



General

The LogiDrive 240xx servo converter is especially attractive for multi-axis systems.

The LD 240xM master module (first axis) already contains an integrated power supply and a ballast circuit and can be operated as a stand-alone unit. Through an internal bus connection, up to seven extension axes (LD 240xA axis module) can be connected.

An overview of the LD 240xx servo converter:

- Setpoint input either through the CAN bus or as analog signals (0 ... ± 10 V)
- Simple user interface
- Output current 6 A/3 A
- Loading capacity up to 200 %/300 % for 5 s
- Compact dimensions
- Installation on top hat rail for 300 mm switch cabinets
- Integrated mains filter
- Windows user software including oscilloscope function
- Meets all CE standards
- Can be connected to any international power supply mains from 230 V to 400 V + 10 %
- Unrestricted application and communication possibilities by open hardware and software architecture
- Very fast current controller cycle time of 62 µs
- Freely programmable for your individual drive tasks
- Low inherent losses
- Patented ballast power distribution circuit

Concept, PC User Software

Concept

Operation and Parameterisation

- Through the LD2000.exe user software.
- Emergency operation through two keys directly located on the master module with three-digit status display.
- All axes within one system can be parameterised through one interface.
- Can be directly driven by MotionController GEL 8230/40 and MotionCard LD 100.

Power Circuit

- Power supply: B6 rectifier bridge directly on the grounded three-phase mains, integrated mains filter and starting circuit.
- Connections: All shield connections directly on the amplifier
- Power amplifier: IGBT module with potential-free current measurement
- Ballast circuit: With dynamic distribution of the ballast power over several amplifiers at the same intermediate circuit, external ballast resistor on request

Control

- Freely programmable, digital current controller (62 μ s) and freely programmable, digital speed controller (250 μ s)
- Evaluation of the resolver signals or of the sine/cosine signals of a high-resolution rotary encoder, respectively
- Rotary encoder emulation

Functions

- Adjustable setpoint ramps
- Four programmable, digital inputs and two programmable, digital outputs
- Freely programmable linking of all digital messages

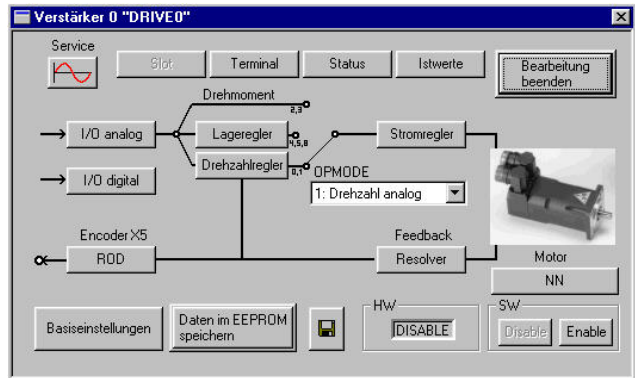
Hardware Requirements

- Processor: 80486 or later
- Operating system: Windows 95(c)/98/2000/ME/NT4.0 (does not run under Windows 3.xx)
- Drives: 3.5" disk drive
Hard disk (5 MB free space)
- RAM: 8 MB min.
- Communication port: One free, serial interface

LD2000.exe PC User Software

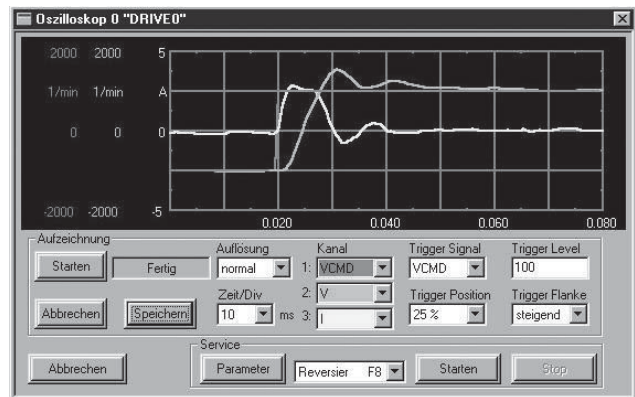
(included in the scope of supplies)

With the aid of the comfortable LD2000.exe user software and a PC, you can alter the operating parameters of the servo converters. Just connect the PC to the master module with a serial null modem cable. So you can change parameters with a minimum of efforts and immediately see the effect on the drive since you have a permanent connection.



At the same time, significant actual values are read from the selected converter and displayed on the PC (oscilloscope function).

You can save (file) and re-load the data records of the operating parameters onto/from data media.



At our website www.lenord.de, you can find:

[ld2000.exe](#) LogiDrive LD 2000 servo converter startup software

Technical data LD 240xM (master module) and LD 240xA (axis module) specifications

