

Automation systems Drive solutions

Controls

Inverter

Motors

Gearboxes

Engineering Tools

Contents of the L-force catalogue

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Lenze makes many things easy for you.

With our motivated and committed approach, we work together with you to create the best possible solution and set your ideas in motion - whether you are looking to optimise an existing machine or develop a new one. We always strive to make things easy and seek perfection therein. This is anchored in our thinking, in our services and in every detail of our products. It's as easy as that!

1

Developing ideas

Are you looking to build the best machine possible and already have some initial ideas? Then get these down on paper together with us, starting with small innovative details and stretching all the way to completely new machines. Working together, we will develop an intelligent and sustainable concept that is perfectly aligned with your specific requirements.

2

Drafting concepts

We see welcome challenges in your machine tasks, supporting you with our comprehensive expertise and providing valuable impetus for your innovations. We take a holistic view of the individual motion and control functions here and draw up consistent, end-to-end drive and automation solutions for you - keeping everything as easy as possible and as extensive as necessary.

3

Implementing solutions

Our easy formula for satisfied customers is to establish an active partnership with fast decision making processes and an individually tailored offer. We have been using this principle to meet the ever more specialised customer requirements in the field of machine engineering for many years.

4

Manufacturing machines

Functional diversity in perfect harmony: as one of the few full-range providers in the market, we can provide you with precisely those products that you actually need for any machine task – no more and no less. Our L-force product portfolio, a consistent platform for implementing drive and automation tasks, is invaluable in this regard.

5

Ensuring productivity

Productivity, reliability and new performance peaks on a daily basis – these are our key success factors for your machine. After delivery, we offer you cleverly devised service concepts to ensure continued safe operation. The primary focus here is on technical support, based on the excellent application expertise of our highly-skilled and knowledgeable after-sales team.

A matter of principle: the right products for every application.

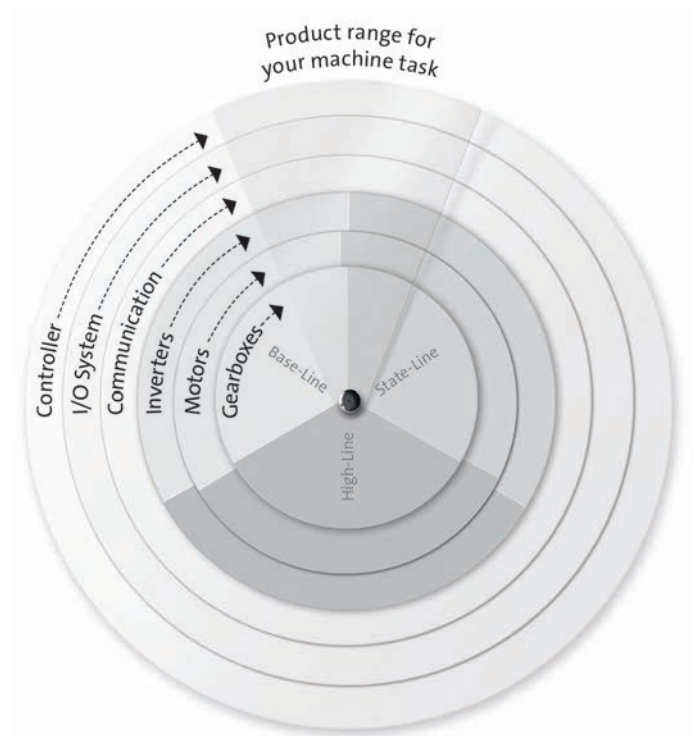
Lenze's extensive L-force product portfolio follows a very simple principle. The functions of our finely scaled products are assigned to the three lines Base-Line, State-Line or High-Line.

But what does this mean for you? It allows you to quickly recognise which products represent the best solution for your own specific requirements.

Powerful products with a major impact:

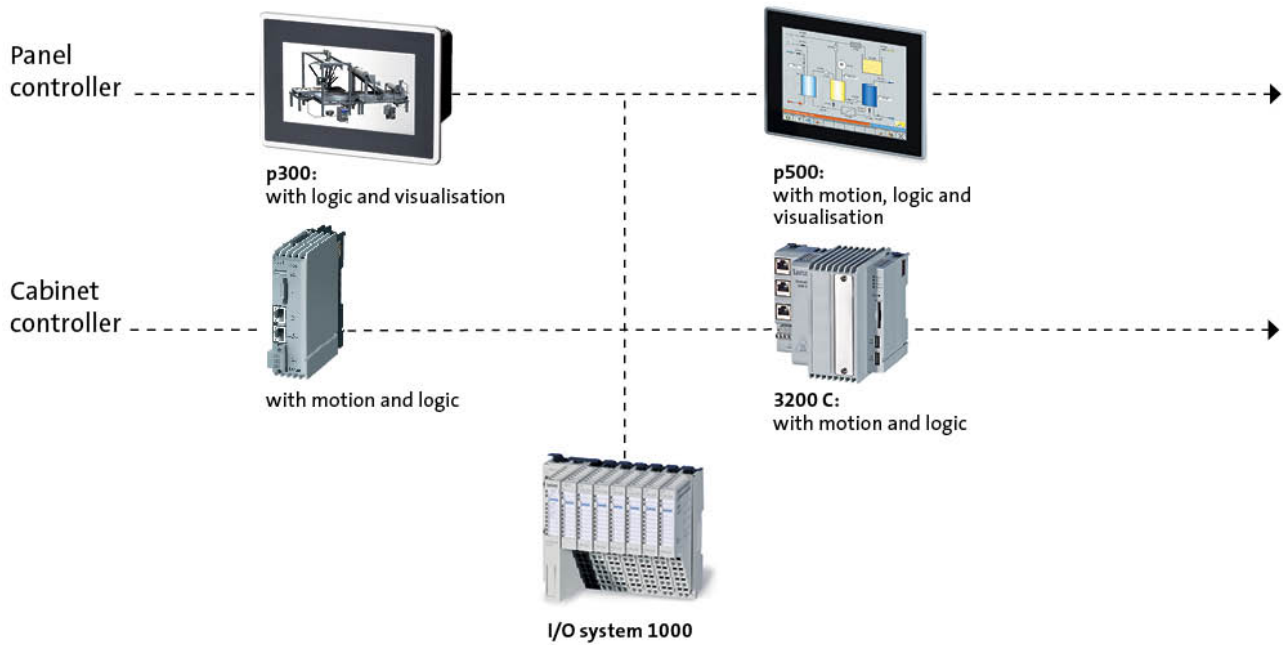
- Easy handling
- High quality and durability
- Reliable technologies in tune with the latest developments

Lenze products undergo the most stringent testing in our own laboratory. This allows us to ensure that you will receive consistently high quality and a long service life. In addition to this, five logistics centres ensure that the Lenze products you select are available for quick delivery anywhere across the globe. It's as easy as that!

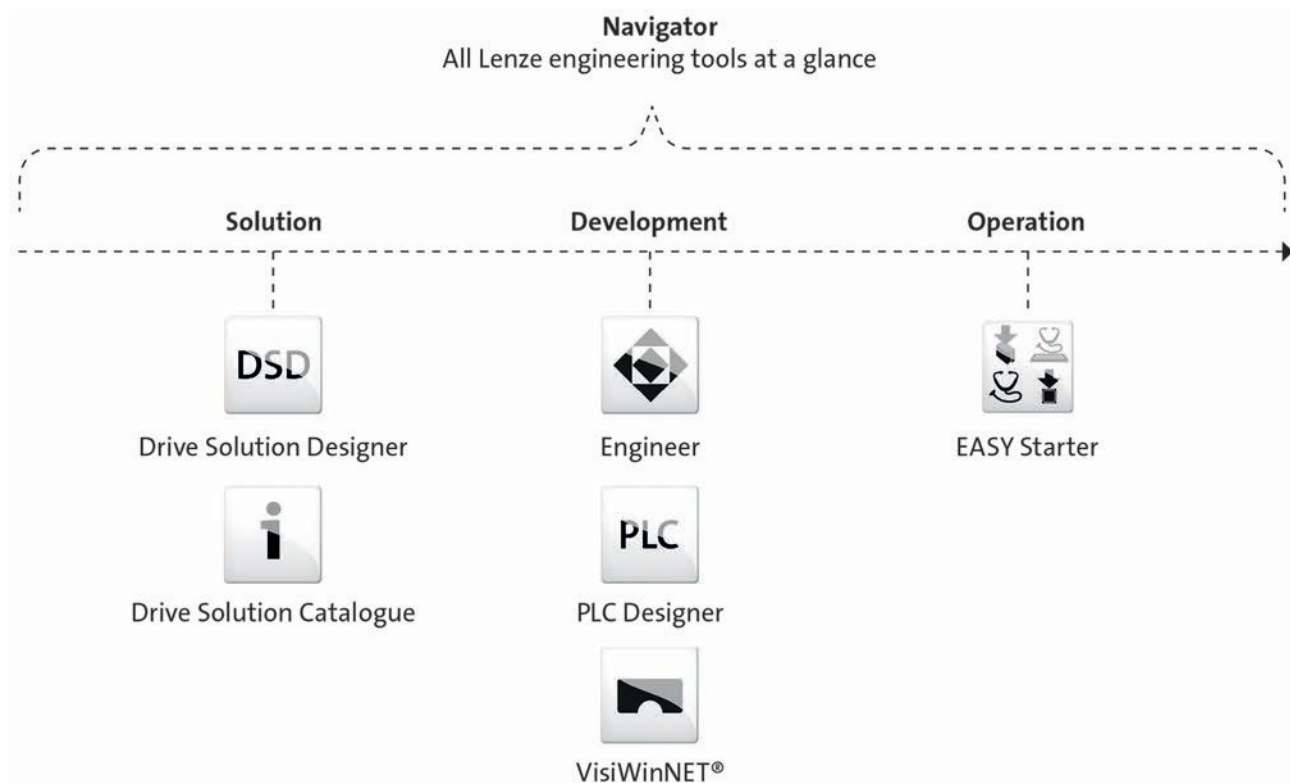


L-force product portfolio

Controls

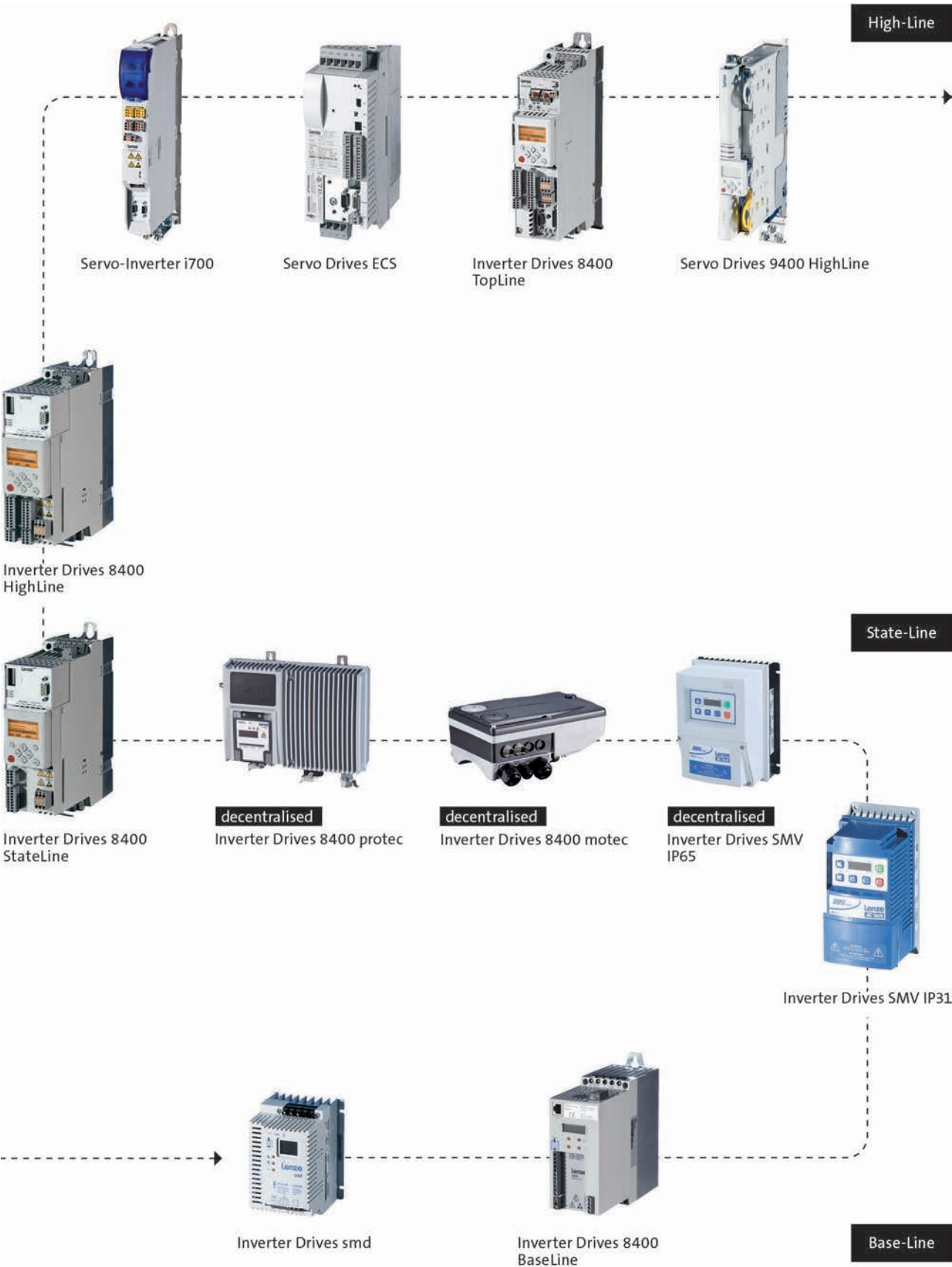


Engineering Tools



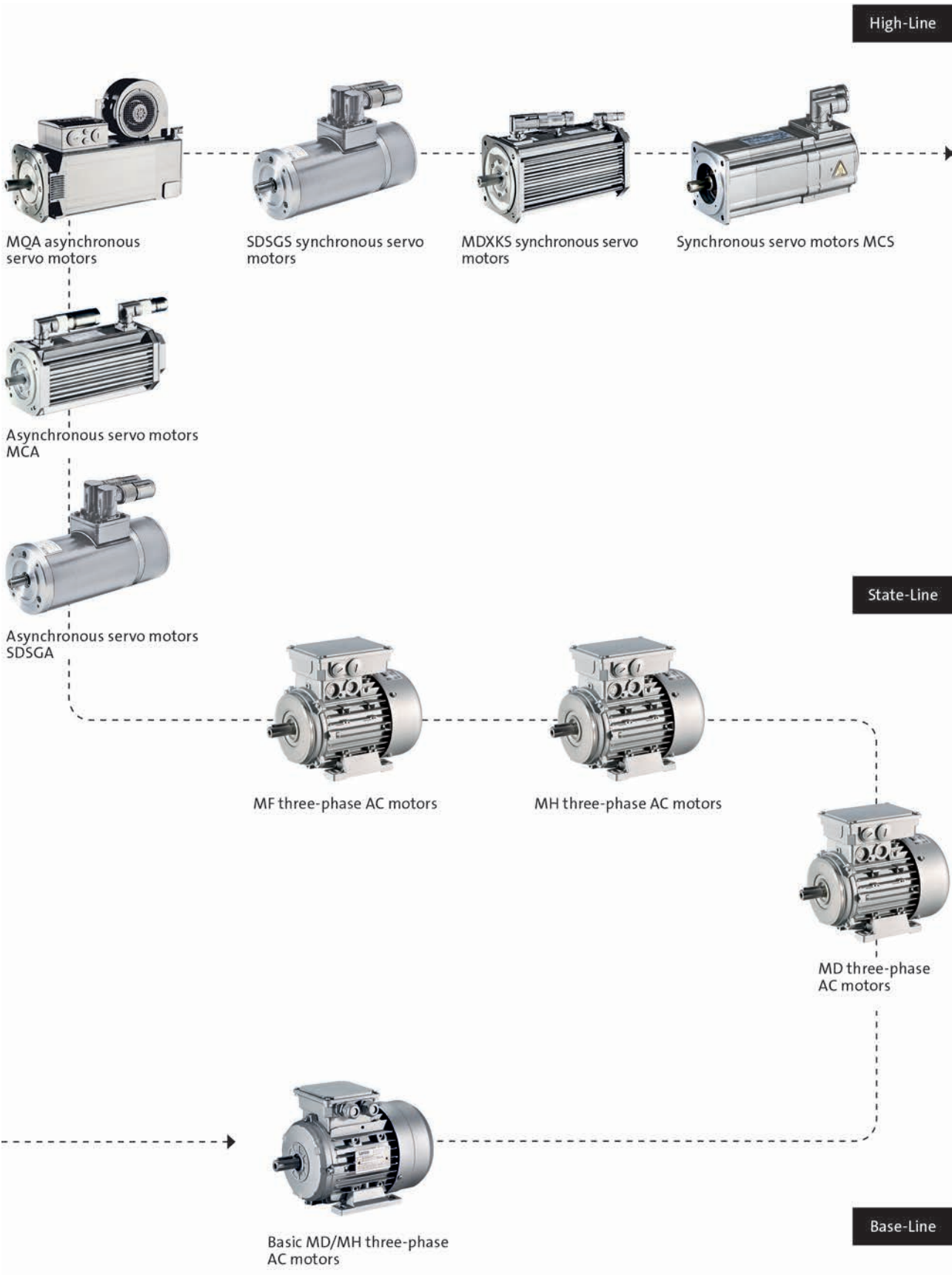
L-force product portfolio

Inverter



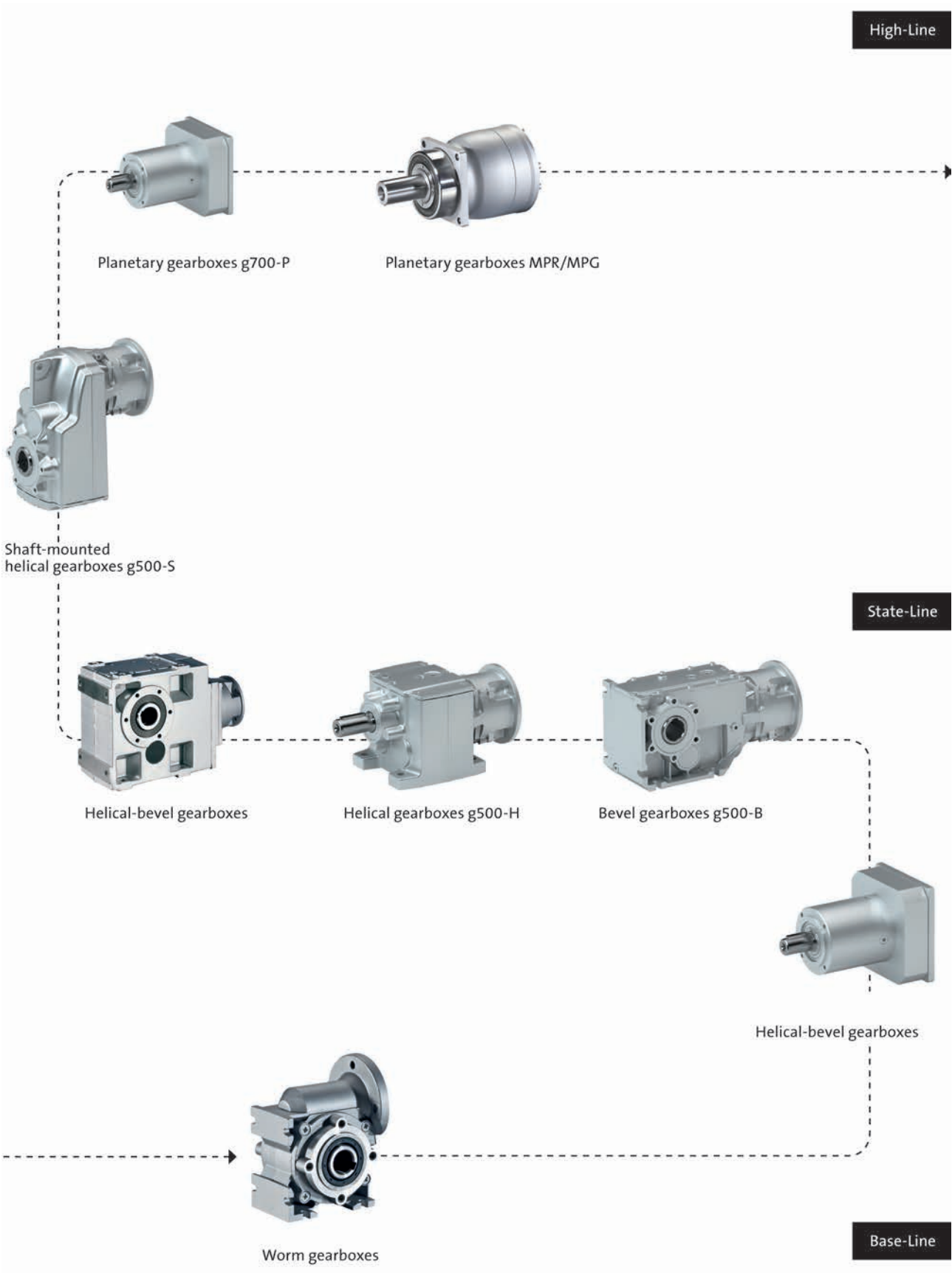
L-force product portfolio

Motors



L-force product portfolio

Gearboxes



Inverter

Inverter Drives 8400 protec

0.75 to 7.5 kW



Inverter Drives 8400 protec

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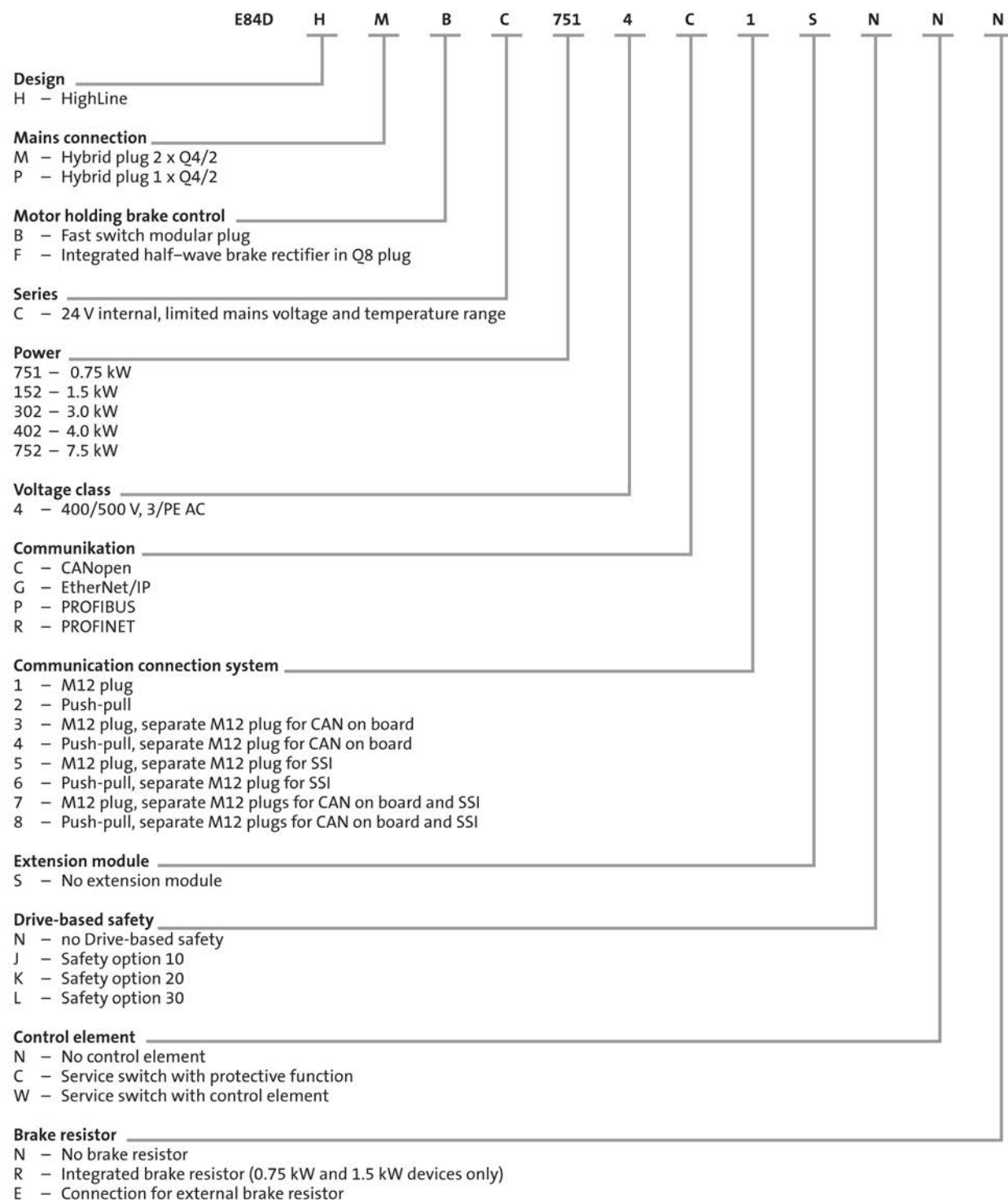
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Inverter Drives 8400 protec

General information



Product key



4.1

Inverter Drives 8400 protec

General information



Equipment

Display and diagnostics

Status LEDs
L-force diagnostic interface

Safety system

optional

Mains connection

Pluggable in loop-through technique

Pluggable control connections

For communication purposes and inputs/outputs



Brake resistor

Plug connection

Motor connection

Connection via hybrid cable

4.1



List of abbreviations

b	[mm]	Dimensions
C _{th}	[KWs]	Thermal capacity
f _{ch}	[kHz]	Rated switching frequency
h	[mm]	Dimensions
I _{N, out}	[A]	Rated output current
I _{N, AC}	[A]	Rated mains current
m	[kg]	Mass
n _{max}	[r/min]	Max. speed
P	[kW]	Typical motor power
P _V	[kW]	Power loss
P _N	[kW]	Rated power
R _N	[Ω]	Rated resistance
t	[mm]	Dimensions
U _{AC}	[V]	Mains voltage
U _{DC}	[V]	DC supply
U _{N, AC}	[V]	Rated voltage
U _{out}	[V]	Max. output voltage

ASM	Asynchronous motor
DIAG	Slot for diagnostic adapter
DIN	Deutsches Institut für Normung e.V.
EN	European standard
EN 60529	Degrees of protection provided by enclosures (IP code)
EN 60721-3	Classification of environmental conditions; Part 3: Classes of environmental parameters and their limit values
EN 61800-3	Electrical variable speed drives Part 3: EMC requirements including special test methods
IEC	International Electrotechnical Commission
IEC 61508	Functional safety of electrical/electronic/programmable electronic safety-related systems
IM	International Mounting Code
IP	International Protection Code
MCI	Slot for communication module (module communication interface)
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)

Inverter Drives 8400 protec

General information



8400 protec

The wall-mounted device with a high degree of integration for complex decentralised systems. It excels through its robust design, high degree of operational reliability and fast installation.

