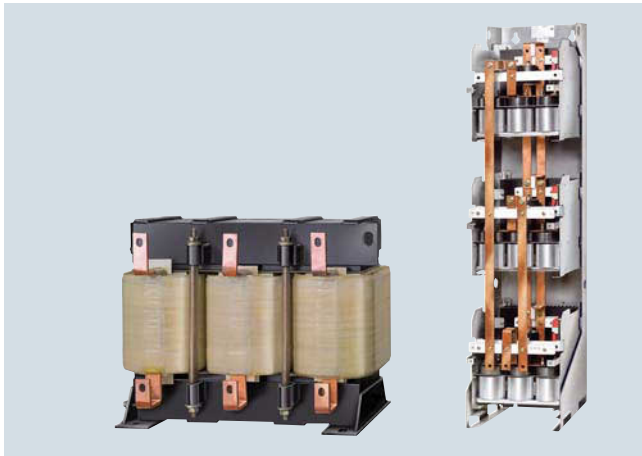


SINAMICS S120 drive system

Chassis format

Motor-side power components for chassis format > dv/dt filters plus VPL

Overview



dv/dt filter plus VPL (**V**oltage **P**eak **L**imiter) limit the voltage rate-of-rise dv/dt to values $< 500 \text{ V}/\mu\text{s}$ and the typical voltage peaks to the following values in accordance with the limit value curve according to IEC/TS 60034-17: 2006:

$< 1000 \text{ V}$ at $U_{\text{line}} < 575 \text{ V}$

$< 1250 \text{ V}$ at $660 \text{ V} < U_{\text{line}} < 690 \text{ V}$

Standard motors with standard insulation and without insulated bearings with a supply voltage of up to 690 V can be used for converter operation if a dv/dt filter plus VPL is used.

dv/dt filters plus VPL are designed for the following maximum motor cable lengths:

- Shielded cables: 300 m (328 ft) (e.g. Protodur NYCWY)
- Unshielded cables: 450 m (1476 ft) (e.g. Protodur NYY)

For shorter cable lengths (100 m shielded, 150 m (492 ft) unshielded), see also dv/dt filter compact plus VPL.

Notice:

The maximum permissible cable length between the dv/dt filter plus VPL and the Power Module/Motor Module is 5 m (16.4 ft).

Design

The dv/dt filter plus VPL consists of two components, which are also supplied as separate mechanical units:

- dv/dt reactor
- Voltage limiting network, which cuts off the voltage peaks and feeds the energy back to the DC link