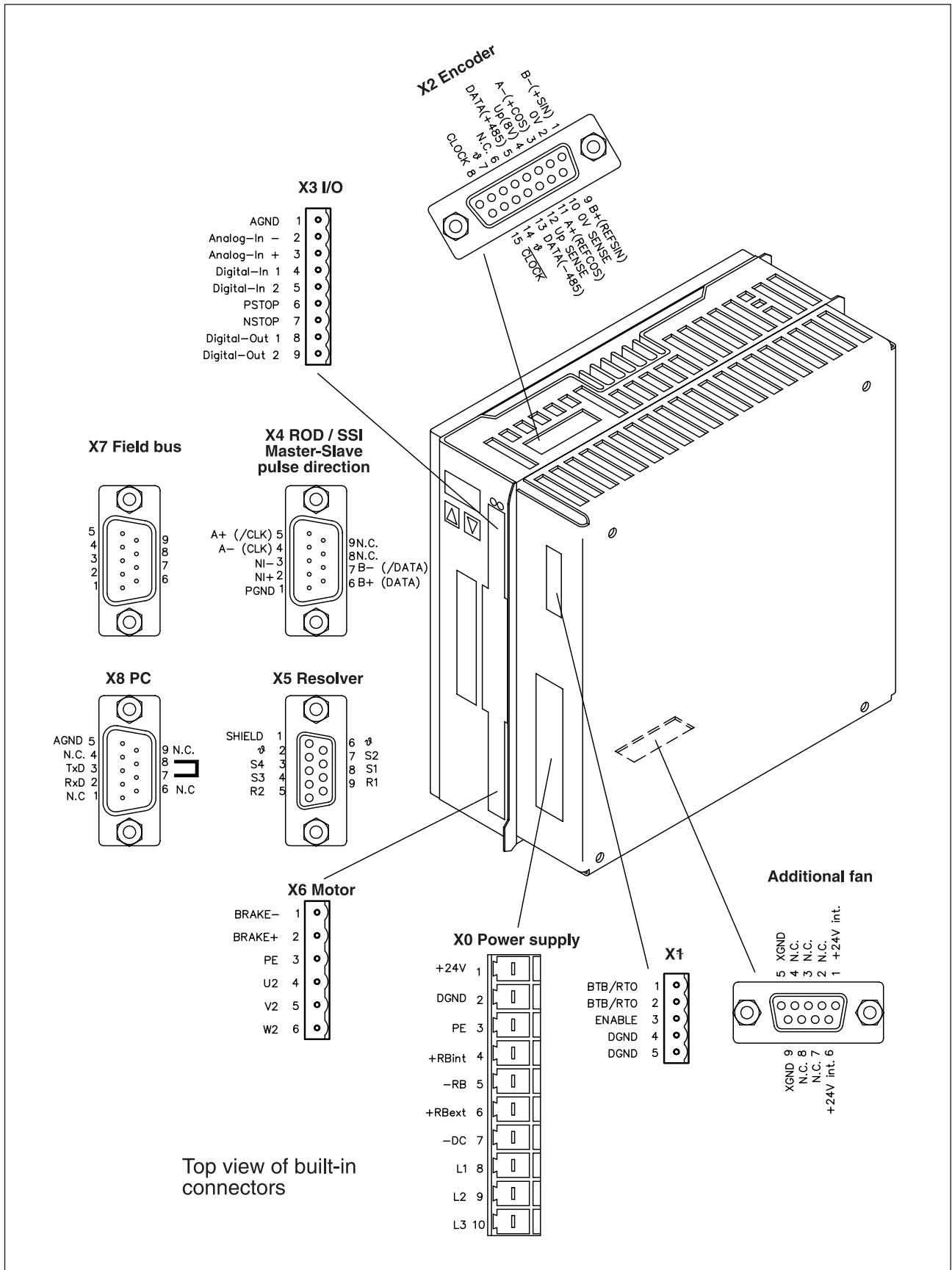
		400 V AC max.				
		LogiDrive				
Rated data		unit	2403M	2406M	2403A	2406A
Rated supply voltage	V~	3 x 230 V _{-10%} to 3 x 400 V _{+10%}		—		
Maximum installed load for S1 operation (in a multi-axis system)	kVA	12		—		
Rated DC-link voltage	V=	310 - 560				
Rated output current (r. m. s. value, ± 3 %)	Arms	3	6*	3	6*	
Peak output current (approx. 5 s max., ± 3 %)	Arms	9	12*	9	12*	
Clock frequency of output stage	kHz	8				
Overtoltage switch-off threshold	V	750		—		
Output current form factor (for nominal data and minimum load inductance)	—	1.01				
Bandwidth of the secondary current controller	kH	> 1.2				
Residual voltage drop for rated current	V	< 5				
Standby power dissipation, output stage disabled	W	12	15	12	15	
Dissipation at rated current (without ballast dissipation)	W	35	60	30	40	
Internal fusing						
Auxiliary supply 24 V	—	internal 20 AM		—		
Ballast resistor	—	internal 33 Ω		—		
External fusing						
Fuses or equivalent						
AC-supply $F_{N1/2/3}$	AT	16				
24 V-supply $F_{H1/2}$	AT	16				
Ballast resistor $F_{B1/2}$	AT	6				
Inputs/outputs						
Analog input, 14-bit resolution common-mode voltage max. Input resistance	V	± 10				
	V	± 10				
	kΩ	20				
Digital control inputs	V	low 0 ... 7 / high 12 ... 36				
	mA	7				
Digital control outputs, open emitter	V	30 max.				
	mA	10				
BTB/RTO output, relay contacts	V	DC 30 max. AC 42 max.				
	mA	500				
Auxiliary supply, electrically isolated, without brake, without fan	V	20 ... 30				
	A	0.5				
Auxiliary supply, electrically isolated, with brake (check voltage drop !)	V	24				
	A	(-0% + 15%)				
	A	2.5				
Max. output current for brake	A	2				
Ballast circuit						
Continuous rating (R_{Bint})	W	80				
Continuous rating (R_{Bext}) max.	kW	0.6				
Pulse power (R_{Bint} max. 1 s)	kW	16				
Pulse power (R_{Bext} max. 1 s)	kW	16				
Mechanical						
Weight	kg	3		1.7		
Height, without connectors	mm	230	267*	230	267*	
Width	mm	100		50		
Depth, without connectors	mm	240				