This inverter with a high level of functionality facilitates both basic and servo-based applications. The Inverter Drives 8400 protec is supplied with all modules and interfaces ready to be connected.

On-site diagnostics

- A large display provide constant information on the operating status of the device.
- The clearly laid out LEDs provide additional diagnostics information. The fast diagnostics system thereby makes an effective contribution to increasing system availability.

Decentralised integrated positioning

- Implementing affordable and decentralised positioning applications with asynchronous motors. Whether switch-off, tabular or absolute positioning: the Inverter Drives 8400 protec offers integrated solutions for these applications. The ability to connect incremental and absolute value encoders rounds off this scope of functions.
- The parameters are set conveniently using the "L-force Engineer" here. The range also has a freely editable function block interconnection for integration of logic, arithmetic and mathematic program through graphic programming.

Safety engineering in line with EN ISO 13849-1

- The certified safety system enables not only the connection of local safety elements and safe communication via PROFIsafe, but also a series of safety functions.
- Safe torque off (STO)
- Safe stop 1 (SS1)
- Emergency stop (SSE)
- Safe operation mode selector (OMS)
- Safe enable switch (ES)

Further benefits

- 200% overload current (3s)
- V/f control with and without encoder
- Sensorless vector control
- Servo control
- Short-circuit and earth-fault protected
- DC-injection braking
- S-shaped ramp for smooth acceleration
- Max. output frequency 1,000 Hz
- 15 fixed frequencies
- Standardised connectors
- CANopen, EtherNet/IP, PROFIBUS, PROFINET

4.1



Inverter Drives 8400 protec

Inverter Drives 8400 protec

General information



Functions and features

Mode	8400 protec
Control types, motor control	
Sensorless vector control (SLVC)	For three-phase asynchronous motors
V/f control (VFCplus)	For three-phase AC motors and asynchronous servo motor (linear or square-law)
Basic functions	Freely assignable user menu Free function block interconnection with extensive function library Parameter change-over DC brake function Flying restart circuit S-shaped ramps for smooth acceleration PID controller 15 fixed frequencies Masking frequencies
Technology applications	Speed actuating drive Switch-off positioning without feedback Table positioning without feedback
Monitoring and protective measures	Short circuit Earth fault Overvoltage Motor phase failure Overcurrent I ² x t-Motor monitoring Motor overtemperature Mains phase failure Protection for cyclical mains switching Motor stalling
Diagnostics	Data logger, logbook, oscilloscope functions
Status display	18 LEDs
Diagnostic interface	Integrated For USB diagnostic adapter or keypad (diagnosis terminal)
Braking operation	
Brake chopper	Integrated
Brake resistor ¹⁾	Internal or external

¹⁾ Internally only for 0.75 and 1.5 kW

Inverter Drives 8400 protec

General information

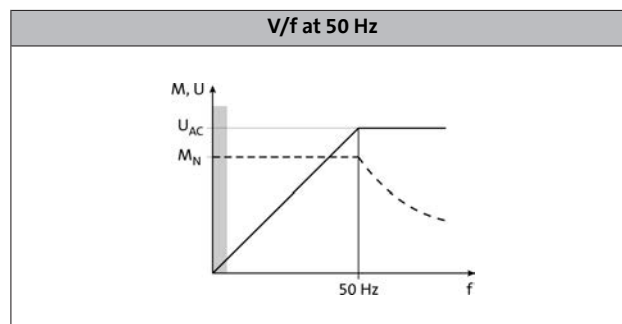


Operating modes

An inverter enables energy-efficient operation of a system in virtually all application cases. The various operating modes, which can be created by making just a few simple settings, facilitate this. The following characteristics and corresponding specifications listed on the following pages can be used to calculate the optimum operating mode during the project planning phase.

Standard setting

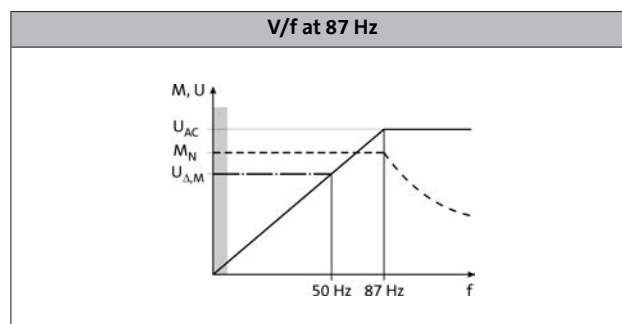
In its initial state when delivered, the inverter is set up for basic operation with a three-phase AC motor with V/f control. When operated in this mode, the rated torque of the motor is available in a setting range up to 50 Hz.



4.1

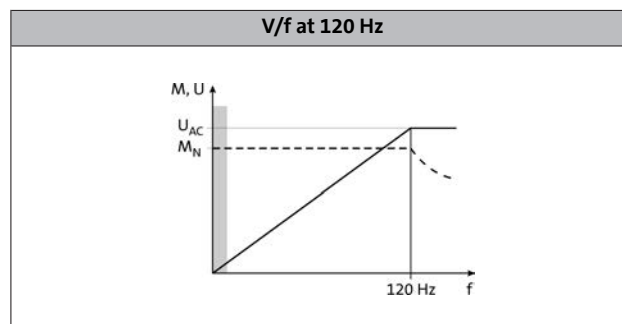
Extended setting range up to 87 Hz

If the V/f reference point on the inverter is set to 87 Hz, the rated torque can be used across an extended setting range. Here, a 230/400V motor is for example used and operated in a delta layout with a 400V inverter. The setting range is then increased by 40 %. The inverter must be dimensioned for a rated motor current of 230 V.



Operation with inverter-optimised MF motors

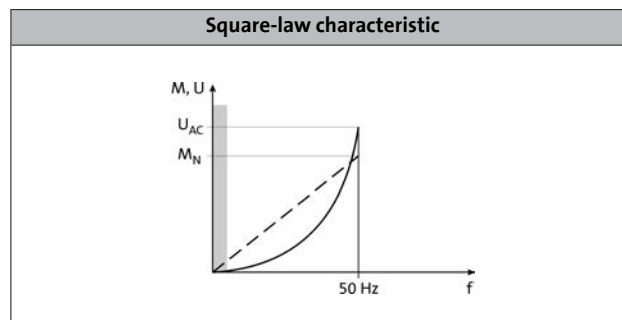
Large setting ranges and optimum operation at the rated torque: these are the strengths of the MF motor when used in combination with an inverter. The motors are optimised for a setting range up to 120 Hz. Compared to conventional 50Hz operation, the setting range increases by 250 %. It is quite simply not possible for a drive to be operated any more efficiently in a machine.



Operation with low loads

This operating mode can be used for various applications, e.g. for fans and pumps:

In fan and pump applications, the load behaviour follows a square-law characteristic depending on the speed. Often, an overload capacity of 120% is sufficient. This serves to operate the inverter during operation with increased power, i.e. the inverter can be dimensioned one power size smaller. The square-law characteristic which corresponds to the load behaviour can be set in the inverter.



Inverter Drives 8400 protec

General information



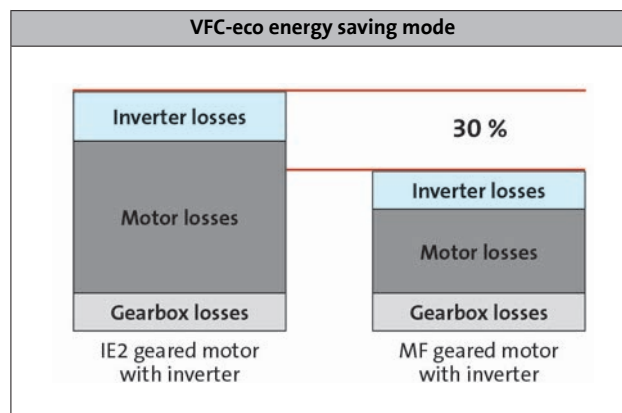
Operating modes

VFC-eco energy saving mode

The Inverter Drives 8400 make energy saving especially easy with the "VFC eco" function. Particularly in the partial load operational range, this function significantly reduces energy requirements. Combined with the new L-force MF three-phase AC motors, this drive solution impresses with the maximum energy efficiency of a Lenze BlueGreen solution.

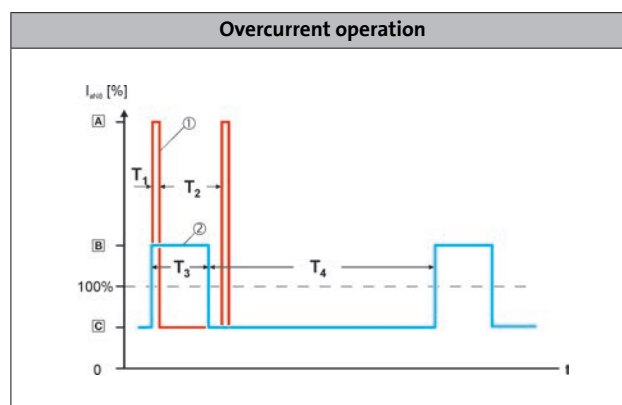
The "VFC eco" mode adjusts the magnetising current of a motor intelligently to actual requirements. This is particularly useful in partial load operational range, as this is precisely where three-phase AC motors need to be supplied with a greater magnetising current than the operating conditions actually require. The "VFC eco" mode allows losses to be reduced so much that savings of up to 30% can be achieved.

Energy efficiency can then be increased even further with the MF three-phase AC motors. These motors have been specifically designed for operation with frequency inverters. They operate at 120 Hz instead of 50 Hz, as 4-pole three-phase AC motors are at their most efficient at this frequency.



Overcurrent operation

The inverters can be driven at higher amperages beyond the rated current if the duration of this overcurrent operation is time limited. Two utilisation cycles with a duration of 15 s and 180 s are defined. Within these utilisation cycles, an overcurrent is possible for a certain time if afterwards an accordingly long recovery phase takes place. For both utilisation cycles, a moving average is determined separately. The adjacent diagram shows both cycles: 15 s in red and 180 s in blue. The overload times t_{oi} are 3 s (T_1) and 60 s (T_3) respectively, the corresponding recovery times t_{re} are 12 s (T_2) and 120 s (T_4) respectively. The following tables show the resulting maximum output currents. Monitoring of the device utilisation ($I \times t$) activates the set error response (trip or warning if one of the two utilisation values exceeds the limit of 100 %).



Switching frequencies

On an inverter, the term "switching frequency" is understood to mean the frequency with which the input and outputs of the output module (inverter) are switched. On an inverter, the switching frequency can generally be set to values between 2 and 16 kHz, whereby the selection is based on the respective power output.

Since losses (in the form of heat) can be generated when switching the modules, the inverter can provide a higher output current at a switching frequency of 2 kHz. In addition to this, it is also important to differentiate between operation at a fixed switching frequency and a variable switching frequency, whereby the switching frequency is automatically reduced based on the output current here.

The data for operation at increased output is permitted for operation at a switching frequency of 2 or 4 kHz and in an ambient temperature of max. 40 °C.

Inverter Drives 8400 protec

Technical data



Standards and operating conditions

Mode			
Product			8400 protec
Conformity			
CE			Low-Voltage Directive 2006/95/EC
EAC			TP TC 004/2011 (TR CU 004/2011) TP TC 020/2011 (TR CU 020/2011)
Approval			
UL 508C			Power Conversion Equipment (file no. E132659)
CSA			CSA 22.2 No. 14
Enclosure			
EN 60529			IP65 mit Bedienelement "C" IP64
NEMA 250			
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -25 °C ... +60 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -25 °C ... +75 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -25 °C ... +55 °C)
Current derating at over 40 °C			2.5 % / K
Site altitude			
Amsl	H _{max}	[m]	4000
Current derating at over 1000 m		[%/1000 m]	5
Vibration resistance			
Transport (EN 60721-3-2)			2M2
Operation (EN 60721-3-3)			3M4
Operation (Germanischer Lloyd)			General conditions: acceleration resistant up to 2 g

4.1

Mode			
Product			8400 protec
Supply form			
			Systems with earthed star point (TN and TT systems)
Noise emission			
EN 61800-3			Integrated RFI suppression: cable-guided, category C2 up to 20 m shielded motor cable
Insulation resistance			
EN 61800-5-1			≤ 2000 m amsl overvoltage category III > 2000 m amsl overvoltage category II
Degree of pollution			
EN 61800-5-1			2
Protective insulation of control circuits			
EN 61800-5-1			Safe mains isolation: double/reinforced insulation

Inverter Drives 8400 protec

Technical data



Rated data 400 V

- The data is valid for operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.

				
Typical motor power				
4-pole asynchronous motor	P	[kW]	0.75	1.50
Product key				
Inverter			E84D□□□7514□□□□	E84D□□□1524□□□□
Mains voltage range				
	U_{AC}	[V]	3/PE AC 320 V-0% ... 440 V+0%, 45 Hz-0 % ... 65 Hz+0%	
Rated mains current				
	$I_{N, AC}$	[A]	4.1	5.5
Rated output current				
	$I_{N, out}$	[A]	2.4	3.9
Rated switching frequency				
	f_{ch}	[kHz]	8	
Output current				
2 kHz	I_{out}	[A]	2.4	3.9
4 kHz	I_{out}	[A]	2.4	3.9
8 kHz	I_{out}	[A]	2.4	3.9
16 kHz	I_{out}	[A]	1.6	2.3

Data for 60 s overload

Max. output current				
	$I_{max, out}$	[A]	3.6	5.9
Overload time				
	t_{ol}	[s]	60.0	
Recovery time				
	t_{re}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	$I_{max, out}$	[A]	4.8	7.8
Overload time				
	t_{ol}	[s]	3.0	
Recovery time				
	t_{re}	[s]	75.0	

Inverter Drives 8400 protec

Technical data



Rated data 400 V

- The data is valid for operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.

				
Typical motor power				
4-pole asynchronous motor	P	[kW]	0.75	1.50
Product key				
Inverter			E84D□□□7514□□□□	E84D□□□1524□□□□
Power loss				
	P _V	[kW]	0.066 ²⁾	0.084 ²⁾
Mass				
	m	[kg]	7.6	
Max. cable length				
Shielded motor cable	I _{max}	[m]	20	

4.1

Brake chopper rated data

Rated power, Brake chopper				
	P _N	[kW]	0.9	2.0
Max. output power, Brake chopper				
	P _{max, 1}	[kW]	3.5	
Min. brake resistance				
	R _{min}	[Ω]	150.0	

Dimensions

Dimensions				
Height	h	[mm]	260 ³⁾	
Width	b	[mm]	353	
Depth	t	[mm]	110	

¹⁾ Technically possible cable lengths, irrespective of EMC requirements

²⁾ Operation at rated output current I_{N, out}.

³⁾ + 30 mm with connector shell.

Inverter Drives 8400 protec

Technical data



Rated data 400 V

- The data is valid for operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.

					
Typical motor power					
4-pole asynchronous motor	P	[kW]	3.00	4.00	7.50
Product key					
Inverter			E84D□□□3024□□S□	E84D□□□4024□□S□	E84D□□□7524□□S□
Mains voltage range					
	U _{AC}	[V]	3/PE AC 320 V-0% ... 440 V+0%, 45 Hz-0 % ... 65 Hz+0%		
Rated mains current					
	I _{N, AC}	[A]	9.7	12.9	20.8
Rated output current					
	I _{N, out}	[A]	7.3	9.5	16.0
Rated switching frequency					
	f _{ch}	[kHz]	8		
Output current					
2 kHz	I _{out}	[A]	7.3	9.5	16.0
4 kHz	I _{out}	[A]	7.3	9.5	16.0
8 kHz	I _{out}	[A]	7.3	9.5	16.0
16 kHz	I _{out}	[A]	4.9	6.3	10.7

Data for 60 s overload

Max. output current					
	I _{max, out}	[A]	11.0	14.3	19.0
Overload time					
	t _{ol}	[s]	60.0		
Recovery time					
	t _{re}	[s]	120.0		

Data for 3 s overload

Max. short-time output current					
	I _{max, out}	[A]	14.6	19.0	32.0
Overload time					
	t _{ol}	[s]	3.0		
Recovery time					
	t _{re}	[s]	75.0		

Inverter Drives 8400 protec

Technical data



Rated data 400 V

- The data is valid for operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.

					
Typical motor power					
4-pole asynchronous motor	P	[kW]	3.00	4.00	7.50
Product key					
Inverter			E84D□□□3024□□S□	E84D□□□4024□□S□	E84D□□□7524□□S□
Power loss					
	P _V	[kW]	0.15 ²⁾		0.23
Mass					
	m	[kg]	11.3		
Max. cable length					
Shielded motor cable	I _{max}	[m]	50		

4.1

Brake chopper rated data

Rated power, Brake chopper					
	P _N	[kW]	3.9	5.2	
Max. output power, Brake chopper					
	P _{max, 1}	[kW]	11.2		
Min. brake resistance					
	R _{min}	[Ω]	47.0		

Dimensions

Dimensions					
Height	h	[mm]	260 ³⁾		
Width	b	[mm]	434		
Depth	t	[mm]	148		

¹⁾ Technically possible cable lengths, irrespective of EMC requirements

²⁾ Operation at rated output current I_{N, out}.

³⁾ + 30 mm with connector shell.

Inverter Drives 8400 protec

Technical data



Mains connection

- The mains fuse and cable cross-section specifications are for a mains connection of 3 x 400 V.
- Class gG/gI fuses or class gRL semiconductor fuses.
- The cable cross-sections apply to PVC-insulated copper cables.
- Use for installation with UL-approved cables, fuses and brackets.

Typical motor power	Mains voltage	Product key	Circuit breaker	Fuse		Mains connection
4-pole asynchronous motor		Inverter		EN 60204-1	UL	Cross-section (without mains choke)
P	U _{AC}		I	I	I	q
[kW]	[V]		[A]	[A]	[A]	[mm ²]
0.75	3 AC 320 ... 440	E84D□□□7514□□S□	C16	16	15	2.5
1.50		E84D□□□1524□□S□				
3.00		E84D□□□3024□□S□				
4.00		E84D□□□4024□□S□	C20	20	20	4.0
7.50		E84D□□□7524□□S□				

Motor connection

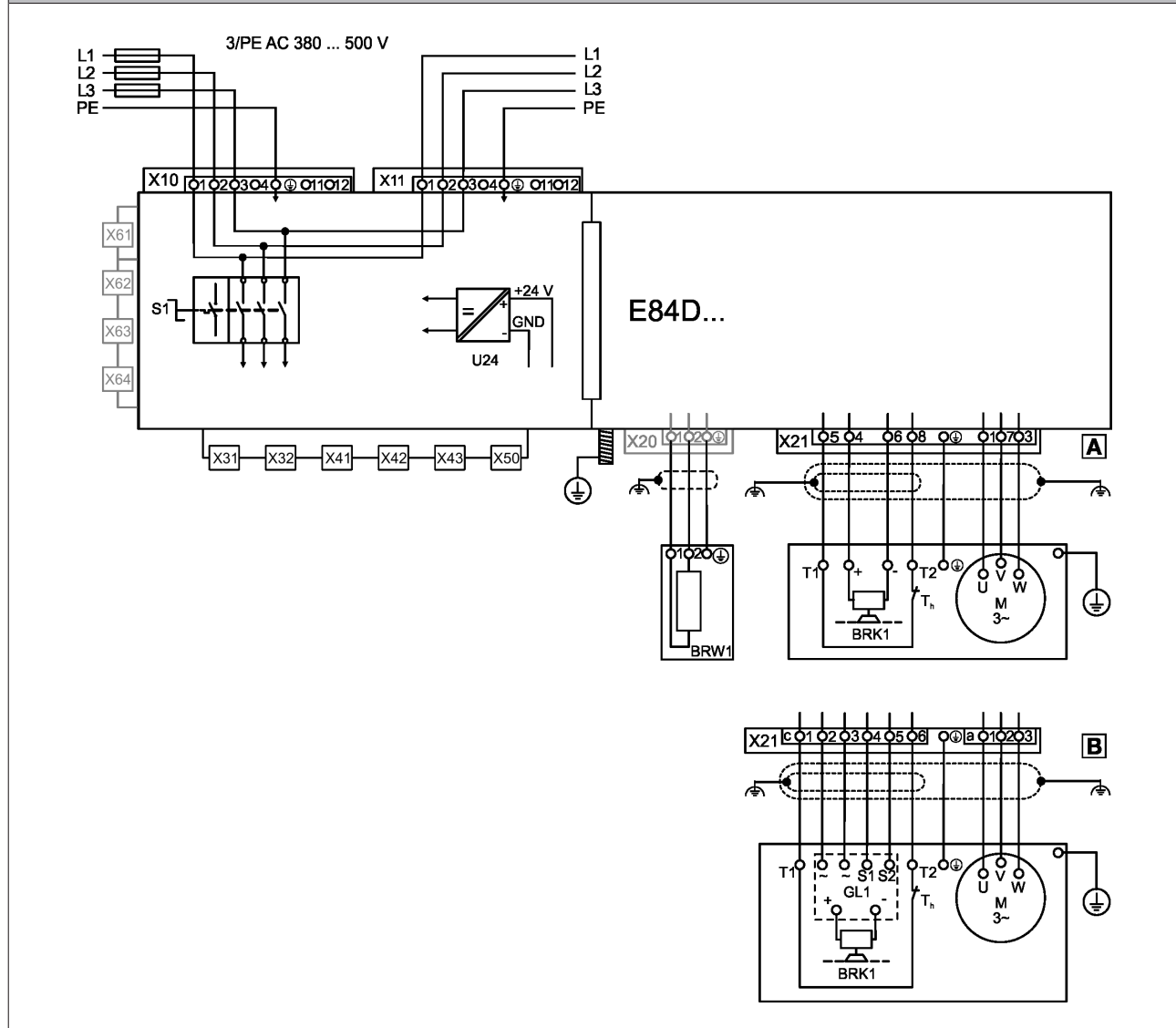
- Keep motor cables as short as possible, as this has a positive effect on the drive behaviour.
- With group drives (multiple motors on one inverter), the resulting cable length is the key factor. This can be calculated using the hardware manual.
- Electric strength of the motor cable: 1 kV as per VDE 250-1.

Typical motor power	Mains voltage	Product key	Max. cable length	
4-pole asynchronous motor		Inverter	shielded C2 without external measures	shielded C2 with external measures
P	U _{AC}		I _{max}	I _{max}
[kW]	[V]		[m]	[m]
0.75	3 AC 320 ... 440	E84D□□□7514□□S□	20	20
1.50		E84D□□□1524□□S□		
3.00		E84D□□□3024□□S□		
4.00		E84D□□□4024□□S□		
7.50		E84D□□□7524□□S□		



Connection diagrams

Wiring example for connecting Inverter Drives 8400 protec to 3 x 400V



[A] Motor connection system: connector type Q8/0

[B] Motor connection system: modular connector type

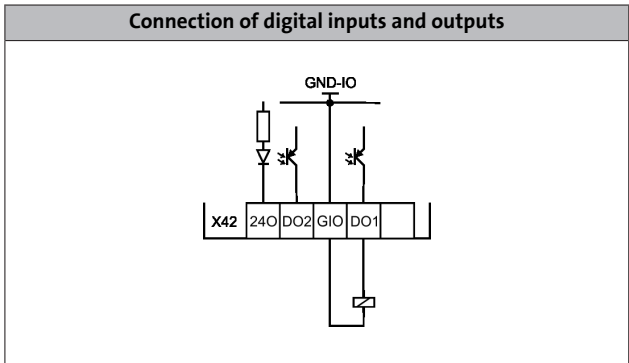
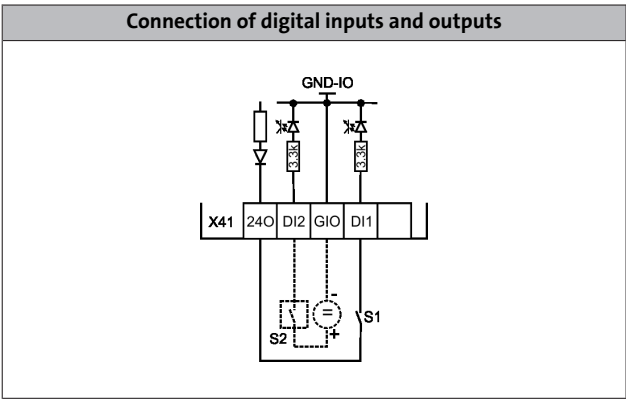
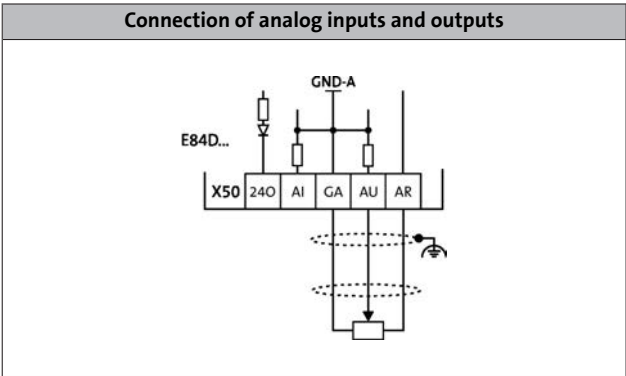


Control connections

Mode	
Product	8400 protec
Analog inputs	
Number	1 Optional: voltage or current input
Resolution	10 bits
Value range	0 ... 10V, 0/4 ... 20mA
Digital inputs	
Number	6 or 4 (configurable)
Switching level	PLC (IEC 61131-2)
Max. input current	11 mA
Function	
Digital outputs	
Number	0 or 2 (configurable)
Switching level	PLC (IEC 61131-2)
Max. output current	200 mA per output
Relay	
Number	
Contact	
AC connection	
DC connection	
External 24 V DC supply	
	To support communication when the 400 V is switched off
Internal 24 V DC supply	
	Max. 1 A for inputs/outputs and sensor feeds
Interfaces	
CANopen	on board optional
Extensions	Integrated fieldbus communication
Safety engineering	1-2 safe inputs for passive/active actuators/PROFIsafe/PROFIsafe, depending on the safety option selected
Drive interface	
Encoder input	Via 2 digital inputs, HTL, 2-track, 10 kHz 100 kHz, can also be used as a frequency input, SSI input (instead of analog input),



Control connections



Inverter Drives 8400 protec

Technical data



Inverter Drives 8400 protec

Modules



Memory module

All drive settings for the 8400 are stored on the memory module, which is a pluggable memory chip. The memory module ensures that drives can be replaced quickly and without errors being made.

