

MLFB-Ordering data

6SL3220-3YE12-0AF0



Client order no. : Order no. : Offer no. : Remarks : Item no. :
Consignment no. :
Project :

Rated data			General ted	General tech. specifications		
Input			Power factor λ	0.70 0.85		
Number of phases	3 AC		Offset factor cos φ	0.96		
Line voltage	380 480 \	V +10 % -20 %	Efficiency η	0.98		
Line frequency	47 63 Hz		Sound pressure level (1m)	55 dB		
Rated voltage	400V IEC	480V NEC	Power loss	0.050 kW		
Rated current (LO)	2.80 A	2.70 A	Filter class (integrated)	RFI suppression filter for		
Rated current (HO)	1.99 A	2.00 A	Filter class (integrated)	Category C2		
Output		Ambient conditions				
Number of phases	3 AC					
Rated voltage	400V IEC	480V NEC	Cooling	Air cooling using an integrated fan		
Rated power (LO)	1.10 kW	1.50 hp	Cooling air requirement	0.005 m³/s (0.177 ft³/s)		
Rated power (HO)	0.75 kW	1.00 hp	Installation altitude	1000 m (3280.84 ft)		
Rated current (LO)	3.10 A	3.00 A	Ambient temperature			
Rated current (HO)	2.20 A	2.10 A	Operation	-20 45 °C (-4 113 °F)		
Rated current (IN)	3.20 A		Transport	-40 70 °C (-40 158 °F)		
Max. output current	3.40 A		Storage	-25 55 °C (-13 131 °F)		
Pulse frequency	4 kHz		Relative humidity			
Output frequency for vector control	0 200 Hz		Max. operation	95 % At 40 °C (104 °F), condensation and icing not permissible		
Output frequency for V/f control	0 550 Hz		Closed-loop	control techniques		

Overload	capability
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Low Overload (LO)

110% base load current IL for 60 s in a 300 s cycle time

High Overload (HO)

150% x base load current IH for 60 s within a 600 s cycle time

C	osed-	loop	contro	I techniques	
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closed loop control techniques				
V/f linear / square-law / parameterizable	Yes			
V/f with flux current control (FCC)	Yes			
V/f ECO linear / square-law	Yes			
Sensorless vector control	Yes			
Vector control, with sensor	No			
Encoderless torque control	Yes			
Torque control, with encoder	No			