SINAMICS S120 drive system

Chassis format

Motor-side power components for chassis format > dv/dt filters plus VPL

Selection and ordering data

Suitable for Power Module		Suitable for Motor Module		Type rating at 400 V, 50 Hz (460 V, 60 Hz)/ 690 V, 50 Hz (575 V, 60 Hz)	Rated output current	dv/dt filter plus VPL
Air-cooled	Liquid-cooled	Air-cooled	Liquid-cooled	kW (hp)	A	Article No.
Line voltage 380 ... 480 V 3 AC						
6SL3310-1TE32-1AA3	6SL3315-1TE32-1AA3	6SL3320-1TE32-1AA3	6SL3325-1TE32-1AA3	110 (150)	210	6SL3000-2DE32-6AA0
6SL3310-1TE32-6AA3	6SL3315-1TE32-6AA3	6SL3320-1TE32-6AA3	6SL3325-1TE32-6AA3	132 (200)	260	
6SL3310-1TE33-1AA3	6SL3315-1TE33-1AA3	6SL3320-1TE33-1AA3	6SL3325-1TE33-1AA3	160 (250)	310	6SL3000-2DE35-0AA0
6SL3310-1TE33-8AA3	–	6SL3320-1TE33-8AA3	–	200 (300)	380	
6SL3310-1TE35-0AA3	6SL3315-1TE35-0AA3	6SL3320-1TE35-0AA3	6SL3325-1TE35-0AA3	250 (400)	490	
–	–	6SL3320-1TE36-1AA3	6SL3325-1TE36-1AA3	315 (500)	605	6SL3000-2DE38-4AA0
–	–	6SL3320-1TE37-5AA3	6SL3325-1TE37-5AA3	400 (600)	745	
–	–	6SL3320-1TE38-4AA3	6SL3325-1TE38-4AA3	450 (700)	840	
–	–	6SL3320-1TE41-0AA3	6SL3325-1TE41-0AA3	560 (800)	985	6SL3000-2DE41-4AA0
–	–	6SL3320-1TE41-2AA3	6SL3325-1TE41-2AA3	710 (1000)	1260	
–	–	6SL3320-1TE41-4AA3	6SL3325-1TE41-4AA3	800 (1150)	1405	
			6SL3325-1TE41-4AS3 ¹⁾	800 (1000)	1330	
Line voltage 500 ... 690 V 3 AC						
–	–	6SL3320-1TG28-5AA3	–	75 (75)	85	6SL3000-2DH31-0AA0
–	–	6SL3320-1TG31-0AA3	6SL3325-1TG31-0AA3	90 (75)	100	
–	–	6SL3320-1TG31-2AA3	–	110 (100)	120	6SL3000-2DH31-5AA0
–	–	6SL3325-1TG31-5AA3	6SL3320-1TG31-5AA3	132 (150)	150	
–	–	6SL3320-1TG31-8AA3	–	160 (150)	175	6SL3000-2DH32-2AA0
–	–	6SL3320-1TG32-2AA3	6SL3325-1TG32-2AA3	200 (200)	215	
–	–	6SL3320-1TG32-6AA3	–	250 (250)	260	6SL3000-2DH33-3AA0
–	–	6SL3320-1TG33-3AA3	6SL3325-1TG33-3AA3	315 (300)	330	
–	–	6SL3320-1TG34-1AA3	–	400 (400)	410	6SL3000-2DH34-1AA0
–	–	6SL3320-1TG34-7AA3	6SL3325-1TG34-7AA3	450 (450)	465	6SL3000-2DH35-8AA0
–	–	6SL3320-1TG35-8AA3	6SL3325-1TG35-8AA3	560 (600)	575	
–	–	6SL3320-1TG37-4AA3	6SL3325-1TG37-4AA3	710 (700)	735	6SL3000-2DH38-1AA0
–	–	6SL3320-1TG38-1AA3	6SL3325-1TG38-0AA3 6SL3325-1TG38-1AA3	800 (800)	810	
–	–	6SL3320-1TG38-8AA3	–	900 (900)	910	6SL3000-2DH41-3AA0
–	–	6SL3320-1TG41-0AA3	6SL3325-1TG41-0AA3	1000 (1000)	1025	
–	–	6SL3320-1TG41-3AA3	6SL3325-1TG41-3AA3	1200 (1250)	1270	

¹⁾ This Motor Module has been specifically designed for loads demanding a high dynamic performance.