Mode	Features	Product key
Memory module	- For 8400 StateLine, HighLine, Toplevel and protec - Packaging unit: 5 items	E84AYM10S/M

Safety engineering

The following safety functions are integrated into the communication modules depending on the device version:

Safety option 10

- Safe torque off (STO)
- The drive is safely disconnected when a request is sent via connected active or passive sensors

Safety option 20

- Safe torque off (STO)
- Safety stop 1 (SS1)
- Safe stop emergency (SSE)
- Safe operation mode selector (OMS)
- Safe enable switch (ES)
- The drive is safely disconnected by a higher-level safety PLC by means of PROFIsafe/PROFINET

Safety option 30

- Safe torque off (STO)
- Safe stop 1 (SS1)
- Safe stop emergency (SSE)
- Safe operation mode selector (OMS)
- Safe enable switch (ES)
- The drive is safely disconnected by a higher-level safety PLC by means of PROFIsafe/PROFINET and via connected active or passive sensors

4.1

Safety functions	10	20	30
Basic error limit (at 25 °C)			
Certification			
EN ISO 13849-1	Category 4 / PLe	Category 3 / PLe	
EN 61800-5-2		SIL 3	
EN 62061		SIL 3	
IEC 61508		SIL 3	
Fail-safe state	Safe torque off		

Communication modules

Inverter Drives 8400 protec are supplied with permanently installed communication modules. As well as containing the components for fieldbus communication, these modules also include the digital inputs and outputs. An analog input or a synchronous serial interface (SSI) can also be provided as an option.

Overview

	Digital inputs	Digital outputs	Analog inputs
Communication module	Number	Number	Number
CANopen	6 or 4 (configurable)	0 or 2 (configurable)	1 ¹⁾
EtherNet/IP	6 or 4 (configurable)	0 or 2 (configurable)	1 ¹⁾
PROFIBUS	6 or 4 (configurable)	0 or 2 (configurable)	1 ¹⁾
PROFINET	6 or 4 (configurable)	0 or 2 (configurable)	1 ¹⁾

¹⁾ Or as a synchronous serial interface (SSI).



Communication module: CANopen

The CANopen communication module allows the 8400 protec to be controlled via the "CANopen" bus system using digital control signals. It is integrated in the inverter with the product key E84D□□□□□□□□C.

The benefits of this system include:

- Easy, yet very powerful bus system
- Easy system integration, as a wide range of sensors and actuators is available in the market.

Mode	Features
Communication module	
CANopen	• Addressing via DIP switches or parameters

Technical data

4.1

Mode			
Communication module			CANopen
Communication			
Medium			DIN ISO 11898
Communication profile			CANopen, DS301 V4.02 Lenze system bus
Device profile			Lenze device control
Baud rate			
	b	[kBit/s]	20 50 125 250 500 800 1000
Node			
			Slave Multi-master
Network topology			
			Line with terminating resistors (120 ohm) at both ends
Number of logical process data channels			
			4 (each with 1 - 8 bytes)
Number of logic parameter data channels			
			5
Number of bus nodes			
			63
Max. cable length			
per bus segment	I_{max}	[m]	17 for 1000 kbps 40 for 800 kbps 110 for 500 kbps 290 for 250 kbps 630 for 125 kbps 1500 for 50 kbps 3900 for 20 kbps 8000 for 10 kbps



EtherNet/IP communication module

The EtherNet/IP communication module based on standard TCP and UDP enables the Inverter Drives 8400 motec to support a continuous communication from the field level right through to the controlling system. The product key E84D□□□□□□□□G

indicates an inverter with an integrated communication module

The benefits of this system include:

- Currently widespread fieldbus based on real-time Ethernet
- Supports DHCP and BootP in allocating the IP address
- Devices linked via EtherNet/IP can be implemented seamlessly and with minimum configuration expense via mapping into the I/O tree of the RSLogix programming tool

Mode	Features
Communication module	
EtherNet/IP	• Supports multicast messages, UCMM, ACD, BOOTP/DHCP, VLAN-Tagging/DSCP

Technical data

Mode			
Communication module			EtherNet/IP
Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 / EN50173
Communication profile			EtherNET/IP, AC Drive
Baud rate			
	b	[MBit/s]	10/100 (full duplex/half duplex)
Node			
			Slave (Adapter)
Network topology			
			Tree, star and line
Process data words (PCD)			
16 Bit			1 ... 16
Number of bus nodes			
			max. 254 im Subnetz
Max. cable length			
between two nodes	$l_{\max}$	[m]	100



PROFIBUS communication modules

With the PROFIBUS communication module, the 8400 protec supports the most widespread current fieldbus system. It is integrated in the inverter with the product key E84D□□□□□□□□P.

The benefits of this system include:

- Widespread and very powerful fieldbus system
- Integrated I/O node. Capable of communication and reading inputs even when the 400V supply is switched off.

Mode	Features
Communication module	
PROFIBUS	• DPVO: basic functionalities such as cyclical data exchange and diagnostics • DPV1: supports acyclical data exchange for parameter setting, operation and alarm handling

Technical data

4.1

Mode			
Communication module			PROFIBUS
Communication			
Medium			RS 485
Communication profile			PROFIBUS-DP-V1 PROFIBUS-DP-V0
Device profile			PROFIDrive, version 3
Baud rate			
	b	[kBit/s]	9.6 ... 12 000 (automatic detection)
Node			
			Slave
Network topology			
			with repeater: line or tree without repeater: line
Process data words (PCD)			
16 Bit			1 ... 16
DP user data length			
			Optional parameter channel (4 words) + process data words
Number of bus nodes			
			31 slaves + 1 master per bus segment With repeaters: 125
Max. cable length			
per bus segment	$I_{\max}$	[m]	1200 (depending on the baud rate and the cable type used)



PROFINET communication modules

With the PROFINET communication module, the 8400 protec supports a fieldbus system for continuous communication from the field level right through to company management level. It is integrated in the inverter with the product key E84D□□□□□□□□R.

The benefits of this system include:

- Fieldbus system capable of handling large data volumes
- Use of IT standards
- Integrated switch allows direct looping of PROFINET via the inverters
- Integrated I/O node. Capable of communication and reading inputs even when the 400V supply is switched off.

Mode	Features
Communication module	
PROFINET	• Automatic detection of the 100 Mbps baud rate • Creation of a line topology through integrated 2-port switch • Support for I&M 0 to 4 functionality for identification of the standard device • Link / Activity

Technical data

Mode			
Communication module			PROFINET
Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 (2002)
Communication profile			PROFINET RT Conf. Class B
Baud rate			
	b	[MBit/s]	10/100
Node			
			Slave (Device)
Network topology			
			Tree, star and line
Number of logical process data channels			
			1 ring as client (media redundancy)
Process data words (PCD)			
16 Bit			1 ... 16
Max. cable length			
between two nodes	$I_{\max}$	[m]	100

Inverter Drives 8400 protec

Modules





Brake resistors

An external brake resistor is required to brake high moments of inertia or in the event of prolonged operation in generator mode; this resistor converts braking energy into heat.

The brake resistors recommended in the table below have been dimensioned for approx. 1.5 times the regenerative power, with a cycle time of 15/135 s (brake/rest ratio). These brake resistors generally meet the usual requirements of standard applications.

The brake resistors are fitted with a thermostat (potential-free NC contact).



Brake resistor

Typical motor power	Mains voltage	Product key		Rated resistance	Rated power	Thermal capacity	Dimensions	Mass
4-pole asynchronous motor		Inverter	Brake resistor					
P	U _{AC}			R _N	P _N	C _{th}	h x b x t	m
[kW]	[V]			[Ω]	[kW]	[KWs]	[mm]	[kg]
0.75	3 AC 320 ... 440	E84D□□□7514□□S□	ERBS240R300W	240.0	0.30	45.0	382 x 124 x 122	2.0
1.50		E84D□□□1524□□S□	ERBS180R350W	180.0	0.35	53.0		
3.00		E84D□□□3024□□S□	ERBS047R400W	47.0	0.40	60.0	400 x 110 x 105	2.3
4.00		E84D□□□4024□□S□						
7.50		E84D□□□7524□□S□						



USB diagnostic adapter

The operation, parameter setting and diagnostics of the Inverter Drives 8400 and the Servo Drives 9400 via the L-force diagnostics is made with the keypad X400 or a PC. The connection of a PC can be made via a USB interface and the USB diagnostic adapter.

For connecting the USB diagnostic adapter with the L-force diagnostics interface (DIAG) tat the inverter, three different connecting cables are separately available in the lengths 2.5 m, 5 m and 10 m. The connection can be established during operation. The engineering tools EASY Starter or Engineer can be used to carry out the operation, parameter setting or diagnostics of the inverters. Both tools have simple intuitive surfaces. This enables a quick and easy commissioning.

Optionally to the USB diagnostic adapter, the PC system bus adapter can be used. For this purpose, a CANopen interface must be available at the inverter.



USB diagnostic adapter incl. connecting cable to the PC

4.1

- The engineering tools EASY Starter or Engineer are used for operation, parameter setting and diagnostics of the inverters.

Mode		Features	Product key
USB diagnostic adapter		• Input-side voltage supply via USB connection on PC • Output-side voltage supply via inverter's diagnostic interface • Diagnostic LEDs • Electrical isolation of PC and inverter • Hot-pluggable	E94AZCUS

Connecting cables for USB diagnostic adapter

Mode	Features	Product key
Connecting cable for USB diagnostic adapter	• Length: 2.5 m	EWL0070
	• Length: 5 m	EWL0071
	• Length: 10 m	EWL0072

Inverter Drives 8400 protec

Accessories



Diagnosis terminal

The diagnosis terminal can be used as an alternative to a PC if you are looking for an easy way to operate the inverter, set parameters or carry out diagnostics locally. The structured menus and plain text display provide quick access to data. The diagnosis terminal can be plugged into the inverter's L-force diagnostic interface (DIAG) from the outside.



Diagnosis terminal

Mode	Features	Slot	Product key
Diagnosis terminal	• Diagnosis terminal inside robust housing • incl. 2.5 m cable • Degree of protection IP20 • For 8400 motec and protec.	DIAG	EZAEBK2003

4.1

Switch/potentiometer unit

The switch / potentiometer unit is fitted directly to the 8400 motec or in a different position within the system. An analogue setpoint can be specified with the switch/potentiometer unit and the control connections integrated in the inverter by using the integrated potentiometer; the rotary switch can, for example, be used to start/stop the drive or change the direction of rotation. The switch/potentiometer unit is supplied with a 2.5 m connection cable.



Switch/potentiometer unit

Mode	Product key
Switch/potentiometer unit (IP65)	E82ZBU



System cables

For connection of the motor, Lenze provides finished hybrid cables. They are optimally matched to the connection between the Drive Package components. Motor connection, blower connection, brake connection and temperature monitoring are integrated in the cables. Cables up to a length of 100 m can be selected in increments of 0.1 m.

10-pole cables

Available with cross-sections 1.5² and 2.5² with connection for brake or thermal contact.

4.1

Product series	Cable type	Connection cable	Cable length in decimetres	Cable end on the motor side (socket)	Cable end on the controller side
E Y P Motor		A	0003 5000 Minimum length Maximum length		
Fixed installation	0039	1.5 mm ²		H07 Modular 16A	A00 Without plug-in connector Q08 Modular 40A
	0040	2.5 mm ²		A00 Without plug-in connector H08 Modular 16A	Q08 Modular 40A A00 Without plug-in connector Q09 Modular 40A
	0046	4.0 mm ²		H09 Modular 40A A00 Without plug-in connector	A00 Without plug-in connector Q09 Modular 40A
	0047	10.0 mm ²		H14 Modular 40A H15 Modular 40A	A00 Without plug-in connector A00 Without plug-in connector



8-pole cables

Available with cross-sections 1.5² and 2.5² with connection for brake and thermal contact.

Product series	Cable type	Connection cable	Cable length in decimetres	Cable end on the motor side (socket)	Cable end on the controller side
EY P Motor		A	0003 5000 Minimum length Maximum length		
Fixed installation	0037	1.5 mm ²		M07 Screw plug	A00 Without plug-in connector
				M08 SpeedTec	
				H10 10E-Υ	
				H12 10E-Δ	
				M07 Screw plug	Q10 Q8
				M08 SpeedTec	
				H10 10E-Υ	
				H12 10E-Δ	
				A00 Without plug-in connector	Q10 Q8
	0038	2.5 mm ²		M07 Screw plug	A00 Without plug-in connector
				M08 SpeedTec	
				H11 10E-Υ	
				H13 10E-Δ	
				M07 Screw plug	Q11 Q8
				M08 SpeedTec	
				H11 10E-Υ	
				H13 10E-Δ	
				A00 Without plug-in connector	Q11 Q8

Inverter Drives 8400 protec

Accessories



Inverter

Inverter Drives 8400 motec

Decentralised frequency inverter for motor and wall mounting

0.37 ... 7.5 kW



Inverter Drives 8400 motec

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List of abbreviations

b	[mm]	Width
C _{th}	[kW _s]	Thermal capacity
f _{ch}	[kHz]	Rated switching frequency
h	[mm]	Height
I _{rated, out}	[A]	Rated output current
I _{rated, AC}	[A]	Rated mains current
m	[kg]	Mass
n _{max}	[r/min]	Max. Speed
P	[kW]	Typ. motor power
P _R	[kW]	Power loss
P _{rated}	[kW]	Rated power
R _{rated}	[Ω]	Rated resistance
t	[mm]	Depth
U _{AC}	[V]	Mains voltage
U _{DC}	[V]	DC supply
U _{rated, AC}	[V]	Rated voltage
U _{out}	[V]	Max. output voltage

ASM	Asynchronous motor
DIAG	Slot for diagnostic adapter
DIN	Deutsches Institut für Normung e.V.
EN	European standard
EN 60529	Degrees of protection provided by enclosures (IP code)
EN 60721-3	Classification of environmental conditions; part 3: Classes of environmental parameters and their limiting values
EN 61800-3	Electrical variable speed drives Part 3: EMC requirements, including specific test procedures
IEC	International Electrotechnical Commission
IEC 61508	Functional safety of electrical/electronic/programmable electronic safety-related systems
IM	International Mounting Code
IP	International Protection Code
MCI	Plug-in station for the communication unit (communication interface module)
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)

Inverter Drives 8400 motec

General information



8400 motec

Maximised user-friendly operation and installation are characteristics of the 8400 motec.

Particularly when used for decentralised drive solutions, the 8400 motec shows excellent efficiency with regard to space, time and energy.

Space savings

- Integrated safety technology and fieldbus communication tailored to individual requirements
- The modular structure minimises your spares inventory

Time benefits

- Pluggable connection system to reduce mounting and installation times: "Unpack, connect and you're done!"
- Easy replacement of the memory module facilitates standard set-up and increases availability

Energy efficiency

- "VFC eco" mode offers intelligent adaptation of the magnetising current.
- Up to 30 % energy savings possible in partial load operations

Variance

- Use our »Product Finder« to filter products based on various criteria to locate precisely the item you need. You can also use the function to configure your products and obtain configurable CAD data.

Further benefits

- 200 % overload current (3 s)
- V/f control with and without encoder
- Sensorless vector control
- Sensorless control of synchronous motors
- Short circuit and earth fault proof
- DC-injection braking
- S-ramps for smooth acceleration
- Max. output frequency 300 Hz
- CANopen, PROFIBUS, PROFINET, EtherCAT®, EtherNet/IP, POWERLINK and AS interface
- Safety function STO

Wonderfully simple

- Large LED ensures that operating status is clearly visible from a distance; blinking informs users as to error causes.

Mechanically and electrically robust

- Thanks to the high degree of protection (IP65), ideally suited for use in the harshest environments.

A real benefit in decentralised applications

- The 8400 motec meets all the requirements of a modern, universally deployable and cost-efficient motor inverter. This makes it ideally suited for decentralised tasks in the field of intralogistics, such as at airports or distribution centres.

Inverter Drives 8400 motec

General information

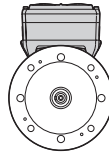


Assembly options for motor mounting

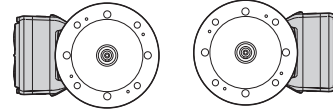
The 8400 motec can be mounted on the motor in various directions. The technical data for the mounting arrangement must be observed when selecting the mounting direction.



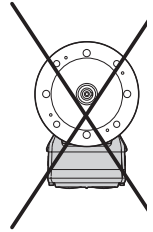
8400 motec for motor mounting



With rating data



With derating

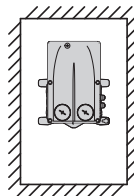


Assembly options for wall mounting

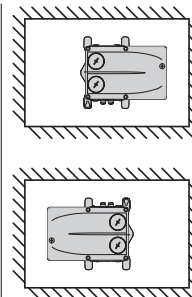
The 8400 motec can be mounted on the wall, or the chassis, in various directions. The technical data for the mounting arrangement must be observed when selecting the mounting direction.



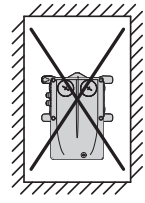
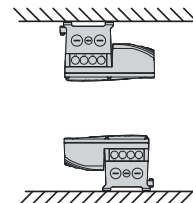
8400 motec for wall mounting



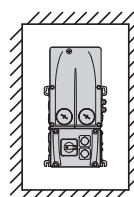
With rating data



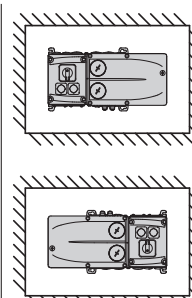
With derating



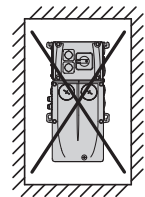
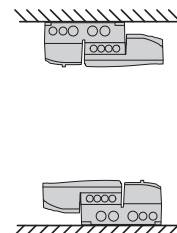
8400 motec for wall mounting with service switch



With rating data



With derating



Inverter Drives 8400 motec

General information



The combinable units

The modular, sophisticated design of the 8400 motec, which comprises the “Drive Units”, “Communication Unit” and “Wiring Unit”, shows how flexible this drive is.

After selecting which units you want, you can order three different versions of the 8400 motec:

- **Motor mounting for geared motors**
The 8400 motec is delivered mounted on a Lenze geared motor/ three-phase AC motor and pretested with optional mounting parts. In addition, the underlying, detailed motor parameters are preconfigured to facilitate commissioning.
- **Motor mounting set**
The 8400 motec is delivered as a set of individual parts – with or without mounting parts – and then mounted on site.
- **Wall mounting**
The 8400 motec for wall mounting is always completely assembled and delivered as a unit after testing. It is delivered as individual units if cable glands are selected as the connection system.

When the units are individually ordered, they are delivered in separate packages.

Drive Unit

- Inverter power section
- Easy commissioning via DIP switch, potentiometer or diagnosis terminal
- Easy to replace memory module
- A large LED display to show statuses

Communication Unit

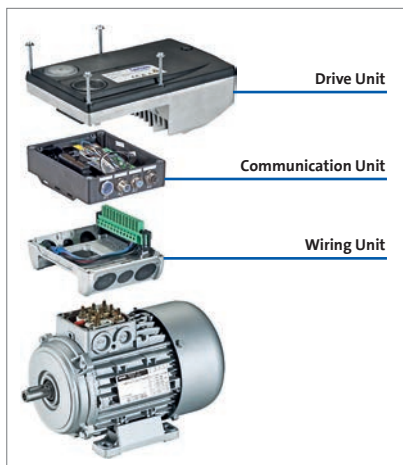
- Interface for I/Os and fieldbus links
- AS-Interface, POWER, CANopen, EtherCAT®, EtherNet/IP, PROFIBUS or PROFINET
- I/Os and on-board safety technology
- Pluggable M12 connection system

Wiring Unit and Frame Unit

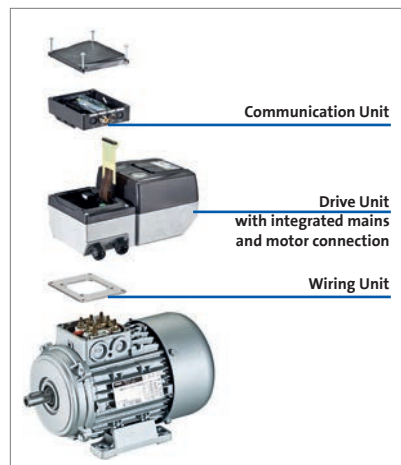
- Connections to mains and drive
- Flexible connection options such as cable glands and diverse plug-in connectors
- Connection for brake resistor
- Connection for spring-applied brake

4.2

Motor mounting

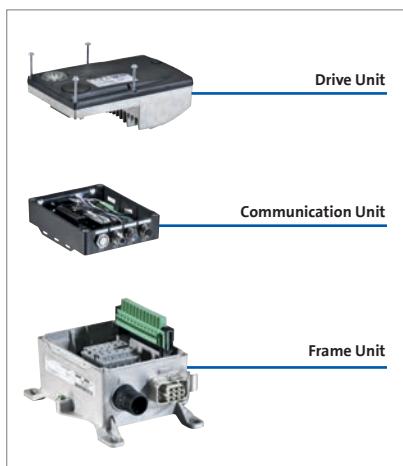


8400 motec 0.37 ... 3.0 kW

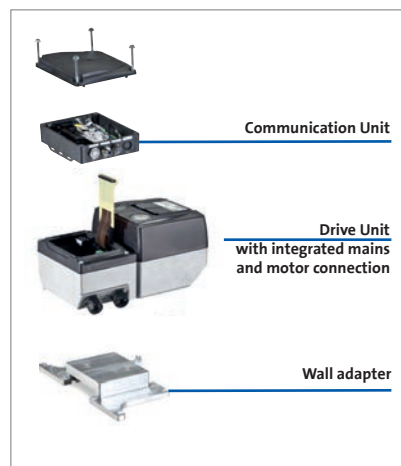


8400 motec 4.0 ... 7.5 kW

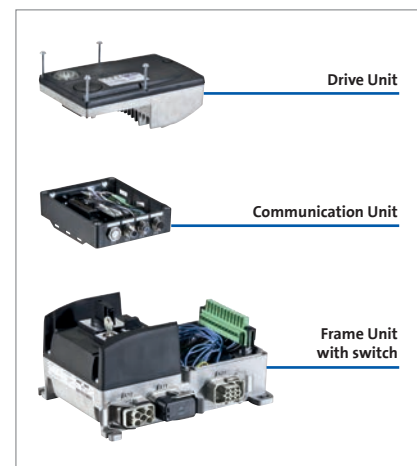
Wall mounting



8400 motec for wall mounting
0.37 ... 3.0 kW



8400 motec for wall mounting
4.0 ... 7.5 kW



8400 motec with switch for wall mounting
0.37 ... 3.0 kW

Inverter Drives 8400 motec

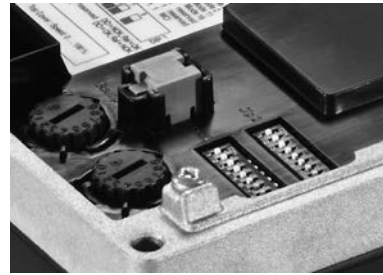
General information



Drive Unit

The drive unit has DIP switches and potentiometers on its underside, adjacent to the power unit, with which the inverter can be put into operation very easily. They are used to adjust configuration, speed and ramp settings. In this way, the drive unit can be quickly and easily matched with the equipment.

The diagnosis adapter can be connected next to the status display in order to perform diagnostics. This does not require dismantling of the drive. With the potentiometer that can be accessed from above, you can make speed settings while the motor is actually running.



DIP switches on Drive Unit



Drive Unit diagnostic terminal



Drive Unit diagnostic terminal

Inverter Drives 8400 motec

General information



Functions and features

Mode	8400 motec
Control mode, motor control	
Sensorless vector control (SLVC)	Speed control for three-phase asynchronous motors
Sensorless vector control (SLVC) with torque mode	Torque control for three-phase asynchronous motors
Sensorless control (SL PSM)	For synchronous motors
V/f characteristic control linear/square-law (VFCplus)	For three-phase AC motors and asynchronous servo motors
Energy saving function (VFC eco)	For three-phase asynchronous motors
V/f characteristic control (VFC closed loop)	For asynchronous servo motors
Basic functions	Freely assignable user menu Parameter change-over DC brake function Flying restart circuit S-shaped ramps for smooth acceleration PID controller 3 fixed frequencies Masking frequencies
Technology applications	Speed actuating drive Switch-off positioning without feedback
Monitoring and protective measures	Short circuit Earth fault Overvoltage Motor phase failure Overcurrent I ² x t-Motor monitoring Motor overtemperature Mains phase failure Protection in the event of cyclical power supply switching Motor stalling
Diagnostics	Data logger, logbook
Status displays	1 LEDs
Diagnostic interface	Integrated For USB diagnostic adapter or keypad (diagnosis terminal)
Braking operation	
Brake chopper	Integrated
Brake resistor	Built-on module or external

4.2

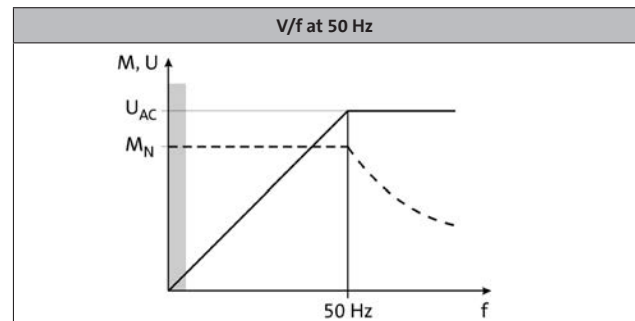


Operating modes

An inverter ensures energy-efficient system operation in virtually every application case. The easily selectable operating modes are used for this purpose. The following characteristics and matching technical data listed on the following pages are used to determine the optimum operating mode during the project planning phase.