*with add-on ventilation

Permissible environmental conditions

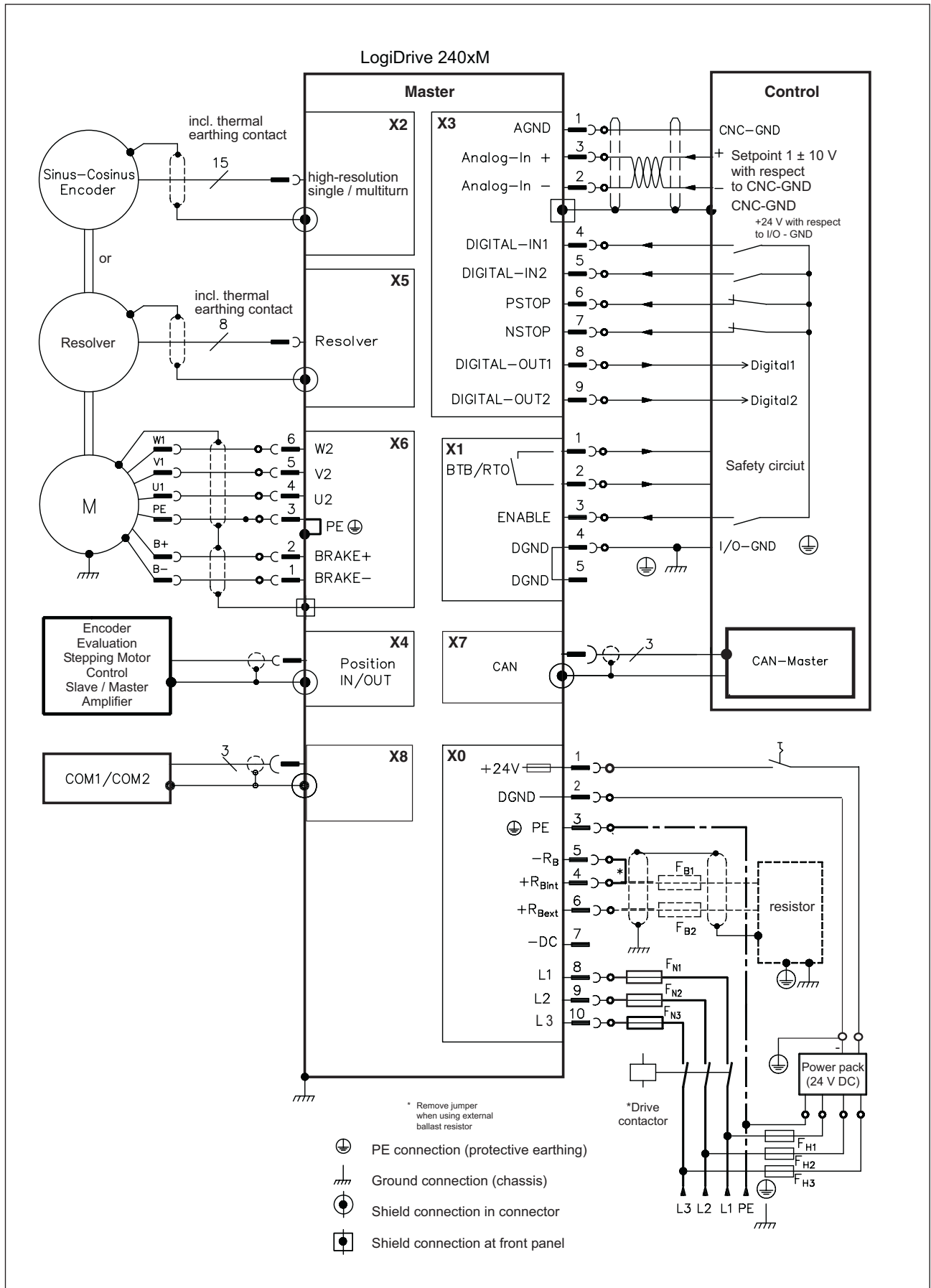
Storage temp.	-25 ... +55°C, fluctuating by 20 K max. / hour
Humidity	95% RH max., no condensation
Storage period	< 1 year without restriction
Supply voltage tolerances	-25 ... +70°C, fluctuating by 20 K max. / hour
Transport humidity	95% RH max., no condensation
Supply voltage tolerances LogiDrive 240xM power supply	3 x 230 V _{-10%} AC min. / 3 x 400 V ^{+10%} _{max.} , 50/60 Hz
Auxiliary voltage supply without brake	20 V DC ... 30 V DC
with brake	24 V DC (-0% +15%)
Ambient temperature when control is in operation	0 ... + 45°C for nominal data +45 ... + 55° C with a power loss of 2.5 % / K
Humidity when control is in operation	85% RH, no condensation
Installation height	Up to 1000 m above sea level without restriction 1000 ... 2500 m above sea level with a power loss of 1.5% / 100 m
Pollution severity	Pollution severity 2 as per EN 60204 / EN 50178
Protection class	IP 20
Installation position	Vertical
Ventilation	Free convection for LogiDrive 2403, built-on fan (page 8) required LogiDrive 2406
Ensure sufficient forced circulating air in the closed switch cabinet.	

Pin layout



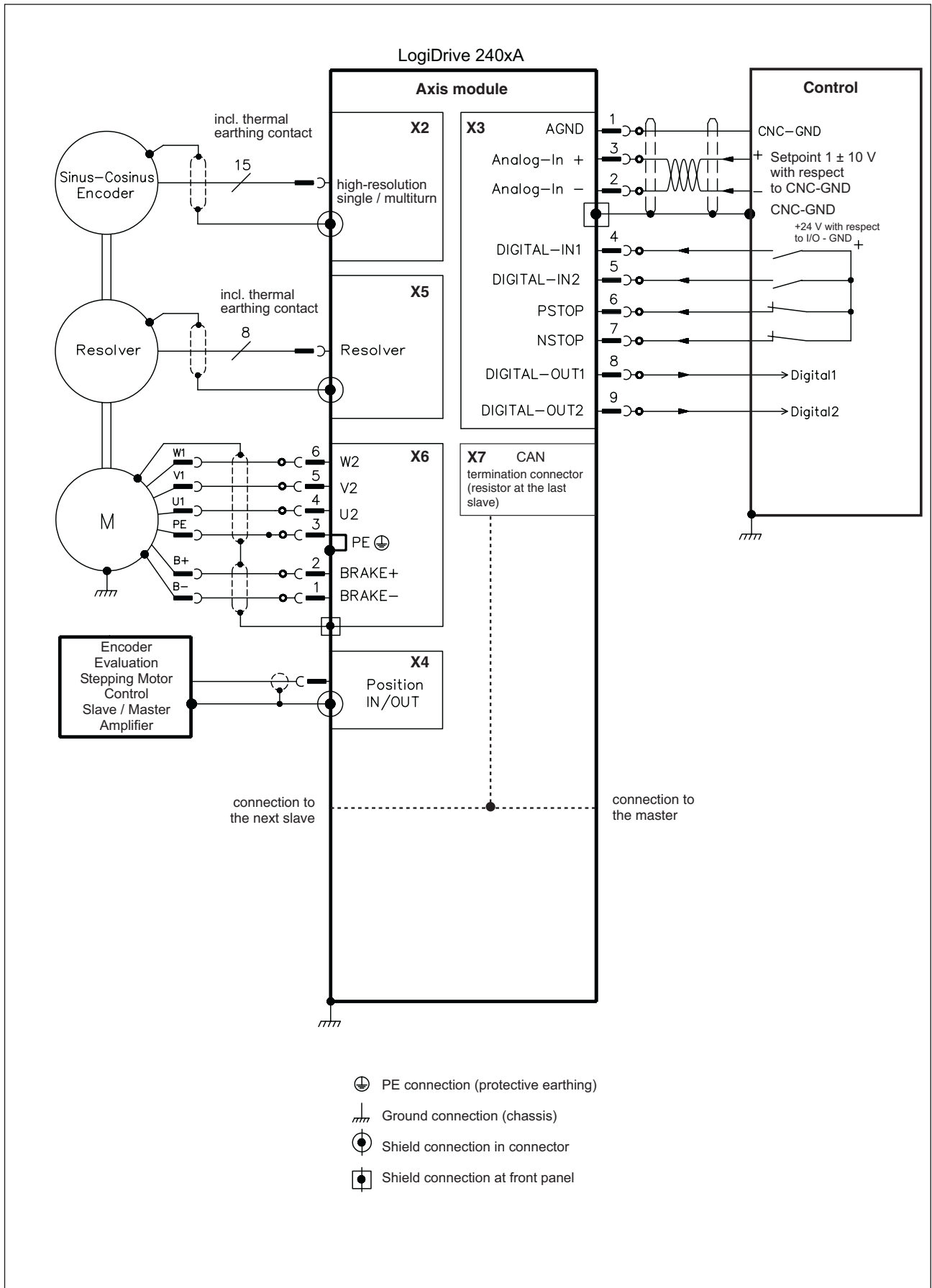
LogiDrive 240xM

Terminal connection diagram (master module)