SINAMICS S120 drive system

Chassis format

Motor-side power components for chassis format > dv/dt filters plus VPL

Technical specifications

Line voltage 380 ... 480 V 3 AC		dv/dt filter plus VPL			
		6SL3000-2DE32-6AA0	6SL3000-2DE35-0AA0	6SL3000-2DE38-4AA0	6SL3000-2DE41-4AA0
$I_{th\ max}$	A	260	490	840	1405
Degree of protection		IP00	IP00	IP00	IP00
Cable length, max. between dv/dt filter and motor ¹⁾					
• Shielded	m (ft)	300 (984)	300 (984)	300 (984)	300 (984)
• Unshielded	m (ft)	450 (1476)	450 (1476)	450 (1476)	450 (1476)
Conformity		CE	CE	CE	CE
Certificate of suitability		cURus	cURus	cURus	cURus
dv/dt reactor					
Power loss, max. ²⁾					
• At 50 Hz 400 V	kW	0.701	0.874	1.106	1.111
• At 60 Hz 460 V	kW	0.729	0.904	1.115	1.154
• At 150 Hz 400 V	kW	0.78	0.963	1.226	1.23
Connections					
• To the Power Module/ Motor Module		1 × hole for M10	1 × hole for M12	1 × hole for M12	2 × hole for M12
• To load		1 × hole for M10	1 × hole for M12	1 × hole for M12	2 × hole for M12
• PE		M6 screw	M6 screw	M6 screw	M6 screw
Dimensions					
• Width	mm (in)	410 (16.1)	460 (18.1)	460 (18.1)	445 (17.5)
• Height	mm (in)	370 (14.6)	370 (14.6)	385 (15.2)	385 (15.2)
• Depth	mm (in)	229 (9.02)	275 (10.8)	312 (12.3)	312 (12.3)
Weight, approx.	kg (lb)	66 (146)	122 (269)	149 (329)	158 (348)
Voltage Peak Limiter (VPL)					
Power loss, max.					
• At 50 Hz 400 V	kW	0.029	0.042	0.077	0.134
• At 60 Hz 460 V	kW	0.027	0.039	0.072	0.125
• At 150 Hz 400 V	kW	0.025	0.036	0.066	0.114
Connections					
• To dv/dt reactor		M8 nut	70 mm ² terminals	1 × hole for M8	1 × hole for M10
• To DC link		M8 nut	70 mm ² terminals	1 × hole for M8	1 × hole for M10
• PE		M8 stud	35 mm ² terminals	M8 stud	M8 stud
Dimensions					
• Width	mm (in)	265 (10.4)	392 (15.4)	309 (12.2)	309 (12.2)
• Height	mm (in)	263 (10.3)	285 (11.2)	1313 (51.7)	1313 (51.7)
• Depth	mm (in)	190 (7.48)	210 (8.27)	400 (15.7)	400 (15.7)
Weight, approx.	kg (lb)	6 (13)	16 (35)	48 (106)	72 (159)
Suitable for Power Module (Type rating)		6SL3310-1TE32-1AA3 (110 kW) 6SL3315-1TE32-1AA3 (110 kW) 6SL3310-1TE32-6AA3 (132 kW) 6SL3315-1TE32-6AA3 (132 kW)	6SL3310-1TE33-1AA3 (160 kW) 6SL3315-1TE33-1AA3 (160 kW) 6SL3310-1TE33-8AA3 (200 kW) 6SL3310-1TE35-0AA3 (250 kW) 6SL3315-1TE35-0AA3 (250 kW)	–	–
Suitable for Motor Module (Type rating)		6SL3320-1TE32-1AA3 (110 kW) 6SL3325-1TE32-1AA3 (110 kW) 6SL3320-1TE32-6AA3 (132 kW) 6SL3325-1TE32-6AA3 (132 kW)	6SL3320-1TE33-1AA3 (160 kW) 6SL3325-1TE33-1AA3 (160 kW) 6SL3320-1TE33-8AA3 (200 kW) 6SL3320-1TE35-0AA3 (250 kW) 6SL3325-1TE35-0AA3 (250 kW)	6SL3320-1TE36-1AA3 (315 kW) 6SL3325-1TE36-1AA0 (315 kW) 6SL3320-1TE37-5AA0 (400 kW) 6SL3325-1TE37-5AA0 (400 kW) 6SL3320-1TE38-4AA0 (450 kW) 6SL3325-1TE38-4AA0 (450 kW)	6SL3320-1TE41-0AA3 (560 kW) 6SL3325-1TE41-0AA3 (560 kW) 6SL3320-1TE41-2AA3 (710 kW) 6SL3325-1TE41-2AA3 (710 kW) 6SL3320-1TE41-4AA3 (800 kW) 6SL3325-1TE41-4AA3 (800 kW) 6SL3325-1TE41-4AS3 (800 kW) ²⁾

Note:

For powers above 560 kW (380 ... 480 V) or 710 kW (500 ... 690 V), then a filter contains two dv/dt reactors.

¹⁾ Longer cable lengths for specific configurations are available on request.

The technical specifications listed refer to a dv/dt reactor.

For additional information on dv/dt filters, please refer to the [SINAMICS Low Voltage Engineering Manual](#).

²⁾ This Motor Module has been specifically designed for loads demanding a high dynamic performance.