Standard setting

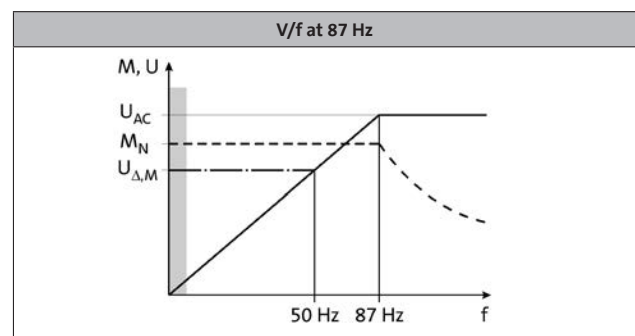
In the "as delivered" condition, the inverter is configured for single operation on a three-phase AC motor with V/f-closed loop control. When operated in this mode, the rated torque of the motor is available in a range adjustable up to 50 Hz.



4.2

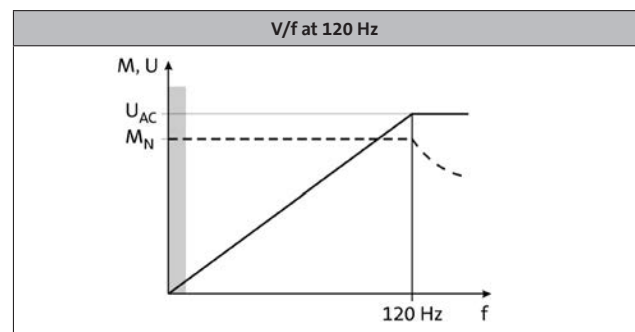
Extended setting range up to 87 Hz

If the V/f inflexion point is set to 87 Hz, the rated torque can also be taken into consideration in the extended setting range. In this case, for instance, a 230/400 V-motor is used and operated on a 400 V inverter in delta connection. The adjustment range is increased by 40%. The inverter must be dimensioned for a rated motor current of 230 V.



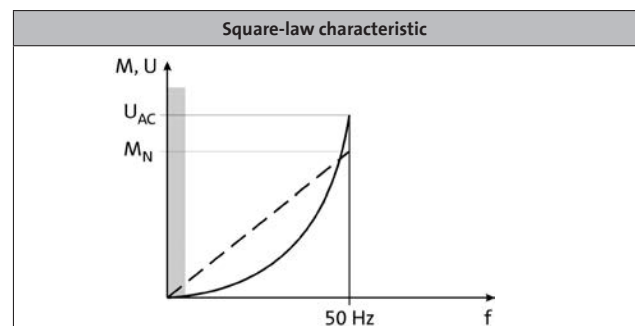
Operation with inverter-optimised MF motors

Large adjustment range and optimised operation with rated torque. These are the strengths of the MF motor when used in combination with an inverter. The motors are optimised for a setting range up to 120 Hz. Compared to conventional 50 Hz operation, the setting range increases by 250%. It is quite simply not possible for a drive to be operated any more efficiently in a machine.



Operation with low loads

This operating mode can be used for various applications, e.g. for fans and pumps: In fan or pump applications, the load response follows a square-law characteristic, depending on the speed. An overload capability of 1.2 x is often sufficient. This means the inverter can be operated at increased power, i.e. the inverter can be dimensioned one power size smaller. The square-law characteristic which corresponds to the load behaviour can be set in the inverter.





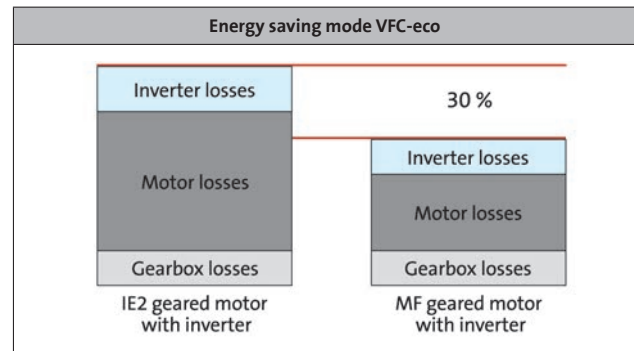
Operating modes

Energy saving mode VFC-eco

The inverters make energy efficiency particularly easy with the "VFC eco" function. This function significantly reduces energy demand, particularly in the partial load operational range. Combined with the new L-force MF three-phase AC motors, this drive solution impresses with the maximum energy efficiency of a Lenze BlueGreen solution.

The "VFC eco" mode adapts the magnetising current of a motor intelligently to meet actual needs. This is particularly useful in partial load operational range as it is precisely here that three-phase AC motors need to be supplied with a greater magnetising current than the operating conditions actually require. In practice, the "VFC eco" mode reduces losses to such an extent that savings of up to 30% are within reach.

Energy efficiency can then be increased again with the MF three-phase AC motors. These motors have been specifically designed for operation with frequency inverters. They operate at 120 Hz instead of 50 Hz, as 4-pole three-phase AC motors are most efficient at this frequency.

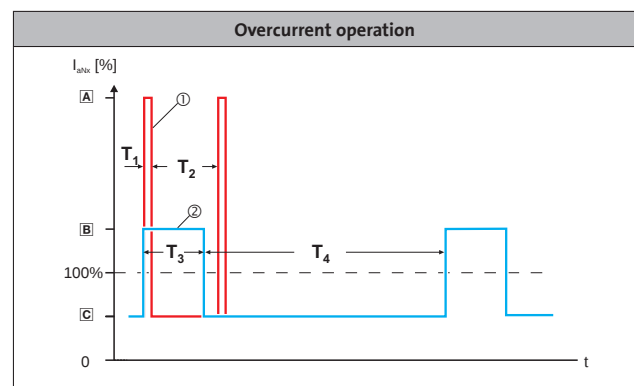


4.2

Overcurrent operation

The inverters can be operated at higher amperages beyond the rated current if the duration of this overcurrent operation is time limited. Two utilisation cycles of 15 s and 180 s are defined. Within these utilisation cycles, an overcurrent is possible for a certain time if afterwards an accordingly long recovery phase takes place. One moving average is determined separately for each utilisation cycle. The adjacent diagram shows the two cycles: 15 s in red und 180 s in blue. The overload time is 3 s (T_1) or 60 s (T_3), so the recovery time is therefore 12 s (T_2) or 120 s (T_4). The following data tables show the possible maximum output currents.

The monitoring of the device utilisation (I_{xt}) causes the set error response (trip or warning) if one of the two utilisation values exceeds the threshold of 100 %.

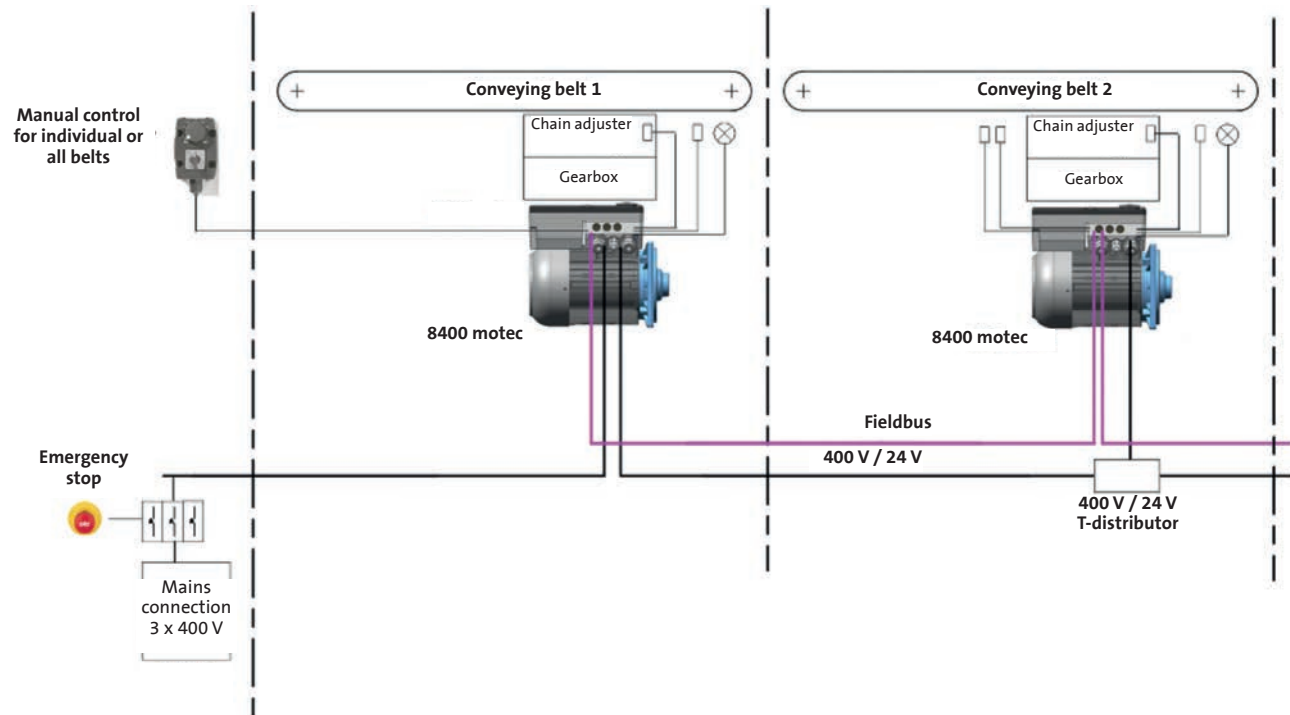


Switching frequencies

For inverters, the term "switching frequency" means the frequency with which the output modules (inverters) are switched on and off. The switching frequency on the 8400 motec can be set to values between 4 and 16 kHz; the selection depends on the output. The inverter can provide a higher output current at a switching frequency of 2 kHz, as switch operations on the module generates losses, i.e. heat. Additionally, a distinction is made between operation at a permanently set switching frequency and a variably set switching frequency, whereby the switching frequency is automatically reduced based on the output current. The data for operation at increased output is permitted for operation at a switching frequency of 2 or 4 kHz and at an ambient temperature of max. 40 °C.

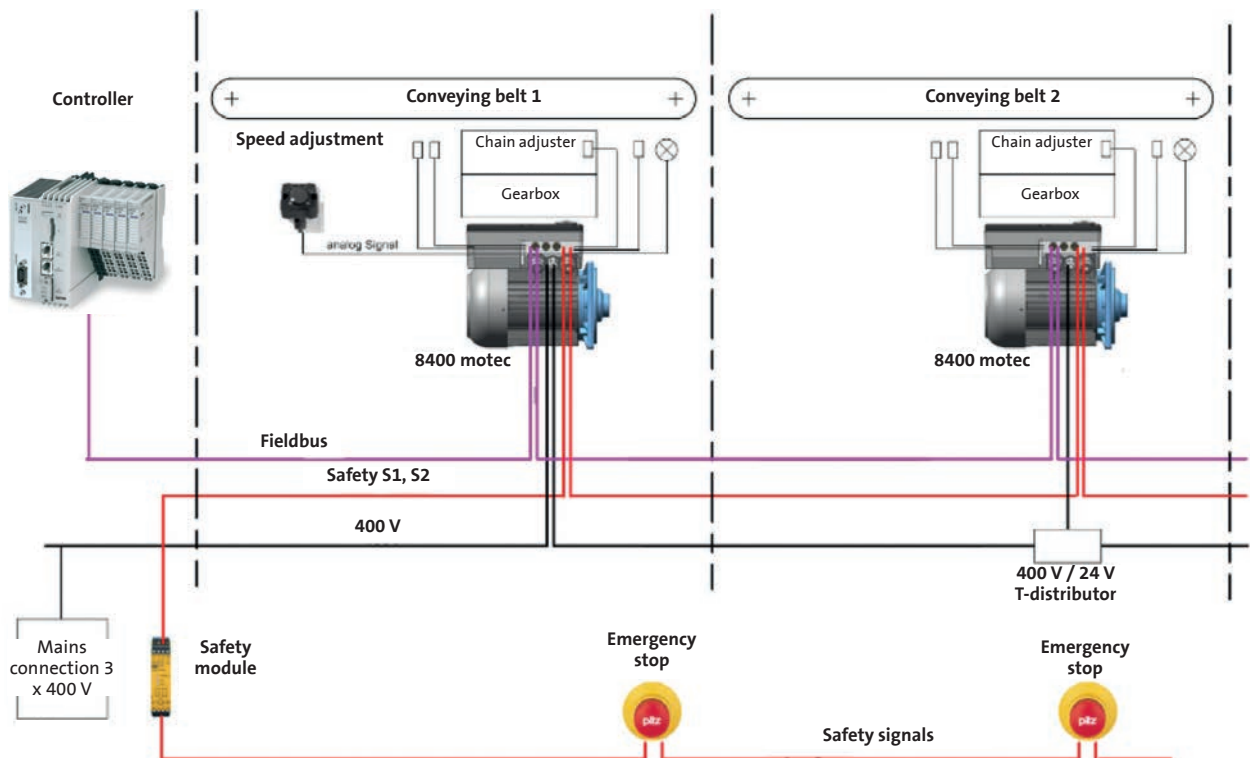


Topologies for decentralised drive technology



4.2

Extension by safety technology





Application example of an overall interconnected system

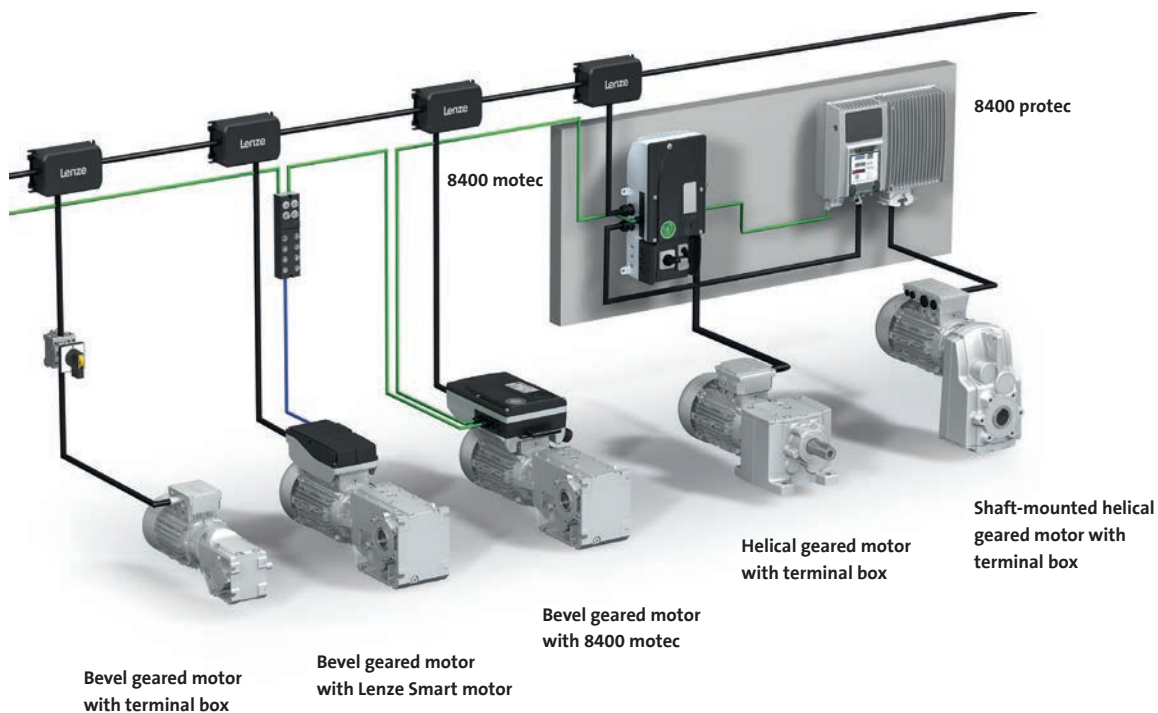
Lenze components can be used to create an entire compact decentralised drive solution within the overall interconnected system.

Mains operation:

The IE1, IE2 and IE3 three-phase geared motors and the Lenze Smart Motor m300 in combination with the g500 gearboxes.

Inverter operation

The various three-phase geared motors in combination with the 8400 motec inverter for motor and wall mounting and the 8400 protec for wall mounting. Easy and clear wiring via terminal boxes or plug-in connectors ensure safe operation and a high level of service safety.



Inverter Drives 8400 motec

Technical data



Standards and operating conditions

Mode			
Product			8400 motec
Conformity			
CE			Low-Voltage Directive 2014/35/EU EMC Directive 2014/30/EU
EAC			TP TC 004/2011 (TR CU 004/2011) TP TC 020/2011 (TR CU 020/2011)
Approval			
UL 508C			Power Conversion Equipment (File-No. E132659/E170350)
CSA			CSA 22.2 No. 247-13
Protection type			
EN 60529			Standard: IP65 Frame Unit – service switch with protective function: IP64 Frame Unit – service switch: IP54 Frame Unit - service switch with control elements: IP54
NEMA 250			Type 4x (only indoors), wall mounting 0.37 kW ... 3 kW type 12
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Operation (EN 60721-3-3) 3K3			3K3 (temperature: -30 °C ... +55 °C)
Current derating			2.5%/K Operation at 4 kHz above 45°C Operation at 8/16 kHz above 40°C
Site altitude			
above sea level	Hmax	[m]	4000
Current derating at over 1000 m		[%/1000 m]	5
Vibration resistance			
Transport (EN 60721-3-2)			2M2
Operation (EN 60721-3-3)			3M6
Operation (Germanischer Lloyd)			General conditions: Acceleration resistant up to 2 g

Mode	8400 motec
Product	
Type of mains power supply	Systems with earthed star point (TN and TT systems) Systems with high-resistance or isolated star point (IT systems)
Noise emission	Interference suppression measures integrated: Conducted, category C1 ¹⁾ For wall mounting: Category C2 with a shielded motor cable of up to 20 m when F _{ch} = 4 kHz
EN 61800-3	
Insulation resistance	0 to 2000 m above sea level, overvoltage category III 2000 m to 4000 m above sea level, overvoltage category II
EN 61800-5-1	
Degree of pollution	2
EN 61800-5-1	
Protective insulation of control circuits	Safe mains isolation: double/reinforced insulation
EN 61800-5-1	

Characteristics of the motor holding brake		
Designation	Description	Rated value
X1		
BD1 (+) BD2 (-)	Connection of a motor holding brake	
	Output voltage (depending on the mains voltage)	400 V system: DC 180 V 480 V system: DC 215 V
	Max. output current	0.3 A
	Max. output power	55 VA

¹⁾ Applies to 4 kHz, from 4 kW category C2 for 4 and 8 kHz.

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	0.37	0.55 ¹⁾	0.55	0.75 ¹⁾
Product key						
Drive Unit			E84DGDVB37142PS		E84DGDVB55142PS	
Motor mounting			E84DVBM3714□□□2□□		E84DVBM5514□□□2□□	
Wall mounting			Z□5□□□□□□□□137□□□□		Z□5□□□□□□□□155□□□□	
Mains voltage range						
	U _{AC}	[V]	3/PE AC 320 V-0 % ... 528 V+0 %, 45 Hz-0 % ... 65 Hz+0 %			
Rated mains current						
	I _{rated, AC}	[A]	1.3	1.6	1.8	2.2
Rated output current						
	I _{rated, out}	[A]	1.3	1.6	1.8	2.2
Rated switching frequency						
	f _{ch}	[kHz]	8	4	8	4
Output current						
4 kHz	I _{out}	[A]	1.3	1.6	1.8	2.2
8 kHz	I _{out}	[A]	1.3		1.8	
16 kHz	I _{out}	[A]	0.9		1.2	

4.2

Data for 60 s overload

Max. output current				
	I _{max, out}	[A]	2.0	2.7
Overload time				
	t _{ol}	[s]	60.0	
Recovery time				
	t _{ret}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	I _{max, out}	[A]	2.6	3.6
Overload time				
	t _{ol}	[s]	3.0	
Recovery time				
	t _{ret}	[s]	12.0	

1) Operating mode, increased rated power at 40 °C ambient temperature

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	0.37	0.55 ¹⁾	0.55	0.75 ¹⁾
Product key						
Drive Unit			E84DGDVB37142PS		E84DGDVB55142PS	
Motor mounting			E84DVBM3714□□□2□□		E84DVBM5514□□□2□□	
Wall mounting			Z□5□□□□□□□□137□□□□		Z□5□□□□□□□□155□□□□	
Power loss						
	P _R	[kW]	0.026		0.033	
Mass						
	m	[kg]	2.6			
Max. cable length						
Shielded motor cable ³⁾	l _{max}	[m]	20			

Brake chopper rated data

Rated power, brake chopper						
	P _{rated}	[kW]	0.4	0.5	0.6	0.7
Max. output power, brake chopper						
	P _{max, 1}	[kW]	0.6		0.8	
Min. brake resistor						
	R _{min}	[Ω]	90.0			

Dimensions

Dimensions			
Height	h	[mm]	109
Width	b	[mm]	161
Depth	t	[mm]	241

1) Operating mode, increased rated power at 40 °C ambient temperature
3) Technically possible cable lengths, irrespective of EMC requirements

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	0.75	1.10 ¹⁾	1.10	1.50 ¹⁾
Product key						
Drive Unit			E84DGDVB75142PS		E84DGDVB11242PS	
Motor mounting			E84DVBM7514□□□2□□		E84DVBM1124□□□2□□	
Wall mounting			Z□5□□□□□□□175□□□□		Z□5□□□□□□□211□□□□	
Mains voltage range						
	U _{AC}	[V]	3/PE AC 320 V-0 % ... 528 V+0 %, 45 Hz-0 % ... 65 Hz+0 %			
Rated mains current						
	I _{rated, AC}	[A]	2.4	2.9	3.2	3.8
Rated output current						
	I _{rated, out}	[A]	2.4	2.9	3.2	3.8
Rated switching frequency						
	f _{ch}	[kHz]	8	4	8	4
Output current						
4 kHz	I _{out}	[A]	2.4	2.9	3.2	3.8
8 kHz	I _{out}	[A]	2.4		3.2	
16 kHz	I _{out}	[A]	1.6		2.1	

4.2

Data for 60 s overload

Max. output current				
	I _{max, out}	[A]	3.6	4.8
Overload time				
	t _{ol}	[s]	60.0	
Recovery time				
	t _{ret}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	I _{max, out}	[A]	4.8	6.4
Overload time				
	t _{ol}	[s]	3.0	
Recovery time				
	t _{ret}	[s]	12.0	

1) Operating mode, increased rated power at 40 °C ambient temperature

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	0.75	1.10 ¹⁾	1.10	1.50 ¹⁾
Product key						
Drive Unit			E84DGDVB75142PS		E84DGDVB11242PS	
Motor mounting			E84DVBM7514□□□2□□		E84DVBM1124□□□2□□	
Wall mounting			Z□5□□□□□□□175□□□□		Z□5□□□□□□□211□□□□	
Power loss						
	P _R	[kW]	0.041		0.052	
Mass						
	m	[kg]	2.6			
Max. cable length						
Shielded motor cable ³⁾	l _{max}	[m]	20			

Brake chopper rated data

Rated power, brake chopper						
	P _{rated}	[kW]	0.8	0.9	1.1	1.3
Max. output power, brake chopper						
	P _{max, 1}	[kW]	1.3		1.7	
Min. brake resistor						
	R _{min}	[Ω]	90.0			

Dimensions

Dimensions						
Height	h	[mm]	109			
Width	b	[mm]	161			
Depth	t	[mm]	241			

1) Operating mode, increased rated power at 40 °C ambient temperature

3) Technically possible cable lengths, irrespective of EMC requirements

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	1.50	2.20 ^{1) 2)}	2.20	3.00 ¹⁾
Product key						
Drive Unit			E84DGDVB15242PS		E84DGDVB22242PS	
Motor mounting			E84DVB1524□□□2□□		E84DVB2224S□□□2□□	
Wall mounting			Z□5□□□□□□□□215□□□□		Z□5□□□□□□□□222□□□□	
Mains voltage range						
	U _{AC}	[V]	3/PE AC 320 V-0 % ... 528 V+0 %, 45 Hz-0 % ... 65 Hz+0 %			
Rated mains current						
	I _{rated, AC}	[A]	3.8	4.6	5.5	6.7
Rated output current						
	I _{rated, out}	[A]	3.9	4.7	5.6	6.7
Rated switching frequency						
	f _{ch}	[kHz]	8	4	8	4
Output current						
4 kHz	I _{out}	[A]	3.9	4.7	5.6	6.7
8 kHz	I _{out}	[A]	3.9		5.6	
16 kHz	I _{out}	[A]	2.6		3.7	

4.2

Data for 60 s overload

Max. output current				
	I _{max, out}	[A]	5.9	8.4
Overload time				
	t _{ol}	[s]	60.0	
Recovery time				
	t _{ret}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	I _{max, out}	[A]	7.8	11.2
Overload time				
	t _{ol}	[s]	3.0	
Recovery time				
	t _{ref}	[s]	12.0	

1) Operating mode, increased rated power at 40 °C ambient temperature

2) Only applies to motor mounting

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	1.50	2.20 ^{1) 2)}	2.20	3.00 ¹⁾
Product key						
Drive Unit			E84DGDVB15242PS		E84DGDVB22242PS	
Motor mounting			E84DVBM1524□□□2□□		E84DVBM2224□□□2□□	
Wall mounting			Z□5□□□□□□□□215□□□□		Z□5□□□□□□□□222□□□□	
Power loss						
	P _R	[kW]	0.061		0.088	
Mass						
	m	[kg]	2.6		3.5	
Max. cable length						
Shielded motor cable ³⁾	l _{max}	[m]	20			

Brake chopper rated data

Rated power, brake chopper						
	P _{rated}	[kW]	1.5	1.8	2.2	2.6
Max. output power, brake chopper						
	P _{max, 1}	[kW]	2.3		3.3	
Min. brake resistor						
	R _{min}	[Ω]	90.0		90.0	

Dimensions

Dimensions						
Height	h	[mm]	109		135	
Width	b	[mm]	161		176	
Depth	t	[mm]	241		261	

1) Operating mode, increased rated power at 40 °C ambient temperature

2) Only applies to motor mounting

3) Technically possible cable lengths, irrespective of EMC requirements

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	3.00	4.00 ^{1) 2)}	4.00	5.50 ¹⁾
Product key						
Drive Unit			E84DGDVB30242PS		E84DGDVB40242PS	
Motor mounting			E84DVB3024□□□2□□		E84DVB40242□□□2□□	
Wall mounting			Z□5□□□□□□□□230□□□□		Z□5□□□□□□□□240□□□□	
Mains voltage range						
	U _{AC}	[V]	3/PE AC 320 V-0 % ... 528 V+0 %, 45 Hz-0 % ... 65 Hz+0 %			
Rated mains current						
	I _{rated, AC}	[A]	7.2	8.6	9.3	11.3
Rated output current						
	I _{rated, out}	[A]	7.3	8.8	9.5	11.4
Rated switching frequency						
	f _{ch}	[kHz]	8	4	8	4
Output current						
4 kHz	I _{out}	[A]	7.3	8.8	9.5	11.4
8 kHz	I _{out}	[A]	7.3		9.5	
16 kHz	I _{out}	[A]	4.9		6.3	

4.2

Data for 60 s overload

Max. output current				
	I _{max, out}	[A]	11.0	14.3
Overload time				
	t _{ol}	[s]	60.0	
Recovery time				
	t _{ret}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	I _{max, out}	[A]	14.6	19.0
Overload time				
	t _{ol}	[s]	3.0	
Recovery time				
	t _{ret}	[s]	12.0	

1) Operating mode, increased rated power at 40 °C ambient temperature

2) Only applies to motor mounting

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

Typ. motor power				
4-pole asynchronous motor	P	[kW]	3.00	4.00 ^{1) 2)}
Product key				
Drive Unit			E84DGDVB30242PS	E84DGDVB40242PS
Motor mounting			E84DVBM3024□□□2□□	E84DVBM40242□□□2□□
Wall mounting			Z□5□□□□□□□□230□□□□	Z□5□□□□□□□□240□□□□
Power loss				
	P _R	[kW]	0.11	0.14
Mass				
	m	[kg]	3.5	5.3
Max. cable length				
Shielded motor cable ³⁾	I _{max}	[m]	20	

Brake chopper rated data

Rated power, brake chopper				
	P _{rated}	[kW]	3.0	4.0
Max. output power, brake chopper				
	P _{max, 1}	[kW]	4.5	5.5
Min. brake resistor				
	R _{min}	[Ω]	90.0	47.0

Dimensions

Dimensions				
Height	h	[mm]	135	176
Width	b	[mm]	176	195
Depth	t	[mm]	261	325

1) Operating mode, increased rated power at 40 °C ambient temperature

2) Only applies to motor mounting

3) Technically possible cable lengths, irrespective of EMC requirements

Inverter Drives 8400 motec

Technical data



Rated data 400 V

- The data applies to operation at 400 V AC.
- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	5.50	7.50 ¹⁾	7.50	9.20 ^{1) 4)}
Product key						
Drive Unit			E84DGDVB55242PS		E84DGDVB75242PS	
Motor mounting			E84DVBM5524□□□2□□		E84DVBM7524□□□2□□	
Wall mounting			Z□5□□□□□□□□255□□□□		Z□5□□□□□□□□275□□□□	
Mains voltage range						
	U _{AC}	[V]	3/PE AC 320 V-0 % ... 528 V+0 %, 45 Hz-0 % ... 65 Hz+0 %			
Rated mains current						
	I _{rated, AC}	[A]	12.8	15.4	16.3	19.6
Rated output current						
	I _{rated, out}	[A]	13.0	15.6	16.5	19.8
Rated switching frequency						
	f _{ch}	[kHz]	8	4	8	4
Output current						
4 kHz	I _{out}	[A]	13.0	15.6	16.5	19.8
8 kHz	I _{out}	[A]	13.0		16.5	
16 kHz	I _{out}	[A]	8.7		11.0	

4.2

Data for 60 s overload

Max. output current				
	I _{max, out}	[A]	19.5	24.8
Overload time				
	t _{ol}	[s]	60.0	
Recovery time				
	t _{ret}	[s]	120.0	

Data for 3 s overload

Max. short-time output current				
	I _{max, out}	[A]	26.0	33.0
Overload time				
	t _{ol}	[s]	3.0	
Recovery time				
	t _{ret}	[s]	12.0	

1) operating mode, increased rated power at 40 °C ambient temperature.