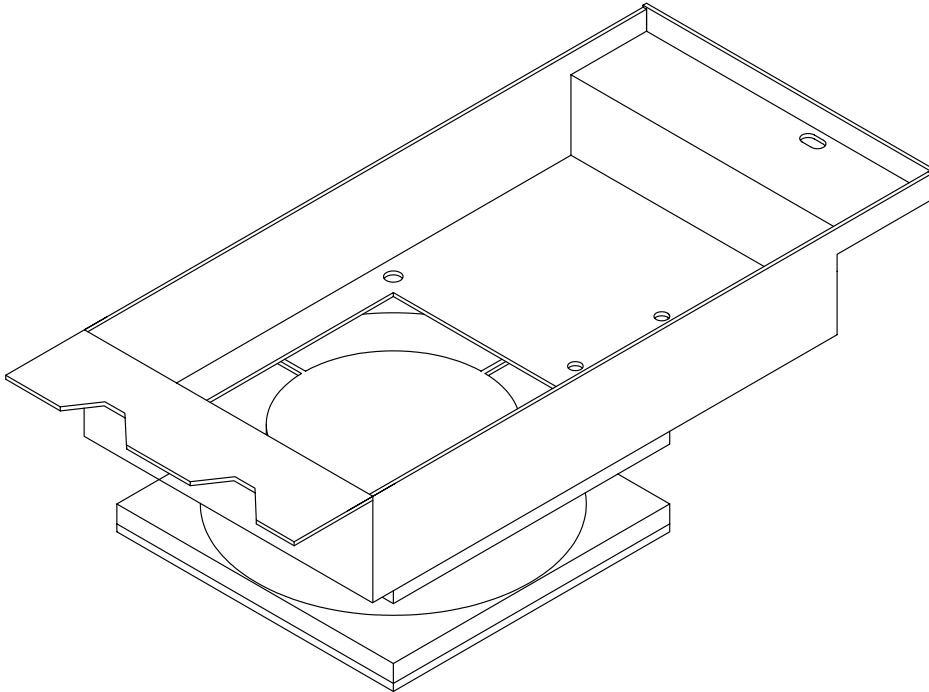


LogiDrive 240xA

Terminal connection diagram (axis module)



ABL 121.1 Built-on fan for LD 2406



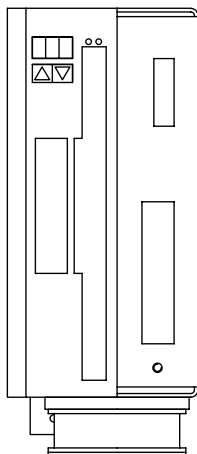
Built-on electric fan for two axes to guarantee the rated power efficiency, even under difficult environmental conditions; required for LogiDrive 2406.

To fit the fan to the servo amplifier already pre-assembled in the switch cabinet just hang the rear hooks into the slots provided for this purpose at the underside of the LogiDrive and use the attached screw to fasten the front of the fan to the enclosure. Electrical connection will be set up automatically when you fit the fan.

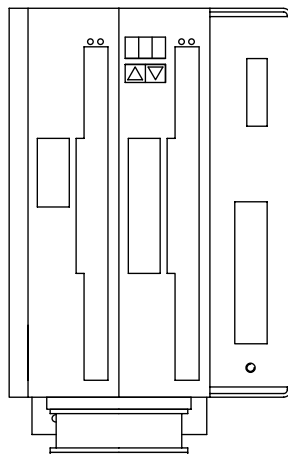
Please note that a fitted fan will increase the free space required below the device from 60 mm to 110 mm.

The drawing below shows how to fit the fan.

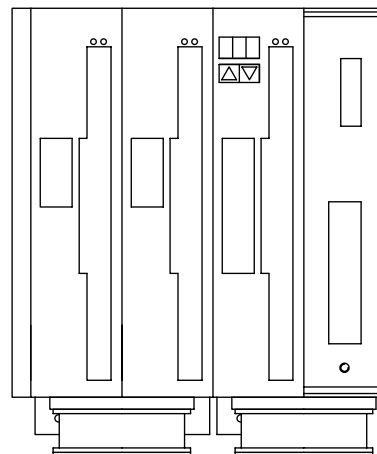
For an odd number of axes (including the master axis), the fan must also cover the power pack on the master.