SINAMICS S120 drive system

Chassis format

Motor-side power components for chassis format > dv/dt filters plus VPL

Technical specifications (continued)

Line voltage 500 ... 690 V 3 AC		dv/dt filter plus VPL			
		6SL3000-2DH31-0AA0	6SL3000-2DH31-5AA0	6SL3000-2DH32-2AA0	6SL3000-2DH33-3AA0
I_{th max}	A	100	150	215	330
Degree of protection		IP00	IP00	IP00	IP00
Cable length, max. between dv/dt filter and motor ¹⁾					
• Shielded	m (ft)	300 (984)	300 (984)	300 (984)	300 (984)
• Unshielded	m (ft)	450 (1476)	450 (1476)	450 (1476)	450 (1476)
Conformity		CE	CE	CE	CE
Certificate of suitability ²⁾		cURus	cURus	cURus	cURus
dv/dt reactor					
Power loss, max.					
• At 50 Hz 500/690 V	kW	0.49	0.389	0.578	0.595
• At 60 Hz 575 V	kW	0.508	0.408	0.604	0.62
• At 150 Hz 500/690 V	kW	0.541	0.436	0.645	0.661
Connections					
• To the Power Module/ Motor Module		1 × hole for M10	1 × hole for M10	1 × hole for M10	1 × hole for M10
• To load		1 × hole for M10	1 × hole for M10	1 × hole for M10	1 × hole for M10
• PE		M6 screw	M6 screw	M6 screw	M6 screw
Dimensions					
• Width	mm (in)	350 (13.8)	350 (13.8)	460 (18.1)	460 (18.1)
• Height	mm (in)	320 (12.6)	320 (12.6)	360 (14.2)	360 (14.2)
• Depth	mm (in)	227 (8.94)	227 (8.94)	275 (10.8)	275 (10.8)
Weight, approx.	kg (lb)	48 (106)	50 (110)	83 (183)	135 (298)
Voltage Peak Limiter (VPL)					
Power loss, max.					
• At 50 Hz 500/690 V	kW	0.016	0.02	0.032	0.042
• At 60 Hz 575 V	kW	0.015	0.019	0.03	0.039
• At 150 Hz 500/690 V	kW	0.013	0.018	0.027	0.036
Connections					
• To dv/dt reactor		M8 nut	M8 nut	70 mm ² terminals	70 mm ² terminals
• To DC link		M8 nut	M8 nut	70 mm ² terminals	70 mm ² terminals
• PE		M8 stud	M8 stud	35 mm ² terminals	35 mm ² terminals
Dimensions					
• Width	mm (in)	263 (10.3)	263 (10.3)	392 (15.4)	392 (15.4)
• Height	mm (in)	265 (10.4)	265 (10.4)	285 (11.2)	285 (11.2)
• Depth	mm (in)	188 (7.40)	188 (7.40)	210 (8.27)	210 (8.27)
Weight, approx.	kg (lb)	6 (13)	6 (13)	16 (35)	16 (35)
Suitable for Motor Module (Type rating)		6SL3320-1TG28-5AA3 (75 kW)	6SL3320-1TG31-2AA3 (110 kW)	6SL3320-1TG31-8AA3 (160 kW)	6SL3320-1TG32-6AA3 (250 kW)
		6SL3320-1TG31-0AA3 (90 kW)	6SL3320-1TG31-5AA3 (132 kW)	6SL3320-1TG32-2AA3 (200 kW)	6SL3320-1TG33-3AA3 (315 kW)
		6SL3325-1TG31-0AA3 (90 kW)	6SL3325-1TG31-5AA3 (132 kW)	6SL3325-1TG32-2AA3 (200 kW)	6SL3325-1TG33-3AA3 (315 kW)

Note:

For powers above 560 kW (380 ... 480 V) or 710 kW (500 ... 690 V), then a filter contains two dv/dt reactors.

The technical specifications listed refer to a dv/dt reactor.
For additional information on dv/dt filters, please refer to the [SINAMICS Low Voltage Engineering Manual](#).

¹⁾ Longer cable lengths for specific configurations are available on request.

²⁾ Only for line voltages 500 ... 600 V 3 AC.