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Size FSA Connections Net weight 3 kg (7.50 lb) Signal cable Width 73 mm (2.87 in) Conductor cross-section 0.15 1.50 mm² (AWG 24 AWG 24 AWG 24 AWG 24 AWG 24 AWG 24 AWG 25 AWG 26 AWG 27 AWG 28 AWG 29 AWG				Figu
Size FSA Connections Net weight 3 kg (7.50 lb) Signal cable Width 73 mm (2.87 in) Conductor cross-section 0.15 1.50 mm² (AWG 24 AWG 24 AWG 24 AWG 24 AWG 24 AWG 25 AWG 25 AWG 26 AWG 27 AWG 28 AWG 28 AWG 28 AWG 29 mm (8.23 in) Version screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG 28 AWG 29 AW	Mechanical	data	Com	nmunication
Net weight 3 kg (7.50 lb) Signal cable Width 73 mm (2.87 in) Conductor cross-section 0.15 1.50 mm² (AWG 24 AWG 24 AWG 25 AWG 26 AWG 26 AWG 26 AWG 27 AWG 27 AWG 28 AWG 29 AWG 28 AWG 29 AWG	Degree of protection	IP20 / UL open type	Communication	PROFINET / EtherNet/IP
Width 73 mm (2.87 in) Conductor cross-section 0.15 1.50 mm² (AWG 24 AWG Line side Depth 209 mm (8.23 in) Version screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Inputs / outputs Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminals Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminals Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminals Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminals Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminals Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Version Screw-type terminal Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Line side) Conductor cross-sect	Size	FSA	Co	onnections
Height 232 mm (9.13 in) Line side Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Motor end 1.5	Net weight	3 kg (7.50 lb)	Signal cable	
Depth 209 mm (8.23 in) Version Screw-type terminal	Width	73 mm (2.87 in)	Conductor cross-section	0.15 1.50 mm² (AWG 24 AWG
Inputs / outputs tandard digital inputs Motor end Version Screw-type terminals Switching level: 0→1 11 V Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Switching level: 1→0 5 V DC link (for braking resistor) Max. inrush current 15 mA PE connection On housing with M4 screw Max. motor cable length Number 1 Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Standards Output (resistive load) DC 30 V, 5.0 A Number as relay changeover contact 2 Compliance with standards UL, cUL, CE, C-Tick (RCM), EAC, KCC F47, REACH EMC Directive 2004/108/EC, Low-Volume on the standards of the control of t	Height	232 mm (9.13 in)	Line side	
Number 6 Version Screw-type terminals Switching level: 0→1 11 V Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Switching level: 1→0 5 V DC link (for braking resistor) Max. inrush current 15 mA PE connection On housing with M4 screw Max. motor cable length Number 1 Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Number as relay changeover contact 2 Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Number 2 (Differential input) Number 3 to bit Number 4 (Differential input) Number 4 (Differential input) Number 5 (Differential input) Number 6 (Differential input) Number 7 (Differential input) Number 8 (Differential input) Number 9 (Differential input)	Depth	209 mm (8.23 in)	Version	screw-type terminal
Number 6 Version Screw-type terminals Switching level: 0→1 11 V Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG Switching level: 1→0 5 V DC link (for braking resistor) Max. inrush current 15 mA PE connection On housing with M4 screw Max. motor cable length Number 1 Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Number as relay changeover contact 2 Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0→1 4 V	Inputs / ou	tputs	Conductor cross-section	1.50 2.50 mm² (AWG 18 AWG
Switching level: 0 → 1 11 V Conductor cross-section 1.50 2.50 mm² (AWG 18 AWG 50 AWG 5	tandard digital inputs		Motor end	
Switching level: 1→0 5 V Max. inrush current ail-safe digital inputs Number 1 igital outputs Number as relay changeover contact 2 Standards Output (resistive load) Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input Output (Passitive load) 10 bit witching threshold as digital input Output (Passitive load) 10 bit DC 30 V, 5.0 A 10 bit DC 30 V, 5.0 A 10 bit CE marking PE connection On housing with M4 screw Max. motor cable length Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Compliance with standards UL, cUL, CE, C-Tick (RCM), EAC, KCC F47, REACH EMC Directive 2004/108/EC, Low-Vo Directive 2006/95/EC	Number	6	Version	Screw-type terminals
Max. inrush current 15 mA PE connection Max. motor cable length Number 1 Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Number as relay changeover contact 2 Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0-1 4 V	Switching level: 0→1	11 V	Conductor cross-section	1.50 2.50 mm² (AWG 18 AWG
PE connection On housing with M4 screw Max. motor cable length Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Unshielded 300 m (984.25 ft) Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 malog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0-1 4 V	Switching level: 1→0	5 V	DC link (for braking resistor))
Number 1 Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Unshielded 300 m (984.25 ft) Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 Inalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0 -1 4 V	Max. inrush current	15 mA	PE connection	On housing with M4 screw
Shielded 200 m (656.17 ft) Unshielded 300 m (984.25 ft) Unshielded 300 m (984.25 ft) Standards Output (resistive load) DC 30 V, 5.0 A Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0 4 V	ail-safe digital inputs		Max. motor cable length	
Number as relay changeover contact 2 Standards Output (resistive load) Number as transistor Number as transistor Number 2 (Differential input) Resolution 10 bit Unshielded 300 m (984.25 ft) Compliance with standards UL, cUL, CE, C-Tick (RCM), EAC, KCC F47, REACH CE marking CE marking CE marking CE marking	Number	1	Shielded	200 m (656.17 ft)
Output (resistive load) Number as transistor Number 2 (Differential input) Resolution 10 bit Output (resistive load) DC 30 V, 5.0 A Compliance with standards Compliance with standards EMC Directive 2004/108/EC, Low-Vo. Directive 2006/95/EC CE marking CE marking Output (resistive load) UL, cUL, CE, C-Tick (RCM), EAC, KCC F47, REACH EMC Directive 2004/108/EC, Low-Vo. Directive 2006/95/EC	oigital outputs		Unshielded	
Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 4 ∨	Number as relay changeover contact	2	S	tandards
Number as transistor 0 nalog / digital inputs Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0→1 4 V	Output (resistive load)	DC 30 V, 5.0 A		III -III CE C T:-I·/DCM) EAC VCC
Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 4 ∨	Number as transistor	0	Compliance with standards	
Number 2 (Differential input) Resolution 10 bit witching threshold as digital input 0→1 4 V	analog / digital inputs			
witching threshold as digital input 0→1 4 V	Number	2 (Differential input)	CE marking	
0 →1 4 V	Resolution	10 bit		
	witching threshold as digital in	put		
1 → 0 1.6 V	0→1	4 V		
	1→0	1.6 V		

PTC/ KTY interface

Analog outputs

Number

1 motor temperature sensor input, sensors that can be connected: PTC, KTY and Thermo-Click, accuracy $\pm 5~^{\circ}\text{C}$

1 (Non-isolated output)



MLFB-Ordering data

6SL3220-3YE12-0AF0

90%



Converter losses to EN 50598-2*

-					
Efficier	ncy class		IE2		
Compa 100%)	rison with the reference o	converter (90% /	-31.30 %		
1	^				
100% -	42.5 W (1.98 %)	47.2 W (2.20 %)	55.1 W (2.57 %)		
		i 	i 		
50% →	35.3 W (1.64 %)	37.2 W (1.73 %)	40.0 W (1.86 %)		
	22.2 W /1 FO 0/)	 - 	i 		
25% →	32.3 W (1.50 %)	¦ 33 W (1.54 %)			

The percentage values show the losses in relation to the rated apparent power of the converter.

The diagram shows the losses for the points (as per standard EN 50598) of the relative torque generating current (I) over the relative motor stator frequency(f). The values are valid for the basic version of the converter without options/components.

Operator panel: Intelligent Operator Panel (IOP-2)

Screen		Ambient conditions	
Display design	LCD colors	Ambient temperature during	
Screen resolution	320 x 240 Pixel	Operation	0 50 °C (32 122 °F)
	320 X 240 PIXEI		55 °C only with door mounting kit
Mech	anical data	Storage	-40 70 °C (-40 158 °F)
Degree of protection	IP55 / UL type 12	Transport	-40 70 °C (-40 158 °F)
Net weight	0.13 kg (0.30 lb)	Relative humidity at 25°C do	uring
Width	70.0 mm (2.76 in)	Max. operation	95 %
Height	106.85 mm (4.21 in)	Approvals	
Depth	19.65 mm (0.77 in)		Approvais
		Certificate of suitability	CE, cULus, EAC, KCC, RCM

^{*}converted values