Master only



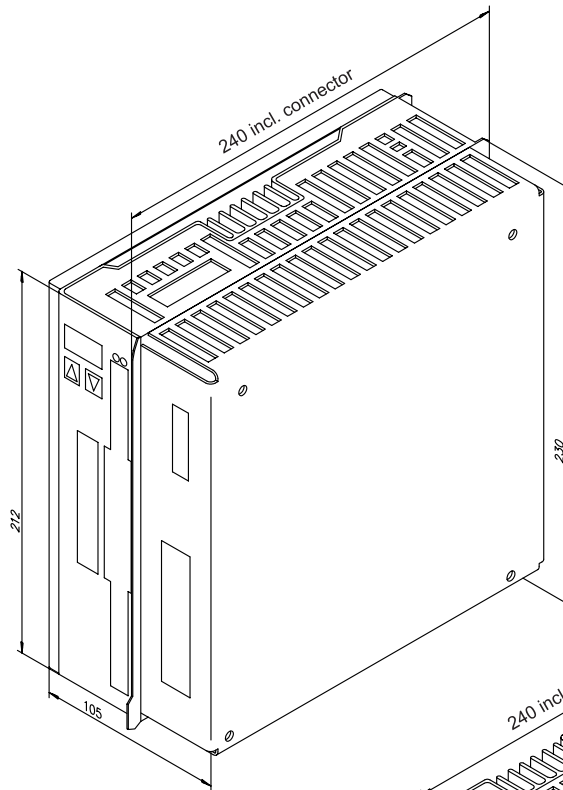
Master with 1 axis module



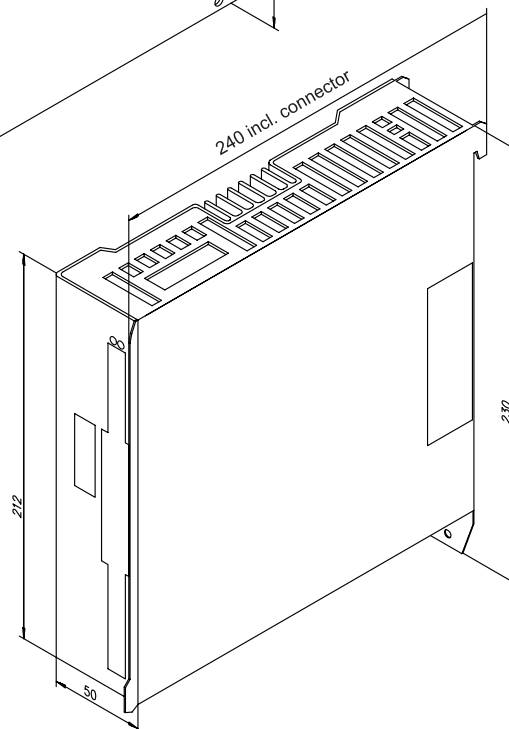
Master with 2 axis modules

Dimensional drawing, Type code

LogiDrive 240xM Dimensional drawing



LogiDrive 240xA Dimensional drawing



Type code

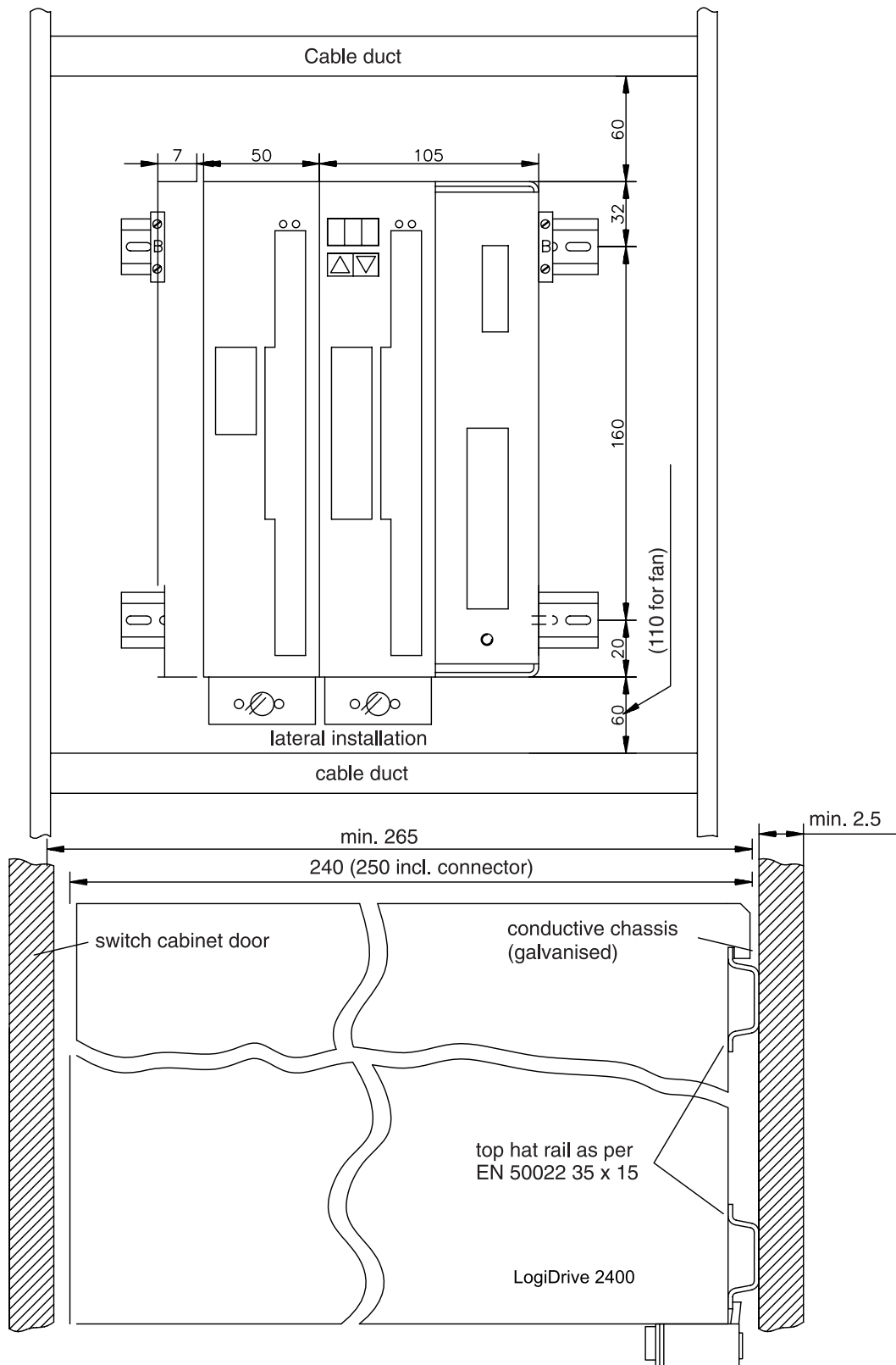
		Rated output current
	3	3 A
	6	6 A
		Module
	M	master module
	A	axis module
LD 2 4 0	-	-

Installation

Installation material: 2 top hat rails as per EN 50022, minimum length = system width + 40 mm, ensure conductive connection with chassis.

Fit protective cover (7 mm) to outer left side.

Tools required: screwdriver for slotted screws, point width approx. 5 mm.