4) Operation at 9.2 kW is not permitted with the Q8/0 connector.

Inverter Drives 8400 motec

Technical data



Rated data 400 V

The data applies to operation at 400 V AC.

- Unless otherwise specified, the data refers to the default setting.
- The product key of the inverter for motor mounting is specified in the technical data tables.
- For wall mounting of devices up to 3 kW, the corresponding derating figures in the hardware manual must be observed.

						
Typ. motor power						
4-pole asynchronous motor	P	[kW]	5.50	7.50 ¹⁾	7.50	9.20 ^{1) 4)}
Product key						
Drive Unit			E84DGDVB55242PS		E84DGDVB75242PS	
Motor mounting			E84DVBM5524□□□2□□		E84DVBM7524□□□2□□	
Wall mounting			Z□5□□□□□□□255□□□□		Z□5□□□□□□□275□□□□	
Power loss						
	P _R	[kW]	0.19		0.23	
Mass						
	m	[kg]	5.3			
Max. cable length						
Shielded motor cable ³⁾	l _{max}	[m]	20			

Brake chopper rated data

Rated power, brake chopper						
	P _{rated}	[kW]	5.5	6.6	7.5	9.2
Max. output power, brake chopper						
	P _{max, 1}	[kW]	7.5		9.2	
Min. brake resistor						
	R _{min}	[s]	47.0			

Dimensions

Dimensions						
Height	h	[mm]	176			
Width	b	[mm]	195			
Depth	t	[mm]	325			

1) operating mode, increased rated power at 40 °C ambient temperature.

3) Technically possible cable lengths, irrespective of EMC requirements

4) Operation at 9.2 kW is not permitted with the Q8/0 connector.

Inverter Drives 8400 motec

Technical data



Mains connection

- The data given for mains fuses and cable cross-sections is intended for a mains connection of 3 x 400 V for individual connection.
- Class gG/gI fuses or class gRL semiconductor fuses.
- The cable cross-sections apply to PVC-insulated copper cables.
- Use for installation with UL-approved cables, fuses and brackets.

Typ. motor power	Mains voltage	Automatic circuit breaker	Fuse		Mains connection
4-pole asynchronous motor			EN 60204-1	UL	Cross-section (w/o power choke)
P	U _{AC}	I	I	I	q
[kW]	[V]	[A]	[A]	[A]	[mm ²]
0.37	3 AC 320 ... 528	C16	16	15	2.5
0.55					
0.75					
1.10					
1.50					
2.20					
3.00					
4.00					
5.50		C20	20	20	4.0
7.50					

4.2

Motor connection

- Keep motor cables as short as possible, as this has a positive effect on the drive behaviour.
- For group drives (several motors on one inverter), the resulting cable length is authoritative. This can be calculated using the hardware manual.
- Electric strength of the motor cable:
1 kV according to VDE 250-1.

EMC			
Interference emission (in TN and TT networks)			
Cable-guided	EN 61800-3		
Motor mounting		0.37 ... 1.5 kW, $f_{ch} \leq 8$ kHz	Category C1
		2.2 ... 3.0 kW, $f_{ch} \leq 4$ kHz	Category C1
		4.0 ... 7.5 kW	Category C2
Wall mounting and Lenze system cable 20 m	EN 61800-3	0.37 ... 7.5 kW, $f_{ch} \leq 4$ kHz	Category C2
Wall mounting and Lenze system cable 10 m	EN 61800-3	0.37 ... 7.5 kW, $f_{ch} \leq 8$ kHz	Category C2
Radiation	EN 61800-3	0.37 ... 1.5 kW, $f_{ch} \leq 8$ kHz	Category C1
		2.2 ... 7.5 kW, $f_{ch} \leq 8$ kHz	Category C2

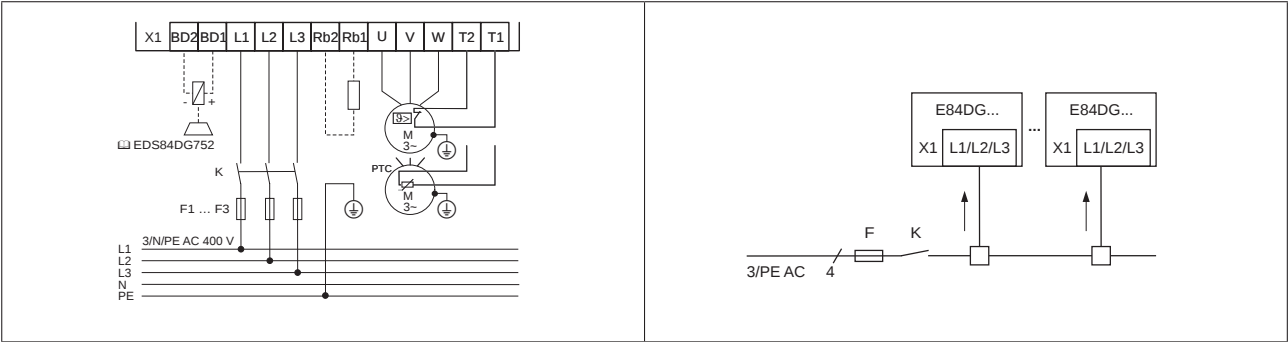


Electrical installation

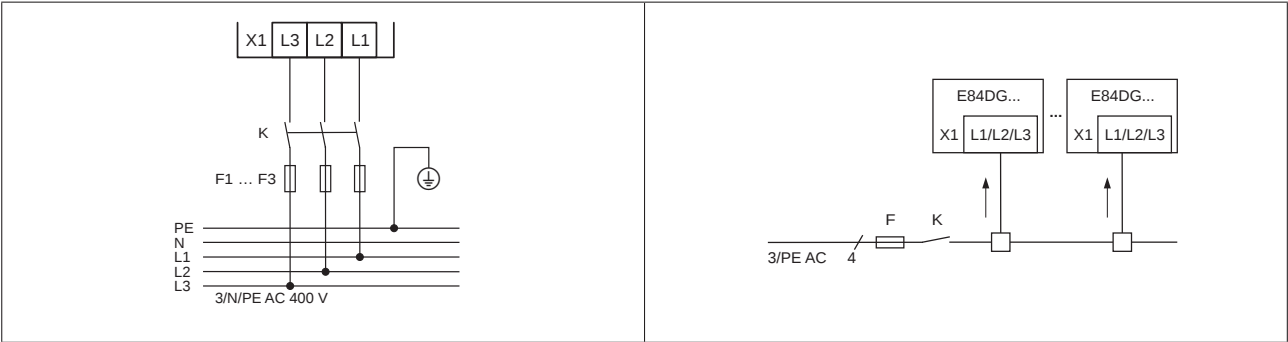
Power connections

Basic circuit diagram

0.37 ... 3 kW



4 ... 7.5 kW



Inverter Drives 8400 motec

Units



Communication Units

The communication units support the following functions:

- Control of inverters via digital and analog signals
- Control of the inverter via the fieldbus systems
- Support for “safe torque off” functionality
- Connection options for sensors and actuators
- The sensors can be powered by the internal 24V supply
- Connection options via cable glands and M12 connector. A total of up to 8 screwed connections / plugs can be used. Depending on their function, the individual communication units are equipped with the corresponding connections by default.



Communication Unit

	Controller enable	Digital inputs	Digital outputs	Relay outputs	Analog inputs	Safety STO 2 channels (S1A and S1B)	External DC 24V supply
	Number	Number	Number	Number	Number	Number	Number
I/O modules							
Basic I/O	1	2		1			
Standard I/O	1	5	1	1	1		1
Standard I/O + M12	1	5	1	1	1		1
Extended I/O	1	8	1	1	2		
Fieldbus							
AS interface / standard I/O	1	5	1				
AS interface / enhanced I/O							
CANopen / standard I/O							
CANopen / enhanced I/O							
EtherCAT / standard I/O	1	5	1				1
EtherCAT enhanced I/O							
EtherNet / IP / standard I/O							
EtherNet / IP / enhanced I/O							
POWERLINK / standard I/O							
POWERLINK / enhanced I/O							
PROFIBUS / standard I/O							
PROFIBUS / enhanced I/O							
PROFINET / standard I/O							
PROFINET / enhanced I/O							
Fieldbus with safety							
AS interface STO / standard I/O	1	5	1	1	1	1	1
AS interface STO / enhanced I/O							
CANopen STO / standard I/O							
CANopen STO / enhanced I/O							
EtherCAT STO / standard I/O							
EtherCAT STO / enhanced I/O							
EtherNet/IP STO / standard I/O							
EtherNet / IP STO / enhanced I/O							
POWERLINK STO / standard I/O							
POWERLINK STO / enhanced I/O							
PROFIBUS STO / standard I/O							
PROFIBUS STO / enhanced I/O							
PROFINET STO / standard I/O							
PROFINET STO / enhanced I/O							

4.2

Inverter Drives 8400 motec

Units



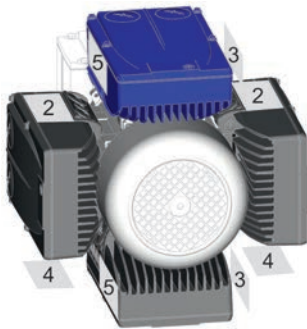
General technical data

Mode	
Product	8400 motec
Analog inputs	
	Switchable: Voltage or current input
Resolution	10 bit
Value range	0 ... 10 V, 0/4 ... 20 mA
Value range extended I/O	-10 ... +10 V
Digital inputs	
Switching level	PLC (IEC 61131-2)
Function	Parameterisable
Digital outputs	
Switching level	PLC (IEC 61131-2)
Max. output current	50 mA
Function	Parameterisable
Relay	
Contact	NO contact
Connection	250 V AC, 3 A
Connection	DC 24 V, 2 A ... 240 V, 0.16 A
Function	Parameterisable
External 24 V DC supply	
	To support communication when the 400 V is switched off
Internal 24 V DC supply	
	Max. 100 mA for inputs/outputs and sensor feeds
Interfaces	
Extensions	Fieldbus via communication unit
Safety technology	Dual-channel STO input
Drive interface	
Encoder input	Via 2 digital inputs, HTL, 2-track, 7.5 kHz / 10 kHz



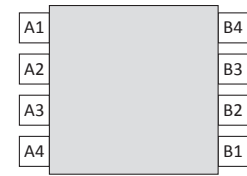
Terminal box position

Standard installation is position 2. Derating must be considered for all other mounting positions. (See hardware manual)



Connection positions

Connection designation



The basic design of the communication units includes standard positions for the M12 connectors. These can be seen in the respective data tables on the following pages. The connection position of the M12 connectors for the IOs and the mains connection (fieldbus) can be selected in the Lenze configuration tool »Product Finder«.

Inverter Drives 8400 motec

Units



Safety technology

The "safe torque off (STO)" safety function can be integrated into the communication unit in addition to the communication unit. This combination is available with any fieldbus.

Communication Unit	AS-Interface STO	CANopen STO	EtherCAT STO	EtherNet/IP STO	POWERLINK STO	PROFIBUS STO	PROFINET STO
Certification							
EN ISO 13849-1	PLe Category 4						
EN 61800-5-2	SIL 3						
EN 62061	SIL 3						
IEC 61508	SIL 3						
Fail-safe state							
	Safe torque off						

Inverter Drives 8400 motec

Units



Communication Unit Basic I/O

The Communication Unit Basic I/O provides the inverter with a minimum number of digital inputs and outputs for the simplest operations.



Communication Unit Basic I/O

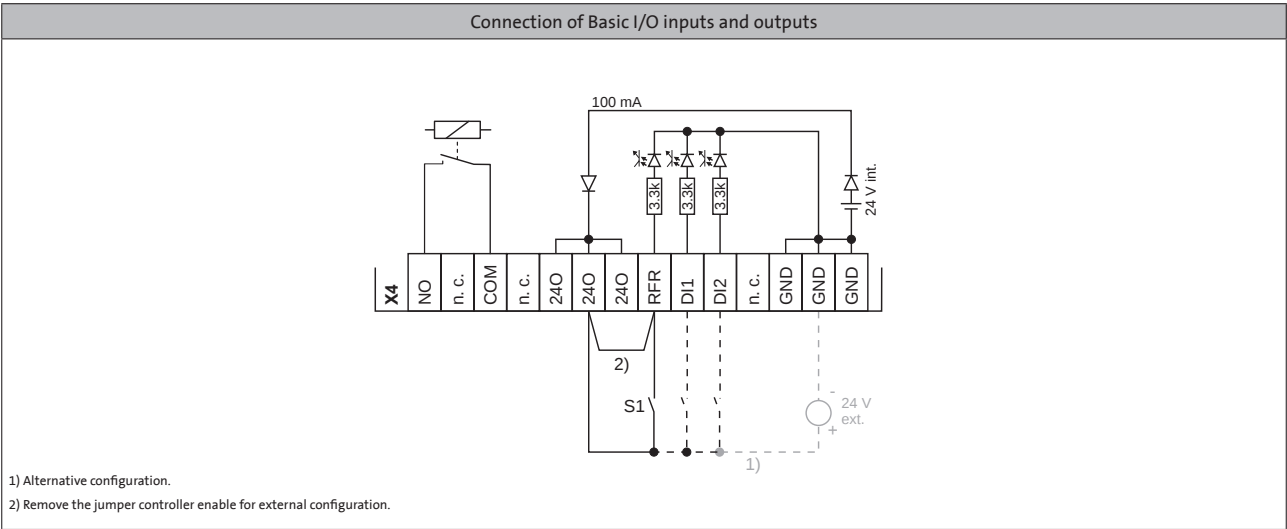
Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Connections

Mode	Features		Connections	Cable glands (possible connections)	Product key
Basic I/O	Controller enable Digital inputs Digital output Analog input Relay Safety function STO 24 V DC external	RFR DI DO AI NO STO 24 V	1 2 - - 1 -	A1 A2 A3 A4 B4 B3 B2 B1	E84DGFCNNNP



Inverter Drives 8400 motec

Units



Communication Unit Standard I/O

The Communication Unit Standard I/O provides the inverter with a number of digital inputs and outputs and is mainly intended for standard applications.



Communication Unit Standard I/O

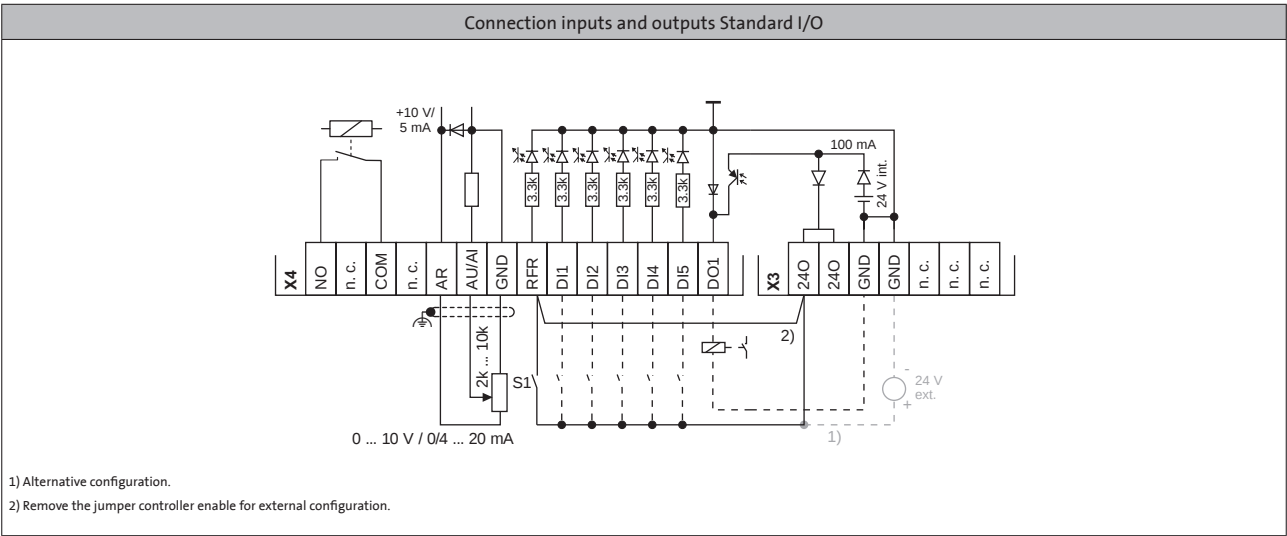
Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Connections

Mode	Features		Connections	Cable glands (possible connections)	Product key
Standard I/O	Controller enable Digital inputs Digital output Analog input Relay Safety function STO 24 V DC external	RFR DI DO AI NO STO 24 V	1 5 1 1 1 - -	A1 A2 A3 A4 B4 B3 B2 B1	E84DGFCNNP



Inverter Drives 8400 motec

Units



Communication Unit Standard I/O + M12

The Communication Unit Standard I/O provides the inverter with a number of digital inputs and outputs and is mainly intended for standard applications.



Communication Unit Standard I/O + M12

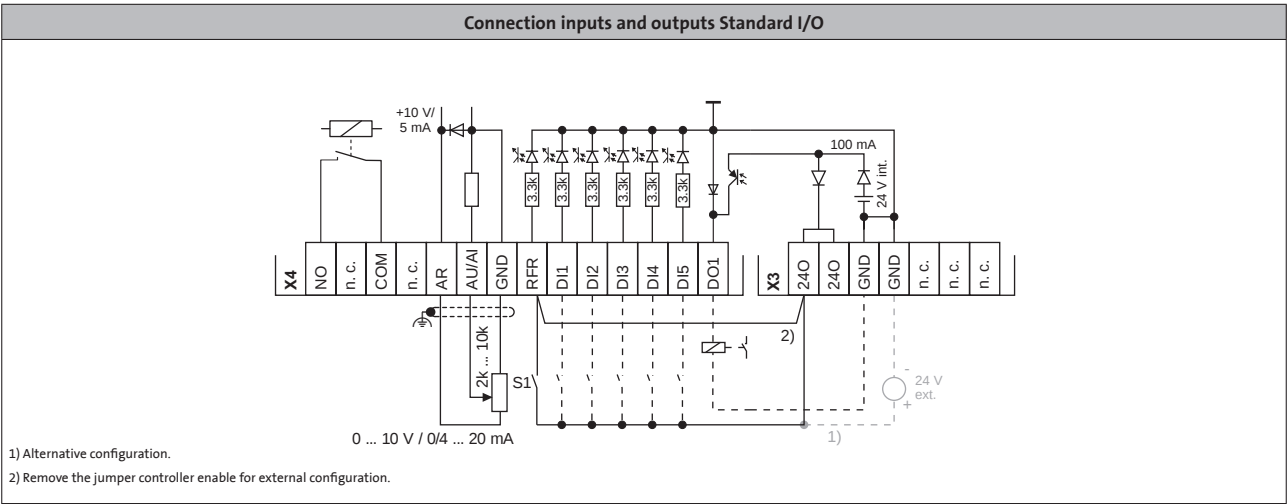
Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Connections

Mode	Features		Connections	Cable glands (possible connections)	Product key
Standard I/O	Controller enable Digital inputs Digital output Analog input Relay Safety function STO 24 V DC external	RFR DI DO AI NO STO 24 V	1 5 1 1 1 - -	A1 A2 A3 A4 B4 B3 B2 B1	E84DGFC51NP



M12 connector pin assignment

E84DGFC51NP					
		A1		A2	
	2 3 50 1 4 M12 female socket A-coding	1 240 2 DI2 3 GND 4 DI1 5 n. c.	2 3 50 1 4 M12 female socket A-coding	1 240 2 DI3 3 GND 4 DO1 5 n. c.	

Inverter Drives 8400 motec

Units



Communication Unit Extended I/O

In addition to the standard I/O, the Communication Unit Extended I/O provides the inverter with two additional digital inputs and one analog input and is intended for use with higher-order applications.