LD 240xx Accessories

	Ordering Designation	Description	
Accessories ⇔			
Built-on fan (for LD 2406)	ABL 121.1	Electrical built-on fan for a maximum of two axes to guarantee the rated power efficiency	
Ballast resistor 33 Ohm	BW 121.1	BAR 250 W	
Motor choke	MD 121	3YL-20 motor choke box for motor cables 25 m	
Connecting cable	AL 121.9	PC-LD 2000 connecting cable, 9-pole PC connector, 3 m	
	AL 121.25	PC-LD 2000 connecting cable, 25-pole PC connector, 3 m	
Connector (motor)	LS 129-L2	Power connector	
	SS 129-L2	Resolver connector	
Connector (converter)	GG 121.1	Counter plug, power supply (X0)	<i>Scope of supplies</i>
	GG 121.2	I/O, counter plug (X1)	
	GG 121.5	I/O, counter plug (X3)	
	GG 121.6	Counter plug, motor (X6)	(inc./SSI X4) (field bus X7) (PC X8) (resolver X5) (Sin-Cos encoder X2)
	GG 121.10	9-pole Sub-D counter plug, female	
	GG 121.12	9-pole Sub-D counter plug, male	
	GG 121.13	15-pole Sub-D counter plug, male	

When ordering LogiDrive 2400 series amplifiers with us, you will receive:

- LogiDrive 240xM (master).
- X0, X1, X3 counter plug (GG 121.1/GG 121.2/GG 121.5).
- Protective cover for axis side (required only once per system).
- One LD 100 CD ROM (incl. software for LD 2400)

or

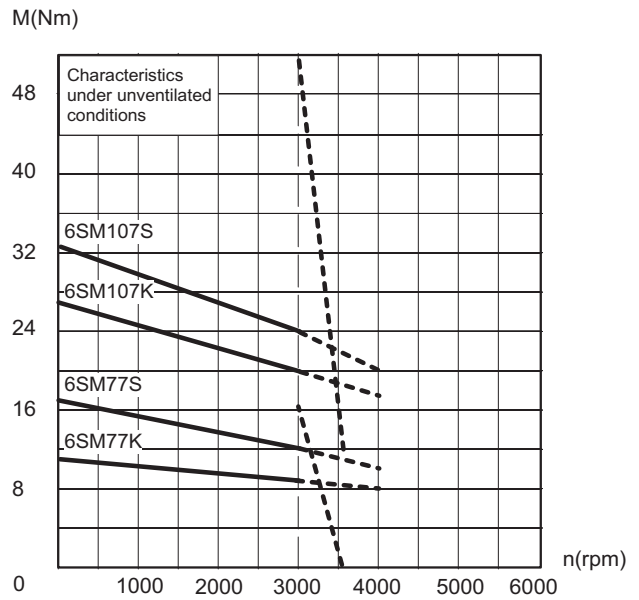
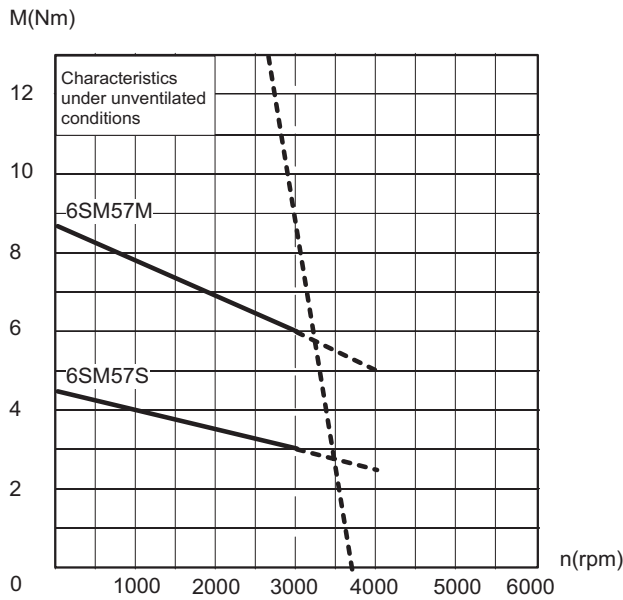
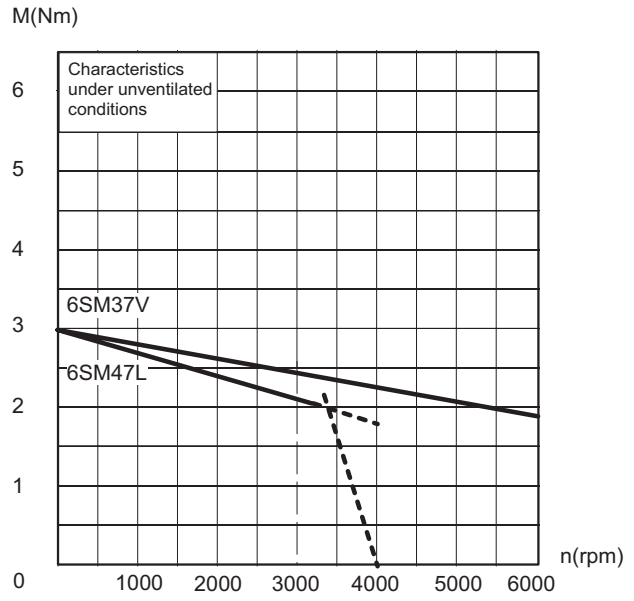
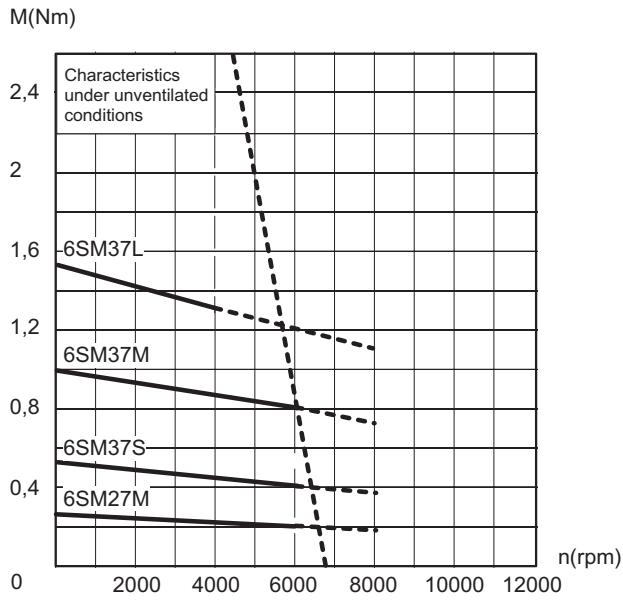
- LogiDrive 240xA (axis module).
- X3 counter plug (GG 121.5).

Any other accessories must be ordered separately, if necessary (refer to the table above).