Communication Unit Extended I/O

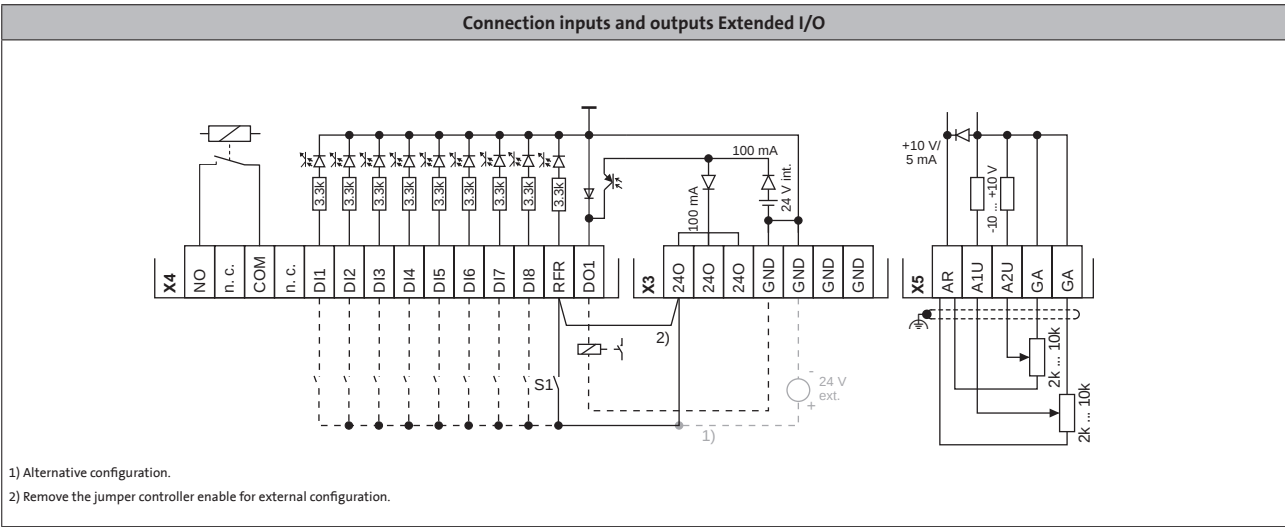
Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Connections

Mode	Features		Connections	Cable glands (possible connections)	Product key
Extended I/O	Controller enable Digital inputs Digital output Analog input Relay Safety function STO 24 V DC external	RFR DI DO AI NO STO 24 V	1 8 1 2 1 - -	A1 A2 A3 A4 B4 B3 B2 B1	E84DGFCXNNP



Inverter Drives 8400 motec

Units



Communication Unit AS Interface (AS-i)

The Communication Unit AS Interface allows control of the 8400 motec by sending digital control signals. The AS-i bus system has become the established solution for transferring digital signals on the lowest field level. It is designed for applications that do not require the use of powerful fieldbus systems. The advantages of this system are:

- Easy handling and commissioning
- Reduction of wiring complexity
- Easy integration into existing systems
- Cost reductions



Communication Unit AS Interface

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U_{AC}	[V]	50.0

Technical data

Standard			EN 50295 / IEC 62026-2
Communication			
Communication profile			AS-Interface V3.0
Medium			2-wire cable for data and auxiliary power
Network topology			Free topology (line, ring, tree, star)
Bus nodes			Slave (single or dual) max. 31 standard slaves or safe slaves Max. 62 A/B slaves
Number of bus nodes			1 ... 31
Max. cable length			
per bus segment	I_{max}	[m]	100 without repeaters / extenders 300 including 2 repeaters / extenders 500 only for star-shaped mains including repeaters / extenders
Transfer rate		[kbps]	167 (gross value) 53 (net at data transmission = 32%)
Rated voltage			
	$U_{rated, DC}$	[V]	24.0



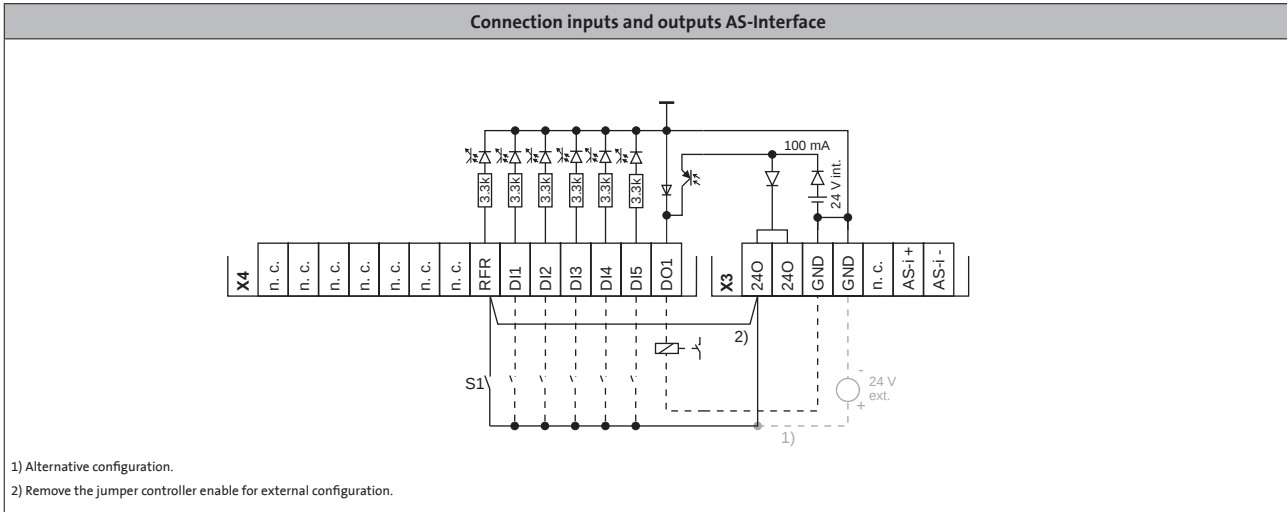
Communication Unit AS Interface (AS-i)

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
AS interface / standard I/O	Controller enable (RFR)	1			E84DGFCAFNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	ASI+/ASI-	ASI+/ASI- to A2		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
AS interface / enhanced I/O	Controller enable (RFR)	1			E84DGFC AENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	ASI+/ASI-	ASI+/ASI- to A2		

4.2



M12 connector pin assignment

E84DGFCxFNx	●		
E84DGFCxENx	●	●	
 M12 male socket A-coding	A2		 vM12 female socket A-coding
	1	AS-i+ (IN)	
	2	n. c.	
	3	AS-i- (OUT)	
	4	n. c.	
	5	n. c.	
 M12 female socket A-coding	A4		
	1	24O	
	2	DI2	
	3	GND	
	4	DI1	
	5	n. c.	
	B4		
	1	24O	
	2	DI3	
	3	GND	
	4	DO1	
	5	n. c.	

Inverter Drives 8400 motec

Units



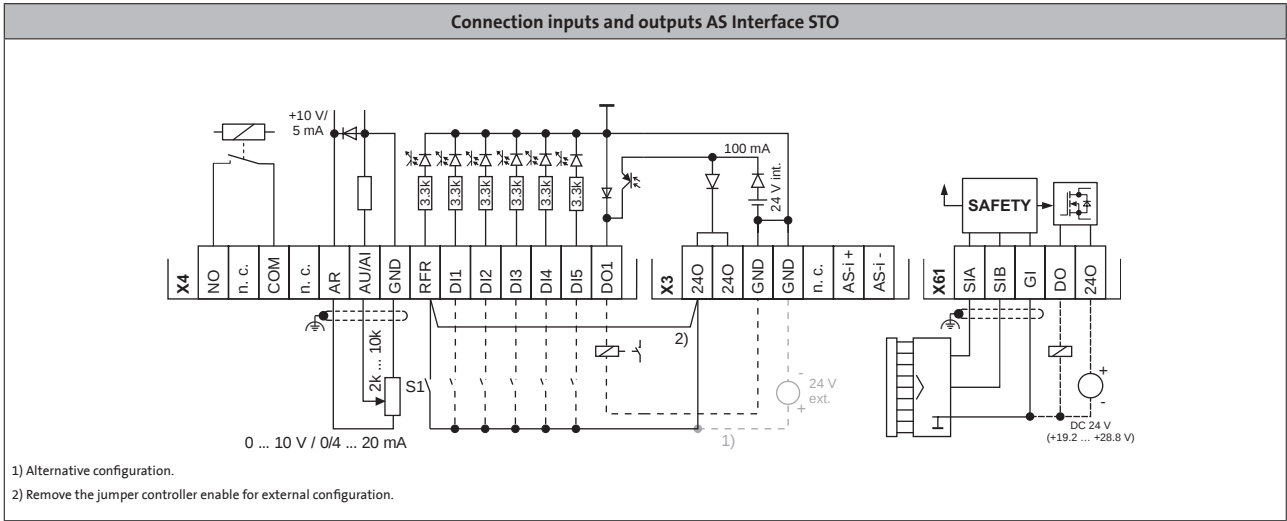
Communication Unit AS Interface (AS-i)

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
AS interface STO / standard I/O	Controller enable (RFR)	1			E84DGFCAFJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	ASI+/ASI-	ASI+/ASI- to A2		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
AS interface STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCAEJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	LED network		LED to A1		
	Network	ASI+/ASI-	ASI+/ASI- to A2		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		

4.2



M12 connector pin assignment

E84DGFCxJx	●							
E84DGFCxEJx	●		●					
			A2			B2	B3	
		1	AS-i+ (IN)		1	24O	24O	
		2	n. c.		2	AU/AI	DO1	
		3	AS-i- (OUT)		3	GND	GND	
		4	n. c.		4	Controller	COM	
		5	n. c.		5	n. c.	NO	
	M12 male socket A-coding		M12 female socket A-coding					
			A4			B4		
		1	24O		1	SIA		
		2	DI2		2	SIB		
3		GND	3		DO			
4		DI1	4		24O			
5		n. c.	5		GI			
M12 female socket A-coding		M12 male socket A-coding						

Inverter Drives 8400 motec

Units



Communication Unit CANopen

The Communication Unit CANopen allows control of the 8400 motec by sending digital control signals via the "CANopen" bus system.

- The advantages of this system are:
- Straightforward, yet extremely powerful, bus system
- Cost-effective
- Easy system integration, as there is a wide range of sensors and actuators available on the market.



Communication Unit CANopen

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Technical data

Communication			
Medium			DIN ISO 11898
Communication profile			CANopen, DS301 V4.02 Lenze system bus
Baud rate	b	[kbps]	20 50 125 250 500 800 1000
Bus nodes			Slave Mini master
Network topology			Line with terminating resistor of 120 Ω on both sides
Number of logical process data channels			2 transmit PDOs and 2 receive PDOs (each with 1 ... 8 bytes)
Number of logical parameter data channels			max. 2 server SDO channels (with 1 ... 8 bytes)
Number of bus nodes			63
Max. cable length	I _{max}	[m]	13 at 1000 kbps 38 at 800 kbps 113 at 500 kbps 275 at 250 kbps 600 at 125 kbps 1575 at 50 kbps 4013 at 20 kbps
Rated voltage			
	U _{rated, DC}	[V]	24.0



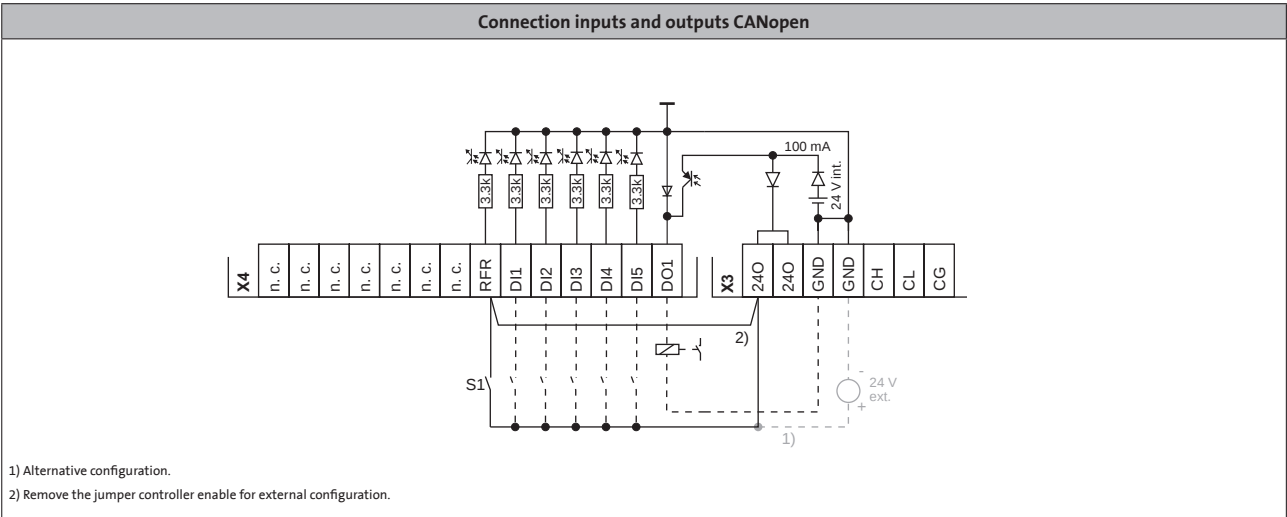
Communication Unit CANopen

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
CAN / standard I/O	Controller enable (RFR)	1			E84DGFCFNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	Network	CAN input	CAN input to A2		
	Network	CAN output	CAN output to A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
CAN / enhanced I/O	Controller enable (RFR)	1			E84DGFCENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	Network	CAN input	CAN input to A2		
	Network	CAN output	CAN output to A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●		●					
E84DGFCxENx	●		●		●			
 M12 male socket A-coding	A2		A4		B4			
	1	n. c.	 M12 female socket A-coding	1	24O	 M12 female socket A-coding	1	24O
	2	n. c.		2	DI2		2	DI3
	3	CG		3	GND		3	GND
	4	CH		4	DI1		4	DO1
	5	CL		5	n. c.		5	n. c.
 M12 female socket A-coding	A3							
	1	n. c.						
	2	n. c.						
	3	CG						
	4	CH						
	5	CL						

Inverter Drives 8400 motec

Units



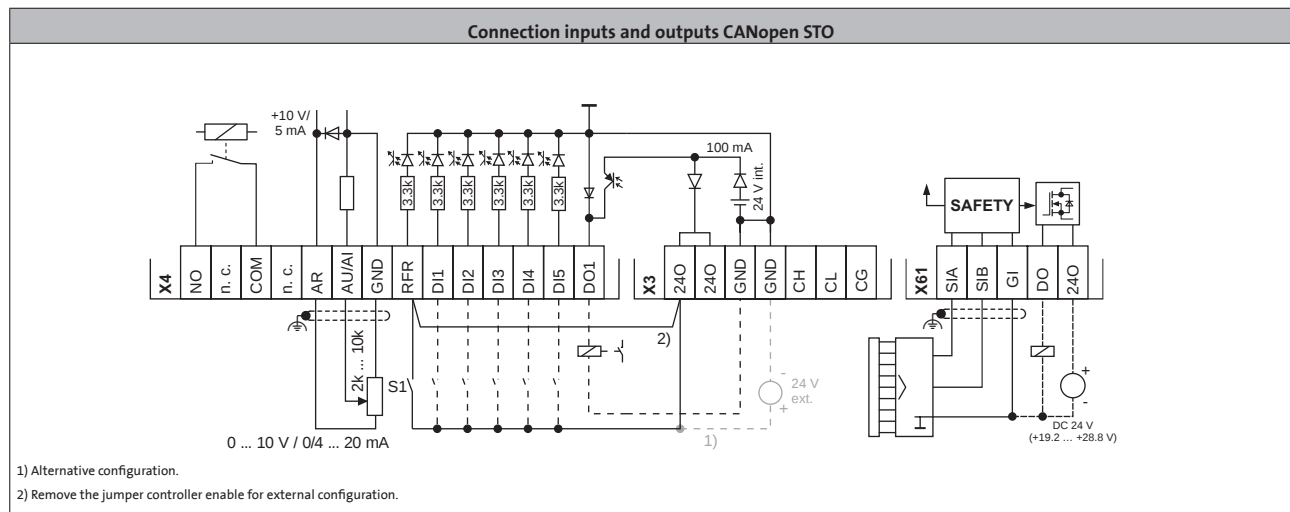
Communication Unit CANopen

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
CAN STO / standard I/O	Controller enable (RFR)	1			E84DGFCFJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	Network	CAN input	CAN input to A2		
	Network	CAN output	CAN output to A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
CAN STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCCEJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	Network	CAN input	CAN input to A2		
	Network	CAN output	CAN output to A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		

4.2



M12 connector pin assignment

E84DGFCxFJx	●		●							
E84DGFCxEJx	●		●		●					
 M12 male socket A-coding	A2		 M12 female socket A-coding	A4		 M12 female socket A-coding	B2	B3		
	1	n. c.		1	24O		1	24O	24O	
	2	n. c.		2	DI2		2	AU/AI	DO1	
	3	CG		3	GND		3	GND	GND	
	4	CH		4	DI1		4	Controller	COM	
	5	CL		5	n. c.		5	n. c.	NO	
	 M12 female socket A-coding	A3					 M12 male socket A-coding	B4		
		1						n. c.	1	SIA
		2						n. c.	2	SIB
		3						CG	3	DO
4		CH	4			24O				
5		CL	5			GI				

Inverter Drives 8400 motec

Units



Communication Unit EtherCAT®

With the Communication Unit EtherCAT®, the motec 8400 supports consistent communication from the field level to the management level. The advantages of this system are:

- Use of IT standards
- Integrated switch allows direct looping of EtherCAT® via the inverters
- Integrated I/O node. Capable of communication and reading inputs even when the 400 V supply is switched off.
- Option for connecting a 24 V supply



Communication Unit EtherCAT®

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

Technical data

Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 (2002)
Communication profile			CoE (CANopen over EtherCAT)
Baud rate			
	b	[kbps]	100
Bus nodes			
			Slave
Network topology			
			Line Switch
Number of logical process data channels			
			1
Process data words (PCD)			
to the master			1 ... 10 (max. 20 bytes, 16 bits / word)
from the master			1 ... 8 (max. 16 bytes, 16 bits / word)
Parameter data			
Max. mailbox size for CoE transfer		[Byte]	128
Number of bus nodes			
			Max. 65535
Max. cable length			
per bus segment	I _{max}	[m]	100 (typical)
Rated voltage			
	U _{rated, DC}	[V]	24.0

Inverter Drives 8400 motec

Units



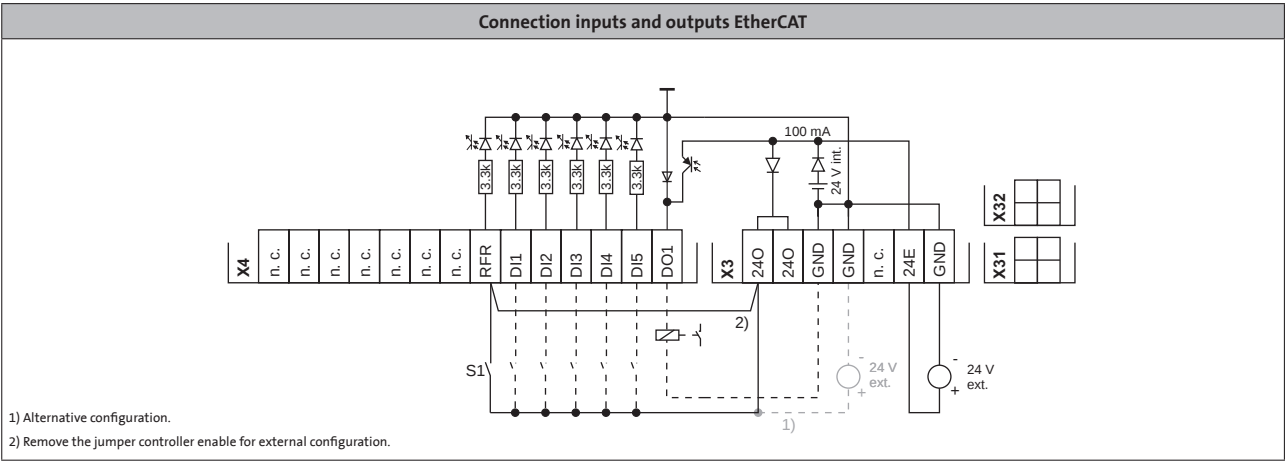
Communication Unit EtherCAT®

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherCAT / standard I/O	Controller enable (RFR)	1			E84DGFCTFNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	EtherCAT In	EtherCAT In to A2		
	Network	EtherCAT Out	EtherCAT Out to A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherCAT enhanced I/O	Controller enable (RFR)	1			E84DGFCTENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	EtherCAT In	EtherCAT In to A2		
	Network	EtherCAT Out	EtherCAT Out to A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●			●							
E84DGFCxENx	●			●			●				
 M12 female socket D-coding			A2	 M12 female socket A-coding			A4	 M12 female socket A-coding			B4
		1	TX+			1	240			1	240
		2	RX+			2	DI2			2	DI3
		3	TX-			3	GND			3	GND
		4	RX-			4	DI1			4	DO1
						5	n. c.			5	n. c.
 M12 female socket D-coding			A3								
		1	TX+								
		2	RX+								
		3	TX-								
		4	RX-								

Inverter Drives 8400 motec

Units

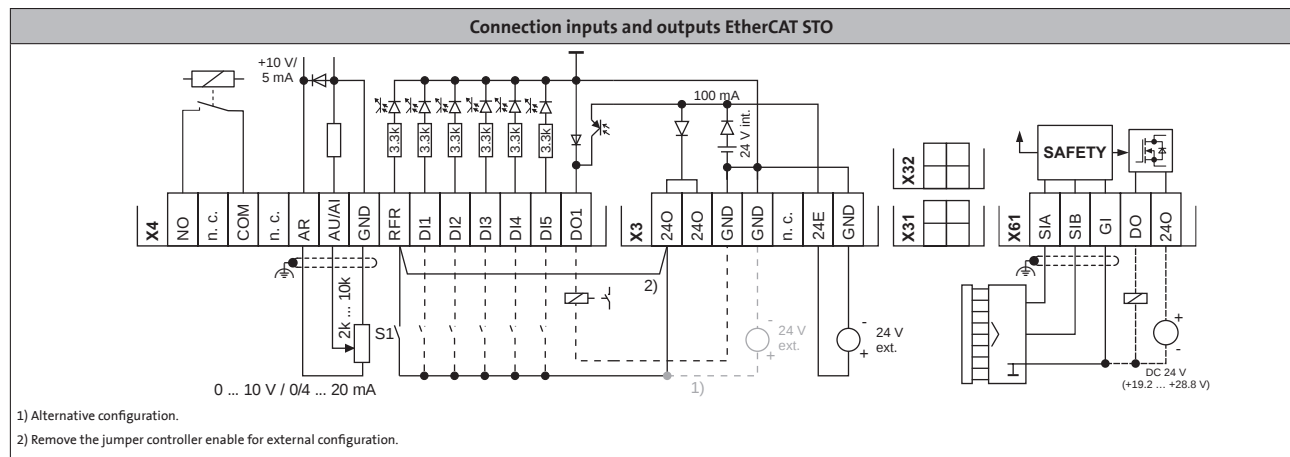


Communication Unit EtherCAT®

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherCAT STO / standard I/O	Controller enable (RFR)	1			E84DGFCTFJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	EtherCAT In	EtherCAT In to A2		
	Network	EtherCAT Out	EtherCAT Out to A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherCAT STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCTEJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)		AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)		NO/COM on B3		
	LED network		LED to A1		
	Network	EtherCAT In	EtherCAT In to A2		
	Network	EtherCAT Out	EtherCAT Out to A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		



M12 connector pin assignment

E84DGFcxFJx	●		●								
E84DGFcxEJx	●		●		●						
 M12 female socket D-coding	A2		 M12 female socket A-coding	A4		 M12 female socket A-coding	B2	B3			
	1	TX+		1	240		1	240	240		
	2	RX+		2	DI2		2	AU/AI	DO1		
	3	TX-		3	GND		3	GND	GND		
	4	RX-		4	DI1		4	Controller	COM		
				5	n. c.		5	n. c.	NO		
	 M12 female socket D-coding	A3					 M12 male socket A-coding	B4			
		1			TX+			1	SIA		
2		RX+	2		SIB						
3		TX-	3		DO						
4		RX-	4		240						
			5		GI						

Inverter Drives 8400 motec

Units



Communication Unit EtherNet/IP

The Communication Unit EtherNet/IP, based on standard TCP and UDP, supports continuous communication with the 8400 motec from the field level to the controlling system. The advantages of this system are:

- Currently widespread fieldbus based on real time Ethernet
- Supports DHCP and BootP in allocating the IP address
- Devices linked via EtherNet/IP can be implemented seamlessly and with minimum configuration effort via mapping into the I/O tree of the RSLogix programming tool.



Communication Unit EtherNet/IP

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U_{AC}	[V]	50.0

4.2

Technical data

Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 / EN50173
Communication profile			EtherNET/IP, AC Drive
Baud rate			
		[Mbps]	10/100 (full duplex/half duplex)
Bus nodes			
			Slave (Adapter)
Network topology			
			Tree, star and line
Number of logical process data channels			
			1
Process data words (PCD)			
16 bits			1 ... 16
Number of bus nodes			
			Max. 254 in the subnetwork
Max. cable length			
per bus segment	I_{max}	[m]	100
Rated voltage			
	$U_{rated, DC}$	[V]	24.0



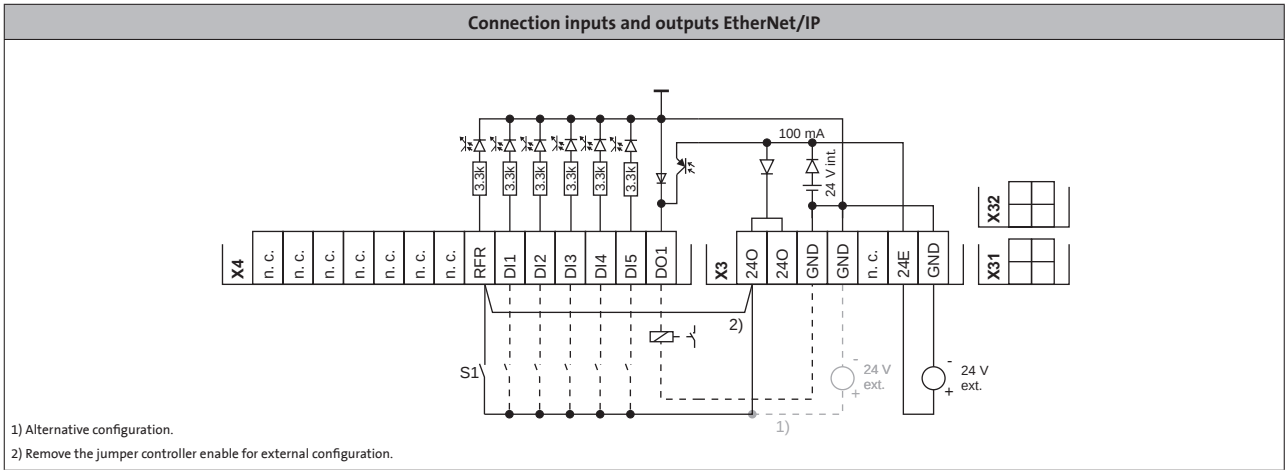
Communication Unit EtherNet/IP

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherNet / IP / standard I/O	Controller enable (RFR)	1			E84DGFCGFNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	EtherNet/IP Port 1	EtherNet/IP Port 1 to A2		
	Network	EtherNet/IP Port 2	EtherNet/IP Port 1 to A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherNet / IP / enhanced I/O	Controller enable (RFR)	1			E84DGFCGENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	EtherNet/IP Port 1	EtherNet/IP Port 1 to A2		
	Network	EtherNet/IP Port 2	EtherNet/IP Port 1 to A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●		●			
E84DGFCxENx	●		●		●	
 M12 female socket D-coding	A2		A4		B4	
	1	TX+	1	240	1	240
	2	RX+	2	DI2	2	DI3
	3	TX-	3	GND	3	GND
	4	RX-	4	DI1	4	DO1
			5	n. c.	5	n. c.
 M12 female socket D-coding	A3					
	1	TX+				
	2	RX+				
	3	TX-				
	4	RX-				