Servo motors, Technical data

Data	Symbol	Unit	Available versions							
			6SM27M-4000	6SM37S-6000	6SM37M-6000	6SM37L-4000	6SM47L-3000	6SM57S-3000	6SM57M-3000	6SM77K-3000
Stalled torque	M_0	Nm	0.32	0.5	1	1.5	3	4.6	8	11
Stop current	I_{0rms}	A	0.8	1	1.6	1.6	2.3	2.8	4.3	6
Nominal speed	n_n	min ⁻¹	4,000	6,000	6,000	4,000	3,000	3,000	3,000	3,000
Torque constant	K_{Trms}	Nm/A	0.41	0.5	0.62	0.96	1.33	1.65	1.85	1.85
Voltage constant	K_{Erms}	mV/min	25	30	38	58	81	97	112	112
Rated mains voltage	U_n	V	400/460							
Nominal torque at n_n	M_n	Nm	0.3	0.4	0.8	1.2	2.2	3	6	8.5
Rated current	I_n	A	0.75	0.95	1.5	1.5	2	2.7	4	5
Nominal power	P_n	kW	0.13	0.25	0.5	0.5	0.47	0.95	1.9	2.7
Peak current	I_{0max}	A	3.5	4.0	6.5	6.4	9	11	17	24
Number of motor poles	p_{Mot}	-	6							
Number of resolver poles	p_{Res}	-	2							
Phase-to-phase winding resistance	R_{20}	Ω	31	36	12.8	15.5	11	6.3	3.9	2.2
Phase-to-phase winding inductance	L	mH	21	32	21	30	25	35	24	18
Insulation class	-	-	F, DIN 57530							
Thermal earthing contact switching point	-	°C	145 ± 5							
Design	-	-	IM B5(V1,V3), DIN 42950							
Rotor moment of inertia	J	kgcm ²	0.08	0.45	0.7	1.0	1.6	3.1	4.5	12.6
Static moment of friction	M_R	Nm	0.02	0.02	0.02	0.03	0.05	0.12	0.15	0.25
Permissible radial stress on the shaft end at n_n	F_R	N	90	270	270	270	270	650	650	730
Permissible axial stress on the shaft end at n_n	F_A	N	30	90	90	90	90	180	180	210
Flange tolerance class	-	-	R, DIN 42955							
Vibrational Q	-	-	N, DIN ISO 2373							
Thermal time constant	t_{TH}	min	10	10	15	15	15	20	20	25
Weight without brake	G	kg	1.1	1.9	2.3	2.9	3.5	5.7	7.6	9.8
EMC RES connector	-	-	12-pole, round							
RES cable, screened	-	mm ²	4 x 2 x 0.25							
Power connector	-	-	4+4-pole, offset							
Motor cable, screened	-	mm ²	4 x 1 or 4 x 1.5							4 x 1.5
Stop torque	M_{BR}	Nm	1	2.5			6		12	
Supply voltage	U_{BR}	V=	24 + 6/-10%							
Electric power	P_{BR}	W	8	14			16		18	
Moment of inertia	J_{BR}	kgcm ²	0.07	0.38			1.06		3.6	
Fan delay time	t_{BRH}	ms	15-20		10-15			10-30		30-60
Application delay time	t_{BRL}	ms	5-10		10-15			5-15		10-20
Holding brake weight	G_{BR}	kg	0.3	0.4			0.6		1.5	
Motor cable with brake, screened	-	mm ²	4 x 1.5 + 2 x 0.75							

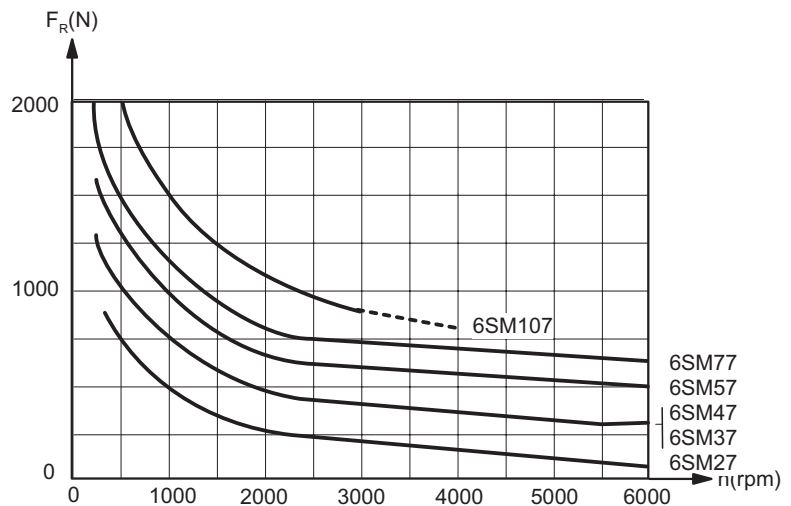
Torque characteristics, Permissible radial force