Inverter Drives 8400 motec

Units



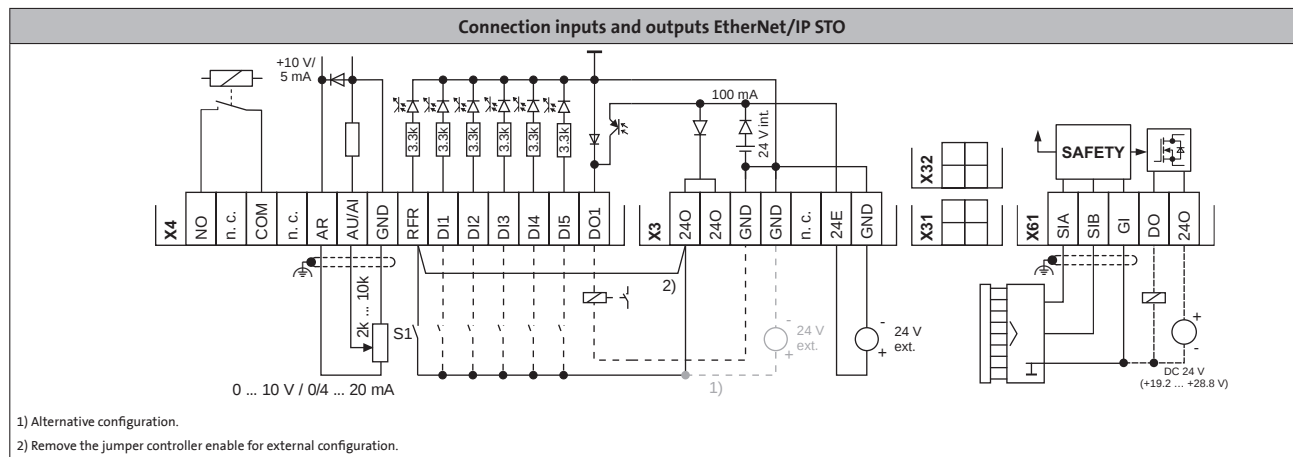
Communication Unit EtherNet/IP

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherNet/IP STO / standard I/O	Controller enable (RFR)	1			E84DGFCGFJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	EtherNet/IP Port 1	EtherNet/IP Port 1 to A2		
	Network	EtherNet/IP Port 2	EtherNet/IP Port 1 to A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
EtherNet / IP STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCGEJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	LED network		LED to A1		
	Network	EtherNet/IP Port 1	EtherNet/IP Port 1 to A2		
	Network	EtherNet/IP Port 2	EtherNet/IP Port 1 to A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		

4.2



M12 connector pin assignment

E84DGFCxJx	●		●							
E84DGFCxEJx	●		●		●					
 M12 female socket D-coding	A2		 M12 female socket A-coding	A4		 M12 female socket A-coding	B2		B3	
	1	TX+		1	24O		1	24O	24O	
	2	RX+		2	DI2		2	AU/AI	DO1	
	3	TX-		3	GND		3	GND	GND	
	4	RX-		4	DI1		4	Controller	COM	
				5	n. c.		5	n. c.	NO	
	A3						B4			
	 M12 female socket D-coding	1		TX+				 M12 male socket A-coding	1	SIA
2		RX+	2	SIB						
3		TX-	3	DO						
4		RX-	4	24O						
			5	GI						

Inverter Drives 8400 motec

Units



Communication Unit POWERLINK

POWERLINK is a real-time capable fieldbus system based on Ethernet. POWERLINK specifies a communications protocol based on CANopen in order to exchange usage data. The advantages of this system are:

- The integrated safety system can be used on machines for the protection of persons.
- Integrated I/O node. Capable of communication and reading inputs even when the 400 V supply is switched off.
- Option for connecting a 24 V supply



Communication Unit POWERLINK

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Technical data

Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 (2002)
Communication profile			Ethernet POWERLINK V2
Baud rate			
	b	[kbps]	100
Bus nodes			
			Controlled Node
Network topology			
			Tree, star and line
Number of logical process data channels			
			1
Process data words (PCD)			
16 bits			1 ... 6
Parameter data			
Max. mailbox size for CoE transfer		[Byte]	128
Number of bus nodes			
			Max. 239 in the subnetwork
Max. cable length			
per bus segment	I _{max}	[m]	100 (typical)
Rated voltage			
	U _{rated, DC}	[V]	24.0

Inverter Drives 8400 motec

Units



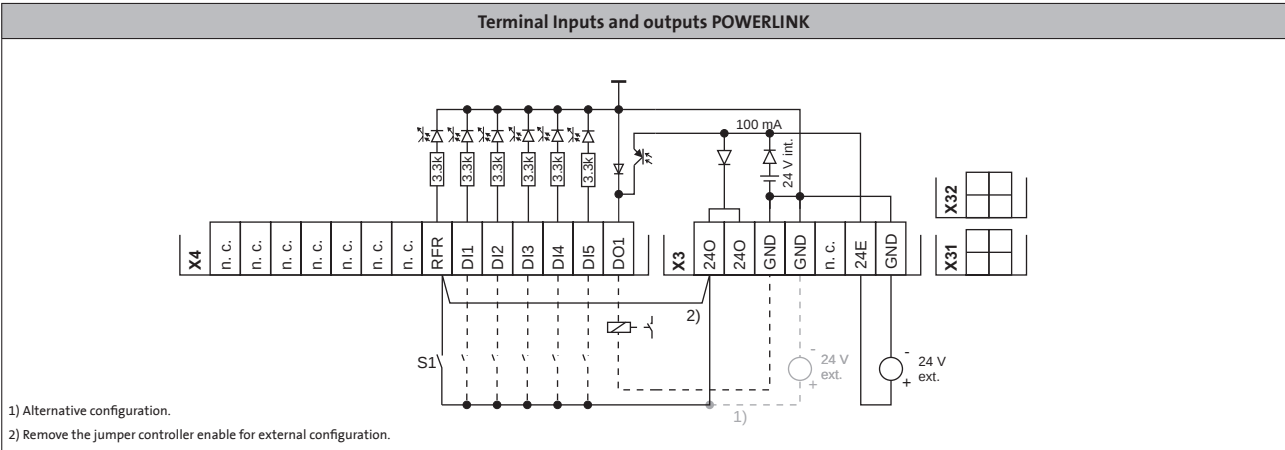
Communication Unit POWERLINK

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
POWERLINK / standard I/O	Controller enable (RFR)	1			E84DGFCLENP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	POWERLINK In	POWERLINK In on A2		
	Network	POWERLINK Out	POWERLINK Out on A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
POWERLINK / enhanced I/O	Controller enable (RFR)	1			E84DGFCLENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	POWERLINK In	POWERLINK In on A2		
	Network	POWERLINK Out	POWERLINK Out on A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●			●					
E84DGFCxENx	●			●			●		
			A2			A4			B4
	 M12 female socket D-coding	1	TX+	 M12 female socket A-coding	1	24O	 M12 female socket A-coding	1	24O
		2	RX+		2	DI2		2	DI3
		3	TX-		3	GND		3	GND
		4	RX-		4	DI1		4	DO1
					5	n. c.		5	n. c.
			A3						
	 M12 female socket D-coding	1	TX+						
2		RX+							
3		TX-							
4		RX-							

Inverter Drives 8400 motec

Units

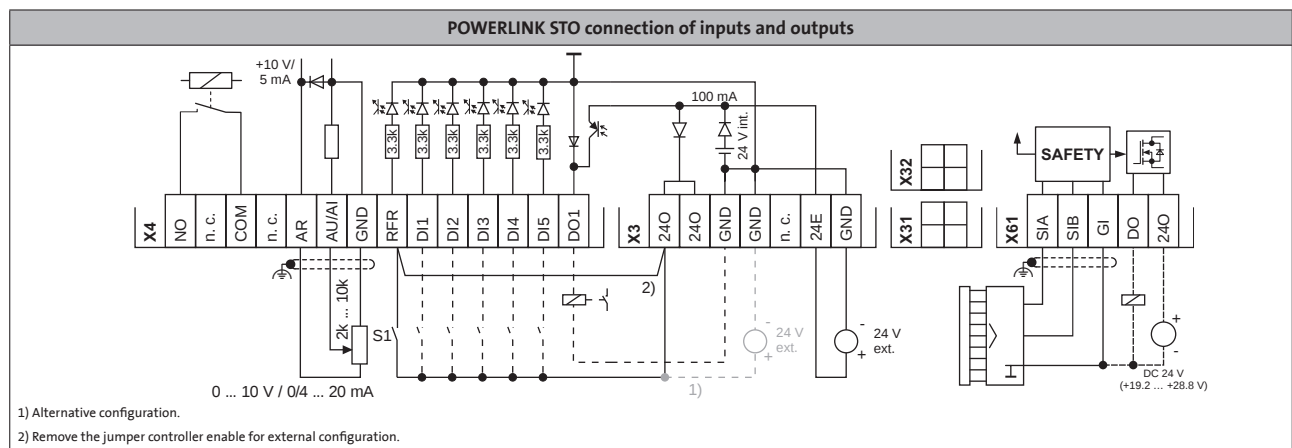


Communication Unit POWERLINK

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
POWERLINK STO / standard I/O	Controller enable (RFR)	1			E84DGFCLEJFP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	POWERLINK In	POWERLINK In on A2		
	Network	POWERLINK Out	POWERLINK Out on A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
POWERLINK STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCLEJFP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	LED network		LED to A1		
	Network	POWERLINK In	POWERLINK In on A2		
	Network	POWERLINK Out	POWERLINK Out on A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		



M12 connector pin assignment

E84DGFCxJx	●		●									
E84DGFCxEJx	●		●		●							
 M12 female socket D-coding	A2		 M12 female socket A-coding	A4		 M12 female socket A-coding	B2		B3			
	1	TX+		1	24O		1	24O	24O			
	2	RX+		2	DI2		2	AU/AI	DO1			
	3	TX-		3	GND		3	GND	GND			
	4	RX-		4	DI1		4	Controller	COM			
				5	n. c.		5	n. c.	NO			
	A3						B4					
	 M12 female socket D-coding	1		TX+				 M12 male socket A-coding	1	SIA		
		2		RX+					2	SIB		
		3		TX-					3	DO		
4		RX-	4	24O								
			5	GI								

Inverter Drives 8400 motec

Units



Communication Unit PROFIBUS

The 8400 motec uses the Communication unit PROFIBUS to support the currently popular fieldbus system. The advantages of this system are:

- Widely used and extremely powerful fieldbus system
- Integrated I/O node. Capable of communication and reading inputs even when the 400 V supply is switched off.
- Option for connecting a 24 V supply



Communication Unit PROFIBUS

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U _{AC}	[V]	50.0

4.2

Technical data

Communication			
Medium			RS 485
Communication profile			PROFIBUS-DP-V0 (DRIVECOM) PROFIBUS-DP-V1 (PROFIdrive)
Baud rate			
	b	[kbps]	9.6 ... 12000 (automatic detection)
Bus nodes			
			Slave
Network topology			
			with repeater: Line or tree without repeater: Line
Process data words (PCD)			
16 bits			1 ... 8
DP user data length			
			Optional parameter channel (4 words) + process data words Acyclic parameter data channel (DP-V1): max 240 bytes
Number of bus nodes			
			31 slaves + 1 master per bus segment With repeaters: 125
Max. cable length			
per bus segment	I _{max}	[m]	1200 (depending on the baud rate and the cable type used)
Rated voltage			
	U _{rated, DC}	[V]	24.0



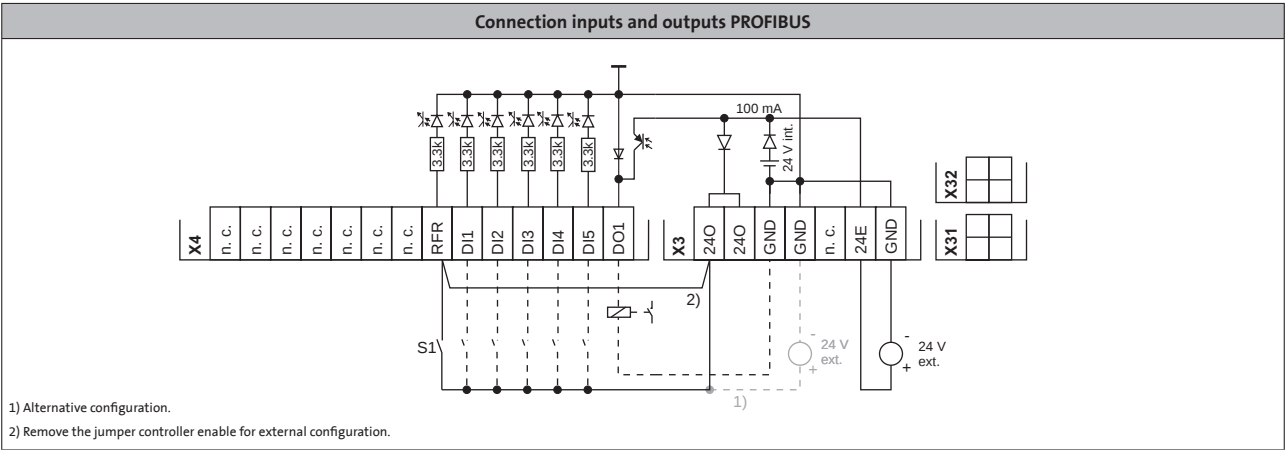
Communication Unit PROFIBUS

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFIBUS / standard I/O	Controller enable (RFR)	1			E84DGFCFPNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	PROFIBUS input	PROFIBUS input to A2		
	Network	PROFIBUS output	PROFIBUS output to A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFIBUS / enhanced I/O	Controller enable (RFR)	1			E84DGFCPENP
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 on B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	PROFIBUS input	PROFIBUS input to A2		
	Network	PROFIBUS output	PROFIBUS output to A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●		●					
E84DGFCxENx	●		●		●			
 M12 male socket B-coding	A2		A4		B4			
	1	n. c.	 M12 female socket A-coding	1	240	 M12 female socket A-coding	1	240
	2	RxD/TxD-N (A)		2	DI2		2	DI3
	3	n. c.		3	GND		3	GND
	4	RxD/TxD-P (B)		4	DI1		4	DO1
	5	n. c.		5	n. c.		5	n. c.
 M12 female socket B-coding	A3							
	1	P5V2						
	2	RxD/TxD-N (A)						
	3	M5V2						
	4	RxD/TxD-P (B)						
	5	n. c.						

Inverter Drives 8400 motec

Units

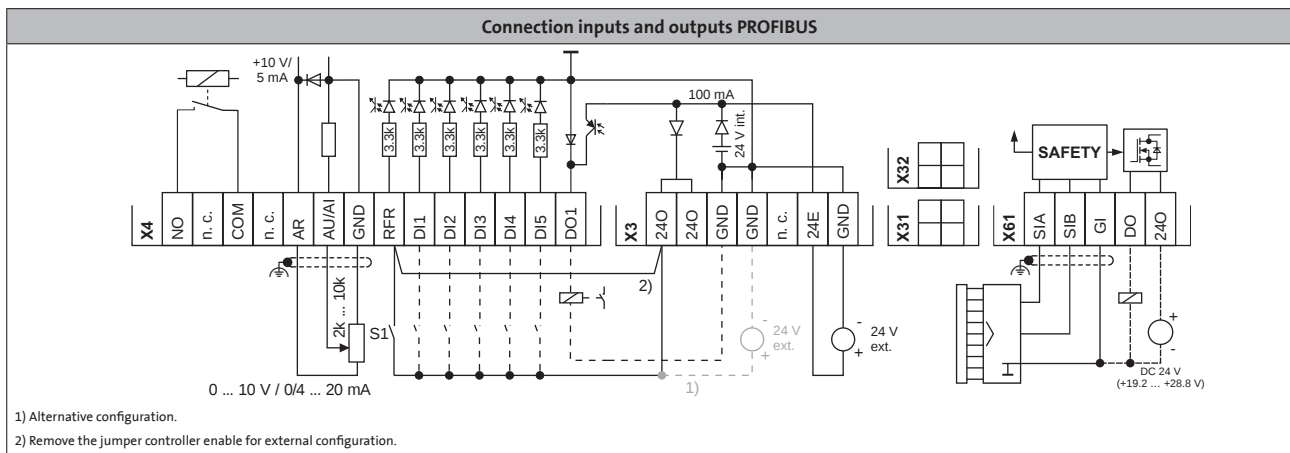


Communication Unit PROFIBUS

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFIBUS STO / standard I/O	Controller enable (RFR)	1			E84DGFCPJJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	PROFIBUS input	PROFIBUS input to A2		
	Network	PROFIBUS output	PROFIBUS output to A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFIBUS STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCPEJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	LED network		LED to A1		
	Network	PROFIBUS input	PROFIBUS input to A2		
	Network	PROFIBUS output	PROFIBUS output to A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		



M12 connector pin assignment

E84DGFCxPJx	●	●	
E84DGFCxEJx	●	●	●
M12 male socket B-coding	A2	A4	B2 B3
	1 n. c.	1 240	1 240 240
	2 RxD/TxD-N (A)	2 DI2	2 AU/AI DO1
	3 n. c.	3 GND	3 GND GND
	4 RxD/TxD-P (B)	4 DI1	4 Controller COM
M12 female socket B-coding	5 n. c.	5 n. c.	5 n. c. NO
M12 female socket A-coding	A3	B4	
	1 P5V2	1 SIA	
	2 RxD/TxD-N (A)	2 SIB	
	3 M5V2	3 DO	
	4 RxD/TxD-P (B)	4 240	
M12 male socket A-coding	5 n. c.	5 GI	

Inverter Drives 8400 motec

Units



Communication Unit PROFINET

With the Communication Unit PROFINET, the motec 8400 supports consistent communication from the field level to the management level. The advantages of this system are:

- Use of IT standards
- Integrated switch allows direct looping of PROFINET via the inverters
- Integrated I/O node. Capable of communication and reading inputs even when the 400 V supply is switched off.
- Option for connecting a 24 V supply



Communication Unit PROFINET

Standards and operating conditions

Protection type			
EN 60529			IP65
Climatic conditions			
Storage (EN 60721-3-1)			1K3 (temperature: -30 °C ... +60 °C)
Operation (EN 60721-3-3)			3K3 (temperature: -30 °C ... +55 °C)
Transport (EN 60721-3-2)			2K3 (temperature: -30 °C ... +75 °C)
Insulation voltage to reference earth/PE			
EN 61800-5-1	U_{AC}	[V]	50.0

Technical data

Communication			
Medium			CAT5e S/FTP according to ISO/ICE11801 (2002)
Communication profile			PROFINET RT Conf. Class B
Baud rate	b	[Mbps]	100
Bus nodes			Slave (Device)
Network topology			Tree, star and line
Number of logical process data channels			1
Process data words (PCD)			1 ... 10 words to control system (16 bits/word, max. 20 bytes) 1 ... 8 words from the control system (16 bits/word, max. 16 bytes)
Number of bus nodes			31 slaves + 1 master per bus segment With repeaters: 125
Max. cable length			
per bus segment	I_{max}	[m]	100
Rated voltage			
	$U_{rated, DC}$	[V]	24.0



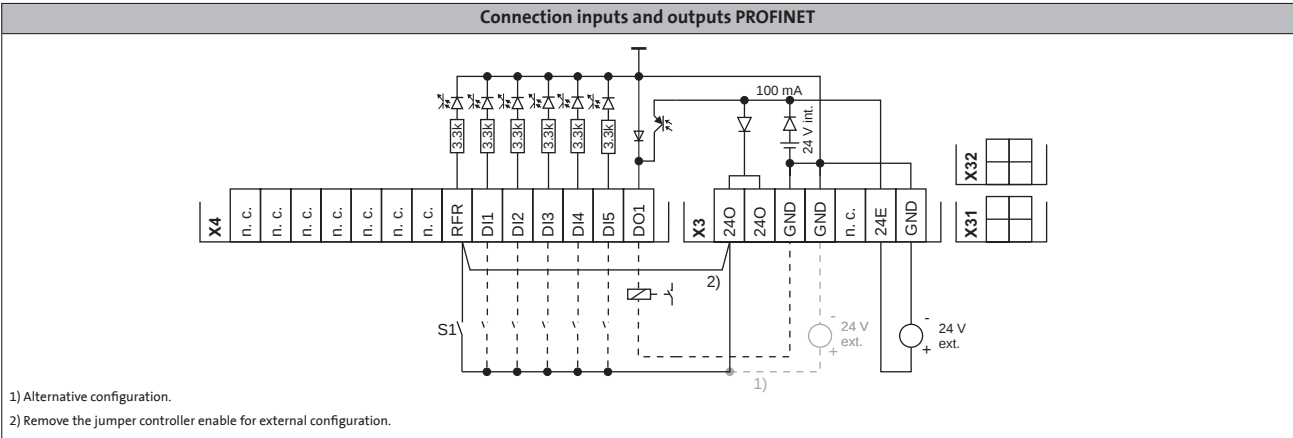
Communication Unit PROFINET

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFINET / standard I/O	Controller enable (RFR)	1			E84DGFCRFNP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1			
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	PROFINET Port 1	PROFINET Port 1 to A2		
	Network	PROFINET Port 2	PROFINET Port 2 to A3		

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFINET / enhanced I/O	Controller enable (RFR)	1			E84DGFCRENp
	Digital inputs (DI)	5	DI1/DI2 on A4 DI3 to B4		
	Analog inputs (AU/AI)	-			
	Digital outputs (DO)	1	DO1 on B4		
	Relay (NO/COM)	-			
	LED network		LED to A1		
	Network	PROFINET Port 1	PROFINET Port 1 to A2		
	Network	PROFINET Port 2	PROFINET Port 2 to A3		

4.2



M12 connector pin assignment

E84DGFCxFNx	●			●					
E84DGFCxENx	●			●			●		
			A2			A4			B4
	 M12 female socket D-coding	1	TX+	 M12 female socket A-coding	1	240	 M12 female socket A-coding	1	240
		2	RX+		2	DI2		2	DI3
		3	TX-		3	GND		3	GND
		4	RX-		4	DI1		4	DO1
					5	n. c.		5	n. c.
			A3						
	 M12 female socket D-coding	1	TX+						
2		RX+							
3		TX-							
4		RX-							



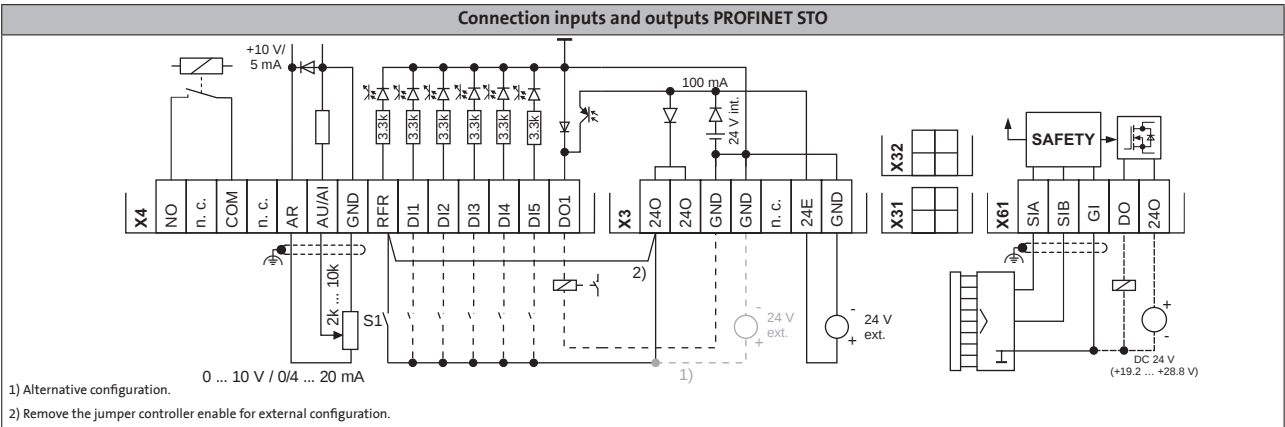
Communication Unit PROFINET

Connections

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFINET STO / standard I/O	Controller enable (RFR)	1			E84DGFCRFJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1			
	Digital outputs (DO)	1			
	Relay (NO/COM)	1			
	LED network		LED to A1		
	Network	PROFINET Port 1	PROFINET Port 1 to A2		
	Network	PROFINET Port 2	PROFINET Port 2 to A3		
	STO	SIA/SIB/GI/DO			

Mode	Features	Connections	Pin assignment	Pin arrangement	Product key
PROFINET STO / enhanced I/O	Controller enable (RFR)	1			E84DGFCREJP
	Digital inputs (DI)	5	DI1/DI2 on A4		
	Analog inputs (AU/AI)	1	AU/AI on B2		
	Digital outputs (DO)	1	DO1 to B3		
	Relay (NO/COM)	1	NO/COM on B3		
	LED network		LED to A1		
	Network	PROFINET Port 1	PROFINET Port 1 to A2		
	Network	PROFINET Port 2	PROFINET Port 2 to A3		
	STO	SIA/SIB/GI/DO	SIA/SIB/GI/DO to B4		

4.2



M12 connector pin assignment

E84DGFCxJx	●			●						
E84DGFCxEJx	●			●			●			
 M12 female socket D-coding			A2			A4			B2	B3
		1	TX+	 M12 female socket A-coding	1	24O	 M12 female socket A-coding	1	24O	24O
		2	RX+		2	DI2		2	AU/AI	DO1
		3	TX-		3	GND		3	GND	GND
		4	RX-		4	DI1		4	Controller	COM
					5	n. c.		5	n. c.	NO
 M12 female socket D-coding			A3						B4	
		1	TX+				 M12 male socket A-coding	1	SIA	
		2	RX+					2	SIB	
		3	TX-					3	DO	
		4	RX-					4	24O	
								5	GI	

Inverter Drives 8400 motec

Units



Wiring Unit for motor mounting

The Wiring Unit is the interface between the various Lenze motors and the 8400 motec. Mounting additional modules to the Wiring Unit provides significant flexibility for the connection of the mains, motor, brake and brake resistor, such as:

- Q4/2 plug-in module as Q4/2 plug connection or loop-through connection
- Quick-On and M15 connectors for mains connection
- Attachable external brake resistor for braking operation via the integrated brake chopper

Product key	Mode	Inverter	Motor frame sizes	
E84DGVN1E	Wiring Unit	E84DGDVB3714PS E84DGDVB5514PS E84DGDVB7514PS E84DGDVB1124PS	063 071	
E84DGVN2E		E84DGDVB5514PS E84DGDVB7514PS E84DGDVB1124PS E84DGDVB1524PS	080 090 100	
E84DGVN3E		E84DGDVB2224PS E84DGDVB3024PS	080 090 100 112	
E84DGVN4E		E84DGDVB4024PS E84DGDVB5524PS E84DGDVB7524PS	080 090 100 112	
E84DGVN5E		E84DGDVB24PS E84DGDVB7524PS	132	

4.2

Inverter Drives 8400 motec

Units



Frame Unit Wall mounting 0.37 to 3.0 kW

The 8400 motec is mounted on the wall using the Frame Unit. Wiring of the mains, motor and brake resistor connections is completed either using cable glands or prefabricated connectors. As an option, a brake resistor of 90 Ω (30 W, 0.6 kW) can also be delivered integrated in the housing. The following variants are available overall:



Frame Unit

Product key	Connection system	Mains connection	Motor connection	Brake resistor	Lage		Type Drive Unit
					3	5	
E84DGS2EENNNP	Cable gland	-	-	Not integrated			E84DGDVB3714PS E84DGDVB5514PS E84DGDVB7514PS E84DGDVB1124PS E84DGDVB1154PS E84DGDVB2224PS E84DGDVB3024PS
E84DGS2EENKNP		-	-	Integrated			
E84DGS2SCNNNP	Pluggable	1x Quickon	1x Q8/0	Not integrated			
E84DGS2SCNKNP		1x Quickon	1x Q8/0	Integrated			
E84DGS2ICNNNP		1x M15	1x Q8/0	Not integrated			
E84DGS2ICNKNP		1x M15	1x Q8/0	Integrated			
E84DGS2KCNNNP		2x Q4/2	1x Q8/0	Not integrated			
E84DGS2KCNKNP		2x Q4/2	1x Q8/0	Integrated			
E84DGS2KCNMNP		2x Q4/2	1x Q8/0	Externally connectable using 1x Q5/0			

Inverter Drives 8400 motec

Units



Wall adapter Wall mounting 4.0 to 7.5 kW

A wall adapter is used for wall mounting of 4.0 to 7.5 kW, which can be purchased either as a component or as part of a complete wall mounting set. The drive unit of the 8400 motec can be mounted directly on the wall adapter and complies with protection class IP65.