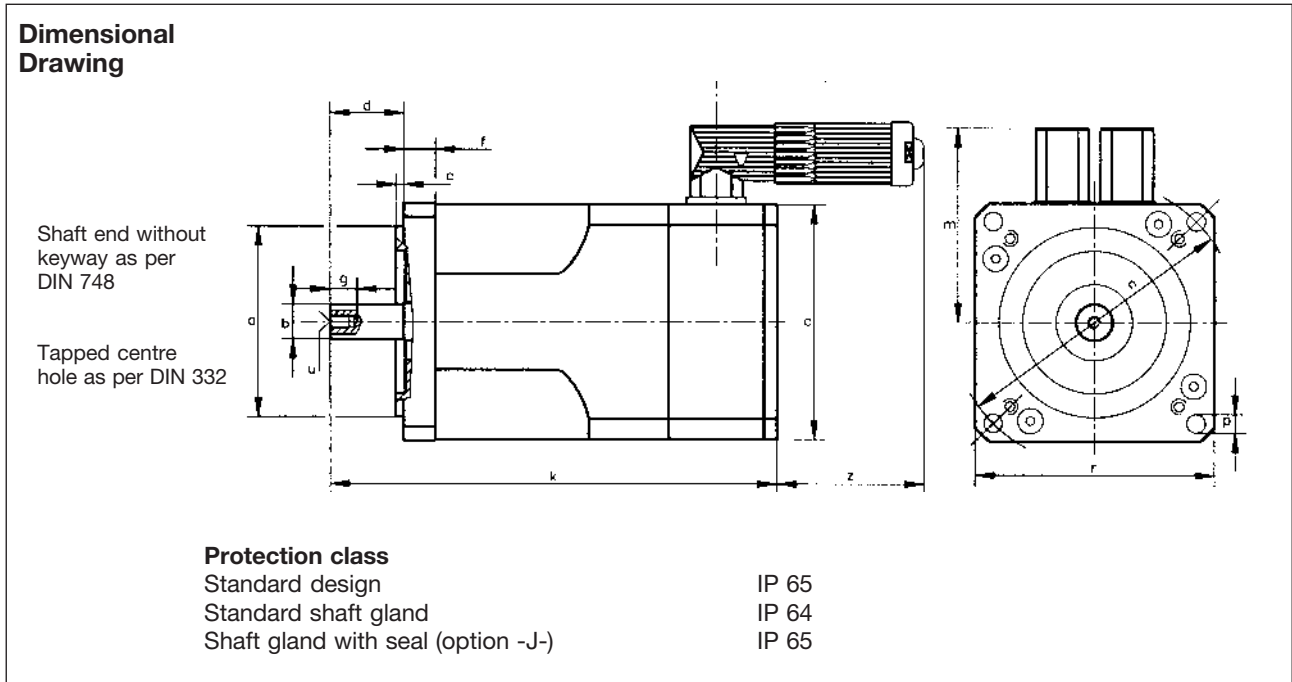
Permissible radial force



$$F_A = F_R / 3$$



Accessories, Synchronous servo motor



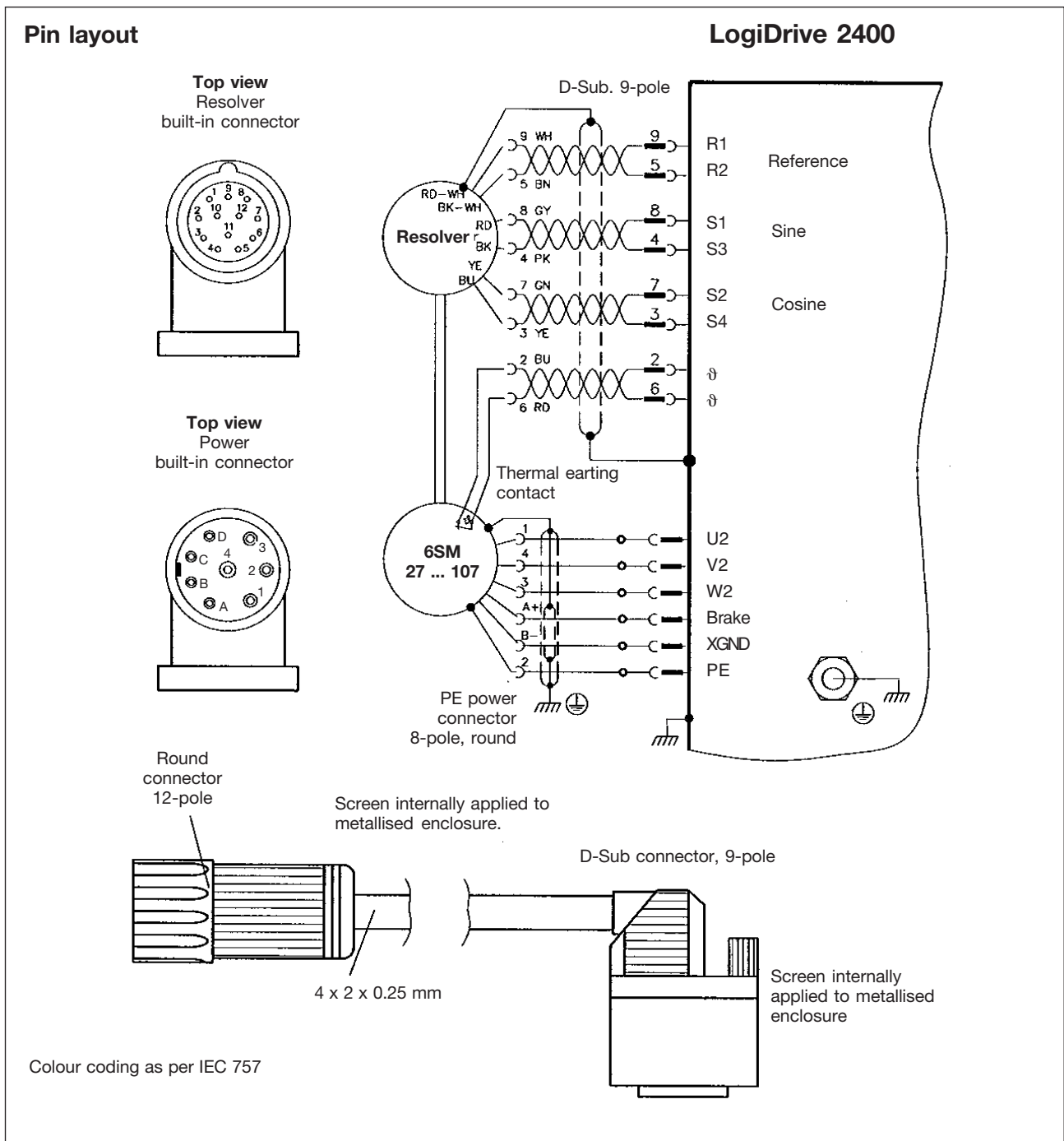
Dimensions (in mm)

Designation	a _{j6}	b _{k6}	c	d	e	f	g	k	k(-G-)	m	n	p	r	u	z
6SM27M-4000	40	9	50	20	2.5	7	-	142	175	62.5	63	5.8	55	-	75
6SM37S-6000	60	11	74	23	2.5	10	10	139	172	69.5	90	5.8	75	M4	75
6SM37M-6000								157	190						
6SM37L-4000								175	208						
6SM47L-3000	80	14	74	30	3	9	17	218	251	69.5	100	7	88	M5	75
6SM57S-3000	95	19	97	40	3	10	22	225	260	81	115	9	105	M5	75
6SM57M-3000								270	305						
6SM77K-3000	130	24	127	50	3.5	11	27	266	309	96	165	11	142	M8	75

Options

- **G** - Holding brake
- **P** - Special shaft with keyway
Special flange and special shaft are available. Please send your inquiry, if necessary.
- **J** - Radial shaft seal:
Radial shaft seal for protection against oil mist and splash oil. The degree of protection of the shaft gland will thus increase to IP 65. The seal is not suitable for dry running. If the holding brake has been integrated option -J- will extend the motor length by 10 mm.
- **V** - Built-in bushes for vertical resolver and power connections.
- **S** - Special design (e. g. with ECN/ERN absolute-value encoder).

The desired options must be added to the end of the motor designation. Example: 6SM57S-3000 **G P V**.

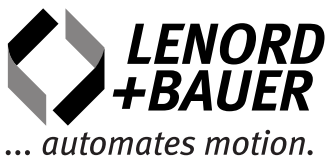


Motor cable type codes (pre-cut with connectors)

	C	Cable type	
		Motor cables type codes (pre-cut with connectors)	
	R	Resolver cable	
		Cross section	
	B	1.5 mm ² , only for motor cable	
	D	0.25 mm ² , only for resolver cable	
		Length	
	002	e. g. for 2 m	
KM 129	-	-	- - - -

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