Wall adapter

Product key	Mode	Features	For
E84DZMAWE2	Wall adapter	- Degree of protection IP65 - Easy installation	E84DGDVB4024PS E84DGDVB5524PS E84DGDVB7524PS

Inverter Drives 8400 motec

Units



Frame Unit with switch Wall mounting 0.37 to 3.0 kW

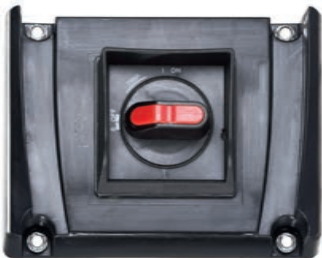
The Frame Unit with switch is a wiring and switch box for wall mounting and performance class up to 3.0 kW. The protection classes of the switches are listed in the Technical Data. The Frame Unit with switch is available in the following combinations:

- In cable gland version
- In connector version, 2 x Q4/2 for mains loops and 1 x HAN Q8/0 for motor connection
- With service switch
- Service switch with control elements
- Service switch with protective function
- With integrated 220 Ω (15 W, 0.6 kW) brake resistor



Frame Unit with switch

Switch functions	Left position	Centre	Right position	Protection type
Service switch with protective function	Mains supply On/Off, rated current 20 A, short circuit protection			IP64
Service switch	Mains supply on/off			IP54
Service switch with control elements				
Service switch	Mains supply on/off			IP54
Operational control 1 (key-operated switch)	Manual operation		Automatic	
Control element 2	Motor counter-clockwise rotation		Motor clockwise rotation	



Service switch with protective function



Service switch



Service switch with control elements

Inverter Drives 8400 motec

Units



Product key	Switch type	Connection system	Mains connection	Motor connection	Brake resistor	Lage		Type Drive Unit
						3	5	
E84DGS3LEBNND	Service switch	Cable gland	-	-	Not integrated			E84DGDVB3714PS E84DGDVB5514PS E84DGDVB7514PS E84DGDVB1124PS E84DGDVB1154PS E84DGDVB2224PS E84DGDVB3024PS
E84DGS3LEKNND	Service switch with protective function							
E84DGS3LEENND	Service switch with control elements							
E84DGS3LEBCND	Service switch	Cable gland	-	-	Integrated			
E84DGS3LEKCND	Service switch with protective function							
E84DGS3LEECND	Service switch with control elements							
E84DGS3KCBNND	Service switch	Pluggable	2x Q4/2	1x Q8/0	Not integrated			
E84DGS3KCKNND	Service switch with protective function							
E84DGS3KCENND	Service switch with control elements							
E84DGS3KCBCND	Service switch	Pluggable	2x Q4/2	1x Q8/0	Integrated			
E84DGS3KCKCND	Service switch with protective function							
E84DGS3KCECND	Service switch with control elements							
E84DGS3KCBLND	Service switch	Pluggable	2x Q4/2	1x Q8/0	Externally connectable using 1x Q5/0			
E84DGS3KCKLND	Service switch with protective function							
E84DGS3KCELND	Service switch with control elements							

4.2



Overview of possible components of the 8400 motec system



Drive Unit



USB diagnostic adapter - E94AZCUS



Diagnosis terminal - EZAEBK2001



Memory module - E84AYM205/M



Communication Unit



M12 connector - EZA EVE013/M



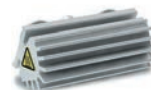
Switch/potentiometer unit, connection via B-side - E82ZBU



Wiring Unit



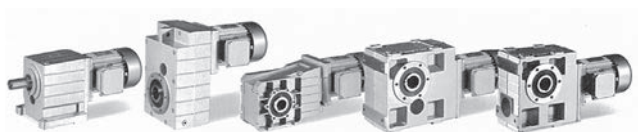
External brake resistor



External brake resistor, can be mounted on the left or right of the wiring unit



Plug-in connector, version available for mounting on the right or the left-hand side



Mounted on geared motor

Inverter Drives 8400 motec

Accessories



Memory module

All device settings for the 8400 are stored on a plug-in memory chip, the memory module. The memory module ensures that drives can be replaced quickly and without errors.



Mode	Features	Product key
Memory module	- For 8400 Baseline, 8400 motec - Packaging unit: 12 pieces	E84AYM20S/M

M12 connector

The M12 plug-in connector can easily be added by breaking open the cutouts in the Communication Unit. The Communication Unit is wired by means of plug-in terminals. This means additional I/Os can also be plugged in.



Mode	Features	Product key
M12 connector	- A-coded, 5-pin, female - Packaging unit: 5 pieces	EZAEVE013/M



Connector modules

Screwed sockets are available by default in the 8400 motec for mains connection. Plug-in modules can also be used as an alternative. Because of the universal connection options offered by the modules, a supply bus can be set up using plugs and couplings without the need for any external accessories.

Mounting of the plug-in module on the right (position 3)



Mounting of the plug-in module on the left (position 5)

Mode	Illustrations	Features	Product key
Plug-in module, left, 1 x Q4/2		• Mains supply • 4 power contacts and PE: 32 A / 400 V • 2 control contacts: 10 A / 24 V	E84DZEVBPNP
Plug-in module, right, 1 x Q4/2			E84DZEVBPNP
Plug-in module, left, 2 x Q4/2		• Mains supply with daisy chain • 4 power contacts and PE: 32 A / 400 V • 2 control contacts: 10 A / 24 V	E84DZEVBPRP
Plug-in module, right, 2 x Q4/2			E84DZEVBPRP
Plug-in module, left, 1 x Q8/0		• Motor connection for wall mounting • 8 power contacts and PE: 16 A / 400 V • Suitable for rated motor power up to ≤ 7.5 kW	E84DZEVBCNP
Plug-in module, right, 1 x Q8/0			E84DZEVBCNP
Plug-in module, right, 1 x Q8/0 1 x Q5/0		• Motor connection (Q8/0) for wall mounting • 8 power contacts and PE: 16 A / 400 V • Connection (Q5/0) for an external brake resistor • Suitable for rated motor power up to ≤ 7.5 kW	E84DZEVBCFP



Plug

Mode	Illustrations	Features	Product key
Quick-on connector (wall duct)		- Applications with single mains connection directly on the Wiring Unit, i.e. Frame Unit - Suitable for rated power up to ≤ 3 kW - For all sizes, 20 A / 690 V (UL: 15 A / 690 V) - UL in preparation	EWS0102
M15 connector (wall duct)		- Applications with single mains connection directly on the Wiring Unit, i.e. Frame Unit 4 power contacts and PE: 16 A / 600 V 2 control contacts: 10 A / 24 V - Suitable for rated power up to ≤ 3 kW - UL in preparation	EWS0107

Nuts for the Quickon terminal

For fast and easy Quickon connection, the following nuts (counterparts) can be fitted to the connecting cable.

4.2

Mode	Illustrations	Features	Product key
5 x Quickon nuts		Connection cycles: maximum of 10	
		Cable diameter 6 ... 10 mm	EWS0103/M
		Cable diameter 9 ... 14 mm	EWS0104/M
5 x Quickon connectors with Quickon nuts		Connection cycles: more than 50	
		Cable diameter 6 ... 10 mm	EWS0105/M
		Cable diameter 9 ... 14 mm	EWS0106/M

Connector for the M15 terminal

The following connectors can be fitted to the connection cable for the M15 terminal.

Mode	Illustrations	Features	Product key
5 x M15-connector		- Connection cross-section 6 x 2.5 mm² - Crimp sockets - Plastic w/o shielding	EWS0109/M

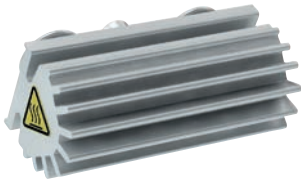
Inverter Drives 8400 motec

Accessories



Brake resistors

To decelerate greater moments of inertia or with a longer operation in generator mode an external brake resistor is required. It converts braking energy into heat. Besides the optionally integrated 220 Ω (15/30 W) brake resistors for wall mounting, the following brake resistors are also available.



External brake resistor

External brake resistor on the Wiring Unit

An external brake resistor can be mounted on the side of the 8400 motec Wiring Unit or Drive Unit instead of the plug-in modules or cable gland.

Typ. motor power	Mains voltage	Brake resistor	Rated resistance	Rated power	Thermal capacity		
4-pole asynchronous motor							
P	U _{AC}		R _{rated}	P _{rated}	C _{th}		
[kW]	[V]		[Ω]	[W]	[kWs]		
0.37	3 AC 320 ... 528	E84DZEW220R001	220.0	40.0	0.6		
0.55							
0.75							
1.10							
1.50		E84DZEW100R001	100.0				
2.20							
3.00							
4.00		E84DZEW47R0001	47.0				
5.50							
7.50							



External brake resistor

The brake resistors recommended in the table below have been set or approx. 1.5 times the regenerative power cycle time of 15/135 s (brake/rest ratio). These brake resistors generally meet the usual requirements of standard applications.

The brake resistors are equipped with a thermostat (potential-free opener). The resistors meet IP65 (EN 60529) or type 4 (NEMA 250) specifications.



Brake resistor

Typ. motor power	Mains voltage	Brake resistor	Rated resistance	Rated power	Thermal capacity	Dimensions	Mass
4-pole asynchronous motor							
P	U _{AC}		R _{rated}	P _{rated}	C _{th}	h x w x d	m
[kW]	[V]		[Ω]	[W]	[kW _s]	[mm]	[kg]
0.37	3 AC 320 ... 528	ERBS180R350W	180.0	350.0	53.0	382 x 124 x 122	2.0
0.55							
0.75							
1.10							
1.50							
2.20		ERBS100R625W	100.0	625.0	94.0	566 x 124 x 122	3.0
3.00							
4.00		ERBS047R400W ERBS047R800W	47.0 47.0	400.0 800.0	60.0 120.0	400 x 110 x 105 710 x 110 x 105	2.3 3.9
5.50							
7.50							



USB diagnostic adapter

The operation, parameterisation und diagnostics of the 8400 motec via the L-force diagnostic interface takes place using the diagnosis terminal or a PC. A PC can be connected via the USB interface and the USB diagnostic adapter.

For connecting the USB diagnostic adapter to the L-force diagnostics interface (DIAG) on the inverter, three different cable lengths of 2.5 m, 5 m and 10 m are available separately. The connection can be made during operation. The engineering tools EASY Starter or Engineer are used for operation, parameter setting and diagnostics of the inverters. Both tools have simple, intuitive interfaces. Commissioning can therefore be carried out quickly and easily.

Instead of the USB diagnostic adapter, the PC system bus adapter can be used. This necessitates a CANopen interface on the inverter.

- The 'EASY Starter' or 'Engineer' engineering tools are used to operate, parameterise and diagnose the inverters.



USB diagnostic adapter
incl. connecting cable to PC

4.2

Mode		Features	Product key
USB diagnostic adapter		• Input side voltage supply via USB connection from PC • Output-side voltage supply via inverter's diagnostic interface • Diagnostic LEDs • Electrical isolation of PC and inverters • Supports hot plugging	E94AZCUS

Connecting cables for USB diagnostic adapter

Mode	Features	Product key
Connecting cable for USB diagnostic adapter	• Length: 2.5 m	EWL0070
	• Length: 5 m	EWL0071
	• Length: 10 m	EWL0072

Inverter Drives 8400 motec

Accessories



Diagnosis terminal

The diagnosis terminal can be used for local operation, parameterisation or diagnostics as a simple alternative to a PC. The structured menus and plain text display provide quick access to data. The diagnosis terminal can be plugged into the inverter's L-force diagnostic interface from the outside.



Diagnosis terminal

Mode	Features	Slot	Product key
Diagnosis terminal	• Diagnosis terminal in a robust housing • Incl. 2.5m cable • Degree of protection IP20 • For 8400 motec and protec.	Diagnostic interface	EZAEBK2001

4.2

Switch/potentiometer unit

The switch/potentiometer unit is mounted at one point in the system. An analog setpoint can be specified with the switch/potentiometer unit and the control connections integrated in the inverter by using the integrated potentiometer; the rotary switch can, for example, be used to start/stop the drive or change the direction of rotation. The switch/potentiometer unit is supplied with a 2.5 m connection cable.



Switch/potentiometer unit

Mode	Product key
Switch/potentiometer unit (IP65)	E82ZBU

Inverter Drives 8400 motec

Order

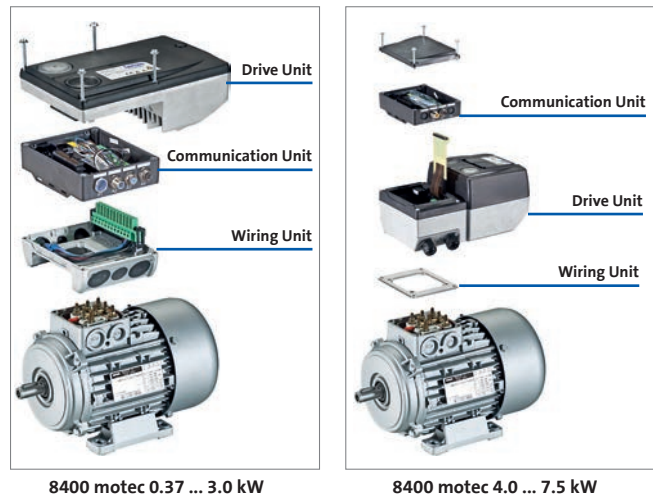


8400 motec motor mounting

The 8400 motec can be delivered mounted on a motor or geared motor, or as a set of individual pieces. A set comprises:

- Drive Unit
- Communication Unit
- Wiring Unit
- Configured attachments

The Wiring Units are modified by default for Lenze motor types 063 to 132, with 0.37 to 7.5 kW. We recommend using our configuration tool »Product Finder« for the detailed configuration. Special accessories can be selected to adapt the system to the circumstances of use on site.



8400 motec 0.37 ... 3.0 kW

8400 motec 4.0 ... 7.5 kW

Accessories

4.2

0.37 ... 3.0 kW



Drive Unit

Product extensions, configurable

Accessories, optional



USB diagnostic adapter, length of the connection cable 2.5, 5 or 10 m



Diagnosis terminal



Memory module



Communication Unit



M12 connector



Switch/potentiometer unit, connected on B side



Wiring Unit



External brake resistor, can be mounted on the left or right of the wiring unit



Plug-in connector, version available for mounting on the right or the left-hand side



Quick-on wall duct



M15 connector wall duct



External brake resistor

4.0 ... 7.5 kW



Communication Unit

Product extensions, configurable

Accessories, optional



M12 connector



Switch/potentiometer unit, connected on B side



USB diagnostic adapter



Diagnosis terminal



Memory module



External brake resistor



Drive Unit



External brake resistor, can be mounted on the left or right of the wiring unit



Plug-in connector, version available for mounting on the right or the left-hand side



Wiring Unit

Inverter Drives 8400 motec

Order



Product key

Motor mounting	E	8	4	D	F	B	M				4	S				2	P
Set comprising: Drive Unit, Communication Unit and Wiring Unit																	
Power consumption																	
0.37 kW								3	7	1							
0.55 kW								5	5	1							
0.75 kW								7	5	1							
1.10 kW								1	1	2							
1.50 kW								1	5	2							
2.20 kW								2	2	2							
3.00 kW								3	0	2							
4.00 kW								4	0	2							
5.50 kW								5	5	2							
7.50 kW								7	5	2							
I/O modules																	
Basic I/O													N	N	N		
Standard I/O													S	N	N		
Standard I/O + M12													S	1	N		
Extended I/O													X	N	N		
Communication Unit with fieldbus																	
CAN / standard I/O													C	F	N		
CAN / enhanced I/O													C	E	N		
CAN STO / standard I/O													C	F	J		
CAN STO / enhanced I/O													C	E	J		
AS interface / standard I/O													A	F	N		
AS interface / enhanced I/O													A	E	N		
AS interface STO / standard I/O													A	F	J		
AS interface STO / enhanced I/O													A	E	J		
PROFIBUS / standard I/O													P	F	N		
PROFIBUS / enhanced I/O													P	E	N		
PROFIBUS STO / standard I/O													P	F	J		
PROFIBUS STO / enhanced I/O													P	E	J		
PROFINET / standard I/O													R	F	N		
PROFINET / enhanced I/O													R	E	N		
PROFINET STO / standard I/O													R	F	J		
PROFINET STO / enhanced I/O													R	E	J		
EtherCAT / standard I/O													T	F	N		
EtherCAT enhanced I/O													T	E	N		
EtherCAT STO / standard I/O													T	F	J		
EtherCAT STO / enhanced I/O													T	E	J		
Ethernet IP / standard I/O													G	F	N		
EtherNet / Enhanced I/O													G	E	N		
EtherNet STO / standard I/O													G	F	J		
EtherNet STO / enhanced I/O													G	E	J		
POWERLINK / standard I/O													L	F	N		
POWERLINK / enhanced I/O													L	E	N		
POWERLINK STO / standard I/O													L	F	J		
POWERLINK STO / enhanced I/O													L	E	J		
Wiring Unit for motor frame size																	
(063/071) for 0.37 ... 1.1 kW																	1
(080/090/100) for 0.55 ... 1.5 kW																	2
(080/090/100/112) for 2.2 ... 3.0 kW																	3
(080/090/100/112) for 4.0 ... 7.5 kW																	4
(132) for 5.5 ... 7.5 kW																	5

4.2

Inverter Drives 8400 motec

Order



8400 motec wall mounting

The assembly for wall mounting consists of:

- Drive Unit
- Communication Unit
- Frame Unit (0.37 - 3.0 kW), wall adapter (4.0 - 7.5 kW)

The cable gland version is delivered as a set of individual parts. The version with plug-in connector is delivered as a fully mounted unit. For wall mounting 0.37 3.0 kW, an internal brake resistor can also be ordered. For wall mounting 4.0 ... 7.5 kW, a mounted brake resistor can also be ordered. We recommend using our configuration tool »Product Finder« for the detailed configuration. Special accessories can be selected to adapt the system to the circumstances of use on site.



0.37 ... 3.0 kW



4.0 ... 7.5 kW

Accessories

4.2

0.37 ... 3.0 kW



Drive Unit



Communication Unit



Frame Unit

Product extensions, configurable

Accessories, optional



USB diagnostic adapter, length of the connection cable 2.5, 5 or 10 m



Diagnosis terminal



Memory module



M12 connector



Switch/potentiometer unit, connected on B side



External brake resistor

4.0 ... 7.5 kW

Product extensions, configurable

Accessories, optional



Communication Unit



Drive Unit



Wall adapter



M12 connector



Switch/potentiometer unit, connected on B side



USB diagnostic adapter



Diagnosis terminal



Memory module



External brake resistor



External brake resistor, can be mounted on the left or right of the wiring unit



Plug-in connector, version available for mounting on the right or the left-hand side

Inverter Drives 8400 motec

Order



Product key

Wall mounting	Z	2	5			0										F	0	0	
Mains connection 1 x Quickon, motor connection 1 x Q8/0				C	0														S
Mains connection, motor connection cable gland				A	0														K
Mains connection 2 x Q4/2, motor connection 1 x Q8/0				B	B														
Mains connection M15, motor connection 1 x Q8/0				E	D														
Brake resistor																			
None						0													
Integrated 90 Ω (30 W) up to rated power 3 kW						B													
Mounted to the Drive Unit 47 Ω (40 W) from rated cable 4 kW						C													
Terminal for external brake resistor 1 x Q5/0						E													
I/O modules																			
Basic I/O						0	A	0	A										
Standard I/O						0	B	0	A										
Standard I/O + M12						0	B	0	B										
Extended I/O						0	D	0	A										
Communication Unit with fieldbus																			
CAN / standard I/O						C	C	0	E										
CAN / enhanced I/O						C	C	0	J										
CAN STO / standard I/O						C	B	A	E										
CAN STO / enhanced I/O						C	B	A	F										
AS interface / standard I/O						A	C	0	C										
AS interface / enhanced I/O						A	C	0	I										
AS interface STO / standard I/O						A	B	A	C										
AS interface STO / enhanced I/O						A	B	A	D										
PROFIBUS / standard I/O						P	C	0	G										
PROFIBUS / enhanced I/O						P	C	0	K										
PROFIBUS STO / standard I/O						P	B	A	G										
PROFIBUS STO / enhanced I/O						P	B	A	H										
PROFINET / standard I/O						R	C	0	G										
PROFINET / enhanced I/O						R	C	0	K										
PROFINET STO / standard I/O						R	B	A	G										
PROFINET STO / enhanced I/O						R	B	A	H										
EtherCAT / standard I/O						T	C	0	G										
EtherCAT enhanced I/O						T	C	0	K										
EtherCAT STO / standard I/O						T	B	A	G										
EtherCAT STO / enhanced I/O						T	B	A	H										
Ethernet IP / standard I/O						G	C	0	G										
EtherNet IP / enhanced I/O						G	C	0	K										
EtherNet IP STO / standard I/O						G	B	A	G										
EtherNet IP STO / enhanced I/O						G	B	A	H										
POWERLINK / standard I/O						L	C	0	G										
POWERLINK / enhanced I/O						L	C	0	K										
POWERLINK STO / standard I/O						L	B	A	G										
POWERLINK STO / enhanced I/O						L	B	A	H										
Power consumption																			
0.37 kW												1	3	7					
0.55 kW												1	5	5					
0.75 kW												1	7	5					
1.10 kW												2	1	1					
1.50 kW												2	1	5					
2.20 kW												2	2	2					
3.00 kW												2	3	0					
4.00 kW												2	4	0					
5.50 kW												2	5	5					
7.50 kW												2	7	5					

4.2

Inverter Drives 8400 motec

Order



8400 motec with switch, wall mounting

The assemblies for wall mounting from 0.37 to 3.0 kW consist of:

- Drive Unit
- Communication Unit
- Frame Unit with switch

The cable gland version is delivered as a set of individual parts. The version with plug-in connector is delivered as a fully mounted unit. Various switch types with different protection classes can be selected:

- Service switch, IP54
- Service switch with control elements, IP54
- Service switch with protective function, IP64

We recommend using our configuration tool »Product Finder« for the detailed configuration. Special accessories can be selected to adapt the system to the circumstances of use on site.



0.37 ... 3.0 kW

Accessories

4.2

Product extensions, configurable

Accessories, optional

0.37 ... 3.0 kW



Drive Unit



Communication Unit



Frame Unit



USB diagnostic adapter, length of the connection cable 2.5, 5 or 10 m



Diagnosis terminal



Memory module



M12 connector



Switch/potentiometer unit, connected on B side



External brake resistor

Inverter Drives 8400 motec

Order



Product key

Wall mounting with switch	Z	3	5													F	0	0	
Mains connection 2 x Q4/2, motor connection 1 x Q8/0 supplied as 1 unit				B	B														S
Mains connection, motor connection cable gland supplied as a set				A	0														K
Service switch																			
Service switch				A															
Service switch with protective function				B															
Service switch with control elements				C															
Brake resistor																			
None				0															
Integrated 220 Ω resistor (15 W)				A															
Terminal for external brake resistor 1 x Q5/0				E															
I/O modules																			
Basic I/O				0	A	0	A												
Standard I/O				0	B	0	A												
Standard I/O + M12				0	B	0	B												
Extended I/O				0	D	0	A												
Communication Unit with fieldbus																			
CAN / standard I/O				C	C	0	E												
CAN / enhanced I/O				C	C	0	J												
CAN STO / standard I/O				C	B	A	E												
CAN STO / enhanced I/O				C	B	A	F												
AS interface / standard I/O				A	C	0	C												
AS interface / enhanced I/O				A	C	0	I												
AS interface STO / standard I/O				A	B	A	C												
AS interface STO / enhanced I/O				A	B	A	D												
PROFIBUS / standard I/O				P	C	0	G												
PROFIBUS / enhanced I/O				P	C	0	K												
PROFIBUS STO / standard I/O				P	B	A	G												
PROFIBUS STO / enhanced I/O				P	B	A	H												
PROFINET / standard I/O				R	C	0	G												
PROFINET / enhanced I/O				R	C	0	K												
PROFINET STO / standard I/O				R	B	A	G												
PROFINET STO / enhanced I/O				R	B	A	H												
EtherCAT / standard I/O				T	C	0	G												
EtherCAT enhanced I/O				T	C	0	K												
EtherCAT STO / standard I/O				T	B	A	G												
EtherCAT STO / enhanced I/O				T	B	A	H												
Ethernet IP / standard I/O				G	C	0	G												
EtherNet IP / enhanced I/O				G	C	0	K												
EtherNet IP STO / standard I/O				G	B	A	G												
EtherNet IP STO / enhanced I/O				G	B	A	H												
POWERLINK / standard I/O				L	C	0	G												
POWERLINK / enhanced I/O				L	C	0	K												
POWERLINK STO / standard I/O				L	B	A	G												
POWERLINK STO / enhanced I/O				L	B	A	H												
Performance																			
0.37 kW												1	3	7					
0.55 kW												1	5	5					
0.75 kW												1	7	5					
1.10 kW												2	1	1					
1.50 kW												2	1	5					
2.20 kW												2	2	2					
3.00 kW												2	3	0					

4.2

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